May 18, 1937. H. E. HOOVER 2,080,480

SUCTION CLEANER

Filed April 11, 1935

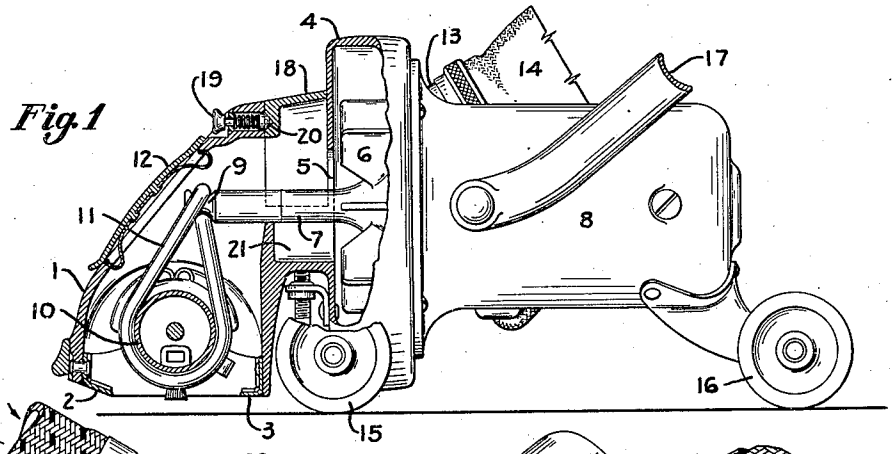


Fig. 1

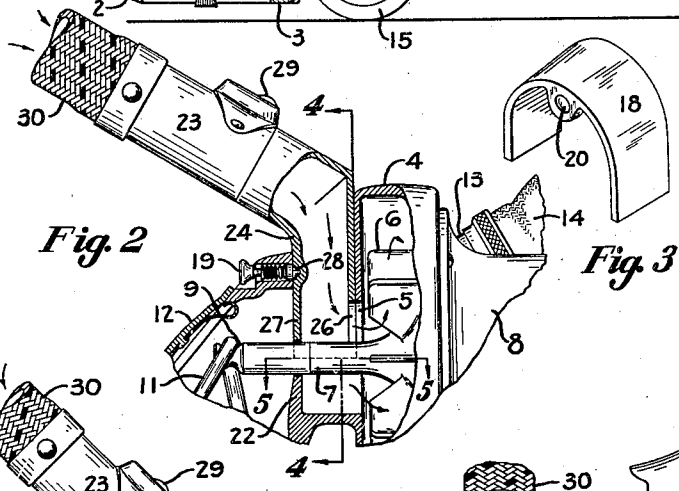


Fig. 2

Fig. 3

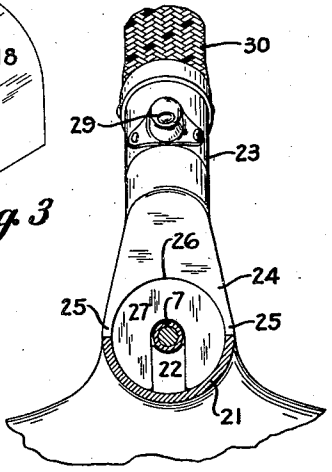


Fig. 4

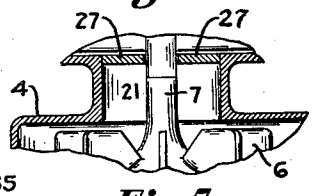


Fig. 5

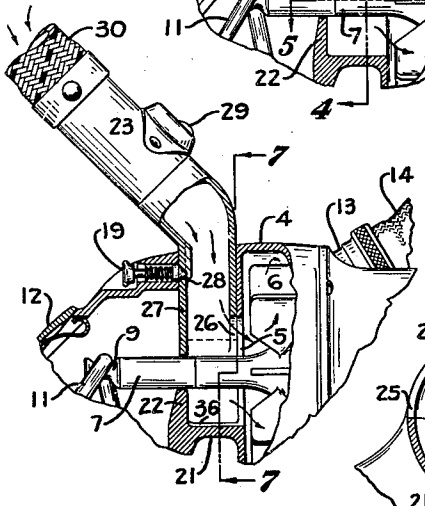


Fig. 6

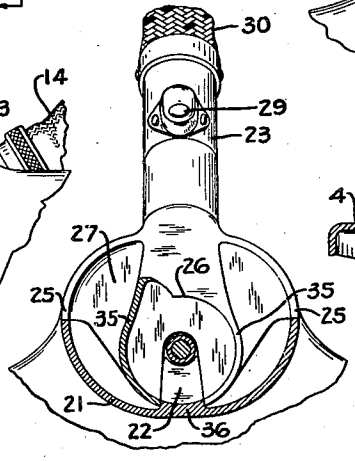


Fig. 7

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SUCTION CLEANER

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5 Claims. (Cl. 15—9)

The present invention relates to suction cleaners in general and more particularly to new and novel improvements in converting mechanisms by which the cleaner is converted from an "on-the-floor" to an "off-the-floor" unit. More specifically the invention comprises a new and novel combination of dusting tool converter and cleaner body.

