

HOLDER FOR OBJECTS

TECHNICAL FIELD

The present invention relates to a holder for objects.

BACKGROUND ART

- 5 Holders for holding and supporting objects are well known and are available in a variety of sizes and shapes, depending on the object to be held. For longer objects, such as brooms, rakes and other tools, or other elongated longer objects such as e.g. ski poles, it is of advantage to use a holder that holds the object at the shaft part of the object. Such holders
10 are available in different designs. One type uses an elastic front part that deforms such that it surrounds part of the object and grips the object.

- WO 8500132 A1 discloses a holder for supporting and holding objects, such as tools and implements. The holder comprises a holder element comprising a gripping part and an attachment device for the attachment of
15 the holder to a supporting surface. The object is gripped and held by the gripping part and two gripping devices arranged on each side of the gripping part.

- WO 2005042212 discloses a holder for objects, comprising a carrying bracket and a holder element supported by the carrying bracket, where the
20 holder element consists of two gripping devices arranged with an elastic connecting device between them. The holder element is capable of gripping objects and can be adjusted between a position for receiving the object and a position for holding the object securely.

- These solutions may work fine for at least some objects, but there is still
25 room for improvements.

DISCLOSURE OF INVENTION

An object of the invention is therefore to provide an improved holder that is capable of gripping objects having a wide span of diameters. A further object is to provide an improved holder that comprises few parts. A further object of the invention is to provide a holder that can easily be
5 disassembled.

The solution to the problem according to the invention is described in the characterizing part of claim 1 for the holder. Further claims are directed to advantageous embodiments and further developments of the holder.

In a holder for objects, comprising a bracket and a holder element supported by the bracket, where the bracket comprises a base part, a first arm with a first hinge joint and a second arm with a second hinge joint, the
10 object of the invention is achieved in that the holder element comprises a resilient gripping section, a first pivoting arm and a second pivoting arm, where the first pivoting arm is stiff and pivotably suspended to the first bracket arm at an inner end of the first pivoting arm and where the outer
15 end of the first pivoting arm is fixedly attached to a first end of the gripping section, where the second pivoting arm is stiff and pivotably suspended to the second bracket arm at an inner end of the second pivoting arm and where the outer end of the second pivoting arm is fixedly attached to a
20 second end of the gripping section, where the holder element comprises a first receiving position in which the pivoting arms are directed away from the bracket, and a second holding position in which the object is held by the holder element and in which the pivoting arms are pivoted inwards towards the bracket such that the gripping section is positioned within the
25 bracket, and where the holder element comprises a first expansion section between the first end of the gripping section and the outer end of the first pivoting arm and a second expansion section between the second end of the gripping section and the outer end of the second pivoting arm.

By this first embodiment of the holder according to the invention, the
30 holder will provide a holder having a larger gripping range than known

holders. The holder will thus provide a secure hold of objects having a large cross-section variation, both in size and shape. The holder is suitable for objects having different cross-section shapes and not only for circular objects. The stiff pivoting arms will provide an enlarged gripping opening in comparison with known holders, and will at the same time allow smaller objects to be held in a secure way.

In an advantageous development of the invention, the bracket is provided with flexible arms, which enlarge the gripping range further.

In an advantageous development of the invention, the holder element is attached to the bracket with a snap connection, which allows the holder element to be removed in an easy way. In this way, the holder element can be removed and reinstalled easily, which is of advantage e.g. when the holder must be cleaned or replaced. This is especially of advantage when the holder is used in the food industry, where a thorough cleaning of all utensils and tools is required.

BRIEF DESCRIPTION OF DRAWINGS

The invention will be described in greater detail in the following, with reference to the embodiments that are shown in the attached drawings, in which

- 20 Fig. 1 shows a view of a holder according to the invention,
- Fig. 2 shows a top view of a holder according to the invention,
- Fig. 3 shows a cut view of the holder according to the invention,
- Fig. 4 shows a cut view of an alternative holder according to the invention,
- 25 Fig. 5 shows a top view of a holder according to the invention holding a small object, and

Fig. 6 shows a top view of a holder according to the invention holding a large object.

MODES FOR CARRYING OUT THE INVENTION

The embodiments of the invention with further developments described in the following are to be regarded only as examples and are in no way to limit the scope of the protection provided by the patent claims.

Fig. 1 shows a holder 1 according to the invention. Fig. 2 shows a top view of the holder, Fig. 3 shows a cut top view of a first example of the holder and Fig. 4 shows a cut view of a second example of the holder. The holder comprises a bracket 2 and a holder element 3 supported by the bracket.

