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### TOY WATER BALL

#### Abstract

The present application relates to the field of water toys, in particular to a toy water ball. The toy water ball includes a mounting frame including a first surface and a second surface arranged oppositely arranged; a magnetic member is not exposed on the second surface; a first connecting rib and a second connecting rib, that cross over a side of the magnetic member close to the first surface to connect the mounting frame surrounding the magnetic member, are provided on the first surface; and the first connecting rib and the second connecting rib are arranged crosswise, and a cross position corresponds to the magnetic member. The magnetic member can be firmly restricted within the mounting frame. Even if it is pulled with a relatively large force during use, the magnetic member will not fall out, which greatly improves the safety of the product.

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## Background/Summary

CROSS REFERENCE TO RELATED APPLICATIONS [0001] The present application is a Continuation-In-Part Application of U.S. application Ser. No. 18/665,601 filed on May 16, 2024, which claims the benefit of Chinese Patent Application No. 202320769008.9 filed on Apr. 7, 2023. All the above are hereby incorporated by reference in their entirety.

### TECHNICAL FIELD

[0002] The present application relates to the field of water toys, in particular to a toy water ball.

### BACKGROUND

[0003] As a summer activity to cool off the heat, water fights are very popular because of their interactive and entertaining features.

[0004] Water fights usually use balloons as water carriers. When a balloon filled with water collides with a player, the balloon will burst and the player will be wetted. However, the balloon cannot be reused and is not environmentally friendly, therefore the research and development personnel have developed a toy water ball that can be recycled. This toy water ball includes two shells and each shell includes a mounting frame, a magnetic member installed on the mounting frame and a water pocket. When two mounting frames attract each other by the magnetic members, the two shells will jointly define a cavity for storing water. When the toy water ball hits the player, the two shells will be separated by force, causing the hit player to be wet by water.

[0005] Since toy water balls generally contain magnetic members and are mostly used by children, there is a possibility that children may pull or bite the toy water balls during use. If the magnetic members fall out when the toy water balls are pulled or bitten, there is a risk of accidental swallowing by children. Existing toy water balls have the defect that magnetic members are easily pulled out by pulling or biting.

### SUMMARY

[0006] The technical problem to be solved by the embodiment of the present application is to provide a toy water ball to solve the problem in the prior art that the magnetic member is easily pulled out by pulling or biting.

[0007] The toy water ball provided by the embodiment of the present application includes: at least two shells that are enclosable to form a water storage cavity, each of the shells including: a mounting frame, a magnetic member and a water pocket, the water pocket being connected to the mounting frame, the magnetic member being sealed in the mounting frame; wherein when the shells are enclosed to form the water storage cavity, magnetic members at corresponding positions on mounting frames of adjacent shells attract each other, so that adjacent mounting frames abut each other; [0008] the mounting frame includes a first surface and a second surface arranged oppositely arranged; the magnetic member is not exposed on the second surface; a first connecting rib and a second connecting rib, that cross over a side of the magnetic member close to the first surface to connect the mounting frame surrounding the magnetic member, are provided on the first surface; and the first connecting rib and the second connecting rib are arranged crosswise, and a

cross position corresponds to the magnetic member.

[0009] Furthermore, both the mounting frame and the water pocket are made of flexible materials.

[0010] Furthermore, the mounting frame is further provided with a gap groove, the gap groove is arranged on a periphery of the magnetic member, and the water pocket is provided with an embedded part embedded in the gap groove.

[0011] Furthermore, the gap groove is located at a position close to an end of the magnetic member, and two ends of the gap groove extend from a direction parallel to the end of the magnetic member and to turn to a direction of a side surface of the magnetic member.

[0012] Furthermore, the mounting frame is provided with an accommodation groove for accommodating the magnetic member, and the accommodation groove has a notch and a groove bottom; the mounting frame further includes a limiting baffle, and the limiting baffle is arranged at the notch of the accommodation groove, and is opposite to the groove bottom of the accommodation groove.

[0013] Furthermore, in a length direction of the accommodation groove, the limiting baffle is arranged at a middle position of the notch of the accommodation groove, so that a middle position of the magnetic member is covered by the limiting baffle, and two ends of the magnetic member are exposed from the notch of the accommodation groove.

[0014] Furthermore, the gap groove includes a first groove wall located on one side of the surrounding edge and a second groove wall opposite to the first groove wall, the mounting frame is further provided with a connection rib, and the connection rib connects the first groove wall and the second groove wall.

[0015] Furthermore, four corner positions of the magnetic member are all provided with gap grooves, and each gap groove is “L” shaped.

[0016] Furthermore, an inner ring of the mounting frame is provided with a warped edge, when the adjacent mounting frames abut each other, corresponding warped edges of the adjacent mounting frames fit each other under pressure.

[0017] Furthermore, the toy water ball further includes a light-emitting assembly, the light-emitting assembly is arranged inside the shells, and the light-emitting assembly includes a lamp bead, a controller, a vibration sensor, and a battery for powering the lamp bead, the controller and the vibration sensor; the controller controls the lamp bead to work when the vibration sensor detects vibration.

[0018] Furthermore, an edge of the magnetic member is provided with a round chamfer.

