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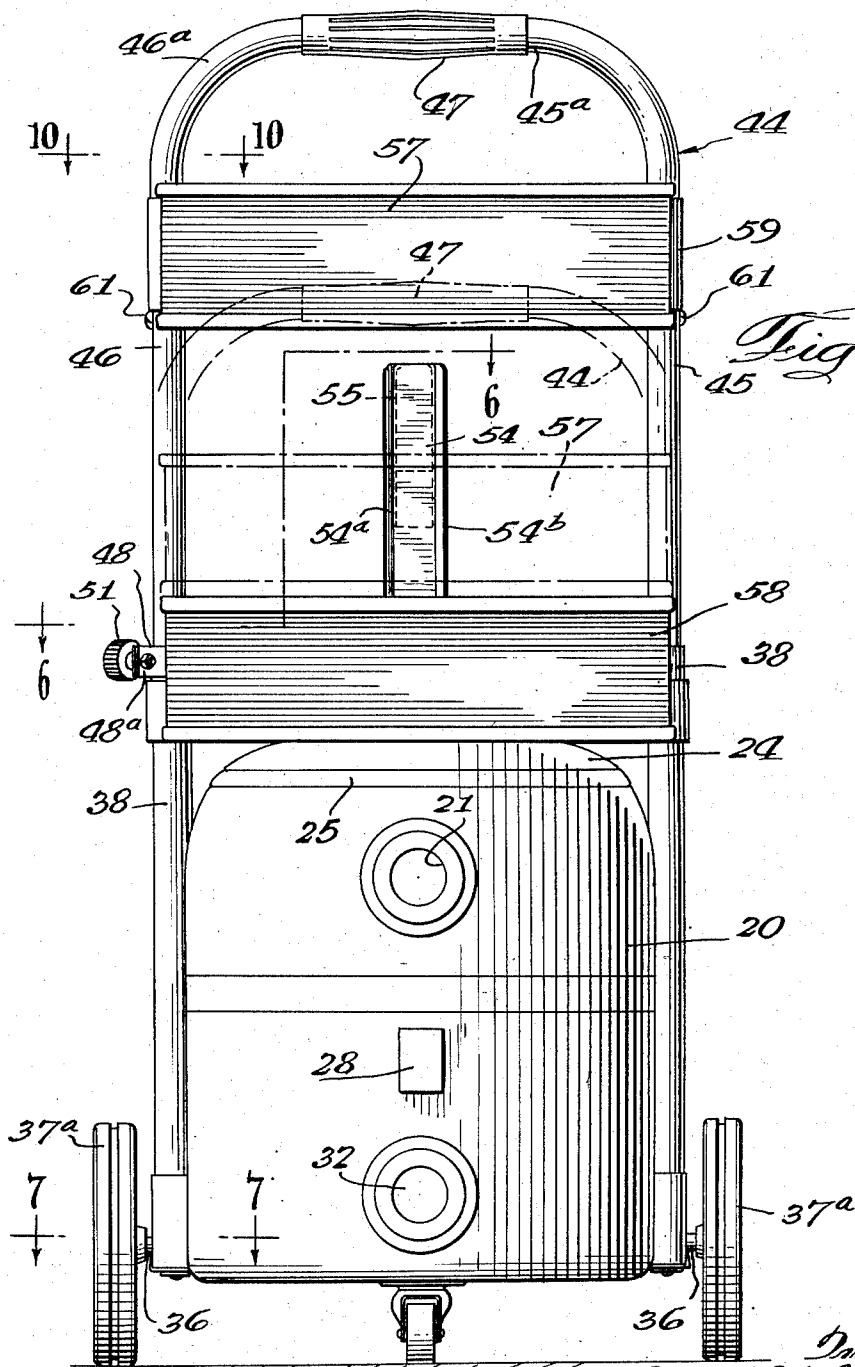
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MOVABLE VACUUM CLEANER STRUCTURE

