Dec. 19, 1967 B. E. NILSSON 3,359,025

VACUUM CLEANER COVER LATCH CONTROL

Filed Oct. 7, 1965 4 Sheets-Sheet 1

FIG. 1

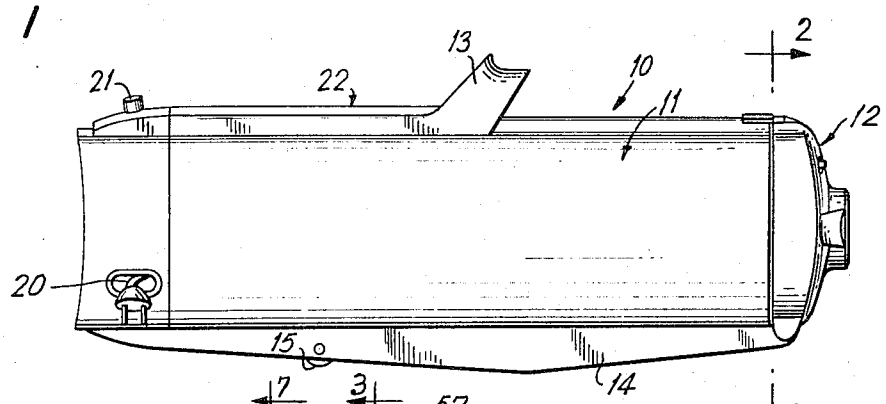
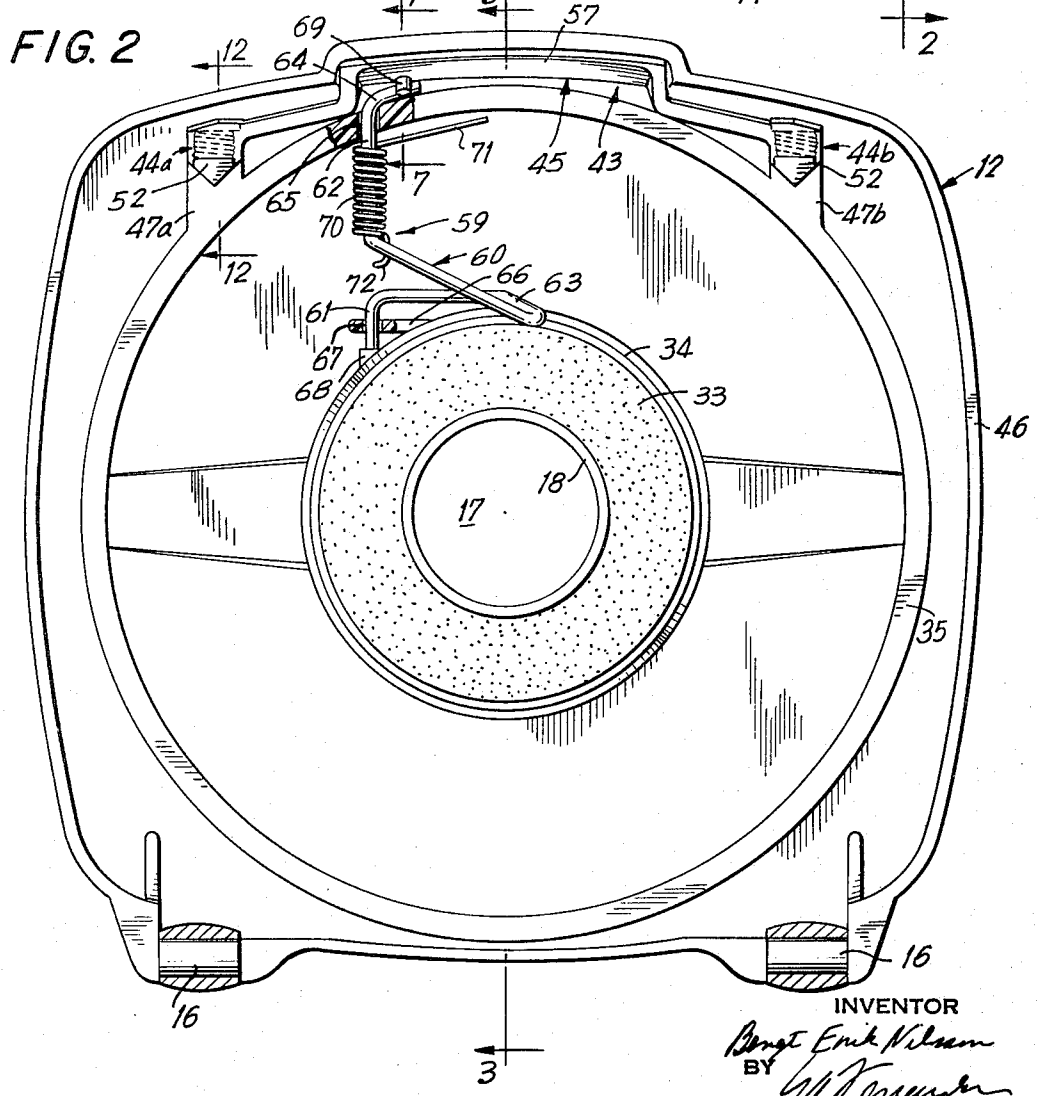


FIG. 2



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Filed Oct. 7, 1965 4 Sheets-Sheet 2

