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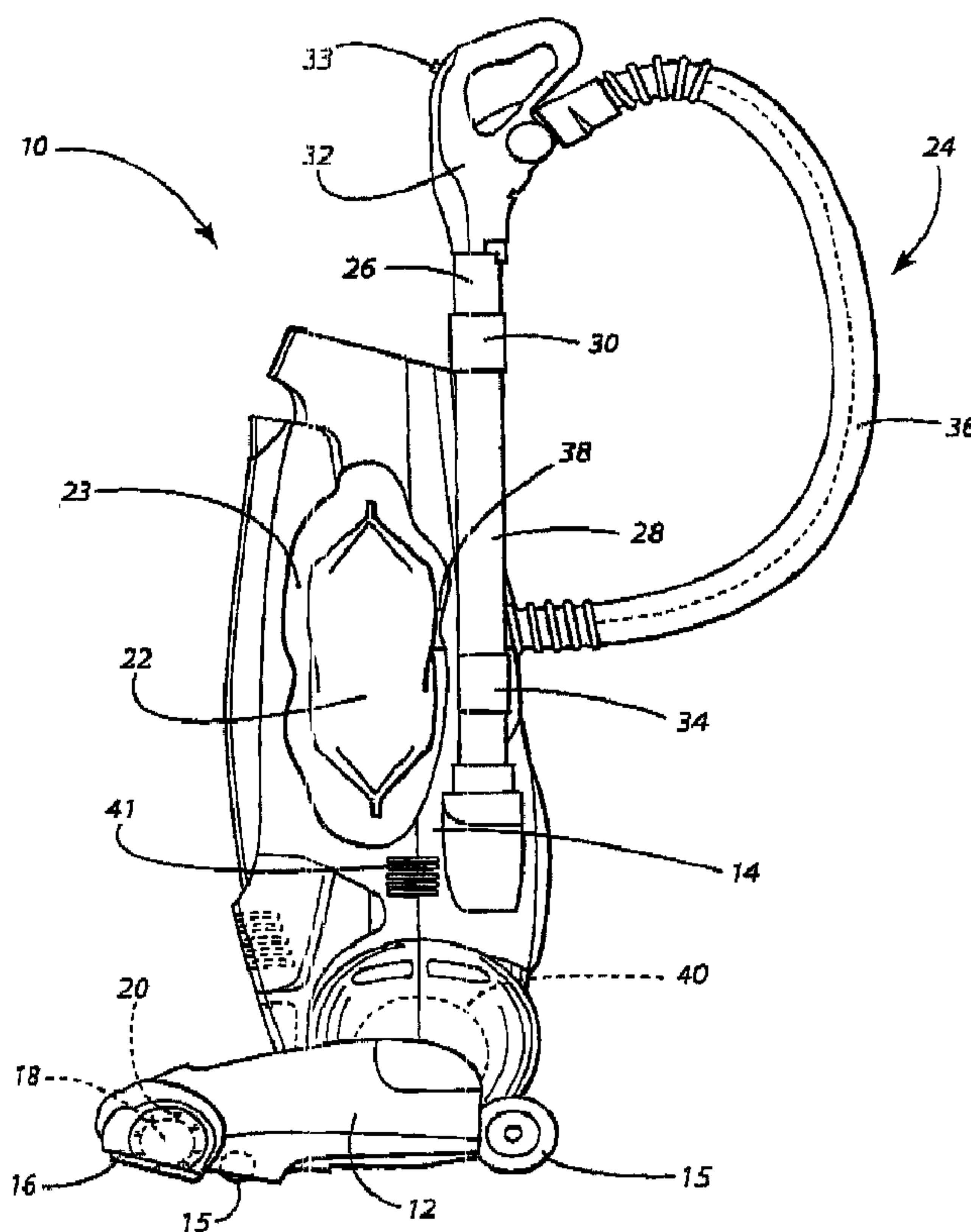
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ENSEMBLE DE TUBE RALLONGE

(54) Title: UPRIGHT VACUUM CLEANER INCORPORATING RELEASEABLE LOCKING MECHANISM FOR WAND
ASSEMBLY



(57) Abrégé/Abstract:

The present invention relates generally to an upright vacuum cleaner including a housing having a canister assembly, a nozzle assembly and a connector for releasably holding the wand assembly. Both a suction generator and a dirt collection vessel are carried on the housing. In addition the upright vacuum cleaner includes a removable wand assembly, a lock and a lock release.

