



US 20070046046A1

(19) **United States**(12) **Patent Application Publication**
Camp(10) **Pub. No.: US 2007/0046046 A1**(43) **Pub. Date: Mar. 1, 2007**(54) **LOG TENDER****Publication Classification**(76) Inventor: **Francis L. Camp**, Medinah, IL (US)(51) **Int. Cl.****F24B 15/10** (2006.01)(52) **U.S. Cl.** **294/11**

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(57)

ABSTRACT(21) Appl. No.: **11/511,624**(22) Filed: **Aug. 29, 2006****Related U.S. Application Data**

(60) Provisional application No. 60/712,782, filed on Aug. 31, 2005.

The present invention is a device for manipulating logs and similar types of objects in a fire. The device comprises a hollow tube, a rigid rod inserted through a cavity of the hollow tube, whereby the rod and tube operate independently, a gripping end for grasping or cradling logs and a handle for manipulating the rod. In operation the device is held in one hand. The other hand manipulates the handle with a torsional force that translates into a torsional force at the gripping end.

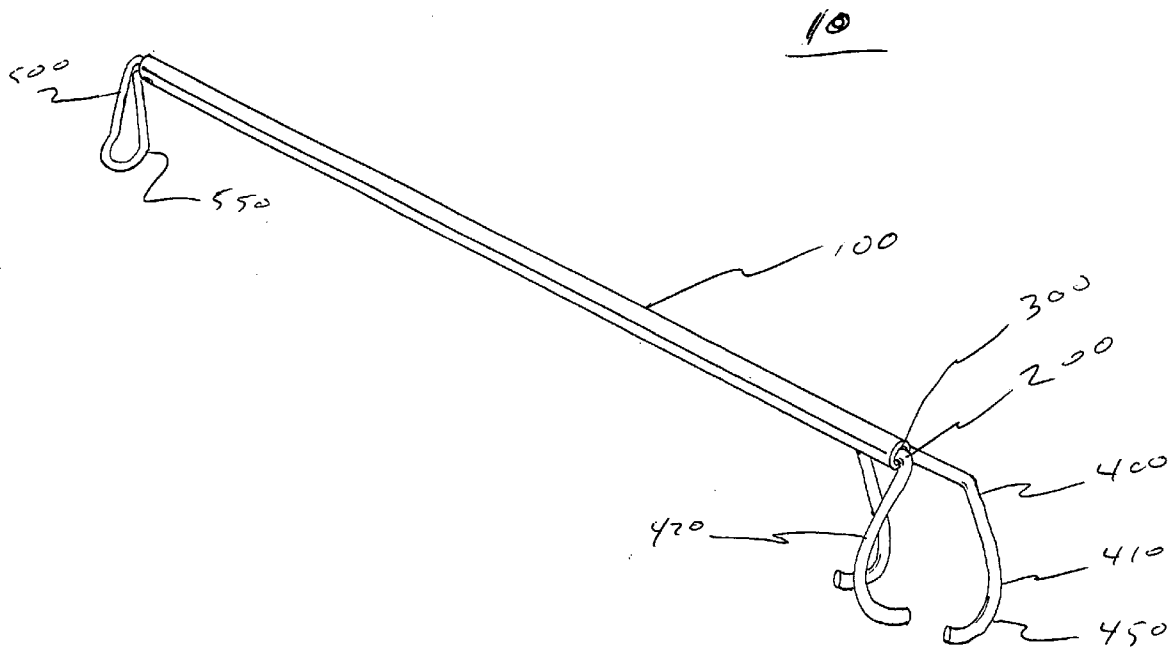


Fig 1

10

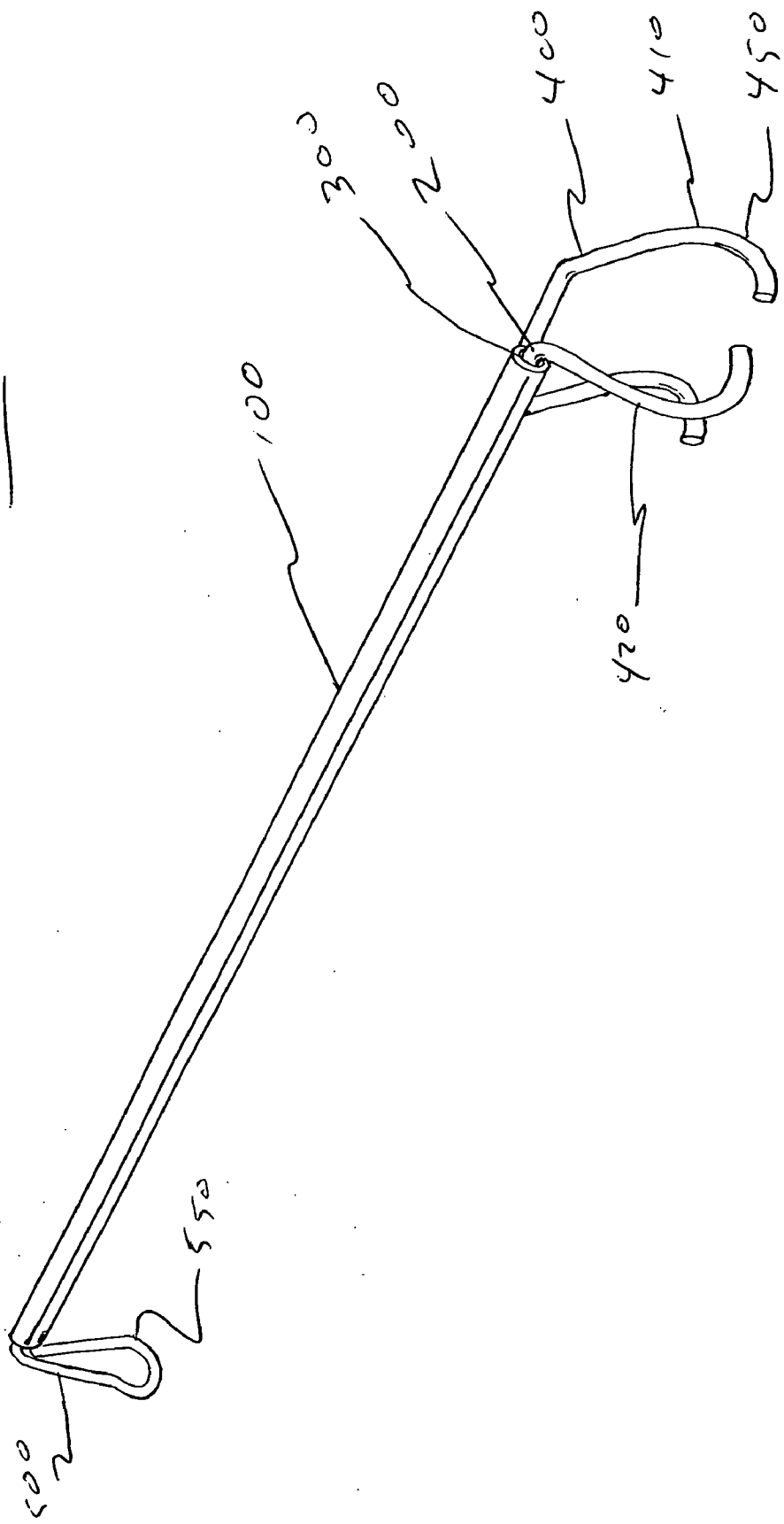
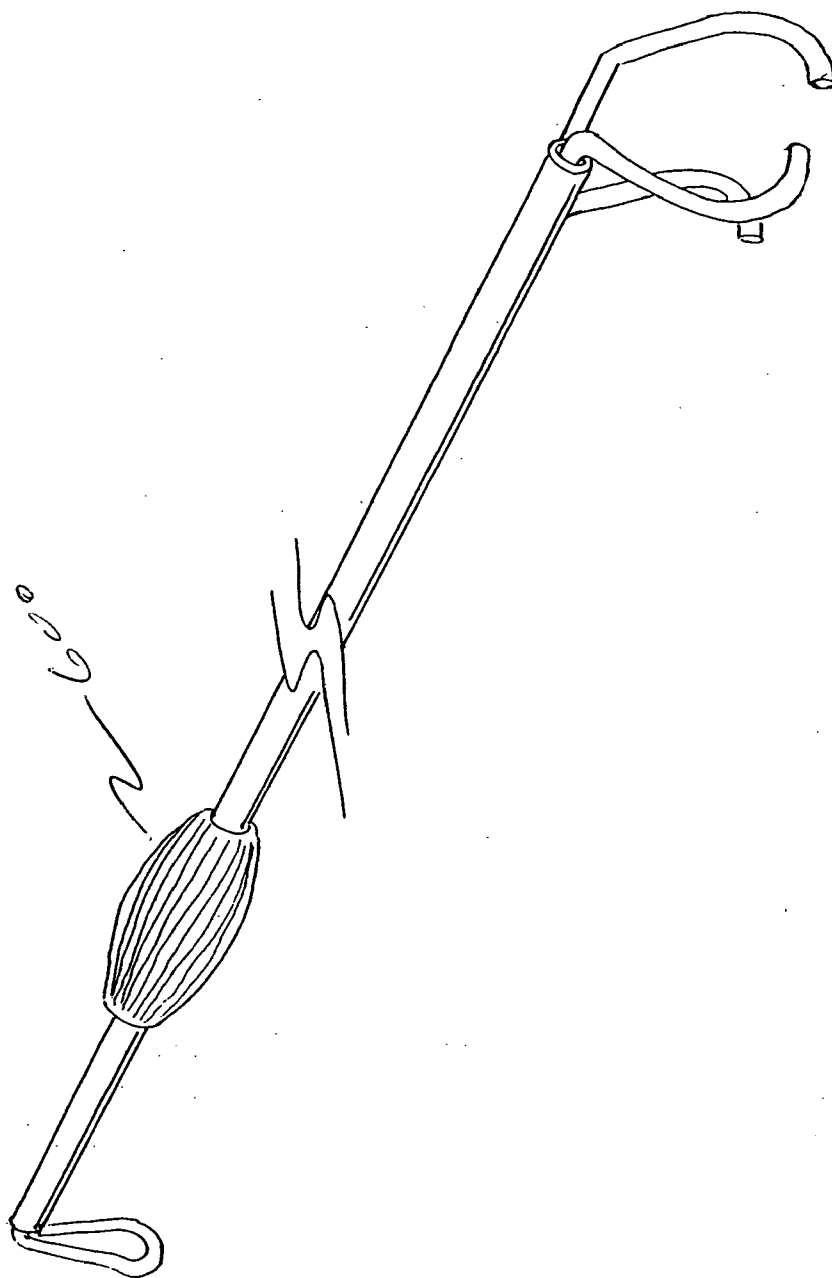
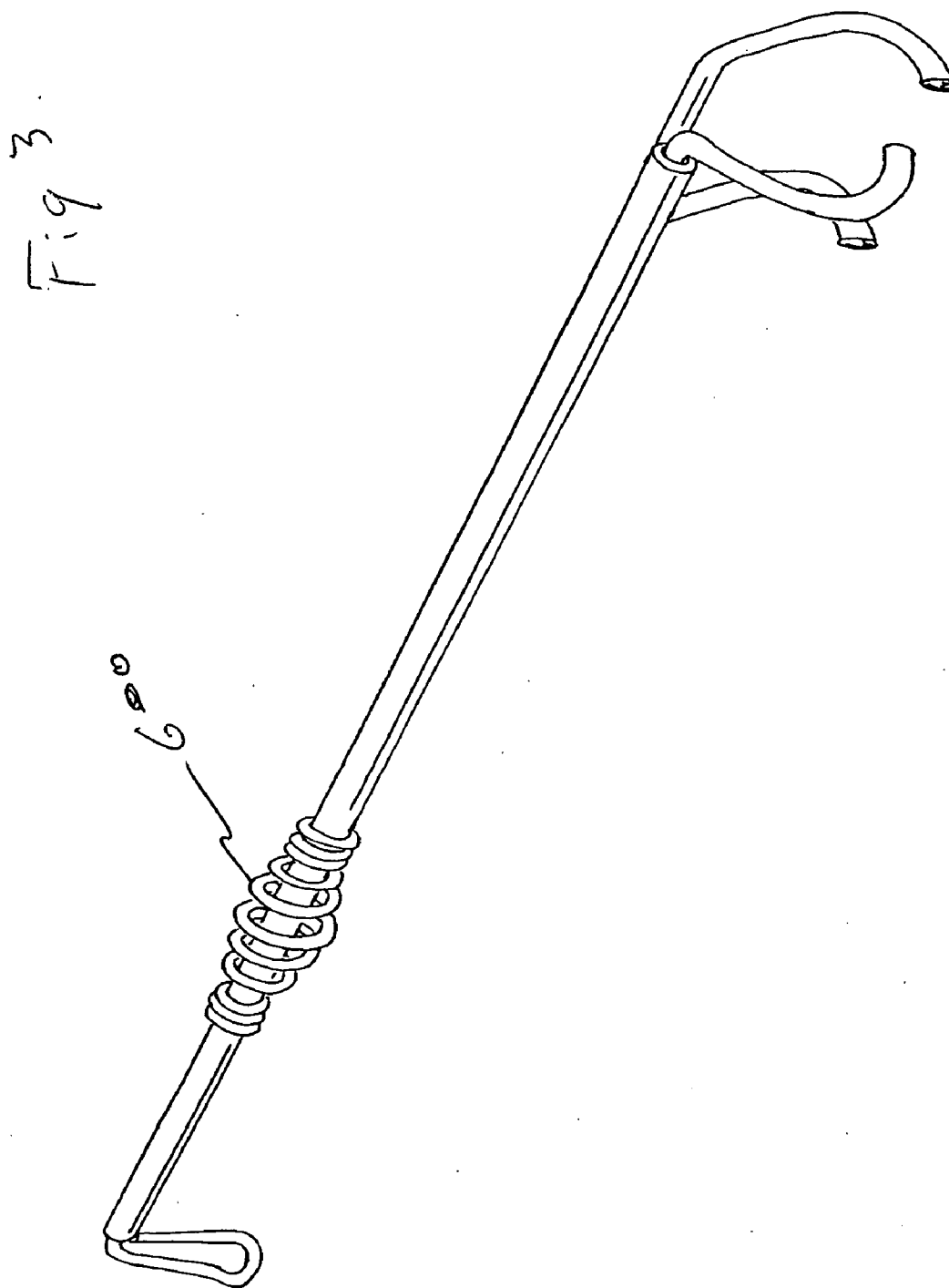
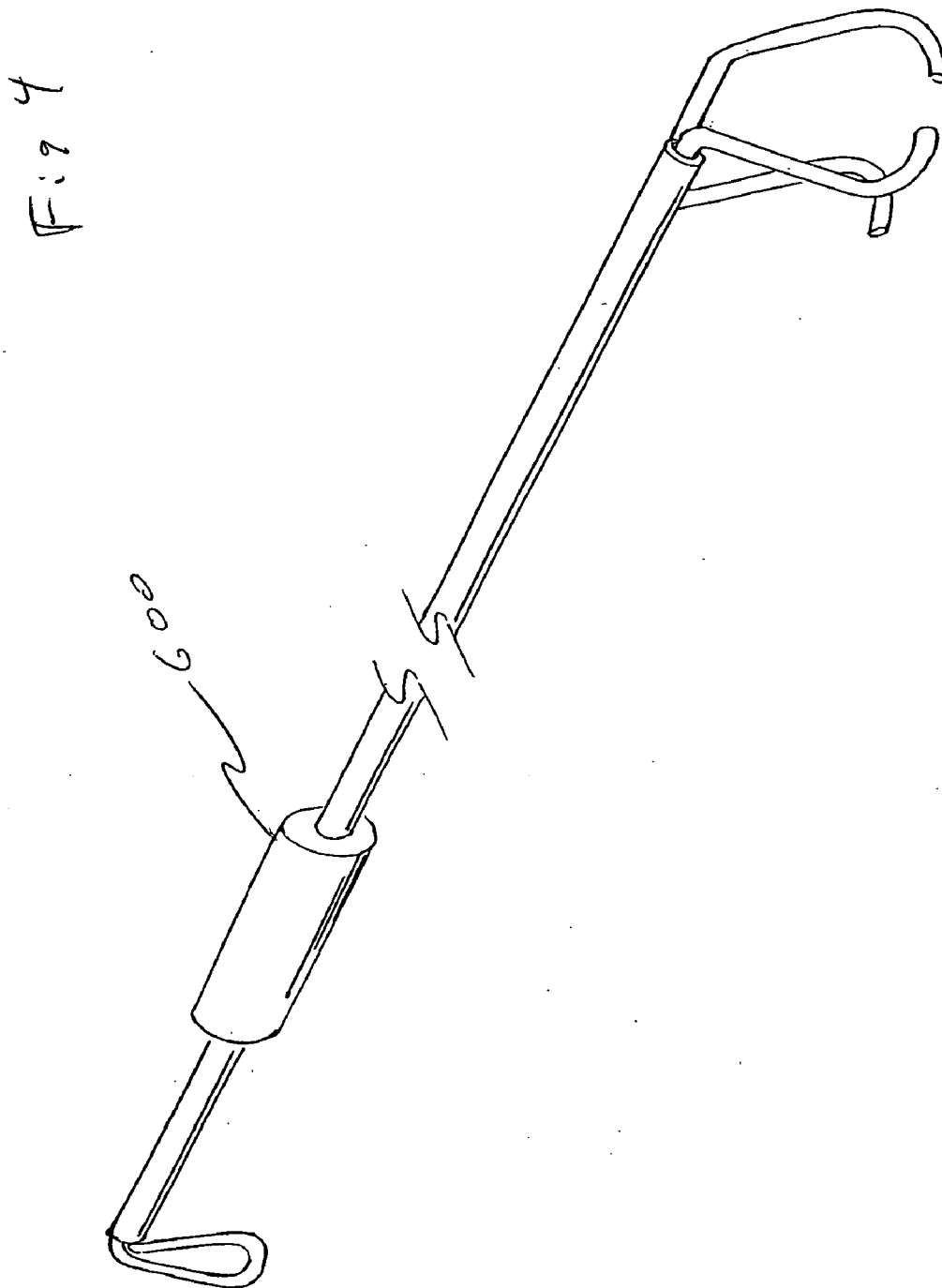
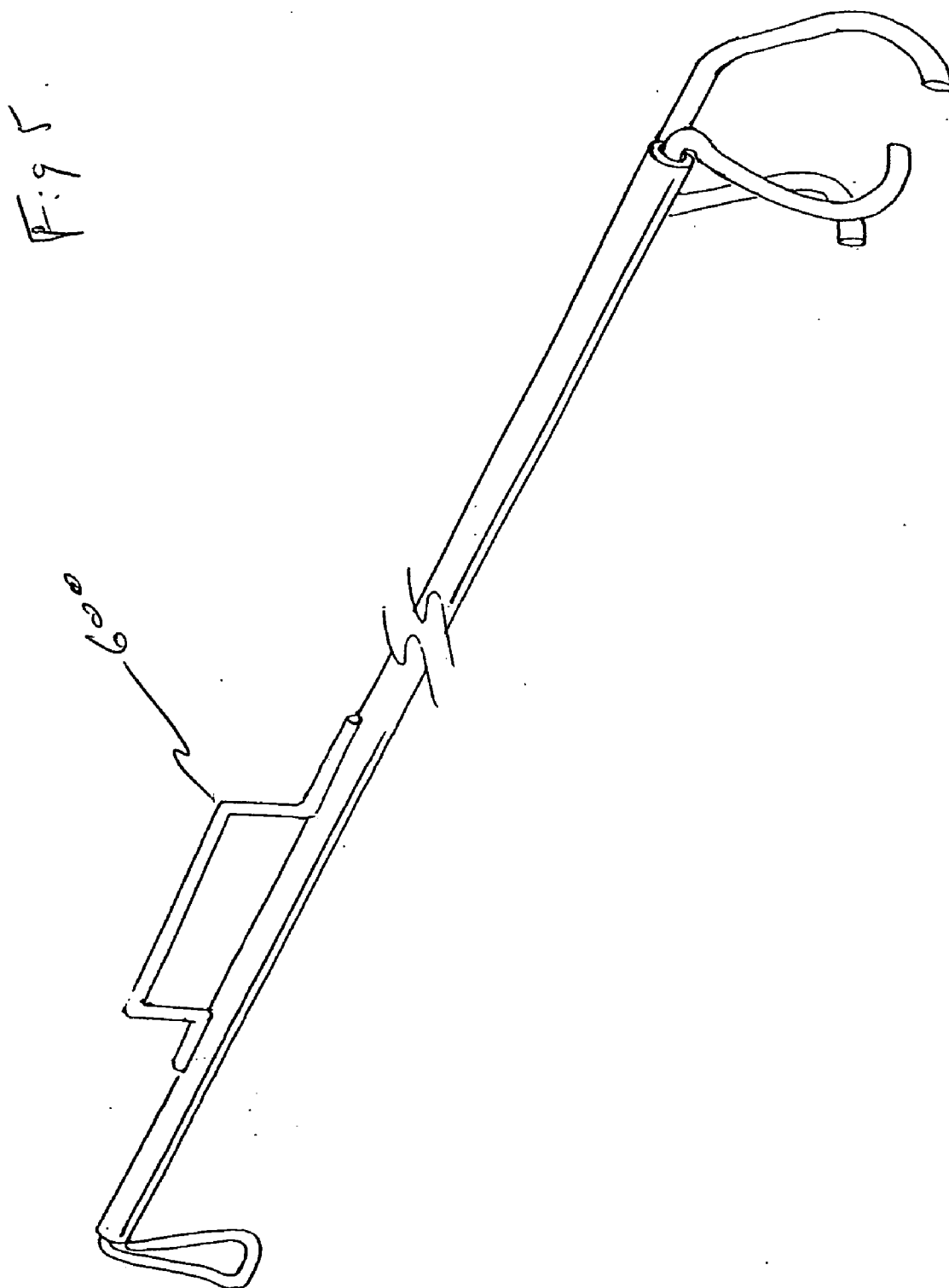