[0019] Furthermore, an adhesive layer is provided between the magnetic member and the accommodation groove.

[0020] Furthermore, when the water pocket is connected to the mounting frame, a covering layer is formed on the mounting frame, and a total thickness of the covering and the mounting frame is greater than or equal to 2.3 mm.

[0021] Furthermore, the first connecting rib, the second connecting rib and the mounting frame are integrally formed; and the magnetic member is covered between the second surface and a combined structure of the first connecting rib and the second connecting rib which are arranged crosswise.

[0022] Furthermore, among the first connecting rib and the second connecting rib, at least the first connecting rib protrudes from the first surface.

[0023] Furthermore, the mounting frame is annular, and the first connecting rib extends along a circumferential direction of the annular mounting frame on the first surface.

[0024] Furthermore, there are multiple magnetic members; the multiple magnetic members are arranged at intervals within the mounting frame; [0025] each magnetic member is provided with a corresponding first connecting rib and a corresponding second connecting rib; adjacent first connecting ribs corresponding to adjacent magnetic members are connected to each other, forming an annular connecting rib; or, there are multiple magnetic members; the multiple magnetic

members are arranged at intervals within the mounting frame; and [0026] each magnetic member is provided with a corresponding first connecting rib and a corresponding second connecting rib; adjacent first connecting ribs corresponding to adjacent magnetic members are not connected to each other.

[0027] Furthermore, both the first connecting rib and the second connecting rib are flush with the first surface.

[0028] Furthermore, a height of a protrusion of the first connecting rib from the first surface is greater than or equal to 0.1 mm; and a width of the first connecting rib is greater than or equal to 1 mm.

[0029] Furthermore, the first connecting rib is located at a middle position in a width direction of the mounting frame.

[0030] Furthermore, the water pocket is connected to the first surface of the mounting frame and covers the first connecting rib and the second connecting rib of the mounting frame.

[0031] Compared with the prior art, the beneficial effect of the toy water ball provided by the embodiment of the present application is that the first connecting rib and the second connecting rib that cross over the side of the magnetic member close to the first surface to connect the mounting frame surrounding the magnetic member are provided on the first surface. This enables the mounting frame to form a framework-like structure at the position of the magnetic member, reinforcing the structural strength of the mounting frame at the position of the magnetic member. The first connecting rib and the second connecting rib connect the mounting frame surrounding the magnetic member into a whole, so that the mounting frame can withstand a greater pulling force without breaking. The magnetic member is firmly restricted within the mounting frame, and even if it is pulled with a relatively large force during use, the magnetic member will not fall out, which greatly improves the safety of the product.

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## Description

### BRIEF DESCRIPTION OF THE DRAWINGS

[0032] The specific embodiment of the present application will be described in further detail below in conjunction with accompanying drawing and embodiment, in the accompanying drawing:

[0033] FIG. 1 is a schematic diagram of the three-dimensional structure of the toy water ball provided by an embodiment of the present application;

[0034] FIG. 2 is a schematic diagram of the three-dimensional structure of the toy water ball provided by an embodiment of the present application, when the shells are separated;

[0035] FIG. 3 is a schematic diagram of the three-dimensional structure of the mounting frame and the connection structure provided by an embodiment of the present application;

[0036] FIG. 4 is a partially enlarged schematic diagram of position A in FIG. 3;

[0037] FIG. 5 is a schematic diagram of the three-dimensional structure of the magnetic member provided by an embodiment of the present application;

[0038] FIG. 6 is a schematic diagram of the toy water ball shown in FIG. 2, omitting the mounting frame and the connection structure;

[0039] FIG. 7 is a schematic diagram of the three-dimensional structure of the toy water ball provided by another embodiment of the present application, when the shells are separated;

[0040] FIG. 8 is a schematic diagram of the plane structure of the mounting frame and the connection structure provided by an embodiment of the present application;

[0041] FIG. 9 is a partially enlarged schematic diagram of position B in FIG. 8;

[0042] FIG. 10 is a schematic diagram of a partial structural of the mounting frame provided by another embodiment of the present application;

[0043] FIG. 11 is a schematic diagram of a partial structure of the mounting frame provided by

another embodiment of the present application;

[0044] FIG. **12** is a cross-sectional view of the mounting frame and the connection structure provided by an embodiment of the present invention; and

[0045] FIG. **13** is a partially enlarged schematic diagram of position C in FIG. **12**;

[0046] FIG. **14** is a three-dimensional schematic diagram of the toy water ball provided by an embodiment of the present application.

[0047] FIG. **15** is a three-dimensional schematic diagram of the mounting frame provided by an embodiment of the present application.

[0048] FIG. **16** is a partially enlarged schematic diagram of position A in FIG. **15**.

[0049] FIG. **17** is a three-dimensional schematic diagram of the mounting frame provided by another embodiment of the present application.

[0050] FIG. **18** is a partially enlarged schematic diagram of position B in FIG. **17**.