FIG. 4

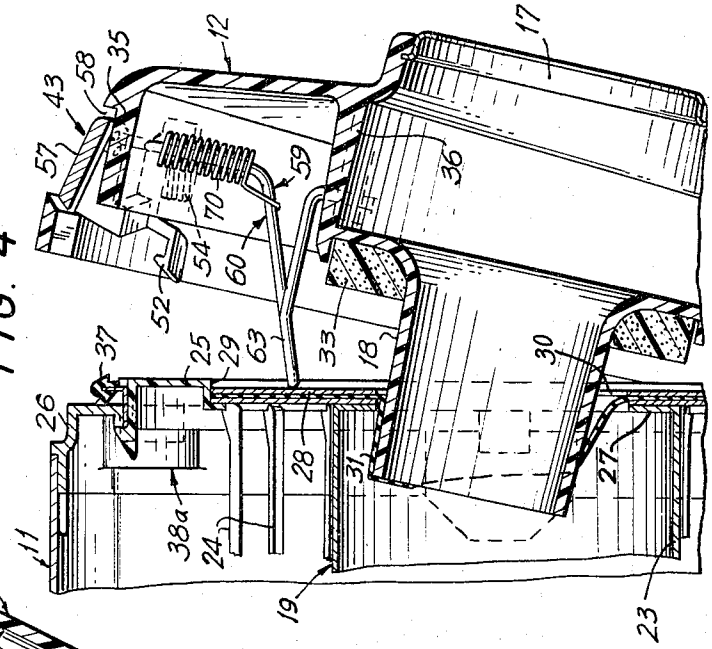
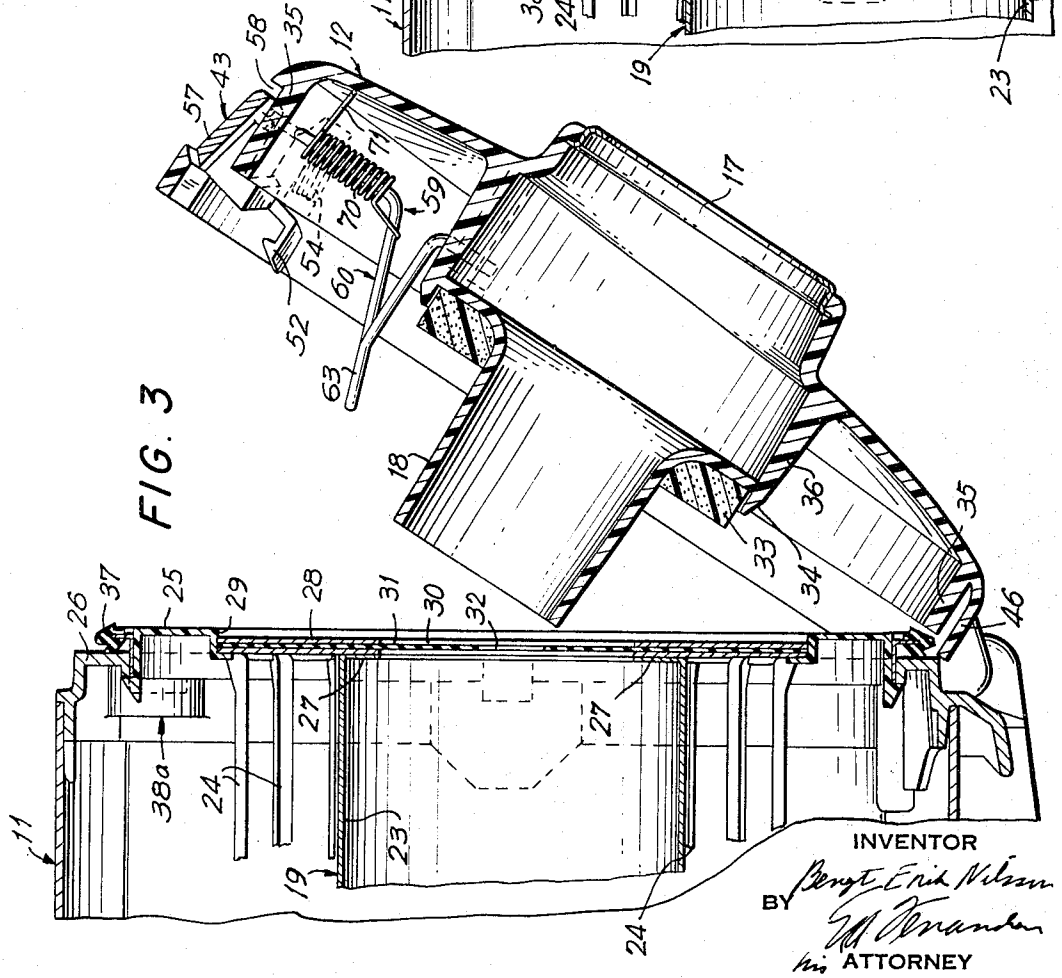


FIG. 3



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VACUUM CLEANER COVER LATCH CONTROL

