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3,375,541

VACUUM CLEANERS WITH COMBINED HOSE CONNECTORS AND HOUSING LATCHES

Filed June 24, 1966

2 Sheets-Sheet 1

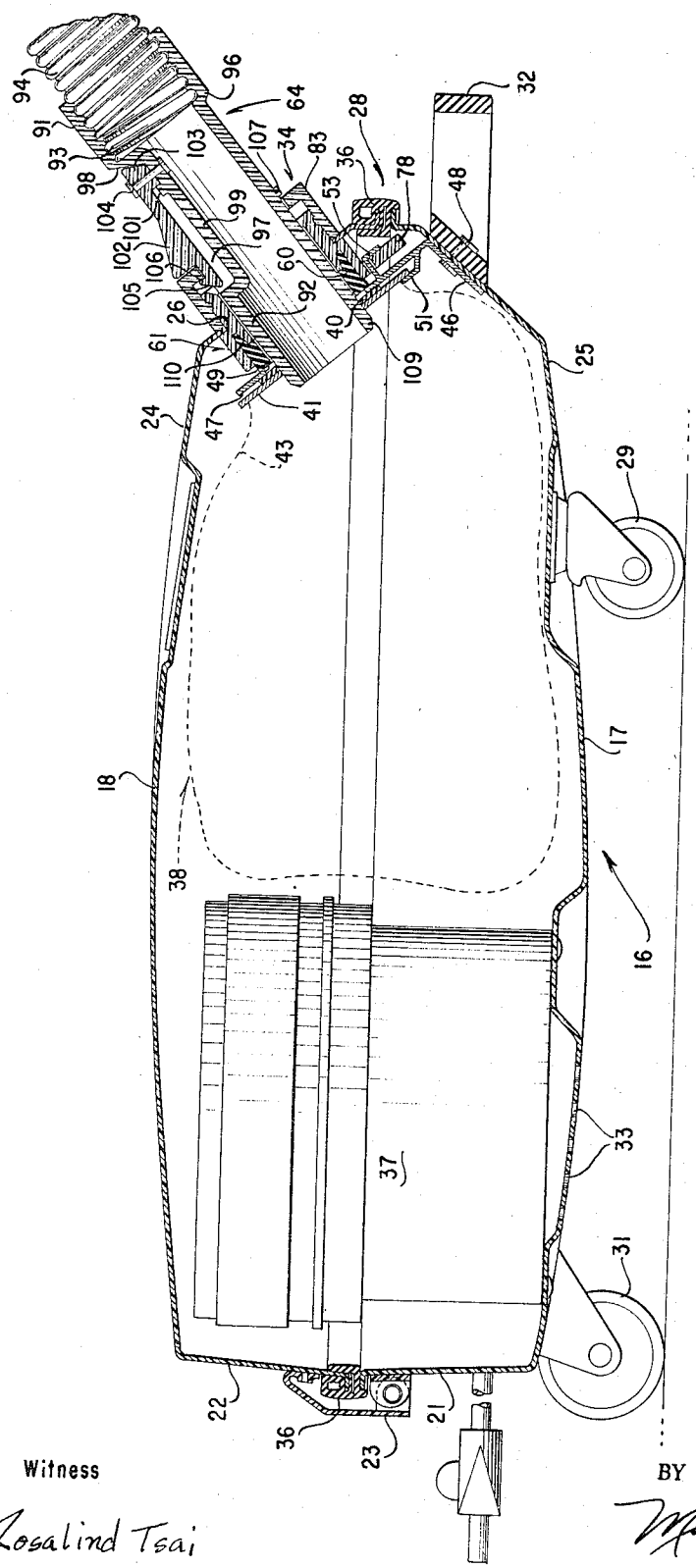


Fig. 1.