Abstract of the Disclosure

The present invention relates generally to an upright vacuum cleaner including a housing having a canister assembly, a nozzle assembly and a connector for releasably holding the wand assembly. Both a suction generator and a dirt collection vessel are carried on the housing. In addition the upright vacuum cleaner includes a removable wand assembly, a lock and a lock release.

**UPRIGHT VACUUM CLEANER INCORPORATING
RELEASEABLE LOCKING MECHANISM FOR WAND
ASSEMBLY**

Technical Field

The present invention relates generally to the floor care equipment field and, more particularly, to an upright vacuum cleaner equipped with an electrified hose and telescopic wand assembly having a releaseable locking mechanism.

Background of the Invention

A vacuum cleaner is an electro-mechanical appliance utilized to effect the dry removal of dust, dirt and other small debris from carpets, rugs, fabrics or other surfaces in both domestic and industrial environments. In order to achieve the desired dirt and dust removal, a rotary agitator is provided to beat dirt and dust from the nap of the carpet and a pressure drop or vacuum is used to force air entrained with this dirt and dust into the nozzle of the vacuum cleaner. The particulate-laden air is then drawn through a bag-like filter, a dirt cup or a cyclonic separation

chamber and filter combination which traps the dirt and dust, while substantially clean air is exhausted by an electrically operated fan that is driven by an on board motor. It is this fan and motor arrangement that generates the drop in air pressure necessary to provide the desired cleaning action. Thus, the fan and motor arrangement is commonly known as the vacuum or suction generator.

Upright vacuum cleaners are presently very popular with consumers. An upright vacuum cleaner comprises a nozzle assembly and canister assembly that are pivotally connected together. The nozzle assembly includes a suction inlet and may also include a rotary agitator. The nozzle assembly and canister assembly glide across the floor on wheels so as to allow for ease of cleaning.

It is known in the art to provide upright vacuum cleaners with a hose and specialty tools to allow for above floor cleaning such as of furniture, upholstery or drapes or to allow cleaning in tight corners or areas where furniture or other impediments prevent the nozzle assembly from being moved across the floor to provide the desired cleaning. The present invention relates to an upright vacuum cleaner equipped with a removable wand assembly having a locking mechanism that securely holds the wand assembly to the housing of the upright vacuum cleaner while also allowing that wand assembly to be easily released for cleaning applications by simply engaging a pivoting lever with the toe or foot of the operator.

Summary of the Invention

In accordance with the purposes of the present invention as described herein, an upright vacuum cleaner is provided. The upright vacuum cleaner

includes a housing having a canister assembly, a nozzle assembly and a connector for releasably holding that wand assembly. A suction generator and dirt collection vessel are both carried on that housing. The upright vacuum cleaner further includes a removable wand assembly. A lock is carried on one of the housing and the wand assembly. Additionally, a lock release is carried on one of the housing and the wand assembly.

In accordance with additional aspects of the present invention the removable wand assembly further includes a control handle. In addition, in one possible embodiment the lock is a spring loaded detent on the connector or the wand assembly and a cooperating aperture on the other of the connector and the wand assembly. Still further the lock release is a lever. That lever is pivotally mounted to the housing and includes a release lug aligned with the locking aperture. Further the lever is substantially L-shaped.

Still further the canister assembly and nozzle assembly are pivotally connected together in the manner of an upright vacuum cleaner. The dirt collection vessel may be a dirt cup or a bag filter. If a dirt cup, the vessel may hold a filter.

Accordingly, in yet another aspect, the present invention resides in an upright vacuum cleaner, comprising; a removable wand assembly; a housing including a canister assembly, a nozzle assembly and a connector for releasably holding said wand assembly; a suction generator carried on said housing; a dirt collection vessel carried on said housing; a lock securing said removable wand assembly to said housing, carried on one of said housing and said wand assembly; and a lock release carried on one of said housing and said wand assembly.

In the following description there is shown and described a preferred embodiment of this invention, simply by way of illustration of one of the modes best suited to carry out the invention. As it will be realized, the invention is capable of other different embodiments and its several details are capable of modification in various, obvious aspects all without

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departing from the invention. Accordingly, the drawings and descriptions will be regarded as illustrative in nature and not as restrictive.

Brief Description of the Drawing

The accompanying drawing incorporated in and forming a part of this specification, illustrates several aspects of the present invention, and together with the description serves to explain certain principles of the invention. In the drawing:

Figure 1 is a partially cutaway side elevational view of an upright vacuum cleaner of the present invention;

Figure 2 is a view similar to Figure 1 but illustrating the handle and wand assembly in a manual cleaning position; and

Figure 3 is a detailed rear elevational view illustrating the connector and release lever on the rear of the vacuum cleaner of the present invention;

Figure 4a is a detailed rear elevational view with a housing cover removed to clearly show the release lever and lock when in the locked position; and

Figure 4b is a view similar to Figure 4a but showing the release lever and lock in position to release the wand from the connector.

