June 17, 1952 H. S. BARNHART 2,600,608

COMBINATION PROPELLING AND PICKUP HANDLE FOR VACUUM CLEANERS

Filed Jan. 9, 1948 2 SHEETS—SHEET 1

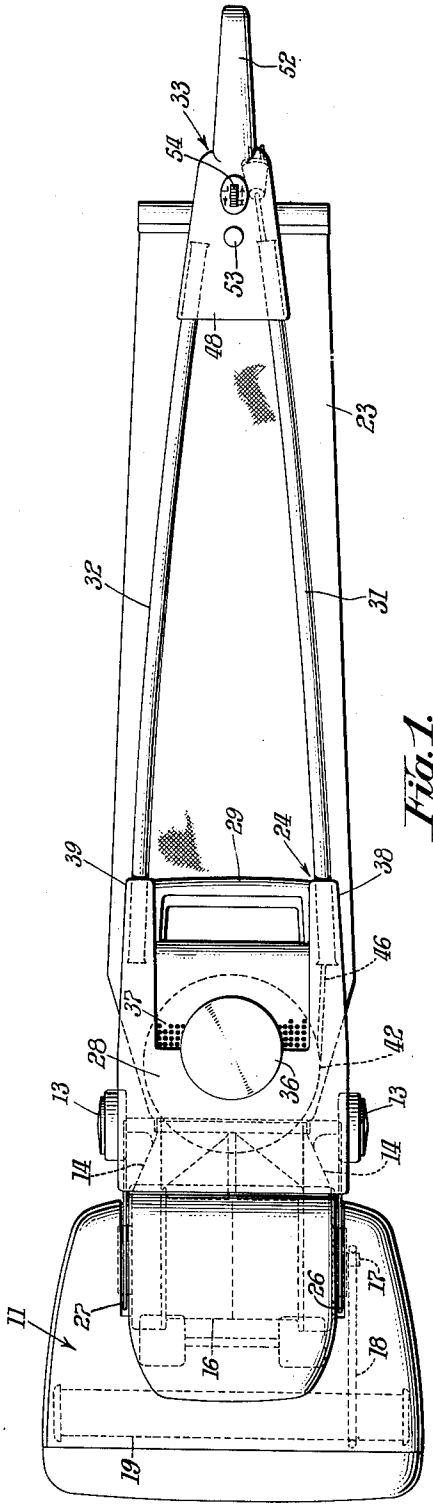


Fig. 1.

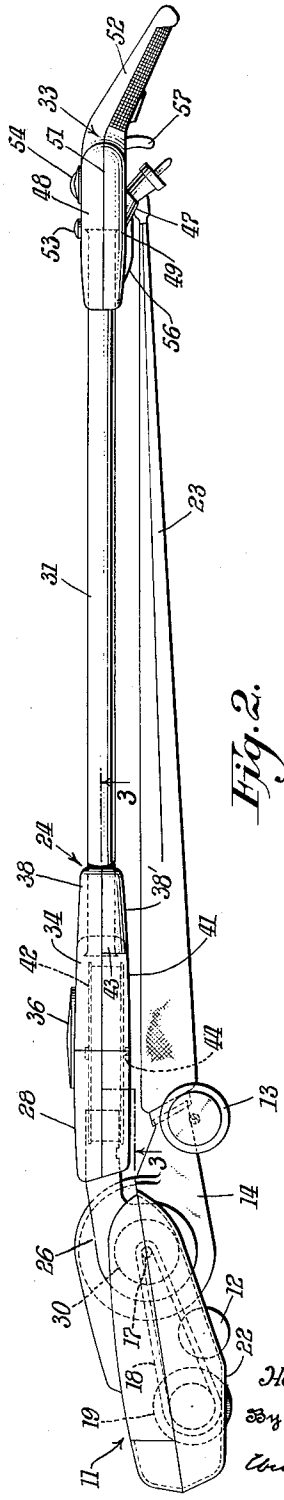


Fig. 2.

