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Inventor(s)	Yan; Yu

Side structure of playpen framework, playpen framework, playpen, and folding method of the playpen

Abstract

A side structure of a playpen framework, the playpen framework, a playpen, and a folding method of the playpen are provided. The side structure includes two vertical support rods, two horizontals support rods, two diagonal support rods, and two first connecting rods. First ends of the horizontal support rods are respectively detachably connected to upper ends of the vertical support rods. Second ends of the horizontal support rods are rotatably connected to each other. First ends of the diagonal support rods are respectively rotatable relative to lower ends of the vertical support rods. Second ends of the diagonal support rods are rotatably connected to a connecting position of the horizontal support rods. First ends of the first connecting rods are respectively rotatably connected to the diagonal support rods, and second ends of the first connecting rods are rotatably connected to each other.

Inventors: **Yan; Yu (Hunan, CN)**

Applicant: **Yan; Yu** (Hunan, CN)

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Primary Examiner: Sun; George

Attorney, Agent or Firm: HOWARD M COHN and Associates, LLC

Background/Summary

TECHNICAL FIELD

(1) The present disclosure relates to a technical field of fences, and in particular to a side structure of a playpen framework, the playpen framework, a playpen, and a folding method of the playpen.

BACKGROUND

(2) A conventional playpen is generally built by boards. During transportation, the conventional playpen needs to be disassembled into the boards separated from each other. A common consumer has to assemble the boards by himself/herself after purchase. When the conventional playpen needs to be stored, similar disassembly steps are performed. Both assembly and storage of the conventional playpen are quite cumbersome. In addition, such a simple splicing structure of the conventional playpen is generally not stable enough to withstand impact of children's active shaking, and there is a risk of collapse or separation of the conventional playpen.

SUMMARY

(3) The present disclosure provides a side structure of a playpen framework, the playpen framework, a playpen, and a folding method of the playpen to solve a problems of The invention is used to solve the problems of inconvenient splicing and storage of playpens in the prior art.

(4) In a first aspect, the present disclosure provides the side structure of the playpen framework. The side structure comprises two vertical support rods, two horizontal support rods, two diagonal support rods, and two first connecting rods. The two vertical support rods are disposed in a vertical direction and disposed at intervals in a horizontal direction. The two horizontal support rods are disposed in the horizontal direction. First ends of the two horizontal support rods are respectively detachably connected to upper ends of the two vertical support rods. Second ends of the two horizontal support rods are rotatably connected to each other. When the two horizontal support rods are respectively detached from the upper ends of the two vertical support rods, the two horizontal

support rods move toward each other through rotating downward.
(5) First ends of the two diagonal support rods are respectively rotatable relative to lower ends of the two vertical support rods. Second ends of the two diagonal support rods are rotatably connected to a connecting position of the two horizontal support rods. The two diagonal support rods are allowed to move toward each other by rotating upward relative to the lower ends of the two vertical support rods.
(6) First ends of the two first connecting rods are respectively rotatably connected to the two diagonal support rods, and second ends of the two first connecting rods are rotatably connected to each other.
(7) In some embodiments, the side structure further comprises two second connecting rods. First ends of the two second connecting rods are respectively rotatably connected to the two horizontal support rods. Second ends of the two second connecting rods are rotatably connected to a connecting position of the two first connecting rods.
(8) In some embodiments, when the side structure is unfolded, the two first connecting rods, and the two horizontal support rods are disposed in parallel.
(9) In some embodiments, the two horizontal support rods define two central points, and the two diagonal support rods define two central points.
(10) In a left-right direction of the side structure, a distance between the first ends of the two first connecting rods is less than a distance between the two central points of the two diagonal support rods, and a distance between the first ends of the two second connecting rods is less than a distance between the two central points of the two horizontal support rods.
(11) In some embodiments, the side structure further comprises an intermediate connecting piece connected to the second ends of the two horizontal support rods. The two horizontal support rods are rotatably connected relative to the intermediate connecting piece. The second ends of the two diagonal support rods are rotatably connected to the intermediate connecting piece.
(12) In a second aspect, the present disclosure provides the playpen framework. The playpen framework comprises a plurality of side structures mentioned above. The plurality of side structures are connected end to end, and each two adjacent side structures share one of the vertical support rods.
(13) In some embodiments, the playpen framework further comprises upper corner connectors. Each of the upper corner connectors comprises a fixing piece and a locking piece detachably connected to the fixing piece. Each fixing piece is slidably sleeved on a corresponding vertical support rod. Each of the horizontal support rods is detachably connected to an upper end of a corresponding vertical support rod through a corresponding fixing piece. Each locking piece is configured to fix a corresponding fixing piece and a corresponding vertical support rod when the playpen framework is unfolded.
(14) In some embodiments, each fixing piece comprises a main body portion. The main body portion defines a mounting hole and a positioning hole defined on an outer wall thereof, and the positioning hole thereof communicates the main body portion thereof and an outside.
(15) Each of the vertical support rods is slidably disposed in a corresponding mounting hole. An upper end of each of the vertical support rods defines an accommodating cavity with an opening extending upward. Each of the vertical support rods defines a fixing hole communicated with the accommodating cavity thereof and the outside. Each locking piece is placed into a corresponding accommodating cavity from the opening of the corresponding accommodating cavity. Each locking piece passes through a corresponding fixing hole and a corresponding positioning hole to relatively fix the corresponding fixing piece and the corresponding vertical support rod.
(16) In some embodiments, each locking piece comprises a locking portion and a first limiting portion. The locking portion thereof is configured to insert into the positioning hole to fix the corresponding fixing piece relative to the corresponding vertical support rod. The first limiting portion thereof is connected to one side of the locking portion thereof and abuts against an inner

