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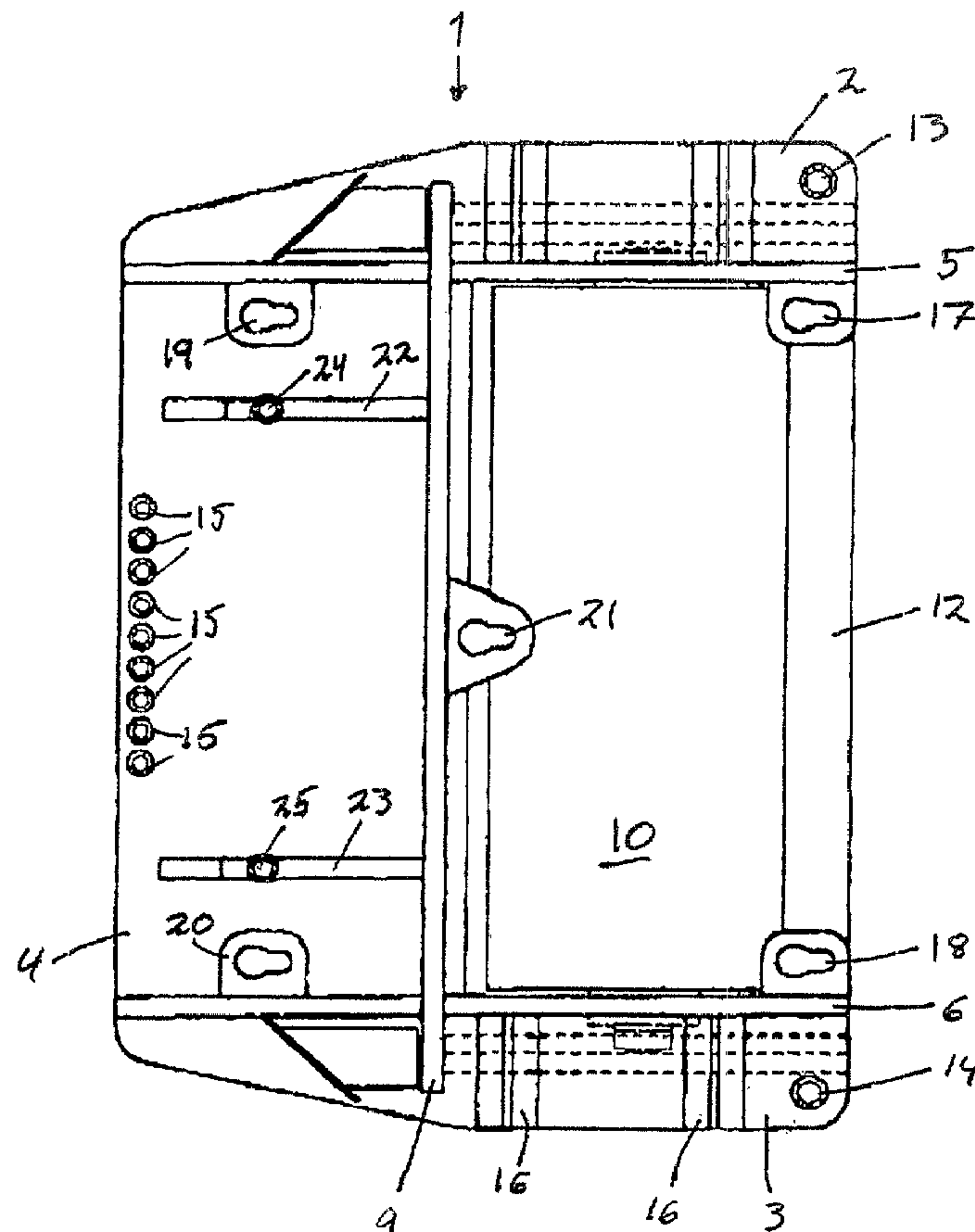
(72) Inventeur/Inventor:
REMOY, JACK E., NO

