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Inventor(s)

Zhang; Meng et al.

ROTATING ASSEMBLY AND JIGSAW PUZZLE TABLE

Abstract

A rotating assembly and a jigsaw puzzle table using the rotating assembly are disclosed in present disclosure. The jigsaw puzzle table includes a board portion comprising a bottom surface, at least two puzzle drawers, a reinforcing arm connected to the bottom surface of the board portion, a first pivoting arm connected to the bottom surface of the board portion, a supporting shaft located below the board portion and spaced apart from the first pivoting arm; and at least one rotating connection component connecting the first pivoting arm and the supporting shaft. The rotating connection component is configured to enable the board portion to switch between a flat position and a tilted position. The board portion is capable of being rotated through a rotational movement of the rotating assembly.

Inventors: Zhang; Meng (Shenzhen, CN), Che; Xiaoling (Dangyang, CN), Duan; Jinyan (Shenzhen, CN)

Applicant: Zhang; Meng (Shenzhen, CN)

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS [0001] This application is a continuation of U.S. patent application Ser. No. 18/817,289, filed on Aug. 28, 2024, which is a continuation-in-part of U.S. patent application Ser. No. 18/736,862, filed on Jun. 7, 2024, and U.S. Pat. No. 12,220,648; a continuation-in-part of U.S. patent application Ser. No. 17/829,359, filed on Jun. 1, 2022, and U.S. Pat. No. 12,104,744; a continuation of U.S. patent application Ser. No. 18/732,602, filed on Jun. 3, 2024, and U.S. Pat. No. 12,186,676; a continuation of U.S. patent application Ser. No. 18/222,990, filed on Jul. 17, 2023; a continuation of U.S. patent application Ser. No. 18/740,863, filed on Jun. 12, 2024, and U.S. Pat. No. 12,226,708; and claims the foreign priority of Chinese Patent Application No. 202420991164.4, filed on May 8, 2024, the contents of which are incorporated herein in their entireties. [0002] U.S. patent application Ser. No. 18/736,862 is a continuation of U.S. patent application Ser. No. 18/235,896, filed on Aug. 21, 2023, and U.S. Pat. No. 12,048,885; a continuation of U.S. patent application Ser. No. 18/235,416, filed on Aug. 18, 2023, and U.S. Pat. No. 12,059,631; a continuation-in-part of U.S. patent application Ser. No. 18/541,685, filed on Dec. 15, 2023, and U.S. Pat. No. 12,042,740; and a continuation-in-part of U.S. patent application Ser. No. 17/829,359, filed on Jun. 1, 2022, and U.S. Pat. No. 12,104,744. U.S. patent application Ser. No. 18/235,416 is a continuation-in-part of U.S. patent application Ser. No. 17/505,587, filed on Oct. 19, 2021, and U.S. Pat. No. 11,890,551, and a continuation-in-part of U.S. patent application Ser. No. 17/829,359. U.S. patent application Ser. No. 18/235,896 is a continuation-in-part of U.S. patent application Ser. No. 17/505,587 and a continuation-in-part of U.S. patent application Ser. No. 17/829,359. U.S. patent application Ser. No. 18/541,685 is a continuation of U.S. patent application Ser. No. 17/505,587. Through U.S. patent application Ser. No. 17/505,587, this application claims priority to Chinese Patent Application No. 202111131554.1, filed on Sep. 26, 2021, and Chinese Patent Application No. 202122334815.1, filed on Sep. 26, 2022. Through U.S. patent application Ser. No. 18/235,896, this application claims priority to Chinese Patent Application No. 202330364018.X, filed on Jun. 13, 2023. [0003] The U.S. patent application Ser. No. 18/732,602 is a continuation of U.S. patent application Ser. No. 18/541,685. [0004] U.S. patent application Ser. No. 18/222,990 is a continuation-in-part of U.S. patent application Ser. No. 17/720,682, filed on Apr. 14, 2022, which claims priority to Chinese Patent Application No. 202210103787.9, filed on Jan. 28, 2022. U.S. patent application Ser. No. 18/222,990 is a continuation-in-part of U.S. patent application Ser. No. 29/824,951, filed on Jan. 28, 2022. U.S. patent application Ser. No. 18/222,990 is a continuation-in-part of U.S. patent application Ser. No. 29/818,457, filed on Dec. 9, 2021. U.S. patent application Ser. No. 18/222,990 is a continuation-in-part of U.S. patent application Ser. No. 29/859,220, filed on Nov. 8, 2022, which claims priority to Chinese Patent Application No. 202230717091.6, filed on Oct. 28, 2022. [0005] All of the above-identified applications are hereby incorporated by reference herein in their entireties and made a part of this specification.

TECHNICAL FIELD

[0006] The present disclosure relates to the field of puzzle game accessories, and in particular to a jigsaw puzzle table with a rotating assembly, wherein the jigsaw puzzle table is movable with respect to one or more players through the rotating assembly for allowing the player to move the jigsaw puzzle table for assembling the puzzle pieces thereon at different planar directions, such that the player does not need to physically travel from side to side of the jigsaw puzzle table

BACKGROUND

[0007] The jigsaw puzzle, as a puzzle game, is essential in intellectual development for children. Due to the jigsaw puzzle being interesting, the jigsaw puzzle is also popular among adults. When playing the jigsaw puzzle, a user needs to carefully identify puzzle pieces to find similarities between the puzzle pieces to splice the puzzle pieces together. In order to enable the user to splice the puzzle pieces, the jigsaw puzzle table is released to the market. However, the jigsaw puzzle table in the art has a fixed height, and the height cannot be adjusted according to a height of the

user. Therefore, the user whose height does not match the height of the jigsaw puzzle table may not use the jigsaw puzzle table comfortably, having a poor usage experience.

[0008] When a user challenges a larger scale jigsaw puzzle, it is necessary to prepare a jigsaw puzzle table with sufficient bearing area. However, the arm length of the user is often insufficient to reach the entire game area, and the viewing angle range of the user is not enough to pay attention to the entire game area. As a result, the user often needs to move the position of the puzzle during the game process.

[0009] A need exists for a tool that retains all the unfinished pieces and while allowing the player to conveniently play the puzzle. It is to the provision of such a tool that the present disclosure is primarily directed.

SUMMARY OF THE DISCLOSURE

[0010] The invention is advantageous in that it provides a movable puzzle platform with a rotating assembly, wherein the puzzle platform is movable for allowing a player to conveniently play the puzzles.

[0011] In one aspect, the present disclosure provides a jigsaw puzzle table, comprising: a puzzle board, a rotating assembly comprising a first moving member and a second moving member rotatably coupled to the first moving member and attached to the puzzle board for driving the puzzle board to rotate relative to the first moving member, and a supporting assembly coupled with the first moving member of the rotating assembly for supporting the puzzle board and the rotating assembly. The puzzle board is capable of being rotated on the supporting assembly through a rotational movement of the rotating assembly.

[0012] In another aspect, the present disclosure provides a rotating assembly comprises a first moving member comprising a first moving frame, a first rolling portion extending from the periphery of the first moving frame, and a first coupling unit extending from the first rolling portion away from the first moving frame, a second moving member comprising a second moving frame, a second rolling portion extending from the periphery of the second moving frame, and a second coupling unit extending from the second rolling portion away from the second moving frame, and a plurality of rotors rotatably retained between the first moving member and the second moving member. The first rolling portion is symmetrically positioned with respect to the second rolling portion, and each of the plurality of rotors is free to roll on both the first rolling portion of the first moving member and the second rolling portion of the second moving member.

[0013] Still further objects and advantages will become apparent from a consideration of the ensuing description and drawings. These and other objectives, features, and advantages of the present disclosure will become apparent from the following detailed description, the accompanying drawings, and the appended claims.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 is an illustrative isometric view of a jigsaw puzzle table according to a first embodiment of the present disclosure.

[0015] FIG. 2 is an illustrative isometric view of the jigsaw puzzle table shown in FIG. 1, but from another aspect.

[0016] FIG. 3 is an illustrative isometric view of a jigsaw puzzle table according to an embodiment of the present disclosure, this time viewed from a third angle.

[0017] FIG. 4 is a partial exploded perspective view of the jigsaw puzzle table shown in FIG. 1.

[0018] FIG. 5 is a partial exploded perspective view of the jigsaw puzzle table shown in FIG. 4.

[0019] FIG. 6 is an illustrative isometric view of a rotating assembly and a supporting assembly of the jigsaw puzzle table shown in FIG. 1.

[0020] FIG. **7** is an enlarged view of Part A in FIG. **6**.

[0021] FIG. **8** is an illustrative isometric view of the rotating assembly and a puzzle board of the jigsaw puzzle table shown in FIG. **1**.

[0022] FIG. **9** is a bottom view of the rotating assembly and the puzzle board of the jigsaw puzzle table shown in FIG. **1**.

[0023] FIG. **10** is an illustrative isometric view of a rotating locking assembly of the jigsaw puzzle table shown in FIG. **1**.

[0024] FIG. **11** is an illustrative isometric view of the puzzle board and the rotating assembly of the jigsaw puzzle table shown in FIG. **1**.

[0025] FIG. **12** is an illustrative cross-sectional view of the puzzle board and the rotating assembly of the jigsaw puzzle table taken along line I-I of FIG. **11**.

[0026] FIG. **13** is an illustrative cross-sectional view of the puzzle board and the rotating assembly of the jigsaw puzzle table taken along line II-II of FIG. **11**.

[0027] FIG. **14** is an exploded perspective view of the rotating assembly of the jigsaw puzzle table shown in FIG. **1**.

[0028] FIG. **15** is an illustrative isometric view of the jigsaw puzzle table of FIG. **1**, illustrating the puzzle board tilted at a certain angle and in a locked state.

[0029] FIG. **16** is similar to FIG. **20**, but from another aspect.

[0030] FIG. **17** is an illustrative isometric view of an adjusting structure and a mounting board of the jigsaw puzzle table shown in FIG. **1**.

[0031] FIG. **18** is an illustrative isometric view of the adjusting structure, the supporting board and the puzzle board of the jigsaw puzzle table shown in FIG. **1**, illustrating the adjusting structure in the locked state.

[0032] FIG. **19** is an illustrative isometric view of the adjusting structure, the supporting board and the puzzle board of the jigsaw puzzle table shown in FIG. **1**, illustrating the adjusting structure in a closed state.

[0033] FIG. **20** is an illustrative isometric view of the adjusting structure, the supporting board, the puzzle board and a mounting board of the jigsaw puzzle table shown in FIG. **1**, illustrating the adjusting structure in the locked state.

[0034] FIG. **21** is an illustrative isometric view of the adjusting structure, the supporting board and a mounting board of the jigsaw puzzle table shown in FIG. **1**, illustrating the adjusting structure in the closed state.

[0035] FIG. **22** is an illustrative isometric view of the adjusting structure of the jigsaw puzzle table shown in FIG. **1**.

[0036] FIG. **23** is an illustrative isometric view of a control unit of the jigsaw puzzle table shown in FIG. **1**.

[0037] FIG. **24** is an illustrative cross-sectional view of the jigsaw puzzle table shown in FIG. **1**, illustrating the adjusting structure in the closed state.

[0038] FIG. **25** is an enlarged view of Part B in FIG. **24**.