Filed July 27, 1954

4 Sheets-Sheet 1



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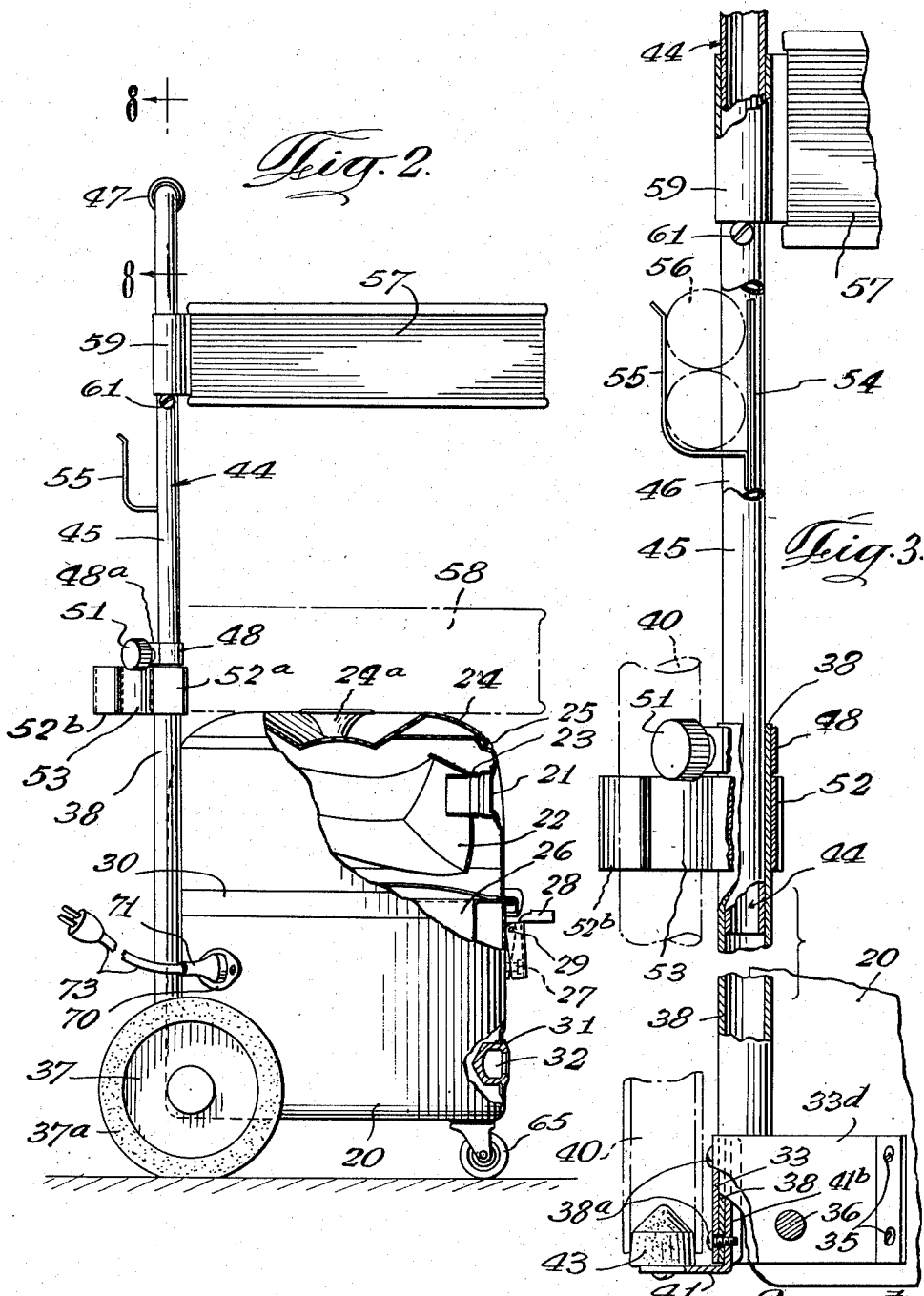
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