

- [54] VACUUM CLEANER IMPLEMENT TRAY
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- [73] Assignee: **Whirlpool Corporation**, Benton Harbor, Mich.
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- [52] U.S. Cl. 15/323
- [51] Int. Cl. A47I 5/00
- [58] Field of Search 15/323, 257; 312/140.4

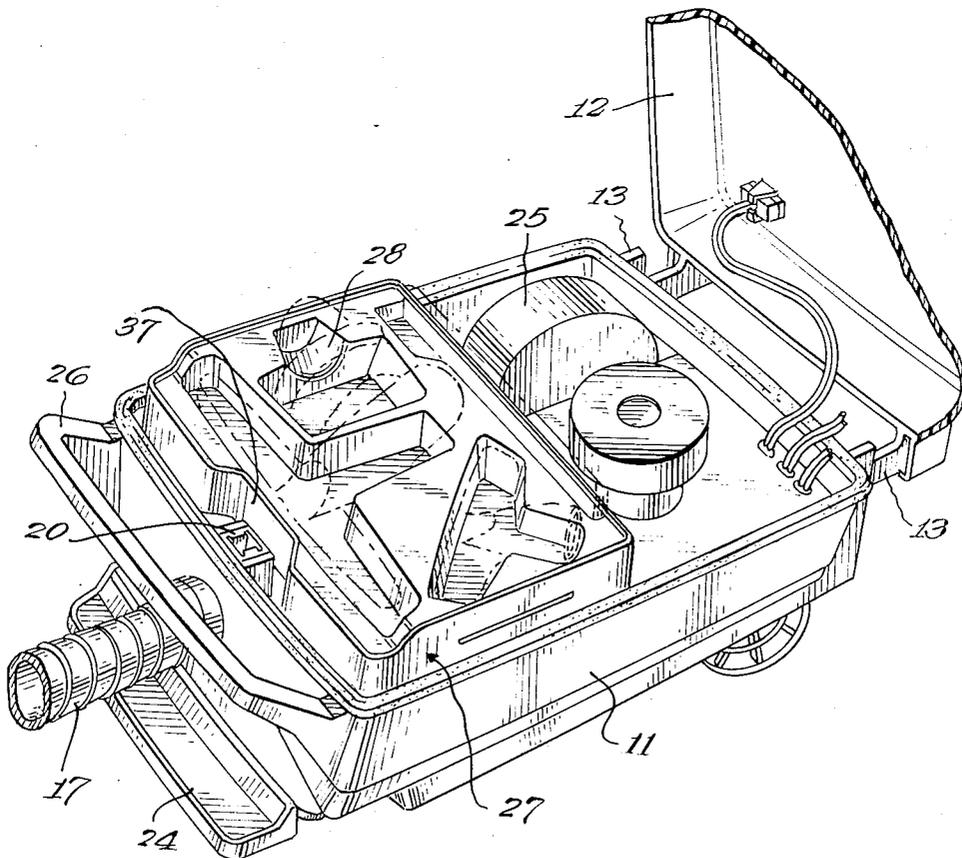
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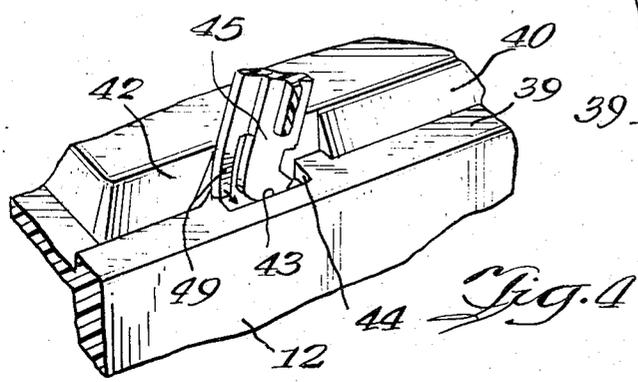
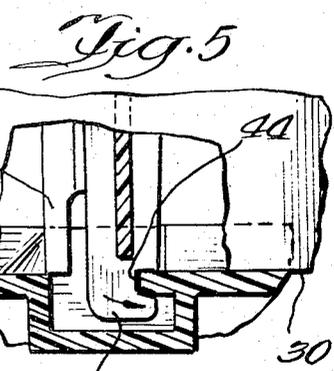
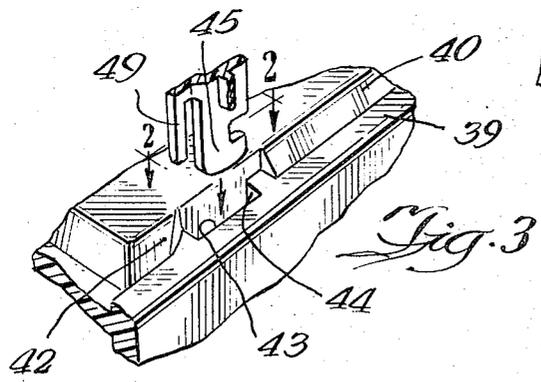
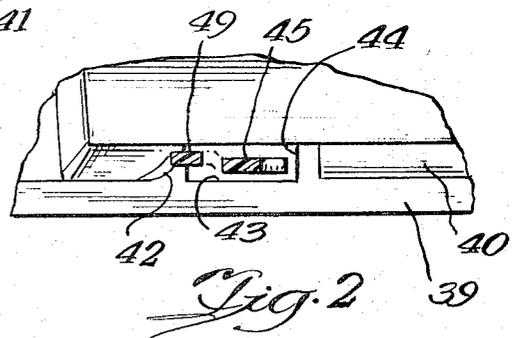
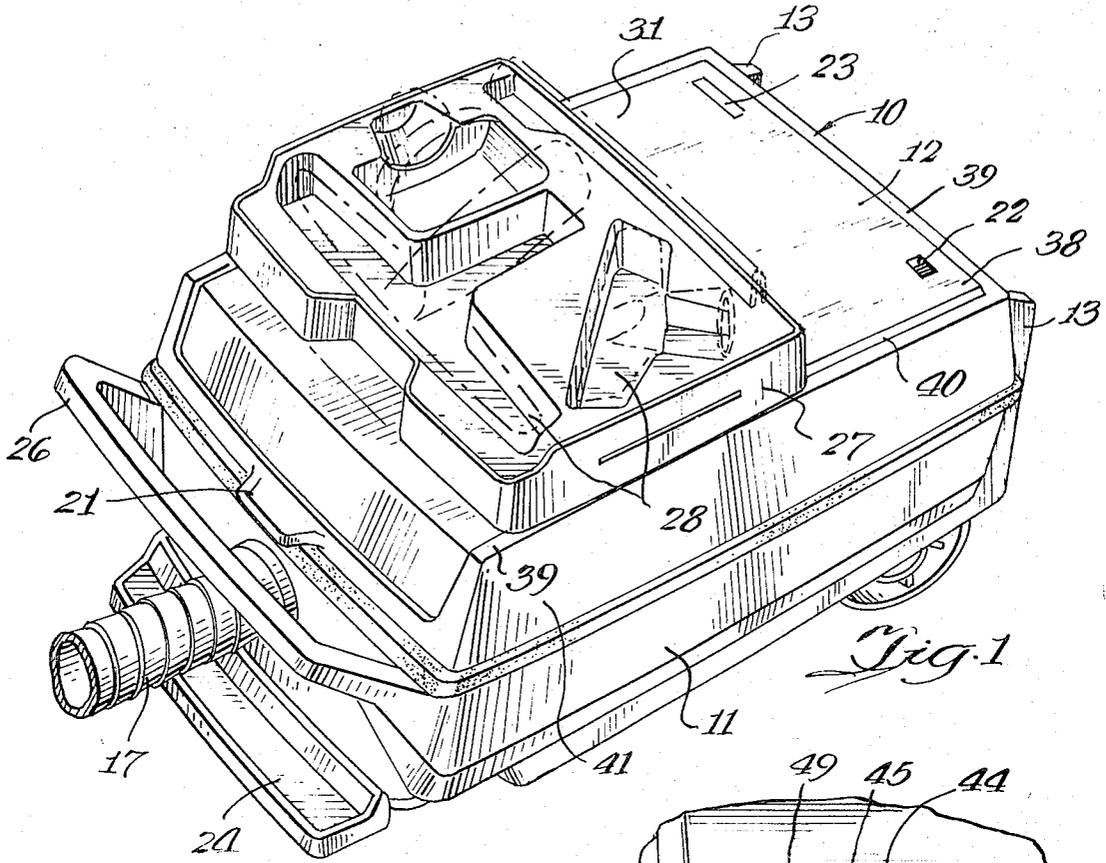
[57] **ABSTRACT**

