Sept. 2, 1941. G. E. LOFGREN 2,254,611

VACUUM CLEANER

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Fig. 1.

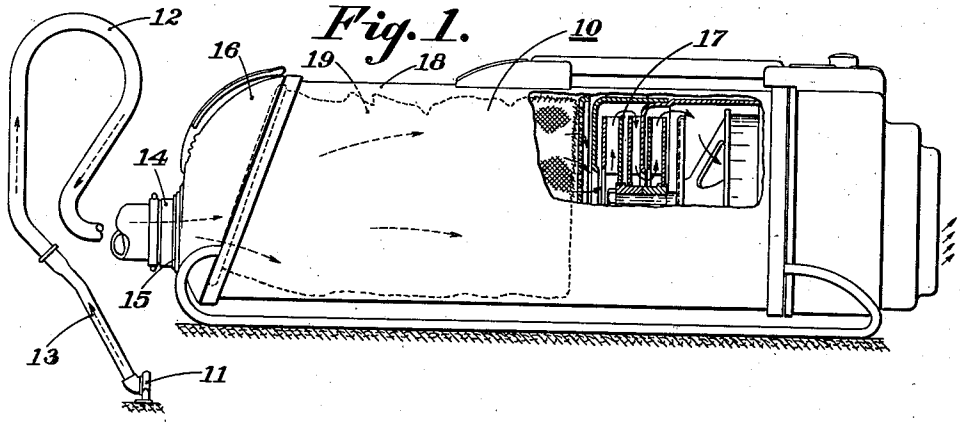


Fig. 2.

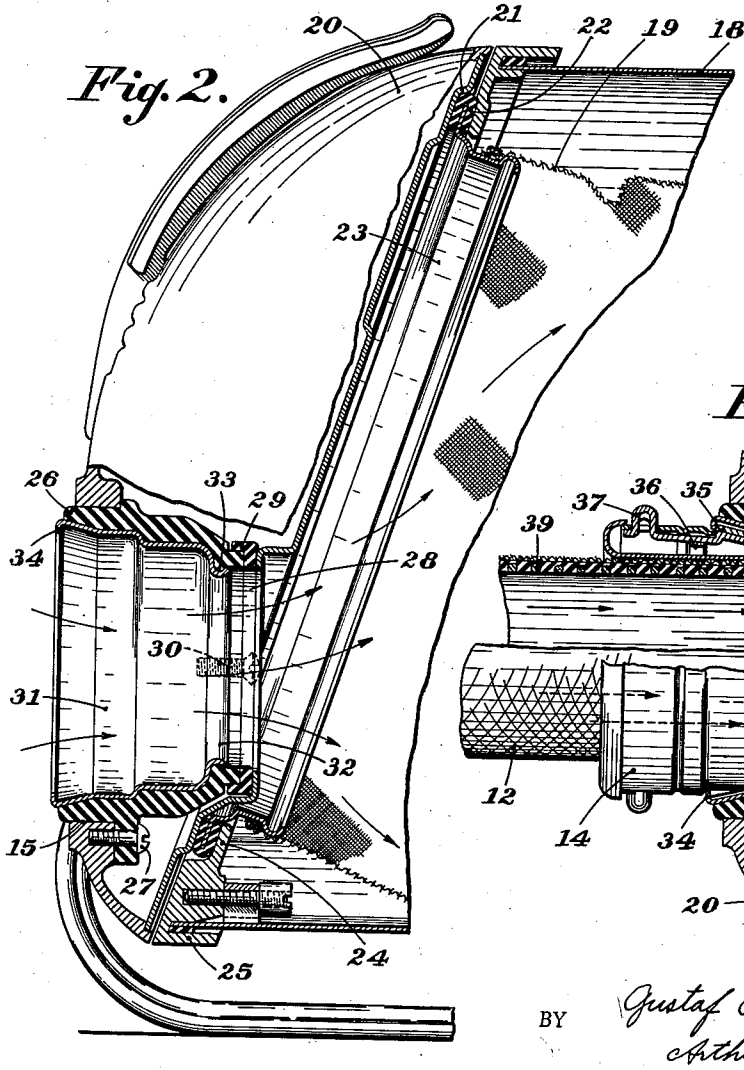


Fig. 3.

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Fig. 4.