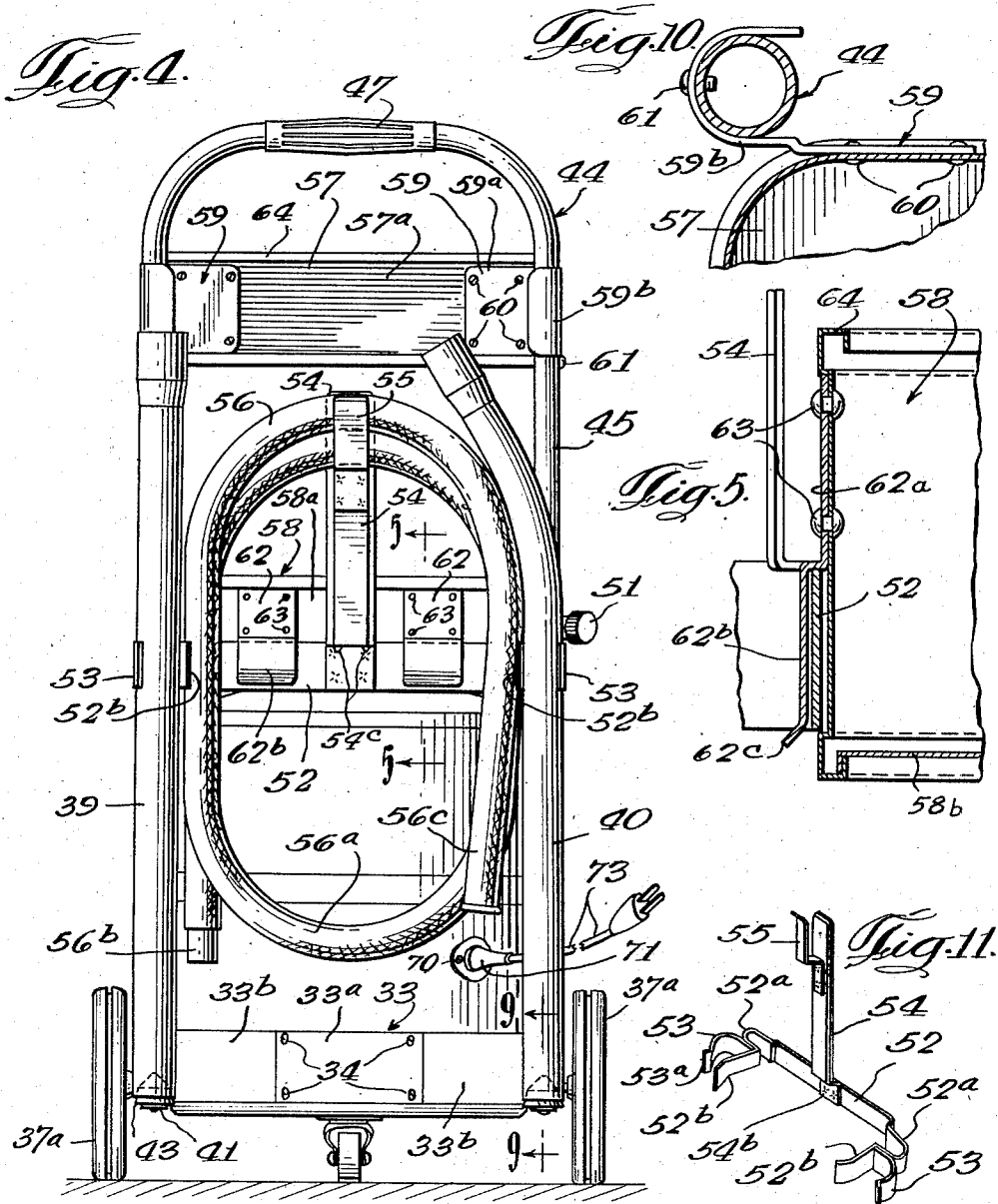
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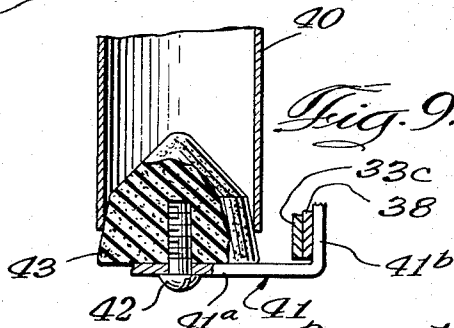
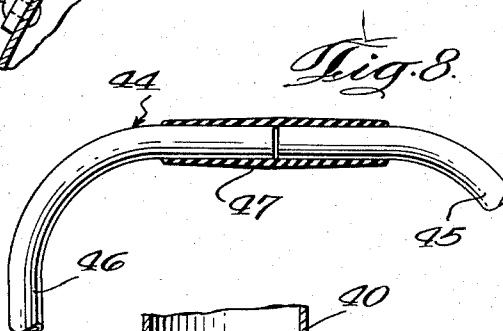