Filed Oct. 7, 1965 4 Sheets-Sheet 3

FIG. 5

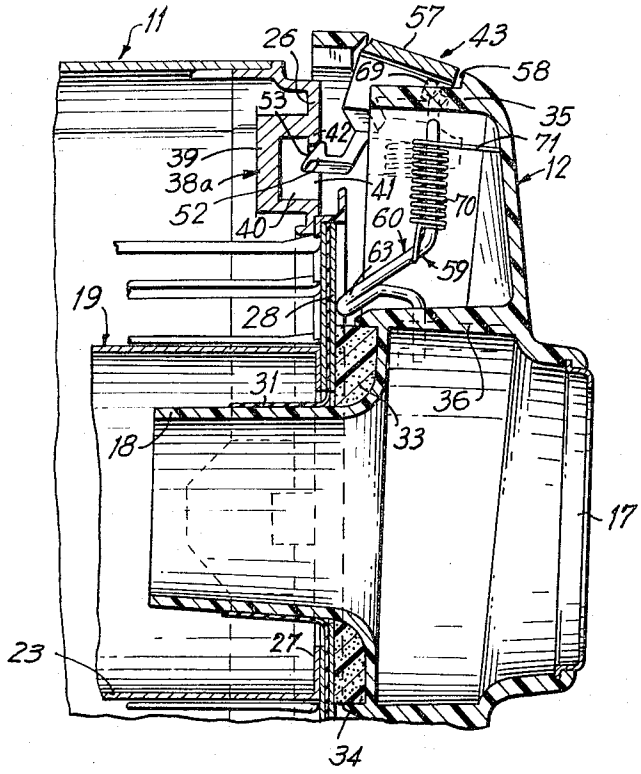


FIG. 6

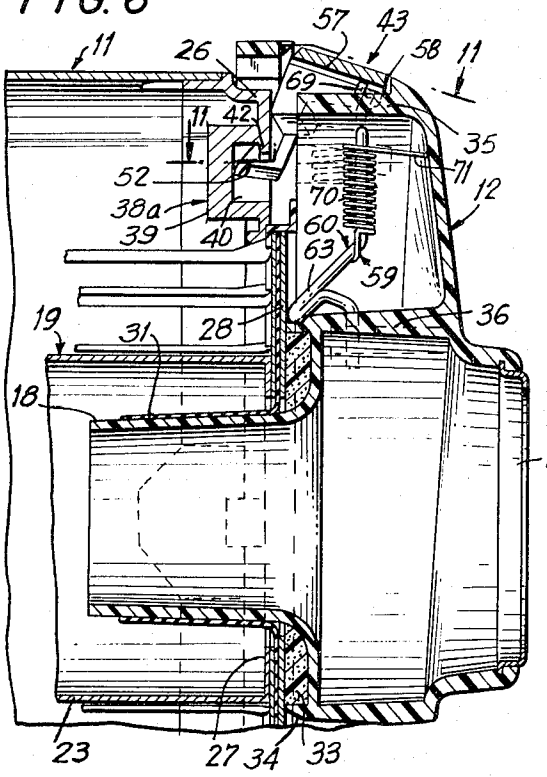


FIG. 7

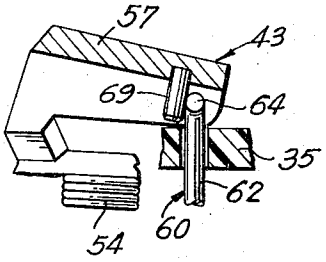
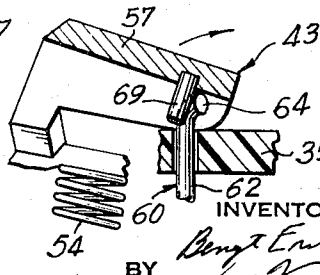


FIG. 8



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Dec. 19, 1967 B. E. NILSSON 3,359,025

VACUUM CLEANER COVER LATCH CONTROL

Filed Oct. 7, 1965 4 Sheets-Sheet 4

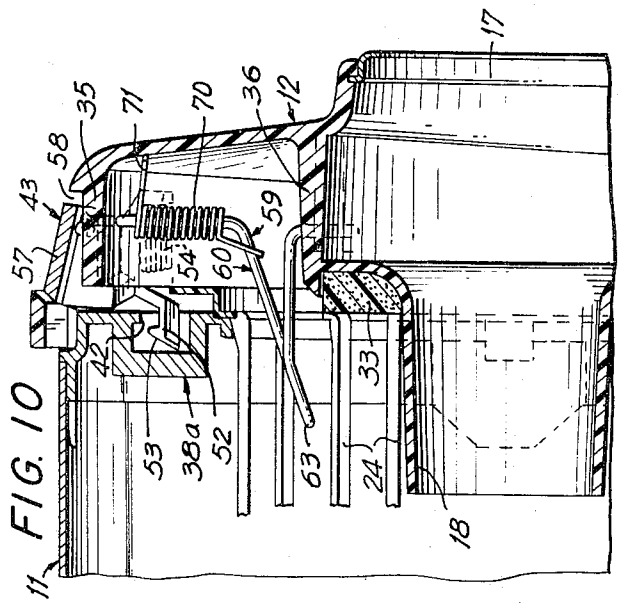

FIG. 10

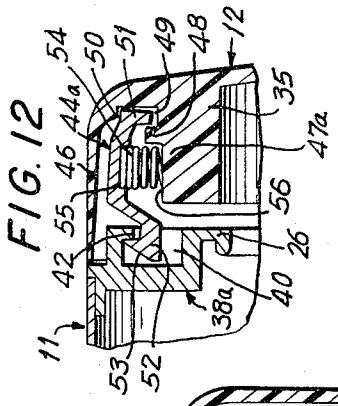

FIG. 12

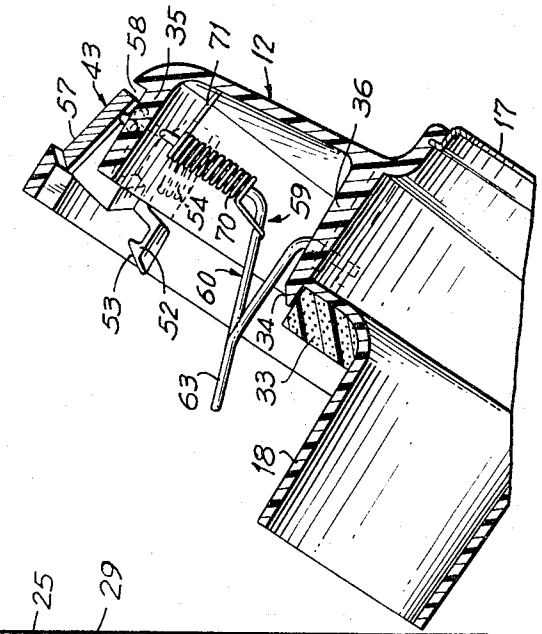

FIG. 9

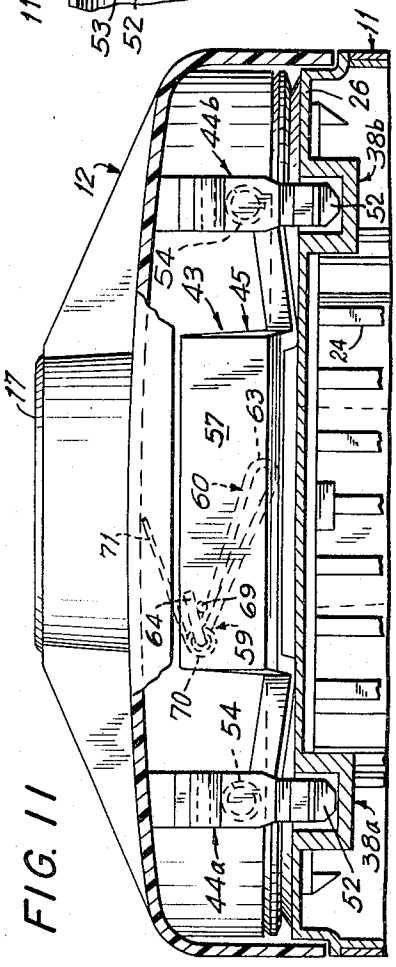

FIG. 11

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United States Patent Office 3,359,025 Patented Dec. 19, 1967

3,359,025

VACUUM CLEANER COVER LATCH CONTROL

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Filed Oct. 7, 1965, Ser. No. 493,742
6 Claims. (Cl. 292—117)

The present invention relates to vacuum cleaners, and more particularly is directed to an improved latch mechanism for controlling the opening and closing of a vacuum cleaner casing.