It is an object of the present invention to provide a new and improved suction cleaner. It is another object of the invention to provide a new and improved converter for a suction cleaner. Still another object is to provide a new and improved dusting tool converter and its cooperative seat on the cleaner body. A still further object is the provision of a detachable dusting tool converter which is adapted to seat upon a cleaner provided with positive agitating means and to seal the cleaner nozzle from the suction-creating means and to connect the dusting tool hose thereto. These and other more specific objects will appear upon reading the following specification and claims and upon considering in connection therewith the attached drawing to which they relate.

The present invention is disclosed in part in United States Letters Patent 1,928,937, granted October 3, 1933 to Howard E. Hoover.

Referring now to the drawing in which a preferred embodiment of the present invention is disclosed:

Figure 1 is a side view of a suction cleaner constructed in accordance with the present invention, certain parts being broken away;

Figure 2 is a broken section through the nozzle and fan chamber of the cleaner shown in Figure 1 but with the dusting tool converter in place and the cleaner adapted for off-the-floor operation;

Figure 3 is a view in perspective of the removable cover element or section which is displaced when the dusting tool converter is seated;

Figure 4 is a section upon the line 4—4 of Figure 2;

Figure 5 is a section upon the line 5—5 of Figure 2;

Figure 6 is a view similar to Figure 2 illustrating a second preferred embodiment of the invention;

Figure 7 is a section upon the line 7—7 of Figure 6.

Referring now to Figures 1 to 5, inclusive, the first preferred embodiment of the invention is disclosed. The suction cleaner body is seen to include a nozzle 1, the mouth of which is defined by front and rear lips 2 and 3, respectively. The nozzle is interiorly connected to a fan chamber 4 at the eye 5 thereof. Within the fan chamber is positioned a rotating suction-creating fan 6, which is carried upon the extended end of the motor shaft 7 driven by an unshown motor positioned within the casing 8 immediately in the rear of the fan chamber. The motor shaft extends forwardly thru the fan chamber into the nozzle to a point above the nozzle mouth, where it is formed as a pulley 9. A rotating agitator 10 comprising flexible brushes and rigid beating elements, is rotatably mounted within the nozzle in a position in which it is adapted to contact the lifted surface covering between the lips 2 and 3 in the cleaning operation. A power-transmitting belt 11 connects the agitator to the pulley 9, the nozzle being provided with a cover plate 12 in its front wall immediately adjacent the pulley 9 which is removable to permit of access to the belt and to the pulley. The cleaning air which is drawn through the nozzle is exhausted from the fan chamber exhaust outlet 13 into a removable dust bag 14 which functions to filter the foreign matter from the air passing therethrough. The cleaner is movably supported upon front and rear wheels 15 and 16 and, as in the usual cleaner construction, a pivoted handle 17 is provided by which the operator can propel the machine over the surface covering undergoing cleaning.

The nozzle 1 is provided, immediately forward of the fan chamber 4, where it is shaped substantially as a horizontal cylinder, with a removable section or plate 18. In the operation of the cleaner in on-the-floor cleaning section 18 is removably secured in place by a spring-pressed detent 19 which seats within a seat 20 in the section. When so positioned the plate 18 forms an integral part of the cleaner body and air is conducted from the nozzle mouth to the eye 5 of the fan chamber and passes therethrough into the dust bag, as aforedescribed.

To convert the cleaner from an on-the-floor unit to an off-the-floor unit the plate 18 is removed from the cleaner the spring-pressed detent 19 being withdrawn from its seat 20. The nozzle as stated is formed as a circular air passageway at the plate 18, and the removal of the plate leaves an open sided semi-circular section 21. From the semi-circular portion 21 there extends a lug, shoulder, or post 22 which extends upwardly to surround partially the motor shaft 7, it being of substantially the same width as that element.

The dusting tool converter comprises a metallic member the outer end of which is formed as a cylindrical conduit 23 and the inner end as a seat portion 24 which extends at an angle and is adapted to seat upon the semi-circular section 21. The seat portion 24 is formed with side walls 25, 25 which rest upon the sides of the semi-circular section 21. The forward wall of the seat portion lies adjacent the fan chamber, is flat and is formed with a cutaway section 26 which conforms to the eye of the fan chamber.

The opposite or rear wall 27 of the converter extends into the air passageway, encloses the motor shaft 7 and its underlying post 22, and cooperates with the latter to seal completely the nozzle mouth from the fan chamber. Seat section 24 of the converter is provided with a recessed seat 28 which cooperates with the spring-pressed detent 19 to hold the unit in place. As in the usual converter construction a manually operable detent 29 is provided which is adapted to secure to the end of the conduit of the converter the cleaner end of a removable flexible dusting tool hose 30.