[0051] The reference numerals in the drawings are: [0052] **1000**. Toy water ball; [0053] **100**, Shell; **110**, Mounting frame; **111**, First surface; **112**, Second surface; **113**, Accommodation groove; **114**, Gap groove; **1141**, First groove wall; **1142**, Second groove wall; **1143**, Groove bottom; **115**, surrounding edge; **116**, limiting baffle; **117**, connection rib; **118**, Warped edge; **120**, Magnetic member; **121**, Round chamfer; **130**, Water pocket; **131**, Embedded part; [0054] **200**. Connection structure; [0055] **310**. First connecting rib; **320**. Second connecting rib.

#### DETAILED DESCRIPTION

[0056] It should be noted that, in the case of no conflict, the embodiments in the present application and the features in the embodiments can be combined with each other. Now with reference to the accompanying drawings, the preferred embodiments of the present application are described in detail.

[0057] The embodiments of the present application provide a toy water ball **1000**, as shown in FIG. **1** to FIG. **5**, the toy water ball **1000** includes at least two shells **100** that are enclosable to form a water storage cavity. Each shell **100** includes a mounting frame **110**, a magnetic member **120** and a water pocket **130**. The mounting frame **110** includes a first surface **111** and a second surface **112** oppositely arranged in its thickness direction (X direction in FIG. **3**). A notch of the accommodation groove **113** is located on the first surface **111**, the magnetic member **120** is installed in the accommodation groove **113**, and the water pocket **130** is connected to the first surface **111**, and covers the notch of the accommodation groove **113** on the first surface **111** to seal the magnetic member **120** in the mounting frame **110**.

[0058] The shells **100** in this embodiment can enclose to define a water storage cavity. At this time, the magnetic members **120** of adjacent shells **100** attract each other, so that the second surfaces **112** of adjacent shells **100** abut each other, thereby avoiding the overflow of water in the water storage cavity. When the toy water ball **1000** of the embodiments is thrown at the player, the toy water ball **1000** will be impacted by an external force, so that the water in the water storage cavity will overflow, causing the player hit by the toy water ball **1000** to be wet. Of course, it can be understood that hitting the player is only a reference method for playing the water ball. In addition to hitting the player, it is also possible to simply hit the toy water ball **1000** to the ground, wall or other places. This embodiment does not make a limitation here.

[0059] Specifically, since in this embodiment, the accommodation groove **113** for installing the magnetic member **120** is opened on the first surface **111**, and the water pocket **130** is connected to the first surface **111**, which makes the water pocket **130** seal the magnetic member **120** by cooperating with the mounting frame **110**. This not only makes the magnetic member **120** not easy to come out of the accommodation groove **113** under force as in the prior art when the toy water ball **1000** is in use, but also prevents the magnetic member **120** from getting wet. It should be noted that the magnetic member **120** is prone to rust after being wetted by water, which makes the toy water ball **1000** unsuitable for continued use. It can be seen that, by implementing this embodiment, the service life of the toy water ball **1000** can be effectively extended, and the toy

water ball **1000** will not easily fail.

[0060] It is worth mentioning that since two shells **100** can be provided as in FIG. **1**, three can be provided as in FIG. **7**, four or five can be provided, and this embodiment does not make a limitation here.

[0061] Referring to FIG. **1**, in a specific embodiment, both the mounting frame **110** and the water pocket **130** are made of flexible materials.

[0062] In the first aspect, the implementation of this embodiment can prevent the toy water ball **1000** from hurting or injuring the player, and eliminate potential safety hazards.

[0063] In the second aspect, the water pocket **130** of this embodiment can change the volume of the toy water ball **1000** through deformation, so as to achieve the technical effect of saving storage space, so as to facilitate storage by users.

[0064] In the third aspect, the implementation of this embodiment can reduce the probability of damage when the mounting frame **110** and the water pocket **130** are impacted, which is beneficial to improve the service life of the toy water ball **1000**.

[0065] Referring to FIG. **1**, in a specific embodiment, the mounting frame **110** and the water pocket **130** are made of silicone or rubber.

[0066] In order to improve the structural strength of the toy water ball **1000** and further avoid failure of the toy water ball **1000**, the present application provides the following two embodiments for reference.

[0067] Referring to FIG. **3**-FIG. **6** and FIG. **9**, in the first embodiment, the mounting frame **110** is also provided with a gap groove **114**, the gap groove **114** is arranged on the periphery of the magnetic member **120** and the notch of the gap groove **114** is located on the first surface **111**, A surrounding edge **115** surrounding the magnetic member **120** is formed between the accommodation groove **113** and the gap groove **114**, and the water pocket **130** is provided with an embedded portion **131** embedded in the gap groove **114**.

[0068] Specifically, when the user uses the toy water ball **1000**, it is inevitable that the water pocket **130** will be pulled, because when the magnetic members **120** of the adjacent shells **100** attract each other, the magnetic members **120** will apply force to limit that the adjacent shells **100** are pulled apart. Therefore, when the water pocket **130** is pulled, the position of the water pocket **130** adjacent to the magnetic member **120** will be subjected to a relatively large force, and it is easy to break away from the connection relationship with the mounting frame **110**. In order to solve this technical problem, the water pocket **130** of this embodiment is partially embedded in the gap groove **114** between the groove wall of the accommodation groove **113** and the surrounding edge **115**, so that the connection relationship of the position where the water pocket **130** is subjected to a relatively large force with the mounting frame **110** will be closer. It can be seen that, by implementing this embodiment, the structural strength of the toy water ball **1000** can be improved so that it will not be easily damaged.