(73) Propriétaire/Owner:
REMOY SEA GROUP AS, NO

(74) Agent: SIM & MCBURNEY

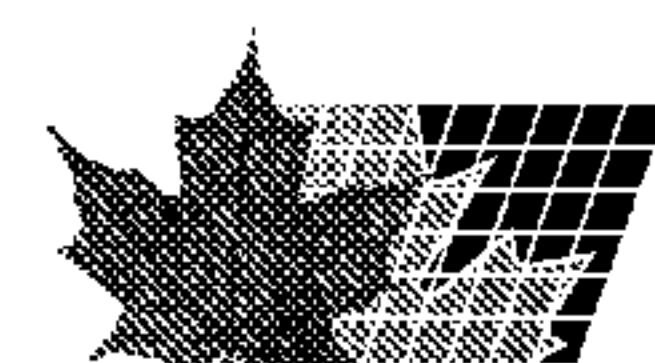
(54) Titre : MASSE D'ALOURDISSEMENT D'UN ROULEAU

(54) Title: ROLLER WEIGHT



(57) Abrégé/Abstract:

A roller weight for bottom trawling, which weight is designed to be connected between a trawler and a trawl. The weight comprises a housing (1) and a roller (10) mounted rotatably in the housing (1). It also comprises means (17 - 21, 24, 25) of connecting the



(57) **Abrégé(suite)/Abstract(continued):**

housing (1) with a steering part (31). The steering part (31) comprises fins (34) that extend partially in the lateral direction with respect to the direction of tow of the weight. In one embodiment, the steering part may be turned around, in order to form a right or left steering weight respectively.

Abstract

A roller weight for bottom trawling, which weight is designed to be connected between a trawler and a trawl. The weight comprises a housing (1) and a roller (10) mounted rotatably in the housing (1). It also comprises means (17 – 21, 24, 25) of connecting the housing (1) with a steering part (31). The steering part (31) comprises fins (34) that extend partially in the lateral direction with respect to the direction of tow of the weight. In one embodiment, the steering part may be turned around, in order to form a right or left steering weight respectively.

Figure 2a

The present invention regards a trawl weight of the roller type with steering properties.

Roller weights are used extensively in bottom trawling with a double trawl, such weights being connected to the respective facing corners of the two trawl bags and to a
5 trawl wire being pulled by a trawler. Trawl doors are provided by the respective outer corners of the two trawl bags, which doors are also connected to a respective trawl wire, which in turn is pulled by the trawler. The trawl doors cause the outer corners of the trawl bags to be pulled outwards, so as to distend the trawl bag, giving it a large opening area. It is desirable for this opening area to be as large as possible, in order to
10 catch as much fish as possible relative to the distance across which the trawl is dragged.

Norwegian patent No. 307541, belonging to the same applicant, describes how three (or more) trawls can be interconnected side by side to form a triple trawl, which further increases the total opening area when compared with a double trawl. This patent also
15 describes a steering weight for keeping the middle trawl bag distended without causing the outside trawl bags to collapse.

The present invention aims to develop the weight according to NO 307541 further, into a roller weight for bottom trawling.

20

According to an aspect of the present invention, there is provided a roller weight for bottom trawling which is designed to be connected between a trawler and trawl, and which comprises a housing and a roller mounted rotatably in the housing and means of connecting the housing with a steering part, which steering part comprises fins that
25 extend partially in the lateral direction with respect to the direction of tow of the weight.

The invention will now be explained in greater detail with reference to an embodiment in the appended drawings, in which:

Figures 1a and 1b show a side view and a top view respectively of the lower part of a weight according to the present invention, and

Figures 2a and 2b show a side view and a top view respectively of a composite weight
5 according to the present invention.

Figures 1a and 1b show the lower part of a weight in accordance with the present invention. This part of the weight is like a conventional roller weight, with the exception of certain significant details that will be explained in greater detail below.
10

The weight comprises a weight housing 1 composed of a first side beam 2, a second side beam 3 and a frame 4. The side beams 2 and 3 are equipped with respective upward projecting ribs 5 and 6 and respective downward projecting ribs (e.g. rib 8). The frame 4 is equipped with an upward projecting rib 9.
15

Between the side beams 2 and 3 there is arranged a roller 10. The roller 10 is mounted in a bearing 11 in each of the downward projecting rib (only one bearing 11 is visible). A pipe 12 extends between the two upward projecting ribs 5 and 6, which pipe is designed to reinforce the housing 1. In use, the roller 10 is to roll along the bottom,
20 ensuring ease of movement for the weight relative to the bottom.

Respective holes 13 and 14 are formed in the side beams 2 and 3 at the same level as the pipe 12. These holes are designed for attachment of a sweep line that extends to respective corners of two trawl bags. At the edge of the frame 4 opposite the roller 10,
25 at least one hole 15 is formed for attachment of a trawl wire connected to the trawler. A plurality of counter weights 16 is provided on the outside of each of the upward projecting ribs 5 and 6 for balancing the weight.