wall surface of the corresponding vertical support rod.
(17) In some embodiments, each locking piece further comprises an elastic portion. A first end of the elastic portion thereof is connected to the first limiting portion thereof. A second end of the elastic portion thereof is fixedly connected to the corresponding vertical support rod. The elastic portion thereof is configured to drive the first limiting portion thereof to abut against the inner wall surface of the corresponding vertical support rod.
(18) In some embodiments, each fixing piece further comprises a positioning portion connected to an outer wall surface of the main body portion thereof, and the positioning portion thereof defines a fixing groove communicated with the positioning hole thereof. When the playpen framework is unfolded, each locking piece is at least partially inserted into a corresponding fixing groove. The playpen framework further comprises unlocking pieces. Each of the unlocking pieces is at least partially mounted in a corresponding fixing groove and is movable in an axial direction relative to a corresponding positioning portion. Each of the unlocking pieces is capable of driving a portion of a corresponding locking piece located in the corresponding fixing groove to return to a corresponding accommodating cavity.
(19) In some embodiments, hooks are disposed on an outer surface of each of the unlocking pieces. Each positioning portion defines sliding grooves extending in the axial direction. The hooks of each of the unlocking pieces are slidable in the sliding grooves of each positioning portion. Each of the sliding grooves comprises a second limiting portion and a third limiting portion spaced apart from the second limiting portion in a sliding direction. Each second limiting portion is configured to prevent a corresponding unlocking piece from being separated from a corresponding positioning portion. When the hooks of each of the unlocking pieces abut against a corresponding third limiting portion, each of the unlocking pieces drives the portion of the corresponding locking piece to return to the corresponding accommodating cavity, and each of the unlocking pieces is located in a corresponding positioning hole.
(20) In some embodiments, each of the unlocking pieces further comprises a base portion and a driving portion. Each base portion comprises an end cover and a cylinder. The end cover thereof is connected to one end of the cylinder thereof to form an accommodating groove with an opening on one side of each base portion. Each driving portion is connected to a groove bottom wall of a corresponding accommodating groove. Each driving portion at least partially extends out of the opening of the corresponding accommodating groove to drive a corresponding locking piece. A gap is formed between an inner wall of each cylinder and a corresponding driving portion. The hooks of each of the unlocking pieces are disposed on an outer wall of each cylinder.
(21) In some embodiments, the playpen framework further comprises plugs. Each of the plugs is detachably mounted on the upper end of each of the vertical support rods to block the opening of each accommodating cavity.
(22) In some embodiments, each fixing piece comprises a first mounting portion and a second mounting portion connected to the first mounting portion. The first mounting portion thereof and the second mounting portion thereof are disposed at an included angle. A connecting position of the first mounting portion and the second mounting portion of each fixing piece defines the first mounting hole. A first end of one of the two horizontal support rods of an adjacent side structure is rotatably connected to the first mounting portion of each of the side structures. A first end of one of the two horizontal support rods of another adjacent side structure is rotatably connected to the second mounting portion of each of the side structures.
(23) In some embodiments, the plurality of side structures are four side structures, and the four side structures are connected to form a rectangular structure. Four upper corner connectors are provided. An extending direction of the first mounting portion of each fixing piece is perpendicular to an extending direction of the second mounting portion of each fixing piece.
(24) In some embodiments, the playpen framework further comprises lower corner connectors. Each of the lower corner connectors comprises a first assembling portion and a second assembling

portion connected to the first assembling portion, and the first assembling portion thereof and the second assembling portion thereof are disposed at an included angle. An assembling hole is defined in a connecting position of the first assembling portion thereof and the second assembling portion thereof. A lower end of each of the vertical support rods is inserted into a corresponding assembling hole. A first end of one of the diagonal support rods of an adjacent side structure is rotatably connected to the first assembling portion of each of the side structures. A first end of one of the diagonal support rods of another adjacent side structure is rotatably connected to the second assembling portion of each of the side structures.

(25) In some embodiments, each of the diagonal support rods comprises a main rod and an assembling piece. A first end of each main rod is connected to each assembling piece, and a second end of each main rod is rotatably connected to the connecting position of the two horizontal support rods of each of the side structures. The first end of each main rod is farther from the two horizontal support rods of each of the side structures than the second end of each main rod. One end of each assembling piece away from each main rod defines an arc surface.

(26) In a third aspect, the present disclosure provides the playpen. The playpen comprises the playpen framework mentioned above and a fabric cover covering side portions and a bottom portion of the playpen framework.

(27) In a fourth aspect, the present disclosure provides the folding method of the playpen mentioned above. The folding method comprises unlocking each fixing piece and the corresponding vertical support rod by each of the unlocking pieces, making each fixing piece to slide downward along the corresponding vertical support rod; and rotating the horizontal support rods respectively detached from the upper ends of the vertical support rods downward, making the diagonal support rods to rotate upward relative to the lower ends of the vertical support rods, making the first connecting rods to rotate upward relative to the diagonal support rod, and making the second connecting rods to rotate upward relative to the horizontal support rods.

(28) The playpen framework of the present disclosure has an unfolded state and a folded state for a user to use and storage. In the unfolded state, the vertical support rods provide vertical support and cooperate with the horizontal support rods to define a height and a shape of the playpen framework. The diagonal support rods cooperate with the vertical support rods and the horizontal support rods to form triangle structures to ensure connection stability of the vertical support rods and the horizontal support rods. The two first connecting rods cooperate with the two diagonal support rods of each of the side structures to form a triangle structure, which further improves stability of the two diagonal support rods of each of the side structures and disperses load borne of the two diagonal support rods of each of the side structures, thereby improving bearing capacity of the playpen framework. In the folded state, the two horizontal support rods of each of the side structures move toward each other by rotating downward, and the two diagonal support rods of each of the side structures move closer to each other by rotating upward. The first connecting rods rotate accordingly to adapt to a folding action of the diagonal support rods. In this way, the playpen framework is folded into a small form that is easy to carry and store.

Description

BRIEF DESCRIPTION OF DRAWINGS

(1) In order to clearly describe technical solutions in the embodiments of the present disclosure, the following will briefly introduce the drawings that need to be used in the description of the embodiments or the prior art. Apparently, the drawings in the following description are merely some of the embodiments of the present disclosure, and those skilled in the art are able to obtain other drawings according to the drawings without contributing any inventive labor.

(2) FIG. **1** is a schematic diagram of a playpen framework shown in an unfolded state according to