[0069] When the toy water ball **1000** of this embodiment is produced, a slot will be opened on the mold for making the mounting frame **110**, and the magnetic member **120** will be installed in this slot, and then the materials used to manufacture the mounting frame **110** will be pressed onto the mold so as to manufacture the mounting frame **110** equipped with the magnetic members **120**, and finally process the water pocket **130** onto the mounting frame **110**. Specifically, as long as the outline of the slot is set larger than the magnetic member **120**, the manufactured mounting frame **110** will be formed with the above-mentioned gap groove **114** and surrounding edge **115**.

[0070] Specifically, there are many shapes of the surrounding edge **115**, which may be circular, oval, square, etc., so this embodiment does not limit it here.

[0071] Referring to FIG. **11**, in the second embodiment, the outline of the magnetic member **120** is smaller than the outline of the accommodation groove **113**, so that there is a gap between the magnetic member **120** and the groove wall of the accommodation groove **113** (position Z in FIG. **11**), and the water pocket **130** is partially embedded in the gap.

[0072] Specifically, when the user uses the toy water ball **1000**, it is inevitable to pull the water pocket **130**. When the magnetic members **120** of adjacent shells **100** attract each other, the magnetic members **120** will apply force to limit the adjacent shells **100** from being pulled apart, so when the water pocket **130** is pulled, the force of the position of the water pocket **130** adjacent to the magnetic member **120** will be relatively large, and it is easy to break away from the connection relationship with the mounting frame **110**. In order to solve this technical problem, the water pocket **130** of this embodiment is partially embedded in the gap between the magnetic member **120** and the groove wall of the accommodation groove **113**, so that the connection relationship between the position of the water pocket **130** where the force is greater and the mounting frame **110** will be closer. It can be seen that, by implementing this embodiment, the structural strength of the toy water ball **1000** can be improved so that it will not be easily damaged.

[0073] When making the toy water ball **1000** of this embodiment, a mounting frame **110** with a accommodation groove **113** is processed first, then the magnetic member **120** is placed in the groove, and finally the water pocket **130** is processed onto the mounting frame **110**.

[0074] Referring to FIG. 4, in a specific embodiment, the surrounding edge **115** is arranged around the magnetic member **120**, that is, the surrounding edge **115** wraps the outer peripheral surface of the magnetic member **120**, so that not only the constraint of the mounting frame **110** on the magnetic member **120** can be strengthened, making the connection between the magnetic member **120** and the mounting frame **110** closer, but also it is convenient for processing.

[0075] Specifically, if the magnetic member **120** cannot move in the slot when the magnetic member **120** is installed in the slot of the mold, then when the material for manufacturing the mounting frame **110** is pressed onto the mold, the magnetic member **120** may be stressed to come out of the slot, which will cause defective products if it is light, or damage the mold if it is serious. The surrounding edge **115** is arranged around the magnetic member **120**, which means that the magnetic member **120** can move in the slot. When the magnetic member **120** is stressed, it will move in the slot and will not easily come out of the slot, which can not only improve the yield rate, but also does not damage the mold.

[0076] Referring to FIG. 9, in one embodiment, the gap groove **114** is disposed close to the end of the magnetic member **120**, and both ends of the gap groove **114** extend from the direction parallel to the end of the magnetic member **120** and to turn to the direction of the side surface of the magnetic member **120**. In this way, the connection relationship between the embedded portion **131** and the mounting frame **110** will be closer. The structural strength of the toy water ball **1000** can be further improved so that it will not be easily damaged.

[0077] Referring to FIG. 4, in a specific embodiment, the mounting frame **110** also includes a limiting baffle **116**, the limiting baffle **116** is arranged at the notch of the accommodation groove **113**, and is opposite to the groove bottom of the accommodation groove **113**.

[0078] Specifically, the limiting baffle **116** can cooperate with the surrounding edge **115** to firmly limit the magnetic member **120** in the accommodation groove.

[0079] Referring to FIG. 4, in order to improve the limiting effect of the limiting baffle **116** on the magnetic member **120**, in a specific embodiment, in the length direction of the accommodation groove **113**, the limiting baffle **116** is set in the middle position of the notch of the accommodation groove **113**, so that the middle position of the magnetic member **120** is covered by the limiting baffle **116**, and the two ends of the magnetic member **120** are exposed from the notch.

[0080] Referring to FIG. 9, in a specific embodiment, the gap groove **114** includes a first groove wall **1141** on one side of the surrounding edge **115**, and a second groove wall **1142** opposite to the first groove wall **1141**, and the mounting frame **110** is also provided with connection ribs **117**, the connection ribs **117** connect the first groove wall **1141** and the second groove wall **1142**.