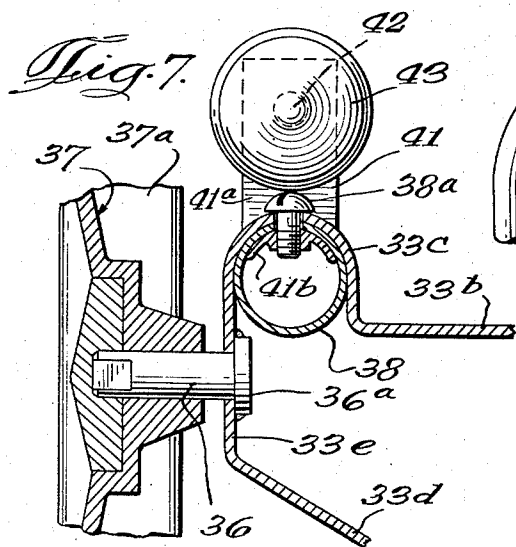
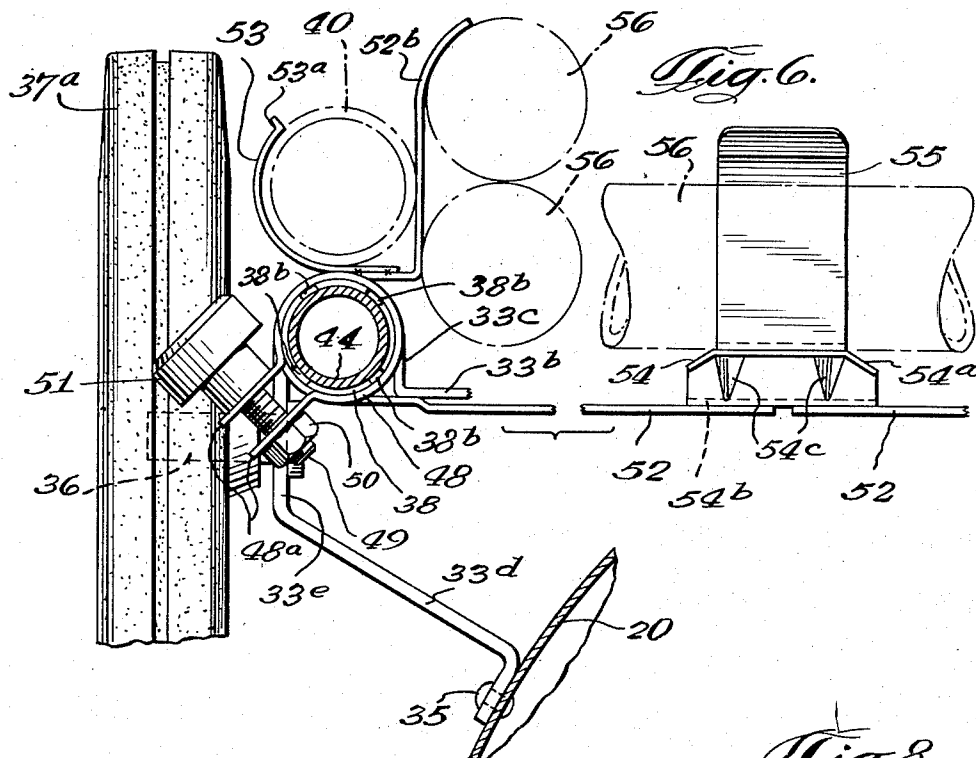
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MOVABLE VACUUM CLEANER STRUCTURE

