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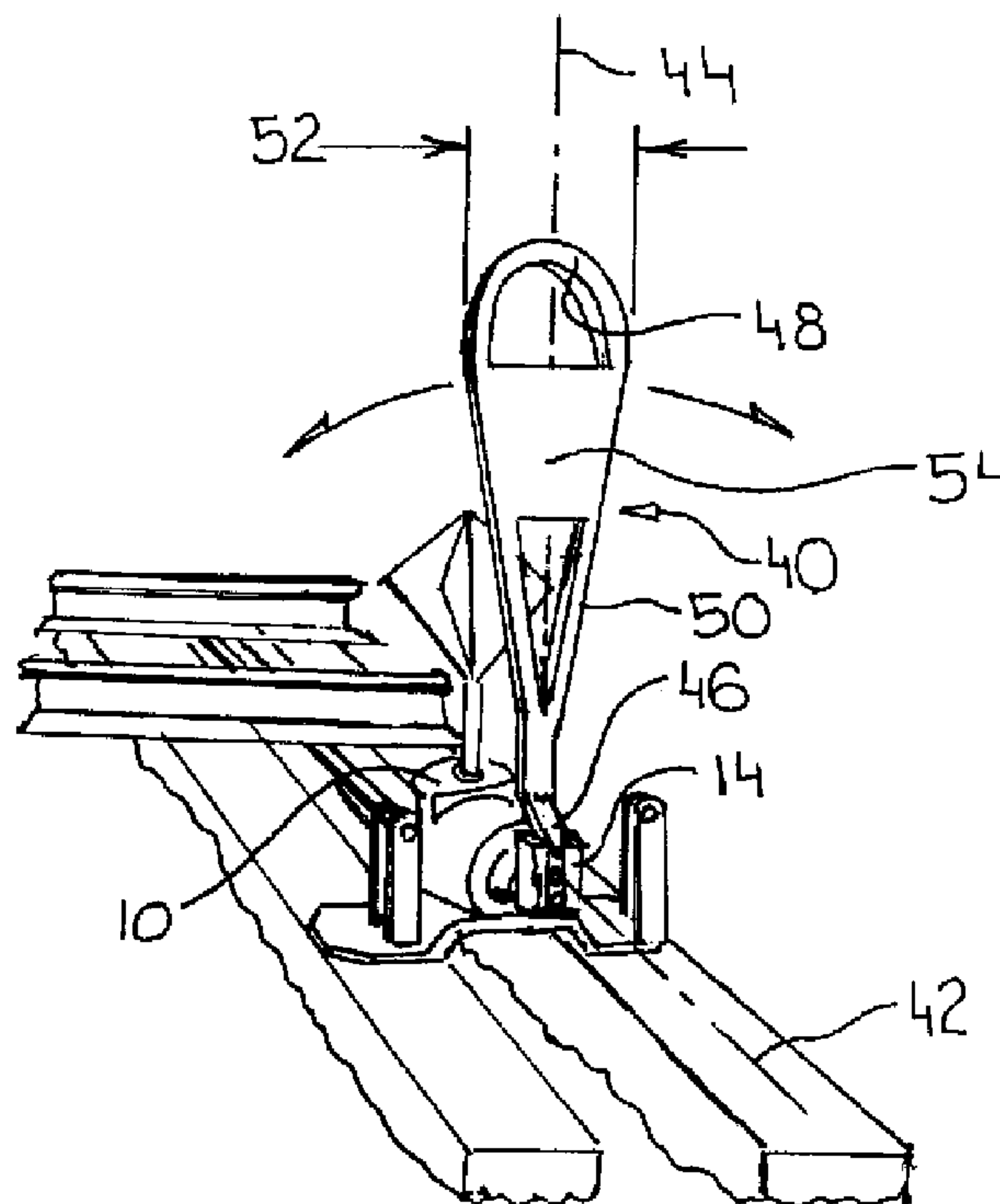
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(54) Titre : MANCHE POUR SUPPORT DE LEVIER D'AIGUILLAGE

(54) Title: SWITCH STAND HANDLE



(57) Abrégé/Abstract:

A handle for rotating an actuator on a railway switch stand about an actuator axis, through an arc of approximately 180° between a first position and a second position. The handle has a connector for connecting it to the actuator, a curved grip and an intermediate portion extending between the connector and the curved grip. A weight is secured to the handle between the connector and the curved grip. The handle has a handle axis generally perpendicular to the actuator axis, the handle axis being generally horizontal when the switch stand is in the first or second position. The curved grip extends from opposite sides of the handle axis in a direction generally radial to the actuator axis. The curved grip has a span with a breadth sufficient to allow grasping above the handle axis when the handle is in the first and second positions while avoiding interference with an underlying surface and allowing relatively easy grasping through an intermediate position approximately mid-way between the first and second positions.