[0039] FIG. **26** is an illustrative isometric view of the jigsaw puzzle table shown in FIG. **1**, illustrating the adjusting structure in the locked state.

[0040] FIG. **27** is an enlarged view of Part C in FIG. **26**.

[0041] FIG. **28** is an illustrative cross-sectional view of the jigsaw puzzle table shown in FIG. **1**, illustrating the adjusting structure in the locked state.

[0042] FIG. **29** is an enlarged view of Part D in FIG. **33**.

[0043] FIG. **30** is an illustrative isometric view of the adjusting structure of the jigsaw puzzle table shown in FIG. **1**, illustrating the adjusting structure in a sliding state.

[0044] FIG. **31** is similar to FIG. **30**, but from another aspect.

[0045] FIG. **32** is an enlarged view of Part E in FIG. **31**.

[0046] FIG. **33** is an illustrative cross-sectional view of the adjusting structure of the jigsaw puzzle

table shown in FIG. 1, illustrating the adjusting structure in a sliding state.

[0047] FIG. 34 is an enlarged view of Part F in FIG. 33.

[0048] FIG. 35 is similar to FIG. 23, but from another aspect.

[0049] FIG. 36 is an exploded perspective view of the adjusting structure of the jigsaw puzzle table shown in FIG. 1.

[0050] FIG. 37 is similar to FIG. 36, but from another aspect.

[0051] FIG. 38 is an illustrative isometric view of the jigsaw puzzle table according to a second embodiment of the present disclosure.

[0052] FIG. 39 is an illustrative isometric view of the jigsaw puzzle table shown in FIG. 38, but from another aspect.

[0053] FIG. 40 is an enlarged view of Part G in FIG. 39.

[0054] FIG. 41 is a partial exploded perspective view of the jigsaw puzzle table shown in FIG. 38.

[0055] FIG. 42 is an illustrative isometric view of a rotating assembly and a supporting assembly of the jigsaw puzzle table shown in FIG. 38.

[0056] FIG. 43 is an illustrative isometric view of the rotating assembly and a puzzle board of the jigsaw puzzle table shown in FIG. 38.

[0057] FIG. 44 is an illustrative cross-sectional view of the puzzle board of the jigsaw puzzle table taken along line III-III of FIG. 38.

[0058] FIG. 45 is an enlarged view of Part H in FIG. 44.

[0059] FIG. 46 is an illustrative cross-sectional view of the puzzle board of the jigsaw puzzle table taken along line IV-IV of FIG. 38.

[0060] FIG. 47 is an enlarged view of Part J in FIG. 46.

[0061] FIG. 48 is an illustrative isometric view of the jigsaw puzzle table of FIG. 38, illustrating the puzzle board tilted at a certain angle and in a locked state.

[0062] FIG. 49 is similar to FIG. 48, but from another aspect.

[0063] FIG. 50 is an illustrative isometric view of the jigsaw puzzle table according to a third embodiment of the present disclosure.

[0064] FIG. 51 is an illustrative isometric view of the jigsaw puzzle table shown in FIG. 50, but from another aspect.

[0065] FIG. 52 is a partial exploded perspective view of the jigsaw puzzle table shown in FIG. 50.

[0066] FIG. 53 is a partial exploded perspective view of the jigsaw puzzle table shown in FIG. 52.

[0067] FIG. 54 is an illustrative cross-sectional view of the jigsaw puzzle table taken along line V-V of FIG. 50.

[0068] FIG. 55 is an enlarged view of Part L in FIG. 54.

[0069] FIG. 56 is an illustrative cross-sectional view of the jigsaw puzzle table taken along line VI-VI of FIG. 50.

[0070] FIG. 57 is an enlarged view of Part M in FIG. 56.

[0071] FIG. 58 is an exploded perspective view of a rotating assembly and a puzzle board of the jigsaw puzzle table shown in FIG. 50.

[0072] FIG. 59 is an illustrative isometric view of the rotating assembly and the puzzle board of the jigsaw puzzle table shown in FIG. 50.

[0073] FIG. 60 is an enlarged view of Part N in FIG. 59.

[0074] FIG. 61 is an illustrative isometric view of the rotating assembly and a supporting assembly of the jigsaw puzzle table shown in FIG. 50.

[0075] FIG. 62 is an illustrative isometric view of the assembly process for the rotating assembly and the puzzle board of the jigsaw puzzle table shown in FIG. 50.

[0076] FIG. 63 is similar to FIG. 62, but from another aspect.

[0077] FIG. 64 is an illustrative isometric view of the jigsaw puzzle table of FIG. 50, illustrating the puzzle board tilted at a certain angle.

[0078] FIG. 65 is similar to FIG. 64, but from another aspect.

[0079] FIG. **66** is an exploded perspective view of the rotating assembly of the jigsaw puzzle table shown in FIG. **50**, with a first coupling portion and a second coupling portion being removed.

[0080] FIG. **67** is an illustrative alternative mode of a rotating assembly of the jigsaw puzzle table shown in FIG. **50**.

[0081] FIG. **68** is an illustrative cross-sectional view of the rotating assembly of the jigsaw puzzle table taken along line VII-VII of FIG. **67**.

[0082] FIG. **69** is an illustrative isometric view of the jigsaw puzzle table of FIG. **50**, illustrating the rotating assembly shown in FIG. **68**.

[0083] FIG. **70** is similar to FIG. **69**, but from another aspect.

DETAILED DESCRIPTION

[0084] In order to facilitate understanding of the present disclosure, the present disclosure will be fully described below by referring to the accompanying drawings. The accompanying drawings show preferred embodiments of the present disclosure. However, the present disclosure can be realized in various forms, which are not limited to the embodiments described herein. The embodiments are provided to enable the present disclosure to be understood more thoroughly and comprehensively.

[0085] Those skilled in the art should understand that, in the disclosure of the present disclosure, terminologies of “longitudinal,” “lateral,” “upper,” “front,” “back,” “left,” “right,” “perpendicular,” “horizontal,” “top,” “bottom,” “inner,” “outer,” and etc. just indicate relations of direction or position are based on the relations of direction or position shown in the appended drawings, which is only to facilitate descriptions of the present disclosure and to simplify the descriptions, rather than to indicate or imply that the referred device or element must apply specific direction or to be operated or configured in specific direction. Therefore, the above-mentioned terminologies shall not be interpreted as confine to the present disclosure.

[0086] It is understandable that the term “a” should be understood as “at least one” or “one or more”. In other words, in one embodiment, the number of an element can be one and in other embodiment the number of the element can be greater than one. The term “a” is not construed as a limitation of quantity.

[0087] In the description of the present disclosure, it should be noted that the terms “mounted,” “connected,” and “linked” should be understood in a general manner, which could be, for example, affixedly connected, detachably connected, or integrally connected. Unless expressly specified and defined otherwise, it may also be a mechanical connection, an electrical connection or may be in communication with each other; it may be directly connected or indirectly connected by means of an intermediate medium, and may be an interaction relationship between two or more elements inside the two elements. For a person of ordinary skill in the art, the specific meanings of the above terms in the present disclosure may be understood according to specific situations.

[0088] It should be noted that when an element is “fixed” to another element, it means that the element is directly arranged on the element, or an intermediate element is arranged therebetween. When an element is “connected” to another element, it means that the element is directly connected to the element, or an intermediate element is arranged therebetween. Furthermore, the term “and/or” is merely a description of an associative relationship between associated objects and indicates that three relationships may exist. For example, A and/or B means that A exists alone, both A and B exist, and B exists alone.

[0089] Unless otherwise defined, all technical and scientific terms used herein have the same meaning as commonly understood by any ordinary skilled person in the art. Terms in the specification of the present disclosure are used only for the illustrative purposes only. For example, “in,” “out,” “left,” “right,” and similar expressions are used for illustrative purposes only, and are not intended to limit the present disclosure.

[0090] As shown in FIGS. **1** to **37**, schematic views of the jigsaw puzzle table **1** from a first embodiment of the present disclosure are presented. The jigsaw puzzle table **1** is arranged for a

user or player to assemble a plurality of puzzle pieces **100** thereon. Accordingly, the jigsaw puzzle table **1** comprises a puzzle board **10**, a rotating assembly **20** attached to the puzzle board **10** and a supporting assembly **3** for adjusting the supporting height of the jigsaw puzzle table **1**. The rotating assembly **20** is mounted between the puzzle board **10** and the supporting assembly **3**. The puzzle board **10** and rotating assembly **20** are supported by the supporting assembly **3**, respectively. The supporting assembly **3** comprises a supporting board **4** and a lower frame **5** coupled with the supporting board **4** for adjusting the supporting height of the jigsaw puzzle table **1**. The lower frame **5** comprises a board bracket **6** and a foot structure **7** connected to the board bracket **6**. The board bracket **6** is used to connect the supporting board **4** and the foot structure **7**. The foot structure **7** rests on the ground or other surfaces.

[0091] The puzzle board **10** is arranged above the supporting board **4**. The rotating assembly **20** is disposed between the puzzle board **10** and the supporting board **4**. The puzzle board **10** is placed flat on the supporting board **4** and comprises a puzzle plate **11** for placing the puzzle pieces **100** and a fixing frame **12** for supporting the puzzle plate **11**. The puzzle plate **11** is positioned away from the supporting assembly **3**, allowing the user to assemble the puzzle pieces **100** on it. The puzzle plate **11** has a rectangular shape defined by two longer longitudinal sides aligned along a longitudinal direction X and two shorter transverse sides aligned along a lateral direction Y, which is perpendicular to the longitudinal direction X. Accordingly, the puzzle board **10** defines an XY coordinate surface. The fixing frame **12** has a fixing portion **121**, a hollow space **122** surrounded by a fixing portion **121** and the fixing arm **123** received in the hollow space **122**, and connected to the fixing portion **121**. The puzzle plate **11** is mounted on the fixing arm **123** and received in the hollow space **122**. The edge of the puzzle plate **11** is secured by the fixing portion **121**. The puzzle plate **11** is substantially parallel to the supporting board **4**. The fixing arm **123** comprises at least one fixing hole **124** coupled with the rotating assembly **20**. As shown in FIG. 1, the puzzle board **10** further comprises an anti-slipping layer **104** overlappedly provided on the puzzle plate **11** for preventing the puzzle pieces **100** being slipped thereon. Preferably, the anti-slipping layer **104** has a self-adhesive bottom surface adhered on the puzzle plate **11**, wherein the anti-slipping layer **104** can be removed from the puzzle plate **11** without damaging the puzzle plate **11** and the anti-slipping layer **104**. Therefore, the anti-slipping layer **104** is reusable to place on the puzzle plate **11**. Furthermore, the anti-slipping layer **104** serves as a backing layer of the puzzle pieces **100** after the puzzle pieces **100** are assembled. The anti-slipping layer **104** can be omitted, and other drawings in this embodiment, except for FIG. 1, also omit the anti-slipping layer **104**.