one embodiment of the present disclosure.
(3) FIG. **2** is a schematic diagram of the playpen framework shown in a partially folded state according to one embodiment of the present disclosure.
(4) FIG. **3** is a schematic diagram of the playpen framework shown in a folded state according to one embodiment of the present disclosure.
(5) FIG. **4** is a side schematic diagram of the playpen framework according to one embodiment of the present disclosure.
(6) FIG. **5** is another side schematic diagram of the playpen framework according to one embodiment of the present disclosure.
(7) FIG. **6** is a cross-sectional schematic diagram of the playpen framework taken along the line A-A shown in FIIG. **5**.
(8) FIG. **7** is an enlarged schematic diagram of area B shown in FIIG. **6**.
(9) FIG. **8** is a schematic diagram of an intermediate connecting piece according to one embodiment of the present disclosure.
(10) FIG. **9** is a schematic diagram of a fixing piece according to one embodiment of the present disclosure.
(11) FIG. **10** is a schematic diagram of an unlocking piece according to one embodiment of the present disclosure.
(12) FIG. **11** is a schematic diagram of a lower corner connector according to one embodiment of the present disclosure.
(13) FIG. **12** is a schematic diagram of a diagonal support rod according to one embodiment of the present disclosure.
(14) In the drawings: **10**-playpen framework; **100**-horizontal support rod; **200**-vertical support rod; **200***a*-accommodating cavity; **200***b*-fixing hole; **300**-diagonal support rod; **310**-main rod; **320**-assembling piece; **410**-first connecting rod; **420**-second connecting rod; **500**-intermediate connecting piece; **510**-connecting hole; **600**-upper corner connector; **610**-fixing piece; **611**-main body portion; **611***a*-mounting hole; **611***b*-positioning hole; **6111**-first mounting portion; **6112**-second mounting portion; **6113**-mounting groove; **612**-positioning portion; **612***a*-fixing groove; **612***b*-sliding groove; **613**-second limiting portion; **614**-third limiting portion; **620**-locking piece; **621**-locking portion; **622**-first limiting portion; **700**-unlocking piece; **710**-base portion; **711**-end cover; **712**-cylinder; **720**-driving portion; **730**-hook; **800**-plug; **900**-lower corner connector; **910**-first assembling portion; **920**-second assembling portion; **900***a*-assembling hole; **900***b*-assembling groove.
(15) Realization of purposes, functional features, and advantages of the present disclosure is further explained in conjunction with embodiments and with reference to the accompanying drawings.
DETAILED DESCRIPTION
(16) In order to make the purpose, technical solutions, and advantages of the present disclosure clear, the following section will further describe the embodiments of the present disclosure in detail with reference to the accompanying drawings.
(17) When the following description refers to the drawings, the same numbers in different drawings refer to the same or similar elements unless otherwise indicated. The implementations described in the following exemplary embodiments do not represent all implementations consistent with the present disclosure. Rather, they are merely examples of apparatus and methods consistent with certain aspects of the present disclosure, as detailed in the appended claims.
(18) It should be understood in the description of the present disclosure that terms such as “first” and “second” are only used for the purpose of description, rather than being understood to indicate or imply relative importance or hint the number of indicated technical features. Thus, the feature limited by “first” and “second” can explicitly or implicitly include at least one feature. Unless otherwise indicated, the term “a plurality of” means two or more. The term “and/or” depicts relationship between associated objects and there are three relationships thereon. For example, A

and/or B may indicate A exists alone, A and B exist at the same time, and B exists alone. The character "/" generally indicates that the associated object is alternative. The terms "first", "second", "third", etc. in the present disclosure are used only to distinguish similar objects and do not imply a specific ordering of objects.

(19) Unless otherwise defined, all technical and scientific terms used herein have the same meaning as commonly understood by those skilled in the art of the present disclosure. The terminology used in the specification is for the purpose of describing specific embodiments only and is not intended to limit the present disclosure. As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items.

(20) The present disclosure provides a playpen. The playpen comprises a playpen framework and a fabric cover. The fabric cover covers side portions and a bottom portion of the playpen framework **10**. The playpen framework **10** is a basic structure of the playpen and is mainly configured to provide support. The playpen framework **10** may be made of a strong and durable material (such as metal or hard plastic). The fabric cover may be made of cotton cloth, chemical fiber gauze, polyethylene cloth (PE cloth) etc. The fabric cover covers the playpen framework **10** to define an enclosed space served as a baby play area or a pet activity area. It is understood that the fabric cover and the playpen framework **10** are detachable, and a user is able to replace or wash the fabric cover and the playpen framework **10** as needed to keep the playpen clean and hygienic.

(21) As shown in FIG. **1**, the playpen framework **10** comprises four side structures connected end to end. The four side structures are connected to form a rectangular structure. Of course, in other embodiments, a quantity of the side structures may be three, five, six, etc. Each of the side structures comprises two vertical support rods **200**, two horizontal support rods **100**, two diagonal support rods **300**, and two first connecting rods **410**. Each two adjacent side structures share one of the vertical support rods **200**. For instance, four vertical support rods are provided. The four vertical support rods **200** are disposed at intervals along an outer circumference of the playpen framework **10**.

(22) As shown in FIG. **1**, the two horizontal support rods **100** of each of the side structures are disposed in a horizontal direction. First ends of the two horizontal support rods **100** of each of the side structures are respectively detachably connected to upper ends of the two vertical support rods **200** of each of the side structures. Second ends of the two horizontal support rods **100** are rotatably connected to each other. When the two horizontal support rods **100** are respectively detached from the upper ends of the two vertical support rods **200**, the two horizontal support rods **100** move toward each other through rotating downward. First ends of the two diagonal support rods **300** of each of the side structures are respectively rotatable relative to the lower ends of the two vertical support rods **200**. Second ends of the two diagonal support rods **300** of each of the side structures are rotatably connected to a connecting position of the two horizontal support rods **100** of each of the side structures. The two diagonal support rods **300** of each of the side structures are allowed to move toward each other by rotating upward relative to the lower ends of the two vertical support rods **200**. First ends of the two first connecting rods **410** are respectively rotatably connected to the two diagonal support rods **300**, and second ends of the two first connecting rods **410** are rotatably connected to each other.

(23) As shown in FIGS. **1**-**3**, the playpen framework **10** of the present disclosure has an unfolded state and a folded state for a user to use and storage. As shown in FIG. **1**, in the unfolded state, the vertical support rods **200** provide vertical support and cooperate with the horizontal support rods **100** to define a height and a shape of the playpen framework **10**. The diagonal support rods **300** cooperate with the vertical support rods **200** and the horizontal support rods **100** to form triangle structures to ensure connection stability of the vertical support rods **200** and the horizontal support rods **100**. The two first connecting rods **410** cooperate with the two diagonal support rods **300** of each of the side structures to form a triangle structure, which further improves stability of the two diagonal support rods **300** of each of the side structures and disperses load borne of the two

diagonal support rods **300** of each of the side structures, thereby improving bearing capacity of the playpen framework **10**. As shown in FIG. **3**, in the folded state, the two horizontal support rods **100** of each of the side structures move toward each other by rotating downward, and the two diagonal support rods **300** of each of the side structures move closer to each other by rotating upward. The first connecting rods **410** rotate accordingly to adapt to a folding action of the diagonal support rods **300**. In this way, the playpen framework **10** is folded into a small form that is easy to carry and store.

(24) Furthermore, the fabric cover covers an inner side of the playpen frame **10**, with an open upper end and a closed lower end. Specifically, the fabric cover is a rectangular structure matched with the playpen frame **10**. Sleeves are vertically disposed on corners of the fabric cover, and the sleeves are respectively sleeved on outer peripheries of the vertical support rods **200** to achieve the connection between the fabric cover and the vertical support rods **200**. A connecting portion is disposed on an upper portion of the fabric cover, and the connecting portion extends from the upper portion of the fabric cover. Zippers are respectively disposed on the connecting portion and the fabric cover match each other. The upper portion of the fabric cover is fixed to the horizontal support rods **100** by the connecting portion and the zippers.