While the present invention may have other applications, it is particularly adapted for use with tank type vacuum cleaners. Such vacuum cleaners include a casing having an opening, usually at an end thereof, for the insertion and removal of a dust bag which is preferably disposable, and an end cover which is hinged or otherwise mounted on the casing for movement to and from a position closing the end opening. A flexible hose has one end detachably connected to an opening in the cover, and suitable nozzles or other cleaning appliances are detachably engageable with the other end of the hose. A motor-fan unit in the casing produces a partial vacuum therein to cause dirt-laden air to be drawn into the casing from the cleaning appliance through the hose. As the dust-laden air flows through the porous dust bag in the casing of the vacuum cleaner, the dust and dirt is separated from the air and retained in such bag, whereupon the clean air is exhausted through a suitable discharge opening of the casing.

If such a vacuum cleaner is operated without a dust bag properly positioned therein, the dust removed from one area of a room is exhausted with the air leaving the casing and distributed over the entire area of the room being cleaned. Furthermore, such dust or dirt accumulates on the motor-fan unit and is apt to interfere with its proper operation.

Although vacuum cleaner cover latching mechanisms have been provided which prevent the latching of the cover in its closed position so long as a dust bag is not properly positioned within the casing, for example, as disclosed in U.S. Patent No. 2,860,725, issued Nov. 18, 1958, to A. P. Cawl et al., and in U.S. Patent No. 3,016,982. issued Jan. 16, 1962, to R. Descarries, such known latching mechanisms are relatively complex and costly to produce and assemble. The known latching mechanisms further provide only a single latch element which is laterally centered on the cover at the side of the latter remote from its hinge axis and which is engageable with a similarly centered single keeper mounted at the adjacent end of the vacuum cleaner casing. The engagement of the single laterally centered latch element with a single keeper provides inadequate security for maintaining the cover in its closed position, particularly when the cleaner casing is propelled along other than a straight path by a pull exerted on the hose connected to the cover.

Accordingly, it is an object of this invention to provide a vacuum cleaner of the described type with a latching mechanism which is operative to releasably secure the end cover of the casing in its closed position only when a dust bag is disposed within the casing, and wherein such latching mechanism includes two laterally spaced keepers on the casing and a similarly laterally spaced pair of latch elements mounted on the cover and having latching noses that are engageable with the respective keepers.

Another object is to provide a latching mechanism of the described character which is relatively simple and inexpensive to produce and assemble, and which is reliably capable of sensing the presence or absence of a dust bag within the casing.

In acordance with an aspect of this invention, a latching mechanism for a vacuum cleaner of the described type comprises two keepers spaced apart in a direction parallel to the hinge axis of the cover and being substantially equally spaced from such axis, a latch member having a pair of generally parallel latch elements and an integral connecting bar extending between the latch elements and spacing apart the latter by a distance equal to the distance between the keepers, each latch element having a mounting lug at one end and a latching nose at the other end, the cover being formed with spaced sockets which loosely receive the mounting lugs of the latch member and thereby mount the latter for rocking relative to the cover about an axis parallel to the hinge axis, first spring means urging the latch member to rock to a latched position in which the latching noses are engageable with the keepers for holding the cover in its closed position, a latch deactivating member pivoted on the cover and being urged against the latch member by means of second spring means which is of suffcient strength to overcome the first spring means and which acts on the deactivating member to pivot the latter in the direction for rocking the latch member away from its latched position, thereby to prevent engagement of the latching noses with the keepers, and a projecing portion on the deactivating member engageable by a dust bag when the latter is disposed in the casing to pivot the deactivating member in the direction opposed to the action of the second spring means in response to movement of the cover to its closed position, thereby to permit the latching noses to engage the keepers.

In acordance with a feature of this invention, the end cover of the casing has an aperture located between the sockets provided for rockable mounting of the latch member, and the connecting bar of the latch member has an intermediate portion offset substantially from the rocking axis of the latch member and projecting into such aperture so as to be manually depressible for releasing the latching noses from the keepers.

In an advantageous embodiment of this invention, the deactivating member of the latching mechanism is constituted by a bent wire having a substantially radial arm at one end and a bight intermediate the ends of the bent wire to constitute the projecting portion of the deactivating member, and the cover has spaced aligned holes in which aligned end portions of the bent wire are resiliently retained by its intermediate bight, with such holes being disposed so that the pivoting axis of the deactivating member is arranged at right angles to the rocking axis of the latch member and the radial arm at one end of the bent wire is engagable with the latching member at the offset intermediate portion of its connecting bar.

In accordance with a further feature of this invention, the sockets provided in the cover open rearwardly to permit the mounting lugs of the latch member to pass into the sockets only when the latch member is rocked to an extreme position away from its latching position, and rocking of the latch member to such extreme position is prevented, after the mounting lugs have been disposed in the sockets, by the installation of the spring means for urging the latch member to its latching position.

The spring means for urging the latch member to its latching position are preferably constituted by helical compression springs each bearing, at its opposite ends, against a seat provided on each latching element between its mounting lug and latching nose and against an abutment surface formed on the cover.

