

Title

Clip and Clip Hanger

Background of the Present Invention

Field of Invention

The present invention relates to a clip and a clip hanger, and more particularly to an all-plastic clip and an all-plastic clip hanger.

Description of Related Arts

Clips as a tool for clamping things are commonly used in daily life. There are various types of clips, which are different in size and structure. Some clips are very simple, but some clips may be complicated. A traditional clip generally consists of two clipping members and a spring member. Pinch the upper portions of two clipping members, and the lower portions of two clipping members will open an opening for putting things thereinto. Release the upper portions of two clipping members, then under the elastic effect of the spring member, the lower portions of two clipping members will tightly clip the things. Chinese Patent Application with a Publication Number. CN1113729 introduces a plastic clip, which includes an upper board, a lower board, and an operation board, wherein a supporting frame is mounted on the rear portion of the upper board, a hinge mounted on the rear portion of the lower board, and an operating cam is mounted on the operation board. The open and close movement of two front portions of the upper board and the lower board are achieved by operating the operation board.

The clips mentioned above have the disadvantages of untight clamping effect, lacking self-locking function, etc. Furthermore, the springs element has some defects as following: (1) easy to fall out from the clip; (2) prone to rust; (3) need specific structure and room to be installed; (4) increase the number of components and assembly work; (5)

react to the needle detectors so as to make the clip not be put on the needle detector with clothes or clothing.

Moreover, clothes hanger is also a common tool in daily life, and mainly used for hanging clothes. A traditional clothes hanger can not be folded, so it takes a large space, and is inconvenient to usage, storage and transportation.

Summary of the Present Invention

An object of the present invention is to provide an all-plastic clip which comprises an upper clip portion, a lower clip portion and a locking portion, and use an arc-shaped ratchet front surface and ratchet teeth to obtain tight locking function.

Another object of the present invention is to provide an all-plastic clothes hanger in which foldable structure is achieved by introducing foldable arms so as to make the clothes hanger foldable and self-locking.

Another object of the present invention is to provide an all-plastic clip without any metal pieces which are essential parts in traditional clip, like spring member, etc. which makes that it possible to simplify the structure of the clip, and overcome the shortcomings of the traditional clip.

Accordingly, in order to accomplish the above objects, the present invention provides a clip, comprising:

an upper clip portion comprising a bracket with a frame-slot shaped having a pair of grooves provided in the two sides of the rear portion of the bracket, a front bumper plate provided at the front end of the bracket, an upper laminated plate positioned in the front of the bracket, and a fixing frame with two protruding portions located on the top surface of the bracket, wherein the fixing frame has a pair of mounting slots in two protruding portions of the fixing frame respectively, and a pair of stop plates provided

outside the pair of mounting slots respectively at positions below the top portions of the mounting slots to define a pair of mounting holes at the top of the mounting slots respectively;

a lower clip portion comprising a base board, a lower laminated board positioned in the front of the base board, a fixed block is located on the base board, wherein the fixed block has an arc-shaped ratchet front surface, and comprises a hinge axis set on the back of the fixed block to hingedly connect the bracket; and

a locking portion comprising an opening plate provided on the rear portion of the locking portion for opening the clip, a locking plate provided on the front portion of the opening plate for pressing and locking the clip under its closed condition, a locking rod and a first hinge axis both provided between the opening plate and the locking plate, a first supporting plate extended backward and downward from the rear end of the opening plate and forming an acute angle with the opening plate, and a second supporting plate extended forward and upward from the bottom portion of the locking rod and forming an acute angle with the locking rod, wherein the locking rod has a plurality of ratchet teeth formed on the rear surface of the bottom portion of the locking rod and matching with the arc-shaped ratchet front surface,

wherein the hinge axis of the fixed block is hingedly mounted in the grooves of the bracket in such a manner that the upper clip portion is hingedly connected to the lower clip portion, and the first hinge axis of the locking portion 3 is hingedly mounted in the mounting holes of the fixing frame in such a manner that the locking portion is hingedly connected to the upper clip portion, wherein the ratchet teeth of the locking rod is capable of moving up and down along the arc-shaped ratchet front surface of the fixed block, wherein the ratchet teeth are engaged with the arc-shaped ratchet front surface, wherein the first supporting plate of the locking portion is contacted with the top surface of the bracket, and the second supporting plate of the locking rod of the locking portion is contacted with the rear surface of the front bumper plate of the bracket.

