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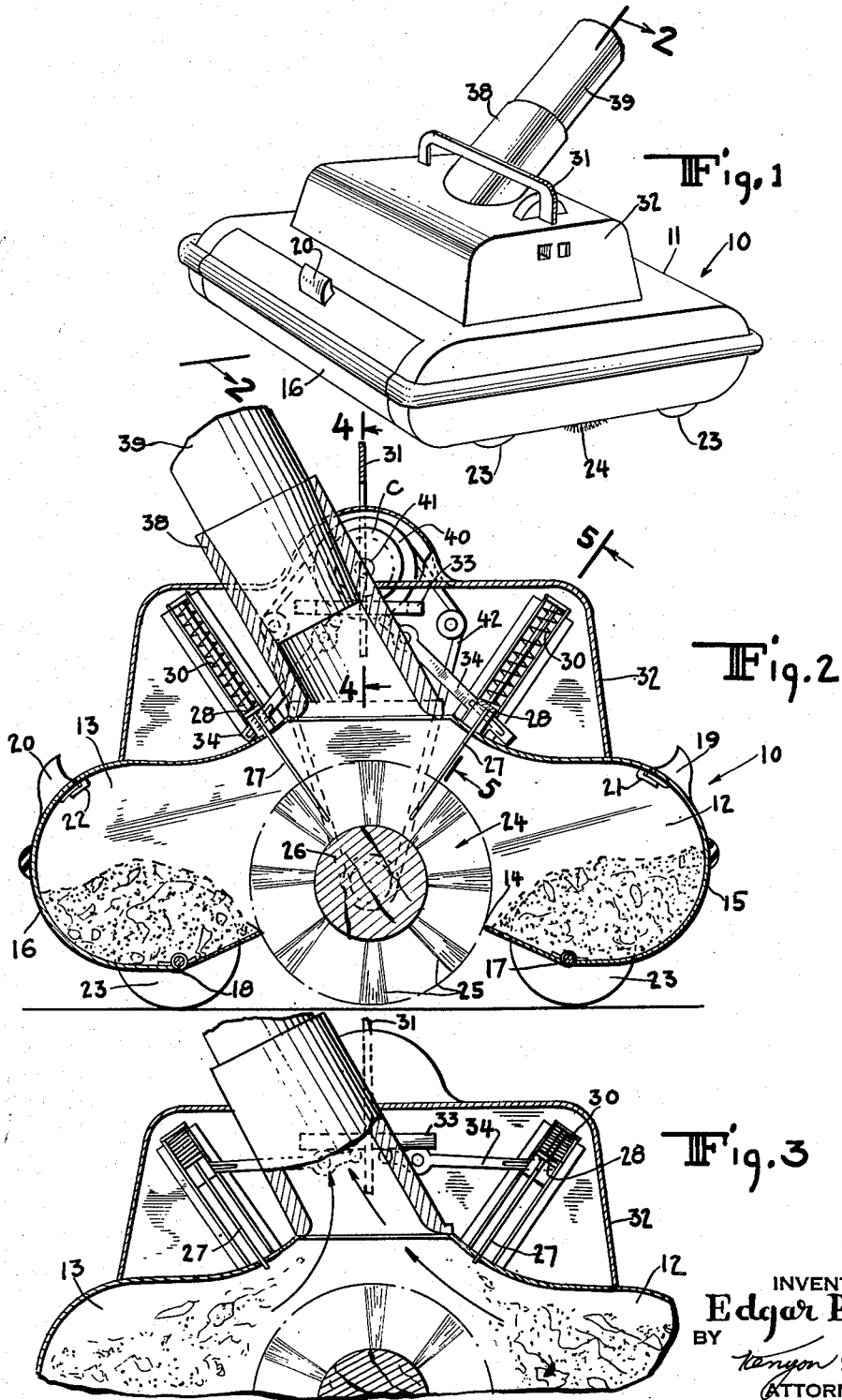
E. P. SENNE