ABSTRACT

A handle for rotating an actuator on a railway switch stand about an actuator axis, through an arc of approximately 180° between a first position and a second position. The handle has a connector for connecting it to the actuator, a curved grip and an intermediate portion extending between the connector and the curved grip. A weight is secured to the handle between the connector and the curved grip. The handle has a handle axis generally perpendicular to the actuator axis, the handle axis being generally horizontal when the switch stand is in the first or second position. The curved grip extends from opposite sides of the handle axis in a direction generally radial to the actuator axis. The curved grip has a span with a breadth sufficient to allow grasping above the handle axis when the handle is in the first and second positions while avoiding interference with an underlying surface and allowing relatively easy grasping through an intermediate position approximately mid-way between the first and second positions.

Title: Switch Stand Handle

Inventor: Collin, Gilbert

5 **FIELD OF THE INVENTION**

This invention relates to railway switch stands and more particularly to handles for activating railway switch stands.

BACKGROUND

10 Figure 1 is a front elevation of a switch stand 10 having a conventional prior art handle 12. The handle 12 is secured to an actuator 14 and used to rotate the actuator through an arc of approximately 180° between first and second positions. Rotation of the handle 12 is about an actuator axis generally perpendicular to the plane of Figure 1.

15 Any force applied to the switch stand resulting from the passage of a train over the switch associated with the switch stand would generally tend to move the switch stand away from its set position. Accordingly the handle 12 is mounted so as to be generally horizontal in the first and second positions and the handle is provided with a weighted end 16 to bias
20 the handle 12 downwardly to resist any forces tending to move the handle 12 upwardly away from its set position. A transversely extending grip 18 is also provided to assist in grasping the handle 12.

Conventional prior art handles such as the handle 12 in Figure 1 are hard on a user's back and their use has resulted in numerous back
25 injuries. The handle 12 is relatively short therefore providing limited leverage and the grip 18 is very close to the ground in its first and second positions requiring a user to bend down to grasp it.

Figure 2 is a front elevation of a prior art handle attachment 20. The handle attachment 20 is mounted to a "stub" 22 provided by cutting
30 off a conventional handle 12. The stub 22 is split into a Y configuration, outer ends of which are received in the ends of the tubing from which the handle attachment 20 is fabricated. A brace 28 extends across the handle 20 to improve its rigidity.

The main advantage of the handle attachment 20 is that it provides
35 gripping surfaces 24 above a center line 26 of the handle when the center line 26 is substantially horizontal.

The handle attachment 20 has some significant drawbacks. Firstly, the handle attachment 20 is of relatively lightweight construction and

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therefore does not provide nearly the amount of downward force in the first and second positions as does the conventional handle 12. The handle 12 therefore lifts when a train passes the switch stand 10 thereby posing a derailment risk. Additionally, the span of the handle attachment 20 between the gripping surfaces 24 may result in the gripping surfaces 24 striking the underlying ground (as shown in Fig. 2) thereby preventing the switch stand 10 from being moved fully into its first or second positions. Furthermore, the span between the gripping surfaces 24 makes the handle attachment 20 awkward to handle, particularly through the vertical portion of its arc of travel.

SUMMARY OF THE INVENTION

15 A handle for rotating an actuator on a railway switch stand about an actuator axis, through an arc of approximately 180° between a first position and a second position, said handle comprising:

- a connector for connecting said handle to said actuator;
- a curved grip;
- 20 an intermediate portion extending between said connector and said curved grip;
- a weight secured to said handle between said connector and said curved grip;
- said handle having a handle axis generally perpendicular to said actuator axis, said handle axis being generally horizontal when said switch stand is in said first and second positions;
- said curved grip extending away from opposite sides of said handle axis in a direction generally radial to said actuator axis; and,
- said curved grip having a span with a breadth sufficient to allow
- 30 grasping above said handle axis when said handle is in said first and second positions while avoiding interference with an underlying surface and allowing relatively easy grasping through an intermediate position approximately midway between said first and second positions.