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4 Sheets-Sheet 4



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2,819,485

MOVABLE VACUUM CLEANER STRUCTURE

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7 Claims. (Cl. 15—323)

This invention relates to a vacuum cleaner structure adapted to be moved over a surface.

The improved vacuum cleaner structure of this invention is a lightweight movable device including a self-contained vacuum cleaner including means for attaching an air intake conduit such as a flexible hose and a tool carrying wand to the cleaner for the cleaning operation and a lightweight framework extending above the cleaner, adapted to support a lightweight container for the cleaning tools. An important feature of this invention is the combination of the low center of gravity for the structure and the lightweight framework which permits the entire structure to be moved over a surface such as by pulling on the cleaning hose during the cleaning operation without danger of the structure tipping over even when the usual cleaning tools are carried by the structure.

Another important feature of the invention is the provision of means for storing cleaning tools that are not being used and of storing the conduit, including the flexible hose and the usual telescoping rigid tubes, when the structure of this invention is not being used but is merely being stored.

Another important feature of the invention is the provision of means for retracting the manipulating handle of the vacuum cleaner structure during storage thereof, with this retraction interfering in no way with the capabilities of the structure for storing the cleaning implements including the cleaning tools and the air conduit sections.

The invention will be described as related to the embodiment shown in the accompanying drawings. Of the drawings:

Fig. 1 is a front elevational view of the vacuum cleaner structure of this invention showing the handle in solid lines in its normally extended position when the structure is adapted to be moved from place to place by means of the handle, and showing the handle in dotted lines in its retracted storage position.

Fig. 2 is a side elevational view of the structure of this invention, partially broken away for clarity of illustration.

Fig. 3 is a fragmentary enlarged side elevational view showing the rear of the cleaner, partially broken away and partially in section for clarity of illustration.

Fig. 4 is a rear view of the structure of this invention.

Fig. 5 is an enlarged fragmentary sectional view, taken substantially along line 5—5 of Fig. 4.

Fig. 6 is a fragmentary sectional elevation, taken substantially along line 6—6 of Fig. 1.

Fig. 7 is a fragmentary sectional elevation, taken substantially along line 7—7 of Fig. 1.

Fig. 8 is a fragmentary section, taken substantially along line 8—8 of Fig. 2.

Fig. 9 is an enlarged fragmentary elevational view, partially in section and partially broken away for clarity of illustration, illustrating a support for a lower end of a wand section.

Fig. 10 is a fragmentary sectional elevation taken substantially along line 10—10 of Fig. 1.

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Fig. 11 is a perspective view illustrating the support for the flexible hose and the upper portions of the wand sections.

The vacuum cleaner structure illustrated in the accompanying drawings comprises a canister-type vacuum cleaner 20 which constitutes a self-contained unit and which is of conventional construction. Thus the vacuum cleaner is provided with an air intake opening including an inwardly extending tube 21 which is adapted to have removably attached thereto a dust separating member 22 such as a porous paper bag. The bag is removably attached to the tube by means of a rubber collar 23. The vacuum cleaner is provided with a removable lid 24 provided with a handle 24a and is normally sealed to the remainder of the cleaner by means of a rubber gasket 25. The vacuum cleaner also includes a motor-fan suction unit 26 of the usual type whose operation is controlled by means of a switch having an outwardly extending operating arm 27. The arm 27 is pushed inwardly to turn the motor on and off by means of a bell crank-shaped foot pedal 28 rotatably mounted about a fulcrum pin 29. Air from the vacuum cleaner 20 is adapted to be exhausted through a series of openings that are concealed by a rubber strip 30. The vacuum cleaner also includes a blower air port 31 normally closed by a flexible rubber plug 32 which is removed when the cleaner is used as a blower. The internal construction details of the vacuum cleaner are purely conventional and the cleaner operates in the customary manner.

Extending around the rear of the cleaner at the lower portion thereof from one side to the other is a relatively wide metal strap 33 having a center section 33a curved to fit against the curved rear of the cleaner and with outwardly extending coplanar sections 33b extending therefrom. The curved section 33a is attached to the rear of the cleaner as by four screws 34.

The outer end of each strap section 33b is curved forwardly and then rearwardly as indicated at 33c to describe a curved arc of approximately 180°. The strap section 33b then extends rearwardly from 33c and is provided with an extreme end 33d extending substantially radially to the cleaner 20. This extreme end is attached to the cleaner 20 as by a pair of rivets 35.

The two sections of the strap 33 between the curved portion 33c and the end portion 33d extend forwardly and are substantially parallel to each other. Each of these sections 33e is provided with an outwardly extending stub axle 36 provided with an enlarged head 36a permanently attached as by welding or brazing to the strap section 33e. The two stub axles 36 are linearly aligned and each carries a relatively large molded wheel preferably made of a moldable resin such as a phenol formaldehyde resin. Each wheel 37 is provided with a resilient rubber tire 37a.

Within each curved portion 33c of the strap 33 there is located a tubular side member 38 extending to a point above the lid 24 of the cleaner. These side members are preferably made of metal such as tubular steel and are substantially parallel to each other. Each tubular member 38 is fastened to its corresponding curved portion 33c by a pair of vertically arranged screws 38a extending through the portion 33c and the tubular member 38.

In order to releasably support the lower ends of a pair of tubular wand sections 39 and 40 at the rear of the device, there is provided at the bottom of each tubular member 38 a support bracket 41. Each bracket includes a rearwardly extending planar section 41a and an upwardly extending arcuately curved section 41b located within the tubular member 38. The curved section 41b and thus the bracket 41 is attached to the assembly of curved strap portion 33c and tubular member 38 by the screws 38a. The rear end of the bracket section 41a

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has attached thereto by means of a screw 42 a resilient rubber conical member 43 for supporting the corresponding wand section 39 or 40.