2,960,714

COMBINATION CARPET SWEEPER AND VACUUM CLEANER

Filed Dec. 4, 1958

2 Sheets-Sheet 1



INVENTOR
Edgar P. Senne
BY *Kanyon H. Kanyon*
ATTORNEYS

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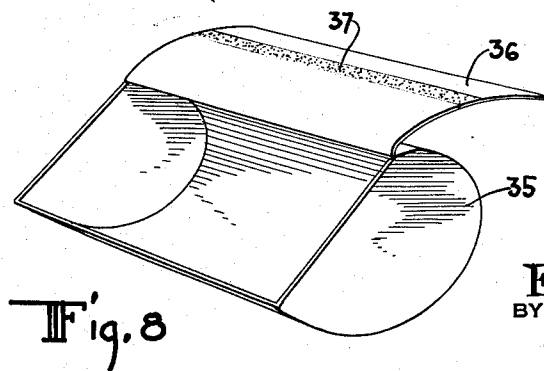
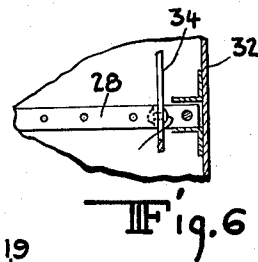
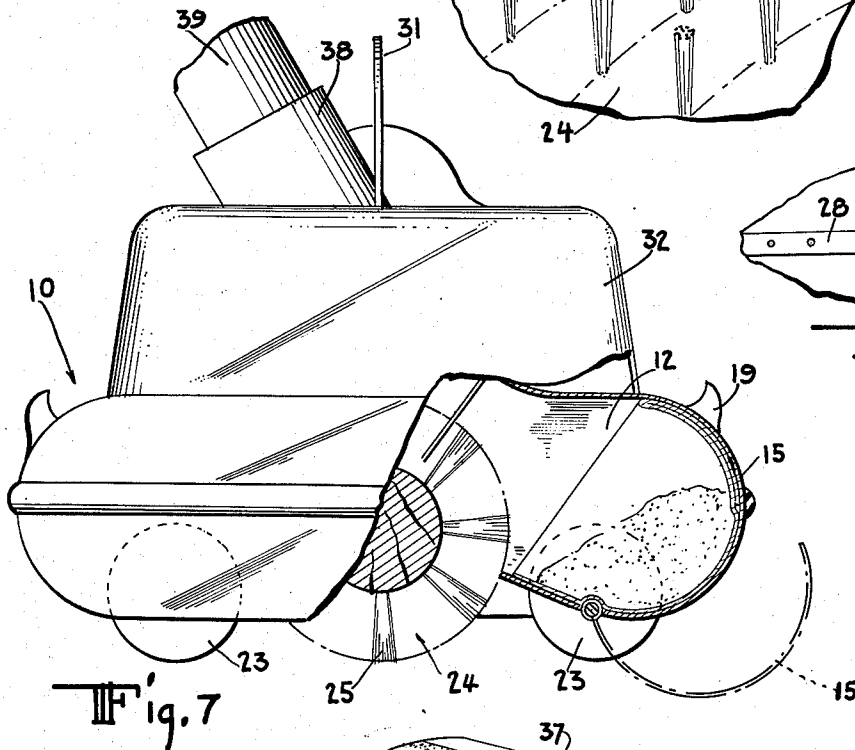
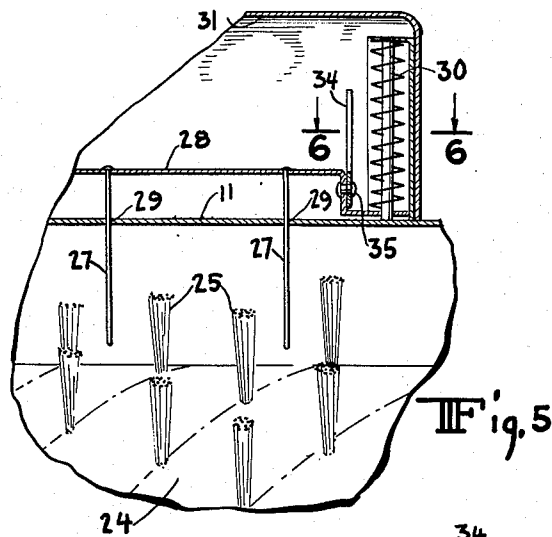
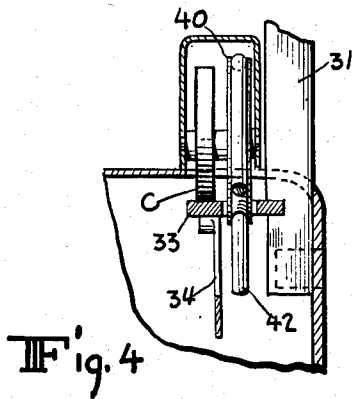
E. P. SENNÉ

