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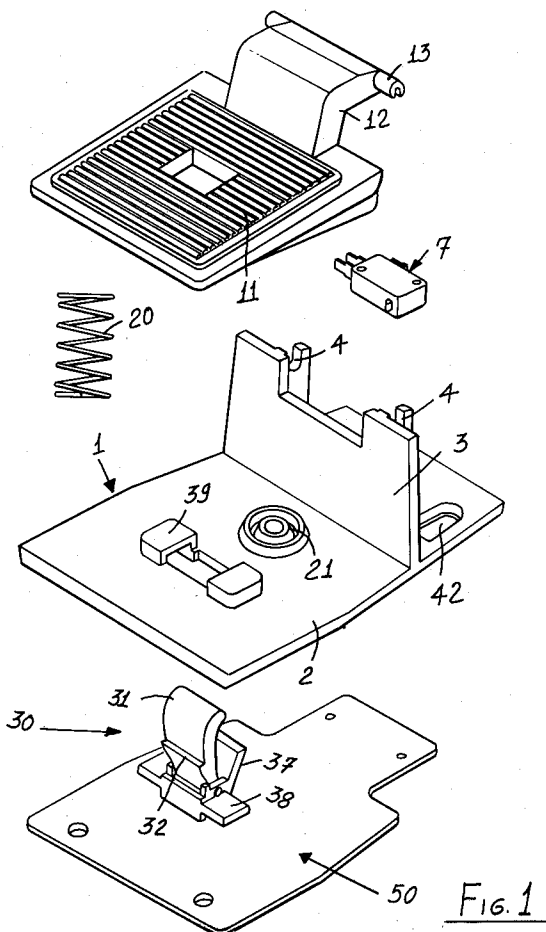
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I-20122 Milano(IT)(54) **Easily assembled pedal unit for operating micro-switches or pneumatic valves.**

(57) The present invention relates to an easily assembled pedal unit for operating microswitches or pneumatic valves, which comprises a bottom element supporting a driving element and having fork-shaped seats, which are opened at the top thereof, for pivotably engaging therein a pedal element which is provided with a leg adapted to cooperate with the driving element, the pedal unit further comprising an outer protecting casing therein the bottom element can be engaged and held herein by snap engaged means, for providing a stable pivotable connection of the pedal element in the fork-shaped seats.

**FIG. 1****EP 0 515 331 A2**

BACKGROUND OF THE INVENTION

The present invention relates to an easily assembled pedal unit for operating microswitches or pneumatic valves.

As is known, prior pedal units used for operating microswitches or pneumatic valve, for driving several types of apparatus, have a construction including a metal frame-work to which a pedal element must be pivotably connected, which pedal will drive said microswitch or pneumatic valve.

Thus, in these prior art constructions there occurs a great assembling problem because of the comparatively high number of component elements.

Another problem is that, mainly as electric component are used, such as microswitches or the like, there is necessary to provide a proper electrical insulation in order to provide the unit with a satisfactory operating safety.

Yet another drawback is that prior art pedal units have a poor stability and, for their coupling to a rest surface, they usually require separate coupling means.

SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to overcome the above mentioned drawbacks by providing an easily assembled pedal unit for operating microswitches or pneumatic valves, which allows the component parts thereof to be easily and quickly assembled without using metal screws or insert elements.

Within the scope of the above mentioned aim, a further object of the present invention is to provide such a pedal unit for operating microswitches or pneumatic valves which is very stable and can be supported firmly on a supporting surface without the need of providing a separate stabilizing element or assembly.

Another object of the present invention is to provide such a pedal unit which is very reliable in operation, can be easily made starting from easily available elements and materials and which, moreover, is very advantageous from a mere economic standpoint.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an easily assembled pedal unit for operating microswitches or pneumatic valves, characterized in that said pedal unit comprises a bottom element supporting a driving element and including fork-shaped seats therein a pedal element can be pivotably engaged, said pedal element being provided with a leg portion cooperating with said driving element, an outer

protecting casing being moreover provided in which said bottom element can be engaged and restrained by snap engaged means, for providing a stable pivotable coupling between said pedal element and fork shaped seats.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the present invention will become more apparent from the following detailed disclosure of a preferred, though not exclusive, embodiment thereof, which is illustrated, by way of an indicative but not limitative example, in the figures of the accompanying drawings, where:

Figure 1 is a perspective exploded view of a bottom element, a ballast assembly and a pedal element included in the pedal unit according to the present invention;

Figure 2 is a perspective view illustrating an outer protecting casing and a driving element, consisting of a pneumatic valve, included in the pedal unit according to the present invention;

Figure 3 is a vertical cross-sectional view illustrating the pedal unit according to the invention with its driving element consisting of a pneumatic valve;

and

Figure 4 is a further vertical cross-sectional view of the subject pedal unit the driving element of which comprises a microswitch.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the above illustrated drawings, the easily assembled pedal unit, for driving microswitches or pneumatic valves, according to the present invention, comprises a bottom element, generally indicated at the reference number 1, comprising a plate-like body 2, from a central region of which there extends a vertical wall 3 adjoining fork-shape seats 4 which are opened at the top thereof.