[0092] The supporting board **4** comprises a supporting unit **41** substantially parallel to the puzzle plate **11** and a supporting frame **42** for providing supporting force of the supporting unit **41**. The supporting unit **41** comprises a supporting portion **43**, an installation window **44** drilled completely through the supporting portion **43** and a fastening hole **459** drilled completely through the supporting portion **43** and surrounding the installation window **44**. At least part of the rotating assembly **20** is exposed from the installation window **44**. The supporting board **4** further comprises a reinforcing arm **45** connected to a bottom surface of the supporting portion **43** and inner sides of the supporting frame **42** for forming at least one drawer cavity **13** and at least one puzzle drawer **14** received in the corresponding drawer cavity **13**. The puzzle drawer **14** is movably mounted below the supporting portion **43**. The puzzle drawer **14** is movable relative to the supporting portion **43** to be opened or closed. In the present embodiment, the puzzle drawer **14** is disposed below the supporting portion **43**. In other embodiments, the puzzle drawer **14** may be provided on the puzzle board **10**, as long as it avoids the installation position of the rotating assembly **20**. The reinforcing arm **45** comprises a pair of inner reinforcing portions **451** spaced apart from each other for forming an inner receiving space **452** and a pair of dividing reinforcing portions **453** connected to the corresponding inner reinforcing portion **451** and extending away from the inner reinforcing portion **451**. Each dividing reinforcing portions **453** comprises at least one reinforcing hole **458**. The supporting board **4** further comprises a first pivoting arm **454** received in the inner receiving space

452 and connected with the pair of inner reinforcing portions 451, a second pivoting arm 455 received in the inner receiving space 452 and connected with the pair of inner reinforcing portions 451 and a pivoting member 456 attached on the first pivoting arm 454. The first pivoting arm 454 is spaced apart from the second pivoting arm 455 for forming an inner window 457 together with the pair of inner reinforcing portions 451. The first pivoting arm 454 is substantially parallel to the second pivoting arm 455. When the supporting unit 41 is assembled with the supporting frame 42, the fastening hole 459 of the supporting unit 41 is communicated with the reinforcing hole 458 of the supporting frame 42 to form a connecting hole 46. Referring to FIGS. 4-8, along an assembling direction A1 of the puzzle board 10 and the rotating assembly 20, the projections of the installation window 44 and the inner receiving space 452 on the puzzle plate 11 do not overlap. The installation window 44 and the corresponding drawer cavity 13 are located outside the pair of inner reinforcing portions 451, while the inner receiving space 452 is located inside the pair of inner reinforcing portions 451. The installation window 44 is communicated with a corresponding drawer cavity 13. [0093] The specific setting, position, and quantity of the reinforcing arm 45 need to be flexibly adjusted based on the number and position of other components within the jigsaw puzzle table 1. The reinforcing arm 45 is chosen as a rectangular section strip, which provides a flat surface and serves as a solid foundational base for the fixed installation of other components. The outline of the inner window 457 matches that of the installation window 44. Along the assembling direction A1 of the puzzle board 10 and the rotating assembly 20, the outlines of the inner window 457 and the installation window 44 completely coincide. The inner window 457 is communicated with the installation window 44. Upon assembly, at least part of the rotating assembly 20 is exposed through the inner window 457 and the installation window 44. In other words, at least part of the rotating assembly 20 is visible through the inner window 457 and the installation window 44 by the assembler.

[0094] The inner reinforcing portions 451 are arranged along the lateral direction Y and are substantially parallel to each other. The dividing reinforcing portions 453, the first pivoting arm 454, and the second pivoting arm 455 are arranged along the longitudinal direction X and are substantially parallel to each other. In an alternative embodiment, the inner reinforcing portions 451, the dividing reinforcing portions 453, the first pivoting arm 454, and the second pivoting arm 455 may be arranged in any direction according to the requirements of the desired functions.

[0095] Although good results have been shown with the rectangular puzzle board 10, it is within the scope of the present disclosure that numerous other shapes of puzzle boards 10 could be utilized to achieve the desired functionality as described herein. The supporting board 4 is also rectangular, allowing it to fit well with the shape of the puzzle board 10, which makes the overall structure of the jigsaw puzzle table 1 more coordinated. In other embodiments, the supporting board 4 may also be circular, elliptical, triangular, or polygonal. The outline of the supporting board 4 is smaller than that of the puzzle board 10, and even smaller than that of the rotating assembly 20. If the outline of the supporting board 4 is less than that of the rotating assembly 20, then at least part of the rotating assembly 20 will be exposed outside the outline of the supporting portion 43. In other words, a part of the rotating assembly 20 extends outside the outline of the supporting board 4.

[0096] The board bracket 6 comprises a mounting board 61, an upper bracket 62 connected to the mounting board 61, a lower bracket 63 positioned below the upper bracket 62, an adjusting bracket 64 connecting the upper and lower brackets 62 and 63, and an adjusting structure 50 hinged to the mounting board 61 and the supporting board 4. The adjusting bracket 64 can be partially inserted into or projected from the lower bracket 63, thereby allowing adjustments to the relative position between the upper and lower brackets 62 and 63. By adjusting the height of the adjusting bracket 64 to extend beyond the lower bracket 63, the overall height of the jigsaw puzzle table 1 can be modified. The adjusting bracket 64 has a plurality of telescopic legs. Each leg comprises a plurality of position locating parts 641. Each telescopic leg can be independently adjusted in extension height relative to the other telescopic legs. The position locating parts 641 serves to fix the height

of the telescopic leg on one hand, and acts as a scale on the other hand, allowing for comparison of the positions of the position locating parts of each telescopic leg, thereby quickly adjusting the overall height of the jigsaw puzzle table **1**.

[0097] The mounting board **61** of the board bracket **6** comprises a supporting shaft **321** and a main frame **322** that forms a closed annular shape in conjunction with the supporting shaft **321**. The supporting board **4** is rotatably mounted on the supporting shaft **321** through the pivoting member **456**. The rotation of the pivoting member **456** drives the supporting board **4** to rotate, causing the supporting board **4** to tilt relative to the board bracket **6**. Since the puzzle board **10** is fixed relative to the supporting board **4**, when the supporting board **4** tilts, the puzzle board **10** tilts synchronously. This allows the puzzle board **10** to face the user more effectively, facilitating puzzle operation. The shape of the mounting board **61** is also rectangular, and its dimensions are smaller than those of the supporting board **4**. Preferably, the board bracket **6** may be completely hidden under the supporting board **4**.

[0098] In this embodiment, the supporting shaft **321** is detachably coupled with the pivoting member **456**. The pivoting member **456** has a circular tubular shape with an opening. The configuration of this opening ensures that the pivoting member **456** can rotate around the supporting shaft **321** while also facilitating easy disassembly and assembly between the pivoting member **456** and the supporting shaft **321**. The supporting board **4** and the puzzle board **10** can be detached from the lower frame **5** without restriction from the supporting shaft **321**. The supporting board **4** can independently support the puzzle board **10**, allowing both the supporting board **4** and the puzzle board **10** to be placed directly on any playing surface, such as a table, wall, floor, or similar structures, or on carriers with a certain spatial height, thereby eliminating the need for the lower frame **5**.

[0099] There are two pivoting members **456**, both of which are simultaneously fixed to the first pivoting arm **454** of the reinforcing arm **45**, maintaining a gap between the two pivoting members **456**. The configuration of the pivoting member **456** is a circular tubular shape. When the user lifts the puzzle board **10** with external force, the pivoting member **456** can be rotated around the supporting shaft **321**, thus facilitating the user's operation. The pivoting member **456** may also be configured as a hinge, magnetic structure, or another similar rotating connection component, as long as it ensures that when the puzzle board **10** tilts, the pivoting member **456** provides sufficient support and guidance for the puzzle board **10**. Preferably, the rotating connection component has a self-locking function.

[0100] The adjusting structure **50** drives the supporting board **4** to rotate around the supporting shaft **321**, thereby causing the puzzle board **10** and the supporting board **4** to tilt relative to the board bracket **6**, enabling the puzzle board **10** to tilt downward, closest to the user, to a desired position.

[0101] The connection point of the adjusting structure **50** and the board bracket **6** is located opposite the supporting shaft **321**; that is, the adjusting structure **50** is installed on the main frame **322**. The adjusting structure **50** comprises an adjusting unit **51**, a driving unit **52** pivoted to the adjusting unit **51** and a control unit **53** detachably pivoted to the driving unit **52** for controlling the adjusting structure **50** in a sliding state, locked state and closed state. The force required to switch between the sliding, locked, and closed states of the adjusting structure **50** is applied by the user on the puzzle board **10** or the supporting board **4** and acts directly or indirectly on the driving unit **52** via the adjusting unit **51**.

[0102] The adjusting unit **51** is a foldable two-section structure and comprises a first fastening unit **510** fixed on the second pivoting arm **455** of the supporting board **4**, a first adjusting arm **511** pivoted to the first fastening unit **510**, a second adjusting arm **512** pivoted to the first adjusting arm **511**, a connecting shaft **5124** connected the first adjusting arm **511** and the second adjusting arm **512**, and a second fastening unit **513** fixed on the main frame **322** of the board bracket **6**. One end of the first adjusting arm **511** is hinged to the supporting board **4** via the first fastening unit **510**,

while the other end of the second adjusting arm **512**, which is away from the first adjusting arm **511**, is hinged to the main frame **322** via the second fastening unit **513**.

[0103] The first fastening unit **510** comprises a first fixing member **5101** fixed to the second pivoting arm **455**, a pair of first connecting walls **5102** extending from the first fixing member **5101** and spaced apart from each other, and two first pivoting shafts **5103** extending from one of the first connecting walls **5102** toward the direction of the other first connecting wall **5102**. The first fixing member **5101**, the first connecting walls **5102**, and the first pivoting shafts **5103** are integrally formed. The pair of first connecting walls **5102** is substantially parallel to each other. The first connecting walls **5102** are perpendicular to the first fixing member **5101**, respectively.

[0104] The first fixing member **5101** can be fixed to a top surface, a bottom surface, or side surfaces of the second pivoting arm **455**. In this embodiment, the first fixing member **5101** is fixed to the bottom surface of the second pivoting arm **455**, and the first connecting wall **5102** is directly fixed to the first fixing member **5101**. In other embodiments, when the first fixing member **5101** is fixed to other surfaces of the second pivoting arm **455**, the first connecting wall **5102** will also need to include a transition component connected to the first adjusting arm **511** and the second pivoting arm **455**. The first fixing member **5101** is affixed to the second pivoting arm **455** using a bolt fastening method, ensuring that the first fixing member **5101** is fixed firmly and stably attached to the second pivoting arm **455**.

[0105] The first adjusting arm **511** comprises a pair of first pivoting parts **5111** and a first connecting part **5112** connected to the pair of first pivoting parts **5111**. The first adjusting arm **511** is located between the pair of first connecting walls **5102**. Each first pivoting part **5111** is pivoted to a corresponding first connecting wall **5102**. Each first pivoting part **5111** comprises a pivoting hole **5113** positioned at the location of the corresponding first pivoting shaft **5103** and the first pivoting shaft **5103** passed through the pivoting hole **5113**. The axes of the two first pivoting shafts **5103** are aligned on the same line while maintaining a gap between them.

[0106] Each first pivoting part **5111** is connected to the corresponding first pivoting shaft **5103**, with the two first pivoting shafts **5103** spaced apart. This arrangement allows each first pivoting part **5111** to easily disengage from its respective first pivoting shaft **5103**. It only requires that a compressive force applied to the two first pivoting parts **5111** causes the first pivoting parts **5111** to move toward each other and generate deformation, thereby allowing them to detach from the first pivoting shafts **5103**.