Furthermore, the arc-shaped ratchet front surface of the fixed block is an arc surface of a circular surface taking the hinge axis of the fixed block, and the upper clip portion and the locking portion are both rotated around the hinge axis of the fixed block.

Furthermore, the fixed block further comprises a pair of limit plates provided on two sides in the front of arc-shaped ratchet front surface respectively.

Furthermore, the fixed block comprises a position member provided at the rear of the fixed block and contacted with the rear portion of the bracket for limiting the opening angle of the clip.

Furthermore, the upper laminated plate has a second hinge axis provided at the front edge of the upper laminated plate, and a storage space defined by the surrounding edges of the upper laminated plate, wherein a cover is hingedly mounted on the second hinge axis and covered on the storage space.

Furthermore, the clip is integrally made of plastic material.

A second technical solution to realize the clip and the clip hanger of the present invention is as following.

A clip hanger comprises a clothes hanger and a clip connected with the clothes hanger.

The clothes hanger comprises a hanging bracket, a hanging arm, a link rod, a locking frame, and a supporting bracket.

The hanging bracket comprises a main rod, a ratchet provided on the main rod, a hanging hook provided on an upper end portion of the main rod, an inserting shaft (reducing diameter) provided on a lower end portion of the main rod, a conical inserting head provided on a lower end portion of the inserting shaft and having an elastic opening.

The hanging arm has holes and hinge holes uniformly provided thereon, and a connecting hook is provided on an end portion of the hanging arm, and a bumping is provided on a back portion of the connecting hook.

A first hinge axis is provided on a first end portion of the link rod, and a connecting hook is provided on a second end portion of the link rod.

The locking frame, comprises a supporting bracket, and a locking rod, wherein a main rod sliding slot is provided on a middle portion of the supporting bracket, an opening slot is provided on a perimeter of the supporting bracket, a hanging rod is provided in the opening slot, a bumper board is provided on a bottom of the supporting bracket, and a sub-board is provided on a top of the supporting bracket, wherein pawls are provided on a bottom of the locking rod, a second supporting plate is provided on opposite to ratchet teeth of the pawls, the second supporting plate is at an accurate angle to the locking rod, a first hinge axis and a laminated plate are provided on the locking rod, wherein the locking rod is hinged in the hinge holes of the bracket via the first hinge axis thereof, the second supporting plate is contact with the bumper plate.

The supporting bracket has a main rod hole provided in a middle portion thereof, a second opening slot corresponding to the opening slot of the bracket is provided on a peripheral portion of the supporting bracket, a hanging rod is provided in the opening slot.

The main rod of the hanging bracket connects through the main rod sliding slot of the supporting bracket of the locking frame. The main rod is fixedly mounted with the supporting bracket by a conical inserting head in a lower end portion of the main rod plugging into the main rod hole of the supporting bracket. The ratchet of the main rod is contacted with the pawls of the locking rod of the supporting bracket. The connecting hook of the hanging arm is hanging on the hanging rod of the opening slot of the supporting bracket. The connecting hook on the first end portion of the link rod is hanging on the hanging rod of the opening slot of the supporting bracket. The second end portion of the link rod is hinged with the hinge hole of the hanging arm via the first hinge axis.

Further, a convex portion is provided on a top of the hanging hook, a hinge hole is provided on the convex portion. A first ring clamping hook is hinged with the hinge hole.

A groove is provided on a first end portion of the first ring clamping hook, a contact point is provided on a second end of the first ring clamping hook, a plurality of teeth are provided on an inner arc surface of the first ring clamping hook, a hinge hole and positioning shaft are respectively provided on two sides of the hanging hook, the groove is contacted with the positioning shaft. A second ring clamping hook is hinged on the hinge hole. A groove is provided on an end portion of the second ring clamping hook and contacted with a second contact point of the first ring clamping hook, and an elastic clamping is provided on an inner arc surface of the second ring clamping hook.

The clip hanger of the present invention is capable of being connected with the clip of the present invention or other clips. If the clip hanger of the present invention is connected with the clip of the present invention, a structure of the clip is illustrated as above.

A third technical solution to realize the clip and the clip hanger of the present invention is as following.

A clip hanger comprises a clothes hanger and a clip connected with the clothes hanger.

The clothes hanger comprises a hanging bracket, a hanging arm, and a tray.

The hanging bracket comprises a main rod, a hanging hook provided on an upper end portion of the main rod, an inserting shaft provided on a lower end portion of the main rod, a conical inserting head provided on a lower end portion of the inserting shaft and having an elastic opening provided thereof. The hanging arm has holes uniformly provided thereon, wherein a connecting hook is provided on an end portion of the hanging arm, a bumping is provided on a back portion of the connecting hook.