Near the fork-shaped seats 4, on the plate-like body 2 of the bottom element 1, there is assembled a driving or control element which can comprise either a microswitch 7 or a pneumatic valve 8.

In the fork-shaped seats 4 a pedal element can be pivotably engaged, said pedal element being generally indicated at the reference number 10 and being provided with a pedal portion 11 from one end of which there extends a lug 12 which supports a cross pivot pin 13 which can be engaged in said seats 4.

At said pivot pin from the element there extends a driving leg 14 which is provided for coop-

erating with the driving or control element consisting of a microswitch or a pneumatic valve.

Between the pedal portion 11 and bottom element 2 urging resilient means operate which comprise a spring 20 abutting in a housing seat 21 formed on the plate-like body and in a corresponding seat which is formed on the bottom wall of the pedal portion 11.

Moreover, the pedal unit further comprises a safety assembly 30 comprising a hook-like element 31 provided with an abutment tooth element 32 projecting through a window 33 formed through the pedal portion.

The pedal unit comprises furthermore resilient means, consisting of a spring 36, cooperating with the hook element 31 and an abutment or shoulder 37 which is formed on the framework 38, which can be housed, by introducing it from the bottom portion, in ear elements 39 applied on the plate-like body 2.

As shown, the bottom element 2 is housed in an outer protecting casing 40 which, at a bottom region thereof, is provided with side guides 41 in order to slidably engage the bottom element therein, said bottom element being provided with coupling resilient means consisting of resilient tabs 42 supporting a bottom projection 43 which is adapted to be snap engaged in corresponding holes 44 formed on the bottom of the outer protecting casing.

The outer protecting casing, which has a box-like configuration, is so designed that, as the bottom element has been engaged inside said casing, the top portion of the casing will practically close the fork-like seats 4 so as to provide a stable connection for firmly pivotably connecting the pedal element and bottom element.

Moreover, the pedal unit also comprises a ballast plate, indicated at 50, which can be engaged between the bottom element 1 and the inner bottom portion of the outer casing, so as to suitable increase the weight of the pedal unit to provide it with a good stability.

Advantageously, the several component elements of the pedal unit of the invention, that is the bottom element, the pedal element and outer casing are made of a plastic material, thereby all of the electrical insulation problems are suitably solved, in addition to providing the possibility of making a very stable and long duration construction.

While the invention has been disclosed and illustrated with reference to a preferred embodiment thereof, it should be apparent that the disclosed embodiment is susceptible to several modifications and variations all of which will come within the spirit and scope of the appended claims.

Claims

1. An easily assembled pedal unit for operating microswitches or pneumatic valves, characterized in that said pedal unit comprises a bottom element supporting a driving element and including fork-shaped seat therein a pedal element can be pivotably engaged, said pedal element being provided with a leg portion cooperating with said driving element, an outer protecting casing being moreover provided in which said bottom element can be engaged and restrained by snap engaged means, for providing a stable pivotable coupling between said pedal element and fork-shaped seats.
2. A pedal unit, according to Claim 1, characterized in that the bottom element has a plate-like body from an intermediate region of which there extends a vertical wall adjoining said upwardly open fork-like seats.
3. A pedal unit, according to Claims 1 and 2, characterized in that said pedal element is provided with a pedal portion from one end of which there extends a projection ending with a pivot pin which can be engaged in said fork-like seats, said leg extending from said pivot pin.
4. A pedal unit, according to one or more of the preceding claims, characterized in that said unit comprises resilient means including an urging spring which operates between said plate-like element and a lower surface of said pedal portion.
5. A pedal unit, according to one or more of the preceding claims, characterized in that said unit further comprises safety locking means including a hook element pivoted to a framework and projecting through a window formed through said pedal portion, said hook element including an abutment tooth element which can be locked against said pedal portion, the hook element being provided for engagement in ear elements applied on the bottom element.
6. A pedal unit, according to one or more of the preceding claims, characterized in that said snap engagement means provided for restraining the bottom element in said outer protecting casing comprise resilient tab elements associated with said plate like body and including a bottom lug element which can be removably engaged in holes formed on the bottom of said outer protecting casing.