Witness

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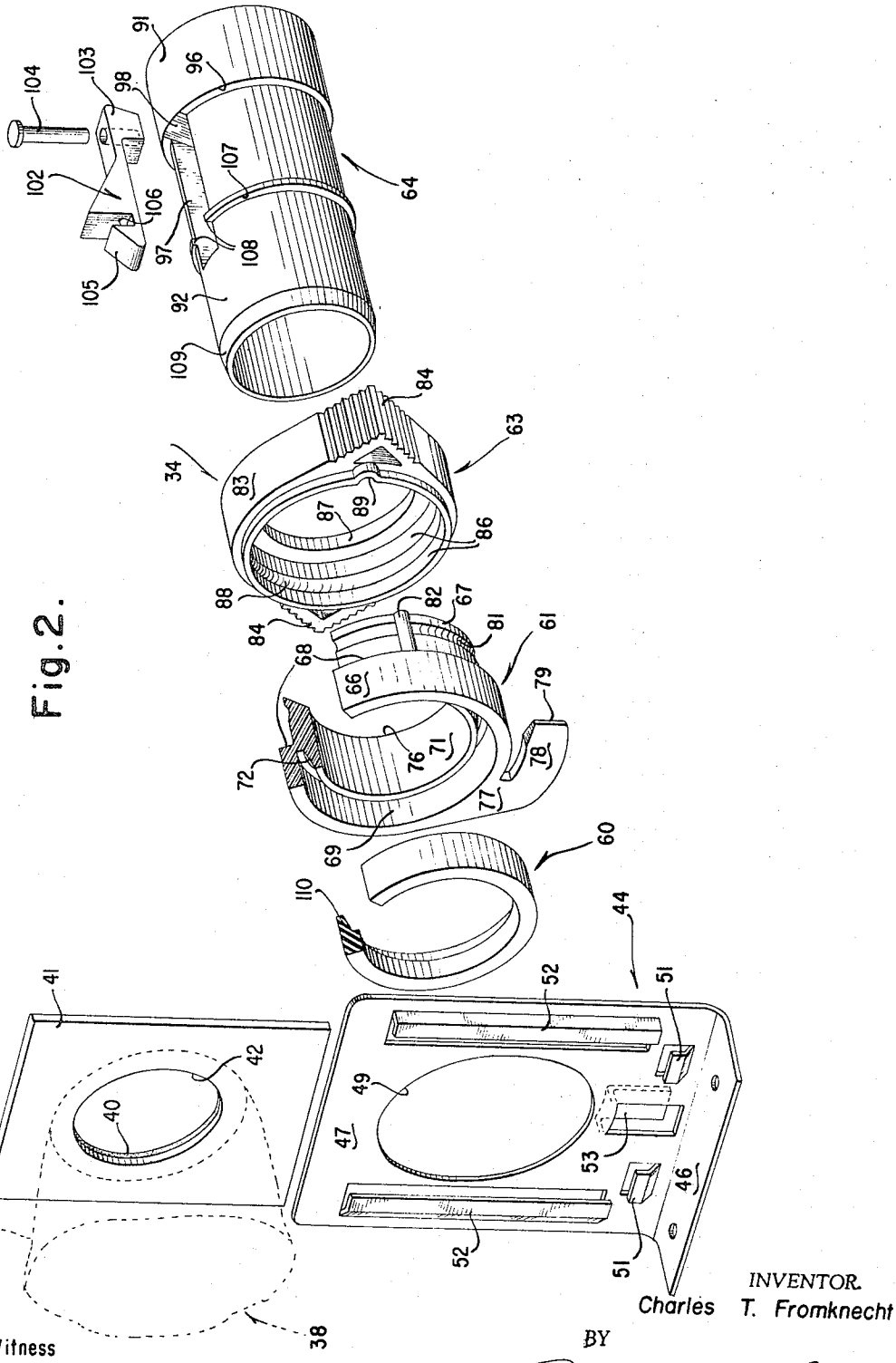


Fig. 2.

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VACUUM CLEANERS WITH COMBINED HOSE CONNECTORS AND HOUSING LATCHES

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6 Claims. (Cl. 15—327)

This invention relates to canister type vacuum cleaners and more particularly to a combined hose connector and housing latch and one of the primary objects of the invention is to provide an improved device of this character.

Another object of the invention is to provide an improved means for latching together the top and bottom housings of a vacuum cleaner.

A further object of the invention is to provide an improved means for connecting the end sleeve of a flexible hose to a vacuum cleaner.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

In the drawings:

FIG. 1 is an elevational side view, partly in sections of a canister type vacuum cleaner embodying the present invention, and

FIG. 2 is an exploded perspective large scale view showing details of certain parts shown in FIG. 1.

Referring now in more detail to FIGS. 1 and 2 the invention has been disclosed as forming part of a canister type vacuum cleaner **16** which comprises a bottom housing **17** and a top housing **18**. The ends **21** and **22** of the housings **17** and **18**, respectively, are connected by a hinge **23** and the end **24** of the top housing **18** is releasably connected to the end **25** of the bottom housing **17** by a latch **28** presently to be described, and the end **24** of the top housing **18** is formed with a circular hole **26**. The bottom housing **17** is equipped with casters **29** and wheels **31**, a pick-up handle **32**, and an exhaust port **33**. The top housing **18** is provided with an air intake hose connector **34** presently to be described. The joint between the housings **17** and **18** is sealed by a plastic gasket **36** which also serves as a bumper. A motor-blower **37** of conventional form is mounted on the bottom housing **17** and when the top housing **18** is latched to the bottom housing **17**, the motor-blower **37** draws dirt laden air through the hose connector **34**, through a dust separator **38** and expels the filtered air through the exhaust port **33**. The dust separator **38**, which may be conventional, is herein shown as comprising a preferably square, flat cardboard end plate or collar **41** formed with a central circular hole **42** having a rubber gasket **40** and a pervious bag **43** is secured, in a known manner, to the end plate **41**.

