July 4, 1933. G. W. ALLEN 1,916,353

VACUUM CLEANER

Filed April 4, 1931 2 Sheets-Sheet 1

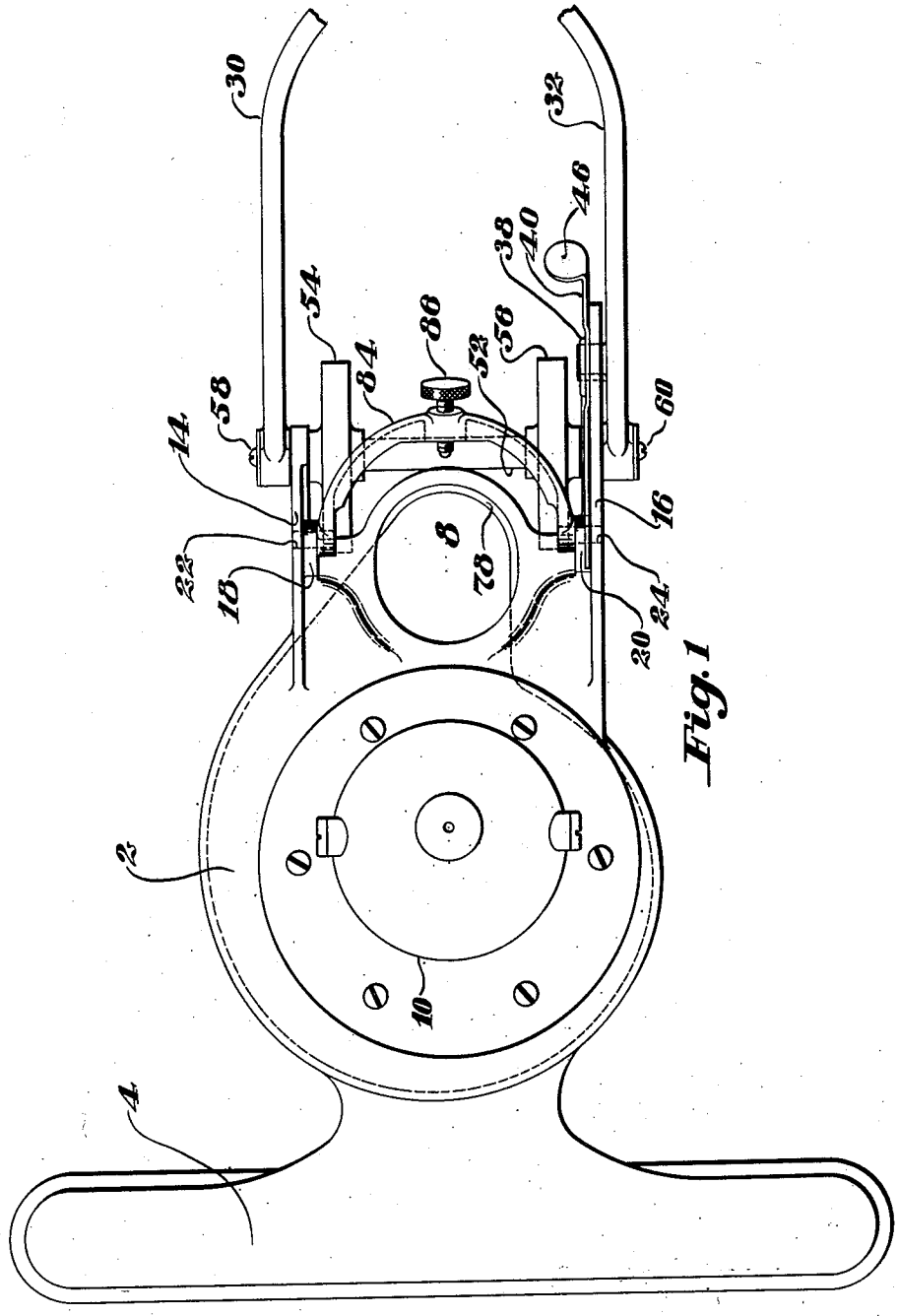


Fig. 1

Witness
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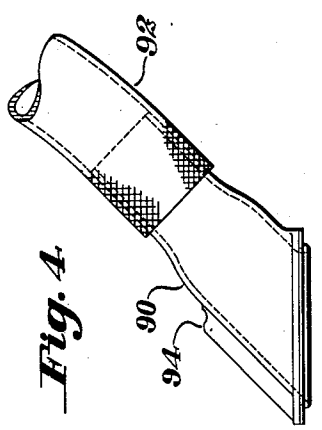


Fig. 4.

Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE

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VACUUM CLEANER

Application filed April 4, 1931. Serial No. 527,765.

The present invention relates to vacuum cleaners and more particularly to that type of vacuum cleaner in which the dust or dirt is separated and collected in an externally supported dust bag.

The main object of the invention is to provide a vacuum cleaner wherein the dust bag may be readily attached to and detached from the cleaner with the maximum of convenience and the minimum of effort.

Another object of the invention is to provide the fan casing with a dust conduit outlet adapted to receive detachably and to make an air and dust tight joint with either a tubular connection permanently attached to the dust bag, or a connection for an air hose and nozzle for the production of a directable air blast.

To the above ends the present invention consists in the devices and combinations of devices hereinafter described and claimed.

In the accompanying drawings which illustrate what is now considered to be the preferred form of the present invention, Fig. 1 is a top plan view of a vacuum cleaner constructed in accordance with the present invention, but with the dust bag removed. Fig. 2 is a side elevation, showing the dust bag attached; Fig. 3 is a medial, vertical sectional view of the connection, together with portions of the fan casing and of the dust bag; and Fig. 4 is a side elevation of the connection for the air hose with a short section of hose attached thereto.