(25) As shown in FIG. **1**, in some embodiments, each of the side structures further comprises two second connecting rods **420**. First ends of the two second connecting rods **420** thereof are respectively rotatably connected to the two horizontal support rods **100** thereof. Second ends of the two second connecting rods **420** thereof are rotatably connected to a connecting position of the two first connecting rods **410** thereof. In this way, the two second connecting rods **420** thereof cooperate with the two horizontal support rods **100** to form a triangle structure, thereby improving the stability of the two first connecting rods **410** thereof in the unfolded state. The second connecting rods **420** thereof further disperses the load borne by the playpen framework **10**, thereby enhancing the stability of the playpen.

(26) As shown in FIG. **1**, furthermore, when each of the side structure is unfolded, the two first connecting rods **410** thereof and the two horizontal support rods **100** thereof are disposed in parallel. The two first connecting rods **410** and the two horizontal support rods **100** of each of the side structures that are disposed in parallel form a stable frame mechanically, which more effectively disperses and resists external forces, thereby reducing a risk of structural deformation and damage of each of the side structures. In contrast, if the two first connecting rods **410** and the two horizontal support rods **100** of each of the side structures are not disposed in parallel, unnecessary torque or shear force may be generated between them, which easily leads to structural instability. Moreover, by arranging the two first connecting rods **410** and the two horizontal support rods **100** of each of the side structures disposed in parallel is conducive to more evenly distributing the load borne by the playpen framework **10**. When the load borne is evenly distributed, the stress borne by each of components of each of the side structures is reduced, thereby improving the load-bearing capacity of the playpen framework **10**.

(27) In some embodiments, as shown in FIG. **4**, each of the side structures of the playpen framework **10** defines a central axis Z extending in the vertical direction. The two horizontal support rods **100** define two central points O, and the two diagonal support rods **300** define two central points P. The two horizontal support rods **100**, the two diagonal support rods **300**, the two vertical support rods **200**, the two first connecting rods **410**, and the two second connecting rods **420** of each of the side structures are symmetrically disposed relative to the central axis Z. In this way, it is ensured that the playpen framework **10** is uniformly supported in the horizontal direction and the vertical direction and is stable in the horizontal direction and the vertical direction. A symmetrical structure of each of the side structures effectively resists influence of various external forces and environmental factors, and maintains the shape and stability of the playpen framework **10**. In addition, the symmetrical structure of each of the side structures enables the playpen framework **10** to distribute the load more evenly when subjected to the external forces, thereby

reducing the stress borne by each of the components due to the symmetrical structure of each of the side structures and improving the bearing capacity of the playpen framework **10**.

(28) In a left-right direction of each of the side structures, a distance h**1** between the first ends of the two first connecting rods **410** thereof is less than a distance h**2** between the two central points P of the two diagonal support rods **300** thereof, and a distance H**1** between the first ends of the two second connecting rods **420** thereof is less than a distance HE between the two central points O of the two horizontal support rods **100** thereof. The two first connecting rods **410** and the two second connecting rods **420** of each of the side structures are closer to the central axis Z of each of the side structures. That is, lengths of the two first connecting rods **410** and the two second connecting rods **420** of each of the side structures are relatively short, which not only reduces the amount of materials used and reduces manufacturing costs, but also reduces an overall weight of the playpen framework**10** and improves convenience of installation. The two first connecting rods **410** and the two second connecting rods **420** of each of the side structures are made more compact in each of the side structures, making the central axis Z of each of the side structures of the playpen framework **10** tighter, which enhances rigidity and stability of the joints of the two horizontal support rods **100** and the two oblique support rods **300** of each of the side structures, so that the playpen framework**10** is able to resist external loads and deformation, and the overall stability and safety of the playpen framework**10** are ensured.

(29) Furthermore, the two first connecting rods **410** of each of the side structures are connected to outer surfaces of the two diagonal support rods **300** of each of the side structures, and the two second connecting rods **420** of each of the side structures are connected to outer surfaces of the horizontal support rods **100** and outer surfaces of the two first connecting rods **410**.

(30) In some embodiments, as shown in FIGS. **1** and **8**, each of the side structures further comprises an intermediate connecting piece **500** connected to the second ends of the two horizontal support rods **100** thereof. The two horizontal support rods **100** of each of the side structures are rotatably connected relative to the intermediate connecting piece **500** of each of the side structures. The second ends of the two diagonal support rods **300** of each of the side structures are rotatably connected to the intermediate connecting piece **500** of each of the side structures. Each intermediate connecting piece **500** is a straight rod with a notch penetrating through a left side, a right side and a lower side of each intermediate connecting piece **500**. Four connecting holes **510** are sequentially disposed along a length direction of each intermediate connecting piece **500**, and the four connecting holes **510** thereof are configured to connect to the two horizontal support rods **100** and the two diagonal support rods **300** of each of the side structures. Specifically, the two horizontal support rods **100** of each of the side structures are inserted into each intermediate connecting piece **500** respectively from the left side and the right side of each intermediate connecting piece **500** and are respectively rotatably connected to two of the four connecting holes **510** located on an outer side. The upper ends of the two diagonal support rods **300** are inserted into each intermediate connecting piece **500** from the lower side of each intermediate connecting piece **500** from two directions and are rotatably connected to two of the four connecting holes **510** located in a middle portion of each intermediate connecting piece **500**.

(31) In some embodiments, as shown in FIGS. **1**-**3**, the playpen framework **10** further comprises upper corner connectors **600** and lower corner connectors **900**. Optionally, four upper corner connectors **600** and four lower corner connectors **900** are provided. Each two adjacent side structures are connected through a corresponding upper corner connector **600** and a corresponding lower corner connector **900**. The first ends of two of the horizontal support rods **100** of the two adjacent side structures share the one of the vertical support rods **200** through each of the upper corner connectors **600**. Each of the upper corner connectors **600** is sleeved on each of the vertical support rods **200** and is slidable relative to each of the vertical support rods **200** in a height direction. The two of the horizontal support rods **100** of the two adjacent side structures are rotatably connected through each of the upper corner connectors **600**, and each of the upper corner

connectors **600** slides on each of the vertical support rods **200** to achieve folding of the playpen framework **10**. Each of the lower corner connectors **900** is fixed to a lower end of each of the vertical support rods **200**, and the lower ends of two of the oblique support rods **300** of the two adjacent side structures share the one of the vertical support rods **200** through each of the lower corner connectors **900**, and the lower ends of two of the diagonal support rods **300** of the two adjacent side structures are rotatably connected to each of the lower corner connectors **900** to achieve folding of the playpen framework **10**.