So far, the weight is of a conventional type. In addition to this, a splice with keyholes
30 17, 18, 19 and 20 are provided at the rear and front ends of the ribs 5 and 6. Moreover,

2a

a splice with a keyhole 21 is provided in the middle of the upward projecting rib 9. Furthermore, two short upward projecting ribs 22 and 23 are provided on the frame 4, each of which is provided with a locking pin 24 and 25 that may for instance be spring loaded. In addition, a number of holes 15 are formed by the forward edge of the frame

5 4. By that means, the trawl wire may be moved between different holes 15 in order to increase or decrease the lateral pulling force of the steering weight.

Figures 2a and 2b show a complete weight according to the present invention. The lower part 30 corresponds to that which is shown in Figures 1a and 1b. The upper part 31 is a steering part that comprises a base plate 32, a top plate 33 and a plurality of principally vertical fins 34. By the front end there is an inlet opening 35 between each fin, and by the rear end there is an outlet opening 36 between each fin. The fins curve to the left (seen in the direction of tow) from the inlet openings 35 to the outlet openings 36. A plurality of openings 37 is also formed in the base plate 32.

The base plate 32 also includes two holes 38. On the underside of the base plate is also provided a plurality of pins 39 with heads. These pins are disposed so as to coincide with and fit into the keyholes 17 – 21 on the lower part 30. When the upper part 31 is placed on the lower part 30, the pins are inserted into the front part of the keyholes 17 – 21, which has the largest diameter. The upper part is then carried backwards so as to make the pins 39 move into the rear part, which has the smallest diameter. The diameter of the heads of the pins 39 is larger than this part of the key holes 17 – 21, to ensure that they can not slip out of the key holes. The holes 38 are now flush with the locking pins 24 and 25, which are inserted into the holes 38 and prevent the upper part 31 from sliding forwards.

In addition to the above locking, the upper part 31 will be forced backwards by the flow of water, which further prevents it from sliding forwards.

By constructing the base plate 32 and the top plate 33 in an identical manner, the upper part can be turned so as to make the ribs 34 curve towards the right (seen in the direction of tow). In this manner, the upper part may be arranged with the lower plate 32 or the upper plate 33 facing the lower part 30, in order to obtain a weight that steers either to the left or to the right. If the steering part of the weight is not required (e.g. when trawling with a double trawl), it may easily be removed.

Instead of providing the keyholes 17 – 21 on the lower part 30 and the pins 39 on the upper part 31, these may obviously be changed around, so that the keyholes 17 – 21 are formed on the upper part 31 and the pins 39 on the lower part 30. A combination of pins

and keyholes on the upper part 31 and corresponding holes and pins on the lower part 30 may also be envisaged. For keyholes 17 – 21 provided on the upper part, the smaller diameter of the keyhole must face the direction of tow, so as to make this part enclose the pins when the upper part 31 is forced backwards.

5

It is also possible to construct the upper part 31 in two parts, as indicated by line 38, so as to form a lower section 31a and an upper section 31b. The sections 31a and 31b may be interconnected e.g. by screw-bolt-joints or by a locking connection of the type that couples the upper part 31 to the lower part 30.

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By separating the two sections along the line 38 and only placing one of the two sections 31a and 31b on the lower part 30, the lateral pulling force of the weight may be halved. The weight may thereby be adjusted further to suit the trawl, the vessel, the trawling speed and other conditions.

15

Claims

1. A roller weight for bottom trawling which is designed to be connected between a trawler and trawl, and which comprises a housing and a roller mounted rotatably in the housing and means of connecting the housing with a steering part, which steering part comprises fins that extend partially in the lateral direction with respect to the direction of tow of the weight.
2. A roller weight according to Claim 1, wherein the means of connecting the steering part to the housing comprise keyholes provided on the steering part of the housing, which keyholes correspond to pins on the housing or the steering part.
3. A roller weight according to Claim 2, wherein the keyholes are shaped so as to have a first portion with a relatively large diameter and a second portion with a relatively small diameter, where the large diameter is larger than a head on the pins, while the small diameter is smaller than a head on the pins, wherein the small diameter faces a direction that coincides with the direction in which the pins are forced when the weight is towed.
4. A roller weight according to Claim 1 or 2, wherein the means of connecting the steering part to the housing comprises a locking device with pins on the housing or the steering part, which pins are designed to be inserted into holes on the steering part or the housing.
5. A roller weight according to any one of claims 1 to 4, wherein the steering part comprises a base plate and a top plate, the base plate and the top plate both equipped with means of connecting the steering part to the housing, to allow the steering part to be disposed with its base plate or its top plate against the housing in order to form a right or left steering weight respectively.

