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Object Securing Device

INVENTOR:

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CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Application Nos. 62/356,529 filed June 30, 2016 and 62/208,706 filed August 23, 2015 respectively. The content of the above applications are incorporated by reference in their entirety.

FIELD OF THE DISCLOSURE

[0002] This disclosure relates generally to the field of securing objects to surfaces. More specifically the present invention relates to securing objects to a surface where a clamp, vice, clasp, adjustable tool, and the like attaches to a surface while a cord, strap, leash, and the like attached to the clamp with a spring loaded plastic lock toggle and the like attached to the end of the cord, leash, strap and the like secures an object to the clamp and thus to the surface.

BACKGROUND

[0003] Multiple scenarios exist in which securing an object to a surface would be desirable. Construction workers working high above the ground cannot drop tools lest they hurt someone below them and cause time and resources recovering the tool to be wasted. Shop workers would not want to drop heavy, expensive tools to the floor lest they break or injure the user. Mothers have long dealt with babies knocking sippy cups, pacifiers, or bottles to the ground causing spills and contaminating the baby item. Cat and dog owners have long dealt with their beloved pets knocking items off shelves, cabinets and dresser drawers.

[0004] Current responses to this issue all suffer from the same drawbacks. They are either large and cumbersome or make the item unusable for its intended purpose. For the foregoing reasons a need exists for a simple, effective, method of securing objects to a surface that doesn't restrict the usefulness of the object.

SUMMARY

[0005] The disclosure presented herein relates to a clamp, vice, clasp or similar structure with an upper and lower jaw capable of gripping a surface. In use the jaws are separated and placed around the surface before being closed and tightened such that the clamp, vice, clasp reversibly

grips the surface. A cord, strap, leash or similar structure is attached to the clamp. A spring loaded plastic toggle is attached to the end of the cord, strap, leash or similar structure. In use the cord, strap, leash or similar structure is secured around an item with the spring loaded plastic toggle. As the cord, strap, leash or similar structure is secured to the clamp the item is also secured to the clamp and the surface. In an embodiment the clamp consists of two jaws attached to a metal bar. As the bar moves one handle moves in relation to the other opening the jaws such that the clamp can be attached to a table. In an embodiment the clamp consists of two curved handles attached to each other by a pin such that the handles create a jaw that can be open or closed. A ratchet connects the upper to the lower handle in such a way that movement of the handles relative to each other can be arrested. The preceding and following embodiments and descriptions are for illustrative purposes only and are not intended to limit the scope of this disclosure. Other aspects and advantages of this disclosure will become apparent from the following detailed description.

[0006] Certain terminology and derivations thereof may be used in the following description for convenience in reference only, and will not be limiting. For example, words such as “upward,” “downward,” “left,” and “right” would refer to directions in the drawings to which reference is made unless otherwise stated. Similarly, words such as “inward” and “outward” would refer to directions toward and away from, respectively, the geometric center of a device or area and designated parts thereof. References in the singular tense include the plural, and vice versa, unless otherwise noted.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Embodiments of the present disclosure are described in detail below with reference to the following drawings. These and other features, aspects, and advantages of the present disclosure will become better understood with regard to the following description, appended claims, and accompanying drawings. The drawings described herein are for illustrative purposes only of selected embodiments and not all possible implementations and are not intended to limit the scope of the present disclosure. Also, the drawings included herein are considered by the applicant to be informal.

[0008] **Figure 1** is an exploded view of one embodiment of the invention.

[0009] **Figure 2** is a close up view of the lower jaw from **Figure 1**

[00010] **Figure 3** is a close up view of the release trigger from **Figure 1**

- [00011] **Figure 4** is a side view of the upper jaw from **Figure 1**
- [00012] **Figure 5** is a side view of another embodiment of the invention
- [00013] **Figure 6** is a perspective view of the embodiment in **Figure 5**
- [00014] **Figure 7** is the embodiment in **Figure 5** viewed from above and behind
- [00015] **Figure 8** is a close up view of the locking plate from **Figure 5**
- [00016] **Figure 9** is a close up view of the ratchet from **Figure 5**
- [00017] **Figure 10** is a close up view of the clamp ends in **Figure 5**
- [00018] **Figure 11** is a view of the object securing device in use

DETAILED DESCRIPTION

[00019] In the Summary above and in this Detailed Description, and the claims below, and in the accompanying drawings, reference is made to particular features (including method steps) of the invention. It is to be understood that the disclosure of the invention in this specification includes all possible combinations of such particular features. For example, where a particular feature is disclosed in the context of a particular aspect or embodiment of the invention, or a particular claim, that feature can also be used, to the extent possible, in combination with and/or in the context of other particular aspects and embodiments of the invention, and in the invention generally.

[00020] The term “comprises” and grammatical equivalents thereof are used herein to mean that other components, ingredients, steps, among others, are optionally present. For example, an article “comprising” (or “which comprises”) components A, B and C can consist of (i.e., contain only) components A, B and C, or can contain not only components A, B, and C but also contain one or more other components.

[00021] Where reference is made herein to a method comprising two or more defined steps, the defined steps can be carried out in any order or simultaneously (except where the context excludes that possibility), and the method can include one or more other steps which are carried out before any of the defined steps, between two of the defined steps, or after all the defined steps (except where the context excludes that possibility).