Reference will now be made in detail to the present preferred embodiment of the invention, an example of which is illustrated in the accompanying drawing.

Detailed Description of the Invention

As illustrated in Figure 1, the present invention relates to an upright vacuum cleaner 10 including a housing comprising both a nozzle assembly 12 and a canister assembly 14. The canister assembly 14 is pivotally connected to the nozzle assembly 12. The upright vacuum cleaner 10 rides over the floor surface being cleaned on wheels 15 carried on the housing.

The nozzle assembly 12 includes a suction inlet 16. A rotary agitator 18 carried on the nozzle assembly 12 is mounted adjacent to or in the suction inlet 16. The rotary agitator 18 includes bristle tufts 20, brushes, wipers or the like to beat dirt and debris from the nap of an underlying carpet being cleaned as the agitator is rotated at high speeds with respect to that carpet and the nozzle assembly 12.

The canister assembly 14 includes a dirt collection vessel 22 housed in a receiver or internal cavity 23. In the illustrated embodiment the dirt collection vessel 22 is a dust bag of permeable filter material adapted to entrap dirt and debris while allowing the passage of clean air through the bag. In an alternative embodiment the dirt collection vessel 22 may take the form of a dirt cup and filter combination. Such a dirt cup may or may not provide for cyclonic air flow. Further, the dirt cup may be equipped with a filter.

The canister assembly 14 also includes a telescopic handle and wand assembly generally designated by reference numeral 24. The telescopic handle and wand assembly 24 includes first and second telescopic wand sections 26, 28 connected together by a locking coupler 30 similar to the structure shown and described in U.S. Patent 6,148,474 to Ohara et al. and owned by the assignee of the present invention. A control hand grip 32, including a multiposition actuator switch 33, is provided at the end of the wand section 26 opposite the coupler 30. The end of the wand section 28 opposite the coupler 30 is received in a connector 34 mounted to the rear of the canister assembly 14. A flexible hose 36 extends from the control handle 32 to the inlet 38 connected to the dirt collection vessel 22. A power cord (not illustrated) includes a plug for connecting to a standard electrical wall outlet and providing power for the vacuum cleaner.

During standard floor cleaning operation, the rotary agitator 18 scrubs and beats dirt and debris from the nap of an underlying carpet being cleaned. A suction generator 40 draws air entrained with that dirt and debris through the suction inlet 16, the connector 34, the wand section 28, the wand section 26, the control handle 32, the hose 36 and the inlet 38 into the dirt collection vessel 22. The dirt and debris is captured in the dirt collection vessel 22 while the now relatively clean air is drawn over the motor of the suction generator 40 in order to provide cooling. That air is then exhausted through a final filter (not shown) and returned to the environment through the exhaust port 41.

As illustrated in Figure 2 the handle and wand assembly 24 includes a distal end that is removable from the canister assembly 14 to allow manipulation and specialty cleaning. More specifically, the distal end of the wand section 28 is removable from the connector 34. As best illustrated in Figure 3-5, the distal end of the wand section 28 includes a spring loaded detent 50 that is biased so as to project through a hole 52 in the sidewall of the wand section. When the handle and wand assembly 24 is fully seated in the connector 34, the end 54 of the wand section 28 is seated against the bottom of the connector. Thus, the main air path from the canister assembly 14 to the handle and wand assembly 24 is tightly sealed for maximum cleaning efficiency. The detent 50 is biased into a lock opening 58 in the connector 34 to insure the integrity of the connection and seal.

When it is desired to release the handle and wand assembly 24 for above floor cleaning, the lock release 60 is manipulated. The lock release 60 comprises an L-shaped lever 62 connected to the canister assembly 14 by a pivot pin 66. The operator simply engages the toe plate 68 of the lever 62 and depresses. This causes the lever 62 to pivot about the pivot pin 66

(see action arrow A in Figure 4a). A lug 70 on the lever 62 is aligned with the lock opening 58. When the lever 62 is depressed, this lug 70 engages the detent 50 and pushes the detent 50 against its spring bias out of the lock opening 58. When the detent 50 clears the lock opening 58 (note Figure 4b), the handle and wand assembly 24 may be freely removed from the connector 34 to allow above floor cleaning.

