

Aug. 22, 1950

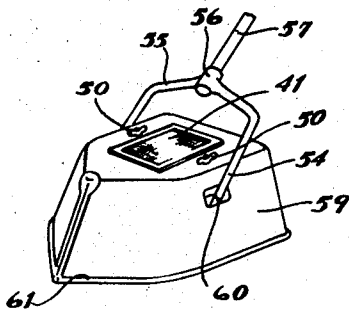
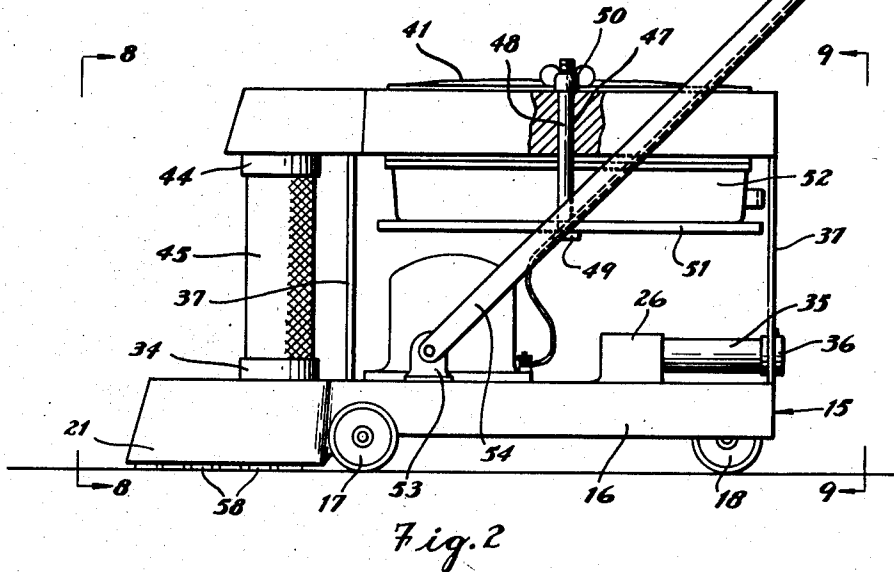
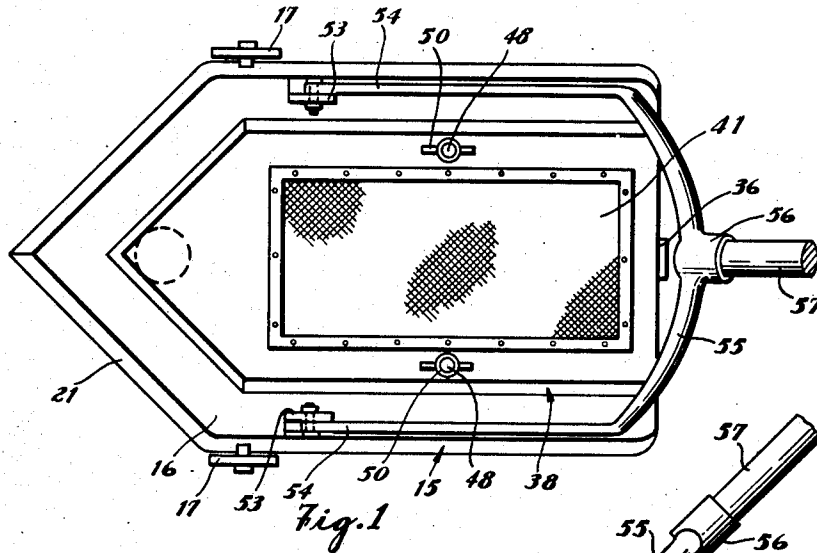
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2,519,741