[00022] The term “at least” followed by a number is used herein to denote the start of a range beginning with that number (which may be a range having an upper limit or no upper limit, depending on the variable being defined). For example, “at least 1” means 1 or more than

1. The term “at most” followed by a number (which may be a range having 1 or 0 as its lower limit, or a range having no lower limit, depending upon the variable being defined). For example, “at most 4” means 4 or less than 4, and “at most 40%” means 40% or less than 40%. When, in this specification, a range is given as “(a first number) to (a second number)” or “(a first number) – (a second number),” this means a range whose limit is the second number. For example, 25 to 100 mm means a range whose lower limit is 25 mm and upper limit is 100 mm.

[00023] In its broadest sense the disclosure consists of a clamp, vice, clasp or similar structure with an upper and lower jaw capable of gripping a surface. In use the jaws are separated and placed around the surface before being closed and tightened such that the clamp, vice, clasp reversibly grips the surface. A cord, strap, leash or similar structure is attached to the clamp. A spring loaded plastic toggle is attached to the end of the cord, strap, leash or similar structure. In use the cord, strap, leash or similar structure is secured around an item with the spring loaded plastic toggle. As the cord, strap, leash or similar structure is secured to the clamp the item is also secured to the clamp and the surface.

[00024] In a preferred embodiment as shown in **Figure 1** the securing device consists of a clamp with a curved upper **1** and lower jaw **2**. The distance from the inside left **3** of the upper or lower curve to the inside right **4** of the upper or lower curve is 2.0 to 3 inches giving the upper or lower curve an internal radius of 1.0 to 1.5 inches. The distance from the upper jaw’s inner wall at the point of highest curvature **5** to the top of the protective foot attached to the upper jaw **6** is preferably between 2 and 4 inches. The distance between the lower jaw’s lower wall at the point of highest curvature **7** and the end of the protective foot attached to the lower jaw **8** is likewise between 2 and 4 inches. Depending on the size of the surface the clip needs to be attached to the upper **1** and lower jaws **2** could be any height but a 2 inch opening between the jaws at closest approach **9** has been found to be suitable for most applications. These dimensions allow the securing device to fit inside a bag, purse, and the like.

[00025] A release trigger **10** sits on a lock return spring **11** which sits on top of a narrow horizontal segment **12** that is part of the lower jaw **2**. The upper **1** jaw is attached to a vertical metal bar **13** that runs vertically through a hole, **14** in **Figure 2**, in the narrow horizontal segment **12**, the lock return spring **11** and a hole **15** in the release trigger **10** as seen in **Figure 3**. The release trigger **10** sits in a groove on the lower jaw and is angled such that when not pressed the vertical metal bar **13** is allowed to slide downward bringing the upper **1** and lower **2** jaws

into close proximity. The angle of the release trigger **10** along with the upward force provided by the lock return spring **11**, however, prevents the vertical metal bar **13** and the upper jaw **1** from being pulled up unless the release trigger **10** is pressed downward. When the release trigger **10** is pressed downward on the angled piece **16** (**Figure 3**) which extends out of the lower jaw **2** the adjustment of the release trigger's **10** angle along with the downward force transferred by the release trigger **10** to the lock return spring **11** allows the vertical metal bar **13** and the upper jaw **1** to be pulled upward. A pin **17** at the bottom of the vertical metal bar **13** prevents the vertical metal bar **13** from being pulled out of the lower jaw **1**. Preferably the pin **17** is positioned 1/8 of an inch from the bottom of the vertical metal bar **13** and stops the vertical metal bar **13** from moving more than 2 inches past the bottom of the lower jaw **2**.

[00026] Underneath the narrow horizontal segment **12** of the lower jaw **2** a clamp trigger **18** sits atop a bar lock **19** which sits atop a compression spring **20** which sits atop a wide vertical section **21** of the lower jaw **2**. The vertical metal bar **13** discussed above slides through an opening, **22** in **Figure 2**, in the wide vertical section **21** of the lower jaw **2** and continues through the compression spring **20**, the bar lock **19**, and the clamp trigger **18** before continuing through the lock return spring **11** and the rest of the lower jaw **2** as described above. The vertical metal bar **13** then continues through a hole, **23** in **Figure 4**, in the bottom of the upper jaw **1**. At the top of the upper jaw **1** a screw **24** and a nut **25** secures the vertical metal bar **13** to the upper jaw **1**. The compression spring **20** along with the bar lock **19** keeps the vertical metal bar **13** from moving downward. When the clamp trigger **18** depresses the compression spring **20** the vertical metal bar **13** moves downward bringing the upper jaw **1** closer to the bottom jaw **2**. Grooves **26** on both the upper **1** and the lower **2** jaw improve the upper **1** and lower **2** jaws' grip on the surface in the closed position. Feet **6** and **8** at the ends of the upper **1** and lower **2** jaw help protect the surface being gripped.

[00027] The lower jaw **2** has a plurality of holes throughout. Pins **27** attached to cover plates **28** fit inside these holes which along with adhesive attaches the cover plates **28** to the lower jaw **2**. The cover plates **28** cover and protect the release trigger **10**, the bar lock **19**, the compression spring **20**, the lock return spring **11**, the bottom portion of the lower jaw **2** and a portion of the clamp trigger **18**.

[00028] A cord, strap, leash or similar structure **29** is threaded through a hole in the lower jaw **2**. A cord lock or similar structure **66** is attached to the distal end of the cord, leash, or

similar structure **29** such that a loop capable of being expanded or contracted is created in the cord.

[00029] The jaws **1** and **2**, release trigger **10**, clamp trigger **18**, bar lock **19**, and the cover plates **27** can be made of any suitable material known in the art though they are preferably made of plastic. The vertical metal bar **13** and springs **20** and **11** can be made of any suitable material though both are preferably made of aluminum or steel. The cord **29** is preferably made of paracord and the feet **6** and **8** are preferably made of rubber but both can be made of any suitable material known in the art.