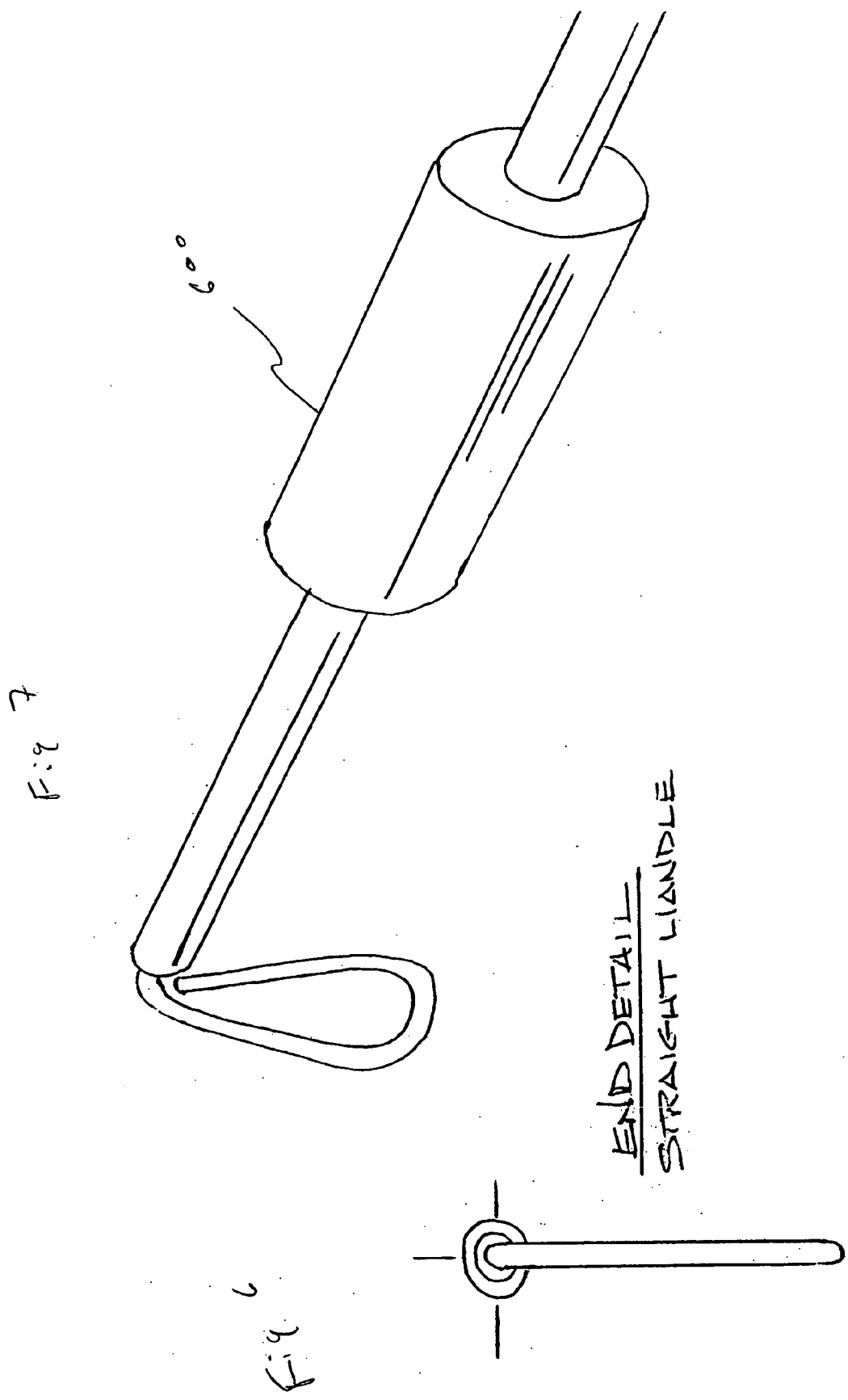
Fig 2

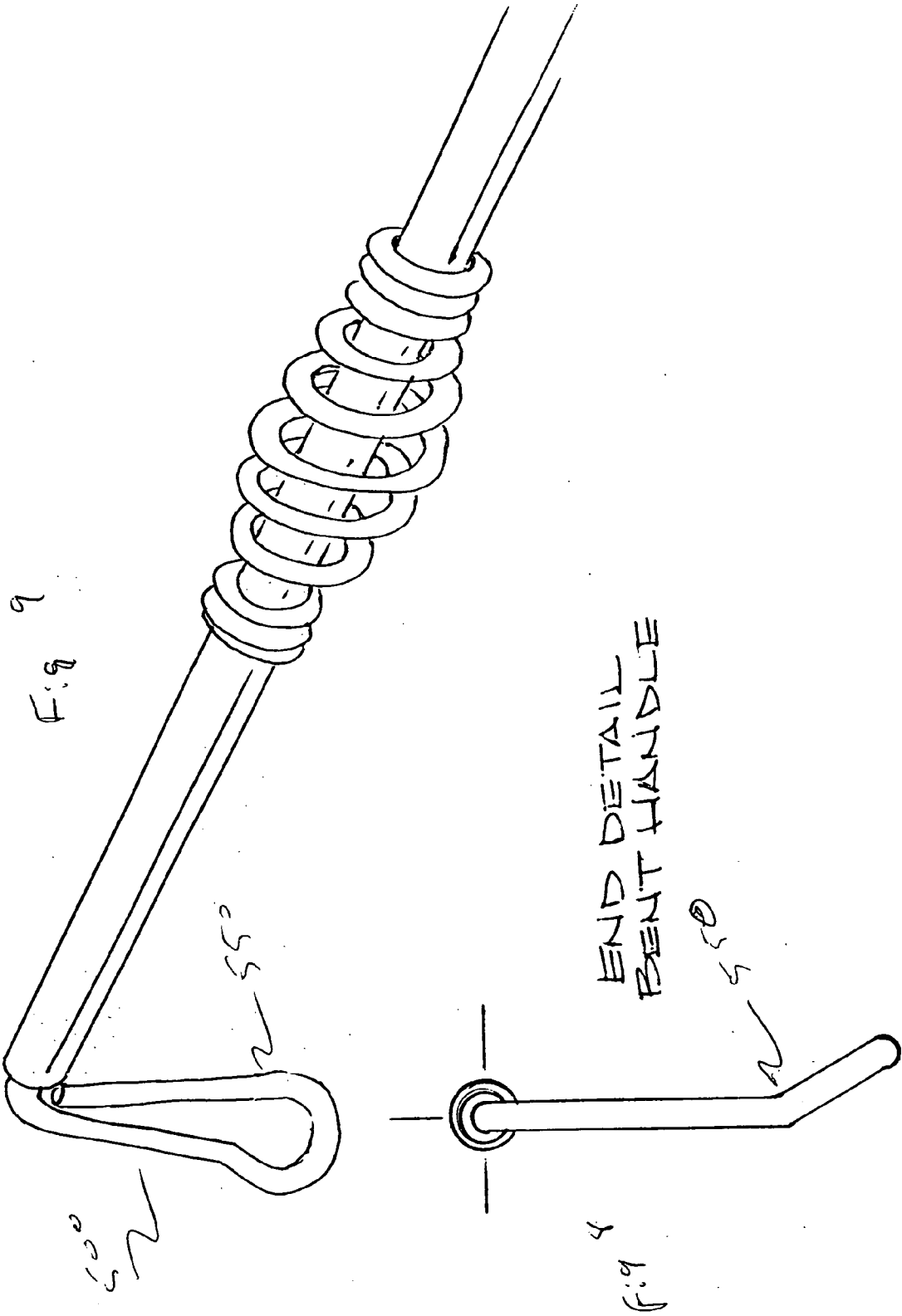


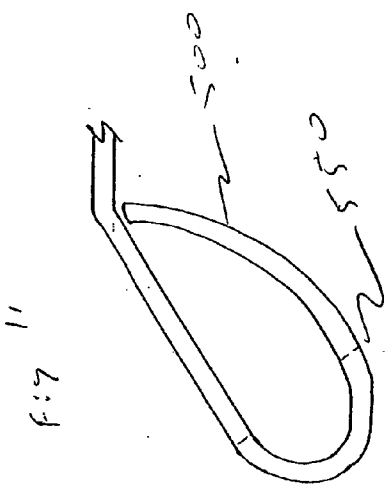
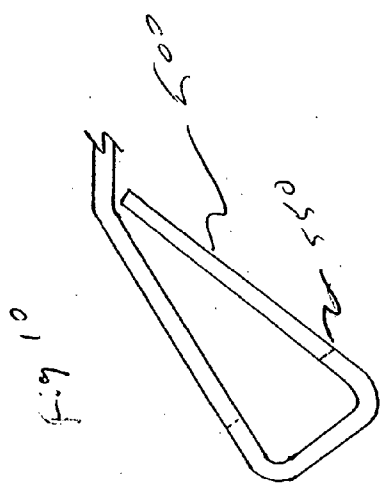