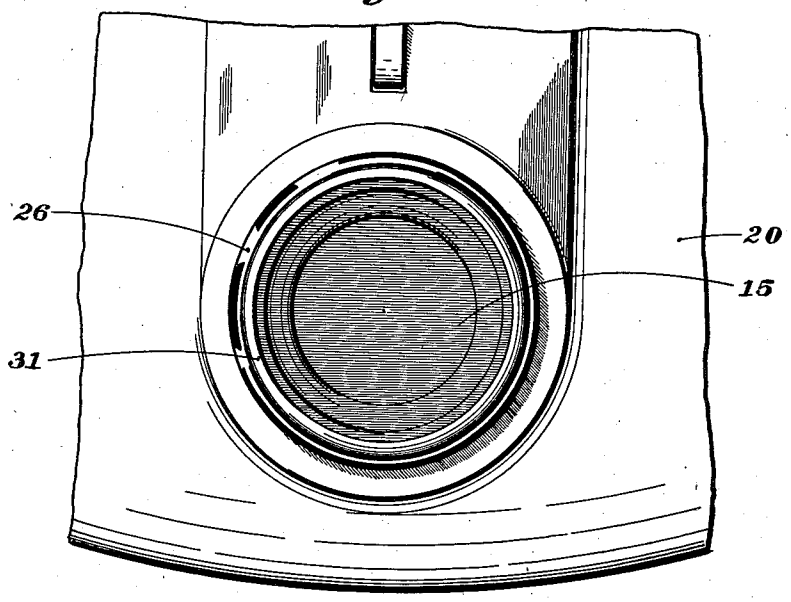
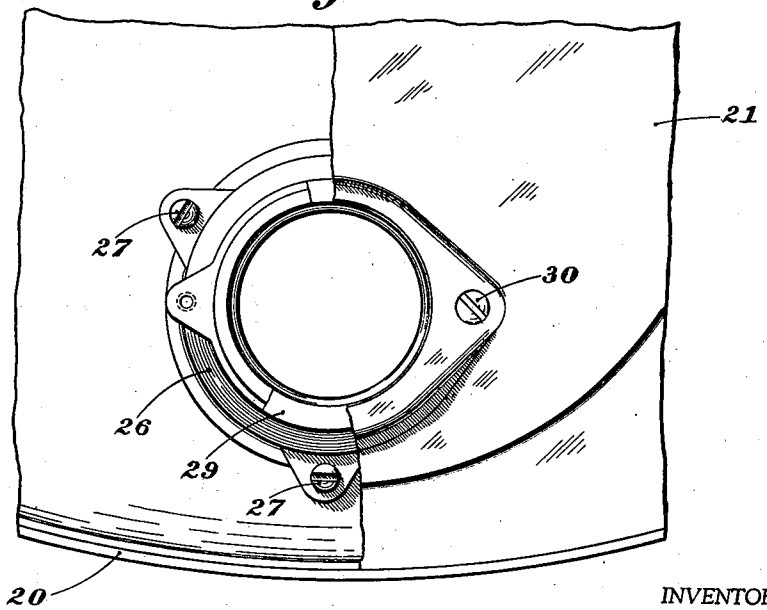


Fig. 5.



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UNITED STATES PATENT OFFICE

2,254,611

VACUUM CLEANER

Gustaf Einar Lofgren, Riverside, Conn., assignor to Electrolux Corporation, Dover, Del., a corporation of Delaware

Application April 6, 1938, Serial No. 200,363

4 Claims. (Cl. 285—75)

My invention relates to vacuum cleaners and more particularly to vacuum cleaners of the so-called inside bag type.

An object of my invention is to provide an improved cover for securing a removable dust separator in a vacuum cleaner casing and for obtaining access to the interior of the casing.

A further object of my invention is to provide a cover with an inlet opening for a vacuum cleaner casing sealed against air leakage and serving to insulate a conduit connected to the cleaner from the vacuum cleaner casing.

What I consider to be novel and my invention may be better understood by reference to the following specification and appended claims when considered in connection with the accompanying drawings, in which

Fig. 1 is a side view of a vacuum cleaner embodying my invention;

Fig. 2 is an enlarged sectional view of the cover in a portion of the vacuum cleaner unit;

Fig. 3 is an enlarged detailed view of a portion of the cover and flexible hose connector;

Fig. 4 is a front view of a portion of the cover; and

Fig. 5 is a rear view of a portion of the cover.

Referring to the drawings, 10 indicates a vacuum cleaner unit of the inside bag type which is adapted to be connected to a cleaning tool 11 by means of a flexible hose 12 and a substantially rigid tubular member 13. Flexible hose 12 is connected to the vacuum cleaner unit 10 by means of a coupler 14 which may be connected in an inlet opening 15 provided in a removable front end cover 16. A motor fan unit 17 produces a flow of air from the front end of casing 18 of the cleaner unit 10, shown at the left in Fig. 1, to the rear, shown at the right. The suction produced in the cleaner unit 10 is transmitted to the cleaning tool 11 by the flexible hose 12 and tube 13. A dust bag 19 located in casing 18 separates the dust from air drawn in through cleaning tool 11. The dust bag 19 may be emptied by first removing the cover 16. Any leak between the cover 16 and the casing 18, or between the hose 12, coupler 14, and the inlet opening 15 will reduce the cleaning efficiency of the cleaning tool 11.