VACUUM CLEANER WITH DUSTPAN

Filed Aug. 25, 1945

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

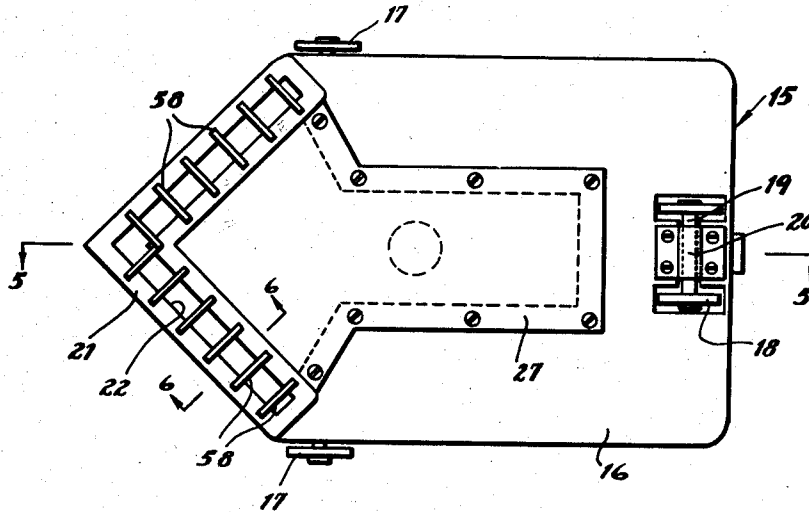


Fig. 4

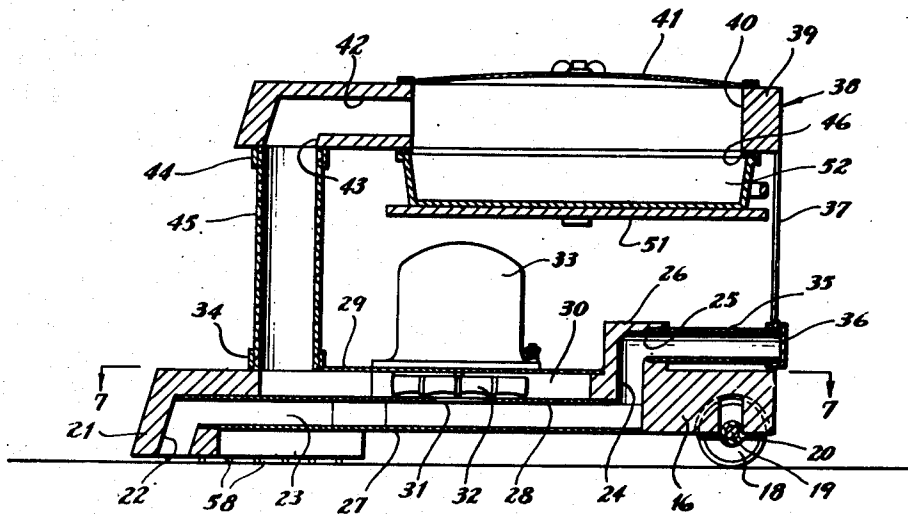


Fig. 5

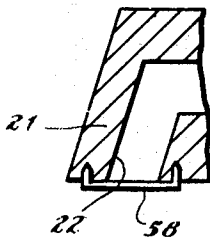


Fig. 6

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3 Sheets-Sheet 3

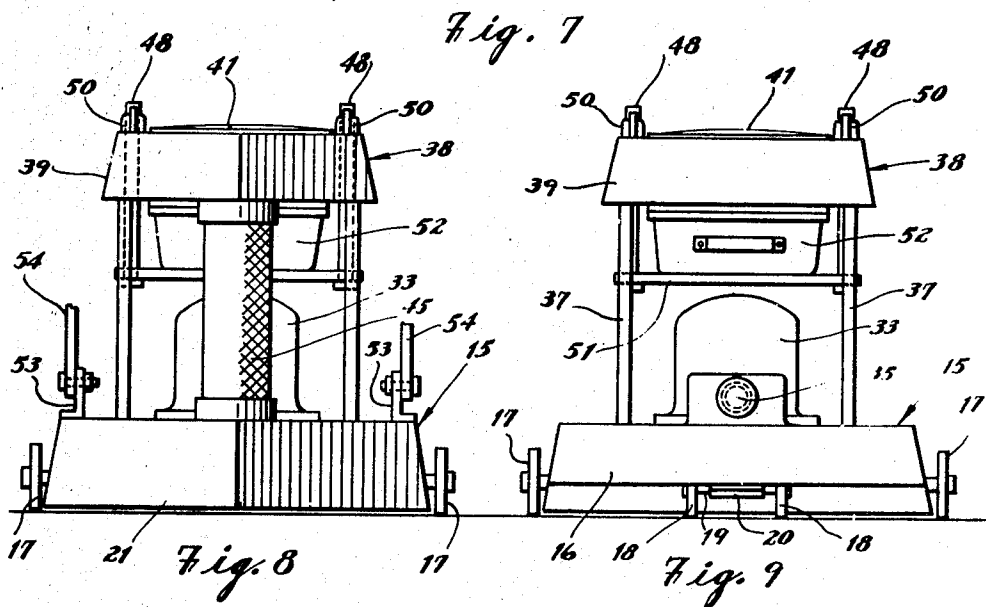
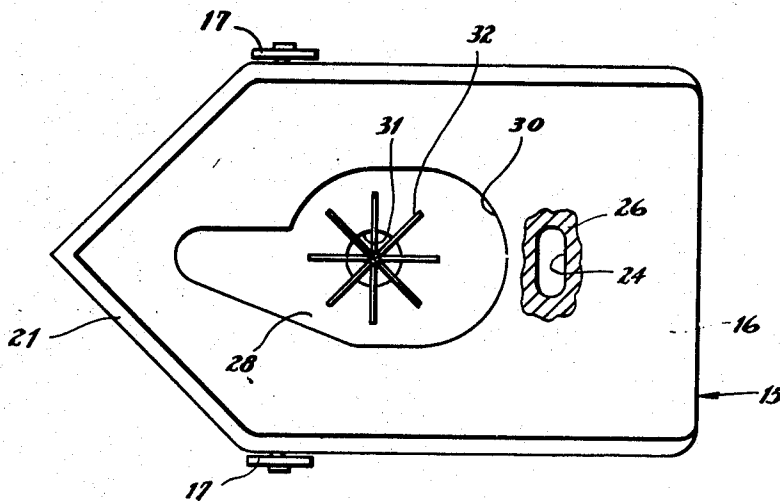


Fig. 10



Fig. 11

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UNITED STATES PATENT OFFICE

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VACUUM CLEANER WITH DUSTPAN

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2 Claims. (Cl. 15—352)

1

This invention relates to a vacuum cleaner of the so called "floor-type."

An important object of the invention is to efficiently remove dust and dirt from the floor and floor covering and deposit it in a receptacle which may be readily removed and emptied.

Among its features my invention embodies a compact vacuum cleaner in which the dust collector is carried by a carriage on which the vacuum cleaning head is supported, and having a removable dust pan which may be readily emptied and replaced with a minimum of effort.

Another feature includes a carriage provided with a pair of horizontal chambers forming spaced parallel passages, the bottom one of which communicates with the cleaner head, said passages communicating intermediate their ends through a horizontal partition wall, a motor driven suction fan mounted in the carriage and operable in one of the passages in axial alignment with the opening in the partition wall to establish a flow of air from one passage to the other, an expansion chamber, an air release conduit establishing communication between the passage containing the suction fan and the expansion chamber, and a dust pan forming the bottom of the expansion chamber in which the dirt and dust collected in the expansion chamber is deposited for subsequent removal.

Other features include a vertically movable platform suspended beneath the expansion chamber and upon which the dust pan is adapted to rest, sealing means to form a dust tight junction between the dust pan and the bottom wall of the expansion chamber, and an air release dust arresting filter closing the upper side of the expansion chamber.

Still other features include a V-shaped slot in the head through which the dust and dirt is extracted from the floor, carpet or rug, or similar surface upon which the device is to be used, and bars extending transversely of the longitudinal axes of the slots so that as the cleaner is advanced over a rug or carpet, a rubbing or scrubbing action will be created on the surface of the rug which loosens the dirt and dust to facilitate its removal to the dust pan.

Still other features include so spacing the bars along the length of the V-shaped slot that the entire surface of a rug or carpet over which the sweeper passes will be engaged and agitated.