The telescopic sections 26, 28 of the handle and wand assembly 24 may then be retracted or extended as desired to produce a wand of desired length. The handle and wand assembly 24 is then manipulated by the operator through the control handle 32. In this mode of operation air including dirt and debris is drawn into the open distal end of the handle and wand assembly 24. That air then travels through the wand section 28, the wand section 26, the control handle 32, the hose 36 and the inlet 38 into the dirt collection vessel 22. There the dirt becomes trapped and clean air then passes over the motor of the suction generator 40 before being exhausted through the final filter into the environment.

Upon finishing the manual cleaning application, the handle and wand assembly 24 is returned to the connector 34. As this is done, the spring loaded detent 50 is again aligned with the lock opening 58. The detent 50 has sufficient force from the biasing spring to force the lug 70 from the locking opening 58 thereby locking the handle and wand assembly 24 back in the connector 34.

The foregoing description of a preferred embodiment of the present invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. Obvious modifications or variations are possible in light of the above teachings.

The embodiment was chosen and described to provide the best illustration of the principles of the invention and its practical application to thereby enable one of ordinary skill in the art to utilize the invention in various embodiments and with various modifications as are suited to the particular use contemplated. All such modifications and variations are within the scope of the invention as determined by the appended claims when interpreted in accordance with the breadth to which they are fairly, legally and equitably entitled. The drawings and preferred embodiments do not and are not intended to limit the ordinary meaning of the claims and their fair and broad interpretation in any way.

We claim:

1. An upright vacuum cleaner, comprising;
a removable wand assembly;
a housing including a canister assembly, a nozzle assembly and a connector for releasably holding said wand assembly;
a suction generator carried on said housing;
a dirt collection vessel carried on said housing;
a lock securing said removable wand assembly to said housing, carried on one of said housing and said wand assembly; and
a lock release carried on one of said housing and said wand assembly.
2. The upright vacuum cleaner of claim 1, wherein said removable wand assembly further includes a control handle.
3. The upright vacuum cleaner of claim 1 wherein said lock is a spring loaded detent on one of said housing and said wand assembly and a cooperating aperture on the other of said housing and said wand assembly.
4. The upright vacuum cleaner of claim 1, wherein said lock is a spring loaded detent carried on said wand assembly and a cooperating locking aperture on said housing.
5. The upright vacuum cleaner of claim 4, wherein said lock release is a lever.
6. The upright vacuum cleaner of claim 5, wherein said lever is pivotally mounted to said housing.
7. The upright vacuum cleaner of claim 6, wherein said lever includes a release lug aligned with said locking aperture.

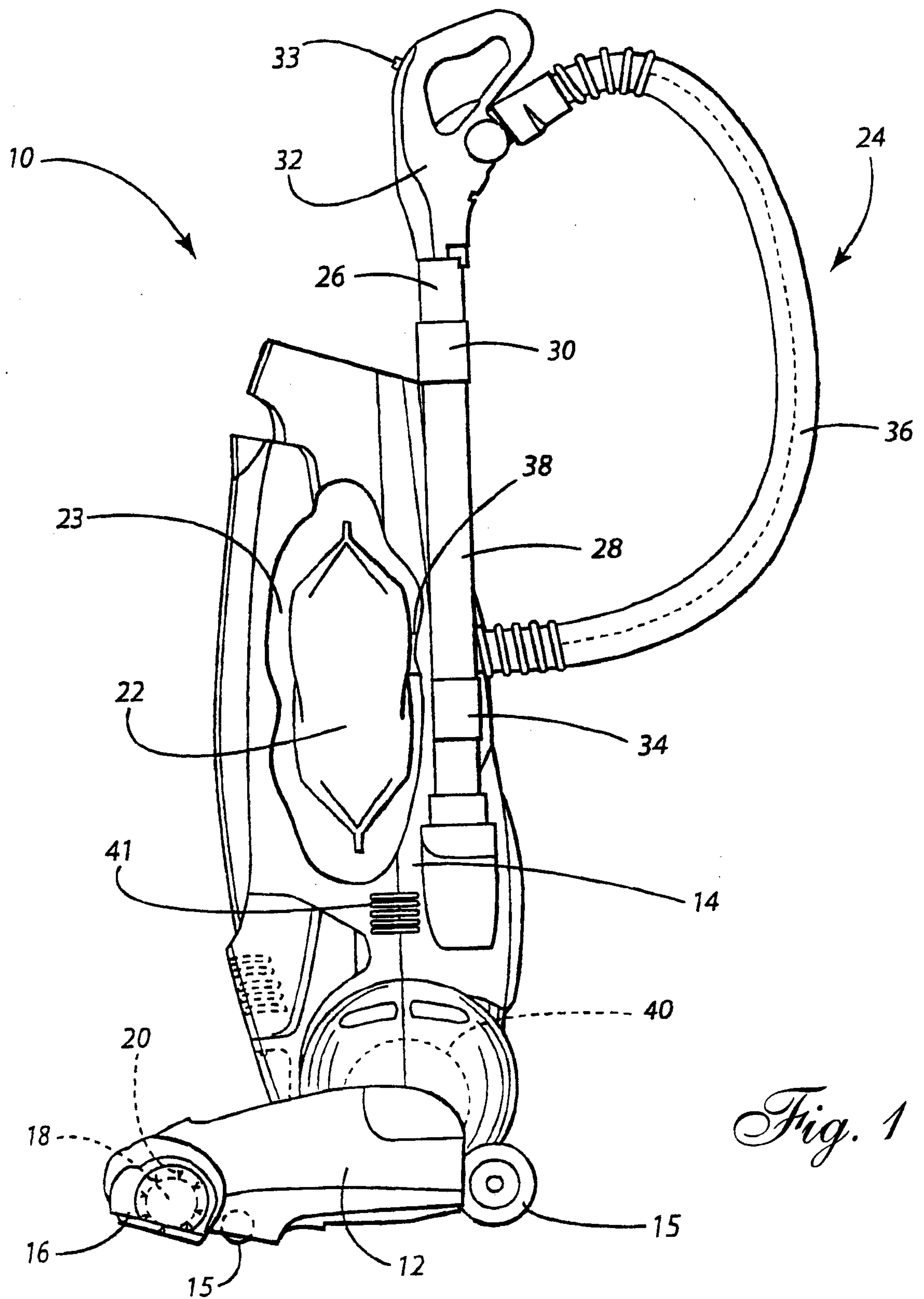
8. The upright vacuum cleaner of claim 7, wherein said lever is substantially L-shaped.