[0107] The second adjusting arm **512** comprises a pair of second pivoting parts **5121**, a second connecting part **5122** connected to the pair of second pivoting parts **5121** and a sliding slot **5123** formed by the pair of second pivoting parts **5121**, and the second connecting part **5122**. The second connecting part **5122** is positioned at the bottom of the second pivoting parts **5121**.

[0108] The first adjusting arm **511** is positioned between the pair of second pivoting parts **5121** and hinged to one of the second pivoting parts **5121** through a connecting shaft **5124**. The two ends of the connecting shaft **5124** pass through the pair of second pivoting parts **5121** and the pair of first pivoting parts **5111**. This configuration allows both the first adjusting arm **511** and the second adjusting arm **512** to rotate around the connecting shaft **5124**. The second connecting part **5122** comprises a plurality of locking slots **5125**, spaced at intervals along the extension direction of the sliding slot **5123**.

[0109] The second fastening unit **513** comprises a second fixing member **5131** fixed to the main frame **322**, a pair of second connecting walls **5132** extending from the second fixing member **5131**, and a connecting member **5133** connected to the second fixing member **5131** and the second connecting walls **5132**. The second fixing member **5131**, the second connecting walls **5132**, and the connecting member **5133** are integrally formed.

[0110] The second fixing member **5131** may be attached to the top surface, the bottom surface, or both side surfaces of the main frame **322**. In this embodiment, the second fixing member **5131** is secured to the bottom surface of the main frame **322**, with the connecting member **5133**

accommodating the offset distance between the second fixing member **5131** and the second connecting walls **5132**.

[0111] The second adjusting arm **512** is positioned between the pair of second connecting walls **5132** and is hinged to the second fastening unit **513** via a third pivoting shaft **5134**. The third pivoting shaft **5134** is passed through the pair of second connecting walls **5132**, respectively, and the pair of second pivoting parts **5121** are fitted onto the third pivoting shaft **5134**, thereby allowing the second adjusting arm **512** to rotate around the second fastening unit **513**.

[0112] The driving unit **52** comprises a fixing end **52A** and a free end **52B**. The fixing end **52A** is located between the pair of first pivoting parts **5111** of the first adjusting arm **511**. The driving unit **52** is hinged to the first adjusting arm **511** via a fourth pivoting shaft **541**. The fourth pivoting shaft **541** is passed through the pair of first pivoting parts **5111**. The fixing end **52A** is fitted onto the fourth pivoting shaft **541**, thereby allowing the driving unit **52** to rotate around the fourth pivoting shaft **541**.

[0113] The free end **52B** is suspended between the second adjusting arm **512** and is capable of sliding freely along the sliding slot **5123**. The free end **52B** can engage with the locking slots **5125** and can be locked into any of those slots.

[0114] The control unit **53** comprises a pair of sliding arms **531**, a sliding portion **532** connected to the pair of sliding arms **531**, and a guiding unit **533** pivoted to the driving unit **52** and connected to the sliding portion **532**. The sliding arms **531** extend in the direction of the extension of the sliding slot **5123**. The pair of sliding arms **531** and the sliding portion **532** cooperatively form a sliding space **57** that accommodates the free end **52B** of the driving unit **52** and the guiding unit **533**. The sliding portion **532** is positioned at one end of the sliding arms **531**, closer to the second fastening unit **513** than the free end **52B** of the driving unit **52**, and spaced apart from the free end **52B** of the driving unit **52**, in order to prevent the driving unit **52** from contacting the sliding portion **532** and the sliding arms **531** during the movement of the driving unit **52**. One end of the guiding unit **533** is fixed to the sliding portion **532**, while the other end of the guiding unit **533** extends away from the sliding portion **532** and is detachably pivoted to the driving unit **52**.

[0115] The guiding unit **533** comprises a base portion **5331**, a first extending portion **5332** extended from one end of the base portion **5331** and connects to the sliding portion **532**, and a second extending portion **5333** extended from the other end of the base portion **5331**. The first extending portion **5332** is located close to the sliding portion **532**, while the second extending portion **5333** is located away from the sliding portion **532**. The first extending portion **5332** and the second extending portion **5333** cooperate with the base portion **5331** to form a guiding portion **5334**. The guiding portion **5334** is provided on both sides of the base portion **5331** and serves to guide the movement of the driving unit **52**.

[0116] The driving unit **52** comprises a pair of third pivoting parts **521** arranged in parallel with a gap between them, a third connecting part **522** connected to the two third pivoting parts **521**, and a pair of guiding members **523** protruded from one third pivoting part **521** towards the direction of the other third pivoting part **521**. Each guiding members **523** is arranged on the free end **52B**, and the pair of guiding members **523** are spaced apart. Each guiding member **523** matches with the guiding portion **5334**, and the states of the driving unit **52** are adjusted by the relative position between the guiding member **523** and the guiding portion **5334**.

[0117] The guiding unit **533** further comprises a position switching part **5335** protruded from the first extending portion **5332** towards the second extending portion **5333**. The position switching part **5335** divides the guiding portion **5334** into a position switching groove **5336** and a position retaining groove **5337**. The position retaining groove **5337** is enclosed by the first extending portion **5332**, the base portion **5331**, and the position switching part **5335**. The position switching groove **5336** is formed between the second extending portion **5333** and the position switching part **5335**. The position retaining groove **5337** is situated further away from the sliding slot **5123** compared to the position switching groove **5336**.

[0118] The position switching groove **5336** serves as a transition channel, enabling the guiding member **523** to move from the position retaining groove **5337** to the sliding slot **5123**, or vice versa, from the sliding slot **5123** back to the position retaining groove **5337**. When the guiding member **523** is located between the position retaining groove **5337** and the sliding slot **5123**, the positions and states of the driving unit **52** differ. Preferably, the top surface of the position switching part **5335** is designed to be smooth to enhance smoothness during the position switching process and to prevent jamming.

[0119] The adjusting structure **50** includes three states: the sliding state, the locked state, and the closed state.

[0120] In the closed state: the guiding unit **533** is located at the starting end of the sliding slot **5123**, with both the first adjusting arm **511** and the second adjusting arm **512** folded and closed. The driving unit **52** is accommodated at a smaller inclination angle between the first adjusting arm **511** and the second adjusting arm **512**, while the free end **52B** is stored underneath the guiding unit **533**, in close contact with the second connecting part **5122**.

[0121] In the locked state: the free end **52B** is locked in any of the locking slots **5125**, and the driving unit **52** is inclined with respect to the puzzle board **10**, which restricts the folding and closing of the first adjusting arm **511** and the second adjusting arm **512**. This allows the first adjusting arm **511** and the second adjusting arm **512** to maintain a continuous stable state, thereby keeping the supporting board **4** and the puzzle board **10** inclined. It can be understood that in the locked state, the driving unit **52**, the first adjusting arm **511**, and the second adjusting arm **512** form a triangular stable structure, which further enhances the stability of the jigsaw puzzle table **1** when the puzzle board **10** is inclined.

[0122] In the sliding state: the free end **52B** is retained within the position retaining groove **5337**. Due to the limiting effect of the position switching unit **5335**, the free end **52B** cannot enter the sliding slot **5123** through the position switching groove **5336**, which prevents it from contacting the second connecting part **5122** and entering the locking slots **5125**. As the driving unit **52** moves up and down, the guiding member **523** is received in the position retaining groove **5337** and drives either the first extending portion **5332** or the second extending portion **5333** to move within the sliding slot **5123**, causing the guiding unit **533** to slide linearly along the sliding slot **5123**.

[0123] Switching process from closed or locked state to the sliding state: in the closed or locked state, the free end **52B** separates from the guiding portion **5334**. The user can lift the supporting board **4** or the puzzle board **10** with their hand, thereby driving the driving unit **52** upwards. During this movement, the driving unit **52** causes the control unit **53** to move linearly up along the sliding slot **5123** until it reaches the end of the sliding slot **5123**. As the user continues to lift the supporting board **4** or the puzzle board **10**, at least one guiding member **523** can enter the position switching groove **5336**. After passing the position switching unit **5335**, at least one guiding member **523** enters the position retaining groove **5337**, achieving the sliding state. At this point, when the user presses down on the supporting board **4** or the puzzle board **10**, the driving unit **52** moves downward to adjust to an appropriate position. Throughout this downward movement, at least one guiding member **523** of the driving unit **52** remains restricted by the first extending portion **5332** and the position switching unit **5335**, preventing it from disengaging from the position retaining groove **5337**. Therefore, the driving unit **52** will drive the control unit **53** to slide synchronously down/up along the sliding slot **5123**, maintaining the sliding state. In this embodiment, when the driving unit **52** and the control unit **53** move to the top end of the sliding slot **5123** (the end of the sliding slot **5123**), the guiding member **523** is switched into the position switching groove **5336**, thereby achieving the sliding state. In an alternative embodiment, the guiding member **523** may be entered into the position switching groove **5336** at any position along the sliding slot **5123**.

[0124] Switching process from the sliding state to the locked state: In the sliding state, at least one guiding member **523** is accommodated within the position retaining groove **5337**. At this moment,

the user lifts the supporting board **4** or the puzzle board **10** with their hand, driving the driving unit **52** to move upward. The free end **52B** disengages from the position retaining groove **5337**, crosses over the position switching unit **5335**, and enters the position switching groove **5336**. It then exits from the end of the position switching groove **5336** into the sliding slot **5123**. By fine-tuning the position of the driving unit **52**, it is aligned with the appropriate locking slots **5125**, thus entering the locking state.

[0125] Switching process from the sliding state to the closed state: First, the user lifts the supporting board **4** or the puzzle board **10** with their hand, causing the free end **52B** to disengage from the locking slots **5125**. Then, by pressing down on the supporting board **4** or the puzzle board **10**, or utilizing the weight of the supporting board **4** and the puzzle board **10**, the driving unit **52** is driven to move downward. The free end **52B** travels along the sliding slot **5123** until it reaches the starting end of the sliding slot **5123**, entering the closed state.

[0126] As the driving unit **52** rotates around the fourth pivoting shaft **541**, the guiding portion **5334** is set to an inclined position to better accommodate the movement trajectory of the driving unit **52**, facilitating the entry and disengagement of the free end **52B** from the guiding portion **5334**.

[0127] The foot structure **7** comprises a supporting beam **71** and at least one universal wheel **72** connected to the supporting beam **71**. In order to enable the entire jigsaw puzzle table **1** to be rolled into the desired position and locked in place, the universal wheels **72** with self-locking switches are mounted at the bottom of the supporting beam **71**.

[0128] The puzzle drawer **14** is mounted on a shorter transverse side of the puzzle board **10**. It is understood that the length of the front of the puzzle board **10** is greater than the length of the shorter transverse side of the puzzle board **10**. In other words, the length of the long edge of the puzzle board **10** is greater than the length of the short edge of the puzzle board **10**. In practice, the frequency that the user faces the front of the puzzle board **10** to assemble the puzzle pieces **100** is higher than the frequency with which the user faces the side of the puzzle board **10** to assemble the puzzle pieces **100**. Furthermore, since the length of the side is smaller than the length of the front, more users may face the front of the puzzle board **10** to assemble the puzzle pieces **100**. Therefore, by considering various factors, the jigsaw puzzle table **1** provides the rotating assembly **20** configured for being supportively disposed between the puzzle board **10** and the supporting assembly **3**, allowing the puzzle board **10** to rotate smoothly in different planar directions with respect to the supporting assembly **3**.