The vacuum cleaner illustrated in the drawings is of the general type having a fan and fan casing with vertical driving motor, the front of the cleaner being supported by the nozzle and the rear by a pair of wheels, with the usual dust bag and propelling and guiding handle.

As shown in Figs. 1 and 2, the fan casing 2 and nozzle 4 are formed integrally of a single casting, preferably of aluminum, the casing extending rearwardly to provide the dust conduit 6 with the upwardly discharging outlet 8 of generally elliptical outline. Mounted upon the casing is the motor 10 which drives the centrifugal fan 12 within the eccentrically shaped fan chamber 2.

On opposite sides of the rear extension of the casing are the vertical flanges 14, 16, unequal in size and unlike in shape, integrally formed with the casing. Inwardly projecting from these flanges are the bosses 18, 20, which are centrally bored to receive the pivot studs 22 and 24 of the swinging clamp 84 for securing the dust bag or hose connection in position.

The larger flange 16 is provided with an arcuate slot 26 adapted to receive the boss 28 located upon the inner side of one of the prongs 30, 32 of the fork 34 to which is attached the handle 36, provided with the usual support for the upper end of the dust bag (not shown). The boss 28, constrained to move within the slot 26, limits the angular displacement of the handle 36.

Near the top of the flange 16 is affixed by bolt, nut, spring and washer 38, a pivoted latch lever 40 which by means of its end 42 and shoulder 44 serves to engage in a plurality of positions the loss 28, permitting the fixation of the handle in any one of a number of angular positions. The latch lever is actuated to release the handle by means of the toe clip 46 on the rearwardly extending end of the lever.

The range of movement of the lever is limited by the projection 48 on the side of the lever and located in the recess 50 in the flange 16.

Passing through the lower parts of the flanges 14 and 16 is the axle 52 upon which are mounted the fibre wheels 54, 56, and also the prongs 30, 32 of the fork 34 of the handle by which the cleaner is propelled and guided. The parts are held in assembled relation by the screws and end washers 58 and 60.

The dust bag 62, which may be of textile or other suitable material, is preferably provided with the usual internal dust valve 64 to prevent the dust and dirt from escaping when the bag is removed from the cleaner. The bag it attached to the discharge opening of the fan casing by means of the tubular connection 66 of metal or other suitable rigid material, consisting of an intermediate tube section 68 having a square (i. e. at right angles to the tube axis) bag-receiving rear

end and an oblique front end to engage the fan casing. At the rear end of the connection is the circular rib or flange 70 to retain the wire ring 72 or other securing device for permanently attaching the end of the bag to the connection. The front oblique end of the connection is provided with the finished face 74 having an internal lip or flange 76 adapted to fit within the outlet or discharge opening 8 of the fan casing, the rear wall of which is shouldered as at 78 to receive the flange. A rubber gasket or washer 80 is inserted between the connector and the casing in order to insure an air and dust tight joint, the flange 76 being under cut slightly as shown at 82 to retain the washer in place when the connection is removed from the casing.

The connection is secured to the fan casing by means of the pivoted clamp 84, mounted upon the studs 22 and 24 and provided with the clamping thumb screw 86 to engage the boss or shoulder 88 on the top of the connection. When the parts are in the positions shown in Fig. 2 and the thumb screw tightened, the connection with its attached bag will be rigidly secured to the fan casing without liability of loosening or breakage. By loosening the screw and swinging the clamp forwardly on its pivot the connection will be free to be detached and removed from the casing for the purpose of cleaning the bag or of attaching the air blowing hose. The top of the dust bag is held closed by the usual friction clamp, (not shown) detachably depending from the handle.

For the production of a directable air blast, use is made of a connector 90, quite similar to connector 66, consisting of a short tubular section one end of which may be of reduced diameter to receive an air hose 92, and the other end of which with its oblique face, is finished with similar flanges to fit the fan casing with the rubber washer therebetween. This connector 90, which may be made of aluminum or other metal, or of hard rubber, fibre, or other suitable moldable material, is provided with a boss or shoulder 94 to receive the end of the thumb screw 86.

The method of operating a vacuum cleaner equipped with the present improvement is as follows: for normal operation the dust bag is connected to the casing of the cleaner by securing it in place by means of the clamp 84 and thumb screw 86. The current for the motor may then be switched on and the cleaner is operated in the usual manner. To remove the dust bag for the purpose of cleaning or to substitute the blowing hose, the thumb screw and clamp are released and the dust bag and its connector are removed. The hose may be attached in the same manner as the bag. Since the union between the dust bag and connector is never broken, the dust bag is subjected to little wear and tear, yet may be removed from or attached to the cleaner with a minimum of effort and in a positive and efficient manner, the angular arrangement of the connector directing the air into the bag without abrupt changes in direction or the formation of spaces or pockets where dust may collect.

This arrangement of connector and casing also permits the top of the casing to be flat throughout its surface, with the advantage of ease of casting and finishing.

While the present invention has been shown and described in what is now considered to be its preferred form, it is not necessarily limited thereto but may be embodied in other forms and arrangements within the term of the claim.

Having thus described the invention, what is claimed is:

A vacuum cleaner comprising a substantially horizontal fan casing having an outlet extension at the rear thereof, a pair of vertical flanges extending rearwardly from the casing one on each side of the extension, an axle mounted in said flanges, wheels mounted on the axle, a guiding handle mounted on the axle, an adjustable stop device for the handle carried by one of the flanges, an outlet connection, a dust bag secured thereto, and means pivoted to the flanges for detachably securing the connection to the outlet extension.

In testimony whereof I have signed my name to this specification.

GEORGE W. ALLEN.