The above, and other objects, features and advantages of the invention, will be apparent in the following detailed description of an illustrative embodiment thereof which is to be read in connection with the accompanying drawings, wherein:

FIG. 1 is a side elevational view of a tank-type vacuum cleaner for which the latching mechanism embodying this invention is particularly adapted;

FIG. 2 is an enlarged sectional view taken along the line 2—2 on FIG. 1 to show the inside of the cover;

FIG. 3 is a sectional view taken along the line 3—3 on FIG. 2, to show the relationship of the several elements of the cleaner when the cover is being moved toward its closed position with a dust bag disposed within the casing of the cleaner;

FIG. 4 is a view similar to that of FIG. 3, but showing the relationship of the elements as the cover nears its closed position;

FIG. 5 is another view similar to that of FIG. 3, but with the casing being sectioned at a location through one of the keepers thereof to show the initiation of the engagement of a latch element with such keeper;

FIG. 6 is a view similar to that of FIG. 5, but showing the latch element engaged with the respective keeper to hold the cover in its closed position;

FIG. 7 is an enlarged fragmentary sectional view taken along the line 7—7 on FIG. 2, and showing the latch member in its inoperative position, as when the cover is open or when the cover is moved to its closed position in the absence of a dust bag within the casing;

FIG. 8 is a view similar to that of FIG. 7, but showing the condition of the latch member when the cover is moved to its closed position and a dust bag is present within the casing;

FIGS. 9 and 10 are sectional views similar to FIGS. 3 and 6, respectively, but showing the condition of the latching mechanism when a dust bag is absent from the casing;

FIG. 11 is a horizontal sectional view taken along the line 11—11 on FIG. 6; and

FIG. 12 is a fragmentary sectional view taken along the line 12—12 on FIG. 2 to show the mounting of one of the latch elements in the cover and the engagement of its latching nose with the respective keeper.

Referring to FIG. 1 of the drawings, the invention is there shown applied to a tank-type vacuum cleaner **10** comprising a casing **11** having a front end cover **12** and a handle **13** by which the casing may be transported. The casing **11** further has skids **14** extending along the bottom thereof and wheels **15** projecting rotatably from the skids to facilitate the movement of the cleaner along a floor or other supporting surface.

The front end cover **12** may be removably secured on the front end of casing **11** in any suitable manner. In the illustrated embodiment, the front end cover **12** is hinged to the casing **11** by means of hinge pins **16** (FIG. 2) to adapt the end cover to swing forwardly from the front end of the casing about a laterally extending axis at the bottom of the cover, thereby to open the front end of the casing. The end cover **12** is formed with an air inlet opening **17** (FIGS. 3–6, 9 and 10) to which a suction hose (not shown) is adapted to be removably connected, and which communicates with a tubular projection **18** extending rearwardly from the cover **12**. Suitable nozzles or other cleaning appliances may be detachably mounted on a wand which, in turn, is connected to the outer free end of the suction hose and through which air flows into the casing by way of the tubular projection **18** of the end cover. A dust bag **19** (FIGS. 3–6) is removably mounted in the casing so as to be disposed in back of cover **12** when the latter is in its closed position (FIG. 6), and such dust bag acts to separate dust and other suspended material from the air entering through tubular projection **18** of the cover.

The flow of air from tubular projection **18** through dust bag **19** is effected by a motor-fan unit (not shown) mounted within the rear end portion of casing **11** and being operated by current received from an outlet through an extensible cable **20** under the control of a push-button switch **21** (FIG. 1). The motor-fan unit receives the air which passes through dust bag **19** and exhausts the cleansed air through a suitable discharge opening **22** at the top of casing **11**.

As shown on FIG. 3, dust bag **19** is of a self-sealing, disposable type and includes a bag portion **23** of air permeable paper having interstices between the fibers of the paper that are of such small dimensions as to separate all dust particles from the air. The paper bag portion **23** fits in a slotted or perforated inner casing sleeve **24** having a mounting flange **25** at its forward end which engages a flange **26** at the front end of casing **11** so as to support sleeve **24** within casing **11**. The edges **27** of the open end of paper bag portion **23** are adhesively attached to a mounting plate **28** of cardboard or the like which projects beyond bag portion **23** to provide a peripheral flange for engagement in a seat **29** defined by flange **25** at the front end of the slotted or perforated sleeve **24** (FIG. 9). The cardboard mounting plate **28** is provided with a central, circular opening **30** (FIG. 3) which is substantially closed by a thin resilient membrane **31** of rubber or the like having a relatively small central hole **32**.

As the end cover **12** is swung toward its closed position (FIGS. 4 and 5) the tubular projection **18** of the end cover enters opening **30** of the mounting plate **28** and presses rearwardly against membrane **31** so as to dilate or stretch the hole **32** of the latter and finally to project rearwardly through the stretched hole **32** into the interior of the bag portion **23**. As is apparent on FIG. 6, when membrane **31** is thus stretched or dilated to permit the extension of tubular projection **18** therethrough, the stretched membrane **31** closely engages the outer periphery of tubular projection **18** for sealing the joint therebetween. The seal is further perfected by an annular sealing member **33** of foamed plastic or the like which seats between the base of tubular projection **18** and a concentric rearwardly projecting flange **34** formed on cover **12** (FIGS. 2 and 3) so that, when cover **12** is in its closed position (FIG. 6) annular seal **33** is compressed between the base of tubular projection **18** and mounting plate **28** around opening **30** of the latter. Cover **12** is further formed with a rearwardly directed circular flange **35** (FIG. 3) spaced radially outward from the central, generally cylindrical hub **36** from which tubular projection **18** extends, and the back edge of the flange **35** is engageable, in the closed position of the cover **12**, with a sealing gasket **37** which is mounted at the outer periphery of the flange **25** of the slotted or perforated sleeve **24**.