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DESCRIPTION OF DRAWINGS

5 The present invention is described in detail below with reference to the accompanying drawings in which:

Figure 1 is a front elevation of a switch stand incorporating a prior art conventional handle;

Figure 2 is a front elevation of a switch stand with a prior art handle attachment;

10 Figure 3 is a perspective view of a handle according to the present invention secured to a switch stand, between its first and second positions;

Figure 4 is a perspective view of a handle according to the present invention secured to a switch stand in one of its respective first and second positions;

15 Figure 5 is a front elevation of an alternate embodiment handle according to the present invention; and,

Figure 6 is an end elevation corresponding to Figure 5.

DESCRIPTION OF PREFERRED EMBODIMENT

20 A handle according to the present invention is generally indicated by reference 40 in Figures 3 and 4. Figure 3 illustrates the position of the handle 40 when the switch stand 10 is approximately midway between its first and second positions. Figure 4 illustrates the position of the handle 40 when the switch stand 10 is in one of its first or second positions.

25 The actuator 14 of the switch stand 10 rotates about an actuator axis 42. The handle 40 is generally symmetrically disposed about a handle axis 44 which is generally radial to the actuator axis 42. The handle axis 44 is generally horizontal when the actuator is in its first and second positions.

30 The handle 40 has a connector 46 at one end for connecting the handle 40 to the actuator 14. The exact configuration of the connector will vary according to the design of the actuator with which it must register. In the illustrations, the connector includes a generally rectangular end received in and bolted to a channel shaped actuator 14.

35 The handle 40 has a curved grip 48 at an end opposite the connector 46. An intermediate portion 50 extends between the connector 46 and the curved grip 48. A weight 54 is secured to the handle between the connector 46 and the curved grip 48. The amount of weight would

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typically correspond to the amount needed to maintain the actuator 14 in its first or second positions. Generally this would require a weight of from
5 about 15 to 25 pounds (approximately 7 to 11.5 kg) acting about 36 inches (approximately 91 cm) from the actuator axis 44. In other words, the weight 54 should exert a torque on the order of 45 to 75 foot pounds (approximately 60 to 100 Nm) about the actuator axis 44 when the handle 40 is in its first or second position. It will be appreciated that the amount
10 of weight required diminishes as its distance from the actuator axis 44 increases.

In the Figures 3 and 4 embodiment, the weight 54 is mounted toward the curved grip 24. In the alternate embodiment illustrated in Figures 5 and 6, the weight 48 is mounted toward the connector 46.

15 The curved grip 48 extends away from opposite sides of the handle axis 44 in a direction generally radial to the actuator axis 42. The curved grip 48 has a span indicated by reference 52 which allows grasping by a user at a location above the handle axis 44 when the handle 40 corresponds to the first or second position of the actuator 14 thereby reducing the amount
20 of bending by the user as compared to the conventional handle 12 illustrated in Figure 1. The span 52 however is not so broad as to cause interference between the lowermost part of the curved grip 48 and the underlying surface thereby allowing the handle axis 44 to be substantially horizontal when the actuator 14 is in its first or second positions. The
25 span 52 should also be narrow enough to enable a user's grip to be moved, without undue strain or overreaching, from one side of the handle 40 to the other side of the handle 40 as the handle is passed through an intermediate position between the first and second positions.

It has been found that a span of from about 10 to about 16 inches
30 (approximately 25 to 41 cm), preferably about 12 inches (approximately 30.5 cm) produces satisfactory results in most applications. The length of the handle 40 between the curved grip 48 and the actuator axis 42 should be from about 35 to about 60 inches (approximately 89 to 152 cm), preferably about 48 inches (approximately 122 cm), to provide adequate leverage for
35 ease of operation without making the curved grip 48 difficult to reach in the vertical position. The overall weight of the handle may range from

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about 40 to about 60 pounds (approximately 18 to 27 kg), however should preferably be below 50 pounds (approximately 23 kg), if it is desirable for
5 only one person to support the handle 40 during installation.

The above description is intended in an illustrative rather than a restrictive sense as variations may be apparent to appropriately skilled persons without departing from the spirit or scope of the invention as defined by claims set out below.

**THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:**

1. A handle for rotating an actuator on a railway switch stand about an
5 actuator axis, through an arc of approximately 180° between a first position
and a second position, said handle comprising:
 - a connector for connecting said handle to said actuator;
 - a curved grip;
 - an intermediate portion extending between said connector and said
10 curved grip;
 - a weight secured to said handle between said connector and said
curved grip;
 - said handle having a handle axis generally perpendicular to said
actuator axis, said handle axis being generally horizontal when said switch
15 stand is in said first and second positions;
 - said curved grip extending away from opposite sides of said handle
axis in a direction generally radial to said actuator axis; and,
 - said curved grip having a span with a breadth sufficient to allow
grasping above said handle axis when said handle is in said first and
20 second positions while avoiding interference with an underlying surface
and allowing relatively easy grasping through an intermediate position
approximately midway between said first and second positions.
2. A handle is claimed in claim 1 wherein:
 - 25 said span of said curved grip is from about 10 to about 16 inches;
 - said handle has a length of from about 35 to about 60 inches
measured between said actuator axis and a radially outermost end of said
curved grip; and,
 - said weight exerts a torque of from about 45 to about 75 foot pounds
30 about said actuator axis when said handle is in said first and second
positions.
3. A handle is claimed in claim 1 wherein:
 - said span of said curved grip is about 12 inches;
 - 35 said handle has a length of about 48 inches measured between said
actuator axis and a radially outermost end of said curved grip; and,
 - said weight exerts a torque of about 60 foot pounds about said
actuator axis when said handle is in said first and second positions.

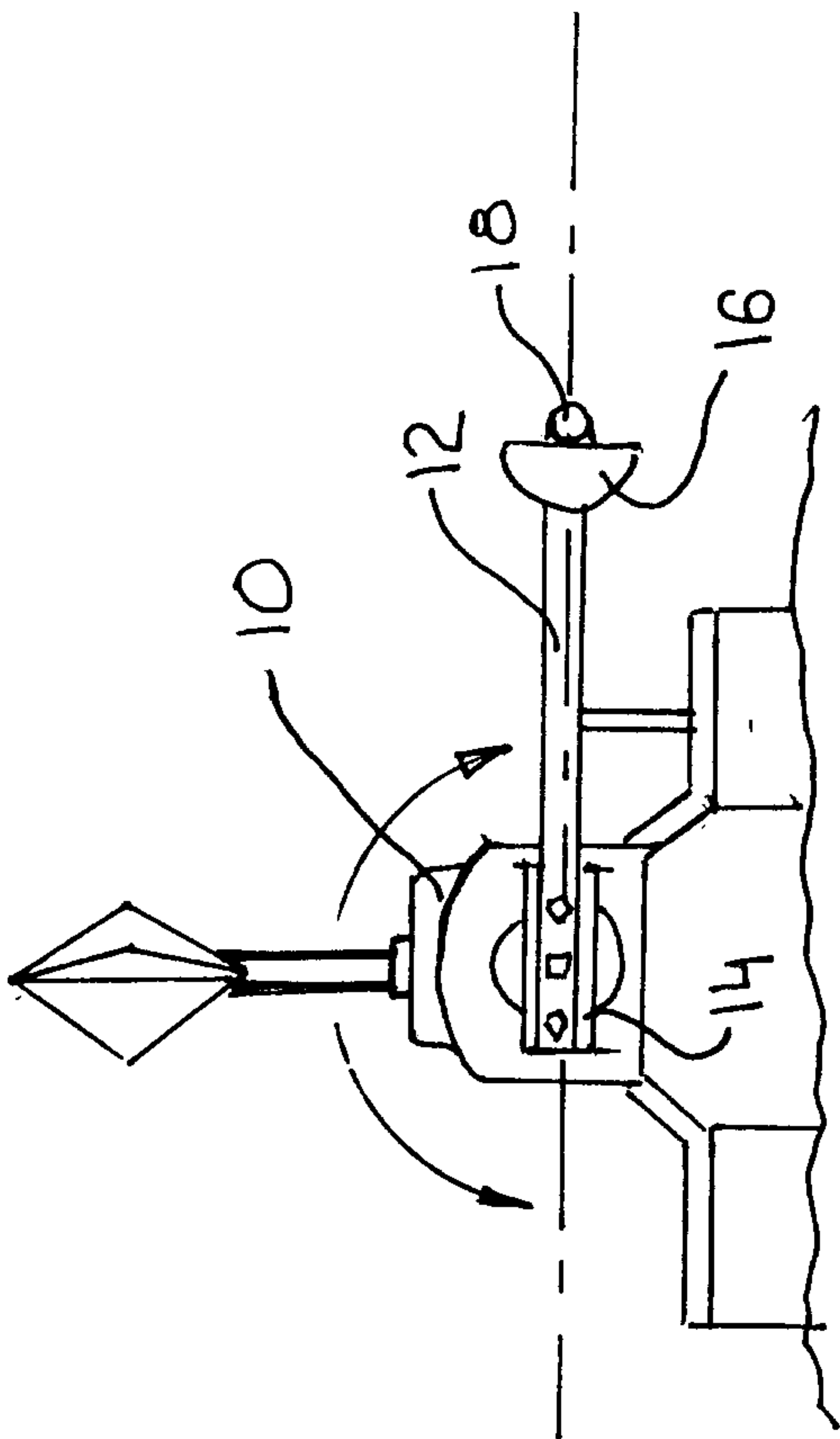


FIG. 1
'PRIOR ART'