The bracket comprises a base part 4 having a first arm 5 and a second arm 6. The base part is preferably injection moulded in one piece from e.g. a suitable plastic material, and may be reinforced with additional fibers. The first arm and the second arm are preferably designed such that they are somewhat flexible. In this way, the arms can bend outwards which allows for a larger gripping range of the holder. The bracket is provided with a suitable height, which is adapted to the object to be held. A suitable height for normal household tools, such as rakes or brooms, etc, is in the range of 1-3 cm.

In a first example of the holder, each bracket arm 5, 6 is provided with a longitudinal semi-circular groove 35, 36 adapted to cooperate with a longitudinal circular hinge pin 37, 38 of the holder element 3. A semi-circular groove is provided with a jaw opening that is narrower than the diameter of the corresponding hinge pin. In this way, a snap connection is created, which forms a hinge joint. The jaw is preferably designed such that the holder element can easily be inserted and removed without damaging the holder element, and such that the holder element provides a secure grip of an object.

The bracket is further provided with an attachment means adapted to allow the holder to be mounted to a mounting rail. The holder can be mounted to a mounting rail in different ways. In the shown example, the bracket is provided with an upper attachment groove 24 and a lower attachment groove 25 that are adapted to grip an upper mounting edge 33 and a lower mounting edge 34 of a mounting rail 32. The upper attachment groove is preferably designed such that the holder can only be attached to and removed from the mounting rail in a specific angled position, e.g. when the angle between the holder and the mounting rail is in a range between 30 to 45 degrees. The advantage of this is that the holder will not disengage easily from the mounting rail, even if the locking device breaks or comes loose and the holder is pushed upwards.

The bracket further comprises a locking device 26 which is adapted to secure the holder in a chosen position on the mounting rail. The locking device can be designed in different ways. In the shown example, the locking device comprises a flap that can be operated by hand when the holder is to be adjusted on the mounting rail or when the holder is to be removed. The locking device is provided with a snap action function that will interact with the lower mounting edge of the mounting rail such that the flap does not have to be operated when the holder is mounted on the mounting rail. The bracket may also be provided with mounting holes 31, which can be used when the holder is to be mounted to a structure with screws.

The holder element 3 comprises a flexible gripping section 9, a first pivoting arm 10 and a second pivoting arm 11. The pivoting arms are stiff and are not adapted to flex. The pivoting arms are fixedly attached to the gripping section and may be attached by permanent glue or the like. More preferably, the holder element is produced in a two component procedure, where the gripping section and the pivoting arms are injection moulded to each other in the same production step. In this way, a reliable attachment

of the gripping section and the pivoting arms is obtained. A further advantage is that such a production process prevents hidden spaces to form, which is of advantage when the holder is used in clean environments, where the holder must be cleaned. The pivoting arms are
5 preferably made from a plastic material, such as a polyamide, and may be reinforced with additional fibers. The gripping section is made from an elastic material, such as rubber, plastic or silicone.

The inner end 12, 13 of each pivoting arm 10, 11 is pivotably suspended to the bracket arms 5, 6 at the hinge joints 7, 8. The hinge joints allow the
10 pivoting arms to rotate around the outer ends of the bracket arms, such that the pivoting arms can pivot inwards, towards the rear side of the bracket. The outer end 14, 15 of each pivoting arm is fixedly attached to the outer ends 16, 17 of the gripping section. The surface of the center part of the gripping section is further provided with protruding ribs 30 which
15 will help to hold an object in place, especially objects that are not circular.

In this example, the hinge joints 7, 8 consists of the longitudinal grooves 35, 36 of the bracket arms and the hinge pins 37, 38 of the pivoting arms 10, 11. This creates a hinge joint that allows the pivoting arms to rotate between an outer position, in which the holder element is in a receiving
20 position 27, to an inner position, in which the holder element is in a holding position 28. The rotation of the pivoting arms is preferably restricted by outer and inner stops.

The gripping section is further provided with expansion sections 22, 23. A first expansion section 22 is provided between the first end 16 of the gripping section 9 and the outer end 14 of the first pivoting arm 10. A
25 second expansion section 23 is provided between the second end 17 of the gripping section 9 and the outer end 15 of the second pivoting arm 11. The expansion sections will help to hold larger objects. When a smaller object is held, the expansion section will stay in its preformed shape, since
30 the object will be held by the centre part of the gripping section. When an

object having a larger diameter is to be held, the expansion sections will expand such that the length of the gripping section increases, and the object can be held in a secure way.