When the front end cover **12** is swung to open position, the dust bag **19** may be stripped from tubular projection **18** of the end cover, at which time the membrane **31** returns to its original position for substantially closing the opening **30** of mounting plate **28** and thereby preventing the inadvertent discharge of dirt or dust from bag **19** as the latter is removed from within the casing of the cleaner. The dust bag **19** which is filled with dust and dirt is then discarded and replaced by a new dust bag disposed within the open front end of casing **11**. Thereafter, when end cover **12** is returned to its closed position, tubular projection **18** of the cover again automatically penetrates the membrane **31** of the new bag to open the latter, while the engagement of such membrane around tubular projection **18**, and the engagement of annular seal **33** with the front face of mounting plate **28** and a flange **35** with gasket **37** ensures that all of the dust laden air entering the cleaner at opening **17** will pass into dust bag **19**.

In accordance with the present invention, a latching mechanism is provided for releasably securing end cover **12** in its closed position (FIGS. 1 and 6) only when a dust bag **19** is properly positioned in casing **11**.

The latching mechanism in accordance with this invention comprises two keepers **38***a* and **38***b* (FIG. 11) formed in the flange **26** at the front end of casing **11**. The two keepers **38***a* and **38***b* are laterally spaced apart so as to be symmetrically located at opposite sides of the medial plane of casing **11** which is perpendicular to the hinge

axis of cover 12, and both keepers 38*a* and 38*b* are equally spaced from such hinge axis. Thus, where the hinge axis extends laterally at the bottom of the front end of casing 11, as in the illustrated vacuum cleaner, the two keepers 38*a* and 38*b* are laterally spaced apart at the top of the opening of the front end of casing 11 which receives the dust bag 19. As shown particularly on FIGS. 5 and 6, each of the keepers 38*a* and 38*b* is formed by a hollow boss 39 defining a cavity 40 which opens through the flange 26, as at 41, and which has a ledge or shoulder 42 at the top edge of the opening 41.

The latching mechanism in accordance with this invention further comprises a latch member generally identified by the reference numeral 43 mounted on the cover 12, as hereinafter described in detail. Latch member 43 generally includes a pair of substantially parallel latch elements 44*a* and 44*b* and an integral connecting bar 45 extending between latch elements 44*a* and 44*b* and spacing apart the latter by a distance equal to that between keepers 38*a* and 38*b* (FIG. 11).

As shown on FIGS. 2 and 12, end cover 12 has a rearwardly directed peripheral wall 46 spaced outwardly from the flange 35, and the latch member 43 is accommodated in the space defined between flange 35 and peripheral wall 46 at the top portion of cover 12, that is, at the side of the cover remote from its hinge axis defined by hinge pins 16. Further, flange 35 has raised bosses 47*a* and 47*b* (FIG. 2) which are symmetrically located at opposite sides of the medial plane of cover 12 extending perpendicular to its hinge axis so as to be spaced apart laterally by a distance equal to that between latch elements 44*a* and 44*b*. Each of the bosses 47*a* and 47*b* has an upwardly directed projection 48 (FIG. 12) so that a socket 49 is defined above each boss 47*a* and 47*b* in front of the respective projection 48 and is limited, at the top, by a rearwardly directed shoulder 50. Each socket 49 opens rearwardly between the top of projection 48 and the back edge of shoulder 50 and is intended to receive, through such gap, a mounting lug 51 which depends from the front end of the respective latch element 44*a* or 44*b*.

Each mounting lug 51 is dimensioned to fit loosely in the respective socket 49 and thereby permit rocking of latch member 43 relative to cover 12 about a laterally extending axis passing generally through the sockets 49. So long as latch member 43 is either in its latching position, as shown on FIG. 12, or rocked downwardly from the latched position to a limited extent, as hereinafter described, for example, as shown on FIG. 10, the mounting lug 51, which is of generally rectangular cross-section, as shown on FIG. 12, has its relatively long dimension extending parallel to the gap between projection 48 and shoulder 50 so that engagement of the top of mounting lug 51 with shoulder 50 prevents raising of the mounting lug to the extent necessary to clear its bottom edge above projection 48. Thus, in the normal operating positions of latch member 43, mounting lugs 51 are retained within the respective sockets. However, during assembling of latch member 43 on cover 12, latch member 43 is rocked downwardly to an extreme position in which the mounting lugs 51 can move into the respective sockets 49 through the rearwardly directed openings or gaps of the latter.

The back end portion of each of latch elements 44*a* and 44*b* slopes downwardly, as shown particularly on FIG. 12, and terminates in a latching nose 52 dimensioned to extend through opening 41 of cavity 40 of the related keeper 38*a* or 38*b* when cover 12 is in its closed position (FIGS. 6, 10 and 12). Each latching nose 52 has an inclined surface 53 which cams under ledge 42 of the related keeper when cover 12 is moved to its closed position with latch member 43 in its latching position, as shown on FIG. 5.

In order to urge latch member 43 to its latching position, a helical compression spring 54 is disposed between a seat 55 formed at the underside of each of latch elements 44*a* and 44*b* at a location intermediate mounting lug 51 and latching nose 52 and an abutment surface 56 defined by the top surface of the boss 47*a* or 47*b* in back of projection 48. Thus, helical springs 54 urge latch member 43 to rock upwardly to the latching position (FIGS. 6 and 12) which is limited by the engagement of mounting lugs 51 against the front wall surface of the respective cavities 49 and against the respective projections 48. Upon movement of cover 12 to its fully closed position with latch member 43 in its latching position (FIGS. 6 and 12), latching noses 52 of latch elements 44*a* and 44*b* engage in back of ledges 42 of the respective keepers 38*a* and 38*b* so as to releasably retain the cover in its closed position. The springs 54, when installed between seats 55 and abutment surfaces 56, prevent downward rocking of latch member 43 to the extent necessary to permit withdrawal of mounting lugs 51 from sockets 49 and thereby maintain the latch member 43 in its assembled position on the cover 12.

The connecting bar 45 of latch member 43 has an upwardly offset or bowed portion 57 intermediate its ends, and such offset portion 57 of the connecting bar projects into an opening or aperture 58 formed in the peripheral wall 46 of cover 12 (FIGS. 3–6, 9 and 10) and can be manually depressed for rocking latch member 43 in the counter-clockwise direction, as viewed on FIG. 6, for releasing the latching noses 52 from the ledegs 42 and thereby permitting opening of cover 12.