With the converter seated on the cleaner the interior of the converter is connected to the interior of the fan chamber, and the cooperation of the wall 27 of the converter with the post 22 completely seals the nozzle from the fan chamber.

Referring now to Figures 6 and 7 in particular, a modified design of converter-cleaner construction is illustrated. In this embodiment the nozzle passageway immediately adjacent the fan chamber is of larger cross section than in the first embodiment and is not entirely closed by the rear wall 27 of the converter in the off-the-floor operation of the cleaner. The side walls 25, 25 of the converter seat upon the sides of the semi-circular section 21 and are supported thereby. Between those walls extending downwardly to the bottom of the section 21, with the converter seated in the cleaner, are side walls 35, 35, which are joined adjacent the fan chamber by the forward wall of the converter, which is again formed with the cutout section 26. The rear wall 27 of the converter extends between the walls 35, 35, encloses the shaft 7 and post 22, and cooperates therewith to seal the interior of the converter to the interior of the fan chamber. The walls 35, 35 are spaced apart sufficiently at their lower ends to permit the drive shaft 7 to pass therebetween. With the converter in place these spaced ends contact the side of a raised shoulder 36 which extends from the fan chamber to the post 22. The converter is retained as in the first embodiment by the cooperation of the spring-pressed detent 19 with a seat 28 formed in the wall 27.

I claim:

1. In a suction cleaner, a nozzle having a mouth, an adjacent fan chamber connected interiorly to said nozzle, an agitator in said nozzle, a driving shaft extending from said fan chamber into said nozzle and connected to said agitator, said nozzle being formed with a removable section opposite said shaft, a post extended from the side of said nozzle to said shaft and in the direction of said removable section, said nozzle being open to said chamber at the sides of said post, and a dusting tool converter adapted to seat on said nozzle with said section removed and open interiorly to said fan chamber, said converter including a plate extending across said nozzle at said post and cooperating therewith to close said nozzle from said fan chamber.

2. In a suction cleaner, a nozzle having a mouth, a fan chamber connected interiorly to said nozzle, said nozzle being formed as an air passageway adjacent said fan chamber, which passageway has a cutout section, a driving shaft extended from said fan chamber thru said passageway, a closure member extended from the side of said passageway opposite said cutout section to said shaft, and a dusting tool converter seated on said passageway at said cutout section and including a closure plate enclosing said driving shaft and said closure member and cooperating with the latter to seal said nozzle mouth from said fan chamber.

3. In a suction cleaner, a nozzle having a mouth and being formed at its opposite end as an air passageway, a fan chamber adjacent and interiorly connected to said passageway, said passageway being formed with a cutout section immediately adjacent said chamber which is adapted to seat a wall section to complete said passageway or a dusting tool converter, a drive shaft extended centrally thru said passageway, a closure member extended out from the side wall of said passageway opposite said cutout section to a position partially surrounding said shaft and a converter seated on said passageway at said cutout section, said converter including a closure plate sealing with the interior of said passageway and formed with a recessed portion to enclose said shaft and closure member to seal said nozzle mouth from said fan chamber.

4. In a suction cleaner, a nozzle having a mouth and formed as an air passageway, a fan chamber interiorly connected to said passageway, said passageway being formed with a cutout section, a driving shaft extended centrally of the portion of said passageway adjacent said fan chamber, a post extending from the wall of said passageway opposite said cutout section radially toward said shaft and terminating in a semi-circular edge partially enclosing said shaft, and a dusting tool converter adapted to be inserted into said cutout section and consisting of wall sections spaced apart and adapted to extend transversely of said passageway to provide a closure therefor, one of said wall sections having a portion removed to register with the entrance of said fan chamber, the other having an inwardly extending marginal slot conforming to the contour of said shaft and said post and adapted to have marginal sealing contact therewith.

5. In a suction cleaner, a nozzle having a mouth and an air passageway, a fan chamber communicating with said passageway, the latter being provided with a transverse cutout wall section adjacent said fan chamber, a driving shaft extending axially into the portion of said passageway provided with said cutout wall section, a post integral with the wall of said passageway and extending radially therefrom toward said shaft from the side opposite said cutout wall section and terminating in a semi-circular end margin partially enclosing said shaft, and a dusting tool converter adapted to be inserted into the opening formed by said cutout wall section and transversely of said passageway, said converter consisting of wall sections spaced apart axially of said shaft and having sealing contact at their edges with the interior of said passageway, one of said wall sections having a portion removed to register with the entrance of said fan chamber, the other having a portion removed to conform to the contour of said shaft and said post and adapted to have marginal sealing contact therewith.

HOWARD EARL HOOVER.