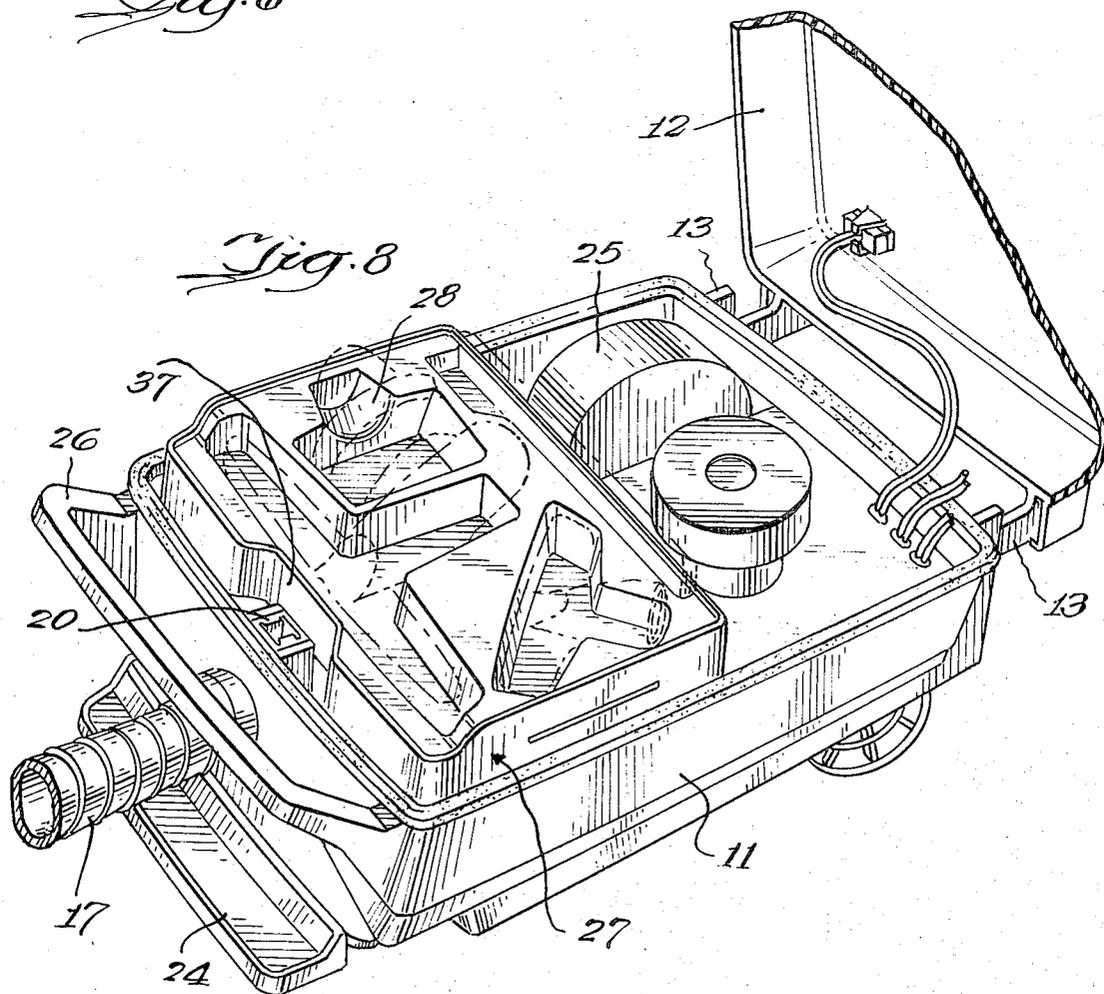
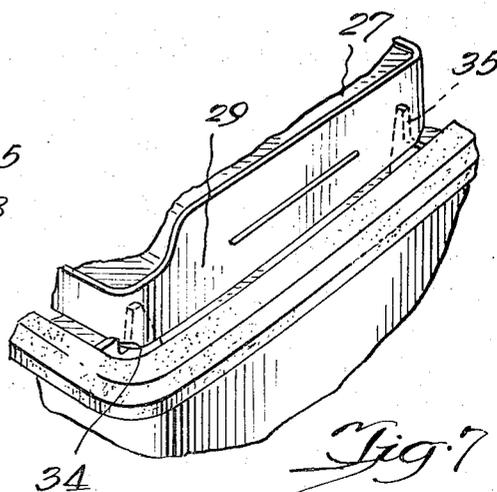
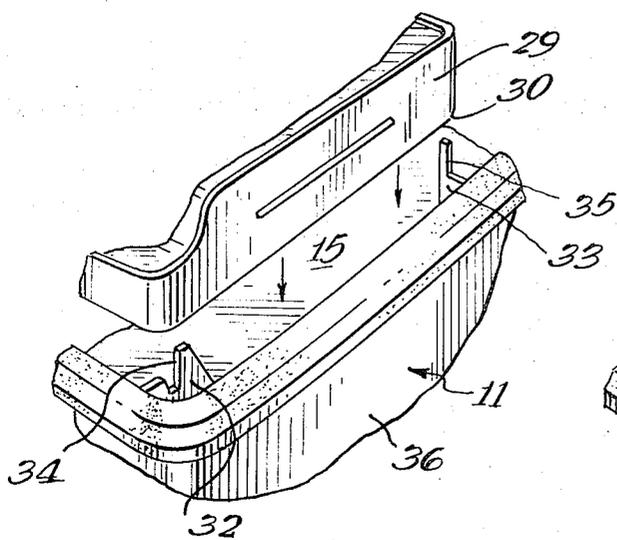
A vacuum cleaner having a canister including a base and a hood cooperatively defining an internal storage space in which is removably received a tray for holding implements, such as tools adapted for use with the vacuum cleaner. The tray is supported above the filter bag space and is readily removable therefrom when the hood is moved to an open position. The hood and tray are provided with cooperating releasable locking means for locking the tray in a closed position to the top surface of the hood, in which position the implements are accessible for use by the operator. The tray includes a depending wall which rests on the hood surface in the implement-exposing arrangement and which is adapted to cooperate with suitable supports for retaining the tray above the filter bag space in the storage position.