A main rod hole is provided in the center of the tray. A plurality of opening slots are uniformly provided on a peripheral portion of the tray. A hanging rod is provided in the opening slot. A position groove is provided on a side wall of each opening slot.

A connecting hook is provided on the blade, and a bumping is provided on a back of the connecting hook.

A groove is provided on a first end portion of the first ring clamping hook, a contact point is provided on a second end of the first ring clamping hook, a plurality of teeth are provided on an inner arc surface of the first ring clamping hook, and a first hinge axis is provided on the first ring clamping hook.

Therefore, the beneficial effects of the present invention are as follows: (1) the clip is entirely made of plastic material, and it has advantages of simple structure, firmly clamping ability, wide application, easy to use, good for environmental protection and recycling; using the engagement between the arc-shaped ratchet front surface and ratchet teeth to tightly clamp articles, so there is no worry about losing elasticity after material fatigue, and it can meet the requirements of clamping thicker articles, such as heavy clothes, thick documents. (2) the clothes hanger is entirely made of plastic material, and it is good for environmental protection and recycling; the clothes hanger is foldable and self-locking; the clips used in the clothes hanger are either the clips provided by present invention or any another ordinary clips; the hanging arms of the clothes hanger is foldable which makes the clothes hanger easy to use, storage and transportation.

Brief Description of the Drawings

FIG. 1 is a front view of a clip according to a first alternative of the present invention, and inner structures thereof are shown in a splitting portion.

FIG. 2 is a three-dimensional view of the FIG. 1.

FIG. 3 is a schematic view of an assembly of the upper clip portion, the lower clip portion and the cover shown in the FIG. 2

FIG. 4 is a schematic view of an assembly of the upper clip portion and the cover shown in the FIG. 3.

FIG. 5 is a bottom view of the upper clip portion shown in FIG. 1.

FIG. 6 is a front view of the locking portion shown in FIG. 1.

FIG. 7 is a bottom view of the FIG. 6.

FIG. 8 is a three-dimensional view of the FIG. 6.

FIG. 9 is an exploded view of the FIG. 1.

FIG. 10 is a front view of a clothes hanger according to a first alternative of the present invention, which indicates an unfolding manner of the clothes hanger, wherein two hanging arms are provided.

FIG. 11 is a schematic view of the clothes hanger shown in the FIG. 10, wherein no clip is provided.

FIG. 12 is a schematic view of the clothes hanger in an unfolded manner, an assembly of the hanging arm and the tray shown in the FIG. 10.

FIG. 13 is a schematic view of the hanging bracket of Fig 11.

FIG. 14 is an assembly diagram of a supporting bracket and a hanging arm in FIG. 11.

FIG. 15 is schematic view of the supporting bracket shown in the FIG. 11.

FIG. 16 is a back view of Fig..15

FIG. 17 is a schematic view illustrating a folding condition of the clothes hanger shown in the FIG. 16.

FIG. 18 is a schematic view of the assembly locking frame shown in the FIG. 11.

FIG. 19 is a front view of the supporting frame assembly shown in the FIG. 18.

FIG. 20 is a vertical view of the hanging hook shown in the FIG. 19.

FIG. 21 is a front view of the locking rod shown in the FIG. 18.

FIG. 22 is a left view of the FIG. 21.

FIG. 23 is a schematic view of the second ring clamping hook shown in the FIG. 11.

FIG. 24 is a schematic view of the first ring clamping hook shown in the FIG. 11.

FIG. 25 is a schematic view of the hanging arm shown in the FIG. 11.

FIG. 26 is a schematic view of the link rod shown in the FIG. 11.

FIG. 27 is an enlarged view of the A part shown in FIG. 25.

FIG. 28 is a top view of the FIG. 27.

FIG. 29 is an enlarged view of the B part shown in FIG. 18.

FIG. 30 is a vertical view of FIG. 29.

FIG. 31 is a schematic view of the clip hanger in an shown in the FIG. 10.

FIG. 32 is a front view of the clothes hanger according to a third alternative of the present invention showing an unfold condition.

FIG. 33 is a schematic view illustrating the clip hanger of the FIG. 32 without a clip..

FIG. 34 is a schematic view illustrating a hanging bracket of the FIG. 33

FIG. 35 is a schematic view illustrating a tray of Fig. 33.

FIG. 36 is an enlarged view of the C part shown in FIG. 325

FIG. 37 is a vertical view of the right hook shown in FIG. 35.