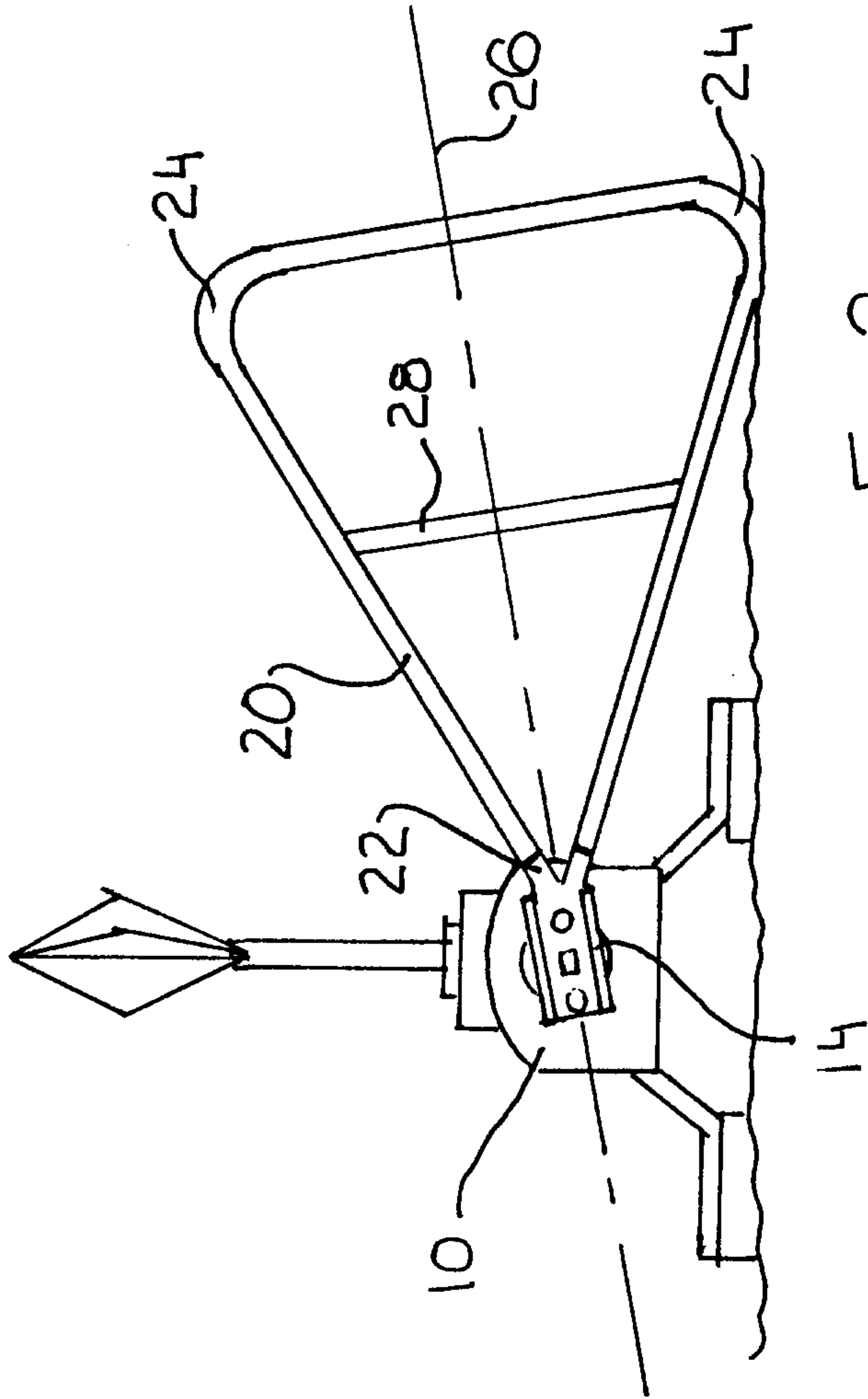