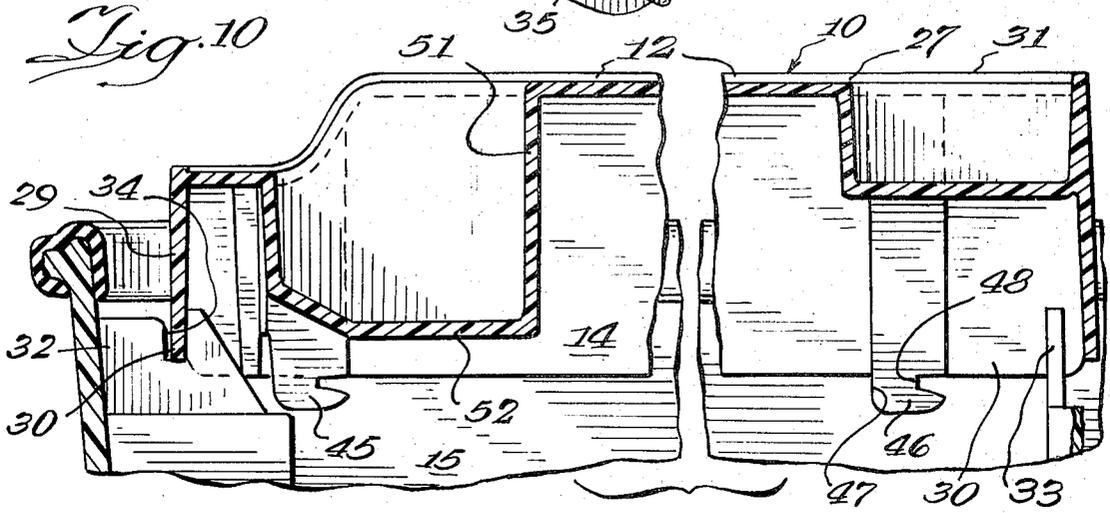
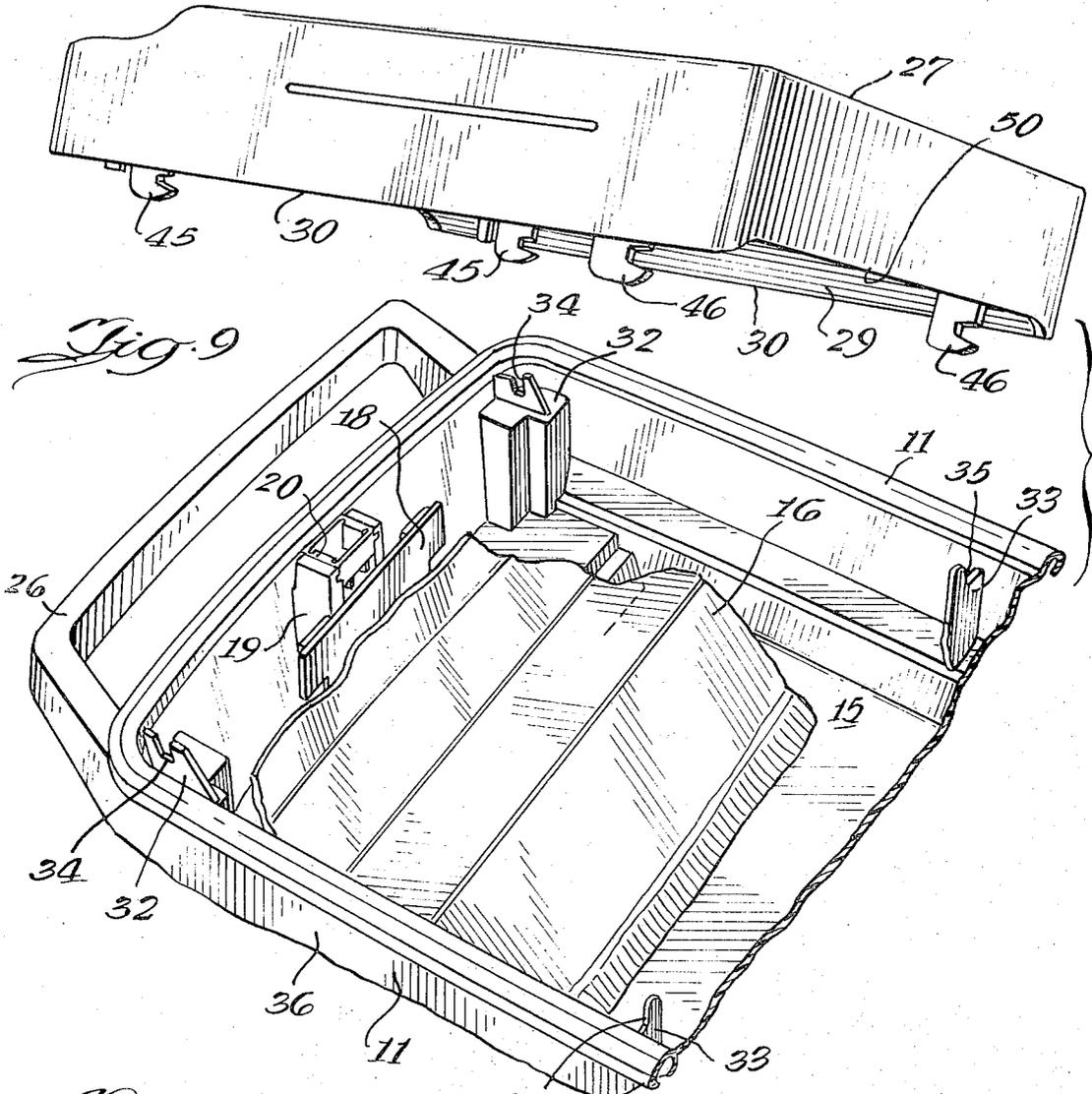
- [56] **References Cited**
- UNITED STATES PATENTS**
- 3,253,294 5/1966 Waters 15/323
- 3,296,648 1/1967 Schaefer 15/323