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COMBINATION CARPET SWEEPER AND VACUUM CLEANER

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2 Sheets-Sheet 2



INVENTOR
Edgar P. Senné
BY
Henry H. Henry
ATTORNEYS

1

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COMBINATION CARPET SWEEPER AND VACUUM CLEANER

Edgar P. Senné, Hempstead, N.Y., assignor to Electrolux Corporation, Old Greenwich, Conn., a corporation of Delaware

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3 Claims. (Cl. 15—349)

This invention relates to cleaning devices and more particularly to a combination carpet sweeper and vacuum cleaner nozzle construction.

Objects and features of the present invention are the provision of a carpet sweeper arrangement in the form of a nozzle for a vacuum cleaner which is capable of use simultaneously with the vacuum cleaner when suction is on, or independently as a carpet sweeper without suction.

Other objects and features of the invention are the provision of an arrangement in the nozzle to collect lint and threads from the carpet sweeper brush tufts which may be removed from the nozzle casing either by suction or as collected in a disposable dirt bag.

Further objects and features of the invention are provision of thread and lint picking mechanism within the cleaner casing which serves to remove thread and lint collected on the cleaner brush tufts, and which then may be moved from the collecting means in a simple manner.

Still further objects and features of the invention are the provision of thread pickers in the form of pins arranged as comb tines to comb the brush of the cleaner, the said tines being positionable between tufts to remove collected threads therefrom and in addition being retractable so that the pins may be readily freed of accumulated thread or lint.

Additional objects and features of the invention are the provision of simple means for emptying collected dirt from the cleaner either by use of suction or by physical removal thereof through opened access doors from compartments which may, if desired, contain disposable collecting bags for the dirt.

Still other objects and features of the invention are the provision of simple nozzle mechanism for effecting the foregoing which may be utilized with existing types of vacuum cleaners provided with hose connections from the suction motor.

Other objects and features of the invention will become apparent from the following specification and the accompanying drawings forming part thereof wherein:

Fig. 1 is a perspective view of a vacuum cleaner-sweeper nozzle construction embodying features of the present invention;

Fig. 2 is a section taken along line 2—2 of Fig. 1;

Fig. 3 is a fragmentary section similar to that of Fig. 2 illustrating use of the nozzle with suction for withdrawal of collected dirt therefrom;

Fig. 4 is a fragmentary section taken along line 4—4 of Fig. 2 illustrating the operating arrangement for the lint collecting pins;

Fig. 5 is a sectional view taken along line 5—5 of Fig. 2;

Fig. 6 is a sectional view taken along line 6—6 of Fig. 5;

Fig. 7 is a partially broken away elevational view of the device of Fig. 2 illustrating the manner of removal of collected dirt, thread and lint therefrom through access doors provided in the casing thereof; and

Fig. 8 is a perspective view of a dirt collecting bag

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that may be inserted into and readily removed from the device.

Referring to the drawing and first to Fig. 1 the reference character 10 denotes generally a carpet sweeper vacuum cleaner nozzle useful in practicing the present invention. In the embodiment shown, this nozzle 10 comprises a casing 11 of metal, plastic or other suitable material. This casing 11 is symmetrical in cross-section with respect to a vertical plane through its center and is provided with a pair of dirt receiving chambers 12 and 13 on opposite sides of said plane, both of which open into a brush receiving portion, which is centrally located. The bottom of the casing is provided with a centrally located opening 14. Portions 15 and 16 of the side wall of the casing are hinged respectively at 17 and 18, thus providing access doors through which entrance to the respective compartments 12 and 13 may be effected. These doors may be spring-biased to normally opened condition in any suitable way. Knobs 19 and 20 for the access doors 15 and 16 facilitate their opening and closing. These knobs may form operating mechanism for spring latches 21 and 22 of the conventional kind which serve to lock the access doors 15 and 16 in closed condition.