In accordance with the present invention, the latching mechanism for cover 12 is further provided with a device 59 which permits engagement of the latching noses 52 with the ledges 42 of the respective keepers only when a dust bag 19 is properly positioned within casing 11 of the cleaner. Such device 59 is shown to include a bent wire deactivating member 60 having axially aligned end portions 61 and 62 (FIG. 2), a radially projecting portion 63 constituted by a bight of the bent wire between aligned end portions 61 and 62, and a substantially radially directed arm 64 which extends from end portion 62. Flange 35 of cover 12 has a hole 65 extending therethrough at right angles to the hinge axis of the cover and spaced from the medial plane of the cover so as to be disposed under one end of the intermediate portion 57 of connecting bar 45. Cover 12 further has a lug 66 extending from its hub 36 and formed with a hole 67 aligned with hole 65.

The end portions 61 and 62 of member 60 are turnably received in the holes 67 and 65, respectively, so that arm 64 of member 60 is angularly movable under the raised or offset portion 57 of connecting bar 45 of the latch member. When member 60 is thus mounted on cover 12, the bight portion 63 of member 60 is stressed so as to urge its end portion 61 axially into hole 67 against an end abutment 68 which is also formed on hub 36. Projecting downwardly from the underside of offset portion 57 is a pin 69 (FIGS. 2, 7 and 8) against which arm 64 is engageable. A coiled torsion spring 70 is wound around portion 62 of member 60 and has its opposite ends 71 and 72 engaged against the front wall surface of cover 12 and the projecting portion 63 of member 60, respectively, so as to yieldably urge member 60 to turn in the direction for projecting portion 63 rearwardly from cover 12, as shown on FIGS. 3, 4, 9 and 10. When portion 63 of member 60 projects rearwardly from cover 12 by the action of spring 70, arm 64 of deactivating member 60 acts against pin 69, as will be explained presently, to rearwardly displace the upwardly offset portion 57 of connecting bar 45 and thereby rock latch member 43 away from its latching position, as particularly shown on FIG. 10. The spring 70 is dimensioned so as to exert a force which is more than sufficient to overcome the force of springs 54 which urge latch member 43 to its latching position.

The above described latching mechanism embodying this invention operates as follows:

When cover 12 is in its open position, as shown on

FIGS. 3 and 4, spring **70** of device **59** is effective to turn deactivating member **60** to the position where its portion **63** projects rearwardly from cover **12**, thereby to dispose latch member **43** in its inoperative position.

It will be seen that the portion **63** of the member **60** is illustrated in the same positions in FIGS. 3 and 10. In FIG. 10, when there is no dust bag within the casing **10**, the latch member **43** also is in its inoperative position with the latching noses **52** free to move out of the cavities **40** past the ledges or shoulders **42**. Under this operating condition, which applies both to FIG. 10 and the open position of cover **12** in FIG. 3, the latch member **43** is in its inoperative position with the latching noses **52** free to move out of the cavities **40** past the ledges or shoulders **42**, as seen in FIG. 10. Under these conditions the coil spring **70** functions to rotate the deactivating member **60** about its vertically aligned end portions **61** and **62** (FIG. 2) and move the radially directed arm **64** beneath the raised offset portion **57** of the connecting bar **45** against the pin **69** fixed to and depending downward from the underside of the offset portion **57** which serves as the manually operable latch member **43** for the connecting bar **45**.

Before the radially directed arm **64** moves beneath the offset portion **57** of the latch member **43**, the helical compression springs **54** act against the opposing ends of the latch member **43** and function to hold the latch member, including the intermediate offset portion **57** thereof, in its raised or latched position. In such latched position of the member **43**, the latching elements **44***a* and **44***b* assume the positions illustrated by the latch element **44***a* in FIG. 12.

When the coil spring **70**, which is capable of exerting greater force than the latch springs **54**, becomes operable responsive to movement of the deactivating member **60** to the position shown in FIGS. 3 and 10, the radial arm **64**, which is nearer to the air inlet **17** in the end cover **12** than the pin **69**, as shown in FIG. 11, moves in a direction from the air inlet **17** toward the perforated sleeve **24** and imparts movement to the pin **69**, which is carried by the offset portion **57** of the latch member **43**, in a direction from the air inlet **17** toward the perforated sleeve **24**. In FIG. 2 it will be seen that the pin **69** is at a higher level than the bosses **47***a* and **47***b* in which the sockets **49** (FIG. 12) are formed. Due to the fact that the pin **69** is at a higher level than the fulcrum points at the sockets **49** for the rocking latch elements **44***a* and **44***b*, and the further fact that the sockets **49** and pin **69** are spaced from one another lengthwise of the cleaner **10** and axially of the cover **12**, movement of the member **60** to the position shown in FIG. 10 will render the radial arm **64** thereof operable to move the pin **69** toward the apertured sleeve **24** in FIG. 11 and this in turn will impart rocking movement of the latch elements **44***a* and **44***b* about the sockets **49** and cause the latching noses **52** to move to their unlatched positions, as shown in FIG. 10.

With the radial arm **64** forced against the pin **69** by the action of the coil spring **70** which exerts a greater force than the latch springs **54**, as explained above, the latch springs **54** are rendered inoperable to move the latch members **44***a* and **44***b* to their latched positions seen in FIG. 12 and they will remain in their unlatched positions while the deactivating member **60** is in the position shown in the cover open position illustrated in FIG. 3 and in the cover closed position illustrated in FIG. 10 when there is no dust bag **19** in the casing **11**.

In view of the foregoing explanation, it will be understood that with the cover **12** in its open position in FIG. 3 and the latch member **43** in its unlatched position due to the illustrated position of the deactivating member **60**, a dust bag which is full of dust and the like can be removed from the casing **11** and replaced by a new or empty dust bag **19**.