5 The holder is also provided with stop members that restrict the angular movement of the pivoting arms and helps to define the receiving position and the holding position. The stop members can either be arranged on the bracket arms 5, 6 or on the pivoting arms 10, 11. In the shown example, the bracket arms are provided with inner stop members 20, 21 that restrict the inward movement of the pivoting arms. In this way, there is no risk that
10 one pivoting arm will stick inside the bracket due to incorrect handling. The bracket arms are in the shown example further provided with outer stop members 18, 19 which restrict the outward rotation of the pivoting arms. In this way, the holder element will be held in a well-defined receiving position.

15 In Fig. 4, another example of a hinge joint is shown. In this example, the hinge joints 7, 8 consist of short hinge pins extending inwards from the upper and lower part of the pivoting arm. Each hinge pin is provided with a bevel in order to facilitate the mounting of the pivoting arms on the bracket arms. Each bracket arm is provided with an upper and a lower hole that
20 corresponds to the hinge pins. The hole may also run through the complete outer end of the bracket arms. In Fig. 4, through holes 41, 42 are shown. In the shown example, the first hole 41 is also provided with an inner stop member 43 and an outer stop member 44 that will correspond to a matching lip of the first hinge pin. The second hole 42 is provided with
25 an inner stop member 45 and an outer stop member 46 that will correspond to a matching lip of the second hinge pin. The stop members and the lip will restrict the inward and outward rotation of the pivoting arm in the same way as described above.

The inner end of the upper and lower part of the pivoting arm is preferably
30 somewhat flexible, such that the upper and lower part of the pivoting arm

can move somewhat outwards. In this way, the hinge pins can move somewhat outwards, away from each other, which will simplify the mounting of the pivoting arm to the bracket arm. This will also allow the holder element to be removed from the bracket. It is of advantage to be able to remove the holder element. This simplifies the replacement of a damage holder element and allows the holder to be thoroughly cleaned, which is important e.g. in the food industry and in hospitals.

It is also possible to attach the pivoting arms to the bracket arms with separate mounting pins that extend through a hole in the upper part of the inner end of a pivoting arm, through a longitudinal hole in the outer end of a bracket arm and through a hole in the lower part of the inner end of a pivoting arm. In this way, each hinge joint will comprise a separate mounting pin that attaches the pivoting arm to the bracket arm. The mounting pin is preferably locked to the bracket arm in a suitable manner, e.g. by friction or resilient hooks. In this way, it is possible to remove the mounting pins if a holder element is to be removed e.g. for cleaning purposes or is to be replaced. It is also possible to fasten the mounting pin in a permanent way, e.g. by using glue or heat melting, such that the holder element cannot be removed.

When the holder is empty, the holder will be in a receiving position 27, as is shown in Fig. 2. Here, the pivoting arms extend forwards and the holder element is substantially flat. The pivoting arms abut on the outer stop members, which prevent the pivoting arms to rotate too far in an outward direction. In the shown example, the holder element is provided with a slight radius, in order to visualize the insertion position clearer. The holder is adapted to hold objects of varying sizes. In one example, the holder is adapted to hold objects with a diameter from 15 mm up to 40 mm. Other ranges are of course possible, but the purpose of the holder is to provide a wide holding range such that different sized holders are not necessary. It is also possible to adapt a holder for other sizes.

Fig. 5 shows the holder holding a relatively small object in a holding position 28. In the shown example, an object 29 is held by the center part of the gripping section 9. The object is held within the bracket arms. Here, the gripping section is enough for holding the object, and the expansion sections have not expanded. The pivoting arms have rotated inwards by more than 90 degrees such that the pivoting arms points inwards and abut the inner stop members 20, 21.

Fig. 6 shows the holder holding a relatively large object in a holding position 28. In the shown example, an object 29 is held by the center part of the gripping section 9 and the bearing surfaces 39, 40. Since the object is larger, the expansion sections have expanded in order to allow the larger diameter to be held by the gripping section. Here, the object is also supported by the bearing surfaces at the outer ends of the gripping device. The pivoting arms have rotated inwards by more than 90 degrees such that the pivoting arms points inwards and abut the inner stop members 20, 21.

The invention is not to be regarded as being limited to the embodiments described above, a number of additional variants and modifications being possible within the scope of the subsequent patent claims.