(32) As shown in FIGS. **5-7**, each of the upper corner connectors **600** comprises a fixing piece **610** and a locking piece **620** detachably connected to the fixing piece **610**. Each fixing piece **610** is slidably sleeved on each of the vertical support rods. Each of the horizontal support rods **100** is detachably connected to an upper end of each of the vertical support rods through each fixing piece **610**. Each locking piece **620** is configured to fix each fixing piece **610** and each of the vertical support rods when the playpen framework **10** is unfolded. It is understood that each fixing piece **610** comprises a mounting hole **611***a*. Each of the vertical support rods **200** is relatively slidably disposed in each mounting hole **611***a*. Each locking piece **620** is a threaded fastener (such as a bolt, a screw, etc.). A bolt hole is defined in each fixing piece **610**, and each of the vertical support rods **200** and each fixing piece **610** are fastened together by each locking piece **620**. Each locking piece **620** may be a clamping structure disposed on each fixing piece **610**. Each of the vertical support rods **200** is clamped in each fixing piece **610**. However, the present disclosure does not limit a specific form of each fixing piece **610** and a specific form of each locking piece **620**, and each fixing piece **610** and each locking piece **620** may be an integrated structure or separated structures.

(33) In some embodiments, as shown in FIGS. **9**, each fixing piece **610** comprises a main body portion **611** and a positioning portion **612**. The main body portion **611** defines the mounting hole **611***a* and a positioning hole **611***b* defined on an outer wall thereof, and the positioning hole **611***b* thereof communicates the main body portion **611** thereof and an outside. Each of the vertical support rods **200** is slidably disposed in each mounting hole **611***a*. An upper end of each of the vertical support rods **200** defines an accommodating cavity **200***a* with an opening extending upward. Each of the vertical support rods **200** defines a fixing hole **200***b*, the fixing hole **200***b* thereof is configured to communicate with the accommodating cavity **200***a* thereof and the outside. Each locking piece **620** is placed into each accommodating cavity **200***a* from the opening of each accommodating cavity **200***a*. Each locking piece **620** passes through each fixing hole **200***b* and each positioning hole **611***b* to relatively fix each fixing piece **610** and each of the vertical support rods.

(34) Specifically, when the playpen framework **10** is unfolded, each fixing piece **610** is slid upward along each of the vertical support rods **200**, and when each fixing piece **610** slides to a desired position, each locking piece **620** is placed into each accommodating cavity **200***a* from the opening of each accommodating cavity **200***a* and each locking piece **620** passes through each fixing hole **200***b*, each mounting hole **611***a*, and each positioning hole **611***b* to fix each fixing piece **610** relative to each of the vertical support rods **200**. In the process, each locking piece **620** is completely accommodated in each accommodating cavity **200***a*, realizing a concealed installation of each locking piece **620**. When the playpen framework **10** needs to be folded, a portion of each locking piece **620** is returned to each accommodating cavity **200***a*, and each fixing piece **610** is then allowed to slide downward along each of the vertical support rods **200**.

(35) In some embodiments, each locking piece **620** comprises a locking portion **621** and a first limiting portion **622**. Each locking portion **621** is configured to insert into each positioning hole **611***b* to fix each fixing piece **610** relative to each of the vertical support rods **200**. Each first limiting portion **622** is connected to one side of each locking portion **621** and abuts against an inner wall surface of each of the vertical support rods **200**. A shape and a size of each locking portion **621** are matched with each positioning hole **611***b* and each fixing hole **200***b* to ensure that each locking portion **621** is smoothly inserted into and fixed in each fixing hole **200***b* and each positioning hole

611*b*. Each first limiting portion **622** abuts against the inner wall surface of each of the vertical support rods **200**, which prevents each locking piece **620** from excessively moving or falling out in each positioning hole **611***b*, thereby enhancing a fixing effect of each locking piece **620** on each fixing piece **610** and each of the vertical support rods **200**. Each first limiting portion **622** may be an annular protrusion disposed around each locking portion **621**, or each first limiting portion **622** may be a plurality of protrusions disposed at intervals along a circumference of each locking portion **621**, which is not limited thereto.

(36) In some embodiments, each locking piece **620** further comprises an elastic portion (not shown in the drawings). In each locking piece **620**, a first end of the elastic portion thereof is connected to the first limiting portion **622** thereof, a second end of the elastic portion thereof is fixedly connected to each of the vertical support rods **200**. The elastic portion thereof is configured to provide elastic force and drive the first limiting portion **622** thereof to abut against the inner wall surface of each of the vertical support rods **200**. A connection method between each elastic portion and each of the vertical support rods **200** comprises but is not limited to one or more forms such as bonding, welding, clamping, screwing, etc. Of course, in some embodiments, each locking piece **620** may not comprise the elastic portion, and each locking portion **621** is connected to each fixing hole **200***b* and/or each positioning hole **611***b* through interference fit; or each locking piece **620** and each of the vertical support rods **200** are relatively fixed by bonding the limiting portion thereof with a cavity wall of each accommodating cavity **200***a*.

(37) It should be noted that the locking piece **620** may be an integral structure, and the locking portion **621** thereof, the first limiting portion **622** thereof, and the elastic portion thereof are integrally molded. For instance, each elastic portion may be an elastic arm, an elastic buckle, etc. Of course, each locking piece **620** may be separated structures composed of two components, where a first component thereof is molded with the locking portion **621** thereof and the first limiting portion **622** thereof, and a second component thereof forms the elastic portion thereof. Specifically, the second component may be a spring, an elastic sheet, etc.

(38) In order to facilitate each locking piece **620** to withdraw from each positioning hole **611***b*, so as to unlock each fixing piece **610** and each of the vertical support rods **200**, as shown in FIG. **7**, the playpen framework **10** further comprises unlocking pieces **700**. In order to facilitate mounting of each of the unlocking pieces **700**, each fixing piece **610** further comprises a positioning portion **612** connected to an outer wall surface of the main body portion **611** thereof, and the positioning portion **612** thereof defines a fixing groove **612***a* communicated with the positioning hole **611***b* thereof. When the playpen framework **10** is unfolded, each locking piece **620** is at least partially inserted into each fixing groove **612***a*. Each of the unlocking pieces **700** is at least partially mounted in each fixing groove **612***a* and is movable in an axial direction relative to each positioning portion **612**. Each of the unlocking pieces **700** is capable of driving a portion of each locking piece **620** located in each fixing groove **612***a* to return to each accommodating cavity **200***a*. When it is necessary to unlock the playpen framework, the user is able to move each of the unlocking pieces **700** by pressing, so that each of the unlocking pieces **700** contacts each locking piece **620** and applies a driving force to overcome a friction with the inner wall of each of the vertical support rods **200** or the elastic force of each elastic portion, so that the portion of each locking piece **620** is returned into each accommodating cavity **200***a*.