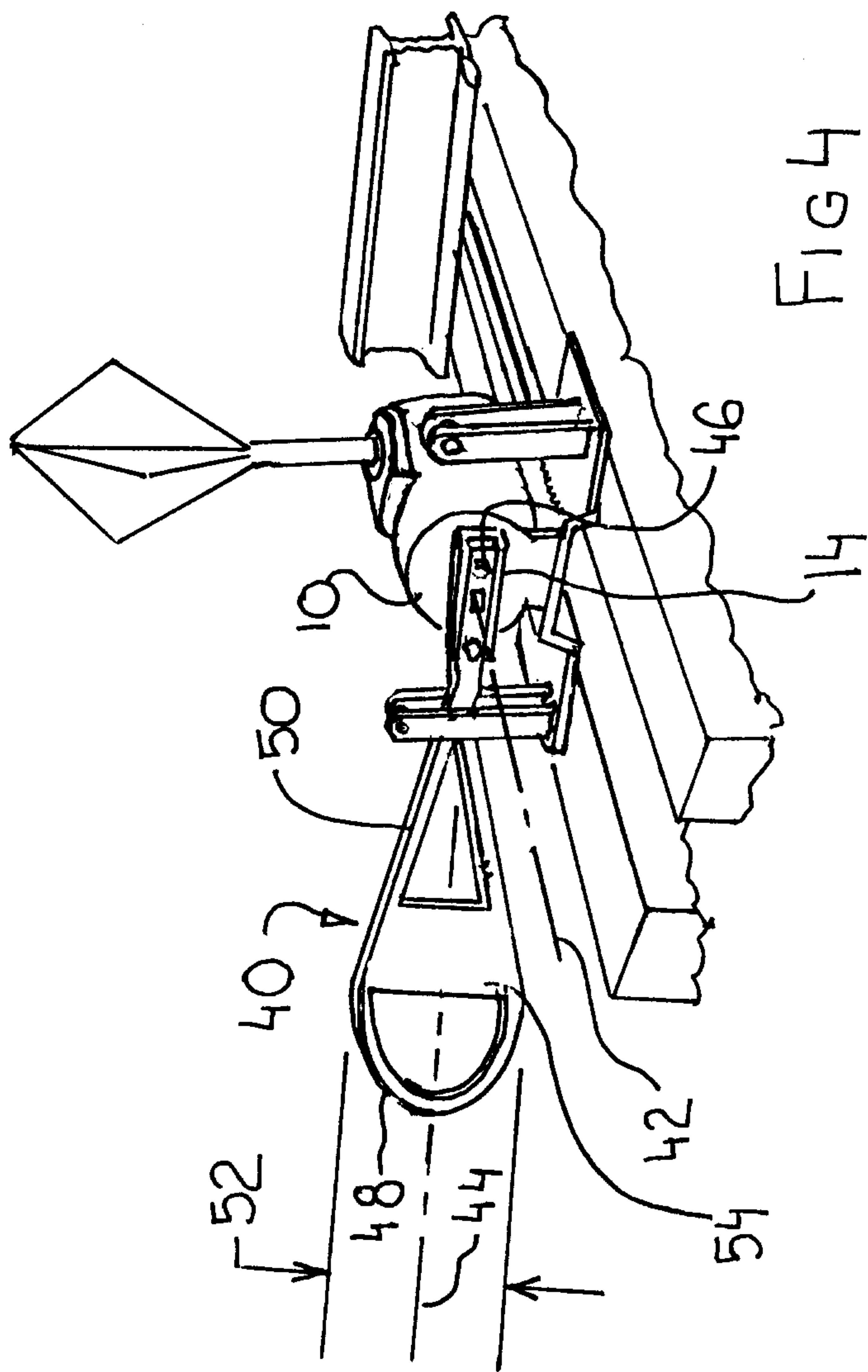