[00030] In an alternative embodiment shown in **Figures 5 – 10** the item securing device consists of two handles **30** and **31** curved on their distal ends. One handle **31** curves in a downward direction while one **30** curves in an upward direction and the two handles are crossed such that the distal ends form a clamp with an upper **32** and lower **33** jaw. Both handles contain two side walls **34 - 37**, a back wall **38-39**, an enclosing wall **40-41** (seen best in **Figure 7**) and a front bar **42-43** (seen best in **Figure 5** and **Figure 6**). Side walls **34-37** extend from the back wall **38-39**, which runs generally perpendicular to the side walls **34-37**, to slightly past the front bar **42-43** on their respective handles. On the upward curving handle **30** the enclosing wall **40** sits atop the side **34, 35** and back **38** walls such that the enclosing wall **40**, the side walls **34, 35**, the back wall **38**, and front bar **42** define an open space below the enclosing wall **40**. On the downward curving handle the enclosing wall **41** sits below the side walls **36, 37** such that the side walls **36, 37**, the back wall **39**, the enclosing wall **41** and the front bar **43** define an open space above the enclosing wall **41**. On both handles the enclosing wall **40, 41** ends before the front bar **42, 43** such that the side walls **34-37** and the front bar **42-43** define an open space on both sides of the front bar **42-43**. The handles are connected by a pin **44**, extending horizontally through both handles **30, 31** where the handles **30, 31** cross, and a ratchet strip **46** that extends through the upward curving handle **30** to the downward curving handle **31**. The ratchet strip **46** is attached to the downward curving handle **31** by a pin **47**, but extends up through a hole **48**, a thumb release **49** and a locking plate **50** into the upward curving handle **30**. The locking plate **50** lies on top of handle **30** below thumb release **49**.

[00031] Due to a very tiny slot **51** in the side of the upwardly curving handle **30** the thumb release **49** can slide back and forth. As the thumb release **49** slides back and forth more or less of the ratchet strip **46** emerges from the hole **48** in the upwardly curving handle and the thumb

release 49. A pin 47 attaches the ratchet strip 46 and a torsion spring 52 to the downwardly curving handle 31. The torsion spring 52 extends horizontally from one end of the downwardly curving handle 31 to another. When the thumb release 49 is pressed the upwardly 30 and downwardly 31 curving handles can be moved closer or farther away causing the torsion spring 52 to force more or less of the ratchet strip 46 out of the hole 48 in the upwardly curving handle 30 and the thumb release 49. When the desired distance between the curved distal ends of the upward and downward curving handles 30-31 is reached a locking plate 50 is used to keep the ratchet strip 46 from moving and the curved distal handle ends at the desired distance apart. Teeth, 53 in Figure 9, in the ratchet strip 46 fit into groves in the locking plate 50 and the ratchet strip 46 is thus kept from moving once the locking plate 50 is in place.

[00032] A clamp end 54-55 is attached to the distal curved end of both handles 30-31. Groves, 56 in Figure 10, on the clamp ends 54-55 allow the clamp ends 54-55 to be attached to the handles' 30-31 front bars 42-43 and to pivot about the front bars 42-43 in the front and back open space defined by the handles' 30-31 side walls 34-37 and front bar 42-43. Protective feet 57-58 are attached to the clamp ends 54-55.

[00033] A cord, leash, strap or similar structure 61 is threaded through a hole 59 in the downward curving handle 31. A cord lock or similar structure is attached to the distal end of the cord, leash, or similar structure 61 such that a loop capable of being expanded or contracted is created in the cord 61.

[00034] The handles 30-31, thumb release 49, ratchet strip 46, and locking plate 50 are preferably made of plastic but can be made of any suitable material known in the art. The pins 44 and 47, as well as spring 52 are preferably made of metal but can be made of any suitable material known in the art. The cord 61 is preferably made out of paracord but can be made of any suitable material known in the art. The protective feet 57-58 attached to the clamp ends 54-55 are preferably made out of silicon but can be made out of any suitable material known in the art.

Method of Use

[00035] To use the first embodiment the release trigger 10 is pressed. This changes the angle of the release trigger 10 along with applying downward force to the lock return spring 11. The vertical metal bar 13 and the upper jaw 1 can then be pulled upward until enough space is created between the upper 1 and lower 2 jaws to attach the clamp, 62 in Figure 11, to the surface

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63. The clamp 62 is then tightened by depressing the clamp trigger 18 which depresses the compression spring 20 and moves the vertical metal bar 13 and the upper jaw 1 down until the clamp 62 is tightly attached to the surface 63. An object 65 is then placed into the loop created by the cord 29 and the cord lock 66 slid along the cord 29 until the loop is tight around the object 65. The object 64 can now be placed on the surface 63 in confidence that if it is knocked off the cord 29 and clamp 62 will keep it connected to the surface 63.

[00036] The second embodiment is used by first sliding the thumb release 49 forward to release the ratchet strip 46. Once the ratchet strip 46 is released the handles 30-31 naturally move apart. Once the jaws are open enough they are placed around the surface. The upwardly and downwardly curving handles 30-31 are squeezed until the jaws close around the surface. The thumb release 49 is then slide back to secure the ratchet 46 and the jaws in place. An object is then placed into the loop created by the cord 61 and the cord lock slid along the cord 61 until the loop is tight around the object. The object can now be placed on the surface in confidence that if it is knocked off the cord 61 and clamp will keep it connected to the surface.