17 Claims, 10 Drawing Figures









VACUUM CLEANER IMPLEMENT TRAY

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to vacuum cleaners and in particular to implement-holding trays for use in canister type vacuum cleaners.

2. Description of the Prior Art

In the conventional canister type vacuum cleaner, a hood, or cover, is movably carried on a base to define a filter bag space and to house the suction motor-fan. It is further desirable in such canister vacuum cleaners to provide means for storing implements, such as cleaner tools including dirt pickup heads and nozzles, for interchangeable use with the wand means of the vacuum cleaner. One example of a vacuum cleaner provided with such a tool holder is that shown in R. S. Waters U.S. Pat. No. 3,284,834. In R. S. Waters U.S. Pat. No. 3,253,294, a door is provided on the canister housing to permit selective insertion and removal of the tools relative to a storage space within the housing. In O. L. Allen U.S. Pat. No. 2,747,214, a removable tool holder for use with a vacuum cleaner is disclosed as including a plate member provided with holding members. In H. W. Schaefer U.S. Pat. No. 3,480,987, a canister vacuum cleaner is disclosed wherein the hose is selectively stored within the housing.

Devices are known for snapping together plastic elements, such as cases, and similar holders. Illustrative examples of such snap-type holding means are shown in U.S. Pat. Nos.:

| | | |
|-----------|-------------|--|
| 2,833,522 | Michaels | Railing Mounting and Fastener Therefor |
| 3,285,637 | Taussig | Snap Lock Device for Plastic Parts |
| 3,361,483 | Main et al. | Ornamented Wheel Structure |
| 3,586,158 | Muscatiello | Hingless Razor Case |

SUMMARY OF THE INVENTION

The present invention comprehends an improved vacuum cleaner construction wherein an implement holding tray is selectively carried in a storage position within the canister, or in an exposed position on the top of the canister hood to provide facilitated accessibility to the implements carried on the tray for facilitated operation of the vacuum cleaner with the different implements.

The canister defines an internal filter bag holding space and means for supporting the tray above the filter bag space for ready removal therefrom and installation of the tray on the upper surface of the hood. The supporting means in the canister permits free upward movement of the tray therefrom while precluding lateral movement of the tray to maintain the tray in overlying relationship to the bag holding space.

The tray and hood define cooperating male and female connector means removably locking the tray to the upper surface of the hood in the implement-exposing position. The locking means includes a cooperating hook and catch structure and a resilient finger adapted to releasably maintain the hook and catch in an interlocked arrangement while yet permitting release thereof by forceful separating movement, by the operator, of the tray relative to the hood.