[0081] Specifically, when the user uses the toy water ball **1000**, it is inevitable that the water pocket **130** will be pulled, because when the magnetic members **120** of the adjacent shells **100** attract each other, the magnetic members **120** will apply force to limit that the adjacent shells **100** are pulled

apart. Therefore, when the water pocket **130** is pulled, the part of the mounting frame **110** near the magnetic member **120** will be subjected to a relatively large force, which will cause a large deformation of this part and be easily damaged. In order to solve this technical problem, the mounting frame **110** of this embodiment is provided with a connection rib **117**, the connection rib **117** connects the first groove wall **1141** and the second groove wall **1142** of the gap groove **114**, and the connection rib **117** can be used to apply a reaction force when the user pulls the water pocket **130**, thereby reducing the degree of deformation of the part of the mounting frame **110** near the magnetic member **120**. It can be seen that, by implementing this embodiment, the structural strength of the toy water ball **1000** can be improved, making the toy water ball **1000** durable.

[0082] In addition, when the water pocket **130** is processed on the mounting frame **110**, the mounting frame **110** may be deformed accordingly. Exemplarily, when the water pocket **130** is processed on the mounting frame **110**, when the raw material enters the gap groove **114**, it will exert a force in the opposite direction on the first groove wall **1141** and the second groove wall **1142**. If the force is too large, the distance between the first groove wall **1141** and the second groove wall **1142** will be changed by this force, thus causing the mounting frame **110** to deform, and if the deformation is too large, it will become a defective product, while the connection rib **117** of this embodiment can strengthen the constraint between the first groove wall **1141** and the second groove wall **1142** to avoid excessive deformation of the mounting frame **110** when the water pocket **130** is processed on the mounting frame **110**, thereby improving the yield rate.

[0083] In a specific embodiment, the connection ribs **117** are also connected to the groove bottom **1143** of the gap groove **114**, so that the connection ribs **117** will be less deformed when stressed, which can further improve the structural strength of the toy water ball **1000** and make the toy water ball **1000** durable.

[0084] Referring to FIG. **10**, in a specific embodiment, gap grooves **114** are provided at four corner positions of the magnetic member **120**, and the gap grooves **114** are “L” shaped. In this way, the mounting frame **110** will include a plurality of connection ribs **117**, and the plurality of connection ribs **117** are respectively located in different directions of the magnetic member **120**, which can further prevent the mounting frame **110** from being excessively deformed when the water pocket **130** is processed on the mounting frame **110**, thereby improving the yield rate.

[0085] Referring to FIGS. **7-8**, in an embodiment, the toy water ball **1000** further includes a connection structure **200**, and each shell **100** is connected to the connection structure **200**.

[0086] Specifically, it is conceivable that if there is no connection relationship between the shells **100** and they are scattered and out of order, it will be very cumbersome and time-consuming to assemble the shells **100** into a toy water ball **1000**, and some shells are easy to get lost during the game. The connection structure **200** can connect the shells **100** together and simplify the assembly time of the toy water ball **1000**.

[0087] Referring to FIGS. **1-3**, in a specific embodiment, the connection structure **200** is made of flexible material, and the connection structure **200** is integrally formed with the mounting frame **110**.

[0088] Specifically, the connection structure **200** made of flexible material can prevent the toy water ball **1000** from hurting or injuring the player, and the integral formation of the connection structure **200** and the mounting frame **110** can simplify the assembly steps.

[0089] Referring to FIGS. **1-3**, the connection structure **200** and the mounting frame **110** in FIGS. **1-3** are both made of silica gel. Specifically, the raw material is pressed into a corresponding mold and formed integrally to form the connection structure **200** and the mounting frame **110**. The toy water ball **1000** is very convenient to use, as long as one of the shells **100** is moved toward another shell **100**, the water storage cavity can be enclosed and defined.

[0090] Of course, it can be understood that the connection structure **200** can also be a component independent of the mounting frame **110**, just like the toy water ball **1000** shown in the drawings.

[0091] Referring to FIG. **4** and FIG. **9**, in one embodiment, the inner circle of the mounting frame



**110** is provided with a warped edge **118** at a position close to the second surface **112**, and the warped edge **118** extends toward a direction close to the center of the mounting frame **110** and away from the first surface **111**, and the included angle between the warped edge **118** and the plane where the second surface **112** is located is  $\geq 5$  degrees, when the second surfaces **112** of the adjacent mounting frames **110** abut each other, the corresponding warped edges **118** on the adjacent mounting frames **110** fit each other under pressure.

[0092] Specifically, because the warped edge **118** extends toward a direction close to the center of the mounting frame **110** and away from the first surface **111**, the warped edge **118** of the shells **100** have already contacted each other before the second surfaces **112** of the shells **100** abut each other. When the second surfaces **112** of the shells **100** abut each other, the warped edges **118** of the shells **100** have been pressed against each other and elastically deformed, so setting the warped edges **118** can better limit the overflow of the water in the water storage cavity to avoid water leakage from the toy water ball **1000**.

[0093] In one embodiment, the toy water ball further includes a light-emitting assembly, which is arranged inside the shells, and the light-emitting assembly includes a lamp bead, a controller, a vibration sensor, and a battery for powering the light bead, the controller and the vibration sensor. The controller controls the lamp bead to work when the vibration sensor detects vibration.