6. A roller weight according to any one of claims 1 to 5, further comprising a plurality of attachment holes for a trawl wire, which holes are disposed along the front edge of the housing, to allow the laterally acting force of the weight to be adjusted by changing the attachment of the trawl wire.

7. A roller weight according to any one of claims 1 to 6, wherein the steering part comprises two or more sections designed to be taken apart, so as to allow the laterally acting force to be reduced.

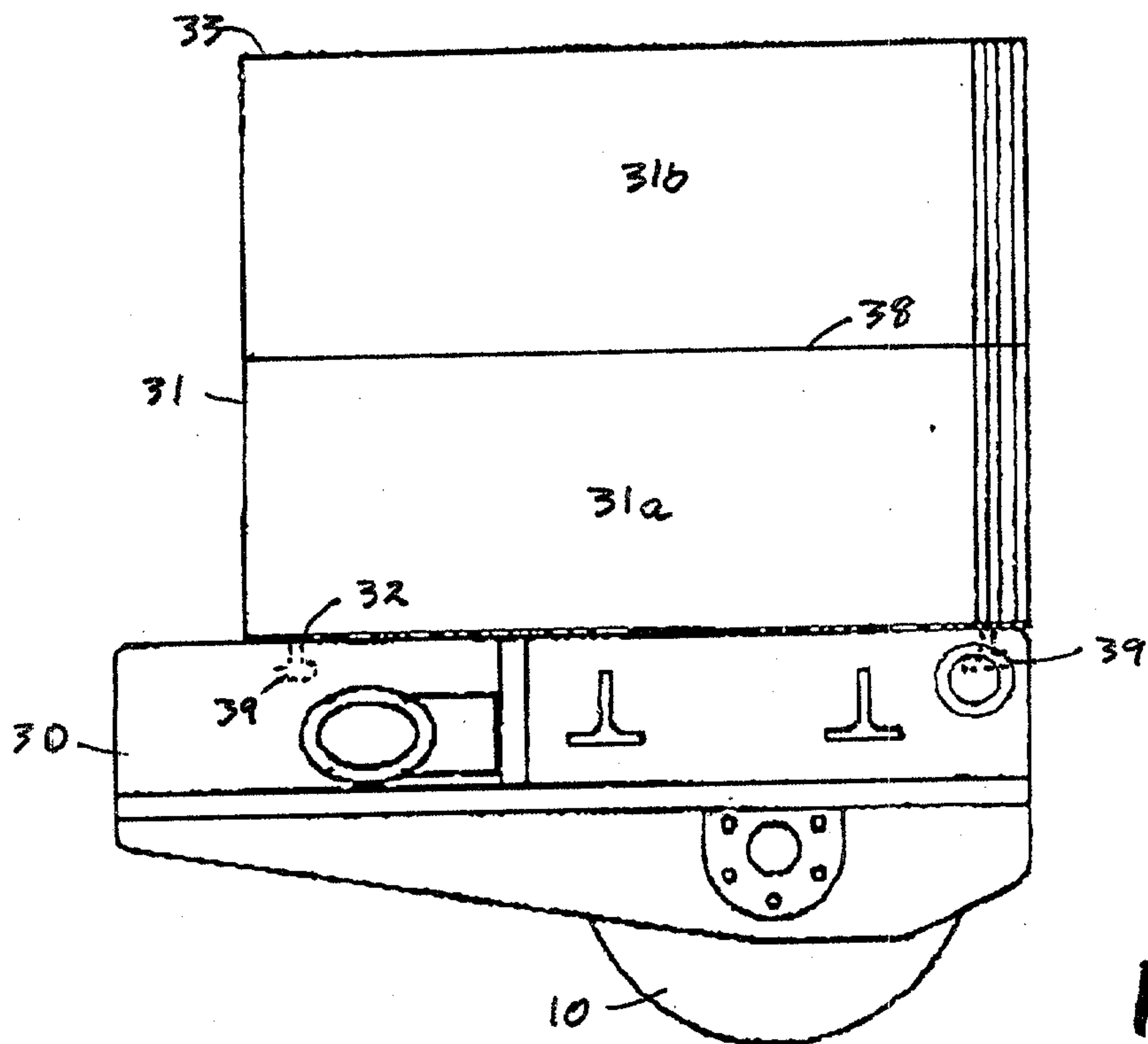


Fig. 2a

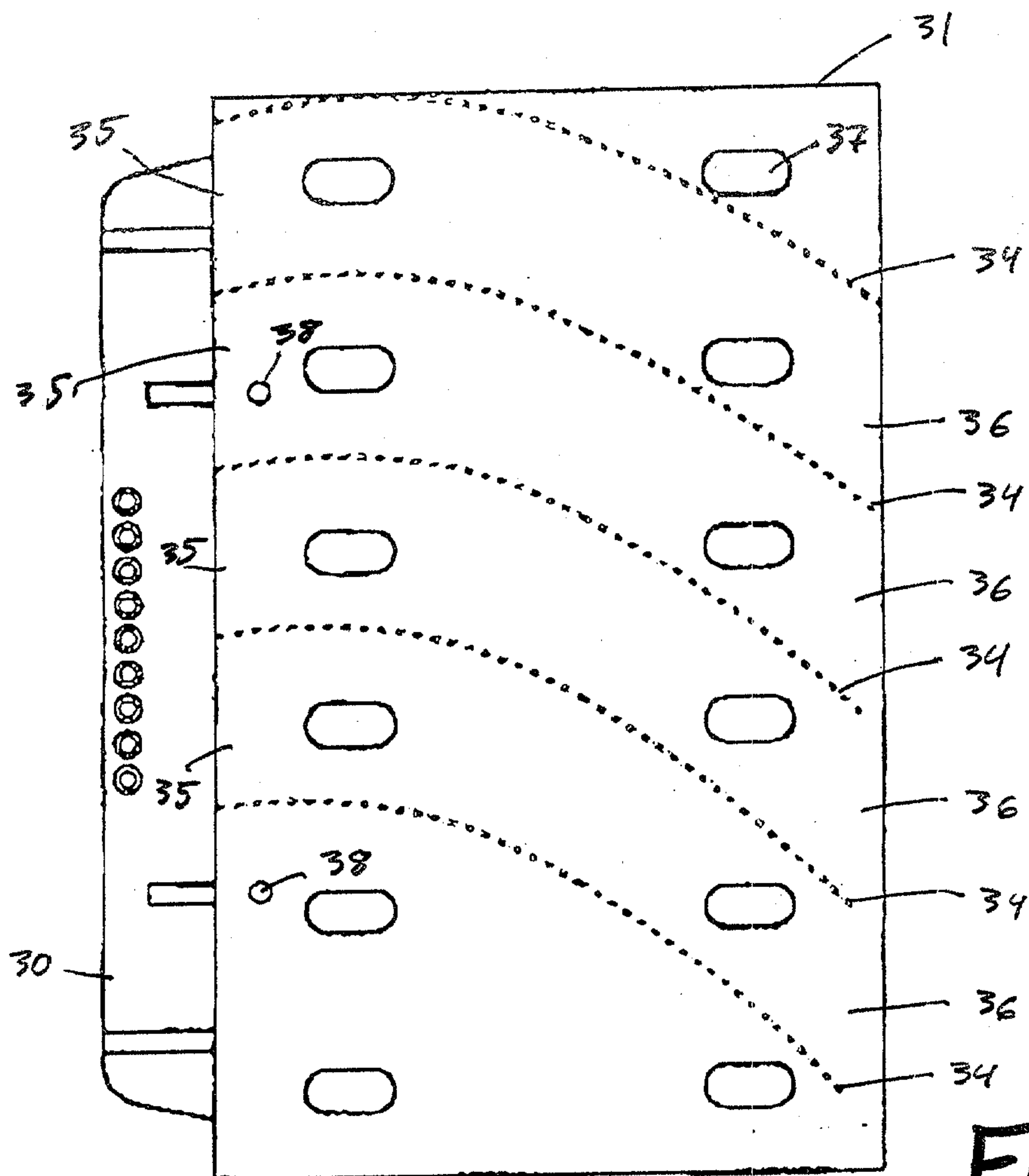


Fig. 2b