In the drawings:

Figure 1 is a top plan view of a vacuum cleaner embodying features of this invention showing the external cover removed,

2

Figure 2 is a side view of Figure 1,

Figure 3 is a perspective view of the device showing the cover in place,

Figure 4 is a bottom plan view of the vacuum cleaner illustrated in Figure 1,

Figure 5 is a longitudinal sectional view taken substantially on the line 5—5 of Figure 4,

Figure 6 is a transverse sectional view taken substantially on the line 6—6 of Figure 4,

Figure 7 is a horizontal sectional view taken substantially on the line 7—7 of Figure 5,

Figure 8 is a front view in elevation of Figure 1,

Figure 9 is a rear view in elevation of Figure 1,

Figure 10 is a plan view of a closure for the V-shaped slot adapted to be used when the usual cleaner attachments are employed, and

Figure 11 is an edge view of Figure 10.

Referring to the drawings in detail a carriage designated generally at 15 comprising a body 16 is provided on opposite sides adjacent its forward end with supporting rollers 17 which cooperate with similar supporting rollers 18 which are mounted at opposite ends of a shaft 19 which is mounted for rotation in a horizontally extending supporting bracket 20 adjacent the rear end of the body 16. The rollers 17 and 18 are adapted to support the body 16 in spaced relation to the floor or rug over which the cleaner is being operated and formed at the forward end of the body 16 is a V-shaped depending flange 21 having formed therein a V-shaped slot 22 which opens through the bottom in juxtaposition to the floor or rug to be cleaned. Formed in the body 16 immediately to the rear of the flange 21 is a chamber or passage 23 the forward end of which opens into the upper end of the slot 22, while the rear end communicates with a vertical passage 24 which in turn communicates with a horizontal passage 25 formed in an upstanding socket 26 which projects above the general level of the top of the body 16. The bottom of the opening forming the passage 23 is closed by a cover or bottom wall 27 and extending horizontally through the opening is a partition wall 28 which cooperates with a top wall 29 in defining a fan chamber or upper passage 30. Formed substantially centrally in the partition wall 28 is an opening 31 and carried by the wall 29 with its axial shaft in vertical alignment with the axis of the opening 31 is a motor driven fan 32, the motor 33 of which is supported on the upper side of the cover 29. Formed at the extreme forward end of the cover is an opening which is surrounded by a collar 34 the purpose of which will more fully

3

hereinafter appear. Fitted in the passage 25 and extending to a point adjacent the rear end of the body 16 is a pipe 35 which under normal circumstances is closed by a suitable cap 36 which is adapted to be removed so that the usual hose and vacuum cleaner attachments may be used when desired.

Supported on suitable brackets 37 extending upwardly from the carriage 15 is a super-structure designated generally at 38 which comprises a body 39 having formed therein an enlarged substantially rectangular opening 40, the upper side of which is closed by an air release dust arresting filter 41. Extending forwardly through the body 39 and communicating at its rear end with the opening 40 is a passage 42 the forward end of which communicates with an opening 43 which opens downwardly through the bottom of the body 39 adjacent its forward end and is surrounded by a suitable attaching collar 44 arranged in axial alignment with the collar 34 previously described. Fitted in the collars 34 and 44 and establishing communication between the passage and the opening 43 is an air release tube 45 preferably formed of a suitable woven fabric which will permit the escape of air but arrest dust or dirt. Attached to the bottom side of the body 39 immediately adjacent the edge of the opening 40 is a gasket 46 the purpose of which will hereinafter appear.

Formed in the body 39 on opposite sides of the opening 40 are vertically extending openings 47 for the reception of bolts 48 the lower ends of which are provided with heads 49 while the upper ends are threaded to receive wing nuts 50. Supported by the head 49 on the bolts 48 is an elevator platform 51 upon which is removably supported a relatively flat shallow pan 52, the upper edge of which is adapted to engage the gasket 46 when the device is in use to establish an air-tight junction at the upper edge of the pan 52 and the body 39.

Secured to the body 16 adjacent opposite sides of the upper surface thereof are ears 53 to which are pivoted the ends of a pair of lever arms 54, the opposite ends of which are joined by a yoke 55 carrying a socket 56 in which a control or pushing handle 57 is secured.