7. A pedal unit, according to one or more of the preceding claims, characterized in that said unit further comprises a ballast plate which can be engaged between said bottom element and a bottom portion of said outer protecting casing. 5
8. A pedal unit, according to one or more of the preceding claims, characterized in that said driving element comprises a microswitch. 10
9. A pedal unit, according to one or more of the preceding claims, characterized in that said driving element comprises a pneumatic valve. 15
10. A pedal unit, according to one or more of the preceding claims, characterized in that said bottom element, said pedal element and said outer protecting casing are made of an electrically insulating plastic material. 20

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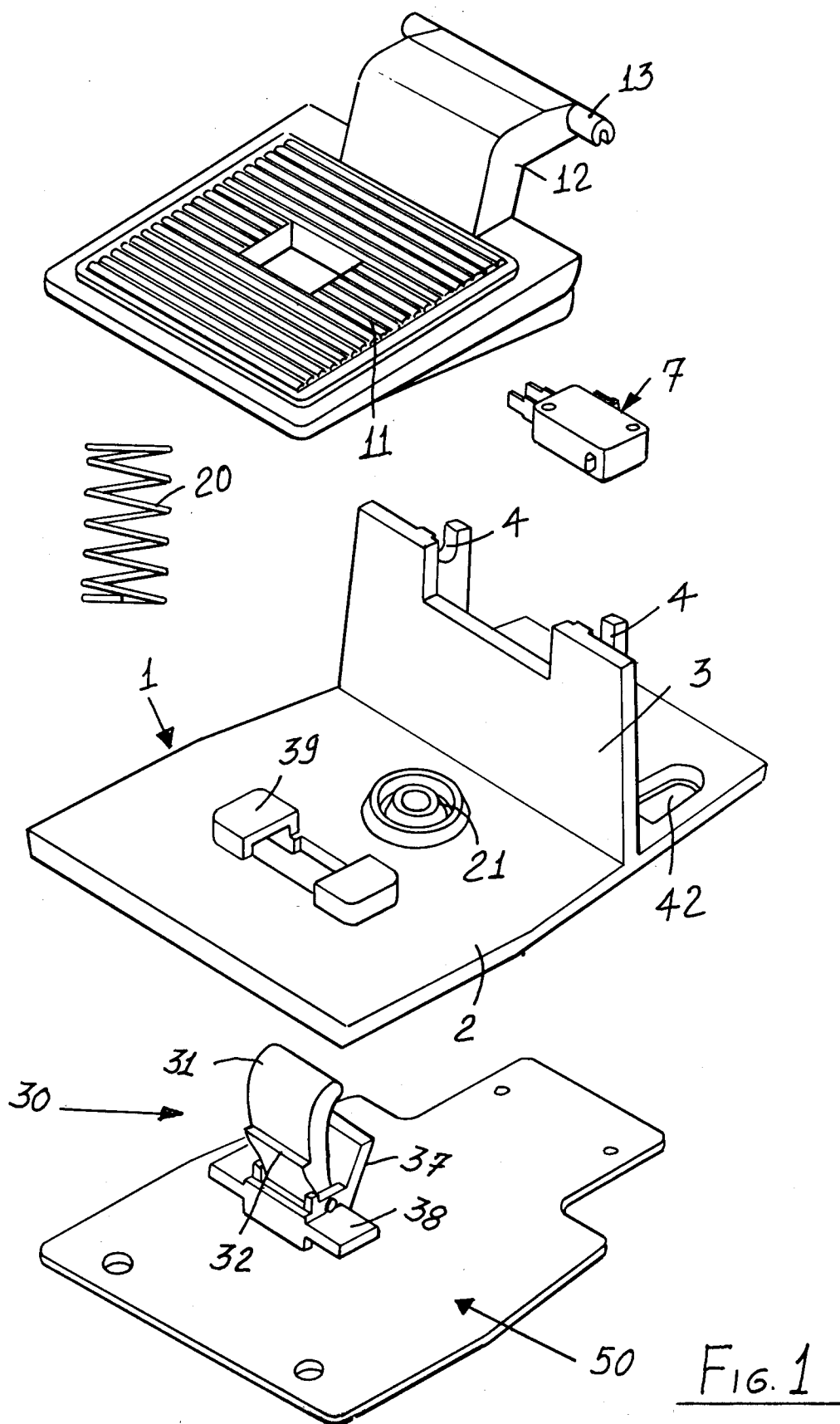
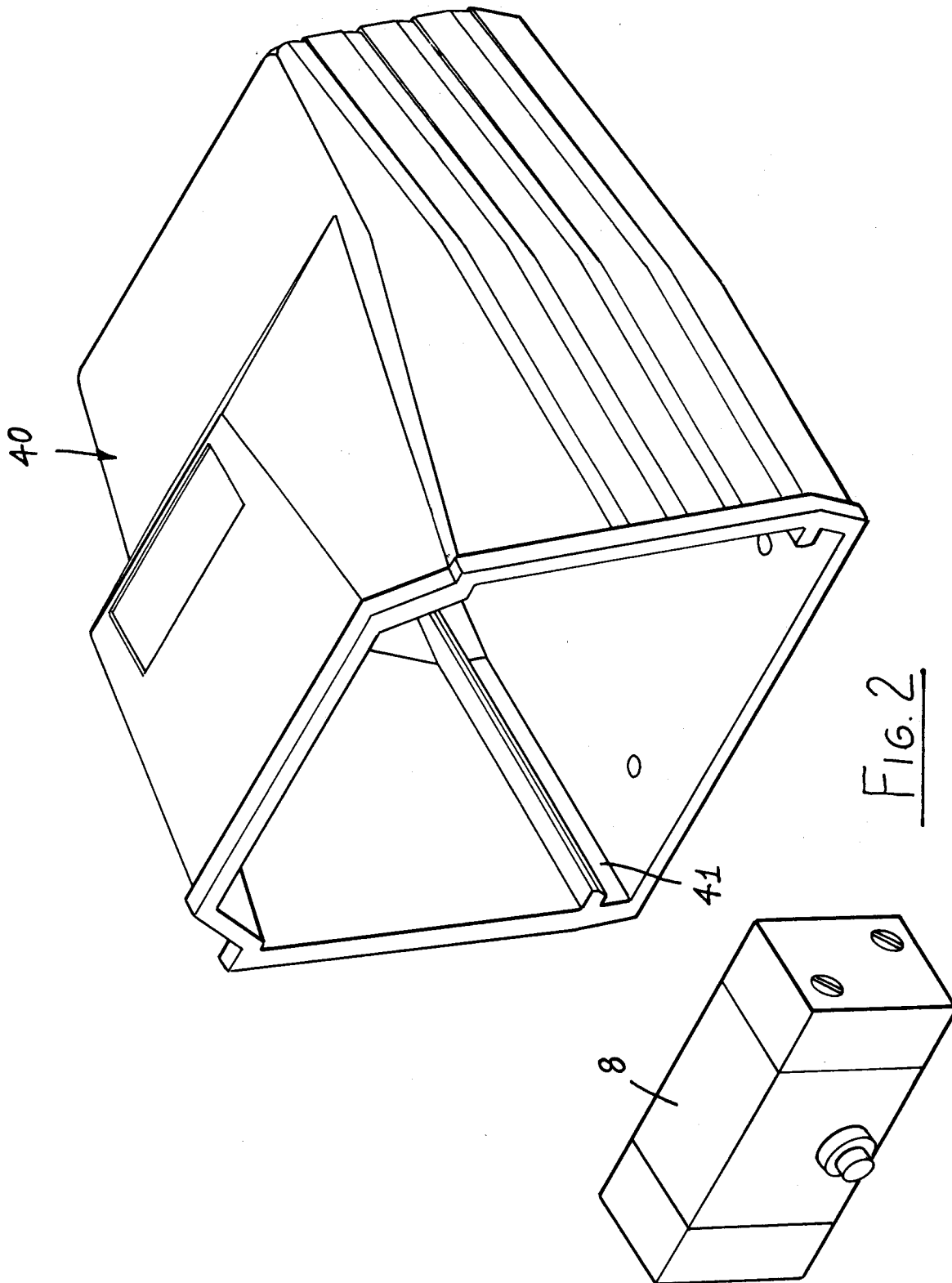