[0094] Specifically, when the toy water ball hits a human body or an object, it will trigger a vibration sensor, and the vibration sensor will feed it back to the controller, and the controller will control the lamp bead to work when it receives the feedback information from the vibration sensor. By implementing this embodiment, the aesthetics of the toy water ball can be increased, especially in the evening and night, the luminous toy water ball will look very beautiful.

[0095] Referring to FIG. 5, in an embodiment, the edge of the magnetic member **120** is provided with a round chamfer **121**.

[0096] Specifically, when the user uses the toy water ball **1000**, it is inevitable that the water pocket **130** will be pulled. Since the magnetic members **120** of the shells **100** attract each other, when the user pulls the water pocket **130**, the magnetic member **120** will exert a reverse force on the mounting frame **110** to deform the groove bottom **1143** of the accommodation groove **113**. If the edge of the magnetic member **120** is relatively sharp, the groove bottom **1143** of the accommodation groove **113** is easily scratched by the magnetic member **120** at this time, causing the toy water ball **1000** to fail. Therefore, in this embodiment, the edge of the magnetic member **120** is provided with the round chamfer **121** to prevent the magnetic member **120** from scratching the groove bottom **1143** of the accommodation groove **113**.

[0097] In addition, the round chamfer **121** on the edge of the magnetic member **120** can also make the connection position between the limiting baffle **116** and the surrounding edge **115** thicker. Referring to FIG. 12 and FIG. 13, the position D in FIG. 13 is thicker than the position E, In this way, the structural strength of the limiting baffle **116** will be relatively large, and it will not be damaged so easily.

[0098] In one embodiment, an adhesive layer is disposed between the magnetic member **120** and the accommodation groove **113**. In this way, the displacement of the magnetic member **120** can be avoided when the water pocket **130** is processed on the mounting frame **110**.

[0099] In one embodiment, when the water pocket **130** is connected to the first surface **111**, a covering layer is formed on the first surface **111**, the thickness of the covering layer is  $\geq 0.3$  mm, and the thickness from the bottom of the accommodation groove **113** to the second surface **112** is  $\geq 0.3$  mm. The thickness of the mounting frame **110** is greater than or equal to 2 mm, so that the structural strength of the shells **100** will be better, making the toy water ball **1000** durable.

[0100] As shown in FIGS. 14 to 16, the magnetic member **120** is not exposed on the second surface **112**. and the first connecting rib **310** and the second connecting rib **320** that cross over the side of the magnetic member **120** close to the first surface **111** to connect the mounting frame **110** surrounding the magnetic member **120** are provided on the first surface **111**. The first connecting

rib **310** and the second connecting rib **320** are arranged crosswise, and the cross position corresponds to the magnetic member **120**.

[0101] By implementing this embodiment, the first connecting rib **310** and the second connecting rib **320** that cross over the side of the magnetic member **120** close to the first surface **111** to connect the mounting frame **110** surrounding the magnetic member **120** are provided on the first surface **111**. This enables the mounting frame **110** to form a framework-like structure at the position of the magnetic member **120**, reinforcing the structural strength of the mounting frame **110** at the position of the magnetic member **120**. The first connecting rib **310** and the second connecting rib **320** connect the mounting frame **110** surrounding the magnetic member **120** into a whole, so that the mounting frame **110** can withstand a greater pulling force without breaking. The magnetic member **120** is firmly restricted within the mounting frame **110**, and even if it is pulled with a relatively large force during use, the magnetic member **120** will not fall out, which greatly improves the safety of the product.

[0102] It is worth mentioning that when the toy water ball **1000** is in use, the second surface **112** is a surface that plays a sealing role. If the magnetic member **120** is exposed on the second surface **112**, it may have a negative impact on the sealing performance of the toy water ball **1000**. A toy water ball **1000** with poor sealing performance will start to leak water before hitting the target object, resulting in a poor user experience. In order to avoid the above situation, the magnetic member **120** is not exposed on the second surface **112** in this embodiment.

[0103] Referring to FIG. **16**, in a specific embodiment, the first connecting rib **310**, the second connecting rib **320** and the mounting frame **110** are integrally formed. The magnetic member **120** is covered between the second surface **112** and the combined structure of the first connecting rib **310** and the second connecting rib **320** which are arranged crosswise.

[0104] Specifically, the integral formation of the first connecting rib **310**, the second connecting rib **320** and the mounting frame **110** can reduce the number of components, decrease the complexity of the structure, and improve the structural stability, enabling the first connecting rib **310**, the second connecting rib **320** and the mounting frame **110** to provide better restraint for the magnetic member **120**. In addition, the integral formation of the first connecting rib **310**, the second connecting rib **320** and the mounting frame **110** can also reduce the assembly cost, and thus reduce the production cost, achieving multiple benefits at once.

[0105] Referring to FIGS. **17** and **18**, in a specific embodiment, among the first connecting rib **310** and the second connecting rib **320**, at least the first connecting rib **310** protrudes from the first surface **111**.