The upper ends of the substantially parallel tubular members 38 are adapted to receive telescopically the lower ends of a handle structure 44. This handle is of generally inverted U-shape and comprises a pair of tubular side sections or portions 45 and 46. The side sections of the handle fit within the tubular members 38 while the upper sections 45a and 46a that form a transverse manipulating portion have their ends adjacent to each other, with these ends being bridged by a flexible rubber hand grip or bridging member 47. With this arrangement, the tubular sections 45 and 46 constituting the handle 44 are capable of moving relative to each other so that there will be no binding of the handle within the tubular members 38 when the handle is moved relative thereto either to the retracted storage position shown in dotted lines in Fig. 1, or to the fully extended position shown in solid lines in Fig. 1.

In order to lock the handle 44 in any desired position relative to the tubular members 38, there is provided clamping means on one of the tubular members 38. In the embodiment shown, the upper end of one tubular member is provided with a plurality of substantially parallel slots 38b, here shown as four, and this extreme end is provided with a clamp 48 formed as a metal strap partially encircling the upper end of the tubular member 38 and provided with spaced substantially parallel ends 48a. These ends are connected by a threaded bolt 49 provided on one end with a nut 50 and on the other end with a knob 51. With this arrangement, the knob 51 may be rotated to tighten or loosen the clamp 48. Thus, when it is desired to move the handle to a new position, the knob 51 is loosened and the handle is moved to this position. The knob 51 is then tightened to clamp the upper end of the tubular member 38 against the corresponding section of the handle 44.

The parallel tubular members 38 are connected at their upper ends by a transversely extending metal cross-member 52 formed in two aligned parts each made of sheet metal. Each end of the cross-member 52 is curved first forwardly and then arcuately to form an arcuate section 52a extending substantially 180° adapted to receive the upper end of a tubular member 38. The sheet metal forming the cross-member 52 is then extended directly rearwardly with the inner end curved inwardly to provide a side bracket 52b. Each side bracket 52b is, therefore, located inwardly of a tubular member 38 and extends rearwardly thereof. The arcuate section 52a is fastened to its tubular member as by means of bolts (not shown).

Attached to the outer surface of each side bracket 52b is a wand section clamp 53, preferably made of sheet spring metal, with the clamp being curved through an arc that is substantially greater than 180°. The extreme end 53a is turned outwardly. The clamp 53a is attached to the side bracket 52b by any means desired, such as by brazing.

Positioned at about the center of the cross-member 52 and attached thereto is an upwardly extending upright member 54 also formed of a strip of sheet metal. This upright member 54 has its side edge portions 54a curved rearwardly. The upright member 54 has its lower end 54b attached at about the center of the cross-member 52, with the remainder of the upright member being positioned rearwardly of the plane of the cross-member 52. The curved side edge portions 54a of the upright member as well as a pair of indentations 54c located in that portion of the upright member that extends directly rearwardly from the cross-member 52 serve to give the upright member added strength.

The upper portion of the upright member 54 is provided with a rearwardly extending bracket 55 attached thereto. This bracket is in the form of a metal strap having its lower end attached to the upright member 54 as by brazing and its upper end spaced rearwardly thereof

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to provide an arrangement for supporting the coils of an ordinary vacuum cleaner hose 56.

In order to provide for the storage of vacuum cleaner tools of the ordinary type, the structure of this invention is provided with an upper metal tray 57 and a lower metal tray 58. Each tray 57 and 58 is relatively deep and is provided with straight sides 57a and 58a. The upper edge of each tray is beaded by bending sheet metal over in the customary manner.

Upper tray 57 is adapted to be removably mounted on the handle 44. In order to provide for this mounting, the opposite ends of one side of the tray are provided with a pair of brackets 59. Each bracket 59 includes a flat portion 59a attached to the rear side of the tray by means of a plurality of screws 60. The outer end 59b of each bracket is curved rearwardly in order to pass around the parallel tubular sections 45 and 46 of the handle 44. With this arrangement, the tray 57 may be lifted from engagement with the handle by merely moving the tray upwardly. Similarly, it can be placed in position on the handle by merely engaging the curved ends 59b with the handle and permitting the tray to move downwardly. The position of the tray is controlled by the curved ends 59b of the brackets 59 resting against a pair of screws 61 engaging the handle sections 45 and 46.