FIG. 38 is a schematic view of the press board shown in FIG. 33.

FIG. 39 is an enlarged view a D part of the FIG. 38.

FIG. 40 is a schematic view of the FIG. 39.

FIG. 41 is a schematic view illustrating the blade of Fig. 33.

FIG. 42 is a schematic view of close state of Fig. 32, wherein partly hanging arms and blades are folded.

FIG. 43 is a schematic view of an application state of the clip and the clip hanger.

In the drawings:

1 lower clip portion; 11 base board; 12 position member; 13 hinge axis; 14 fixed block; 15 arc-shaped ratchet front surface; 16 lower laminated board; 17 limit plate; 2 upper clip portion; 21 opening and closing bracket; 22 fixing frame; 23 storage space; 24 upper laminated plate; 25 second hinge axis; 26 frame hole; 27 mounting hole; 28 front bumper plate; 29 through groove; 3 locking portion; 31 first supporting plate; 32 opening plate 33

first hinge axis; 34 locking plate; 35 second supporting plate; 36 locking rod; 37 ratchet teeth; 4 cover; 41 cover hole; 5 hanging arm; 51 holes; 52 connecting hook; 53 bumping; 54 position groove; 55 blade; 56 hanging column; 6 link rod; 61 groove; 7 locking frame; 71 supporting bracket; 72 sub-board; 73 bumper plate; 74 contact point; 75 main rod sliding slot; 76 laminated plate; 77 pawls; 78 teeth; 8 supporting bracket; 81 opening slot; 82 main rod hole; 83 hanging rod; 84 tray; 9 hanging bracket; 91 elastic opening; 92 inserting shaft; 93 flange; 94 main rod; 95 elastic clamping; 96 hinge holes; 97 convex portion; 98 hanging hook; 99 lifted hook; 100 ratchet; 101 conical inserting head; 102 positioning shaft; 103 clothesline; 104 clothes rod; 105 lifting rod; 50 clip; 60 second ring clamping hook; 70 first ring clamping hook; 80 link; 90 clothes hanger.

Detailed Description of the Preferred Embodiment

A further disclosure of the present invention will be described in the following with reference to the drawings.

The present invention relates to a clip and a clip hanger accompanied with the clip.

First Embodiment: a first alternative of the clip hanger

Referring to Fig 10 of the drawings, a clip hanger comprises a clip 50 and a clothes hanger 90.

The clothes hanger 90 comprises a hanging bracket 9, a hanging arm 5, a link rod 6, a locking frame 7, a supporting bracket 8, a second ring clamping hook 60, and a first ring clamping hook 70.

Referring to Fig. 13 of the drawings, the hanging bracket 9 comprises a main rod 94, a ratchet 100 provided on a side face of the main rod 94, a hanging hook 98 provided on an upper end portion of the main rod 94, an inserting shaft 92 (reducing

diameter) provided on a lower end portion of the main rod 94, a conical inserting head 101 provided on a lower end portion of the inserting shaft 92 and having an elastic opening 91 provided in a middle portion thereof, a lifted hook 99 provided on a lower end portion of the hanging hook 98, a flange 93 provided on an upper portion of the inserting shaft 92, a convex portion 97 provided on a top of the hanging hook 98 and having hinge holes 96 provided thereon, a positioning shaft 102, and an elastic clamping 95 provided on an inner arc surface of the hanging hook 98, wherein hinge holes 96 and the positioning shaft 102 are respectively provided on both sides of the hanging hook 98, and one of the hinge holes 96 is provided on an end portion of the hanging hook 98.

Referring to Fig 25 of the drawings, the hanging arm 5 has holes 51 and hinge holes 96 uniformly provided thereon, wherein a connecting hook 52 is provided on an end portion of the hanging arm 5, a bumping 53 is provided on a back portion of the connecting hook 52.

Referring to Fig 26 of the drawings, a first hinge axis 33 is provided on a first end portion of the link rod 6, a connecting hook 52 is provided on a second end portion of the link rod 6.

The locking frame 7 (See Fig. 18), comprises a supporting bracket 71(See Fig. 19), and a locking rod (See Fig. 21), wherein a main rod sliding slot 75 is provided on a middle portion of the supporting bracket 71, an opening slot 81 is provided on a perimeter of the supporting bracket 71, a hanging rod 83 is provided in the opening slot 81, a bumper board 73 is provided on a bottom of the supporting bracket 71, and a sub-board 72 is provided on a top of the supporting bracket 71, wherein pawls 77 are provided on a bottom of the locking rod 36, a second supporting plate 35 is provided on opposite to ratchet teeth 37 of the pawls 77, the second supporting plate 35 is at an accurate angle to the locking rod 36, a first hinge axis 33 and a laminated plate 76 are provided on the locking rod 36, wherein the locking rod 36 is hinged in the hinge holes 96 of the bracket 71 via the first hinge axis 33 thereof, the second supporting plate is pressed on the bumper plate 73.