[00037] While preferred and alternate embodiments have been illustrated and described, as noted above, many changes can be made without departing from the spirit and scope of the object securing device. Accordingly, the scope of the object securing device is not limited by the disclosure of these preferred and alternate embodiments. Instead, the scope of the invention title be determined entirely by reference to the claims. Insofar as the description above and the accompanying drawings (if any) disclose any additional subject matter that is not within the scope of the claims below, the inventions are not dedicated to the public and Applicant hereby reserves the right to file one or more applications to claim such additional inventions.

[00038] The reader's attention is directed to all papers and documents which are filed concurrently with this specification and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

[00039] All the features disclosed in this specification (including any accompanying claims, abstract, and drawings) may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example of a generic series of equivalent or similar features.



[00040] Any element in a claim that does not explicitly state “means for” performing a specified function, or “step for” performing a specific function is not to be interpreted as a “means” or “step” clause as specified in 35. U.S.C. §112 ¶ 6. In particular, the use of “step of” in the claims herein is not intended to invoke the provisions of U.S.C. §112 ¶ 6.

SAMPLE

CLAIMS

I Claim:

[CLAIM 1] An object securing device comprising:

an upward curving jaw which engages a first surface;
a downward curving jaw which engages a second surface;
means for moving at least one of the upward the curving jaws and
downward curving jaws toward each other;
a slender length of flexible material connected to the tool; and
a spring loaded lock connected to a distal end of the slender length of
flexible material
such that a loop is formed in the slender length of flexible material capable
of surrounding an object.

[CLAIM 2] The object securing device of claim 1 wherein the upward and downward curving
jaws are made of plastic.

[CLAIM 3] The object securing device of claim 1 wherein the upward and downward curving
jaws are made of metal.

[CLAIM 4] The object securing device of claim 1 wherein the slender length of flexible
material connected to the tool is paracord.

[CLAIM 5] The object securing device of claim 1 wherein the tool further comprises protective
feet that are attached to both the upward and downward curving jaws.

[CLAIM 6] The object securing device of claim 5 wherein the protective feet are made of
silicon.

[CLAIM 7] An object securing device comprising:
A clamp;



The clamp further comprising a predominantly vertical bar with a proximal end with a left and right side that defines a proximal cavity;

A downwardly curving member with a predominantly straight portion, a curved portion, a distal end and a proximal end attached to the proximal hole of the vertical bar;

An upwardly curving member with a predominantly vertical portion, a curved portion, a distal end and a proximal end surrounding the distal end of the vertical bar such that the downwardly curving member and the upwardly curving member define a circular space;

The predominantly vertical portion further comprising a wide predominantly vertical segment with a distal end and a proximal end containing left and right sides that define a cavity which surrounds the vertical bar;

A narrow predominantly vertical segment with a proximal end extending predominantly vertically from the proximal end of the wide predominantly vertical segment;

A narrow predominantly horizontal segment, with a left and right side, that defines a cavity which surrounds the vertical bar, and a top end, extending from the proximal end of the narrow predominantly vertical segment in a predominantly horizontal direction away from the circular space defined by the downwardly curving member and the upwardly curving member such that the narrow predominantly horizontal segment, the narrow predominantly vertical segment and the wide



predominantly vertical segment define an open space;

A first spring with a top end attached to the top of the narrow predominantly horizontal portion such that the spring surrounds the vertical bar;

A first restraining member with a proximal end with left and right sides that define a cavity which surrounds the predominantly vertical bar and a distal end that extends beyond the first spring at an angle to the restraining members proximal end attached to the top end of the first spring;

A second spring with a top attached to the proximal end of the wide predominantly vertical segment such that the predominantly vertical bar surrounded by the cavity defined by the left and right sides of the wide predominantly vertical segment extends through the center of the spring;

A second restraining member with a right and left side that define a cavity attached to the top of the second spring such that the vertical bar extends through the second restraining member;

Means for reversibly compressing the second spring such that the vertical bar and the downwardly curving member attached to the vertical bar move downward when the spring is compressed;

A connecting member with a distal end attached to the distal end of the clamps upwardly curving member;

An attachment means attached to the distal end of the connecting member such that the connecting member can be wrapped around an object and attached reversibly to itself.

[CLAIM 8] The object securing device of claim 7 wherein the downwardly and upwardly curving members are made of plastic.

[CLAIM 9] The object securing device of claim 7 wherein the vertical metal bar, the first spring, and the second spring are made of aluminum.

[CLAIM 10] The object securing device of claim 7 wherein the vertical metal bar, the first spring, and the second spring are made of steel.

[CLAIM 11] The object securing device of claim 7 wherein the connecting member is made of paracord.

[CLAIM 12] The object securing device of claim 7 wherein the clamp further comprises protective feet attached to the distal ends of the upwardly and downwardly curving members.

[CLAIM 13] The object securing device of claim 12 wherein the protective feet are made of silicon.