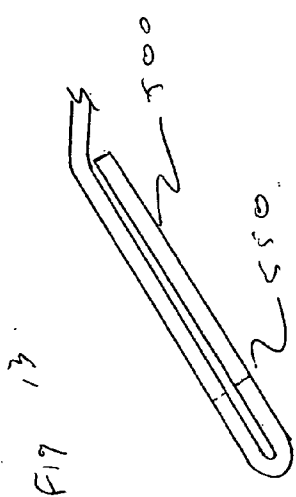
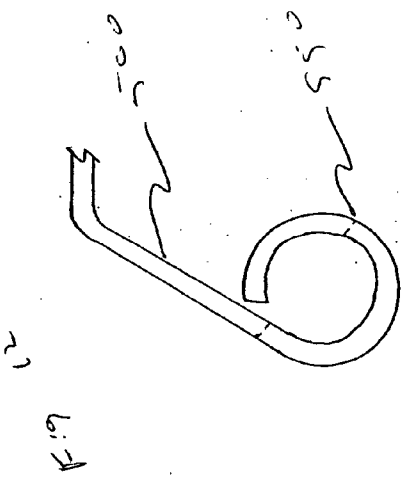








HANDLE STYLES



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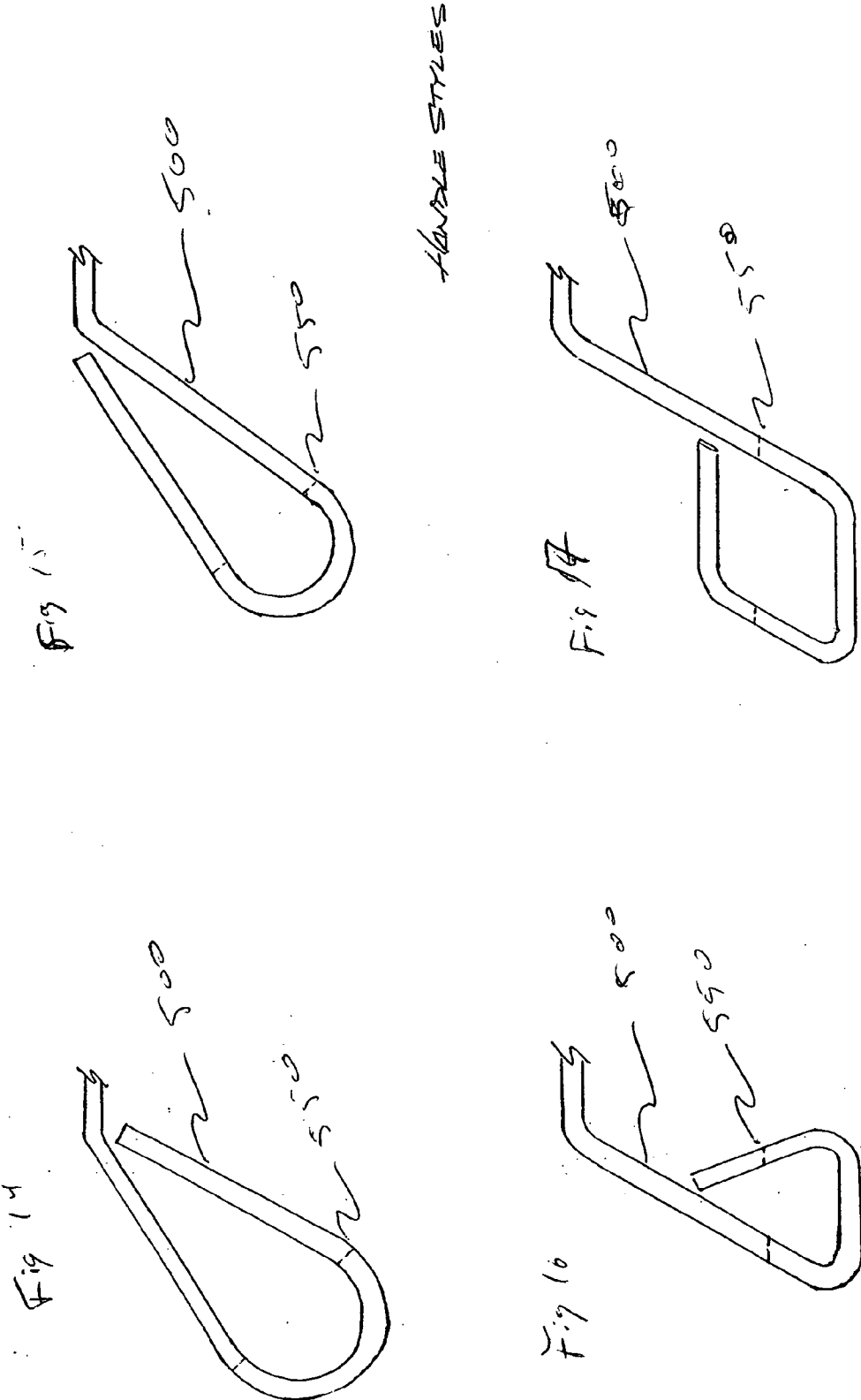
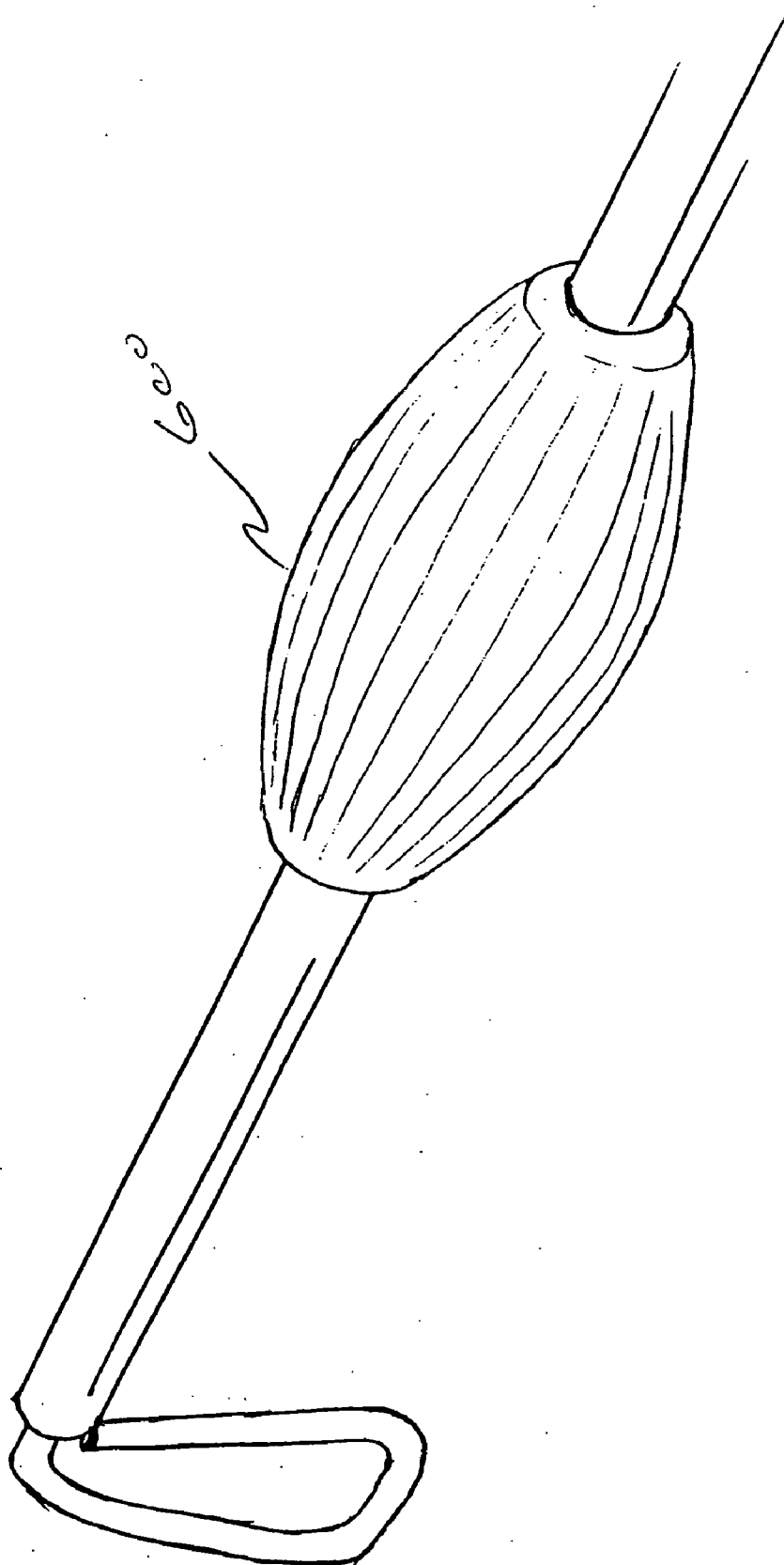