(39) In some embodiments, as shown in FIG. **10**, hooks **730** are disposed on an outer surface of each of the unlocking pieces **700**. Each positioning portion **612** defines sliding grooves **612***b* extending in the axial direction. Each of the hooks **730** is slidable in each of the sliding grooves **612***b*. Each of the sliding grooves **612***b* comprises a second limiting portion **613** and a third limiting portion **614** spaced apart from the second limiting portion **613** in a sliding direction. When unlocking, the user is able to press each of the unlocking pieces **700** to make each of the unlocking pieces **700** slide along each of the sliding grooves **612***b*. During a sliding process, each of the hooks **730** contacts a groove wall of each of the sliding grooves **612***b* and is guided by each of the sliding

grooves **612***b* to a certain extent. When each of the hooks **730** abuts against each third limiting portion **614**, each of the unlocking pieces **700** drives the portion of each locking piece **620** to return to each accommodating cavity **200***a* (i.e., the first limiting portion thereof do not abut against the inner wall of each of the vertical support rods). Moreover, each of the unlocking pieces **700** is located in each positioning hole **611***b*. At this time, unlocking of the playpen framework **10** is achieved, and each of the unlocking pieces **700** is prevented from inserting into each accommodating cavity **200***a*, thereby preventing each of the unlocking pieces **700** from interfering with each of the vertical support rods **200**. When each locking piece **620** is located in each positioning hole **611***b*, each locking portion **621** drives each of the unlocking pieces **700** to move in an opposite direction. Each of the sliding grooves **612***b* comprises the second limiting portion **613**. When each of the unlocking pieces **700** is driven by each locking piece **620**, each of the hooks **730** abuts against each second limiting portion **613**, thereby preventing each of the unlocking pieces **700** from being separated from each positioning portion **612**.

(40) In some embodiments, as shown in FIG. **10**. Each of the unlocking pieces **700** further comprises a base portion **710** and a driving portion **720**. Each base portion **710** comprises an end cover **711** and a cylinder **712**. The end cover **711** thereof is connected to one end of the cylinder **712** thereof to form an accommodating groove with an opening on one side of each base portion. Each driving portion **720** is connected to a groove bottom wall of each accommodating groove. Each driving portion **720** at least partially extends out of the opening of each accommodating groove to drive each locking piece **620**. A gap is formed between an inner wall of each cylinder **712** and each driving portion **720**. The hooks **730** of each unlocking piece are disposed on an outer wall of each cylinder **712**. The gap between the inner wall of each cylinder **712** and each driving portion **720** makes each cylinder **712** have a certain deformation ability. In this way, each cylinder **712** is able to compress each locking piece **620** in each fixing groove **612***a*, and the outer wall surface of each cylinder **712** abuts against the groove wall of each fixing groove **612***a*. The sliding and limiting the unlocking pieces **700** are achieved by the hooks **730** thereof and the sliding grooves **612***b*, which improve the stability of movement of the unlocking pieces **700** and protect the unlocking pieces **700**.

(41) When unlocking, each driving portion **720** contacts each locking piece **620** when each of the unlocking pieces **700** is pressed to slide to an appropriate position. By applying a driving force, each driving portion **720** overcomes the friction between each locking piece **620** and the inner wall of each of the vertical support rods **200** or each driving portion **720** overcomes the elastic force of each elastic portion, so that the portion of each locking piece **620** returns into each accommodating cavity **200***a*. As each locking piece **620** returns, an unlocking function is realized.

(42) In some embodiments, as shown in FIG. **7**, the playpen framework **10** further comprises plugs **800**. Each of the plugs **800** is detachably mounted on the upper end of each of the vertical support rods **200** to block the opening of each accommodating cavity **200***a*. Each of the plugs **800** is of a columnar structure, and limiting holes are respectively defined in two sides of each of the plugs **800**. Elastic snappers are respectively disposed in the limiting holes. Each of the plugs **800** is connected to the upper end of each of the vertical support rods **200** by abutting against the inner wall of each of the vertical support rods **200** through the elastic snappers thereof.

(43) In some embodiments, as shown in FIG. **9**, each fixing piece **610** comprises a first mounting portion **6111** and a second mounting portion **6112** connected to the first mounting portion **6111**. The first mounting portion **6111** thereof and the second mounting portion **6112** thereof are disposed at an included angle. A connecting position of the first mounting portion **6111** and the second mounting portion **6112** of each fixing piece **610** defines the first mounting hole **611***a*. The first mounting portion **6111** and the second mounting portion **6112** of each fixing piece **610** comprise mounting grooves **6113**. A first end of one of the two horizontal support rods **100** of an adjacent side structure is rotatably connected to the mounting groove of the first mounting portion **6111** of each of the side structures. A first end of one of the two horizontal support rods **100** of another

adjacent side structure is rotatably connected to the mounting groove **6113** of the second mounting portion **6112** of each of the side structures. Optionally, the playpen framework **10** comprises four side structures and four upper corner connectors **600**, and an extending direction of the first mounting portion **6111** is perpendicular to an extending direction of the second mounting portion **6112** of each fixing piece **610**.

(44) Each of the mounting grooves **6113** defines a first limit position and a second limit position. When each of the horizontal support rods **100** is in the first limit position, each of the horizontal support rods **100** is in a vertical state or a slightly inclined state. When each of the horizontal support rods **100** is switched from the first limit position to the second limit position, each of the horizontal support rods **100** is rotated from the vertical state or the slightly inclined state to a horizontal state. When the playpen framework **10** is folded, two adjacent horizontal support rods **100** of each two adjacent side structures are respectively rotated toward the one of the vertical support rods **200** and are in the vertical state or the slightly inclined state. When the playpen framework **10** is unfolded, the two adjacent horizontal support rods **100** of each two adjacent side structures are respectively rotated away from the one of the vertical support rods **200** and are in the horizontal state.

(45) In some embodiments, as shown in FIG. **11**, the playpen framework **10** further comprises lower corner connectors **900**. Each of the lower corner connectors **900** comprises a first assembling portion **910** and a second assembling portion **920** connected to the first assembling portion **910**, and the first assembling portion **910** thereof and the second assembling portion **920** thereof are disposed at an included angle. An assembling hole **900***b* is defined in a connecting position of the first assembling portion **910** thereof and the second assembling portion **920** thereof. Each first assembling portion **910** and each second assembling portion **920** comprise assembling grooves **900***b*. A lower end of each of the vertical support rods **200** is inserted into each assembling hole **900***b*. A first end of one of the diagonal support rods **300** of an adjacent side structure is rotatably connected to the assembling groove of the first assembling portion **910** of each of the side structures. A first end of one of the diagonal support rods **300** of another adjacent side structure is rotatably connected to the assembling groove of the second assembling portion **920** of each of the side structures. Optionally, an extending direction of the first assembling portion **910** is perpendicular to an extending direction of the second assembling portion **920** of each of the side structures.