[CLAIM 14] An object securing device comprising:

a clamp;

the clamp further comprising a top handle with a predominately straight section and a predominantly curved section, a front bar, and side walls connected to each other by an enclosing wall and a back wall such that the front bar, the side walls, the enclosing wall and the back wall define an open space below the handle;

a bottom handle with a predominately straight section and a predominantly curved section, a front bar and side walls connected to each other by an enclosing wall and a back wall such that the front bar, the side walls, the enclosing



wall, and the back wall define an open space above the handle;

a pin connecting the bottom and top handles latitudinally to each other such that the predominantly curved sections for a C shape, the predominately straight ends extend at an angle away from each other, and pressing the predominately straight ends toward each other causes the predominately curved ends to move toward each other;

gripping surfaces with side walls defining an open space attached to the front bar of the top and bottom handles such that the front bar fits into the open space defined by the gripping surfaces' side walls; a locking member attached to the enclosing wall of the top handle;

a releasing member with a top surface and two side surfaces attached to the top surface of the locking member such that the side surfaces extend past the locking member and over the side walls of the top handle; and a ratchet with a plurality of teeth on at least one edge connecting the straight ends of the top and bottom handles longitudinally and extending through the locking member, and the releasing member attached to the top surface of the top handle;

a connecting member with a distal end connected to the predominantly straight section of the bottom handle; and

an attachment means attached to the distal end of the connecting member such that the connecting member can be wrapped around an object and attached reversibly to itself.

[CLAIM 15] The object securing device of claim 14 wherein the top and bottom handles, the releasing member, the locking member and the ratchet strip are made of plastic.

[CLAIM 16] The object securing device of claim 14 wherein the pin is made of aluminum.

[CLAIM 17] The object securing device of claim 14 wherein the pin is made of steel.

[CLAIM 18] The object securing device of claim 16 wherein the connecting member is made of paracord.

[CLAIM 19] A method of securing an object to a surface comprising:

Obtaining a clamp with an attached connecting member with a distal end and an attachment means attached to the distal end of the attachment member;
securing the clamp to a surface; and
securing an item to the connecting member with the attachment means.

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ABSTRACT

The disclosure presented herein relates to a clamp, vice, clasp or similar structure with an upper and lower jaw capable of gripping a surface. In use the jaws are separated and placed around the surface before being closed and tightened such that the clamp, vice, clasp reversibly grips the surface. A cord, strap, leash or similar structure is attached to the clamp. A spring loaded plastic toggle is attached to the end of the cord, strap, leash or similar structure. In use the cord, strap, leash or similar structure is secured around an item with the spring loaded plastic toggle. As the cord, strap, leash or similar structure is secured to the clamp the item is also secured to the clamp and the surface.