Fig. 18



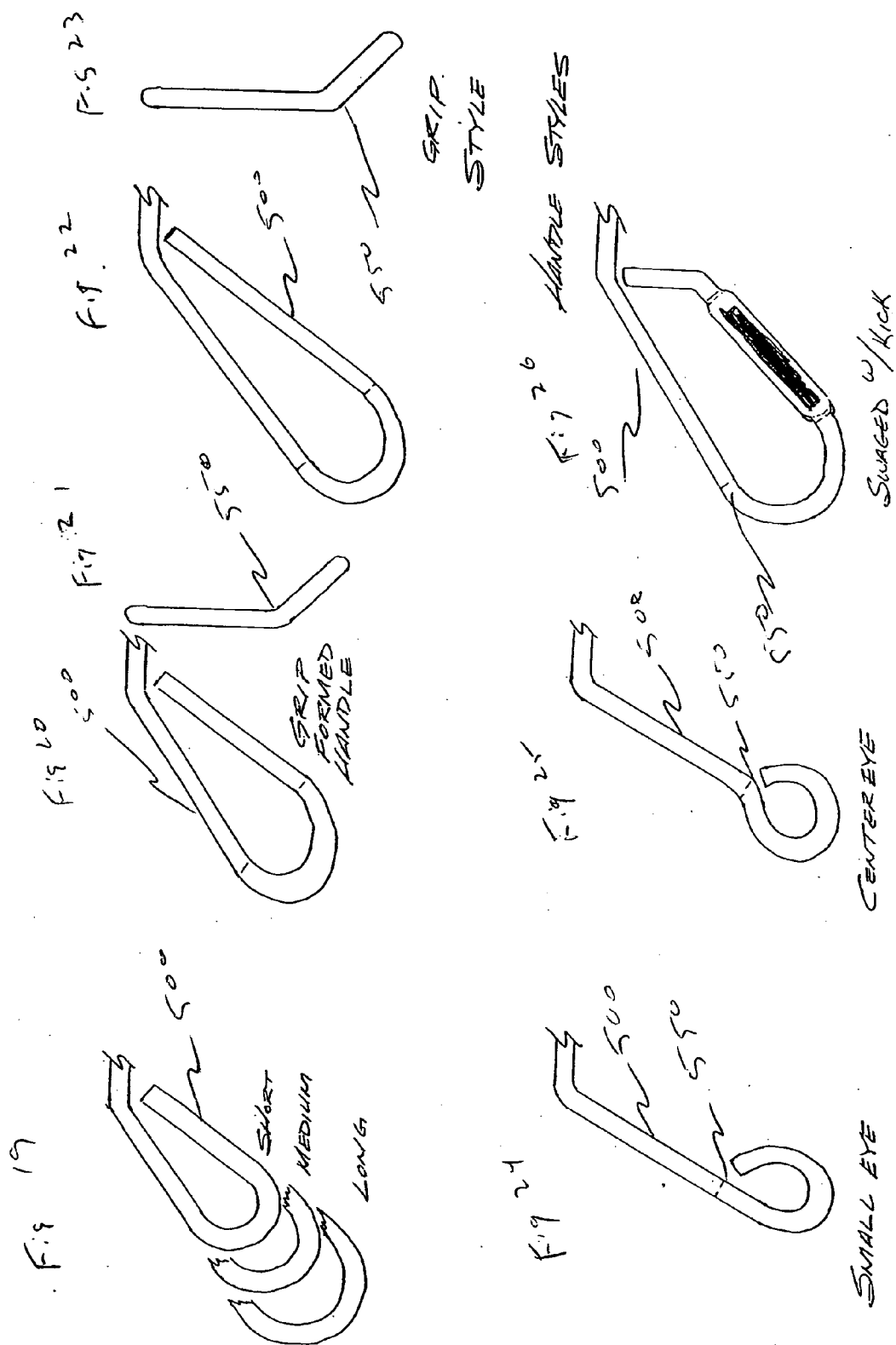
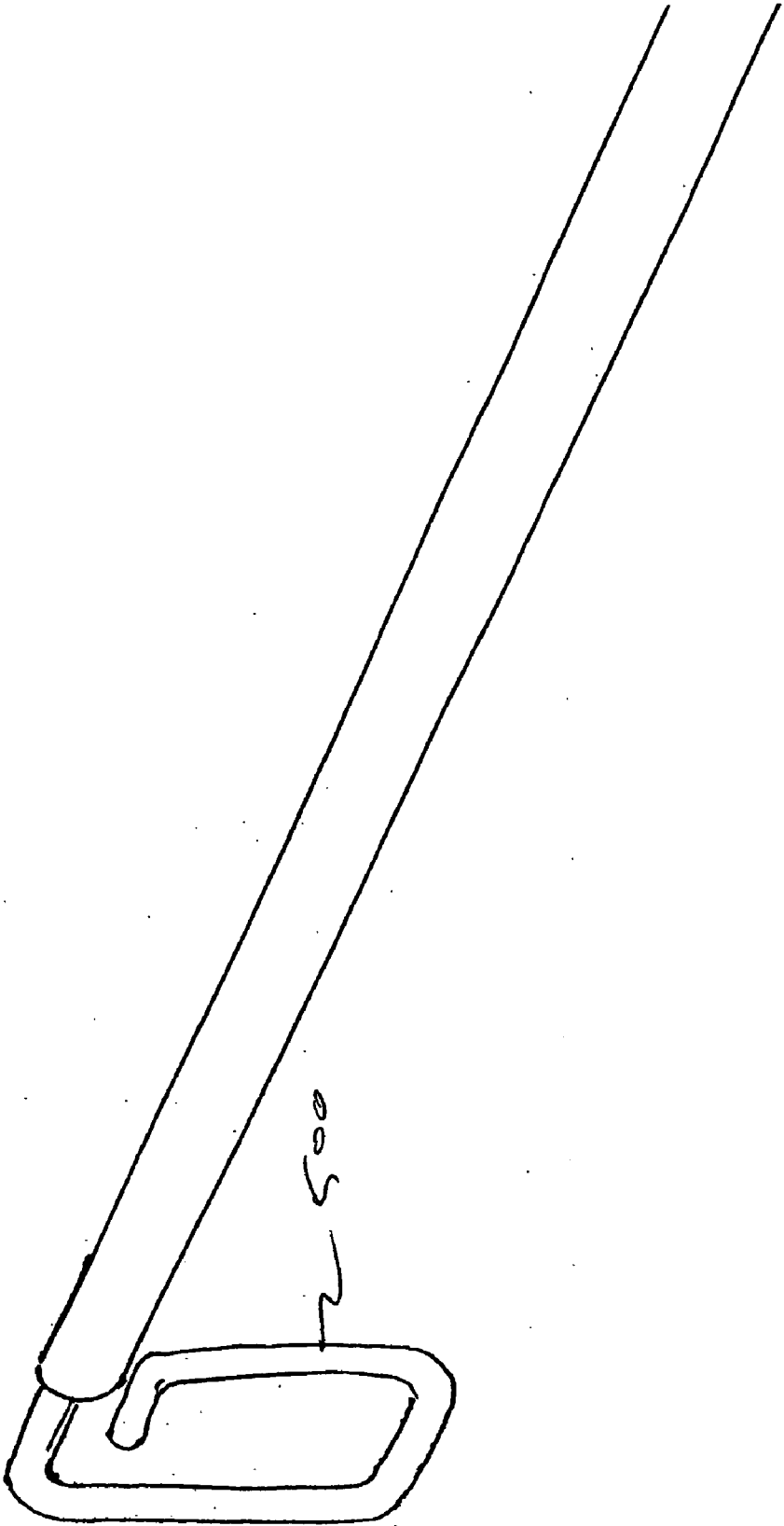
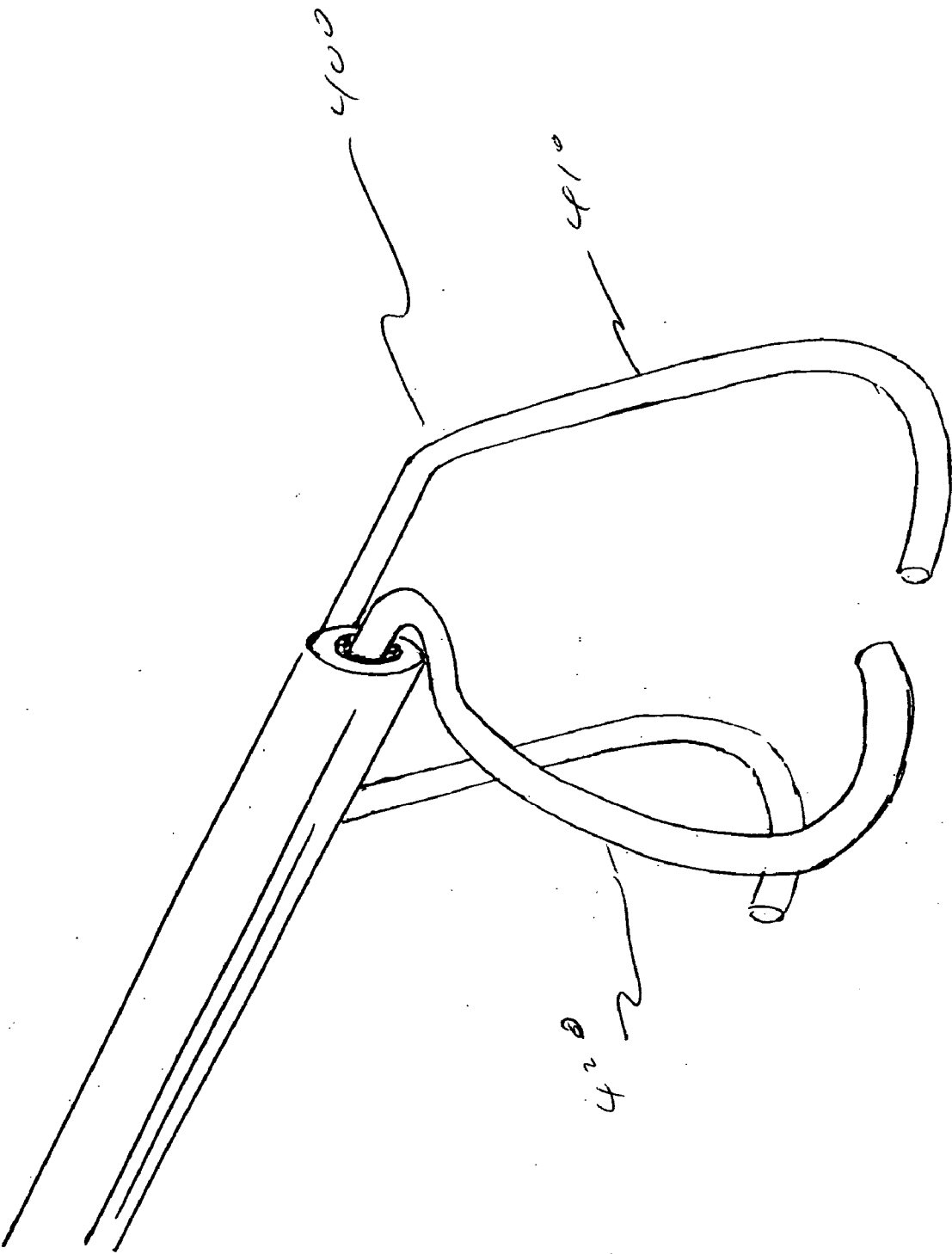


Fig. 27





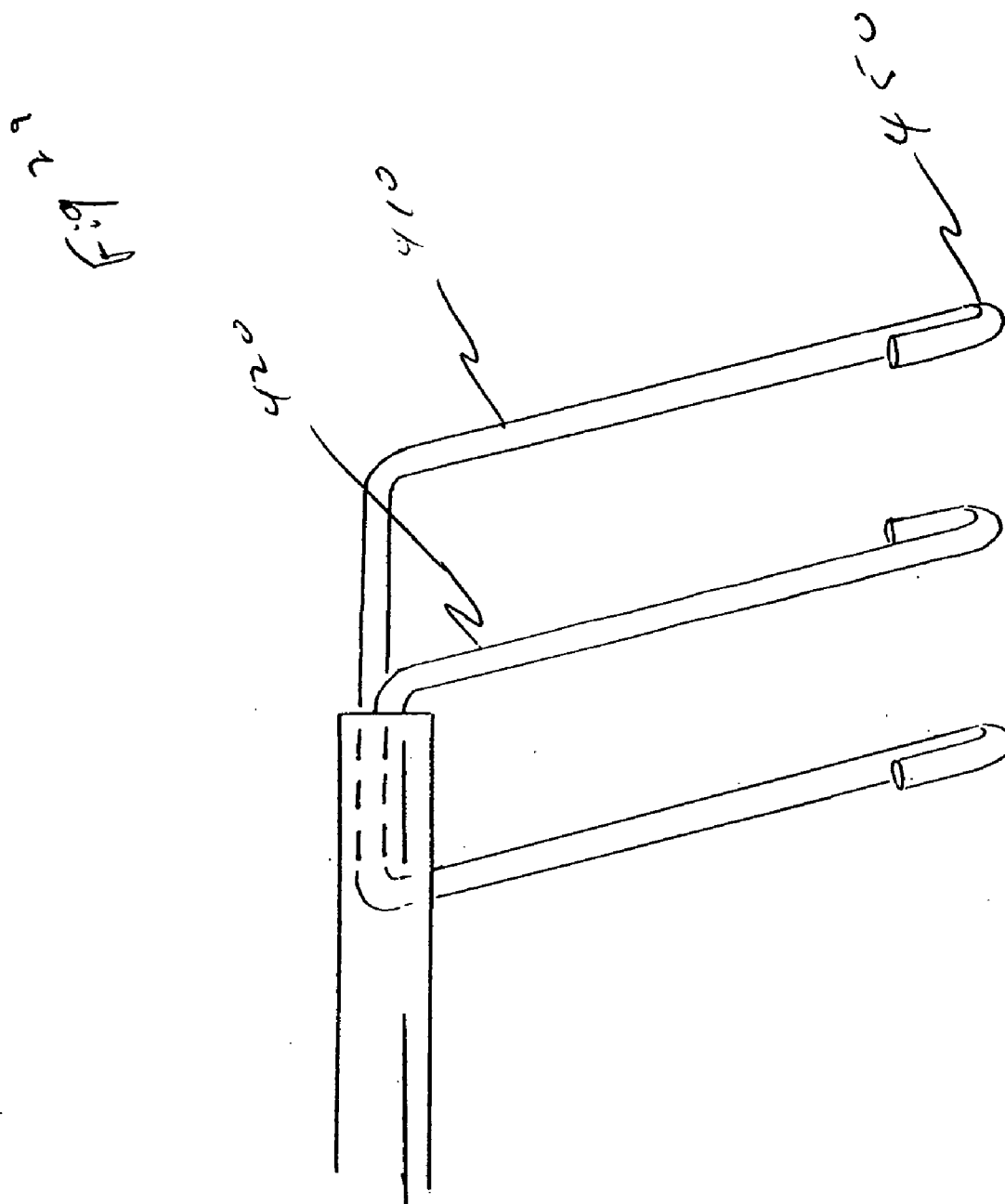
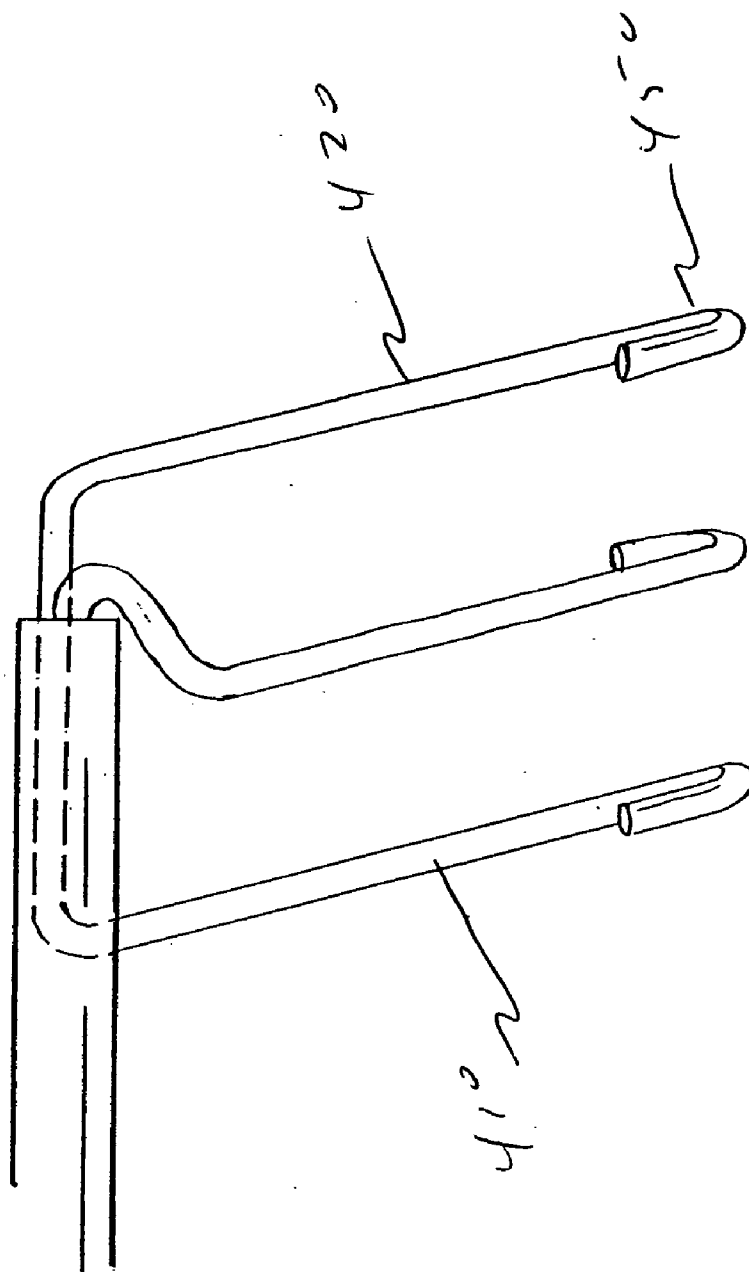
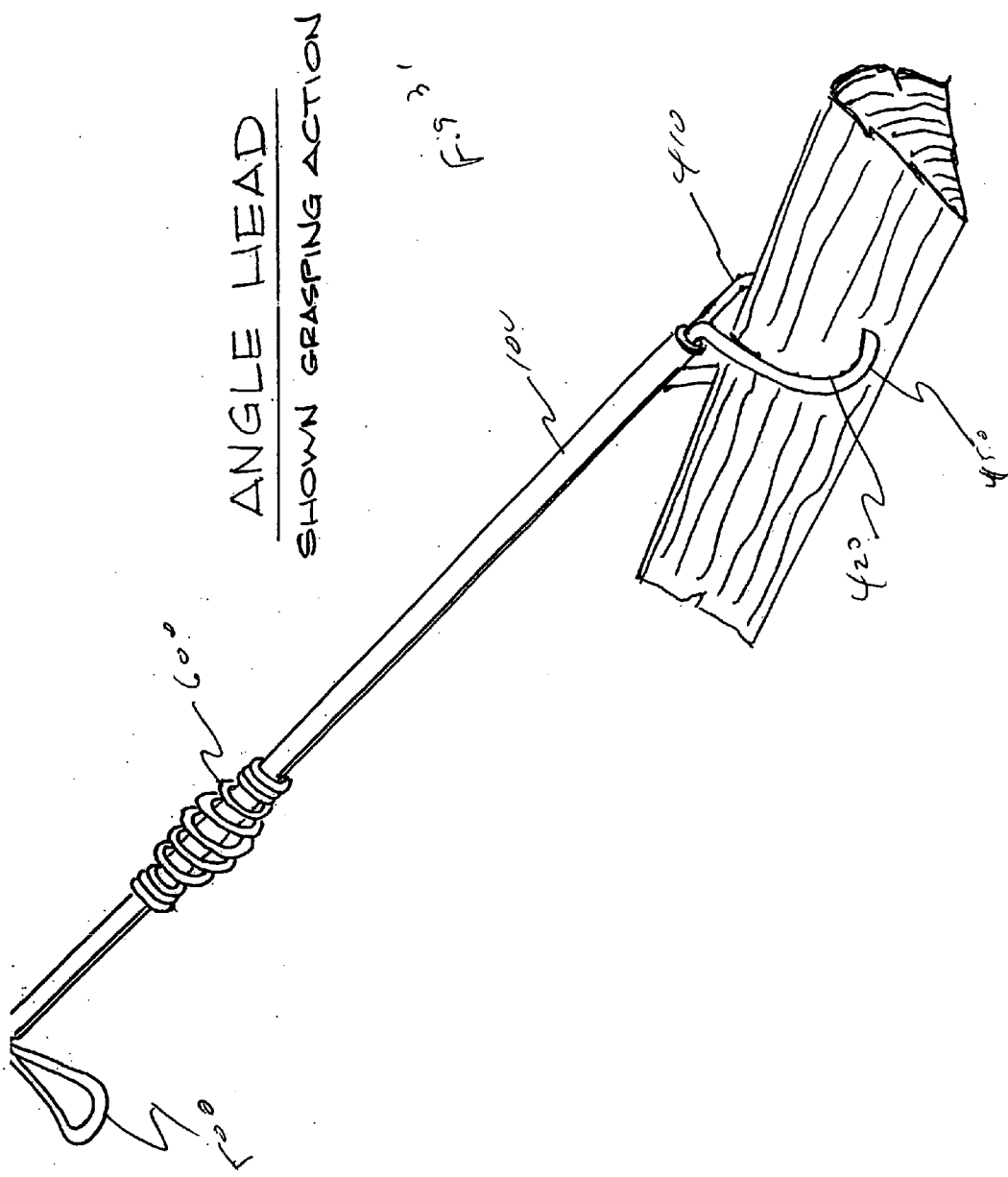
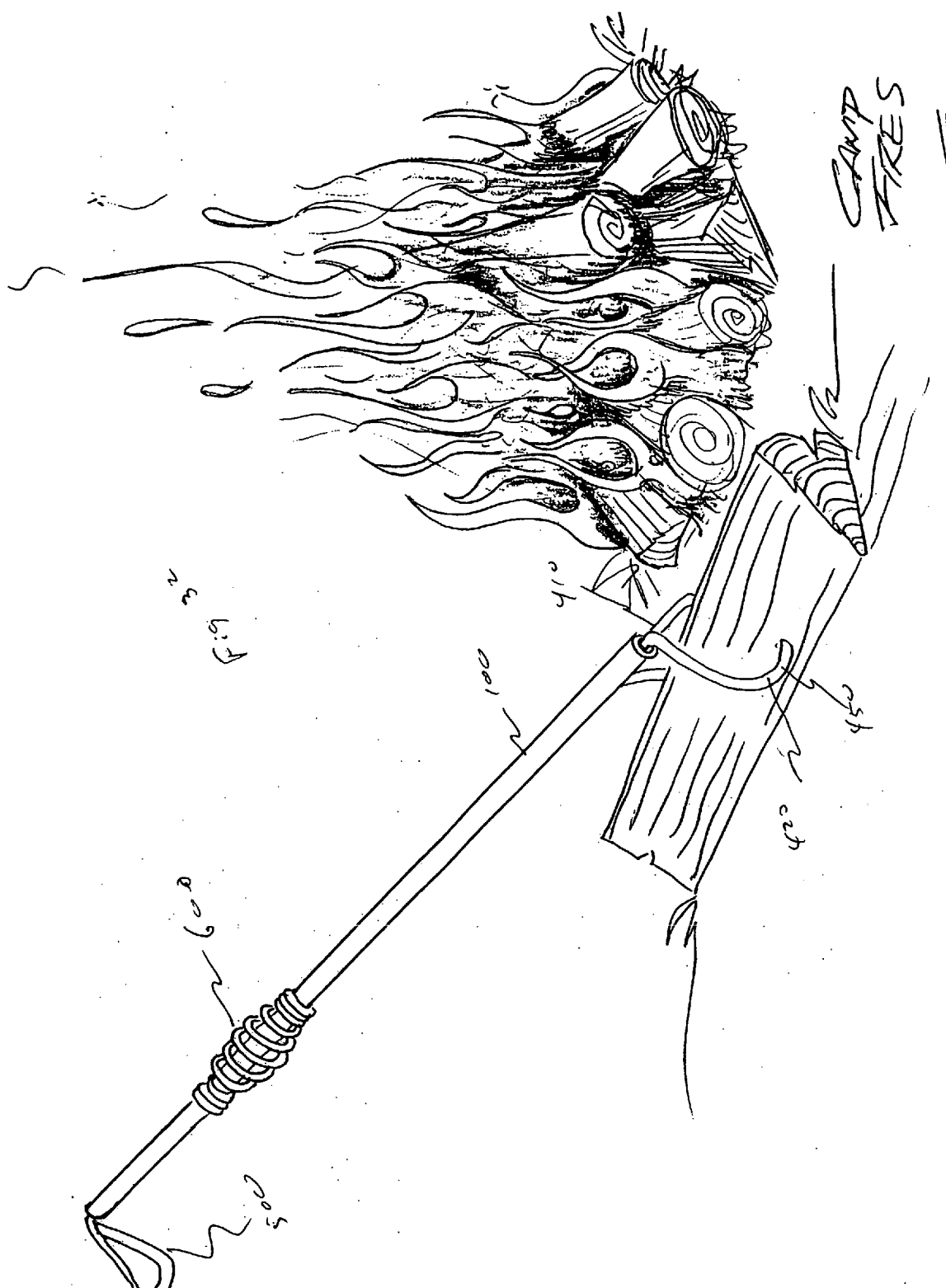