The tray defines a peripheral depending wall having a lower edge adapted to rest on the top surface of the hood in the implement-exposing position. The wall edge further cooperates with the support means in the

canister to retain the tray against undesirable lateral movement in the storage position. The tray may be provided with means defining a plurality of compartments for storing the different implements with the compartments extending downwardly to substantially the level of the peripheral wall bottom edge.

The connector means on the tray is disposed laterally inwardly of the peripheral wall and laterally outwardly of the compartment means. When the tray is mounted to the top surface of the hood, the connector means are effectively hidden by the peripheral wall for improved aesthetic effect. The tray may be provided with a suitable lateral recess to pass the hood latching means provided for maintaining the hood releasably secured to the base of the canister.

The tray is supported on the base to project upwardly from the plane of the top edge thereof into the downwardly opening concave hood for optimum utilization of the space within the canister. The tray effectively overlies substantially the entire bag holding space. The implement holding tray of the present invention is extremely simple and economical of construction while yet providing the highly desirable features discussed above.

BRIEF DESCRIPTION OF THE DRAWING

Other features and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawing wherein:

FIG. 1 is a perspective view of a vacuum cleaner provided with an implement holding tray embodying the invention;

FIG. 2 is a horizontal section taken substantially along the line 2—2 of FIG. 3;

FIG. 3 is a fragmentary perspective view of the means for securing the tray to the top of the hood;

FIG. 4 is a fragmentary perspective view illustrating the method of connecting the tray to the hood;

FIG. 5 is a fragmentary side elevation with portions broken away illustrating the locking of the tray to the hood;

FIG. 6 is a fragmentary perspective view of one side of the canister base and tray illustrating the movement of the tray into the storage position on the base;

FIG. 7 is a fragmentary perspective view illustrating the arrangement of the tray in storage position on the base;

FIG. 8 is a fragmentary perspective view of the vacuum cleaner with the tray in the storage position on the base;

FIG. 9 is an exploded view looking downwardly into the filter bag holding space illustrating the relationship of the tray to the support means on the base; and

FIG. 10 is a fragmentary longitudinal section through the vacuum cleaner with the tray in the storage position in the canister and with the hood in the closed position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the exemplary embodiment of the invention as shown in the drawing, a vacuum cleaner generally designated 10 is shown to comprise a canister vacuum cleaner having a base 11 and a hood 12, the hood being hingedly mounted to the base by hinge means 13 for selective disposition in a closed position, as shown in FIG. 1, and in an open position, as shown in FIG. 8. The base and hood cooperatively define an upper storage space

14 and a lower bag holding space 15. A conventional filter bag 16 may be disposed in space 15 for receiving dirt laden air delivered through a supply hose 17 connected to the bag by means of an adapter 18 mounted on a connector 19 on the base 11. The hood 12 is releasably secured to base 11 in the closed position of FIG. 1 by a suitable catch means 20 on the base cooperating with a latching portion (not shown) of the hood. The hood may be provided with a suitable manipulating handle 21 for swinging the hood from the closed position of FIG. 1 to the open position of FIG. 8 and reversely, as desired.

The vacuum cleaner may be provided with an "ON-OFF" switch 22 and a performance indicator lamp structure 23. Further, a foot pedal 24 may be provided for controlling the operation of the vacuum cleaner motor-fan unit 25 by the user's foot. A handle 26 may be provided on base 11 for carrying the entire canister 10 when desired.

A tray 27 is provided for carrying a plurality of implements, such as cleaning tools, 28 in a storage position within the canister, as shown in FIGS. 8 and 10 or an exposed position, as shown in FIG. 1, wherein the implements are accessible for use by the operator in the normal operation of the vacuum cleaner. As best seen in FIG. 9, tray 27 includes a peripheral depending wall 29 defining a substantially co-planar lower edges 30 adapted to rest on the upper surface 31 of the hood in the implement-exposing position. The wall 29 further cooperates with support elements 32 in the front of the base 11 and support elements 33 at the mid-portion of the base 11, as illustrated in FIG. 9, to carry the tray in overlying relationship to the bag holding space 15 for free movement upwardly therefrom, such as in transferring the tray from the storage position of FIG. 8 to the implement-exposing position of FIG. 1. The support elements 32 and 33 define a plurality of upwardly opening slots 34 and 35, respectively, for precluding lateral movement of the tray in the storage position by engagement thereof with the depending wall edge 30, as illustrated in FIG. 10. The support elements 32 and 33 may be formed integrally with the side wall 36 of the base. As best seen in FIG. 8, the tray side wall 29 defines, at the front center of the tray, a recess 37 exposing the hood catch 20 for engagement by the hood.