The bottom tray 58 is provided at the rear side thereof with a pair of spaced brackets 62, each constituting a flat portion 62a attached to the rear side 58a of the tray as by a plurality of rivets 63 and an outwardly spaced lower clip portion 62b having an outwardly turned lower edge 62c. With this arrangement the clip portions 62b of the bracket 62 are slipped over the cross-member 52 in the manner shown in Figs. 4 and 5 so that the intermediate portion of each bracket rests on the top edge of the cross-member 52. With this arrangement the center of the bottom 58b of the tray 58 rests on the lid handle 24a.

As can be seen from the above description, each of the trays 57 and 58 is adapted to be readily removed from and placed on the vacuum cleaner structure. Each tray being relatively deep can accommodate a relatively large number of cleaning tools. As the bottom tray 58 is supported on the cross-member 52 which in turn is attached to the upper ends of the tubular members 38, this tray remains relatively fixed when the handle 44 is raised and lowered. As the upper tray 57 is attached to this handle, it also is raised and lowered with the handle. When the handle is lowered to storage position as shown in dotted lines in Fig. 1, the upper tray 57 rests on top of the lower tray 58. The trays can rest securely in this position because of the flat horizontal surfaces of the upper and lower beads of the trays, as is illustrated at 64.

As has been pointed out, the rear of the cleaner structure is movably supported on a pair of relatively large, spaced rear wheels 37. The structure may be rapidly moved from room to room and up and down stairs by means of these large wheels 37 when such is desired. The cleaner structure is also supported by means of a relatively small caster wheel 65 located forwardly of the wheels 37 and substantially directly beneath the air intake tube 21.

When the vacuum cleaner structure of this invention is not being used, the various cleaning tools may be positioned within the trays 57 and 58 and the handle 44 retracted by loosening the knob 51 and telescoping the handle downwardly relative to the side members 38 until the upper tray 57 rests on top of the lower tray 58. The flexible hose 56 is then arranged in two coils supported by the bracket 55 with the intermediate portion 56a and the two ends 56b and 56c extending downwardly. The sides of the coils are held substantially parallel by engagement with the inner surfaces of the side brackets 52b of the cross-member 52. The two wand sections 39 and 40 are also supported at the rear of the cleaner

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structure by the clamps 53. The lower ends of the wand sections 39 and 40 are supported by engagement with the rubber conical members 43 on the bottom bracket 41. All of the vacuum cleaner tools, the hose and the wand sections are conveniently supported for ready availability and the entire unit takes up but little space.

When the vacuum cleaner is to be used, the knob 51 is loosened and the handle 44 is elevated to its raised position. The knob is then tightened to hold the handle in this position. The entire apparatus may then be easily moved about from room to room or up and down stairs. The hose 56 is then removed from the rear of the cleaner and one end is attached to the intake tube 21 in the usual manner. The wand sections 39 and 40 are then telescoped together in the usual manner and one end of this assembly is attached to the free end of the hose 56 while the other end of the wand is fitted with the desired cleaning tool. The vacuum cleaner structure can then be pulled from place to place by pulling on this air intake conduit made up of the hose and wand without fear of the structure tipping over. During this movement the handle 44 may be retracted if desired or may be permitted to remain in its fully extended position. Because of the low center of gravity of the structure, the spacing of the wheels 37 and 65, and the light weight of the framework extending above the cleaner 20, it is practically impossible to tip the structure over by pulling on the hose. This is true even though the point of attachment of the hose, the intake tube 21, is spaced a relatively great distance above the caster wheel 65. One important factor that contributes to this stability is the positioning of the caster wheel 65 substantially directly beneath the point of connection of the hose to the vacuum cleaner.

The vacuum cleaner 20 is provided with a female electrical connection 70 adapted to receive the male end 71 of an electrical conduit 73. If desired, the conduit 73 may be replaced by a take-up reel of the ordinary type which includes an electric conduit that is retractable into a casing, with one end of the conduit adapted to make electrical contact with the connection 70. These reels are purely conventional in construction and when used may be suspended from the upright member 54. Thus with this construction, either the ordinary conduit 73 may be used or the reel conduit may be used as desired.

Having described my invention as related to the embodiments shown in the accompanying drawings, it is my intention that the invention be not limited by any of the details of description, unless otherwise specified, but rather be construed broadly within its spirit and scope as set out in the accompanying claims.