[0129] The rotating assembly **20** is sandwiched between the supporting board **4** and the puzzle board **10**. The rotating assembly **20** comprises a first moving member **21** mounted on the supporting board **4** and a second moving member **22** rotatably coupled to the first moving member **21** and coupled to the puzzle board **10**. It is worth mentioning that the rotating assembly **20** is preferred to be coupled coaxially with the center of gravity of the puzzle board **10**, such that the puzzle board **10** can be rotated with respect to the supporting board **4** in a balanced manner. The rotating assembly **20** further comprises a rotor mechanism **23** sandwiched between the first and second moving members **21** and **22**, such that when the first moving member **21** is rotated with respect to the second moving member **22** along a rotating axis **O**, the puzzle board **10** self-rotates 360° with respect to the supporting assembly **3**. The supporting board **4** is arranged coaxially with the puzzle board **10** and the rotating assembly **20**, ensuring that their centers of gravity are aligned along the rotating axis **O** of the rotating assembly **20**, thereby maintaining the stability of the jigsaw puzzle table **1**. When the puzzle board **10** is rotated relative to the supporting assembly **3**, the rotating axis **O** of the rotating assembly **20** coincides with the combined center of gravity of both the puzzle board **10** and the supporting board **4**. The rotor mechanism **23** comprises a retainer unit **231** and a plurality of ball-shaped rotors **232** that are rotatably retained within the retainer unit **231**. The retainer unit **231** is configured to spacedly retain the plurality of rotors **232** in a rollable manner, allowing each rotor **232** to freely roll on both the first moving frame **210** and the second moving frame **220**.

[0130] According to this embodiment of the present disclosure, the puzzle board **10** is adapted for being self-rotated 360° via a rotational movement between the first and second moving members **21** and **22**. In other words, the user can selectively rotate the puzzle board **10** from one long edge to the opposite long edge or to any one of the short edges without walking around the jigsaw puzzle table **1**. For example, the user can assemble one puzzle piece **100** at one side of the puzzle table **100** and then rotate the puzzle board **10** by 180° in order to assemble another puzzle piece **100** on the opposite side of the puzzle board **10**, which speeds up the assembly time of the puzzle pieces **100**. It should be understood that the rotation angle of the puzzle board **10** can be adjusted to be smaller than 360°. The first moving member **21** comprises a first moving frame **210**, a first middle hole **211** surrounded by the first moving frame **210**, and a first coupling unit **24** connected with the first moving frame **210**. The first coupling unit **24** comprises a first coupling base **241** integrally extended from an inner circumferential surface of the first moving frame **210** towards the rotating axis O of the rotating assembly **20**, a first coupling hole **242** formed on the first coupling base **241**, and a first coupling portion **243** passed through the first coupling hole **242** and the connecting holes **46** of the supporting portion **43**. The first moving member **21** is detachably coupled at the supporting portion **43** by inserting the first coupling portion **243** through the first coupling hole **242** into the supporting portion **43**. In order to more stably secure the first moving member **21** to the supporting portion **43**, the number of first coupling units can be multiple and arranged with space between them.

[0131] The second moving member **22** comprises a second moving frame **220**, a second middle hole **221** surrounded by the second moving frame, and a second coupling unit **25** connected to the second moving frame **220**. The second coupling unit **25** comprises a second coupling base **251** integrally extended from an inner circumferential surface of the second moving frame **220** towards the rotating axis O of the rotating assembly **20**, a second coupling hole **252** formed on the second coupling base **251**, and a second coupling portion **253** passed through the second coupling hole **252** and the fixing hole **124** of the puzzle board **10**. The second moving member **22** is detachably coupled at the puzzle board **10** by inserting the second coupling portion **253** through the second coupling hole **252** and the fixing hole **124** of the puzzle board **10**.

[0132] When assembled, the first coupling unit **24** and the second coupling unit **25** are arranged in a staggered manner. The second coupling hole **252** is exposed through the installation window **44**. When assembling the second moving member **22** with the puzzle board **10**, the second coupling unit **25** can be exposed through the installation window **44** along the assembling direction of the puzzle board **10** and the rotating assembly **20**, thereby facilitating the assembly of the second moving member **22** with the puzzle board **10**. In order to more stably secure the second moving member **22** to the puzzle board **10**, the number of second coupling units can be multiple and arranged with spacing between them.

[0133] The first moving member **21** and the supporting assembly **3** can be secured together using various methods such as threads, snap-fit, and friction fit. Similarly, the second moving member **22** and the puzzle board can be secured together using the same methods. Therefore, the first and second coupling portions **243** and **253** can be selected from screws, rivets, or similar fasteners. The fixing hole **124** of the puzzle board **10** can be set before assembly or formed during the assembly process of the puzzle board **10** and the second moving member **22**. The connecting hole **46** of the supporting board **40** can likewise be set before assembly or formed during the assembly process of the supporting board **40** and the first moving member **21**. The extending directions of the first and second coupling bases may be opposite. For example, the first coupling bases may extend from an outer circumferential surface of the first moving frame away from the rotating axis of the rotating assembly.

[0134] The outline of the supporting unit **41** is larger than that of the rotating assembly **20**. Looking up from the bottom of the jigsaw puzzle table **1**, except for the second coupling hole **252** of the rotating assembly **20**, which is exposed through the installation window **44**, the other structures of

the rotating assembly **20** are completely covered by the supporting unit **41**. The purpose of the installation window **44** is to allow the assembler to observe the second coupling unit **25** during the assembly process, enabling the assembler to install the rotating assembly **20** onto the puzzle board **10** along the assembling direction **A1**.

[0135] The installation method for the jigsaw puzzle table **1** is as follows: First, assemble the rotating assembly **20** with the supporting board **4**. Specifically, Prepare the supporting board **4**, but do not install the puzzle drawer **14** first. Position the upper surface of the supporting unit **41** of the supporting board **4** facing the assembler, and then place the rotating assembly **20** on the supporting portion **43**. Insert the first coupling portion **243** into the connecting hole **46** of supporting board **4** to secure the rotating assembly **20** to the supporting board **4**, thereby obtaining a combination of the rotating assembly **20** and the supporting board **4**. A fixing direction **B1** of the rotating assembly **20** on the supporting portion **43** differs from the assembling direction **A1** of the puzzle board **10** and the rotating assembly **20**. In this embodiment, the fixing direction **B1** and the assembling direction **A1** are completely opposite.

[0136] Next, manually rotate the second moving member **22** to adjust the set position of the second coupling hole **252** so that the assembler can observe the second coupling hole **252** through the drawer cavity **13** and the installation window **44**. When manually rotating the second moving member **22**, the first moving member **21** remains fixed relative to the supporting board **4** and does not rotate; therefore, the second moving member **22** will rotate relative to the first moving member **21**, allowing for the adjustment of the set position of the second coupling hole **252**. If, after completing the previous step, the assembler can observe the second coupling hole **252** from the installation window **44**, this step may not be necessary.

[0137] Finally, assemble the combined structure of the rotating assembly **20** and the supporting board **4** with the puzzle board **10**. Specifically, position the puzzle plate **11** of the puzzle board **10** facing away from the assembler. Observe the alignment of the fixing hole **124** on the puzzle board **10**, ensuring that the second coupling hole **252** and fixing hole **124** align by looking through installation window **44** and drawer cavity **13**. Insert the second coupling portion **253** into both second coupling hole **252** and fixing hole **124** to secure rotating assembly **20** to puzzle board **10**. Lastly, install the puzzle drawer **14** into the drawer cavity **13**.

[0138] The jigsaw puzzle table **1** further comprises a rotating locking assembly **27**, which is used to limit the rotation between the puzzle board **10** and the supporting board **4**. It can be understood that the rotating assembly **20** can drive the puzzle board **10** to rotate in order to adjust the position of the puzzle board **10**. However, this process should only occur when it is necessary to rotate the puzzle board **10**. When there is no need to rotate the puzzle board **10**, the puzzle board **10** should remain in a stable state to avoid any rotation or shaking that could affect the puzzle operation.

[0139] Specifically, the rotating locking assembly **27** is used to secure the supporting board **4** to the puzzle board **10**, thereby indirectly achieving the goal of limiting the relative rotation between the first moving member **21** and the second moving member **22**. It can be understood that the supporting board **4** is fixed to the first moving member **21**, and the puzzle board **10** is fixed to the second moving member **22**. When a fixation is formed between the supporting board **4** and the puzzle board **10**, both the first moving member **21** and the second moving member **22** are simultaneously fixed and cannot produce relative rotation.

[0140] The rotating locking assembly **27** comprises a locking part **272** formed on the puzzle board **10** and a contacting portion **271** passed through the supporting portion **43** of the supporting board **4** and detachably connected to the locking part **272**. When the contacting portion **271** is connected with the locking part **272**, the puzzle board **10** cannot rotate relative to the supporting portion **43**. When the contacting portion **271** is separated from the locking part **272**, the puzzle board **10** can freely rotate relative to the supporting portion **43** under the drive of the rotating assembly **20**.

[0141] In this embodiment, the rotating locking assembly **27** is a bolt, which includes a screw **271** (the contacting portion) and a nut **272** (the locking part). One end of the screw **271**, which is away

from the nut **272**, is provided with a bolt head **2711** located beneath the supporting portion **43** of the supporting board **4**. The nut **272** is anchored within the puzzle board **10**, and the screw **271** passes through the supporting portion **43** of the supporting board **4** and is threadedly connected to the nut **272**, achieving the fastening of the supporting board **4** and the puzzle board **10**. The number of rotating locking assemblies **27** is preferably two, symmetrically arranged on both sides of the puzzle board **10**, so that both sides of the puzzle board **10** are restricted, thus enhancing stability. [0142] The jigsaw puzzle table **1** can be adjusted to a higher or lower position by modifying the height of the board bracket **6**. The puzzle board **10** can be rotated on the supporting assembly **3** through a rotational movement of the rotating assembly **20**. And the tilt angle of the puzzle board **10** of the jigsaw puzzle table **1** can be altered by controlling the adjusting structure **50** while it is in the locked state.

[0143] FIGS. **38-49** show a jigsaw puzzle table **1'** of a second embodiment of the present disclosure. The jigsaw puzzle table **1'** is arranged for a user or player to assemble a plurality of puzzle pieces **100'** thereon. Accordingly, the jigsaw puzzle table **1'** comprises a puzzle board **10'**, a rotating assembly **20'** attached to the puzzle board **10'**, and a supporting assembly **3'**. The rotating assembly **20'** is mounted between the puzzle board **10'** and the supporting assembly **3'**. The puzzle board **10'** and the rotating assembly **20'** are supported by the supporting assembly **3'**, respectively. The supporting assembly **3'** is capable of adjusting the height of the jigsaw puzzle table **1'**.

[0144] The second embodiment is similar to the first embodiment of the present disclosure except for the following: (1) the supporting board **4'** of the first embodiment can be omitted; in this embodiment, the puzzle board **10'** is directly mounted on the lower frame **5'** of the first embodiment. (2) The drawer cavity **13'** and the puzzle drawer **14'** are incorporated into the puzzle board **10'**. (3) The tilting function is arranged on the puzzle board **10'**.