SAMPLE

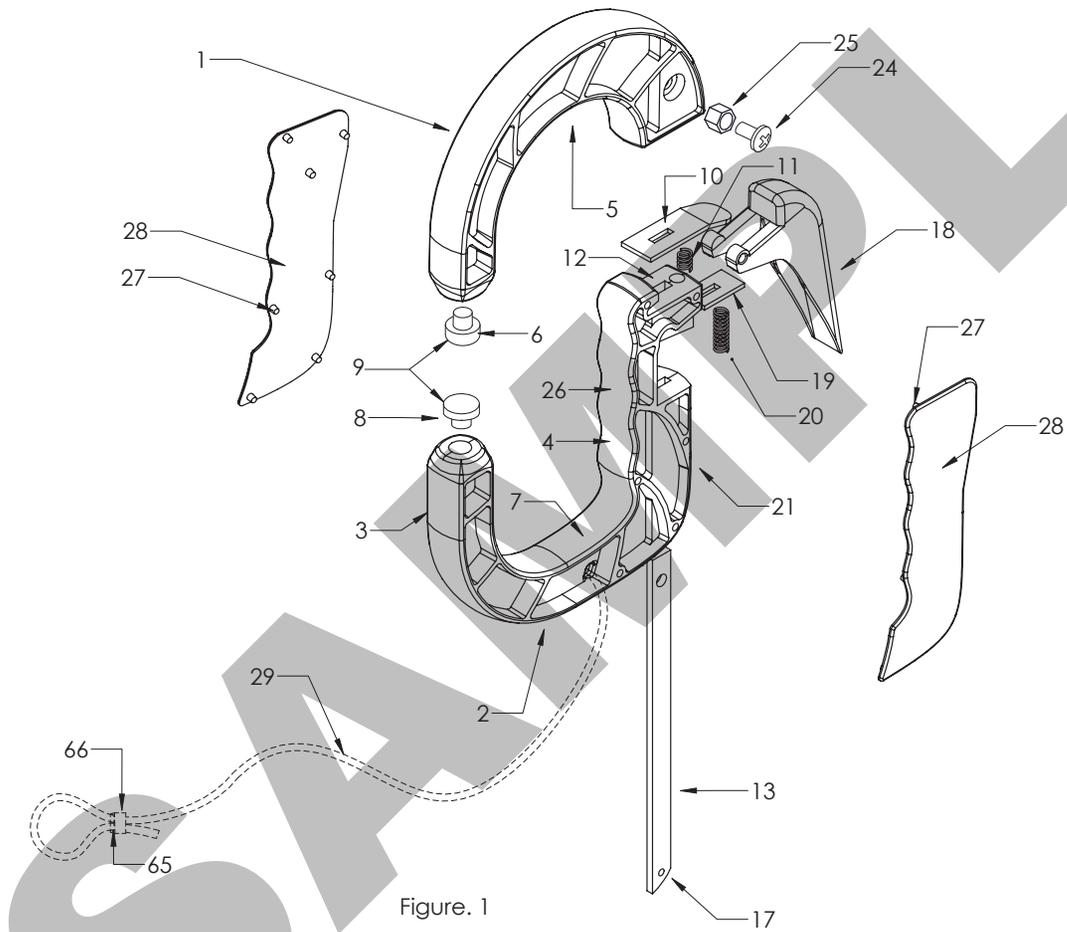


Figure. 1

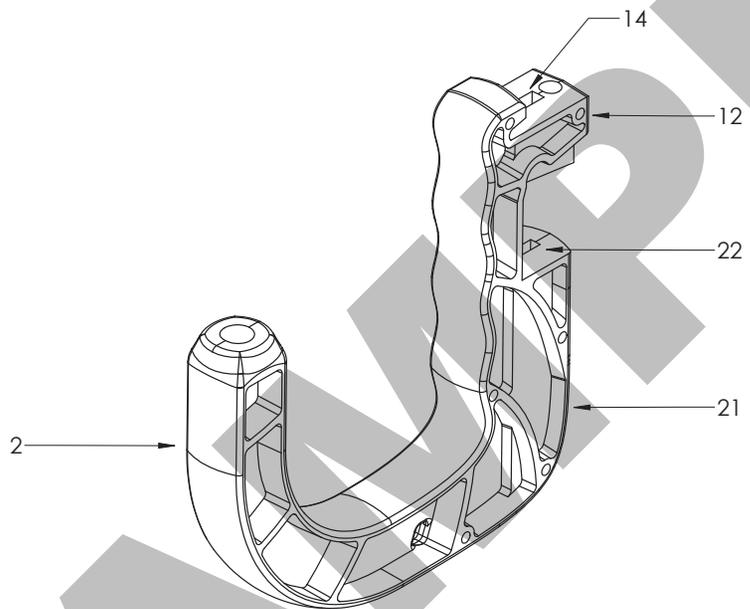


Figure. 2