With a dust bag **19** properly positioned within casing **11**, movement of cover **12** toward its closed position will bring the projecting portion **63** of deactivating member **60** into contact with mounting plate **28** of the dust bag, as shown on FIG. 4. During further movement of cover **12** toward its closed position, as indicated on FIG. 5, the engagement of mounting plate **28** with projecting portion **63** will cause turning of deactivating member **60** for angularly displacing arm **64** thereof in the forward direction, for example, from the position shown on FIG. 7 to the position shown on FIG. 8, that is, away from pin **69** of latch member **43**.

In FIG. 8 the radial arm **64** will have been moved forward within the cover **12**, that is, in a rearward direction in FIG. 2 with respect to the pin **69** which is in front of it. When this occurs, the radial arm **64** no longer will be in the path of movement of the rocking latch member **43** and the latch member springs **54** again can function to move the noses **52** of the latch members **44***a* and **44***b* to their latched positions in FIG. 12; and the offset portion **57** of the latch member **43** can be manually depressed to move the latch members **44***a* and **44***b* to their unlatched positions shown in FIG. 10 against the action of the latch member springs **54**.

During final movement of cover **12** to its closed position, for example, during movement of the cover from the position shown on FIG. 5 to that shown on FIG. 6, the inclined surfaces **53** of noses **52** cam under ledges **42**, whereupon latching noses **52** engage in back of ledges **42**, as shown on FIG. 6, to releasably lock cover **12** in its closed position.

If cover **12** is moved toward its closed position at a time when a dust bag **19** is not positioned within casing **11**, for example, as shown on FIGS. 9 and 10, portion **63** of deactivating member **60** projects rearwardly from cover **12** into the front end portion of casing **11** when the cover is in its closed position (FIG. 10) so that the deactivating member **60** maintains latch member **43** in its inoperative position in the manner explained above. In such inoperative position of latch member **43**, latching noses **52** of latch member **43** remain below ledges **42** of the respective keepers and thus cannot engage the ledges for holding cover **12** in its closed position. Thus, the user of the vacuum cleaner is immediately appraised of the absence of the dust bag and there is no danger that the vacuum cleaner will be operated without a dust bag in the casing.

When a dust bag is located within casing **11** of the vacuum cleaner and the upwardly offset portion **57** of the connecting bar of latch member **43** is manually depressed so as to release latching noses **52** from ledges **42**, the force of spring **70** urges member **60** to turn in the direction projecting its portion **63** rearwardly from cover **12** to react against mounting plate **28** of the dust bag for initiating movement of cover **12** away from its closed position.

It will be apparent from the above description of the illustrated latching mechanism embodying this invention that the same provides the security arising from the engagement of two laterally spaced latching noses **52** with similarly laterally spaced keepers **38***a* and **38***b* while ensuring that such latching engagement can occur only when a dust bag is properly positioned within the casing. The foregoing desirable functions are further achieved with a structural arrangement that is relatively simple and inexpensive to produce and assemble, and yet is reliable in operation.

Although an illustrative embodiment of the invention has been described in detail herein with reference to the accompanying drawings, it is to be understood that the invention is not limited to that precise embodiment, and that various changes and modifications may be effected therein by one skilled in the art without departing from the scope or spirit of the invention, as defined in the appended claims.

What is claimed is:

1. In a vacuum cleaner of the type including a casing having an opening for the insertion and removal of a dust bag and a cover for said opening hinged on said casing for pivotal movement to and from a closed position, a latching mechanism operative when a dust bag is disposed in the casing to releasably secure the cover in said closed position, said mechanism comprising two spaced apart keepers on said casing which are substantially equally spaced from the hinged axis of said cover, a latch member having a pair of generally parallel latch elements and an integral connecting bar extending between said latch elements and spacing apart the latter by a distance equal to the distance between said keepers, said latch elements each having a mounting lug at one end and a latching nose at the other end, means on said cover defining spaced sockets which loosely receive said mounting lugs and thereby mount said latch member for rocking relative to said cover about an axis parallel to said hinge axis, first spring means urging said latch member to rock to a latched position in which said latching noses are engageable with said keepers for holding said cover in its closed position, a latch deactivating member pivoted on said cover and being engageable against said latch member, and second spring means acting on said deactivating member to pivot the latter in a first direction for rocking said latch member away from said latched position so as to prevent engagement of said noses with said keepers, said second spring means being of sufficient strength to overcome said first spring means, said deactivating member including a projecting portion engageable by a dust bag when the latter is disposed in the casing to pivot said deactivating member in a second direction against the action of said second spring means in response to movement of said cover to its closed position, thereby to permit the latching noses to engage the keepers.

2. A vacuum cleaner according to claim 1; wherein said cover has an aperture located between said sockets, and said connecting bar of the latch member has an intermediate portion offset substantially from the rocking axis of the latch member and projecting into said aperture so as to be manually depressible for releasing said latching noses from said keepers.

3. A vacuum cleaner according to claim 2; wherein said deactivating member has its pivoting axis arranged at right angles to said rocking axis of the latch member

and said deactivating member has a substantilly radial arm extending therefrom for engagement with said latch member at said offset intermediate portion of its connecting bar.

4. A vacuum cleaner according to claim 3; wherein said deactivating member is constituted by a bent wire having said substantially radial arm at one end and a bight intermediate the ends of the bent wire to constitute said projecting portion; and wherein said cover has spaced aligned holes in which the end portions of said bent wire are resiliently retained by said intermediate bight.

5. A vacuum cleaner according to claim 1; wherein each of said latch elements has a spring seat located between its mounting lug and latching nose and said cover has abutment surfaces confronting said spring seats; and wherein said first spring means consists of a helical compression spring received, at one end, in said spring seat of each latch element and bearing, at its other end, against the confronting abutment surface.

6. A vacuum cleaner according to claim 5; wherein said means on the cover defining each of said sockets includes an upwardly directed projection extending from said abutment surface and a rearwardly directly shoulder spaced upwardly from said projection to define a rearwardly opening gap therebetween through which said mounting lug can pass only when said latch member is rocked to an extreme position away from said latched position; and wherein said helical springs, when disposed between the respective spring seats and abutment surfaces, prevent rocking of the latch member to said extreme position and thereby maintain said latch member in assembled relation to said cover.

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