9. The upright vacuum cleaner of claim 1, wherein said canister assembly and said nozzle assembly are pivotally connected together.

10. The upright vacuum cleaner of claim 1, wherein said dirt collection vessel is a dirt cup.

11. The upright vacuum cleaner of claim 10, wherein said dirt cup holds a filter.

12. The upright vacuum cleaner of claim 1, wherein said dirt collection vessel is a bag filter.

*Fig. 1*

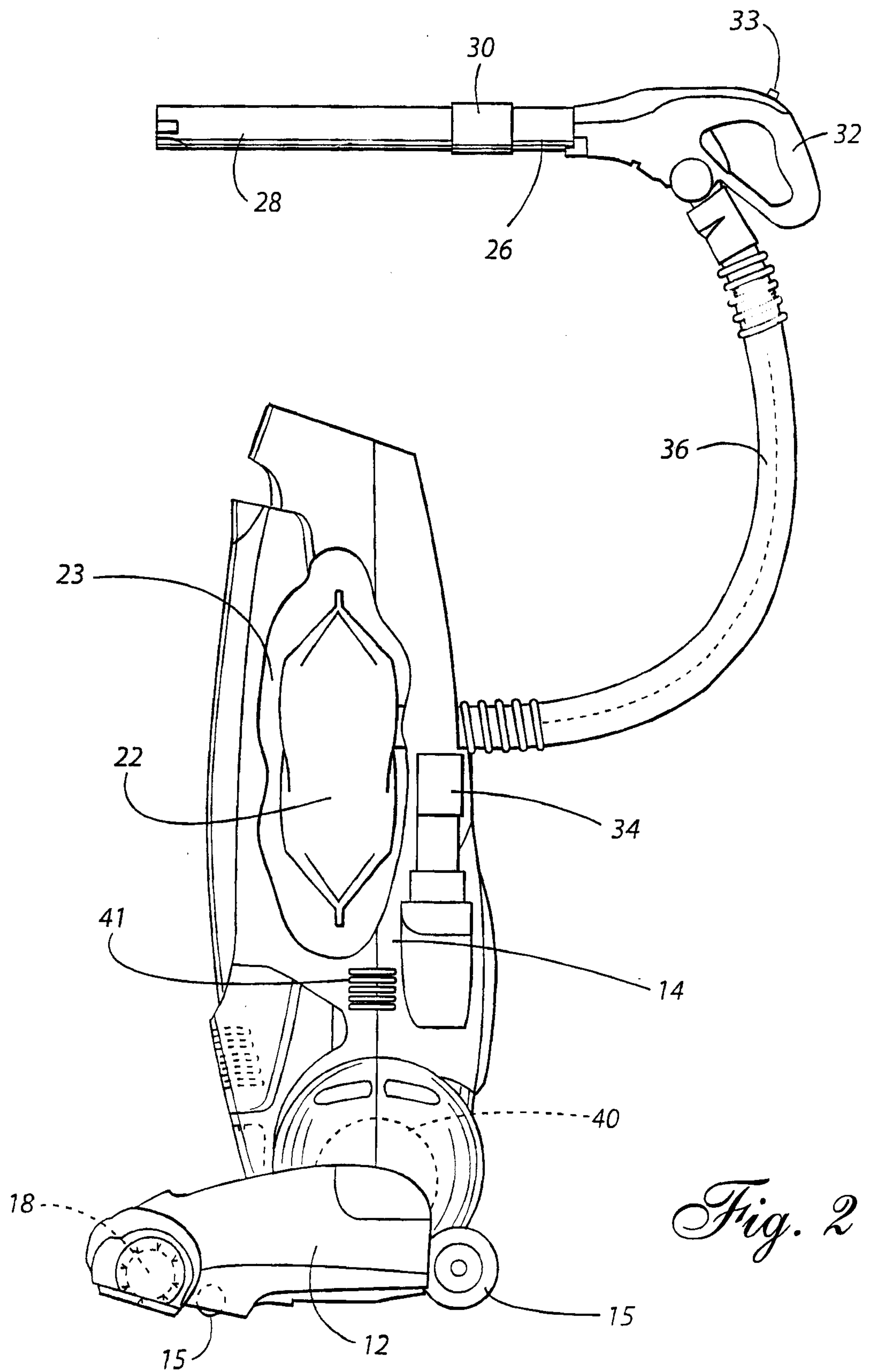


Fig. 2