Fig. 9







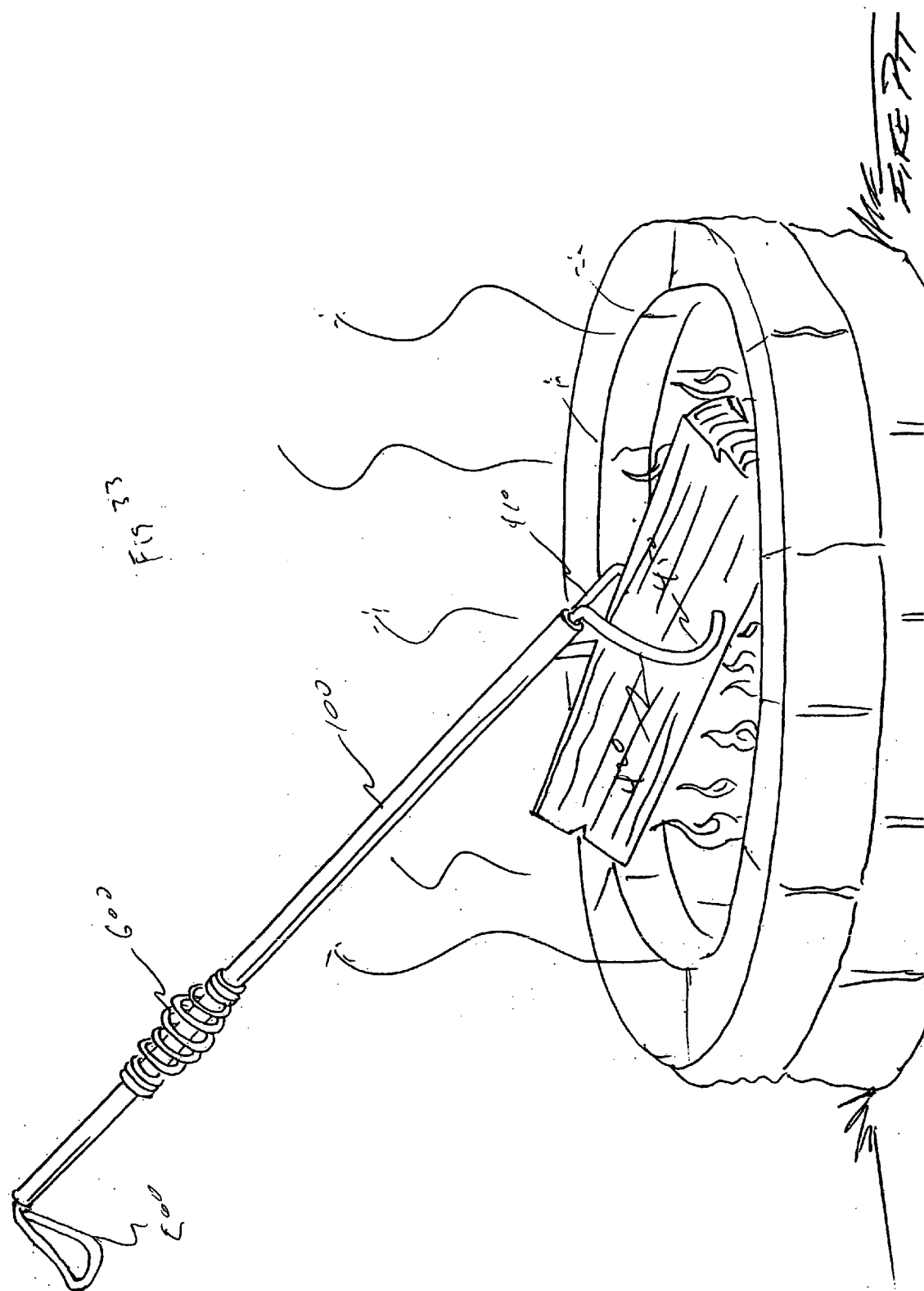
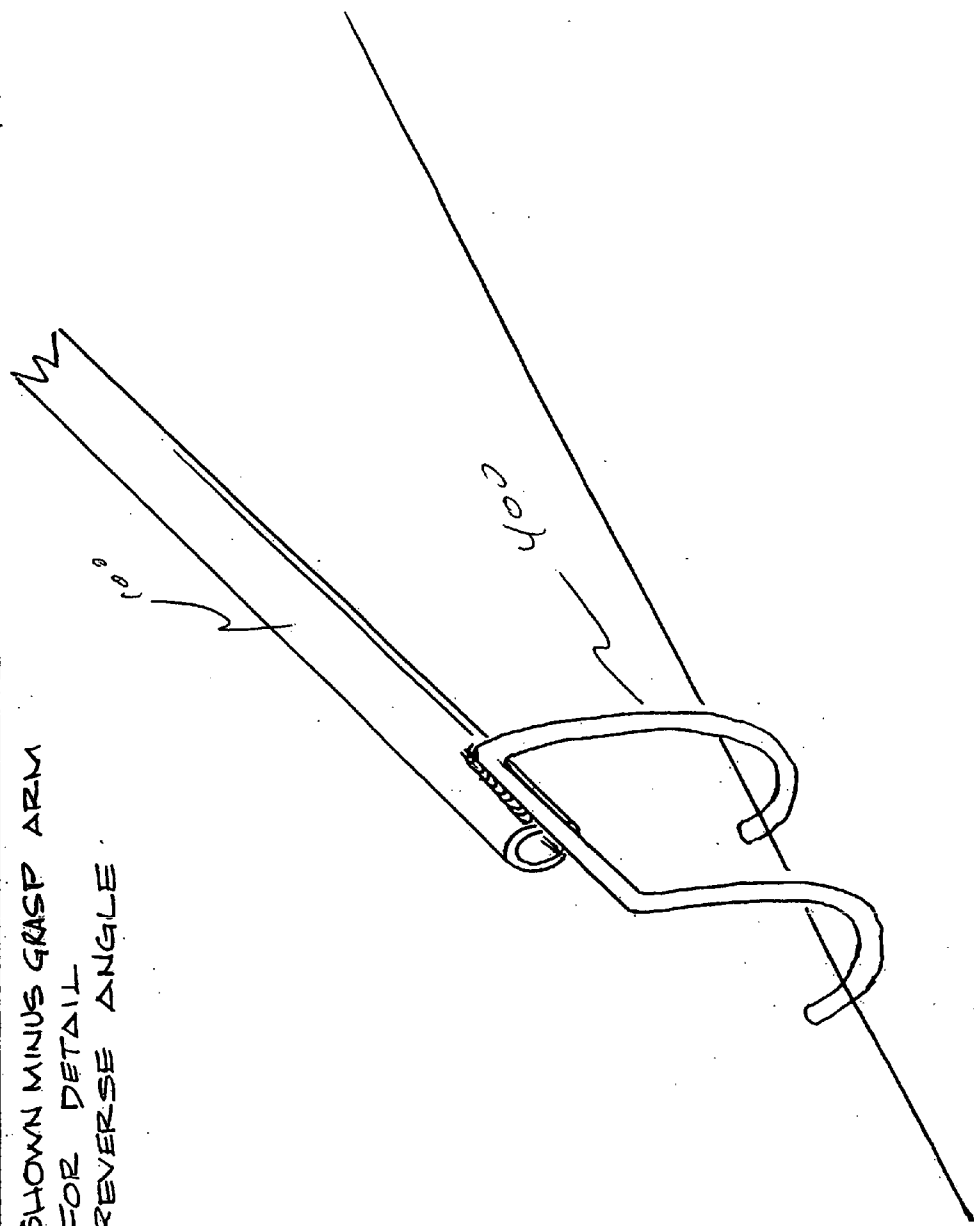