(46) Each of the mounting grooves **6113** defines a third limit position and a fourth limit position. When each of the diagonal support rods **300** is in the third limit position, each of the diagonal support rods **300** is in a vertical state. When each of the diagonal support rods **300** is switched from the third limit position to the fourth limit position, each of the diagonal support rods **300** is rotated from the vertical state to an inclined state. When the playpen framework **10** is folded, two adjacent diagonal support rods **300** of each two adjacent side structures are respectively rotated toward the one of the vertical support rods **200** and are in the vertical state When the playpen framework **10** is unfolded, the two adjacent diagonal support rods **300** of each two adjacent side structures are respectively rotated away from the one of the vertical support rods **200** and are in the inclined state.

(47) In some embodiments, as shown in FIG. **12** each of the diagonal support rods **300** comprises a main rod **310** and an assembling piece **320**. A first end of each main rod **310** is connected to each assembling piece **320**, and a second end of each main rod **310** is rotatably connected to the connecting position of the two horizontal support rods **100** of each of the side structures. The first end of each main rod **310** is farther from the two horizontal support rods **100** of each of the side structures than the second end of each main rod **310**. One end of each assembling piece **320** away from each main rod **310** defines an arc surface. In this way, a processing of the diagonal support rods **300** is facilitated, and each arc surface makes each of the diagonal support rods **300** smoother during the rotation process to avoid interference.

(48) The present disclosure provides a folding method of the playpen mentioned above. The folding

method comprises steps S**01**-S**02**.
(49) The step S**01** comprises unlocking each fixing piece **610** and the corresponding vertical support rod by each of the unlocking pieces **700**, making each fixing piece **610** to slide downward along the corresponding vertical support rod.
(50) The step S**02** comprises rotating the horizontal support rods **100** respectively detached from the upper ends of the vertical support rods **200** downward, making the diagonal support rods **300** to rotate upward relative to the lower ends of the vertical support rods **200**, making the first connecting rods **410** to rotate upward relative to the diagonal support rod, and making the second connecting rods **420** to rotate upward relative to the horizontal support rods **100**.
(51) During a folding process, the fabric cover is folded along with folding of the playpen framework. The playpen is conveniently and quickly folded by using the folding method.
(52) In the drawings of the embodiments, the same or similar numbers correspond to the same or similar components. In the description of the present disclosure, it should be understood that terms such as “upper”, “lower”, “left”, “right” etc. indicate direction or position relationships shown based on the drawings, and are only intended to facilitate the description of the present disclosure and the simplification of the description rather than to indicate or imply that the indicated device or element must have a specific direction or constructed and operated in a specific direction. Therefore, the terms used to describe positional relationships in the drawings are only for illustrative purposes and cannot be construed as limitations of the present disclosure. For those of ordinary skill in the art, the specific meanings of the above terms can be understood according to specific circumstances.
(53) The above are only optional embodiments of the present disclosure and are not intended to limit the present disclosure. Any modifications, equivalent substitutions, and improvements made within the spirit and principles of the present disclosure shall be included in the protection scope of the present disclosure.

Claims

1. A side structure of a playpen framework, comprising: two vertical support rods; two horizontal support rods; two diagonal support rods; and two first connecting rods; wherein the two vertical support rods are disposed in a vertical direction and disposed at intervals in a horizontal direction; wherein the two horizontal support rods are disposed in the horizontal direction, first ends of the two horizontal support rods are respectively detachably connected to upper ends of the two vertical support rods, second ends of the two horizontal support rods are rotatably connected to each other, and when the two horizontal support rods are respectively detached from the upper ends of the two vertical support rods, the two horizontal support rods move toward each other through rotating downward; wherein first ends of the two diagonal support rods are respectively rotatable relative to lower ends of the two vertical support rods, second ends of the two diagonal support rods are rotatably connected to a connecting position of the two horizontal support rods, and the two diagonal support rods are allowed to move toward each other by rotating upward relative to the lower ends of the two vertical support rods; wherein first ends of the two first connecting rods are respectively rotatably connected to the two diagonal support rods, and second ends of the two first connecting rods are rotatably connected to each other; wherein the side structure further comprises two second connecting rods, first ends of the two second connecting rods are respectively rotatably connected to the two horizontal support rods, second ends of the two second connecting rods are rotatably connected to a connecting position of the two first connecting rods.
2. The side structure according to claim 1, wherein when the side structure is unfolded, the two first connecting rods and the two horizontal support rods are disposed in parallel.
3. The side structure according to claim 1, wherein the two horizontal support rods define two central points, and the two diagonal support rods define two central points; wherein in a left-right

direction of the side structure, a distance between the first ends of the two first connecting rods is less than a distance between the two central points of the two diagonal support rods; and a distance between the first ends of the two second connecting rods is less than a distance between the two central points of the two horizontal support rods.

4. The side structure according to claim 1, wherein the side structure further comprises an intermediate connecting piece connected to the second ends of the two horizontal support rods, the two horizontal support rods are rotatably connected relative to the intermediate connecting piece, and the second ends of the two diagonal support rods are rotatably connected to the intermediate connecting piece.

5. A playpen framework, comprising: a plurality of side structures; wherein each of the side structures comprises two vertical support rods, two horizontal support rods, two diagonal support rods, and two first connecting rods; wherein the two vertical support rods are disposed in a vertical direction and disposed at intervals in a horizontal direction; wherein the two horizontal support rods are disposed in the horizontal direction, first ends of the two horizontal support rods are respectively detachably connected to upper ends of the two vertical support rods, second ends of the two horizontal support rods are rotatably connected to each other, and when the two horizontal support rods are respectively detached from the upper ends of the two vertical support rods, the two horizontal support rods move toward each other through rotating downward; wherein first ends of the two diagonal support rods are respectively rotatable relative to lower ends of the two vertical support rods, second ends of the two diagonal support rods are rotatably connected to a connecting position of the two horizontal support rods, and the two diagonal support rods are allowed to move toward each other by rotating upward relative to the lower ends of the two vertical support rods; wherein first ends of the two first connecting rods are respectively rotatably connected to the two diagonal support rods, and second ends of the two first connecting rods are rotatably connected to each other; wherein each of the side structures further comprises two second connecting rods, first ends of the two second connecting rods are respectively rotatably connected to the two horizontal support rods, second ends of the two second connecting rods are rotatably connected to a connecting position of the two first connecting rods, wherein the plurality of side structures are connected end to end, and each two adjacent side structures share one of the vertical support rods.