REFERENCE SIGNS

	1:	Holder
	2:	Bracket
	3:	Holder element
5	4:	Base
	5:	First bracket arm
	6:	Second bracket arm
	7:	First hinge joint
	8:	Second hinge joint
10	9:	Gripping section
	10:	First pivoting arm
	11:	Second pivoting arm
	12:	Inner end of first pivoting arm
	13:	Inner end of second pivoting arm
15	14:	Outer end of first pivoting arm
	15:	Outer end of second pivoting arm
	16:	First end of gripping section
	17:	Second end of gripping section
	18:	First outer stop member
20	19:	Second outer stop member
	20:	First inner stop member
	21:	Second inner stop member
	22:	First expansion section
	23:	Second expansion section
25	24:	Upper attachment groove
	25:	Lower attachment groove
	26:	Locking device
	27:	Receiving position
	28:	Holding position
30	29:	Object
	30:	Protrusion
	31:	Mounting hole
	32:	Mounting rail
	33:	Upper mounting edge
35	34:	Lower mounting edge

- 35: First longitudinal groove
- 36: Second longitudinal groove
- 37: First hinge pin
- 38: Second hinge pin
- 5 39: First bearing surface
- 40: Second bearing surface
- 41: First hole
- 42: Second hole
- 43: First inner stop member
- 10 44: First outer stop member
- 45: Second inner stop member
- 46: Second outer stop member

CLAIMS

1. Holder (1) for objects (29), comprising a bracket (2) and a holder element (3) supported by the bracket, where the bracket comprises a base part (4), a first bracket arm (5) with a first hinge joint (7) and a second bracket arm (6) with a second hinge joint (8), characterized in that the holder element (3) comprises a resilient gripping section (9), a first pivoting arm (10) and a second pivoting arm (11), where the first pivoting arm (10) is stiff and pivotably suspended to the first bracket arm (5) at an inner end (12) of the first pivoting arm (10) and where the outer end (13) of the first pivoting arm (10) is fixedly attached to a first end (16) of the gripping section (9), where the second pivoting arm (11) is stiff and pivotably suspended to the second bracket arm (6) at an inner end (14) of the second pivoting arm (11) and where the outer end (15) of the second pivoting arm (11) is fixedly attached to a second end (17) of the gripping section (9), where the holder element (3) comprises a first receiving position (27) in which the pivoting arms (10, 11) are directed away from the bracket (2), and a second holding position (28) in which the object is held by the holder element (3) and in which the pivoting arms (10, 11) are pivoted inwards towards the bracket such that the gripping section (9) is positioned within the bracket (2), and where the holder element (3) comprises a first expansion section (22) between the first end (16) of the gripping section (9) and the outer end (14) of the first pivoting arm (10) and a second expansion section (23) between the second end (17) of the gripping section (9) and the outer end (15) of the second pivoting arm (11).
2. Holder according to claim 1, characterized in that the bracket arms (5, 6) are flexible.

3. Holder according to claim 1 or 2, characterized in that the base part (4) comprises an upper attachment groove (24) and a lower attachment groove (25) adapted to grip attachment edges (33, 34) of a mounting rail (32).
- 5 4. Holder according to claim 1 or 2, characterized in that the base (4) comprises at least one mounting hole (31) adapted to allow the bracket to be fastened to a structure with a screw.
5. Holder according to any of claims 1 to 4, characterized in that each hinge joint (7, 8) comprises an outer stop member (18, 19, 44, 46) adapted to restrict the outward movement of the pivoting arms (10, 11).
10
6. Holder according to any of claims 1 to 5, characterized in that each hinge joint (7, 8) comprises an inner stop member (20, 21, 43, 45) adapted to restrict the inward movement of the pivoting arms (10, 11).
15
7. Holder according to any of the preceding claims, characterized in that the bracket (2) is injection moulded.
8. Holder according to any of the preceding claims, characterized in that the gripping section (9) of the holder element (3) is made of a resilient material and that the pivoting arms (10, 11) are made of a stiff material.
20
9. Holder according to any of the preceding claims, characterized in that the gripping section (9) is made from a flexible plastic, rubber or silicone material.
- 25 10. Holder according to any of the preceding claims, characterized in that the pivoting arms (10, 11) are made from a stiff plastic material.

11. Holder according to any of the preceding claims, characterized in that the gripping section (9) and the pivoting arms (10, 11) are moulded in a two-component process.
- 5 12. Holder according to any of claims 1 to 10, characterized in that the gripping section (9) and the pivoting arms (10, 11) are attached to each other in a separate manufacturing step.
13. Holder according to any of the preceding claims, characterized in that the gripping section (9) is provided with a plurality of gripping protrusions (30).
- 10 14. Holder according to any of the preceding claims, characterized in that the inner ends (12, 13) of the pivoting arms (10, 11) are attached to the hinge joints (7, 8) by a snap action.
- 15 15. Holder arrangement comprising a plurality of holders (1) according to any of the preceding claims and further comprising a longitudinal mounting rail (32).