FIG. 34

ANGLE HEAD DETAIL

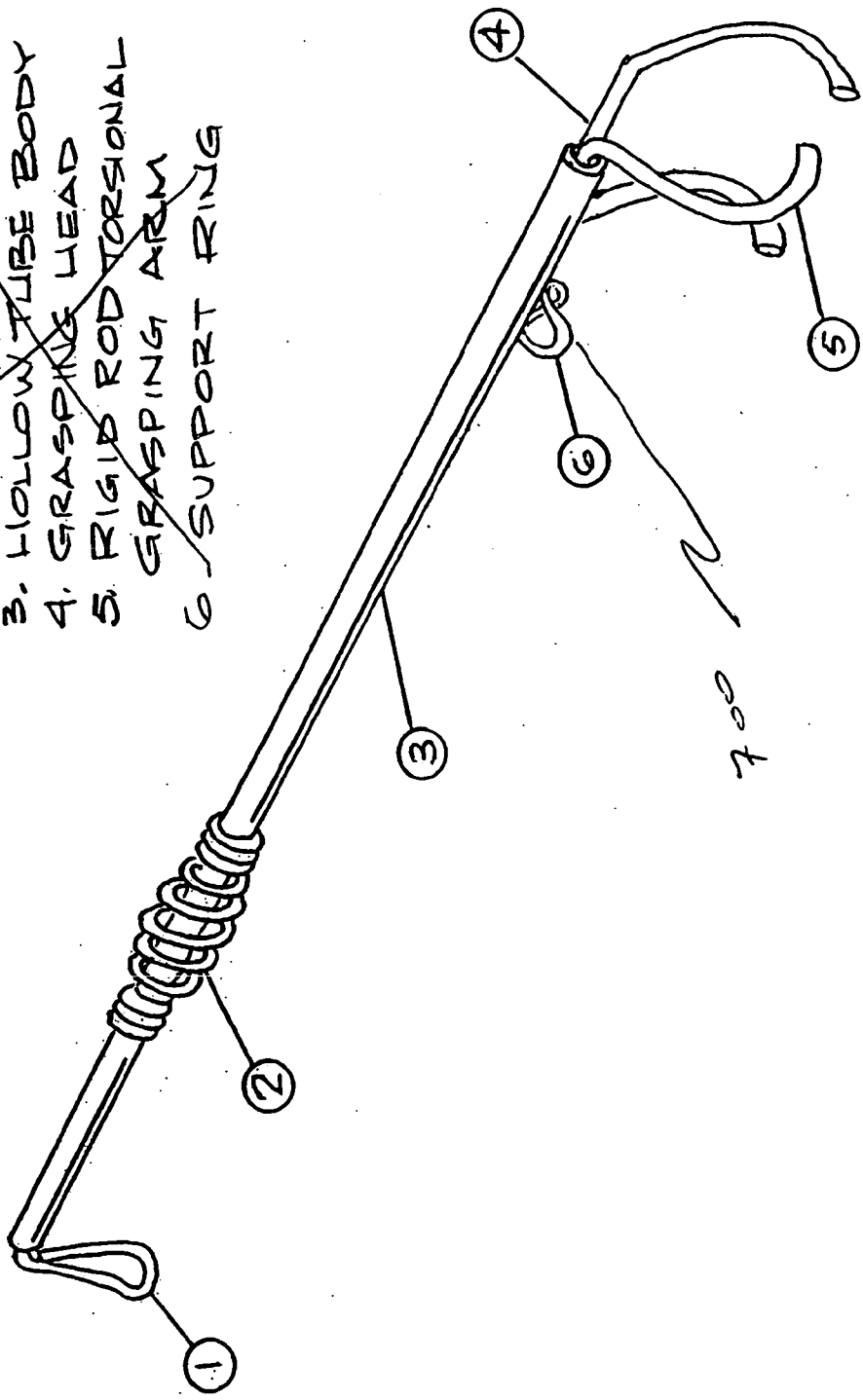
SHOWN MINUS GRASP ARM
FOR DETAIL
REVERSE ANGLE

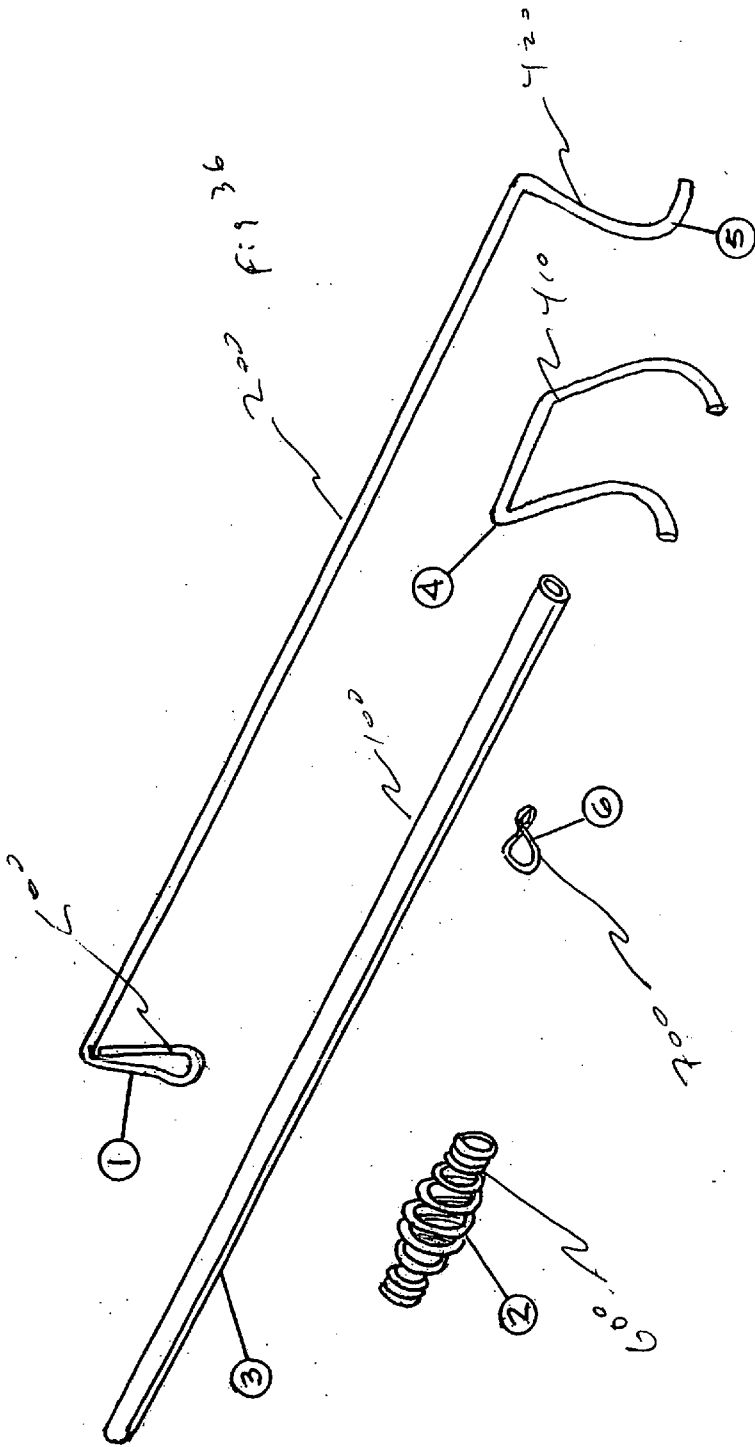


MECHANICAL PARTS

- 1. GRIPPING END
- 2. GRIP HANDLE (OPTIONAL)
- 3. HOLLOW TUBE BODY
- 4. GRASPING HEAD
- 5. RIGID ROD TORSIONAL GRASPING ARM
- 6. SUPPORT RING

Fig 3





MECHANICAL PARTS
EXPLODED VIEW

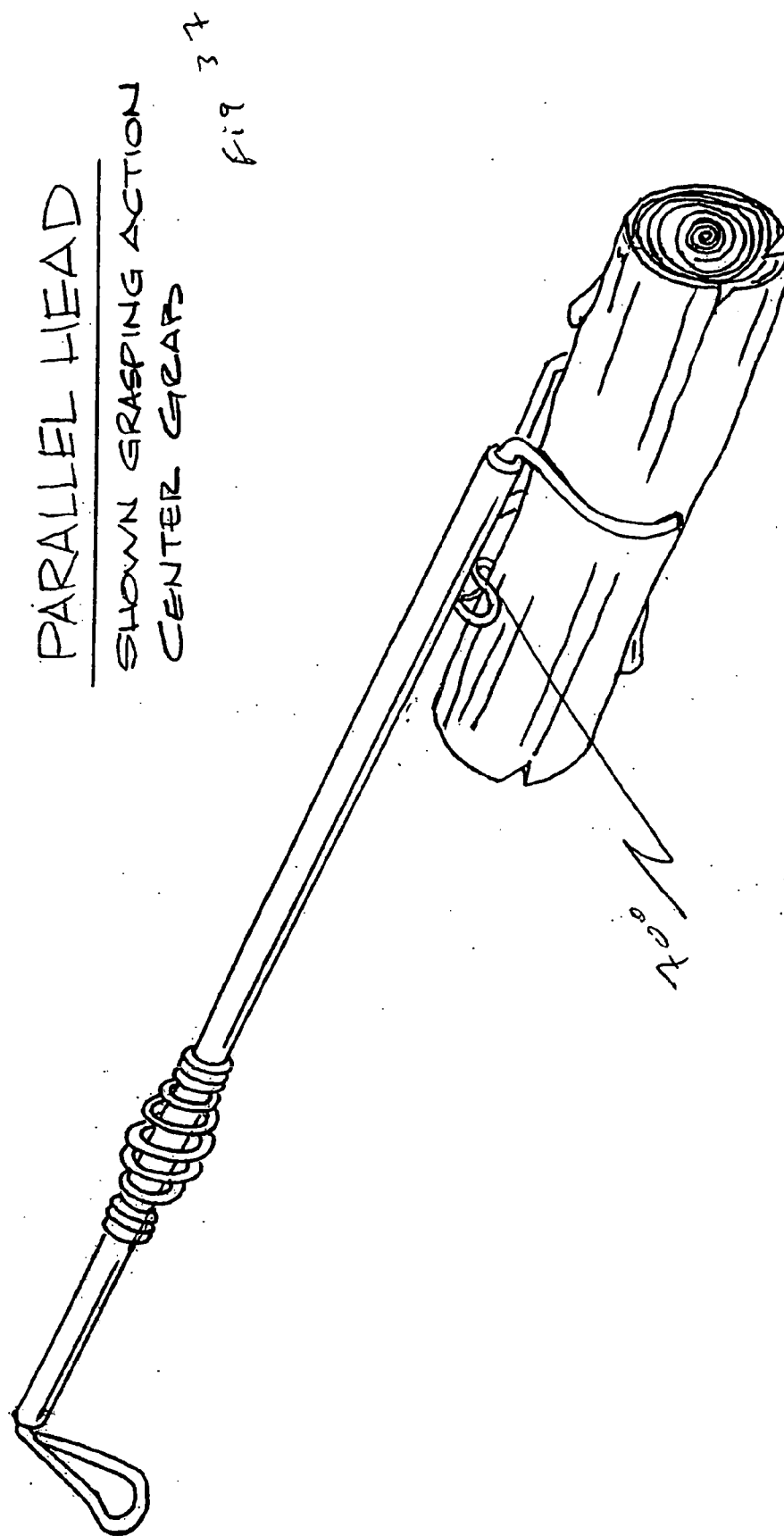
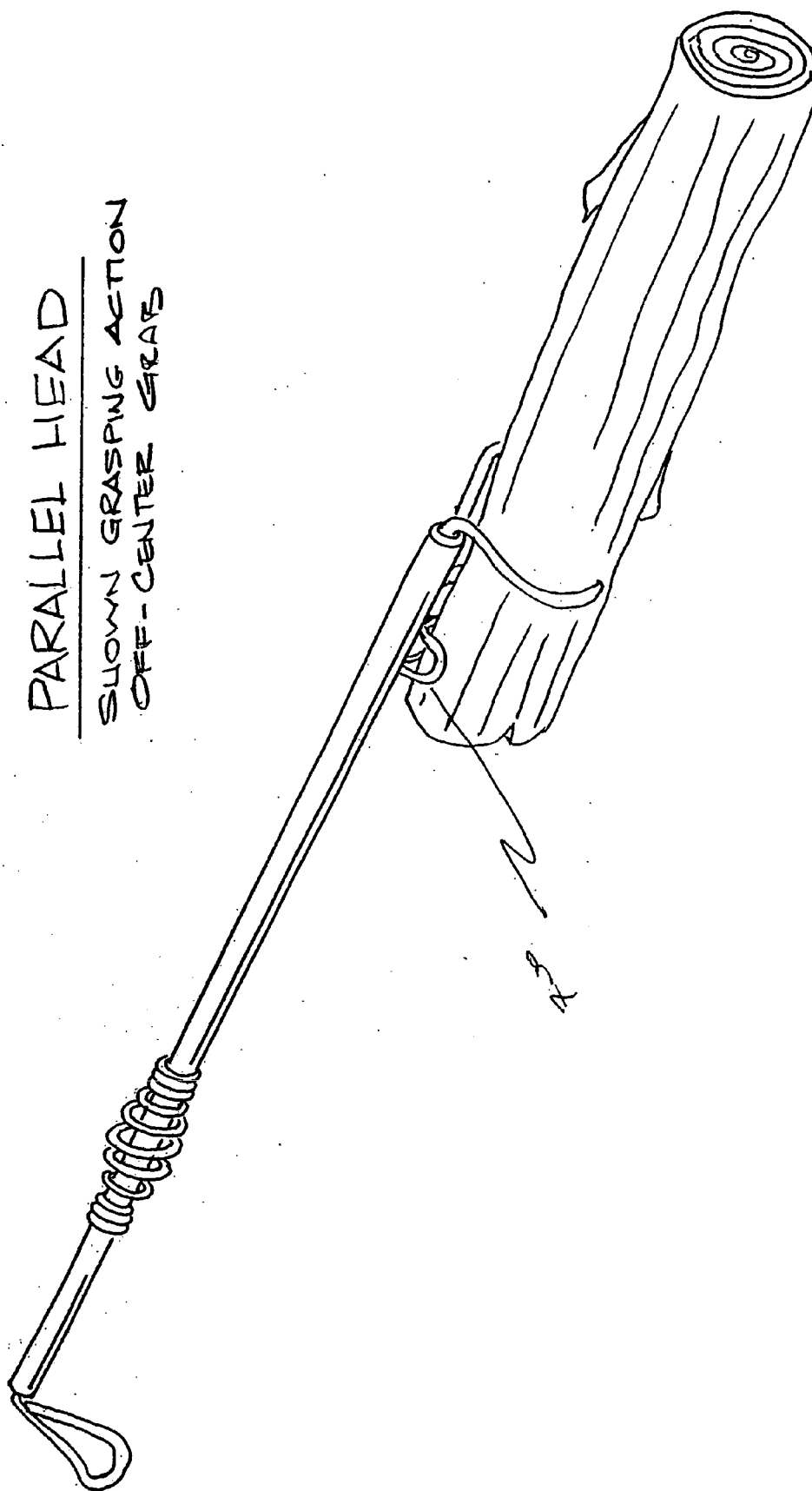
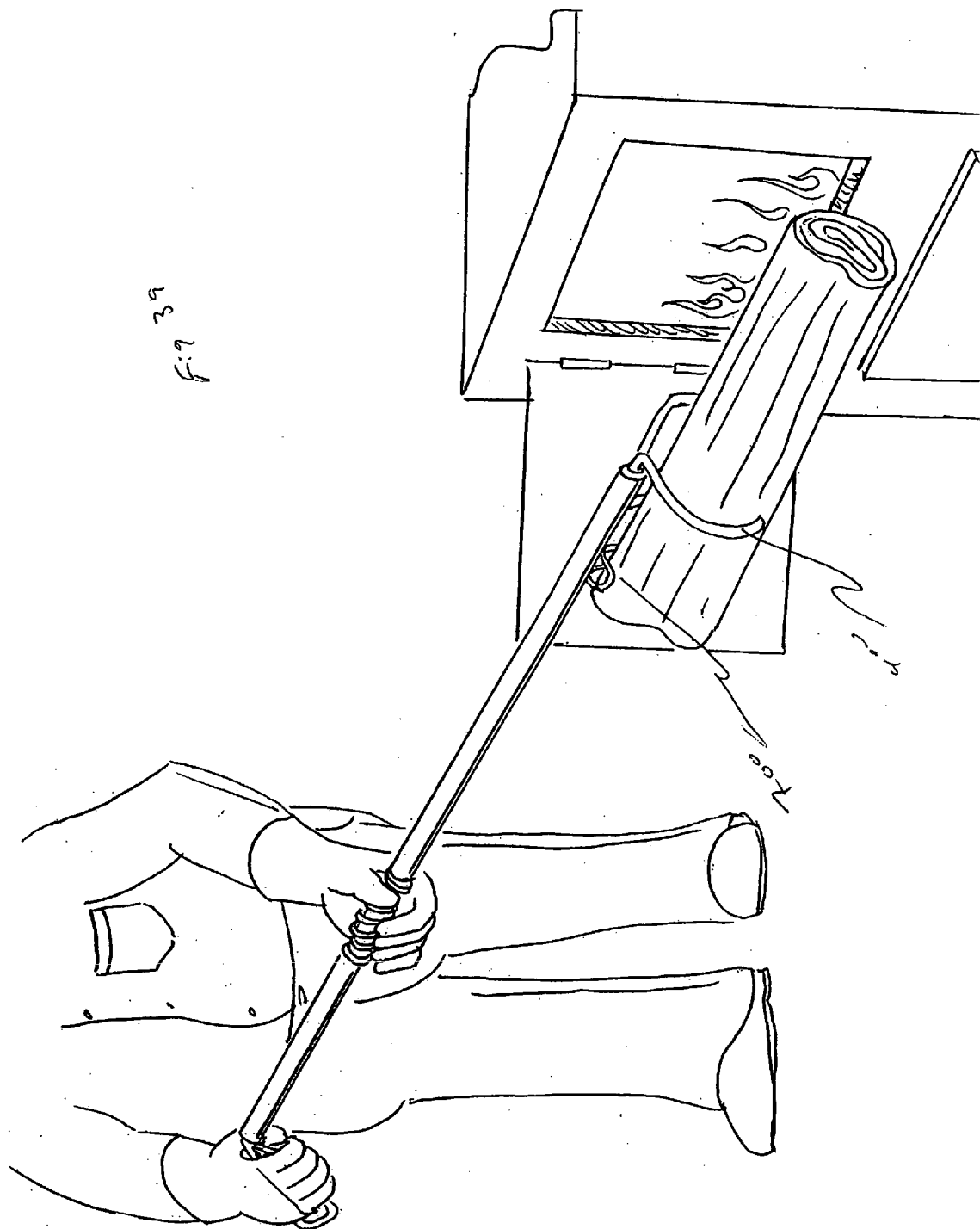