Wheels or rollers 23 are supported suitably from the casing 11 and protrude from the bottom thereof so that the nozzle 10 may be rolled over the floor or carpet (not shown) to be cleaned. A conventional sweeper brush 24 is mounted for rotation within the casing so that its tufts 25 project outwardly of the bottom of the casing through opening 14 to an extent sufficient to provide contact between the tufts and the surface to be cleaned. The shaft 26 of the brush 24 may be belt-coupled with one or more of the wheels 23 to effect rotation of the brush as the nozzle is moved over the surface to be cleaned.

During cleaning operation, as the brush 24 moves over the surface to be cleaned, its tufts carry the dirt through opening 14 into the compartments 12 and 13 where it is collected. During sweeping movement of the tufts 25 they tend to pick up lint and threads from the surface being cleaned. This material eventually tends to clog the brush tufts and reduce the cleaning action of the brush. In order to obviate this problem lint and thread removing means are provided.

In the embodiment shown this lint and thread removing means comprises a plurality of pins 27 arranged as tines of a comb and projecting through openings in the wall of casing 11 into positions between the tufts 25. Groups of these pins extend into the casing from each side of the central vertical plane thereof, via holes 29 and each group is supported by a carrying bar 28. Each carrying bar is reciprocally movable so that the pins carried thereby may be slid axially into and out of position between tuft groups of the brush 25 in the casing. Springs 30 normally bias the bars 28 and the pins 27 so that the latter extend between brush tufts 25. In consequence as the brush rotates during cleaning operations the pins acting as comb tines perform a combing action and remove lint and threads from the tufts. This removed lint or thread collects on the rods or pins 27. In order to rid the pins of these collected lint or threads they are retracted periodically via holes 29 to an outward position relative to the tufts 25. In such retraction which is against the biasing action of the springs 30 the collected lint and thread are forced off the pins by the wall of casing 11 around the holes 29 and collect within the chambers 12 and 13 along with other dirt swept into the latter by the brush 24.

In the embodiment shown the pins 27 may be periodically moved or retracted to the lint and thread ridding position just described by means of a foot-operated member 31 which extends outwardly of a casing extension por-

tion 32. This member 31 internally of the casing portion 32 has a lever engaging cross bar 33 which engages an end of each of a pair of pivoted levers 34, the other ends of which are coupled at 35 to the pin carrying bars 28. Downward movement of the foot member 31 causes the levers 34 to swing from their positions as shown in Fig. 2 to elevated positions as shown in Fig. 3, and in such swing cause outward movement of the bars 28 as well as the pins 27 carried thereby, all in opposition to the springs 30. When foot bar 31 is released the springs 30 restore the moved parts to the positions shown in Fig. 2 at which time the pins 27 again lie between the tufts 25 for lint and thread removing functions.

The dirt collected in the chambers 12 and 13 may be removed therefrom simply by opening the access doors 15 and 16. In the alternative, as seen in Figs. 7 and 8, removable containers 35 of paper, plastic or other cheap material may be positioned within the respective chambers 12 and 13. These containers or bags 35 are shaped and admeasured to fit the chambers into which they are inserted and are each provided with a closing flap 36. Each flap 36 is provided with a strip 37 of conventional pressure sensitive adhesive. The strip 37 lies on the inside face of the flap 36 so that when the latter is folded back to the open condition, the strip 37 will be in position to adhesively engage the inner surface of the access door through which it is inserted. Thus the container bag 35 will be held in position when the door is closed with its mouth or entrance uncovered so that the dirt, lint and thread may fall into it. When the bag 35 is filled the door 15 is opened and the flap readily stripped from its adhesive engagement with the door surface to remove the bag and close it. The bag or container 35 then may be emptied and replaced or, if of the disposable type, thrown away with its dirt content, and replaced by a fresh empty one.

The casing 11 is provided with a hose receiving socket 38 into which a suction hose 39 may be removably mounted and retained in conventional manner. The inner end of the socket 38 opens into the central portion of the casing 11 and communicates with both chambers 12 and 13. Thus when suction is provided in the hose 39 the dirt collected in the chambers 12 and 13 will be withdrawn in conventional manner and delivered to a dirt receiving container (not shown) at a remote point. For convenience, in manipulating the nozzle arrangement 10, the portion 39 of the suction hose connected to the socket 38 and for a determined length thereof may be sufficiently rigid to serve as an opening wand or rod to permit the nozzle construction 10 to be rolled over the carpet or other surface to be cleaned.

Although the bags 35 are described as provided with flaps 36 for closing after they have been filled, as an alternative they may be provided with draw strings (not shown) in conventional manner to close their mouths on removal from the dirt compartments.