FIG. 1



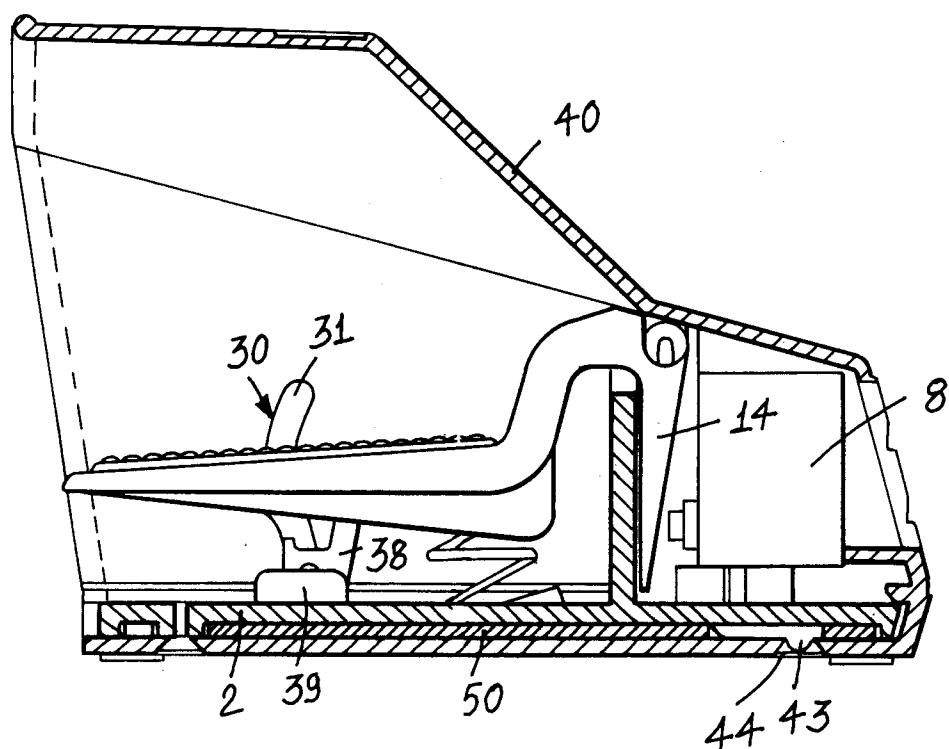


FIG. 3

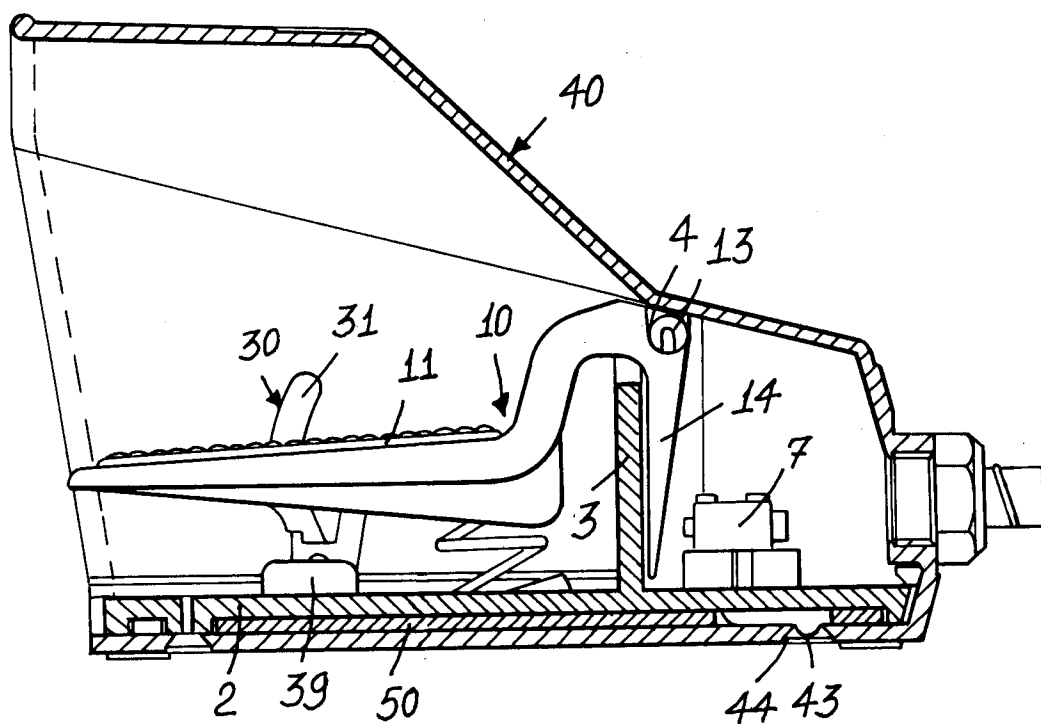


FIG. 4