[0106] In the embodiment where only the first connecting rib **310** protrudes from the first surface **111**, the structural strength of the first connecting rib **310** can be improved, enabling the first connecting rib **310** to better restrain the magnetic member **120**. This increases the installation stability of the magnetic member **120**, further preventing the magnetic member **120** from falling out when being pulled, and enhancing the safety of the product. Additionally, since the first connecting rib **310** protrudes from the first surface **111**, the connecting area between the water pocket **130** in the toy water ball **1000** and the shell **100** will be larger. In this way, the water pocket **130** and the shell **100** can be better combined, and the toy water ball **1000** is less likely to be damaged during use.

[0107] In the embodiment where both the first connecting rib **310** and the second connecting rib **320** protrude from the first surface **111**, the structural strength of the first connecting rib **310** and the second connecting rib **320** can be improved, enabling the first connecting rib **310** and the second connecting rib **320** to better restrain the magnetic member **120**. This increases the installation stability of the magnetic member **120**, further preventing the magnetic member **120** from falling out when being pulled, and enhancing the safety of the product. Additionally, since both the first connecting rib **310** and the second connecting rib **320** protrude from the first surface **111**, the connecting area between the water pocket **130** in the toy water ball **1000** and the shell **100**

will be larger. In this way, the water pocket **130** and the shell **100** can be better combined, and the toy water ball **1000** is less likely to be damaged during use.

[0108] Referring to FIGS. **15** and **16**, optionally, in another specific embodiment, both the first connecting rib **310** and the second connecting rib **320** are flush with the first surface **111**.

[0109] Referring to FIG. **17**, in one embodiment, the mounting frame **110** is annular, and the first connecting rib **310** extends along the circumferential direction of the annular mounting frame **110** on the first surface **111**.

[0110] By implementing this embodiment, the connection strength between the first connecting rib **310** and the mounting frame **110** can be increased, and the tensile resistance of the first connecting rib **310** can be enhanced. This enables the first connecting rib **310** to provide a stronger restraint for the magnetic member **120**, further increasing the installation stability of the magnetic member **120**.

[0111] Referring to FIG. **17**, in a specific embodiment, there are multiple magnetic members **120**. These multiple magnetic members **120** are arranged at intervals within the mounting frame **110**. Each magnetic member **120** is provided with a corresponding first connecting rib **310** and a second connecting rib **320**. The adjacent first connecting ribs **310** corresponding to adjacent magnetic members **120** are connected to each other, forming an annular connecting rib.

[0112] In a first aspect, in this embodiment, by increasing the number of magnetic members **120**, the sealing performance of the toy water ball **1000** during sealing is enhanced. This is to prevent the water in the toy water ball **1000** from flowing out of the toy water ball **1000** easily, enabling customers to have a better user experience.

[0113] In a second aspect, in this embodiment, it is equivalent to connecting each first connecting rib **310** that crosses each magnetic member **120**, thus forming an annular connecting rib that crosses all the magnetic members **120**. With such an arrangement, the first connecting rib **310** can provide better tensile resistance, enabling the first connecting rib **310** to provide a stronger restraint for the magnetic members **120**, and further increasing the installation stability of the magnetic members **120**.

[0114] Optionally, in another specific embodiment, there are multiple magnetic members **120**. These multiple magnetic members **120** are arranged at intervals within the mounting frame **110**. Each magnetic member **120** is provided with a corresponding first connecting rib **310** and a second connecting rib **320**; the adjacent first connecting ribs **310** corresponding to adjacent magnetic members **120** are not connected to each other.

[0115] In this embodiment, by increasing the number of magnetic members **120**, the sealing performance of the toy water ball **1000** during sealing is enhanced. This is to prevent the water in the toy water ball **1000** from flowing out of it easily, enabling customers to have a better user experience.

[0116] Referring to FIGS. **17** and **18**, in one embodiment, the height of the protrusion of the first connecting rib **310** from the first surface **111** is greater than or equal to 0.1 mm; the width of the first connecting rib **310** is greater than or equal to 1 mm. The first connecting rib **310** in this embodiment has good structural strength and high tensile resistance, which can better restrain the magnetic member **120** and increase the installation stability of the magnetic member **120**.

[0117] Referring to FIG. **15**, in a specific embodiment, the first connecting rib **310** is located at the middle position in the width direction of the mounting frame **110**. With such an arrangement, the stress on the mounting frame **110** can be effectively dispersed. This design can reduce the concentration of the force on the mounting frame **110**, lower the risk of damage to the mounting frame **110**, and extend the service life of the toy water ball **1000**.

[0118] As shown in FIGS. **14** to **16**, the water pocket **130** is connected to the first surface **111** of the shell **100** and covers the first connecting rib **310** and the second connecting rib **320** of the shell **100**.

[0119] Specifically, since the shell **100** shown in the above embodiment is adopted in this embodiment, when the toy water ball **1000** is in use, the mounting frame **110** of the shell **100** can withstand a greater pulling force without breaking, and the magnetic member **120** can be firmly

restricted within the mounting frame **110**. Even if it is pulled with a relatively large force during use, the magnetic member **120** will not fall out, which greatly improves the safety of the product. [0120] It should be understood that the above embodiments are only used to illustrate the technical solutions of the present application, rather than to limit them. For those skilled in the art, the technical solutions described in the above embodiments can be modified, or intermediate parts thereof can be modified. Technical features are replaced by equivalents; and all these modifications and replacements should belong to the scope of protection of the appended claims of the present application.