Referring to Fig 15-17 of the drawings, the supporting bracket 8 has main rod hole 82 provided in a middle portion thereof, a second opening slot corresponding to the opening slot 81 of the bracket 71 is provided on a peripheral portion of the supporting bracket 8, a hanging rod 83 is provided in the opening slot 81, a position groove 54 is provided on a side wall of the position groove 54, a plurality of hanging arms 5 are symmetrically provided on a peripheral portion of the supporting bracket 8.

Referring to Fig. 24 of the drawings, a groove 61 is provided on a first end portion of the first ring clamping hook 70, a contact point 74 is provided on a second end of the first ring clamping hook 70, a plurality of teeth 78 are provided on an inner arc surface of the first ring clamping hook 70, and a first hinge axis is provided on the first ring clamping hook 70.

Referring to Fig. 23 of the drawings, a groove 61 is provided on an end portion of the second ring clamping hook 60, a first hinge axis 33 is provided on the second ring clamping hook 60, and an elastic clamping 95 is provided on an inner arc surface of the second ring clamping hook 60.

Specific Connecting Relations

The main rod 94 of the hanging bracket 9 connects through the main rod sliding slot 75 of the supporting bracket 71 of the locking frame 7. By an expanding principle of the elastic opening 91, the main rod 94 is fixedly mounted with the supporting bracket 8 by a conical inserting head 101 in a lower end portion of the main rod 94 plugging into the main rod hole 82 of the supporting bracket 8. The ratchet 100 of the main rod 94 is contacted with the pawls 77 of the locking rod 36 of the supporting bracket 71. The connecting hook 52 of the hanging arm 5 is hanging on the hanging rod 83 of the opening slot 81 of the supporting bracket 71. The connecting hook 52 on the first end portion of the link rod 6 is hanging on the hanging rod 83 of the opening slot 81 of the supporting bracket 8. The second end portion of the link rod 6 is hingedly connected with the hinge hole 96 of the hanging arm 5 via the first hinge axis 33. The first ring clamping hook 70 is hingedly connected with the hinge hole 96 of the convex portion 97 via the first hinge

axis 33. The groove 61 of the first ring clamping hook 70 is connected with the positioning shaft 102 by clamping. The second ring clamping hook 60 is hingedly connected with the hanging hook 98 via the hinge axis 33. The second ring clamping hook 60 is capable of rotating, and accordingly moves the contact point 74 of the first ring clamping hook 70 via the groove 61 provided thereon, so as to rotate the first ring clamping hook 70.

Working Principle

In an unfolded position, the locking rod 36 and the sub-board 72 are pinched inwards by fingers, in such a manner that the pawls 77 of the locking rod 36 is detached from the ratchet 100. At the same time, the locking frame 7 is pushed down and moves downwards. Driven by the link rod 6, the hanging arm 5 is opened up. When the bumping 53 of the hanging arm 5 are received by the position groove 54 of the supporting bracket 71 and get stuck, the locking rod 36 and the sub-board are loosed, and the pawls 77 are tightly stuck in the ratchet 100 by a pushing force of the second supporting plate 35.

In a folded position, the locking rod 36 and the sub-board 72 are pinched inwards by fingers, in such a manner that the pawls 77 of the locking rod 36 is detached from the ratchet 100. At the same time, the locking frame 7 is pushed up and moves upwards. Driven by the link rod 6, the hanging arm 5 is folded. When the hanging arm 5 is folded in a right position, the locking rod 36 and the sub-board are loosed, and the pawls 77 are tightly stuck in the ratchet 100 by a pushing force of the second supporting plate 35.

A plurality of holes 51 are provided on the hanging arms 5, and the holes 51 are connected with the clip 50 via the link 80.

Both the locking frame 7 and the supporting bracket 8 can be square or circular in shape. And a plurality of hanging arms 5 and link rod 6 are symmetrically provided on the locking frame 7 and the supporting bracket 8.