Extending transversely across the lower open end of the V-shaped slot 22, and perpendicular to the longitudinal axis of each leg of the slot are spaced bars 58 which form agitators to loosen the dust and dirt from a rug or carpet as the cleaner is moved over the upper surface thereof. It is to be noted that the bars 58 are so spaced that as the cleaner is moved in the direction of its longitudinal axis the bars 58 will engage the entire width of the surface being traversed by the V-shaped slot 22. It will thus be seen that as the rug or carpet is lifted under the influence of the vacuum created in the slot 22, it will contact the bars 58 and be agitated thereby, thus contributing to the dirt and dust loosening qualities of the device.

A suitable jacket 59 having openings 60 to accommodate the lever arms 54 may be arranged to enclose the carriage 15 and the superstructure 38 as illustrated in Figure 3 and this cover preferably carries a rubber bumper 61 adjacent its lower edge to protect furniture and the like from injury through contact with the cleaner.

In order to obtain the full effect of the vacuum created by the fan 32 when attachments are to be used in connection with the device I provide a block 62 (Figure 10) of V-shaped con-

4

figuration and of a size to cover the slot 22 in order to avoid the introduction of air into the system through the slot when the attachments are being used.

In operation, it will be apparent that when the motor 33 is driven the fan 32 will create a draft of air from the slot 22 through the passage 23 defined between the walls 27 and 28 by reason of the axial alignment of the fan 32 with the opening 31. The air entering the opening 22 will carry with it dust and dirt from the floor or carpet and the dust laden air will be delivered through the passage 30, air release tube 45 into the expansion chamber formed in the superstructure 38 between the dust pan 52 and the air release filter 41. Due to the fact that the capacity of the expansion chamber is so much greater than that of the air passages leading thereto, it will be obvious that the velocity of air flowing through the filter will be greatly reduced so that dust and dirt carried by the air entering the expansion chamber will be deposited in the dust pan 52. In order to empty the dust pan the wing nuts 50 are loosened so as to permit the elevator platform 51 to be lowered whereupon the dust pan may be readily withdrawn from its position closing the bottom of the opening 40 and the contents disposed of. Upon replacing the dust pan and tightening the wing nuts 50 the elevator 51 will move the upper edge of the dust pan in contact with the gasket 46 thus effecting an air-tight seal at the junction of the dust pan with the body 39.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination, and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

What I claim is:

1. In a vacuum cleaner of the type employed for household use, a roller supported carriage having a slot opening through its bottom adjacent its forward end, said carriage having a relatively large extending chamber intermediate its ends, a horizontal bottom wall in the carriage closing the bottom end of the chamber, a horizontal partition wall intermediate the upper and lower ends of the chamber separating the chamber into upper and lower passages with the lowermost of which the horizontally slot communicates, said partition wall having an opening intermediate its ends which establishes communication between the upper and lower passages, a top wall closing the upper end of the chamber, a fan mounted in the upper passage to rotate about an axis which aligns axially with the opening in the partition wall, means carried by the carriage for rotating said fan to establish a flow of air upwardly through the opening in the partition wall, the top wall having an air discharge opening adjacent its forward end, an expansion chamber mounted on the carriage directly above the top thereof, an air pervious filter closing the upper side of the expansion chamber, and a foraminous conduit pervious to air and impervious to dust establishing communication between the air discharge opening and the expansion chamber.

2. In a vacuum cleaner of the type employed for household use, a roller supported carriage having a slot opening through its bottom adjacent its forward end, said carriage having a relatively large horizontally extending chamber intermediate its ends, a horizontal bottom wall in the car-

riage closing the bottom end of the chamber, a horizontal partition wall intermediate the upper and lower ends of the chamber separating the chamber into upper and lower passages with the lowermost of which the slot communicates, said partition wall having an opening intermediate its ends which establishes communication between the upper and lower passages, a top wall closing the upper end of the chamber, a fan mounted in the upper passage to rotate about an axis which aligns axially with the opening in the partition wall, means carried by the carriage for rotating said fan to establish a flow of air upwardly through the opening in the partition wall, the top wall having an air discharge opening adjacent its forward end, an expansion chamber mounted on the carriage directly above the top thereof, a foraminous conduit pervious to air and impervious to dust establishing communication between the air discharge opening and the expansion chamber, a dust pan mounted under the expansion chamber and forming the bottom there-

of, and an air pervious filter closing the upper side of the expansion chamber.

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