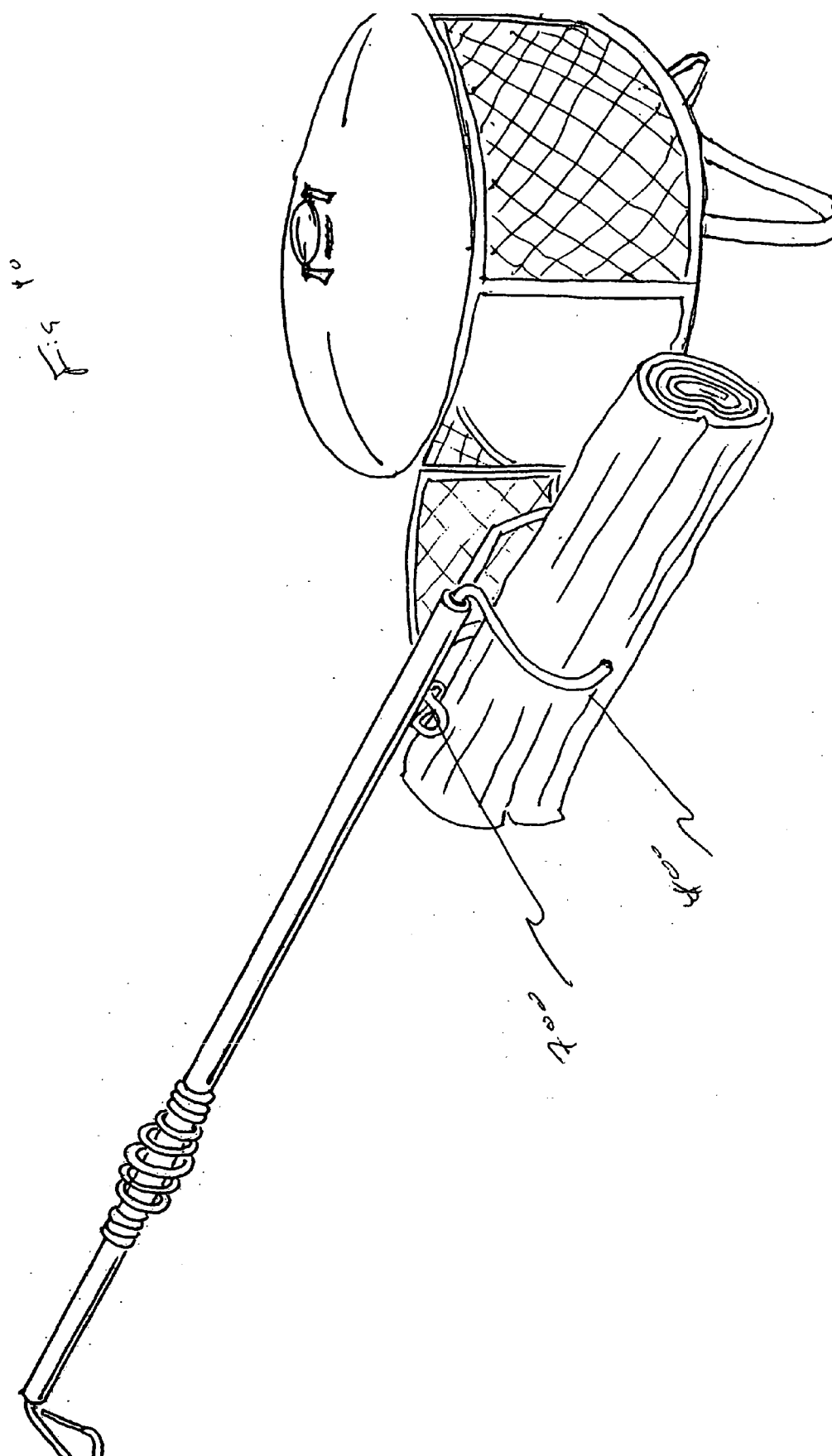
FIG. 38

PARALLEL HEAD

SHOWN GRASPING ACTION
OFF-CENTER GRAB

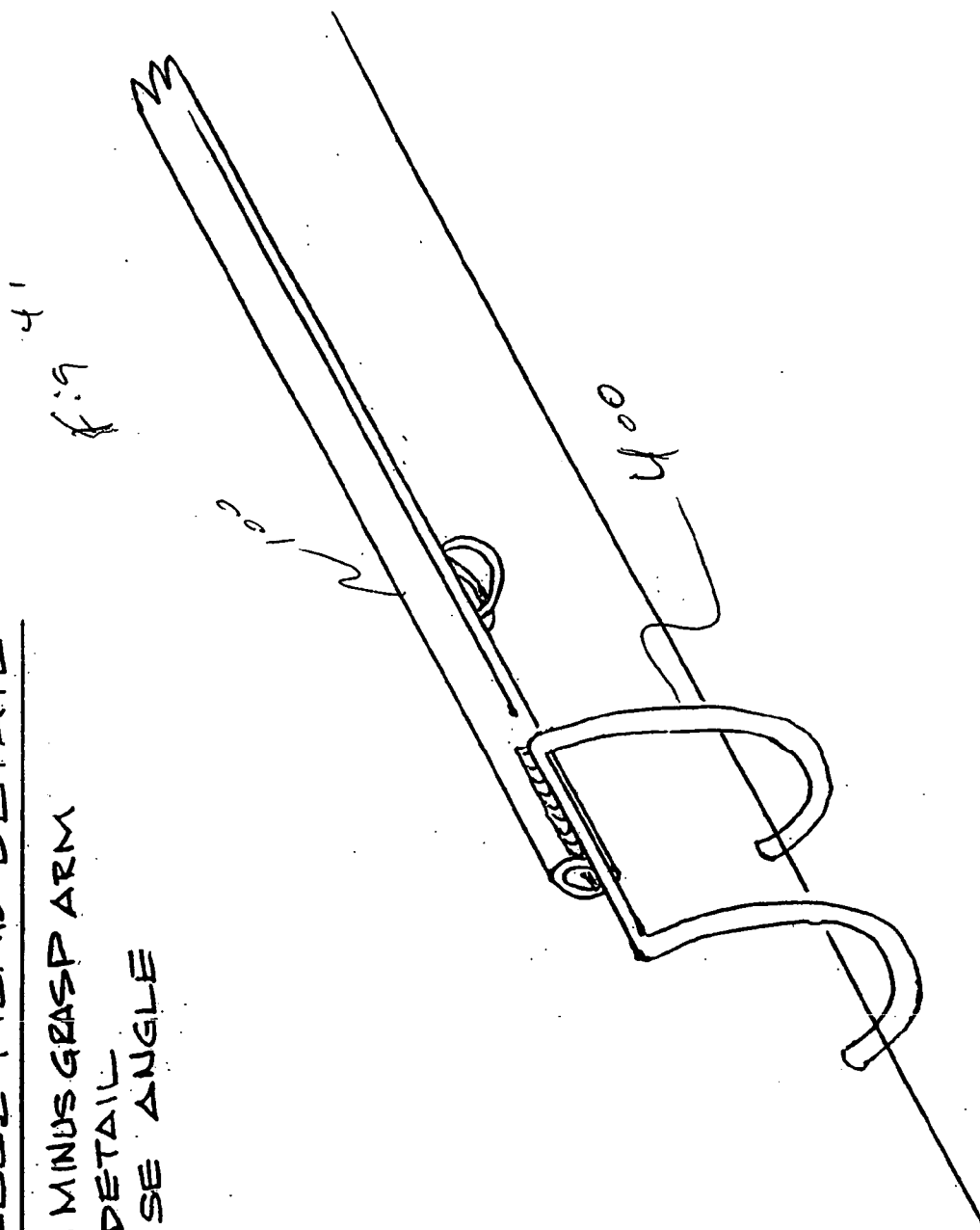






PARALLEL HEAD DETAIL

SHOWN MINUS GRASP ARM
FOR DETAIL
REVERSE ANGLE



LOG TENDER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The applicant claims the benefit of an earlier filing date as set forth under 35 USC 119(e) in that a provisional application was filed Aug. 31, 2005 as application number 60/712,782.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable.

BACKGROUND OF THE INVENTION

[0003] 1. Field of the Invention

[0004] The present invention relates generally to the field of implements for tending to a fire, more particularly, to manipulate logs and similar type objects in a fire. Specifically, the present invention is a handling device having a rigid rod inserted through a cavity of a hollow tube, whereby the rod and tube operate independently, a gripping end for cradling logs and a handle for manipulating the rod. The present invention is configured in such a way as to allow for gripping, cradling, and manipulation of logs with a minimal amount of energy.

[0005] 2. Description of the Related Art Including Information Disclosed Under 37 CFR 1.97 And 37 CFR 1.98:

[0006] In the past, in order to manipulate a log, a device comprising a rigid rod, grasping end and gripping end would use the mechanism in the gripping end, typically a trigger type of mechanism to control the grasping end. The gripping end required a relatively large force to maintain a grasp on the log, making it difficult for certain classes of individuals to maintain a grasp on the log, or for those who could maintain a grasp to work the device infrequently due to local muscle fatigue, or to manipulate the log with difficulty and in an awkward manner.

[0007] The user would position himself whereby the log and device were perpendicular to each other. The user would then operate a trigger type mechanism on the gripping end that would open and close a grasping mechanism around the circumference of a log. Then the user would manipulate the device to move the log into the position that was desired.

[0008] When the desired position was reached, the user would release his grip on the gripping end, which in turn would be forced open at the grasping end by the weight of the log. The process required strength and coordination to position a log into place. In addition, the log would have to be balanced within the grasping end.

[0009] Also, for particularly large or heavy logs, desired positioning was very difficult. Positioning of logs required strength in the hands and the arms. Leg strength had little effect for positioning of logs with these types of devices.

[0010] There are numerous prior art devices used for positioning objects. For example, U.S. Pat. No. 1,820,463 to Klein, issued on Aug. 25, 1931, teaches the ability to use a mechanical device to pick up and manipulate hot coals and the like. There is a gripping end, grasping end and length between the gripping end and grasping end. The gripping

end is mechanically manipulated by squeezing together the mechanical device of the gripping end with the hand. This manipulation of the gripping end translates to movement in the grasping end. As the gripping end is squeezed, the grasping end closes around the desired object to be manipulated, thereby creating a tight grip around the object to be manipulated.

[0011] However, an apparent disadvantage of the '463 patent is that the object that is being manipulated must be relatively small, as the strength of the hands and arms determines the limit of what can be manipulated. This severely limits the device's capabilities. Furthermore, the '463 patent would have difficulties in manipulating any type of object that is long in one dimension while relatively short in the other two dimensions, such as a log.