Front end cover 16 consists of a casting 20 and a cover plate 21. When the cover 16 is secured to the casing 18, plate 21 engages a flexible gasket 22 surrounding a dust bag ring 23 secured to dust bag 19. The dust bag ring 23 and gasket 22 rest upon an inwardly extending flange 24 formed integrally with a ring 25 secured around the open end of casing 18. The gasket 22 carried by the dust bag ring 23 seals the opening of casing 18 between the plate 21 and the ring 25. A tube 26 of a non-metallic material is located in an inlet opening 15 and is secured directly to casting 20 by means of screws 27. Plate 21 is provided with an opening 28 which registers with tube 26. To provide an airtight seal between the tube 26 and plate 21, a flexible ring gasket 29 is provided extending over the end of tube 26. As best indicated in Fig. 5, the plate 21 is secured directly to the tube 26 by means of screws 30 and compresses the gasket 29. A metallic sleeve 31 is secured within tube 26 by inner end 32 which is spun over a shoulder 33. The outer end of sleeve 31 is turned in to form an inwardly extending flange 34.

When the vacuum cleaner unit 10 is used as a suction cleaner, the flow of air through the inlet opening 15 is in the direction indicated by the arrows in Figs. 2 and 3. The leakage of air between the cover 16 and the casing 18 is prevented by the dust bag ring gasket 22 located between the plate 21 and the ring 25. The leakage of air between the inlet opening 15 and the cover 16 is prevented by the gasket 29 located between the plate 21 and the tube 26. The plate 21 performs the dual function of sealing both the dust bag opening to casing 18 and the inlet opening 15 by the seals between the plate 21 and the ring 25 and between the plate 21 and the tube 26.

When the flexible hose 12 is connected to the inlet opening 15, catches 35 carried by coupler 14 engage the inturned flange 34 of sleeve 31. The catches 35 are held in engagement with the flange 34 of sleeve 31 by means of a ring shaped spring 36. The catches 35 may be released by finger grips 37. The inner end of the coupler 14 is stopped against a shoulder 38 provided in the inner end of sleeve 31. As shown in Fig. 3, the flexible hose 12 is formed of non-metallic material and reenforced by a helically wound wire 39. If such a hose became worn an electrical circuit may be completed by the reenforcing wire 39 from the cleaning tool 11 through the metallic tube 13 and flexible hose 12 to the metallic sleeve 31 to which the coupler 14 is connected. However, any possibility of an electrical connection between the coupler 14 and the casing 18 of the vacuum cleaner 10 is prevented by the use of tube 26 formed of non-metallic material. This provides a protection against electrical shock which might result from a ground between the

motor fan unit 17 and the vacuum cleaner casing 18.

In the operation of the vacuum cleaner 10, motor fan unit 17 causes a flow of air in through the cleaner tool 11, hose 12, into casing 18. Occasionally, it may be found desirable to connect the hase to the blower side of the vacuum cleaner unit 10. For such a purpose the hose 12 may be disconnected from the inlet opening 15 simply by depressing the finger grips 37 connected to the catches 35. As the vacuum cleaner 10 is used for cleaning purposes, dust collects in the dust bag 19 and it is necessary to occasionally empty it. This is done by first removing the cover 16 and then removing the dust bag 19. When the dust bag is re-inserted in the casing 18 and the cover 16 secured thereto, a seal between the inlet opening and the casing 18 is provided by the engagement of the plate 21 with the dust bag ring gasket 22 and by the gasket 28 secured to the tube 26. This insures the maximum efficiency of the cleaning tool 11 when connected to the inlet opening 15.

What I claim is:

1. An insulating coupling for connecting an air hose in an opening of a vacuum cleaner including a tube of non-metallic material secured in the opening of the vacuum cleaner, a sleeve of metallic material secured within said tube and having an inturned flange, and a hose coupler inserted into the sleeve with latches engaging the inturned flange of said sleeve to connect said hose within said tube.

2. An insulating coupling for connecting an air hose in an opening of a vacuum cleaner including a tube of non-metallic material secured in the opening of the vacuum cleaner, a sleeve of metallic material spun over a shoulder within said tube and having an inturned flange, and a hose coupler inserted in the sleeve with latches engaging the inturned flange of said sleeve to connect said hose within said tube.

3. An insulating coupling for connecting an air hose in an opening of a vacuum cleaner including a tube of non-metallic material secured in the opening of the vacuum cleaner, a sleeve secured within said tube having a shoulder at its inner end and an inturned flange at its outer end, and a hose coupler insertable in said tube being stopped by engagement with said shoulder and locked by engagement with said flange.

4. An insulating coupling for connecting an air hose in an opening of a vacuum cleaner including a tube of non-metallic material secured in the opening of the vacuum cleaner having an inwardly extending shoulder, a sleeve of metallic material nesting within said tube and spun over said shoulder at its inner end, a flange turned in at the outer end of said sleeve, a coupler abutting said shoulder, and catches carried by said coupler detachably engaging said flange.

GUSTAF EINAR LOFGREN.