Likewise, although periodic foot operation of foot bar 31 has been described to operate the lint and thread removing pins 27 to clear them of collected lint, these pins are also arranged to be operated automatically for such purposes by an eccentric or cam C engageable with the cross bar 33. The cam C is rotated by a pulley 40 carried on the cam shaft 41 and this pulley in turn is coupled by a belt 42 to a drive pulley mounted on the shaft 26 of brush 24 so that as the brush rotates cam C periodically moves the pins 27 to stripping position and permits their return under action of springs 30. The foot bar 31, however, may be depressed at any time independently so that either automatic or manual stripping movement of pins 27 may be effected.

Operation of the device is very simple. The hose length 39 is mounted in the socket 38 and preferably suction is connected to the hose. Then as the sweeper nozzle 10 is rolled over the carpet, the tufts 25 of brush 24 sweep dirt into the compartments 12 and 13 whence it is

sucked through the nozzle and hose 39 to a dirt receiving container (not shown). Periodically during such use the rotation of cam C or depression of the foot bar 31 by the user causes retraction of the lint and thread removing pins 27 which have picked up thread and lint from the tufts. As such retraction occurs the pins 21 are rid of their collected lint or thread which is sucked out by the hose 39. Upon rotation of cam C and/or release of the foot bar 31 the pins 27 will return to their lint and thread removing positions as comb teeth between the tufts 25 of the brush. If suction cleaning is not desired the suction motor (not shown) is turned off. The rigid length 39 then serves as an operating stick. Then as the device 10 is rolled over the carpet the brush sweepings are delivered to the chambers 12 and 13 wherein they collect either directly or in the containers 35 if they are provided in such chambers. Here again periodically cam C or depression of the foot bar 31 rids the pins 27 of thread and lint and this material falls into chambers 12 and 13 or containers 35. When the chambers 12 and 13 or containers 35 are full of collected dirt, lint and thread, the latches of access doors 15 and 16 are released and the collected material is either directly removed from the chambers or removed with the containers 35 which latter either are emptied and returned or replaced.

The arrangement thus described provides either for suction cleaning accompanied by carpet sweeping with suction removal of the sweepings immediately, or else non-suction accompanied by carpet sweeping with periodic manual removal of accumulated sweepings when the compartments 12 and 13 or containers 35 become filled. The device 10 is in reality in the form of a nozzle attachment for suction cleaning devices and may be sold as an accessory when such suction cleaning equipment is sold, or else individually for use with devices of this kind already in use.

While specific embodiments of the invention have been described and shown, variations within the scope of the appended claims are possible and contemplated. There is no intention therefore of limitation to the exact details herein disclosed.

What is claimed is:

1. In a combination vacuum cleaner and carpet sweeper, a casing having symmetrically disposed dirt receiving chambers, a revolvable brush mounted in said casing so that its tufts protrude therefrom for carpet sweeping purposes, retractable pins carried by said casing and extending into said chambers between tufts of said brush to rid the latter of lint and threads during operation of the brush, spring means for biasing said pins to such extension, cam means driven by said brush for periodically retracting said pins and stripping lint and thread therefrom to fall into said chambers and means for removing collected dirt, lint and thread from said chambers.

2. The combination of claim 1 wherein foot controlled means supplements said cam means for retracting said pins.

3. In a combination vacuum cleaner and carpet sweeper, a casing having symmetrically disposed dirt receiving chambers, a revolvable brush mounted in said casing so that its tufts protrude therefrom for carpet sweeping purposes, retractable pins carried by said casing and extending via openings in said casing into said chambers between tufts of said brush to collect lint and threads from the brush during rotation thereof, spring means for biasing said pins to such position, bar members carrying said pins and engageable by said spring means, levers coupled to said bar members, a displaceable member engageable with said levers for swinging them, a foot operated member for moving said displaceable member, a cam member also engageable with said displaceable member, means for imparting rotary movement to said cam member on rotation of said brush to similarly move said displaceable member automatically, said cam member and said foot operated member being independently operable

and each serving independently to move said displaceable member and thereby to effect retractive movement of said pins outwardly of said casing to strip thread and lint collected thereon during their engagement with tufts of said brush, and means for removing dirt, lint and thread collected within said chambers. 5

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