6. The playpen framework according to claim 5, wherein the playpen framework further comprises upper corner connectors, each of the upper corner connectors comprises a fixing piece and a locking piece detachably connected to the fixing piece, each fixing piece is slidably sleeved on a corresponding vertical support rod, each of the horizontal support rods is detachably connected to an upper end of each of the vertical support rods through a corresponding fixing piece, and each locking piece is configured to fix a corresponding fixing piece and a corresponding vertical support rod when the playpen framework is unfolded.

7. The playpen framework according to claim 6, wherein each fixing piece comprises a main body portion, the main body portion defines a mounting hole and a positioning hole defined on an outer wall thereof, and the positioning hole thereof communicates the main body portion thereof to an outside; wherein each of the vertical support rods is slidably disposed in a corresponding mounting hole, the upper end of each of the vertical support rods defines an accommodating cavity with an opening extending upward, each of the vertical support rods defines a fixing hole communicated with the accommodating cavity thereof and the outside, each locking piece is placed into a corresponding accommodating cavity from the opening of the corresponding accommodating cavity, each locking piece passes through a corresponding fixing hole and a corresponding positioning hole to relatively fix a corresponding fixing piece and a corresponding vertical support rod.

8. The playpen framework according to claim 7, wherein each locking piece comprises a locking portion and a first limiting portion, the locking portion thereof is configured to insert into the positioning hole to fix the corresponding fixing piece relative to the corresponding vertical support

rod, and the first limiting portion thereof is connected to one side of the locking portion thereof and abuts against an inner wall surface of the corresponding vertical support rod.

9. The playpen framework according to claim 8, wherein each locking piece further comprises an elastic portion, a first end of the elastic portion thereof is connected to the first limiting portion thereof, a second end of the elastic portion thereof is fixedly connected to the corresponding vertical support rod, and the elastic portion thereof is configured to drive the first limiting portion thereof to abut against the inner wall surface of the corresponding vertical support rod.

10. The playpen framework according to claim 7, wherein each fixing piece further comprises a positioning portion connected to an outer wall surface of the main body portion thereof, and the positioning portion thereof defines a fixing groove communicated with the positioning hole thereof; wherein when the playpen framework is unfolded, each locking piece is at least partially inserted into a corresponding fixing groove, the playpen framework further comprises unlocking pieces, each of the unlocking pieces is at least partially mounted in a corresponding fixing groove and is movable in an axial direction relative to a corresponding positioning portion, and each of the unlocking pieces is capable of driving a portion of a corresponding locking piece located in the corresponding fixing groove to return to a corresponding accommodating cavity.

11. The playpen framework according to claim 10, wherein hooks are disposed on an outer surface of each of the unlocking pieces, each positioning portion defines sliding grooves extending in the axial direction, and the hooks of each of the unlocking pieces are slidable in the sliding grooves of a corresponding positioning portion; each of the sliding grooves comprises a second limiting portion and a third limiting portion spaced apart from the second limiting portion in a sliding direction, each second limiting portion is configured to prevent a corresponding unlocking piece from being separated from a corresponding positioning portion, when each of the hooks abuts against a corresponding third limiting portion, each of the unlocking pieces drives a corresponding locking piece to return to a corresponding accommodating cavity, and each of the unlocking pieces is located in a corresponding positioning hole.

12. The playpen framework according to claim 11, wherein each of the unlocking pieces further comprises a base portion and a driving portion, each base portion comprises an end cover and a cylinder, and the end cover thereof is connected to one end of the cylinder thereof to define an accommodating groove with an opening on one side of each base portion; wherein each driving portion is connected to a groove bottom wall of a corresponding accommodating groove, each driving portion at least partially extends out of the opening of the corresponding accommodating groove to drive a corresponding locking piece, a gap is formed between an inner wall of each cylinder and a corresponding driving portion, and the hooks of each unlocking piece are disposed on an outer wall of each cylinder.

13. The playpen framework according to claim 7, wherein the playpen framework further comprises plugs, each of the plugs is detachably mounted on the upper end of each of the vertical support rods to block the opening of each accommodating cavity.

14. The playpen framework according to claim 5, wherein each fixing piece comprises a first mounting portion and a second mounting portion connected to the first mounting portion, the first mounting portion thereof and the second mounting portion thereof are disposed at an included angle, and a connecting position of the first mounting portion and the second mounting portion of each fixing piece defines the first mounting hole; a first end of one of the two horizontal support rods of an adjacent side structure is rotatably connected to the first mounting portion of each of the side structures, a first end of one of the two horizontal support rods of another adjacent side structure is rotatably connected to the second mounting portion of each of the side structures.

15. The playpen framework according to claim 14, wherein the plurality of side structures are four side structures, and the four side structures are connected to form a rectangular structure; wherein four upper corner connectors are provided, and an extending direction of the first mounting portion of each fixing piece is perpendicular to an extending direction of the second mounting portion of

each fixing piece.

16. The playpen framework according to claim 5, wherein the playpen framework further comprises lower corner connectors, each of the lower corner connectors comprises a first assembling portion and a second assembling portion connected to the first assembling portion, the first assembling portion thereof and the second assembling portion thereof are disposed at an included angle, and an assembling hole is defined in a connecting position of the first assembling portion thereof and the second assembling portion thereof; wherein a lower end of each of the vertical support rods is inserted into a corresponding assembling hole, a first end of one of the diagonal support rods of an adjacent side structure is rotatably connected to the first assembling portion of each of the side structures, and a first end of one of the diagonal support rods of another adjacent side structure is rotatably connected to the second assembling portion of each of the side structures.

17. The playpen framework according to claim 16, wherein each of the diagonal support rods comprises a main rod and an assembling piece, a first end of each main rod is connected to each assembling piece, and a second end of each main rod is rotatably connected to the connecting position of the two horizontal support rods of each of the side structures, the first end of each main rod is farther from the two horizontal support rods of each of the side structures than the second end of each main rod, and one end of each assembling piece away from each main rod defines an arc surface.

18. A playpen, comprising: the playpen framework according to claim 6; and a fabric cover covering side portions and a bottom portion of the playpen framework.

19. A folding method of the playpen according to claim 18, comprising steps: unlocking each fixing piece and the corresponding vertical support rod by each of the unlocking pieces, making each fixing piece to slide downward along the corresponding vertical support rod; and rotating the horizontal support rods respectively detached from the upper ends of the vertical support rods downward, making the diagonal support rods to rotate upward relative to the lower ends of the vertical support rods, making the first connecting rods to rotate upward relative to the diagonal support rod, and making the second connecting rods to rotate upward relative to the horizontal support rods.