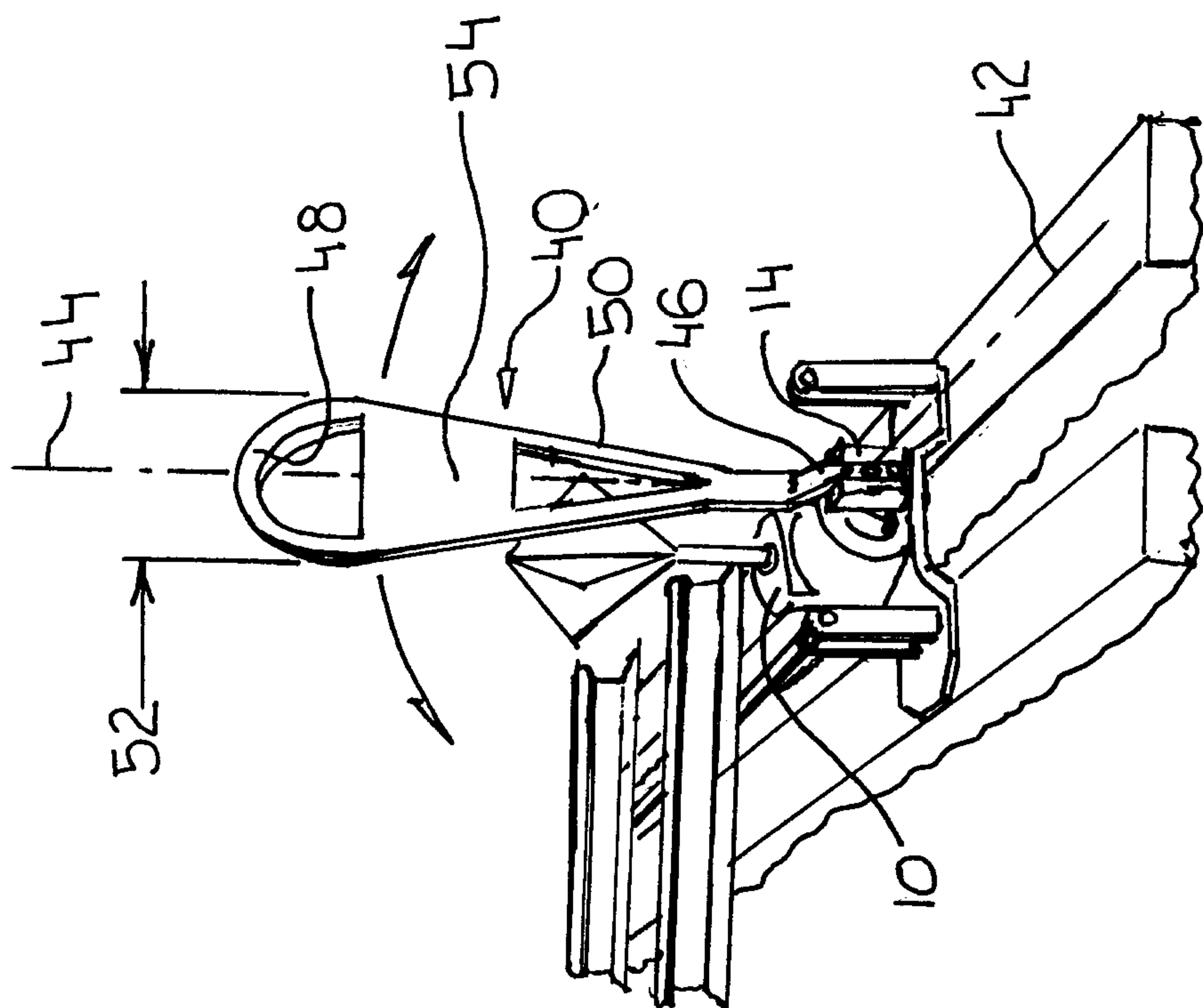