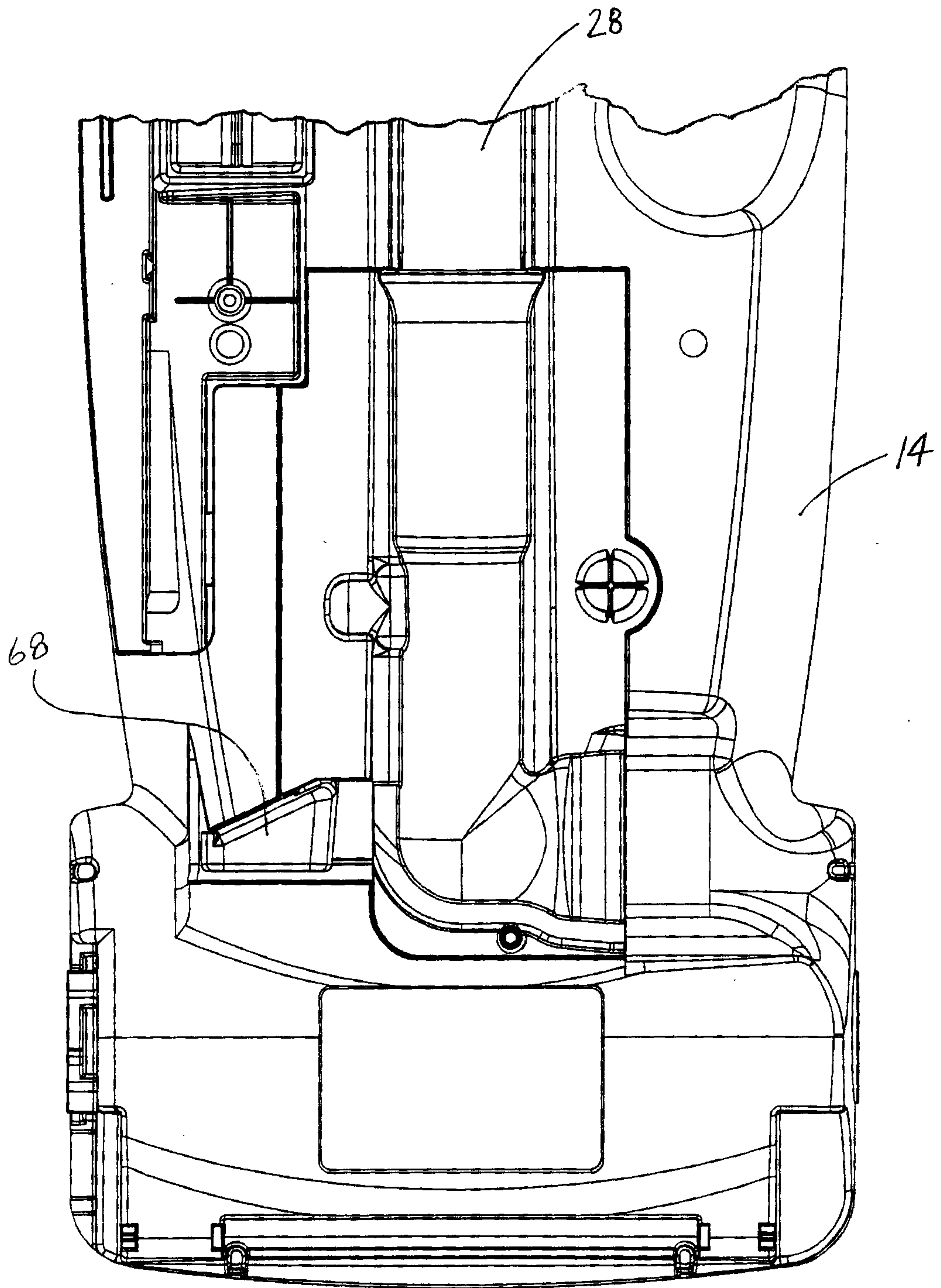


Fig. 3

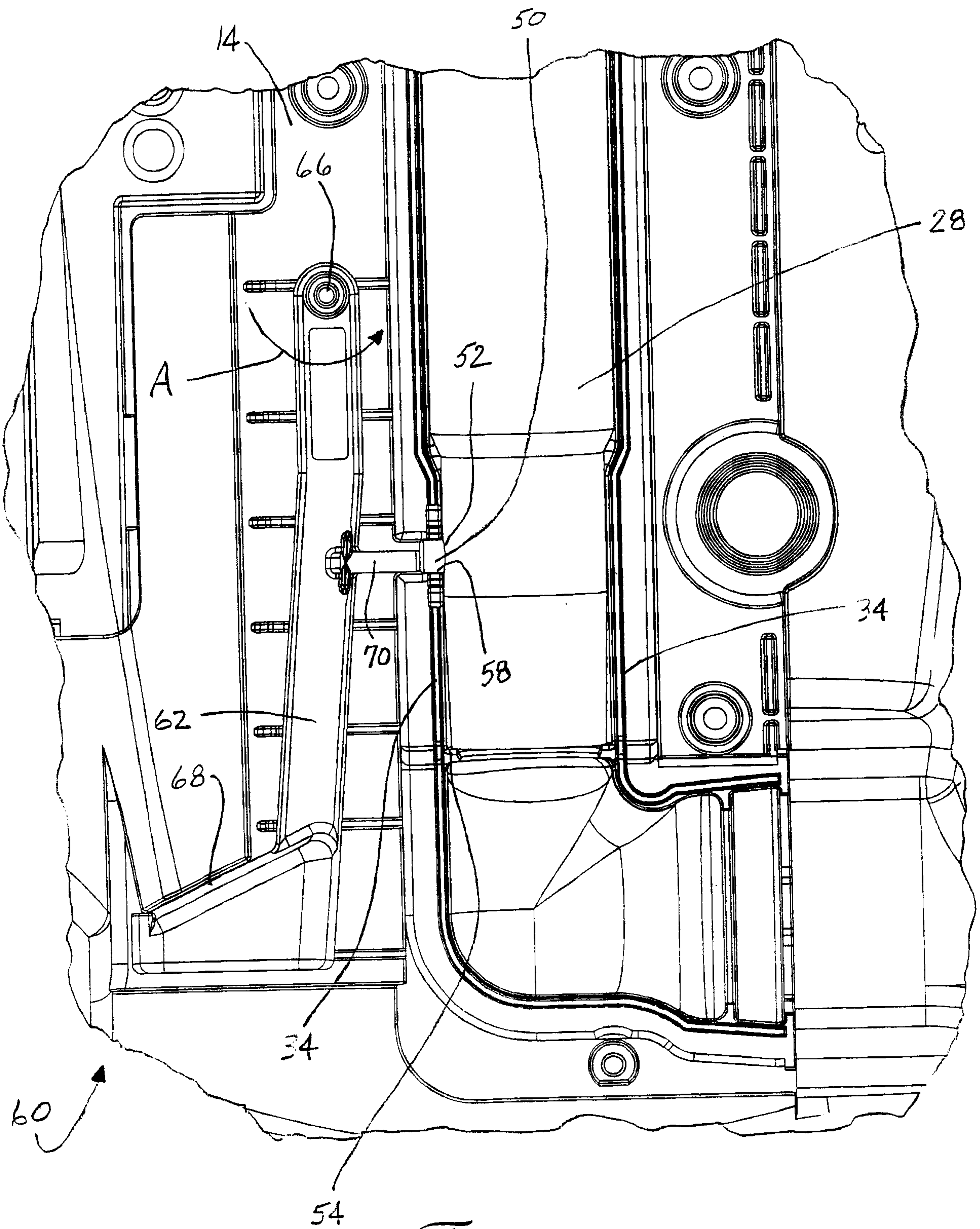


Fig. 4a

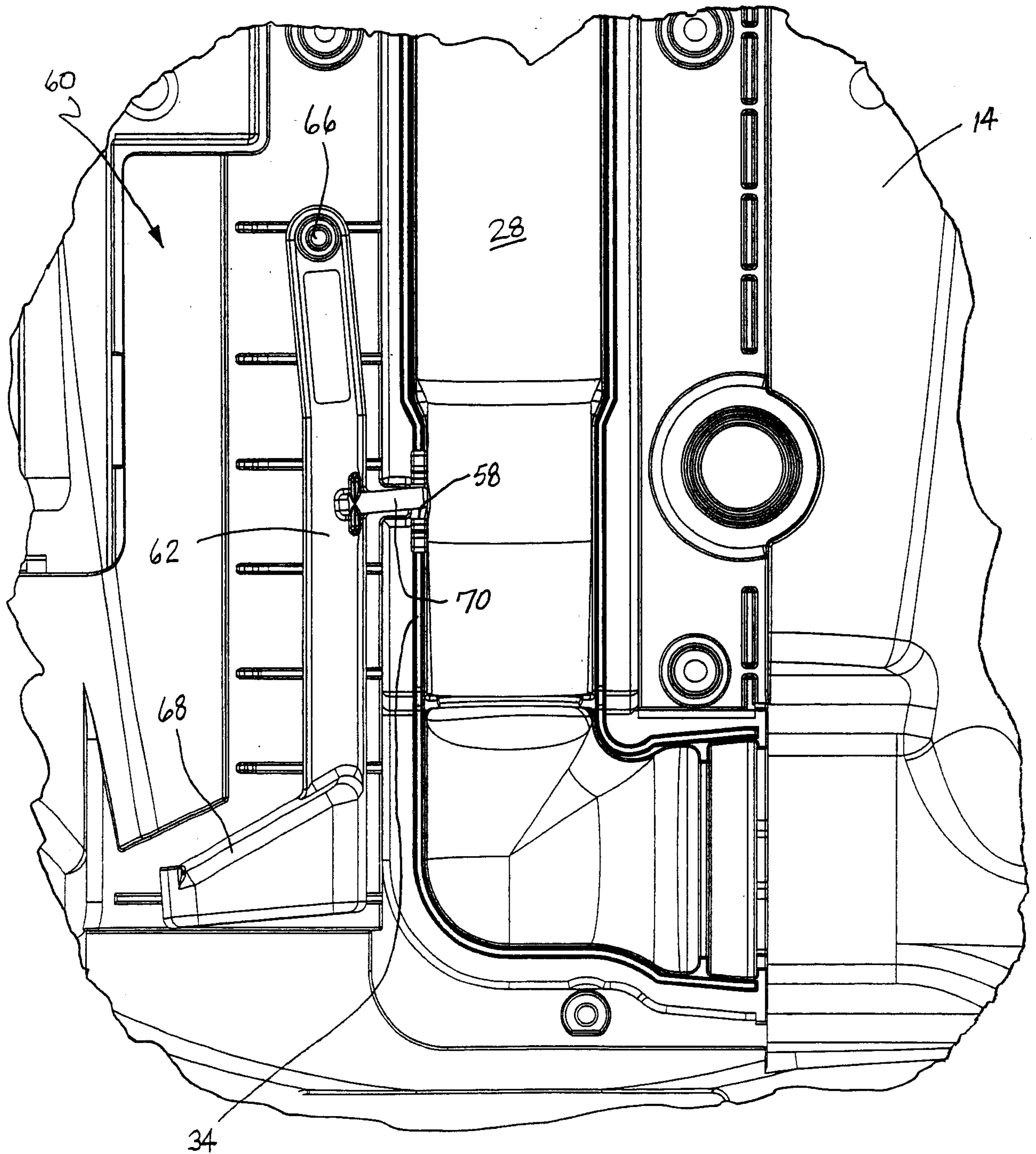


Fig. 4b