The end plate or collar **41**, and thus the bag **43**, are held in place within the housing **17** and **18** by means of an L-shaped bag bracket **44** having a short leg **46** and a long leg **47**. The short leg **46** is secured to the bottom housing **17** by a pair of rivets **48**, which also secure the handle **32** to the housing **17**. The bracket leg **47** has an oval aperture **49**, two short hooks **51—51** and two long hooks **52—52**. The hooks **51—51** define the bottom and the hooks **52—52** define opposite edges of a space adapted to receive the end plate **41**. The hooks **51** and **52**, which extend from the face of the leg **47** adjacent to the leg **46**, position the end plate **41** so as to align the hole **42** with the aperture **49**. A third hook or keeper

53 extends from the opposite face of the leg **47**. The purpose of the keeper **53** will presently be described.

The combined hose connector **34** and the latch **28** comprises a bag seal **60**, a cover latch or rotatable member **61**, a latch ring **63** and a sleeve **64**. The cover latch member **61**, comprises a ring having both a large diameter external cylindrical surface **66** and a smaller diameter external cylindrical surface **67**, the two surfaces **66** and **67**, which are concentric, being joined by an annular radially extending shoulder **68**. The latch member **61** also has both a large diameter internal cylindrical surface **69** and a smaller diameter internal cylindrical surface **71**. The surfaces **69** and **71**, which are concentric, are so arranged that the surface **71** extends axially within the surface **69** and the surfaces **69** and **71** are joined by means of an annular reentrant surface **72**. The cover latch **61** also has opposite ends **76** and **77** and the latch member **61** adjacent to the end **77** is formed with a hook or bolt **78**. The bolt **78** extends radially from the surface **66** and also in a direction concentric with the surface **66**, and the end of the bolt **78** is tapered as at **79**. The surface **67** has an annular indentation **81** and an axially extending protuberance **82**, the protuberance **82** being semicircular in cross section.

The latch ring **63** has an external surface **83** from which protrude a pair of diametrically located corrugated handles **84—84** by use of which the ring **63** can be rotated. The inner surface **86** of the ring **63** is cylindrical and is formed with an inwardly directed end which functions as a keeper or catch flange **87**, a radial cross section of which is substantially rectangular. The inner surface **86** is also formed at a location intermediate its ends with a protruding ring **88** a radial cross section of which is semicircular. The inner surface **86** is indented as at **89** with a radially extending semicircular groove.

The sleeve **64** is formed with both a large external diameter end **91** and a smaller external diameter end **92**. The end **91** is internally threaded as at **93** (FIG. 1) to receive the external spiral corrugations of a hose **94**, and the end **92** is of proper external diameter to easily pass through the aperture of the end flange **87**, the surface **71**, the bag seal **60**, the aperture in the bracket **44** and to enter the opening **42** in the end plate **41**. The different diameter external surfaces of the sleeve **64** are separated by a shoulder **96** and the sleeve **64** is formed with a longitudinally extending cavity **97**, one end of which is beveled as at **98**, and protruding from the external surface of the bottom wall **99** of the cavity **97** is a lug **101**. The cavity **97** receives a plastic catch bar **102**, one lugged end **103** of which is held in place in the cavity **97** by a rivet **104**, and by reason of engagement of the end **103** with the bevel **98** and the lug **101**.

As best seen in FIG. 2, the free or distal end of the catch bar **102** has an inclined end surface **105**, the upper end of which leads into a transverse notch **106**, the purpose of which will presently appear. The external cylindrical surface of the end **92** carries an annular flange **107**, interrupted at **108** to allow for the cavity **97** and the catch bar **102**. The terminal of the end **92** is beveled as at **109**.

The bag seal **60** is in the form of an annular ring having an annular portion **110** of such size and shape as to be tightly received by the reentrant surface **72** of the latch member **61**.