## Claims

1. A toy water ball, comprising: at least two shells that are enclosable to form a water storage cavity, each of the shells comprising: a mounting frame, a magnetic member and a water pocket, the water pocket being connected to the mounting frame, the magnetic member being sealed in the mounting frame; wherein when the shells are enclosed to form the water storage cavity, magnetic members at corresponding positions on mounting frames of adjacent shells attract each other, so that adjacent mounting frames abut each other; the mounting frame comprises a first surface and a second surface arranged oppositely arranged; the magnetic member is not exposed on the second surface; a first connecting rib and a second connecting rib, that cross over a side of the magnetic member close to the first surface to connect the mounting frame surrounding the magnetic member, are provided on the first surface; and the first connecting rib and the second connecting rib are arranged crosswise, and a cross position corresponds to the magnetic member.
2. The toy water ball according to claim 1, wherein both the mounting frame and the water pocket are made of flexible materials.
3. The toy water ball according to claim 2, wherein the mounting frame is further provided with a gap groove, the gap groove is arranged on a periphery of the magnetic member, and the water pocket is provided with an embedded part embedded in the gap groove.
4. The toy water ball according to claim 3, wherein the gap groove is located at a position close to an end of the magnetic member, and two ends of the gap groove extend from a direction parallel to the end of the magnetic member and to turn to a direction of a side surface of the magnetic member.
5. The toy water ball according to claim 1, wherein the mounting frame is provided with an accommodation groove for accommodating the magnetic member, and the accommodation groove has a notch and a groove bottom; the mounting frame further includes a limiting baffle, and the limiting baffle is arranged at the notch of the accommodation groove, and is opposite to the groove bottom of the accommodation groove.
6. The toy water ball according to claim 5, wherein in a length direction of the accommodation groove, the limiting baffle is arranged at a middle position of the notch of the accommodation groove, so that a middle position of the magnetic member is covered by the limiting baffle, and two ends of the magnetic member are exposed from the notch of the accommodation groove.
7. The toy water ball according to claim 3, wherein the gap groove comprises a first groove wall and a second groove wall opposite to the first groove wall, the mounting frame is further provided with a connection rib, and the connection rib connects the first groove wall and the second groove wall.
8. The toy water ball according to claim 3, wherein four corner positions of the magnetic member are all provided with gap grooves, and each gap groove is “L” shaped.
9. The toy water ball according to claim 1, wherein an inner ring of the mounting frame is provided with a warped edge, when the adjacent mounting frames abut each other, corresponding warped edges of the adjacent mounting frames fit each other under pressure.
10. The toy water ball according to claim 1, further comprising a light-emitting assembly, wherein

the light-emitting assembly is arranged inside the shells, and the light-emitting assembly comprises a lamp bead, a controller, a vibration sensor, and a battery for powering the lamp bead, the controller and the vibration sensor; the controller controls the lamp bead to work when the vibration sensor detects vibration.

**11.** The toy water ball according to claim 1, wherein an edge of the magnetic member is provided with a round chamfer.

**12.** The toy water ball according to claim 5, wherein an adhesive layer is provided between the magnetic member and the accommodation groove.

**13.** The toy water ball according to claim 1, wherein when the water pocket is connected to the mounting frame, a covering layer is formed on the mounting frame, and a total thickness of the covering layer and the mounting frame is greater than or equal to 2.3 mm.

**14.** The toy water ball according to claim 1, wherein the first connecting rib, the second connecting rib and the mounting frame are integrally formed; and the magnetic member is covered between the second surface and a combined structure of the first connecting rib and the second connecting rib which are arranged crosswise.

**15.** The toy water ball according to claim 14, wherein among the first connecting rib and the second connecting rib, at least the first connecting rib protrudes from the first surface.

**16.** The toy water ball according to claim 15, wherein the mounting frame is annular, and the first connecting rib extends along a circumferential direction of the annular mounting frame on the first surface.

**17.** The toy water ball according to claim 16, wherein there are multiple magnetic members; the multiple magnetic members are arranged at intervals within the mounting frame; each magnetic member is provided with a corresponding first connecting rib and a corresponding second connecting rib; adjacent first connecting ribs corresponding to adjacent magnetic members are connected to each other, forming an annular connecting rib; or, there are multiple magnetic members; the multiple magnetic members are arranged at intervals within the mounting frame; and each magnetic member is provided with a corresponding first connecting rib and a corresponding second connecting rib; adjacent first connecting ribs corresponding to adjacent magnetic members are not connected to each other.

**18.** The toy water ball according to claim 14, wherein both the first connecting rib and the second connecting rib are flush with the first surface.

**19.** The toy water ball according to claim 15, wherein a height of a protrusion of the first connecting rib from the first surface is greater than or equal to 0.1 mm; and a width of the first connecting rib is greater than or equal to 1 mm.

**20.** The toy water ball according to claim 19, wherein the first connecting rib is located at a middle position in a width direction of the mounting frame.

**21.** The toy water ball according to claim 1, wherein the water pocket is connected to the first surface of the mounting frame and covers the first connecting rib and the second connecting rib of the mounting frame.

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