As shown in FIGS. 8 and 10, the tray 27 extends substantially fully over the bag holding space 15 and is substantially congruent therewith.

Hood top surface 31 is defined by a raised portion 38 of the top wall 39 of the hood having a peripheral side surface 40 spaced inwardly from the side wall 41 of the concave, downwardly opening hood. At its front end, the side surface 40 defines a cam surface 42 forwardly adjacent a slot 43 in the top 39 which defines at its rear end a forwardly facing latch shoulder 44. The tray is provided with a plurality, herein four, depending hooks including a pair of front hooks 45 and a pair of rear hooks 46 which, as shown in FIG. 9, extend to downwardly of the plane of the tray wall edge 30. The hooks open rearwardly to have hooked engagement with the locking shoulder 44 of the hood top wall when the hooks are inserted through the slots 43 and move rearwardly with the tray edge 30 resting on the hood top wall 39, as shown in FIG. 5. The top wall 39 further includes a pair of rear slots 47 defining forwardly extending locking shoulders 48 cooperating with the rear

hooks 46 to lock the rear portion of the tray to the hood top wall 39.

Means are provided for releasably retaining the hooks in the interlocking association with the hood top wall, as illustrated in FIGS. 2, 5 and 10. More specifically, the retaining means includes a spring finger 49 associated with each of front hooks 45, which is disposed, as shown in FIG. 2, normally laterally slightly inwardly of the hook 45 and spaced forwardly therefrom. The finger 49 is adapted to slide against the cam surface 42 as the hook 45 is brought into the slot 43 in a forward position and thence moved rearwardly to engage the hook with the latch shoulder 44. As the finger 49 engages the outermost forward position of the cam surface 42, it is deflected to a maximum amount and as the tray is moved rearwardly, the finger slides along the surface 42 to a relaxed position at the rearward end of the cam surface as shown in FIG. 2. Thus, the spring fingers 49 serve to releasably retain the hooks 45 in engagement with shoulders 44 and the rear hooks 46 in engagement with the shoulders 48 as the result of the resistance of the fingers to outward deflection required to permit the hooks 45 and 46 to move forwardly in the respective slots 43 and 47. However, when it is desired to remove the tray from the implement exposition position of FIG. 1, a forceful urging of the tray forwardly suitable to deflect the fingers outwardly along the cam surface 42 permits the forward separation of the hooks from the locking shoulders 44 and 48 whereupon the tray may be raised vertically from the hood top wall to complete the separation thereof. As shown in FIG. 3, the spring fingers 49 may be formed integrally with the hooks 45 and more specifically, may comprise an integral molded portion of the tray which may comprise a molded synthetic plastic structure.

As shown in FIG. 9, the rear edge 50 of the tray wall 29 may be raised somewhat above the plane of the edge 30 to rest on the raised surface 31 of the hood top wall. Thus, the tray is secured to the hood in a firm, effectively positively maintained association while yet the tray may be readily removed from the hood when desired by a forceful forward urging thereof as discussed above.

The tray includes a plurality of wall portions defining a plurality of compartments 51 adapted to conform to and receive the different attachment implements and tools of the vacuum cleaner as illustrated in FIGS. 1 and 8. The compartment forming walls 52 may extend, as shown in FIG. 10, downwardly to approximately the level of the bottom edges 30 and 50 of the tray side walls so that the implements are effectively recessed within the tray. The base supports 32 and 33 thusly dispose the tray in the storage space 14 within the hood portion of the canister above the filter bag holding space 15 when the hood is in the closed position, as shown in FIG. 10. Thus, the storage space is utilized with optimum efficiency to permit storage of a large number of implements as desired. By arranging the tray to project upwardly from the base 11, facilitated removal of implements from the tray without removing the tray from the base, such as in the arrangement of FIG. 8, may be effected. Because of the simple resting engagement of the tray with the supports 32 and 33, however, the tray may be readily removed from the storage position when desired for secured mounting thereof on the hood, as shown in FIG. 1.

As each of the tray and securing means may be formed economically by the molding thereof from relatively low cost synthetic plastic, the implement holding means of the present invention is extremely simple and economical of construction while yet providing the highly desirable features discussed above.

The foregoing disclosure of specific embodiments is illustrative of the broad inventive concepts comprehended by the invention.

We claim:

1. In a vacuum cleaner having a canister including a base and a hood cooperatively defining a storage space, means for selectively storing within said storage space a plurality of implements adapted for use with the vacuum cleaner or supporting the implements in an accessible position on said hood exteriorly of the canister, said implement storing and supporting means comprising:

a tray defining an upper implement carrying surface; a peripheral, depending wall on said tray defining a substantially planar bottom edge;

means on said base defining upwardly opening slots for receiving and supporting spaced portions of said tray wall edge; and

means defining cooperating male and female connectors on said tray and hood for releasably locking said tray on the top of said hood with said wall edge supported on the top of the hood.