The hereinbefore described parts are assembled in the following manner. First the bag seal **60** is fitted into the cavity of the cover latch member **61** defined by the surfaces **69** and **72**. Then the small end of the cover latch member **61**, defined by the surface **67**, is passed from the inside of the top housing **18** through the hole **26**. Next, from outside of the housing **18**, the interior surface **86** of the latch ring **63** is, by means of an adhesive, secured

to the surface 67, the ring 88 entering the indentation 81 and the protuberance 82 entering the groove 89. The adhesive, the interlocking of the ring 88 with the indentation 81, and the interlocking of the protuberance 82 with the groove 89 insure that the member 61 and ring 63 are rotatable or turnable as a unit in the hole 26 of the top housing 18. The dust separator 38 is installed in the lower housing 17 by placing the bag 43 therein and by sliding the end plate or collar 41 into the space defined by the hooks 51 and 52. Then the top housing 18 is closed until its gasket 36 rests on the upper rim of the bottom housing 17. This causes the bag seal 60 to engage the front surface of the leg 47 of the bag bracket 44. Next, the housing 18 is latched to the housing 17 by using the handles 84 as a means for turning the members 60, 61 and 63 as a unit. Turning of the latch member 61 causes the tapered end 79 of the bolt 78 to engage the hook or keeper 53 on the bracket 44. Completion of the turning causes the bolt 78 to fully engage the keeper 53 thus securing the housing 18 to the housing 17. Thereafter, the end 92 of the sleeve 64 is passed through the ring 63, the latch member 61, the bag seal 60, the aperture 49 and through the hole 42 with its gasket 40 until the flange 107 engages the outer end of the ring 63. As the end 92 enters the ring 63, the inclined end surface 105 of the catch bar 102 engages the flange 87 thereby depressing the catch bar 102. When the flange 107 engages the outer end of the ring 63, the catch bar 102 springs so as to cause the flange 87 to enter the cavity or notch 106. This holds the sleeve 64 in proper position. If it becomes desirable to empty the bag 43, the free end of the catch bar 102 is depressed until it disengages the flange 87. This permits withdrawal of the sleeve 64. Then the members 63, 61 and 60 are turned to disengage the bolt 78 from the keeper 53. This allows the top housing 18 to be turned on the hinges 23 until the cleaner is open to a position for easy removal of the dust separator 38.

Having thus set forth the nature of the invention, what I claim herein is:

1. In a canister type vacuum cleaner formed with a bottom housing and a top housing connectable to said bottom housing, a combined housing latch and hose connector comprising a bag bracket secured to said bottom housing, said bag bracket being apertured and formed with a keeper, a rotatable member carried by said top housing, a bolt carried by said rotatable member and adapted when said top housing is closed upon said bottom housing to engage said keeper to hold said housings together, a tubing sleeve insertable through said rotatable member, and a catch bar carried by said tubing sleeve and releasably engageable with said rotatable member for connecting said tubing sleeve to said rotatable member.

2. In a canister type vacuum cleaner, a combined housing latch and hose connector according to claim 1 wherein said rotatable member carries a bag seal for sealing the joint between said rotatable member to said bag bracket.

3. In a canister type vacuum cleaner, a combined housing latch and hose connector according to claim 1 wherein said rotatable member has secured thereto a latch ring formed with an end flange which acts as a keeper for said catch bar.

4. In a canister type vacuum cleaner, a combined housing latch and hose connector according to claim 1 wherein said tubing sleeve is formed with a cavity for accommodating said catch bar.

5. In a canister type vacuum cleaner, a bottom housing; an apertured top housing connectable to said bottom housing; an apertured bag bracket secured to said bottom housing; means carried by said bag bracket for connecting a dust bag thereto; a keeper formed as part of said bag bracket; an apertured cover latch member rotatably mounted in the aperture in said top housing; an apertured bag seal carried by one end of said latch member; a radially and circumferentially extending bolt formed as part of said latch member, said bolt being adapted to engage the keeper on said bag bracket when said top housing is closed on said bottom housing; an apertured latch ring secured to an end of said latch member; a handle member carried as a part of said latch ring; a keeper flange formed as part of said latch ring; a hose sleeve so constructed and arranged as to pass through the apertures in said latch ring, said cover latch member, said bag seal, and said bag bracket; and a catch bar carried by said hose sleeve, said catch bar being formed with a notch adapted to receive the catch flange on said latch ring and thereby hold said sleeve in position within said latch ring and cover latch member.

6. In a canister type vacuum cleaner, a bottom housing, an apertured top housing connectable to said bottom housing, a bracket, for supporting a dust bag, secured to said bottom housing, a keeper formed as part of said bracket, an annular plastic latch member rotatably mounted in the aperture in said top housing, a bolt formed as part of said latch member and adapted, when said top housing is closed on said bottom housing, to engage the keeper on said bag bracket and thereby latch said top housing to said bottom housing.

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