[0145] The puzzle board **10'** includes a puzzle plate **11'**, a supporting board **15'**, and an adjusting structure **50'**. The puzzle plate **11'** is hinged with the supporting board **15'**. The adjusting structure **50'** is located between the puzzle plate **11'** and the supporting board **15'**. The puzzle plate **11'** can be switched, via the adjusting structure **50'**, between a state in which the puzzle plate **11'** is placed flat on the support plate **11'** and a state in which the puzzle plate **11'** is tilted at an angle with respect to the supporting board **15'**.

[0146] One end of the puzzle plate **11'** is hinged to one end of the supporting board **15'**, forming a hinged portion. The adjusting structure **50'** is disposed below a portion of the puzzle plate **11'** away from the hinged portion. Specifically, one end of the adjusting structure **50'** is hingedly connected to either the puzzle plate **11'** or the supporting board **15'**.

[0147] One end of the adjusting structure **50'** is hinged to the puzzle plate **11'** for allowing the puzzle board **10'** to be supported in an inclined position (a locked state). A carrying handle **54'** is mounted on a top surface of the puzzle plate **11'**. The carrying handle **54'** is located on an end of the puzzle plate **11'** away from the hinged portion. The adjusting structure **50'** comprises a driving unit **52'** and a limiting strip **55'** having a limiting slot **56'**. The driving unit **52'** of the adjusting structure **50'** is adapted to fit into the limiting slot **56'**. When in use, the carrying handle **54'** is held by a user's hand, and the puzzle plate **11'** is pulled upward from the supporting board **15'**. Subsequently, the adjusting structure **50'** at the bottom of the puzzle plate **11'** may swing at a certain angle to enable an end portion thereof to be received in the limiting slot **56'**. In this way, the puzzle plate **11'** is tilted at a certain angle, allowing the user to play with the puzzle pieces **100'**. The adjusting structure **50'** is placed on the supporting board **15'** to abut against the bottom surface of the puzzle plate **11'**, thereby inclining the puzzle plate **11'** with respect to the supporting board **15'**.

[0148] The puzzle board **10'** further comprises a reinforcing arm **45'** connected to the supporting board **15'** for forming at least one drawer cavity **13'** and at least one puzzle drawer **14'** received in the corresponding drawer cavity **13'**. The reinforcing arm **45'** comprises a pair of inner reinforcing portions **451'** spaced apart from each other for forming an inner receiving space **452'** and a pair of dividing reinforcing portions **453'** connected to the corresponding inner reinforcing portion **451'**

and extending away from the inner reinforcing portion **451'**. The reinforcing arm **45'** further comprises at least one fixing hole **124'** formed on the inner reinforcing portions **451'** and coupled with the second coupling unit **25'**.

[0149] The supporting assembly **3'** comprises a board bracket **6'** and a foot structure **7'** connected to the board bracket **6'**. The board bracket **6'** comprises a supporting portion **43'**, an upper bracket **62'** connected to the supporting portion **43'**, a lower bracket **63'** positioned below the upper bracket **62'**, an adjusting bracket **64'** connecting the upper and lower brackets **62'** and **63'**. The rotating assembly **20'** is detachably coupled to both the puzzle board **10'** and the supporting portion **43'** of the supporting assembly **3'**. At least part of the rotating assembly **20'** is exposed through the supporting portion **43'**. The supporting portion **43'** comprises a main frame **322'**, a fastening arm **323'** connected with the main frame **322'** for enhancing the strength of the main frame **322'** and an installation window **44'** surrounded by the main frame **322'** and the fastening arm **323'**. The main frame **322'** has a closed annular shape. In an alternative embodiment, the main frame **322'** can have a semi-enclosed structure or it can be omitted. The upper bracket **62'** is directly connected to the fastening arm **323'**. At least part of the rotating assembly **20'** is exposed outside the outline of the fastening arm **323'** of the supporting portion **43'**.

[0150] The structure of the rotating assembly **20'** in the first embodiment is completely identical to that of the second embodiment. The rotating assembly **20'** of the second embodiment comprises a first moving member **21'** detachably coupled to the supporting portion **43'** along a fixing direction **B1'** and a second moving member **22'** detachably coupled to the reinforcing member **45'** of the puzzle board **10'** along an assembling direction **A1'**. The first moving member **21'** comprises a first coupling unit **24'** fixed on the fastening arm **323'** of the supporting portion **43'** along the fixing direction **B1'**. The second moving member **22'** comprises a second coupling unit **25'** fixed on the inner reinforcing portions **451'** of the puzzle board **10'** along the assembling direction **A1'**. In an alternative embodiment, the second coupling unit **25'** may be fixed to the dividing reinforcing portions **453'** that have the fixing hole **124'**, as long as it secures the second moving member **22'** to the puzzle board **10'**. The first coupling unit **24'** comprises a first coupling hole **242'** and a first coupling portion **243'** passed through the first coupling hole **242'** and fixed on the supporting portion **43'**. The second coupling unit **25'** comprises a second coupling hole **252'** and a second coupling portion **253'** passed through the second coupling hole **252'** and fixed on the puzzle board **10'**.

[0151] In order to ensure the stability of the rotation of the puzzle board **10'**, the rotating assembly **20'** should be sufficiently sized. Therefore, to facilitate the installation of the second coupling unit **25'** on the puzzle board **10'**, the second coupling unit **25'** is positioned further away from a rotating axis of the rotating assembly **20'** than the fastening arm **323'**. To facilitate the installation of the second coupling unit **25'** onto the puzzle board **10'**, the second coupling unit **25'** is positioned to be visible through the fastening arm **323'**. This arrangement ensures that, during the assembly of the rotating assembly **20'** and the puzzle board **10'**, the assembler has an unobstructed view of the fastening arm **323'**, enabling the second coupling unit **25'** to be installed onto the puzzle board **10'**.

[0152] To ensure the stability of the puzzle board **10'** during rotation, it is preferable for the rotating assembly **20'** to be slightly larger. Consequently, the second coupling unit **25'** is positioned further from the rotating axis of the rotating assembly **20'** than the fastening arm **323'** to ease its installation onto the puzzle board **10'**. Additionally, the second coupling unit **25'** is arranged in such a way that it remains visible through the fastening arm **323'**. This configuration guarantees that, when assembling the rotating assembly **20'** with the puzzle board **10'**, the assembler has a clear line of sight to the fastening arm **323'**, facilitating the installation of the second coupling unit **25'** onto the puzzle board **10'**.

[0153] The fastening arm **323'** comprises a pair of fastening beams **3231'** spaced apart from each other for forming a middle space **3232'** passed through the rotating axis of the rotating assembly **20'**. Along an assembling direction **A1'** of the puzzle board **10'** and the rotating assembly **20'**, the

projections of the installation window **44'** and the middle space **3232'** on the puzzle board **10'** do not overlap. The second coupling unit **25'** is located outside the pair of fastening beams **3231'**. In other words, the second coupling unit **25'** is located outside of the middle space **3232'**. The fastening arm **323'** further comprises a connecting hole **46'** communicated with the first coupling hole **242'** for being engaged with the first coupling portion **243'**.

[0154] The installation method for the jigsaw puzzle table **1'** is as follows: First, assemble the rotating assembly **20'** with the supporting assembly **3'**. Specifically, position the upper surface of the supporting portion **43'** facing the assembler. Observe the positioning of the connecting holes **46'** of the supporting portion **43'**, and then place the rotating assembly **20'** on the fastening arm **323'** of the supporting portion **43'** so that the first coupling hole **242'** of the rotating assembly **20'** aligns with the connecting holes **46'** of the supporting portion **43'**. Finally, insert the first coupling portion **243'** into the first coupling hole **242'** and the connecting holes **46'** to secure the rotating assembly **20'** to the supporting portion **43'** along the fixing direction **B1'**, thus forming a combination of the rotating assembly **20'** and the supporting portion **43'**.

[0155] Next, manually rotate the second moving member **22'** to adjust the set position of the second coupling hole **252'** so that the assembler can observe that the second coupling hole **252'** is exposed from the fastening arm **323'** of the supporting portion **43'**. When manually rotating the second moving member **22'**, the first moving member **21'** remains fixed relative to the fastening arm **323'** and does not rotate; thus, the second moving member **22'** will rotate relative to the first moving member **21'**. If the assembler can already see the second coupling hole **252'** exposed from the fastening arm **323'** after completing the previous step, this step may not be necessary.

[0156] Finally, assemble the combined structure of the rotating assembly **20'** and the puzzle board **10'**. Specifically, position the puzzle board **10'** facing away from the assembler. Observe the alignment of the fixing hole **124'**, and ensure that the second coupling hole **252'** aligns with the fixing hole **124'** by checking that the second coupling hole **252'** is exposed from the fastening arm **323'** along the assembling direction **A1'**. Finally, insert the second coupling portion **253'** into the second coupling hole **252'** and the fixing hole **124'** along the assembling direction **A1'** to secure the rotating assembly **20'** onto the puzzle board **10'**.

[0157] As shown in FIGS. **39** and **42-43**, when the puzzle board **10'** and the supporting assembly **3'** are fully assembled, viewing from the bottom of the jigsaw puzzle table **1'**, the first coupling unit **24'** and the second coupling unit **25'** are arranged in a staggered formation. The second coupling unit **25'** is visible through the supporting portion **43'**, while the first coupling unit **24'** is concealed by the supporting portion **43'**. In other words, the projections of the first coupling unit **24'** and the second coupling unit **25'** do not overlap on the puzzle plate **11'**. However, at least part of the first coupling unit **24'** does overlap with the fastening arm **323'**.

[0158] The jigsaw puzzle table **1'** can be adjusted to a higher or lower position by modifying the height of the supporting assembly **3'**. The puzzle board **10'** can be rotated on the supporting assembly **3'** through a rotational movement of the rotating assembly **20'**. And the tilt angle of the puzzle board **10'** of the jigsaw puzzle table **1'** can be altered by controlling the adjusting structure **50'** while it is in the locked state.

[0159] FIGS. **50-70** show a jigsaw puzzle table **1''** of a third embodiment of the present disclosure. The jigsaw puzzle table **1''** is arranged for a user or player to assemble a plurality of puzzle pieces **100''** thereon. Accordingly, the jigsaw puzzle table **1''** comprises a puzzle board **10''**, a rotating assembly **20''** attached to the puzzle board **10''**, and a supporting assembly **3''** for adjusting the height of the jigsaw puzzle table **1''**. The rotating assembly **20''** is mounted between the puzzle board **10''** and the supporting assembly **3''**. The puzzle board **10''** and the rotating assembly **20''** are supported by the supporting assembly **3''**, respectively. The supporting assembly **3''** is capable of adjusting the height of the jigsaw puzzle table **1''**. The supporting assembly **3''** comprises a supporting portion **43''** for supporting both the rotating assembly **20''** and the puzzle board **10''**.