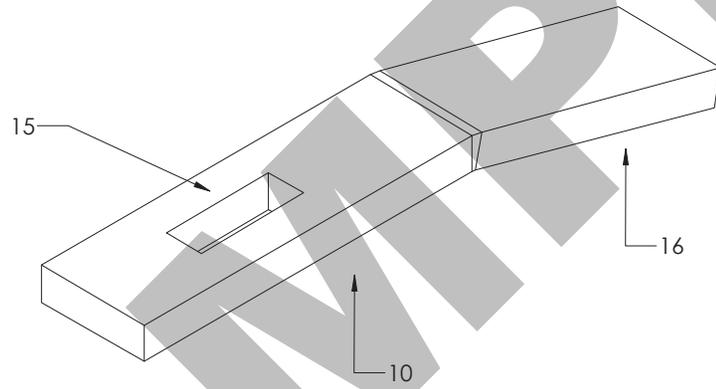


Figure. 3

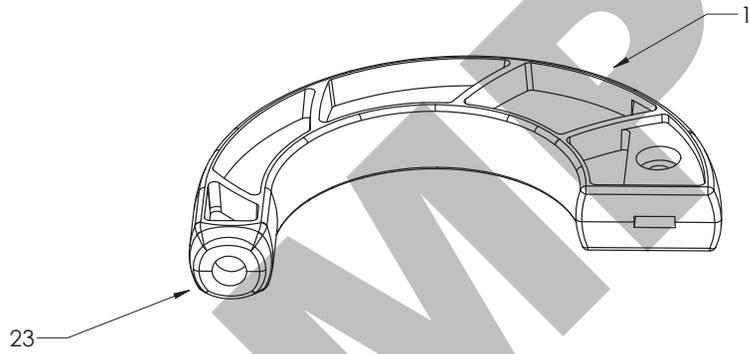
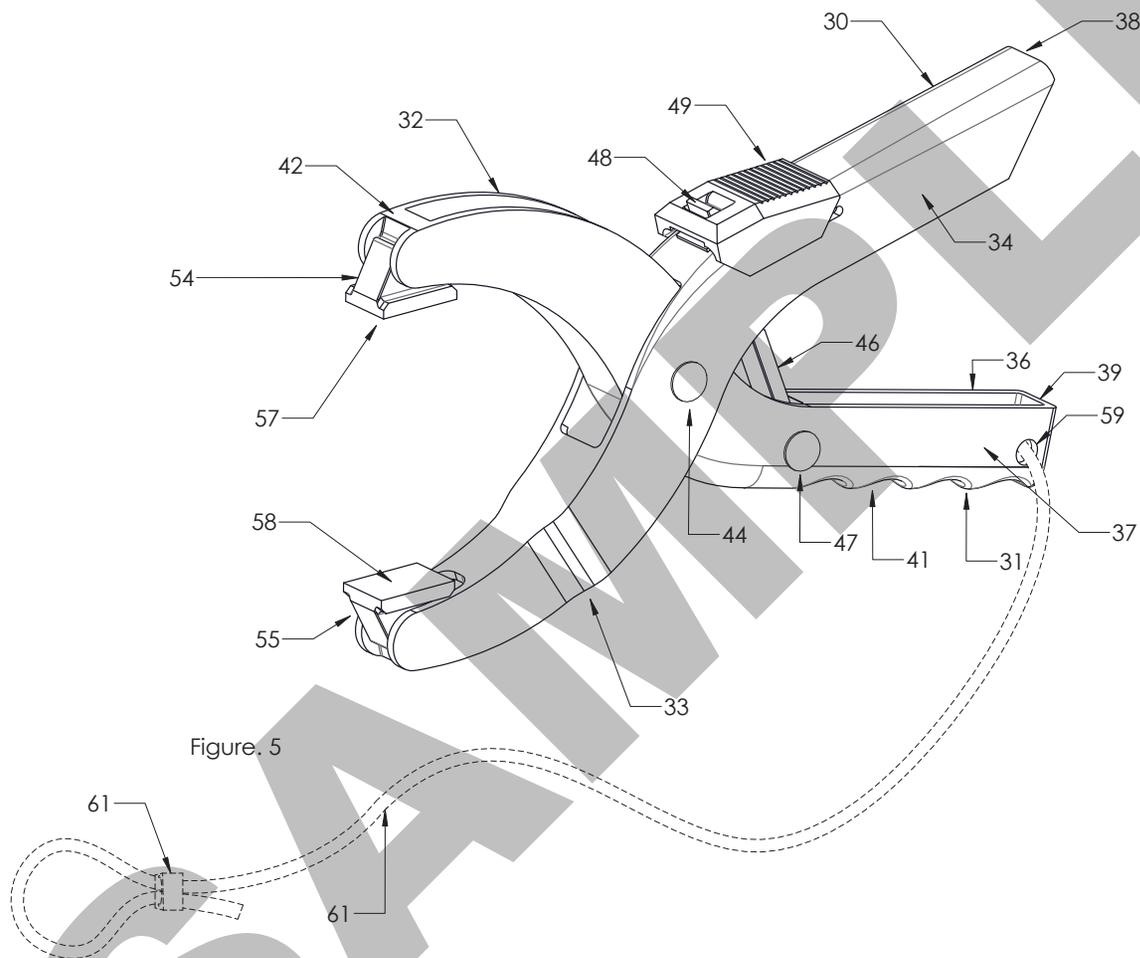