FIG. 2
'PRIOR ART'



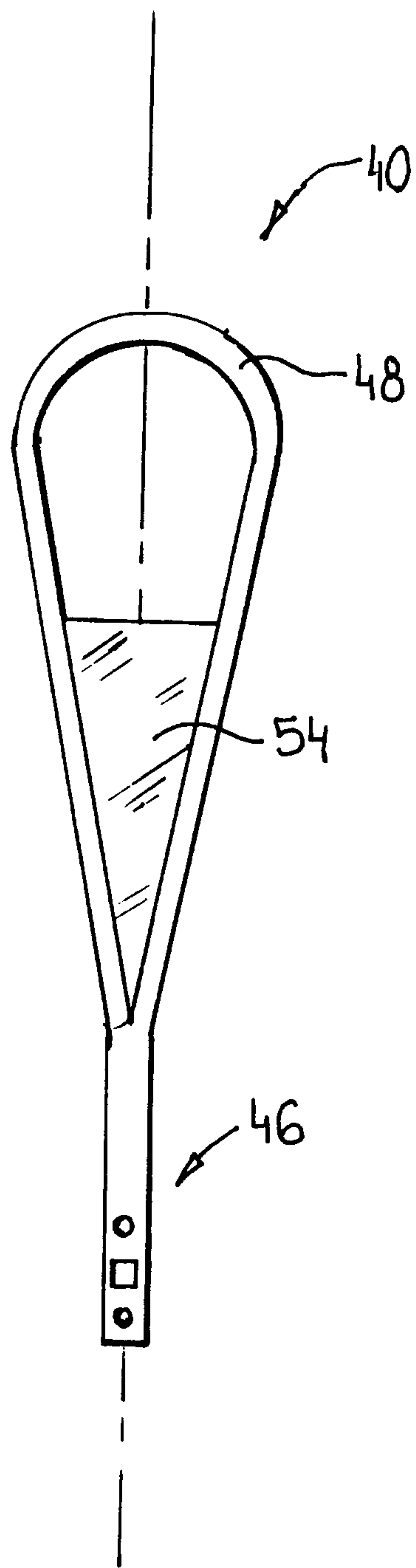


FIG 5

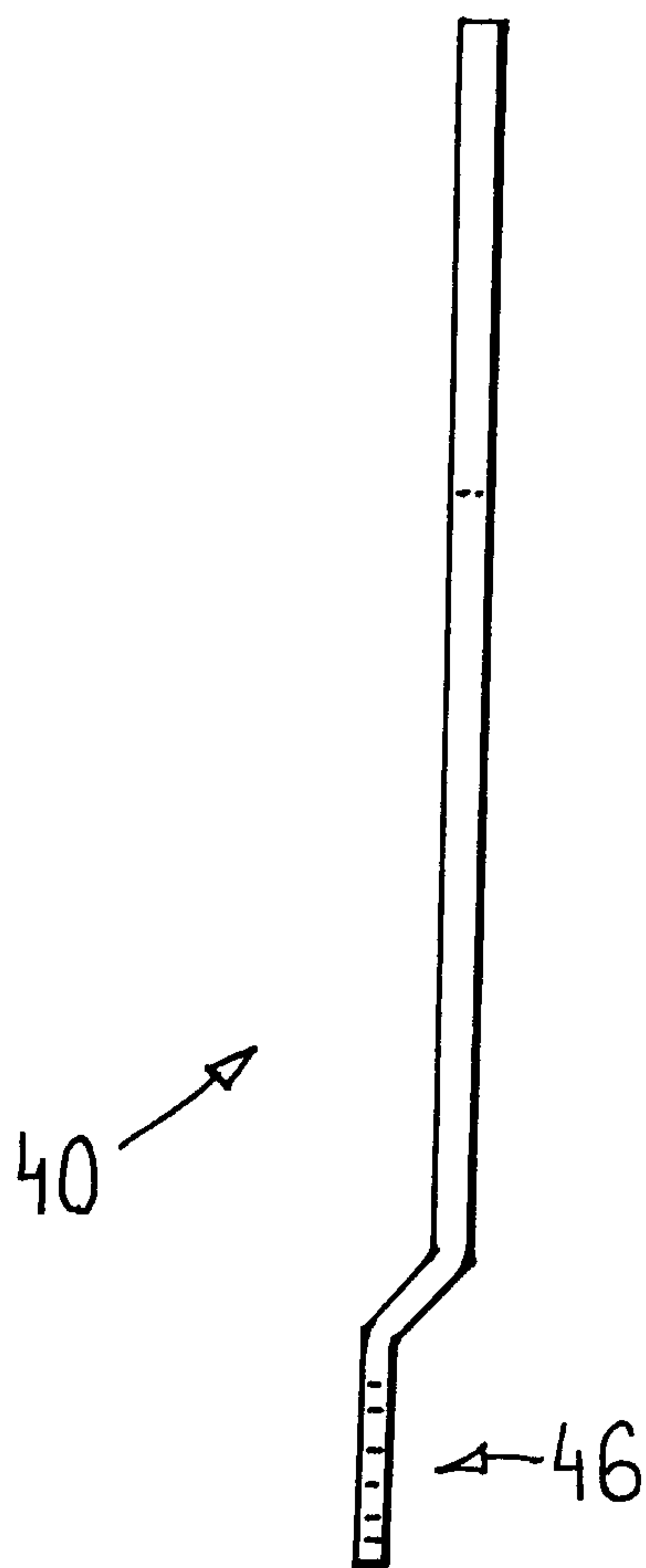


FIG 6