[0160] The structure of the supporting assembly **3''** and the puzzle board **10''** in the second

embodiment is completely identical to that of the second embodiment. The third embodiment is similar to the second embodiment of the present disclosure except for the structure of the rotating assembly **20**". The rotating assembly **20**" comprises a first moving member **21**" detachably coupled to the supporting portion **43**" along a fixing direction **B1**" and a second moving member **22**" detachably coupled to the puzzle board **10**" along an assembling direction **A1**". The fixing direction **B1**" is opposite to the assembling direction **A1**".

[0161] The first moving member **21**" comprises a first through hole **211**", a first moving frame **212**" surrounding the first through hole **211**", a first rolling portion **213**" extending from the periphery of the first moving frame **212**" and surrounding the first moving frame **212**", and a first coupling unit **24**" extending from the first rolling portion **213**" away from the first moving frame **212**".

[0162] The first coupling unit **24**" comprises a first coupling base **241**" extending from the periphery of the first rolling portion **213**", a first coupling hole **242**" drilled completely through the first coupling base **241**", and a first coupling portion **243**" passed through the first coupling hole **242**" and fixed to the supporting portion **43**" along the fixing direction **B1**". The outline of the first coupling base **241**" has a rectangular shape. The first coupling hole **242**" is formed at the four corners of the first coupling base **241**". In this embodiment, the first coupling base **241**" is an integral annular structure that completely surrounds the first rolling portion **213**". In an alternative embodiment, the number of first coupling bases can be multiple, spaced apart from each other by a certain distance. This design allows for greater flexibility and adaptability, enabling adjustments to the number and layout of coupling bases according to actual needs, thereby optimizing the performance and stability of the rotating assembly.

[0163] Referring to FIGS. **54-55** and **66-68**, the first moving frame **212**" comprises a first inner portion **2121**" surrounding the first through hole **211**", a first inclination portion **2122**" extending downwardly from the periphery of the first inner portion **2121**", a first extending portion **2123**" extending from the periphery of the first inclination portion **2122**" away from the first inner portion **2121**", and a first connecting portion **2124**" extending upwardly from the periphery of the first extending portion **2123**" and connected to the first rolling portion **213**". The first coupling base **241**" comprises a first extending part **2411**" extending downwardly from the periphery of the first rolling portion **213**" and a first contacting part **2412**" extending from the first extending part **2411**" away from the first rolling portion **213**". The first coupling hole **242**" is drilled completely through the first contacting part **2412**". The lower surface of the first rolling portion **213**" is taller than an upper surface of the first extending portion **2123**". The lower surface of the first rolling portion **213**" is substantially level with an upper surface of the first inner portion **2121**".

[0164] The second moving member **22**" comprises a second through hole **221**", a second moving frame **222**" surrounding the second through hole **221**", a second rolling portion **223**" extending from the periphery of the second moving frame **222**" and surrounding the second moving frame **222**", a second coupling unit **25**" extending from the second rolling portion **223**" away from the second moving frame **222**".

[0165] The second coupling unit **25**" comprises a second coupling base **251**" extending from the periphery of the second rolling portion **223**", a second coupling hole **252**" drilled completely through the second coupling base **251**", and a second coupling portion **253**" passed through the second coupling hole **252**" and fixed to the puzzle board **10**" along the assembling direction **A1**". The outline of the second coupling base **251**" has a rectangular shape. The second coupling unit **25**" is formed at the four corners of the second edge portion **224**". In an alternative embodiment, the number of second coupling bases can be multiple, spaced apart from each other by a certain distance.

[0166] The second moving frame **222**" comprises a second inner portion **2221**" surrounding the second through hole **221**", a second inclination portion **2222**" extending upwardly from the periphery of the second inner portion **2221**" away from the second inner portion **2221**", a second

extending portion 2223" extending from the periphery of the second inclination portion 2222" away from the second inner portion 2221", and a second connecting portion 2224" extending downwardly from the periphery of the second extending portion 2223" and connected to the second rolling portion 223". The second coupling base 251" comprises a second extending part 2511" extending upwardly from the periphery of the second rolling portion 223" and a second contacting part 2512" extending from the second extending part 2511" away from the second rolling portion 223". The second coupling hole 252" is drilled completely through the second contacting part 2512". The upper surface of the second rolling portion 223" is lower than that of the second extending portion 2223". The upper surface of the second rolling portion 223" is substantially level with that of the second inner portion 2221". The rotating assembly 20" further comprises a connecting element 29" and a rotor mechanism 23". The rotor mechanism 23" comprises a retainer unit 231" and a plurality of ball-shaped rotors 232" that are rotatably retained within the retainer unit 231". The retainer unit 231" is configured to spacedly retain the plurality of rotors 232" in a rollable manner, allowing each rotor to freely roll on both the first rolling portion 213" and the second rolling portion 223". The rotor mechanism 23" is rotatably positioned between the first rolling portion 213" and the second rolling portion 223", enabling the first moving member 21" to rotate with respect to the second moving member 22". This configuration allows the puzzle board 10" to rotate smoothly in various planar directions relative to the supporting assembly 3". The connecting element 29" passes through the first and second through holes 211" and 221" to be rotatably connected with the first and second moving members 21" and 22".

[0167] The first rolling portion 213" is substantially inverted V-shaped and symmetrically positioned with respect to the second rolling portion 223". Each of the plurality of rotors 232" is free to roll on both the first rolling portion 213" of the first moving member 21" and the second rolling portion 223" of the second moving member 22". The first rolling portion 213" comprises a first engaging part 2131" connected to the first connecting portion 2124" of the first moving frame 212" and a second engaging part 2132" extending from the first engaging part 2131". The extension length of the first engaging part 2131" is less than that of the second engaging part 2132", thereby allowing for better wrapping around the rotors 232". The second rolling portion 223" is substantially V-shaped, comprising a first engaging portion 2231" connected to the second connecting portion 2224" of the second moving frame 222" and a second engaging portion 2232" extending from the first engaging portion 2231". The extension length of the first engaging portion 2231" is less than that of the second engaging portion 2232", thereby facilitating better wrapping around the rotors 232" together with the first rolling portion 213". The distance between the first connecting portion 2124" and the second connecting portion 2224" is larger than that between the second engaging part 2132" and the second engaging portion 2232", facilitating better guidance of the rotors 232" within the motion space formed by the first rolling portion 213" and the second rolling portion 223". In other words, the first rolling portion 213" is spaced apart from the second rolling portion 223". An inner distance of the first rolling portion 213" and the second rolling portion 223" is larger than an outer distance of the first rolling portion 213" and the second rolling portion 223".

[0168] The first rolling portion 213" is substantially V-shaped and symmetrically positioned with respect to the second rolling portion 223". Each of the plurality of rotors 232" is free to roll on both the first rolling portion 213" of the first moving member 21" and the second rolling portion 223" of the second moving member 22". The first rolling portion 213" comprises a first engaging part 2132" connected to the first connecting portion 2124" of the first moving frame 212" and a second engaging part 2131" extending from the first engaging part 2131". The extension length of the first engaging part 2132" is less than that of the second engaging part 2131", thereby allowing for better wrapping around the rotors 232". The second rolling portion 223" is substantially inverted V-shaped, comprising a first engaging portion 2231" connected to the second connecting portion 2224" of the second moving frame 222" and a second engaging portion 2232" extending from the

first engaging portion **2231''**. The extension length of the first engaging portion **2231''** is less than that of the second engaging portion **2232''**, thereby facilitating better wrapping around the rotors **232''** together with the first rolling portion **213''**. The distance between the first connecting portion **2124''** and the second connecting portion **2224''** is larger than that between the second engaging part **2131''** and the second engaging portion **2232''**, facilitating better guidance of the rotors **232''** within the motion space formed by the first rolling portion **213''** and the second rolling portion **223''**.

[0169] In other words, the first rolling portion **213''** is spaced apart from the second rolling portion **223''**. An inner distance of the first rolling portion **213''** and the second rolling portion **223''** is larger than an outer distance of the first rolling portion **213''** and the second rolling portion **223''**. The puzzle board **10''** includes a puzzle plate **11''**, a supporting board **15''**, and an adjusting structure **50''**. The puzzle plate **11''** is hinged to the supporting board **15''**. The adjusting structure **50''** is disposed between the puzzle plate **11''** and the supporting board **15''**. The puzzle plate **11''** may be switched, via the adjusting structure **50''**, between a state in which the puzzle plate **11''** is placed flat on the supporting board **15''** and a state in which the puzzle plate **11''** is tilted at an angle with respect to the supporting board **15''**.

[0170] One end of the puzzle plate **11''** is hinged to the supporting board **15''**, forming a hinge point. The adjusting structure **50''** is located below a portion of the puzzle plate **11''** that is distant from the hinge point. Specifically, one end of the adjusting structure **50''** is hingedly connected to either the puzzle plate **11''** or the supporting board **15''**.

[0171] One end of the adjusting structure **50''** is hinged to the puzzle plate **11''** to hold the puzzle board **10''** in an inclined position (a locked state). A carrying handle **54''** is mounted on a top surface of the puzzle plate **11''**. The carrying handle **54''** is located at an end of the puzzle plate **11''** that is distant from the hinge point. The adjusting structure **50''** comprises a driving unit **52''** and a limiting strip **55''** with a limiting slot **56''**. The driving unit **52''** of the adjusting structure **50''** is adapted to fit into the limiting slot **56''**. When in use, the carrying handle **54''** is held by the user's hand, and the puzzle plate **11''** is pulled upward from the supporting board **15''**. Subsequently, the adjusting structure **50''** at the bottom of the puzzle plate **11''** may swing at a certain angle to enable an end portion thereof to be received in the limiting slot **56''**. In this way, the puzzle plate **11''** is tilted at a certain angle, allowing the user to play with the puzzle pieces **100''**. The adjusting structure **50''** is placed on the supporting board **15''** to abut against the bottom surface of the puzzle plate **11''**, such that the puzzle plate **11''** is inclined with respect to the supporting board **15''**.

[0172] The puzzle board **10''** further comprises a reinforcing arm **45''** connected to the supporting board **15''** for forming at least one drawer cavity **13''** and at least one puzzle drawer **14''** received in the corresponding drawer cavity **13''**. The reinforcing arm **45''** comprises a pair of inner reinforcing portions **451''** spaced apart from each other for forming an inner receiving space **452''**, a pair of dividing reinforcing portions **453''** connected to the corresponding inner reinforcing portion **451''** and extending away from the inner reinforcing portion **451''**, and a pair of contacting arms **454''** received in the inner receiving space **452''** and connected with the inner reinforcing portions **451''** for fixing with the second coupling unit **25''**. The reinforcing arm **45''** comprises at least one fixing hole **124''** formed on the inner contacting arms **454''** and coupled with the second coupling unit **25''**.

[0173] The supporting assembly **3''** comprises a board bracket **6''** and a foot structure **7''** connected to the board bracket **6''**. The board bracket **6''** comprises a supporting portion **43''**, an upper bracket **62''** connected to the supporting portion **43''**, a lower bracket **63''** positioned below the upper bracket **62''**, and an adjusting bracket **64''** connecting the upper and lower brackets **62''** and **63''**. The rotating assembly **20''** is detachably coupled to both the puzzle board **10''** and the supporting portion **43''** of the supporting assembly **3''**. The adjusting bracket **64''** has a plurality of position locating parts **641''** for quickly adjusting the overall height of the jigsaw puzzle table **1''**. At least part of the rotating assembly **20''** is exposed through the supporting portion **43''**. The supporting

portion 43" comprises a main frame 322" and a fastening arm 323" connected to the main frame 322" for enhancing the strength of the main frame 322". The main frame 322" has a closed annular shape. In an alternative embodiment, the main frame 322" can have a semi-enclosed structure or it can be omitted. The upper bracket 62" is directly connected to the fastening arm 323". A part of the rotating assembly 20" extends outside the outline of the fastening arm 323" of the supporting portion 43", indicating that part of the rotating assembly 20" is exposed beyond the fastening arm 323" of the supporting portion 43".