Figure. 4



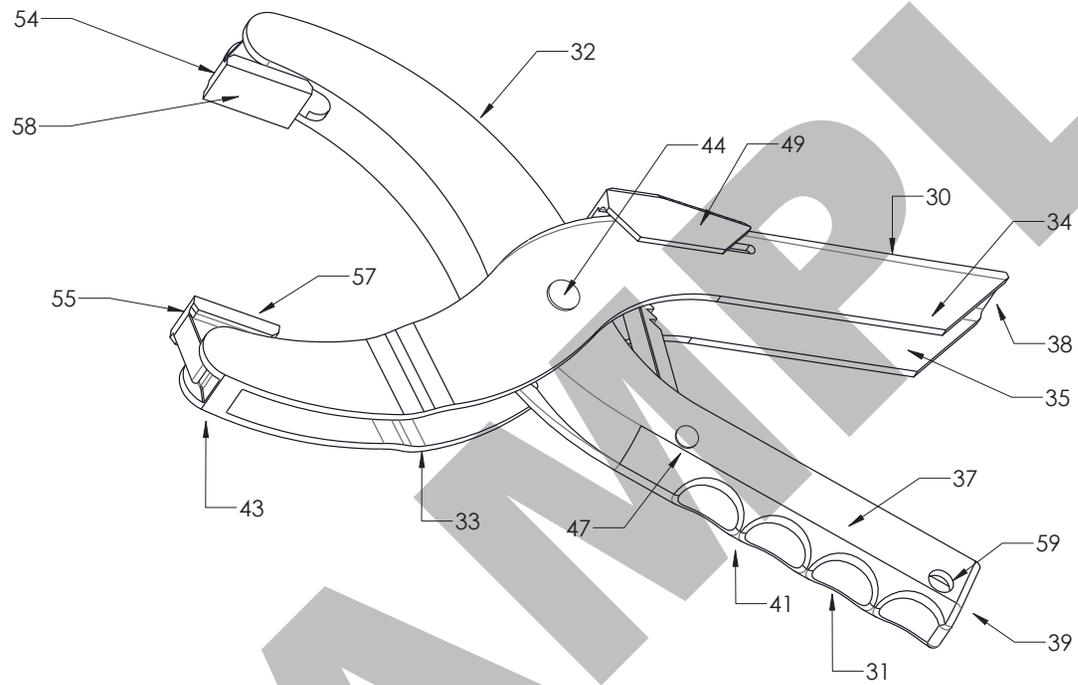


Figure. 6

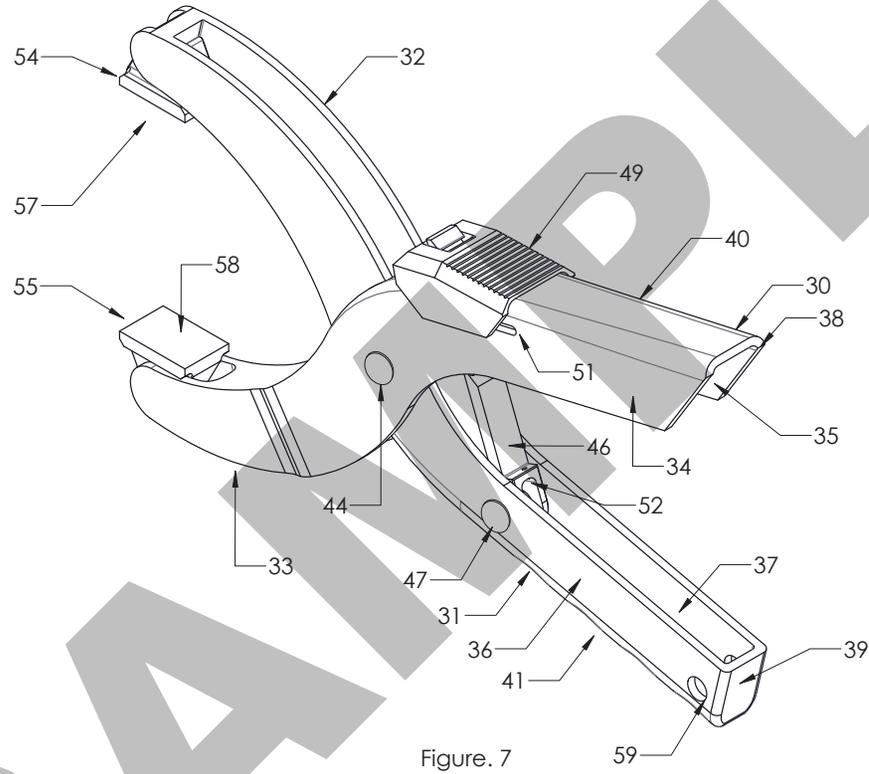


Figure. 7

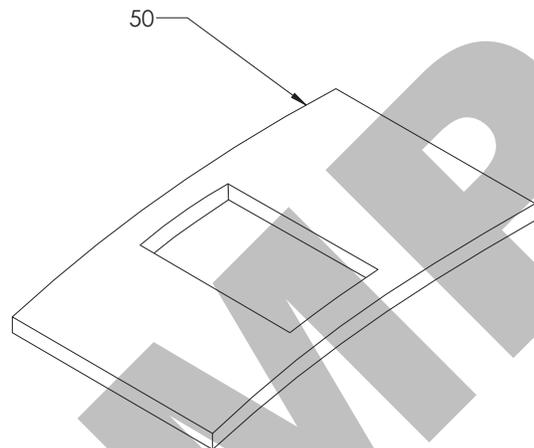


Figure. 8

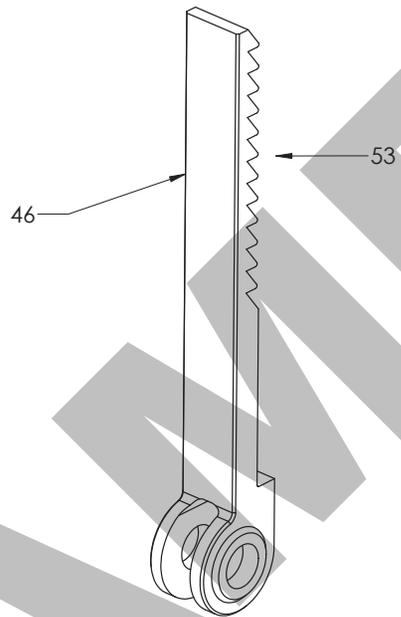


Figure. 9

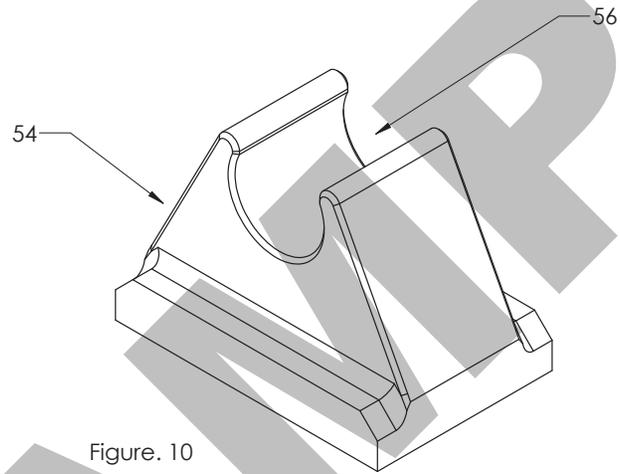


Figure. 10

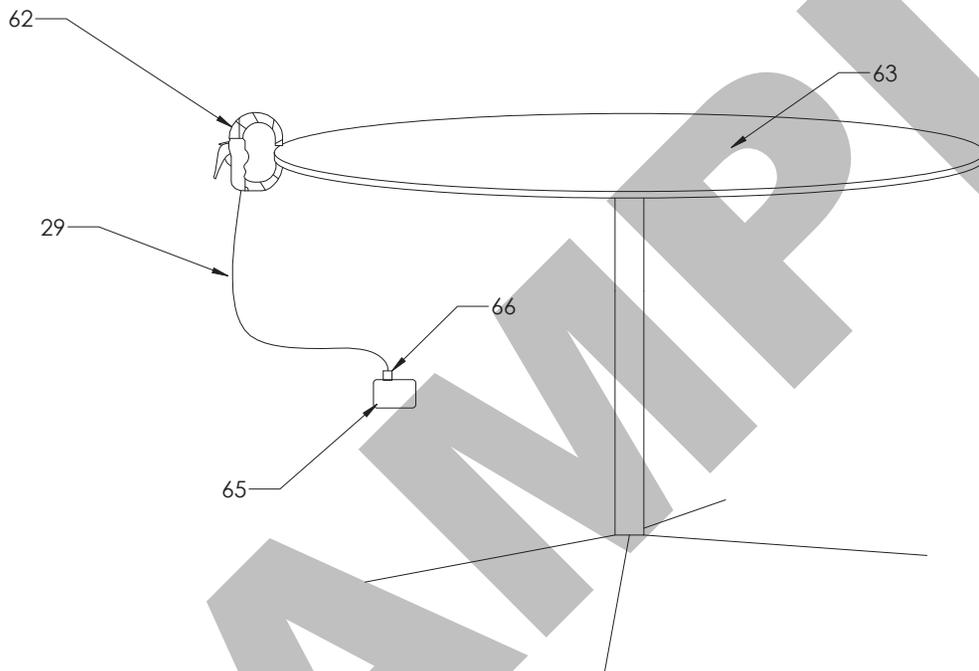


Figure. 11