Application Method

Referring to Fig. 43 of the drawings, while in working condition, a lifting rod 105 supports the lifted hook 99 to lift the clothes hanger 90 upward. When the clothes hanger 90 is hung on the clothesline 103, the hanging hook 98 is capable of being hung on the clothesline 103. At this time, the clothesline 103 drives the second ring clamping hook 60 to rotate, in such a manner that the clothesline 103 passes through the convex portion 97. The rotating second ring clamping hook 60 drives the first ring clamping hook 70 to rotate. The teeth 78 of the first ring clamping hook 70 clamps the clothesline 103, so as to prevent the clothes hanger 90 moving or falling off from the clothesline 103. When the clothes hanger 104 is hanging on the clothes rod 104, the clothes hanger 104 drives the second ring clamping hook 60 to rotate, in such a manner that the clothes rod 104 passes through the hanging hook 98, the clothes rod 104 is caught in the rotated second ring clamping hook 60 and clamped tightly by the elastic clamping 95, so as to prevent the clothes hanger 90 moving or falling off from the clothes rod 104.

Second Embodiment: a second alternative of the clip hanger

Referring to Fig 32 of the drawings, a clip hanger comprises a clip 50 and a clothes hanger 90.

The clothes hanger 90 comprises a hanging bracket 9, a hanging arm 5, a tray 84, a blade 55, a second ring clamping hook 60, and a first ring clamping hook 70.

Referring to Fig. 34 of the drawings, the hanging bracket 9 comprises a main rod 94, a hanging hook 98 provided on an upper end portion of the main rod 94, an inserting shaft 92 (reducing diameter) provided on a lower end portion of the main rod 94, a conical inserting head 101 provided on a lower end portion of the inserting shaft 92 and having an elastic opening 91 provided in a middle portion thereof, a lifted hook 99 provided on a lower end portion of the hanging hook 98, a flange 93 provided on an upper portion of the inserting shaft 92, a convex portion 97 provided on a top of the hanging hook 98 and having hinge holes 96 provided thereon, a positioning shaft 102,

and an elastic clamping 95 provided on an inner arc surface of the hanging hook 98, wherein hinge holes 96 and the positioning shaft 102 are respectively provided on both sides of the hanging hook 98, and one of the hinge holes 96 is provided on an end portion of the hanging hook 98.

Referring to Figs 38-40 of the drawings, the hanging arm 5 has holes 51 and hinge holes 96 uniformly provided thereon, wherein a connecting hook 52 is provided on an end portion of the hanging arm 5, a bumping 53 is provided on a back portion of the connecting hook 52.

Referring to Figs 35-37 of the drawings, a main rod hole 82 is provided in the center of the tray 84. A plurality of opening slots 81 are uniformly provided on a peripheral portion of the tray 84. A hanging rod 83 is provided in the opening slot 81. A position groove 54 is provided on a side wall of each opening slot 81.

Referring to Fig 41 of the drawings, a connecting hook 52 is provided on the blade 55, and a bumping 53 is provided on a back of the connecting hook 52.

Referring to Fig. 24 of the drawings, a groove 61 is provided on a first end portion of the first ring clamping hook 70, a contact point 74 is provided on a second end of the first ring clamping hook 70, a plurality of teeth 78 are provided on an inner arc surface of the first ring clamping hook 70, and a first hinge axis is provided on the first ring clamping hook 70.

Referring to Fig. 23 of the drawings, a groove 61 is provided on an end portion of the second ring clamping hook 60, a first hinge axis 33 is provided on the second ring clamping hook 60, and an elastic clamping 95 is provided on an inner arc surface of the second ring clamping hook 60.

Specific Connecting Relations

By an expanding principle of the elastic opening 91, the main rod 94 is fixedly mounted with the tray 84 by a conical inserting head 101 in a lower end portion of the main rod 94 plugging into the main rod hole 82 of the supporting bracket 8. The tray 84 is capable of revolving around the inserting shaft 92. The connecting hook 52 of the hanging arm 5 is hanging on the hanging rod 83 of the opening slot 81 on the tray 84. The hanging arm 5 comprises a The bumping 53 of the hanging arm 5 is capable of engaging with or detaching from the position groove 54. The first ring clamping hook 70 is hinged with the hinge holes 96 of the convex portion 97 via the first hinge axis 33. The groove 61 of the first ring clamping hook 70 is clamped with the positioning shaft 102. The second ring clamping hook 60 is hanged with the hanging hook 98 via the first hinge axis 33. The second ring clamping hook 60 rotates, and the groove 61 thereof moves the contact point 74 of the first ring clamping hook 70, so as to rotate the first ring clamping hook 70.