[0174] The installation method for the jigsaw puzzle table 1" is as follows: First, assemble the rotating assembly 20" with the supporting assembly 3". Specifically, position the upper surface of the supporting portion 43" facing the assembler. Observe the positioning of the connecting holes 46" of the supporting portion 43", and then place the rotating assembly 20" on the fastening arm 323" of the supporting portion 43" so that the first coupling hole 242" of the rotating assembly 20" aligns with the connecting holes 46" of the supporting portion 43". Finally, insert the first coupling portion 243" into the first coupling hole 242" and the connecting holes 46" to secure the rotating assembly 20" to the supporting portion 43" along the fixing direction B1", thus forming a combination of the rotating assembly 20" and the supporting portion 43".

[0175] Next, manually rotate the second moving member 22" to adjust the set position of the second coupling hole 252" so that the assembler can observe that the second coupling hole 252" is exposed from the fastening arm 323" of the supporting portion 43". When manually rotating the second moving member 22", the first moving member 21" remains fixed relative to the fastening arm 323" and does not rotate; thus, the second moving member 22" will rotate relative to the first moving member 21". If the assembler can already see the second coupling hole 252" exposed from the fastening arm 323" after completing the previous step, this step may not be necessary.

[0176] Finally, assemble the combined structure of the rotating assembly 20" and the puzzle board 10". Specifically, position the puzzle board 10" facing away from the assembler. Adjust the relative positions of the first coupling unit 24" and the second coupling unit 25" so that the first coupling unit 24" is staggered with respect to the second coupling unit 25", allowing the second coupling hole 252" of the second coupling unit 25" to be visible from the first moving member 21", facilitating observation by the assembler. Ensure the alignment of the fixing hole 124", and confirm that the second coupling hole 252" aligns with the fixing hole 124" by checking that the second coupling hole 252" is exposed from the fastening arm 323" along the assembling direction A1". Finally, insert the second coupling portion 253" into the second coupling hole 252" and the fixing hole 124" along the assembling direction A1" to secure the rotating assembly 20" onto the puzzle board 10".

[0177] In this embodiment, the fixing direction B1" is opposite to the assembling direction A1". In an alternative embodiment, a fixing direction B1" is similar to the assembling direction A1". Referring to FIG. 67-70, the first coupling unit 24" further comprises a fixing part 244" fixed to the first coupling portion 243" to cooperate with the first coupling portion 243" in securing the rotating assembly 20" to the supporting assembly 3". The connecting holes 46" are fully drilled in the fastening arm 323" of the supporting portion 43". The first coupling portion 243" first passes through the connecting holes 46" at the bottom of the fastening arm 323", and then protrudes from the connecting holes 46" to be fixed to the fixing part 244". During the process of fixing the first coupling portion 243" to the fixing part 244", if necessary, the assembler needs to secure the position of the fixing part 244" to prevent it from detaching from the first coupling base 241". The assembler may first install the rotating assembly 20" and the puzzle board 10" together, and then assemble the rotating assembly 20" with the supporting assembly 3". Conversely, the assembler may first assemble the rotating assembly 20" with the supporting assembly 3", and then install the rotating assembly 20" and the puzzle board 10" together.

[0178] Referring to FIGS. 62-63, when assembling the puzzle board 10" and the supporting assembly 3", a viewpoint from below the jigsaw puzzle table 1" shows that the first coupling unit

24" and the second coupling unit 25" are staggered. The second coupling unit 25" is visible from the supporting portion 43", whereas the first coupling unit 24" is covered by the supporting portion 43". In other words, the first coupling unit 24" and the second coupling unit 25" do not overlap in their projection onto the puzzle plate 11". However, at least part of the first coupling unit 24" and the fastening arm 323" overlap in their projection on the puzzle plate 11".

[0179] Referring to FIGS. 64-70, when the puzzle board 10" and the supporting assembly 3" are fully assembled, the viewpoint from below the jigsaw puzzle table 1" shows that the first coupling unit 24" and the second coupling unit 25" are substantially aligned. The second coupling unit 25" and the first coupling unit 24" are covered by the fastening arm 323" of the supporting portion 43". In other words, the first coupling hole 242" of the first coupling unit 24", the second coupling hole 252" of the second coupling unit 25", and the reinforcing hole 26" of the fastening arm 323" are substantially overlapping in their projection onto the puzzle plate 11".

[0180] The jigsaw puzzle table 1" can be adjusted to a higher or lower position by modifying the height of the supporting assembly 3". The puzzle board 10" can be rotated on the supporting assembly 3" through a rotational movement of the rotating assembly 20". And the tilt angle of the puzzle board 10" of the jigsaw puzzle table 1" can be altered by controlling the adjusting structure 50" while it is in the locked state.

[0181] Various technical features of the above-described embodiments can be combined arbitrarily. In order to make the description concise, not all possible combinations of the various technical features are described. However, as long as no contradiction occurs, any combination thereof should be included in the scope of the present disclosure.

[0182] The above-described embodiments show only several embodiments of the present disclosure, which are described in a more specific and detailed manner, but shall not be interpreted as a limitation of the scope of the present disclosure. To be noted that, any ordinary skilled person in the art may perform various deformations and improvements without departing from the concept of the present disclosure, all of which shall fall within the scope of the present disclosure. Therefore, the scope of the present disclosure shall be subject to the appended claims.

Claims

1. A jigsaw puzzle table, comprising: a board portion configured to be selectively placed in either a flat position or a tilted position, the board portion comprising a bottom surface; at least two puzzle drawers located below the bottom surface; a reinforcing arm connected to the bottom surface of the board portion for improving the structural strength of the board portion; a first pivoting arm connected to the bottom surface of the board portion; a supporting shaft located below the board portion and spaced apart from the first pivoting arm; and at least one rotating connection component connecting the first pivoting arm and the supporting shaft, the rotating connection component being configured to enable the board portion to switch between the flat position and the tilted position.
2. The jigsaw puzzle table according to claim 1, further comprising a fastening portion fixing the rotating connection component to the first pivoting arm.
3. The jigsaw puzzle table according to claim 2, wherein the rotating connection component is configured as a circular tube.
4. The jigsaw puzzle table according to claim 2, wherein the rotating connection component is a hinge.
5. The jigsaw puzzle table according to claim 1, wherein the at least one rotating connection component comprises at least two rotating connection components fixed to the first pivoting arm in a spaced-apart arrangement, such that a gap is maintained between adjacent rotating connection components.
6. The jigsaw puzzle table according to claim 2, wherein the rotating connection component has a

self-locking function.

7. The jigsaw puzzle table according to claim 1, wherein the reinforcing arm comprises a pair of inner reinforcing portions spaced apart from each other to form an inner receiving space, and the first pivoting arm is received in the inner receiving space.

8. The jigsaw puzzle table according to claim 7, wherein no drawer is disposed in the inner receiving space.

9. The jigsaw puzzle table according to claim 7, wherein the board portion has two shorter sides, and the puzzle drawers are configured to slide toward at least one of the shorter sides.

10. The jigsaw puzzle table according to claim 1, wherein the board portion has two shorter sides and two longer sides; the reinforcing arm comprises an inner reinforcing portion extending between the two longer sides of the board portion, and a dividing reinforcing portion connected to the inner reinforcing portion and extending toward one of the shorter sides; wherein the first pivoting arm and the dividing reinforcing portion are positioned on opposite sides of the inner reinforcing portion.

11. The jigsaw puzzle table according to claim 10, wherein the dividing reinforcing portion is substantially parallel to the first pivoting arm.

12. The jigsaw puzzle table according to claim 1, wherein the board portion has two shorter sides opposite to each other, and the reinforcing arm comprises a pair of inner reinforcing portions spaced apart from each other and a pair of dividing reinforcing portions, each dividing reinforcing portion being connected to a respective inner reinforcing portion and extending toward a corresponding shorter side.

13. The jigsaw puzzle table according to claim 1, wherein the board portion comprises a puzzle plate and a rotating assembly supporting the puzzle plate, the rotating assembly being configured to enable the puzzle plate to rotate in different planar directions.

14. A jigsaw puzzle table, comprising: a board portion configured to be selectively placed in either a flat position or a tilted position, the board portion comprising a bottom surface; at least two puzzle drawers located below the bottom surface; a first pivoting arm connected to the bottom surface of the board portion; a main frame located below the board portion and spaced apart from the first pivoting arm; and an adjusting structure connecting the main frame and the first pivoting arm for adjusting a tilt angle of the board portion; wherein when the board portion is in the flat position, the adjusting structure is connected to both the main frame and the first pivoting arm; wherein when the board portion is in the tilted position, the adjusting structure remains connected to the main frame and the first pivoting arm; and wherein a distance between the first pivoting arm and the main frame increases when the board portion is tilted compared to when the board portion is flat.

15. The jigsaw puzzle table according to claim 14, wherein the first pivoting arm is substantially parallel to the main frame.

16. The jigsaw puzzle table according to claim 14, further comprising a second pivoting arm connected to the bottom surface of the board portion, a supporting shaft located below the board portion and spaced apart from the second pivoting arm, and a rotating connection component connecting the first pivoting arm and the supporting shaft, the rotating connection component being configured to enable the board portion to switch between the flat position and the tilted position.

17. The jigsaw puzzle table according to claim 16, wherein the board portion has two shorter sides, and the first pivoting arm is substantially parallel to the second pivoting arm and extends toward the two shorter sides.

18. The jigsaw puzzle table according to claim 14, wherein the board portion has two shorter sides, and the puzzle drawers are configured to slide toward at least one of the shorter sides.

19. A rotating assembly comprising: a first moving member comprising a first moving frame, a first rolling portion extending from the periphery of the first moving frame, and a first coupling unit extending from the first rolling portion away from the first moving frame; a second moving

member comprising a second moving frame, a second rolling portion extending from the periphery of the second moving frame, and a second coupling unit extending from the second rolling portion away from the second moving frame; and a plurality of rotors rotatably retained between the first moving member and the second moving member; wherein the first rolling portion is symmetrically positioned with respect to the second rolling portion, and each of the plurality of rotors is free to roll on both the first rolling portion of the first moving member and the second rolling portion of the second moving member; and wherein the first moving frame comprises a first inner portion, a first inclination portion extending bendly from the periphery of the first inner portion, and a first extending portion extending from the periphery of the first inclination portion away from the first inner portion, the first inner portion being substantially parallel to the first extending portion.

20. The rotating assembly according to claim 19, wherein the second moving frame comprises a second inner portion, a second inclination portion extending bendly from the periphery of the second inner portion away from the first inclination portion, and a second extending portion extending from the periphery of the second inclination portion away from the second inner portion and substantially parallel to the first extending portion.