I claim:

1. A vacuum cleaner structure capable of being moved over a surface by force exerted on an air conduit attached to the cleaner, comprising: a tank type vacuum cleaner including means for attaching an air intake conduit thereto; a lightweight framework extending thereabove including a handle structure; a plurality of wheels spaced around the structure supporting the structure for said movement in a substantially upright position over said surface, the bottom of the cleaner being located adjacent to said surface; a cross-member at the rear of said structure forming a part of said framework; an upright member attached to said cross-member; means on the top of said upright member for supporting the upper portions of a coiled flexible air conduit hose; means adjacent to the opposite ends of said cross-member for retaining said coils against lateral expansion when in contact therewith; and means adjacent to the opposite ends of said cross-member for retaining a pair of sections of a rigid air conduit tube.

2. A vacuum cleaner structure capable of being moved over a surface by force exerted on an air conduit attached to the cleaner, comprising: a tank type vacuum cleaner

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including means for attaching an air intake conduit thereto; a lightweight framework extending above the cleaner including a pair of upright substantially parallel side members adjacent to said cleaner; a lower metal strap having its opposite ends attached to the cleaner on opposite sides thereof and adjacent to the bottom thereof; means for attaching the lower ends of said side members to said strap; a handle structure including side portions telescopically associated with said side members; a plurality of wheels spaced around the structure supporting the structure for said movement in a substantially upright position over said surface, the bottom of the cleaner being located adjacent to said surface; a storage support for the air conduit including a cross-member extending between said side members and attached thereto, an upright member attached to the cross-member intermediate the ends thereof and extending upwardly thereof, means on the top of said upright member for supporting the upper portions of a flexible air conduit hose, means on said cross-member adjacent to said side members for retaining said coils against lateral expansion when in contact therewith and means adjacent to said side members for retaining a pair of sections of a rigid air conduit tube; and a light weight container for cleaning tools supported on said cross-member above said cleaner.

3. The structure of claim 2 wherein said cross-member comprises an upper metal strap having its ends curved around said side members and extending rearwardly to form said coil retaining means and said tube retaining means comprises a pair of spring clips attached to said strap ends outwardly thereof.

4. The structure of claim 3 wherein said framework is provided with a pair of outwardly extending brackets at the bottom thereof each for releasably supporting the lower end of one of said rigid tube sections.

5. The structure of claim 4 wherein each bracket is provided with a generally conical resilient member for engaging said lower end.

6. A vacuum cleaner structure capable of being moved over a surface by force exerted on an air conduit attached to the cleaner, comprising: a tank type vacuum cleaner including means for attaching an air intake conduit thereto; a light weight framework extending thereabove, the framework including a pair of upright substantially parallel side members adjacent to said cleaner and a handle structure having side portions telescopically associated with said side members and a transverse manipulating portion between said side portions, one side portion and a part of the transverse portion being separate from the other side portion and remaining part of the transverse portion; a flexible bridging member extending between said parts of the transverse portion; a plurality of wheels spaced around the structure supporting the structure for said movement in a substantially upright position over said surface, the bottom of the cleaner being located adjacent to said surface; and a light weight container for cleaning tools supported on said framework above said cleaner.

7. A vacuum cleaner structure capable of being moved over a surface by force exerted on an air conduit attached to the cleaner, comprising: a tank type vacuum cleaner including means for attaching an air intake conduit thereto; a light weight framework extending thereabove including a handle structure, the framework including a pair of upright substantially parallel side members adjacent to said cleaner and said handle structure including side portions telescopically associated with said side members and a transverse manipulating portion extending between said side portions at the top thereof; means for locking said handle structure in adjusted position; a plurality of wheels spaced around the structure supporting the structure for said movement in a substantially upright position over said surface, the bottom of the cleaner being located adjacent to said surface; a container for cleaning tools operatively carried by said side

members; and a second container for cleaning tools operatively carried by said handle structure side portions.

References Cited in the file of this patent

UNITED STATES PATENTS

D. 165,191 Reece ----- Nov. 13, 1951
D. 169,336 Reece ----- Apr. 14, 1953

2,291,984
2,597,544
2,636,207
2,716,253

498,768
613,325

Ponselle ----- Aug. 4, 1942
Swain ----- May 20, 1952
Reece ----- Apr. 28, 1953
Schwarz ----- Aug. 30, 1955

FOREIGN PATENTS

Great Britain ----- Jan. 13, 1939
France ----- Aug. 20, 1926