Working Principle

In unfolding condition, the hanging arms 5 and the blade 55 are pulled down by arms until the hanging arms 5 and the blade 55 are completely unfolded. In folding condition, folding up the hanging arms 5 and the blade 55 until the bumpings 53 of the hanging arms 5 and the blade 55 are received by the position grooves and stucked.

A plurality of holes 51 are provided on the hanging arms 5 which are connected with the clip 50 via the link 80.

The application method is the same to the application method in the first embodiment.

By blowing of wind, the blade 55 drives the tray 84 to rotate, in such a manner that clothes hanging on the clothes hanger are capable of drying faster.

Third Embodiment: an alternative of the clip

Referring to Fig. 9 of the drawings, a chip 50 comprises a lower clip portion 1, an upper clip portion 2, a locking portion 3 and a cover 4.

The lower clip portion 1 is an in-mould decoration. The lower clip portion 1 comprises a base board 11, a lower laminated board 16, which is partly in an arc shape, positioned in the front of the base board 11, a fixed block 14 is located on the base board 11, wherein the fixed block 14 has an arc-shaped ratchet front surface 15, the ratchet thereof is downwards provided. A hinge axis 13 is provided on the fixed block 14 for hinging with the opening and closing bracket 21. A limit plate 17 is provided in the front of the arc-shaped ratchet front surface 15. A position member 12 for positioning an open angle of the upper clip portion 2 is provided on the base board 11 provided on a rear end of the fixed block 14. The arc-shaped ratchet front surface 15 is part of an arc-shaped surface which circles with the hinge axis 13, and has ratchets provided thereon.

The upper clip portion 2 is an in-mould decoration. The upper clip portion 2 comprises an opening and closing bracket 21. The opening and closing bracket 21 is in a frame-slot shape, has three sealed walls, is opened in the back, and takes a front bumper plate 28 as a front sealed face. An upper laminated plate 24, which is partly in an arc shape, is provided on a front end portion of the opening and closing bracket 21. A fixing frame 22 is provided on an upper portion of the opening and closing bracket 21 for installing the locking portion 3. The fixing frame 22 comprises two paralleling vertical plates which are separated by a certain distance. The vertical plates have mounting holes 27 provided thereon. A frame hole 26 is provided on a lower portion of the opening and closing bracket 21. A through groove 29 is provided on the opening and closing bracket 21 which is between the vertical plates. A second hinge axis 25 is provided on two sides of a front portion of the upper laminated plate. A storage space 23 is provided on an upper surface of the second hinge axis 25. The second hinge axis 25 is hinged with the cover 4 via a cover hole 41 of the cover 4. The cover 4 covers the storage space 23, and is capable of opening or covering the storage space 23. The cover 4 is an in-mould decoration.

The locking portion 3 is an in-mould decoration. The locking portion 3 comprises an opening plate 32. A locking plate 34 is provided on a front portion of the opening plate 32. A rectangular bar is provided between the opening plate 32 and the locking plate 34. A first hinge axis 33 is provided on the rectangular bar, and a locking rod 36 is provided on a lower portion of the locking rod 36. Ratchet teeth 37 engaged with the arc-shaped ratchet front surface are provided on a lower portion of the locking rod 36. The number of the ratchet teeth 37 depends on the requirements, and is usually more than 3. The locking rod 36 and the ratchet teeth 37 are curving. A first supporting plate 31 is provided on an end portion of the opening plate 32. The first supporting plate 31 is at an accurate angle to the opening plate 32. An end portion of the first supporting plate 31 is capable of being supported on an upper surface of the opening and closing bracket 21 of the upper clip portion. A second supporting plate 35 is provided on a lower end portion of the locking rod 36 and on a face opposite to the ratchet teeth 37. The second supporting plate 35 is at an accurate angle to the locking rod 36. An end portion of the second supporting plate 35 is capable of being supported on an inner surface of the front bumper plate 28 of the opening and closing bracket 21.

Specific Connecting Relations

The upper clip portion 2 is hinged on the hinge axis 13 of the fixed block 14 of the lower clip portion 1 via the frame hole 26 of the opening and closing bracket 21. The locking portion 3 is hinged on the fixing frame 22 provided on the opening and closing bracket 21 of the upper clip portion 2. The locking rod 36 passes through the through groove 29. In an unfold manner, The ratchet teeth 37 is capable of moving up and down along the arc-shaped ratchet front surface 15 of the fixed block 14, wherein the ratchet teeth 37 are engaged with the arc-shaped ratchet front surface 15, and the upper laminated plate 24 is connected with a front portion of the lower laminated board 16 by pressure.