2. The vacuum cleaner storing and supporting means of claim 1 wherein said slot means on the base defines a plurality of spaced perpendicularly related shoulders for engaging the side of said tray peripheral wall adjacent said edge to retain the tray substantially against lateral displacement in said storage space.

3. The vacuum cleaner storing and supporting means of claim 1 wherein said hood comprises a downwardly opening concave member and said supporting means on said base supports said tray to extend upwardly from said base into the concave hood space.

4. The vacuum cleaner storing and supporting means of claim 1 wherein said connector means on said tray are disposed inwardly of said peripheral wall to be hidden from view when said tray is carried on said hood with said wall edge supported on said top of the hood.

5. The vacuum cleaner storing and supporting means of claim 1 wherein said slot means on said base are formed integrally therewith.

6. The vacuum cleaner storing and supporting means of claim 1 wherein said male and female connector means are formed integrally with said tray and hood.

7. The vacuum cleaner storing and supporting means of claim 1 wherein said connector means comprises a male connector means defined by a hook, a female connector means defined by a slot removably receiving said hook and having a latch shoulder engaging said hook to retain the tray on the hood, and locking means for holding said hook in retaining association with said latch shoulder including a spring finger on one of said tray or cover elements, and a cam surface on the other of said elements disposed to guide the finger to a locking position wherein removal of the hook from the female connector means requires a camming of the finger against the resiliency thereof whereby said finger cooperates with said cam surface to releasably maintain the hook engaged with said latch shoulder.

8. The vacuum cleaner storing and supporting means of claim 1 wherein said connector means comprises a

male connector means defined by a hook, a female connector means defined by a slot removably receiving said hook and having a latch shoulder engaging said hook to retain the tray on the hook, and means for releasably maintaining the hook engaged with said latch shoulder.

9. The vacuum cleaner storing and supporting means of claim 1 wherein said connector means comprises four sets of cooperating male and female means, each set comprising means defined by a hook, a female connector means defined by a slot removably receiving said hook and having a latch shoulder engaging said hook to retain the tray on the hood, and means adjacent two of said sets for releasably maintaining the hook engaged with said latch shoulder.

10. The vacuum cleaner storing and supporting means of claim 1 wherein said tray upper surface defines a plurality of upwardly opening implement receiving compartments extending from adjacent the plane of said peripheral wall bottom edge.

11. The vacuum cleaner storing and supporting means of claim 1 wherein said tray upper surface defines a plurality of upwardly opening implement receiving compartments extending from adjacent the plane of said peripheral wall bottom edge and said connector means on the tray are disposed laterally inwardly of the peripheral wall and laterally outwardly of said compartments.

12. In a vacuum cleaner having a canister including a base and a hood cooperatively defining a storage space, means for selectively storing within said storage space a plurality of implements adapted for use with the vacuum cleaner or supporting the implements in an accessible position on said hood exteriorly of the canister, said implement storing and supporting means comprising:

a tray defining an upper implement carrying surface; a peripheral, depending wall on said tray defining a substantially planar bottom edge;

means on said base for receiving and supporting spaced portions of said tray wall edge; and

means defining cooperating male and female connectors on said tray and hood for releasably locking said tray on the top of said hood with said wall edge supported on the top of the hood, said base and hood further cooperatively defining a filter bag space subjacent said storage space for removably receiving a filter bag for receiving and holding dirt from dirt laden air delivered thereto, said base supporting means being disposed laterally of and substantially at the top of said filter bag space.

13. The vacuum cleaner storing and supporting means of claim 12 wherein said supporting means are disposed at four corners of said filter bag space.

14. The vacuum cleaner storing and supporting means of claim 12 wherein said tray fully overlies and is substantially congruent with said filter bag space.

15. The vacuum cleaner storing and supporting means of claim 12 wherein said base is provided with a catch for releasably engaging a portion of said hood for holding said hood in closed position on said base and said tray includes a laterally outwardly opening recess for exposing said catch for engagement by said hood holding portion.

16. The vacuum cleaner storing and supporting means of claim 12 wherein said base includes side walls defining an upper edge, said filter bag space being dis-

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posed substantially fully below said base edges, and said tray being supported by said supporting means to extend upwardly from the level of said edge into said storage space within the hood.

17. The vacuum cleaner storing and supporting means of claim 12 wherein said tray supporting means

on the base is arranged to permit free movement of the tray upwardly therefrom and effectively precludes lateral movement of the tray thereon, for facilitating access to the filter bag space such as for replacing the filter bag.

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