[0012] To manipulate a log, the user of the '463 patent would have to grasp a long object from an angle perpendicular to the long dimension at a point that would balance the object in the grasping end. Then the user of the device would have used predominately arm strength to manipulate the object into the desired position. For heavy objects, not only would arm strength be required, but also the user would have to apply a required amount of hand strength to the grasping end for the object picked up to remain in the grasp of the grasping end. The amount of strength would depend on the mechanical advantage of the device.

[0013] Lastly, the user would have to be cautious in their manipulation of a long object to maintain the object from dropping on either side (right or left) of the grasping end. Once again, for long or heavy objects, it will be very difficult to control the object.

[0014] The present invention overcomes these limitations. First of all, long objects are picked in a parallel relationship. That is, the length of the device is parallel to the length of the object being manipulated. Therefore, the user can use leg strength to manipulate the position of the object. The object can be cradled or grasped in the grasping end and carried or dragged backwards.

[0015] Additionally, where the object is a log in a campfire, the log can be dragged right or left around the fire. For heavy or long objects, if an end of the log is on the ground, the manipulation of the log would have minimal effect. The present invention does not need, but may, balance the manipulated object by lifting it completely off the ground.

[0016] Furthermore, the present invention does not require squeezing to grasp an object. A torsional action, which requires much less strength, may be used to cradle the manipulated object. Also, the present invention allows for strength to be used for different movement. That is, one hand can manipulate the torsional action to control the grasp of a log, while the other hand manipulates the other axes—right, left, up and down. Also, depending on how far one grasps the rod, one can lift a much greater amount on the grasping end.

[0017] Furthermore, the angle of the gripping end allows for the grasping end to naturally close due to gravity. Lastly, the curvature of the claws allows the log to sit in place, as if being cradled, with minimal amount of torsional force. Most of the torsional force will be to hold the claws together and is minimally affected by the weight of the object being manipulated.

[0018] U.S. Pat. No. 2,429,046 to Billig issued on Oct. 14, 1947, discloses a device for dual action as a poker and as a tong. As a tong, there is a gripping end, shank and jaw. The opening of the jaw is manipulated by secondary grip that slides longitudinally along the shank. This secondary grip allows the user to manipulate heavier objects through the use of two hands.

[0019] However, with heavier objects, because the action is longitudinally, the user must place one hand on the gripping end and one hand on the secondary grip. Then to grip an object the user must expend energy pushing in one direction with the grip and an opposing direction with the secondary grip.

[0020] Finally, to actually manipulate the position of an object, the user must now use additional remaining strength in the user's arm to change position of the object being manipulated.

[0021] Also, the position of the secondary handle is determined by how far open the jaws must be to grasp the manipulated object. Hence, for large and presumably heavier objects, the grip and secondary grips will be in closer proximity than when the manipulated object is smaller, and presumably lighter; thereby, losing the advantage of two hand manipulation for larger, heavier objects.

[0022] The present invention overcomes these limitations by, for example, having a torsional action for cradling or grasping the manipulated object as opposed to requiring opposing forces to grasp the manipulated object, thereby allowing greater amount of strength for manipulating the object than the '046 patent.

[0023] Additionally, the present invention equivalent to a secondary grip is fixed in a non-movable predetermined position that has been determined to provide the best leverage for manipulating objects for the size of objects the device was designed to manipulate. Finally, the present invention is positioned parallel to the longitudinal length of the manipulated object, where the '046 patent would be positioned perpendicular to the manipulated object.

[0024] U.S. Pat. No. 4,225,170 to Flynn, issued on Sep. 30, 1980, discloses a log sideloader. The sideloader comprises a jaw, an arm and a lever. The length of the log will determine how large the jaw is opened. The jaw is manually adjusted until the jaw opening is slightly larger than the log. The lever is mechanically attached to the jaws, such that when the lever is operated the jaws will close, forming a friction fit on the log. Then the log may be manipulated.

[0025] The side loader is designed such that the user operates the sideloader from the side. However, to manipulate a log longitudinally, the sideloader jaw must frictionally engage both ends of the log longitudinally. In this configuration, the length of the arm would determine the length of the log to be manipulated. For this particular device, the length of the log manipulated would be relatively short. Because of the cantilever method of lifting the log, as the longer the log is that is to be manipulated, the quicker it becomes difficult to manipulate ever-increasing log lengths.

[0026] The present invention is designed such that the user may operate the invention from where the log is cradled or grasped. Hence, a user may cradle or grasp a log utilizing the grasping end around the log's circumference. This can be in

the middle of the log or at an end of the log by utilizing the offset rear log support. Therefore, one could manipulate a much longer log than the '170 patent because in the present invention the user does not have to grasp both longitudinal ends of the log, just the circumference. Additionally, the user may also drag the log into a desired position.

BRIEF SUMMARY OF THE INVENTION

[0027] An object of the present invention to provide a novel and improved manipulating device to facilitate manipulation of objects, such as firewood in a bonfire. The present invention provides a device for cradling or grasping longitudinally long objects around the circumference of the object to drag the object to a desired location. Additionally, the invention provides a device that requires a fraction of force used in present inventions for cradling or grasping a heavy object.

[0028] Another object of the present invention to provide a device whereby the user can maximize strength of the arms and legs to manipulate an object. The invention allows the user to grasp or cradle an object where grasp is not primarily dependent on the weight of the object. Additionally, the present invention provides a device where the unique shape of the handle allows greater control over the device while providing ease of use of the device.

[0029] Numerous other objects, features and advantages of the present invention will become readily apparent through the detailed description of the preferred embodiment, drawings and the claims.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0030] A preferred embodiment of the present invention is described herein with reference to the drawing wherein:

[0031] FIG. 1 is a perspective view of the preferred embodiment;

[0032] FIG. 2 is a perspective view of the preferred embodiment with a protective hand cover around the tube;

[0033] FIG. 3 is a perspective view of the preferred embodiment with a protective hand cover around the tube;

[0034] FIG. 4 is a perspective view of the preferred embodiment with a protective hand cover around the tube;

[0035] FIG. 5 is a perspective view of the preferred embodiment with a protective hand cover around the tube;

[0036] FIG. 6 and 7 contain different perspectives of an alternate handle;

[0037] FIG. 8 and 9 contain different perspectives of an alternate handle;

[0038] FIG. 10 and 11 contain different perspectives of an alternate handle;

[0039] FIG. 12 and 13 contain different perspectives of an alternate handle;

[0040] FIG. 14 and 15 contain different perspectives of an alternate handle;

[0041] FIG. 16 and 17 contain different perspectives of an alternate handle;

- [0042] FIG. 18 contains an alternate handle;
- [0043] FIG. 19 contains an alternate handle;
- [0044] FIG. 20 and 21 contain different views of the same alternate handle;
- [0045] FIG. 22 and 23 contain different views of the same alternate handle;
- [0046] FIG. 24 contains an alternate handle;
- [0047] FIG. 25 contains an alternate handle;
- [0048] FIG. 26 contains an alternate handle;
- [0049] FIG. 27 contains an alternate handle;
- [0050] FIG. 28 is perspective view of the preferred embodiment claw arrangement;
- [0051] FIG. 29 is a view of an alternate embodiment of the rod to tube arrangement;
- [0052] FIG. 30 is a view of an alternate embodiment of the rod to tube arrangement;
- [0053] FIG. 31 is a perspective view of the present invention in use;
- [0054] FIG. 32 is a perspective view of the present invention in use;
- [0055] FIG. 33 is a perspective view of the present invention in use;
- [0056] FIG. 34 is a view of the present invention's relationship of rod to longitudinal object angle;
- [0057] FIG. 35 is an alternative perspective view;
- [0058] FIG. 36 is an exploded alternative perspective view;
- [0059] FIG. 37 is a perspective view of the alternate embodiment in use on-center;
- [0060] FIG. 38 is a perspective view of the alternate embodiment in use off-center;
- [0061] FIG. 39 is a perspective view of the alternate embodiment in use;
- [0062] FIG. 40 is a perspective view of the alternate embodiment in use; and
- [0063] FIG. 41 is a view of the present invention's relationship of rod to longitudinal object angle.

DETAILED DESCRIPTION OF THE INVENTION

- [0064] The present invention comprises a novel device for manipulating logs and similar types of objects in a fire.
- [0065] Referring to FIG. 1, a preferred embodiment of the present invention 10 contains a hollow tube 100, a rigid rod 200 inserted through a cavity 300 of the hollow tube 100, whereby the rod 200 and tube 100 operate independently, a grasping end 400 for grasping or cradling logs and a handle 500 for manipulating the rod 200. The hollow tube 100 is made from a material that will protect the user's hand from heat that may be transmitted through the rod 200 and the hollow tube 100 from the object being manipulated.
- [0066] The grasping end 400 may contain a plurality of claws 410 which may be attached to the hollow tube 100 by

a variety of means as one skilled in the art would use. This includes, but is not limited to welded, riveted, crimped, and cast. Additionally, a plurality of claws 420 may be attached to the rod 200 by similar means. The plurality of claws 410 on the tube 100 and the plurality of claws 420 on the rod 200 would oppose each other when employing an opposing torsional force to the hollow tube 100 and rod 200 to grip or wrap around an object to be manipulated. The curvature 450 of the claws 410 and 420 would relate to the size of the objects to be manipulated for a corresponding size device. The claws 410 and 420 are curved in such a manner as to assist in holding and cradling the log while reducing the force needed on the handle 500 to hold the log within the grasp of the claws.

[0067] The length of the rod 200 would relate to the size of the objects to be manipulated for a corresponding size device. Additionally, the minimum diameter and thickness of the rod 200, although the rod 200 is not necessarily solid, is determined by load requirements that are necessary to achieve the objects of the invention.

[0068] The handle 500 size, shape, angle, bend, and offset from center line of the rod 200 will depend on the desire of a particular model of the present invention. However, the offset of the handle 500 from the centerline of the rod 200 is a key design feature for minimizing the force a user must use and maintain to hold, cradle, and manipulate the log within the claws 410 and 420. Additionally, a bend 550 in the handle 500 will provide stability and ease of use of the present invention. Several of these designs are indicated in the drawings; however, one skilled in the art will realize that others variations not shown may be employed to reach a desired goal of ease of use, maximization of manipulation with minimal force, efficiency of use, and efficiency of manufacture.

[0069] Finally, although the present invention may be made from metal, this is not a necessary requirement. The present invention may be made from any material that will withstand the temperature and load requirements that are necessary to achieve the objects of the invention.

[0070] Referring to FIG. 2-FIG. 7, the present invention may include a cover 600 that will protect the user's hand from heat that may be transmitted through the rod 200 and the hollow tube 100 from the object being manipulated.

[0071] Referring to FIG. 8-FIG. 17, variations of handle 500 and bend 550 are shown which will assist in minimizing the force necessary to manipulate the object.

[0072] Referring to FIG. 18, the cover 600 may be designed to slide along the hollow tube 100 to a position that would be most advantageous to user of the device 10.

[0073] Referring to FIG. 19-FIG. 27, variations of handle 500 and bend 550 are shown which will assist in minimizing the force necessary to manipulate the object.

[0074] Referring to FIG. 18-FIG. 30, variations of the grasping end 400 and claws 410 and 420 can be designed to meet specific needs of the user.

[0075] Referring to FIG. 31-33, in operation of the preferred embodiment, a tube 100, or heat protecting cover 600 around the tube of the device is held in one hand. The other hand manipulates the handle 500 with a torsional force that translates into a torsional force at the grasping end 400. The torsional force is used to open the grasping end 400 and its claw like arms 410 and 420 to a size large enough to

accommodate the object to be picked up. The handle **500** is then turned so that the claws **410** and **420** cradles or grasps the object. The claws **410** and **420** are designed and curved **450** such that they will assist in providing a portion of the torsional force needed for the claws **410** and **420** to close around the object.

[0076] Once the claws **410** and **420** are around the object, a torsional force is maintained to keep a grip with the claws **410** and **420** on the object, or to cradle the object. The object can then be manipulated by being lifted or dragged to a desired position. Once in the desired position, the handle can be released or the torsional force lessened or removed such that the manipulated object is released from the grip if the claws **410** and **420**.

[0077] Referring to FIG. **34**, the center line of the hollow tube **100** is not necessarily the same center line of the manipulated object as is grasped in the grasping end **400**.

[0078] Referring to FIG. **35**-FIG. **38**, to assist in balancing longitudinal objects, the device **10** may have an offset rear log support **700** located along the hollow tube **100** or rod **200**, such that there is an additional point of contact on the longitudinal object. This will minimize movement in the longitudinal object and allow the user to cradle or grasp the longitudinal object off longitudinal center while also allowing the user to lift the longitudinal object off the ground rather than drag the longitudinal object. This would greatly assist the user in placing the longitudinal object into container, such as a raised fire pit, or through a small opening of a container, such as the door of a wood burning stove.

[0079] Referring to FIG. **39**-FIG. **40**, in operation, the offset rear log support **700** may be used as an additional point of contact for a longitudinal object such that the object is stabilized in the grasping end **400**.

[0080] Referring to FIG. **41**, the center line of the hollow tube **100** is may be parallel to the center line of the manipulated object as is grasped in the grasping end **400**

What is claimed is:

1. A device for facilitating the manipulation of items comprising:

a handle end;

a rigid rod; and

a grasping end,

said grasping end is mechanically manipulated by using a torsional force such that the torsional force is translated through the rigid rod to the grasping end.

2. A device for facilitating the manipulation of a log comprising:

said handle end;

said hollow tube;

said rigid rod; and

said grasping end,

said grasping end is mechanically manipulated by using said torsional force such that the torsional force is translated through the rigid rod to the grasping end.

3. A device of claim 2, wherein said hollow tube further comprising a cover around the hollow tube.

4. A device of claim 3, wherein said cover is made of a material that will minimize the transmission of heat.

5. A device of claim 2, wherein said grasping end further comprises a plurality of claws to grasp said log to be manipulated.

6. A device of claim 2, further comprising an offset rear log support, wherein said offset rear log support assists in stabilizing said log to be manipulated.

7. A device of claim 2, wherein said handle end further comprising a bend to increase mechanical efficiency of grasping said log.

8. A device of claim 3, wherein said cover slides along said hollow tube to a desired position.

9. A device of claim 5, wherein said plurality of claws further comprising curvatures.

10. A method of manipulating a log comprising the steps of:

holding said handle end of said device;

holding said hollow tube;

manipulating said handle end and said hollow tube to open said claws around said log;

applying a torsional force through said handle end and said hollow tube to grasp said log; and

manipulating said log.

11. A method of claim 10 further comprising step of using said offset rear log support to assist in stabilizing said log to be manipulated.

* * * * *