The upper clip portion 2 and the locking portion 3 are both rotated around the hinge axis 12 of the fixed block

Working Principle

When the opening plate 32 is pressed down, the upper laminated plate 24 opens up and drives the locking portion 3 to move together. Under clamped articles such as clothes or paper are put into spaces between the upper laminated plate 24 and the lower laminated board 16 and against on the limit plate 17. Then pressing down the locking plate 34, the upper laminated plate moves downwards and clamps the articles. Continually pressing the locking plate 34 down by force, the upper laminated plate 24 and the lower laminated board 16 clamps the articles tightly. At the same time, the upper laminated plate 24 and the lower laminated board 16 are locked by engaging of the ratchet teeth 37 and the arc-shaped ratchet front surface 15, in such a manner that the upper laminated plate 24 is not capable of opening up and articles clamped are not capable of falling off.

Pressing down the opening plate 32 again, the upper laminated plate 24 is opened up.

Notes containing information is capable of being placed in the storage space 23.

The clip and the clip hanger are integrally made of plastic material.

What is claimed is:

1. A clip, comprising:

an upper clip portion comprising a bracket with a frame-slot shaped having a pair of grooves provided in the two sides of the rear portion of the bracket, a front bumper plate provided at the front end of the bracket, an upper laminated plate positioned in the front of the bracket, and a fixing frame with two protruding portions located on the top surface of the bracket, wherein the fixing frame has a pair of mounting slots in two protruding portions of the fixing frame respectively, a lower clip portion comprising a base board, a lower laminated board positioned in the front of the base board, a fixed block is located on the base board, wherein the fixed block has an arc-shaped ratchet front surface, and comprises a hinge axis set on the back of the fixed block to hingedly connect the bracket; and

a locking portion comprising an opening plate provided on the rear portion of the locking portion for opening the clip, a locking plate provided on the front portion of the opening plate for pressing and locking the clip under its closed condition, a locking rod and a first hinge axis both provided between the opening plate and the locking plate, a first supporting plate extended backward and downward from the rear end of the opening plate and forming an acute angle with the opening plate, and a second supporting plate extended forward and upward from the bottom portion of the locking rod and forming an acute angle with the locking rod, wherein the locking rod has a plurality of ratchet teeth formed on the rear surface of the bottom portion of the locking rod and matching with the arc-shaped ratchet front surface,

wherein the hinge axis of the fixed block is hingedly mounted in the grooves of the bracket in such a manner that the upper clip portion is hingedly connected to the lower clip portion, and the first hinge axis of the locking portion 3 is hingedly mounted in the mounting holes of the fixing frame in such a manner that the locking portion is

hingedly connected to the upper clip portion, wherein the ratchet teeth of the locking rod is capable of moving up and down along the arc-shaped ratchet front surface of the fixed block, wherein the ratchet teeth are engaged with the arc-shaped ratchet front surface, wherein the first supporting plate of the locking portion is contacted with the top surface of the bracket, and the second supporting plate of the locking rod of the locking portion is contacted with the rear surface of the front bumper plate of the bracket.

2. The clip, as recited in claim 1, wherein the arc-shaped ratchet front surface of the fixed block is an arc surface of a circular surface rounded the hinge axis.

3. The clip, as recited in claim 1, wherein the upper clip portion and the locking portion are both rotated around the hinge axis of the fixed block.

4. The clip, as recited in claim 1, wherein the fixed block further comprises a pair of limit plates provided on two sides in the front of arc-shaped ratchet front surface respectively.

5. The clip, as recited in claim 1, wherein the fixed block comprises a position member provided at the rear of the fixed block and contacted with the rear portion of the bracket for limiting the opening angle of the clip.

6. The clip, as recited in claim 1, wherein both the upper laminated plate of the upper clip portion 2 and the lower laminated board of the upper clip portion 1 are partly in an arc shape, and two front ends are laminated with each other.

7. The clip, as recited in claim 1, wherein the fixing frame comprises two paralleling vertical plates which are separated by a certain distance, and the vertical plates have mounting holes provided thereon.

8. The clip, as recited in claim 1, wherein the second hinge axis 25 is provided on a front portion of the an upper laminated plate, a storage space 23 is provided on an upper

surface of the second hinge axis hinged with the cover via a cover hole of the cover , the cover covers the storage space.

9. The clip, as recited in claim 1, wherein both the clip is integrally made of plastic material.