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COMBINATION PROPELLING AND PICKUP HANDLE FOR VACUUM CLEANERS

Filed Jan. 9, 1948 2 SHEETS—SHEET 2

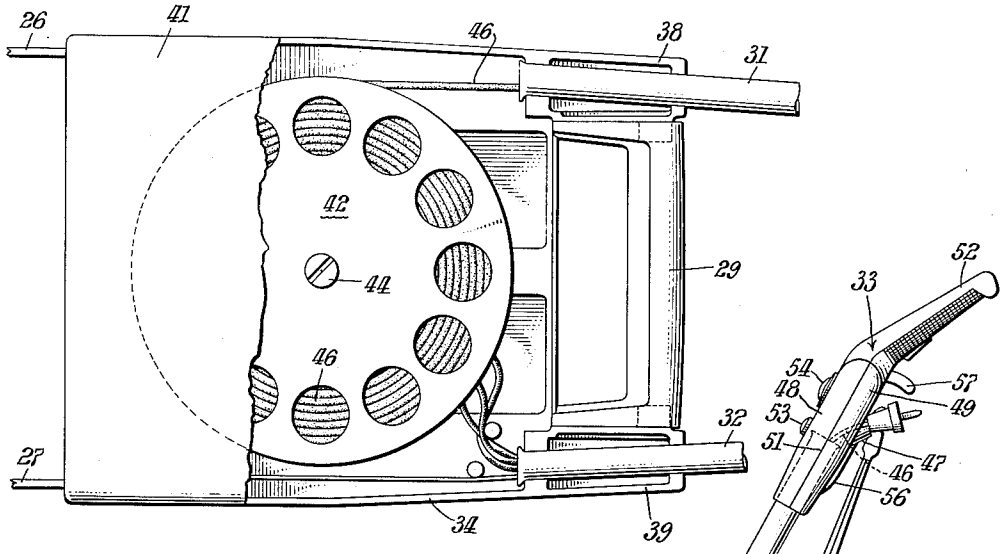


Fig. 3.

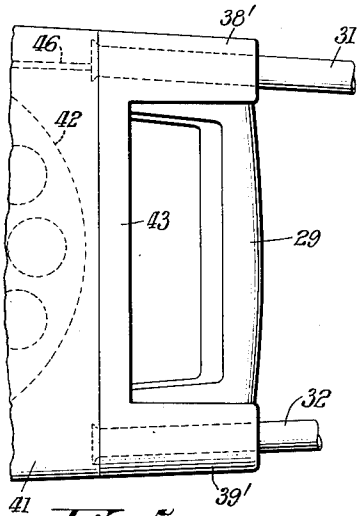


Fig. 5.

Fig. 4.

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UNITED STATES PATENT OFFICE

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COMBINATION PROPELLING AND PICKUP HANDLE FOR VACUUM CLEANERS

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Application January 9, 1948, Serial No. 1,386

11 Claims. (Cl. 15—323)

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This invention relates to domestic vacuum cleaners and more particularly to vacuum cleaner handles arranged to serve as a propelling and pick-up handle as well as to afford means for supporting a cord take-up reel.

The present invention has for its primary object the provision of an improved handle for domestic, floor-type vacuum cleaners.

Another object of the invention is to provide an improved combination propelling and pick-up handle for domestic vacuum cleaners.

A still further object of the invention is to provide an improved means for supporting a cord take-up reel in a vacuum cleaner handle.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

Fig. 1 is a plan view of a floor-type vacuum cleaner equipped with the improved handle of this invention and showing the handle assembly lowered to a position substantially parallel to the floor;

Fig. 2 is a side elevational view of the vacuum cleaner shown in Fig. 1;

Fig. 3 is an enlarged bottom plan view, partly broken away on the line 3—3 of Fig. 2, of a portion of the vacuum cleaner handle and cord-reel housing;

Fig. 4 is a side elevational view similar to Fig. 2 but with the handle elevated; and

Fig. 5 is an enlarged bottom view of a portion of the handle shown in Figs. 1 and 2.

The vacuum cleaner shown in the accompanying drawings has an ambulatory chassis 11 supported on a pair of front wheels 12 attached to the chassis, and a pair of rear wheels 13 attached to exhaust outlets 14, which extend rearwardly from the main chassis 11. An electric motor, indicated generally by the numeral 16, has a shaft 17 which drives a belt 18 and a pair of fans (not shown). The belt drives a brush 19 which is rotatably mounted in a suction chamber having a downwardly open mouth 22 through which dirt enters the vacuum cleaner. The dirt thus collected is discharged through the outlets 14 and passes into a dust bag 23; the lower end of the dust bag being detachably connected to the exhaust outlet 14.

A combination guiding, propelling and lifting handle assembly, indicated generally by the

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numeral 24, is pivotally attached to the chassis 11, preferably by a pair of flat metallic trunnion arms 26 and 27. The forward or lower ends of the trunnion arms are journaled on trunnions 30 carried internally of the chassis 11, and the rearward ends of the trunnions are secured to the handle assembly 24. For a more complete description of the means for pivotally mounting the handle assembly 24, reference may be had to an application, Serial No. 784,167, filed November 5, 1947, by Edgar P. Turner.

By reference to Fig. 1, it will be noted that the propelling and pick-up handle assembly 24 is constructed from five portions; viz. a comparatively wide cord-reel housing 28, a transversely extending pick-up handle 29, two longitudinally extending convergent-divergent hollow handle arms or tubes 31 and 32, and a hand-grip 33.

The reel housing 28 has as one of its principal parts an inverted box or half-portion 34. This box carries on its forward, outer face a decorative medallion 36 and a screen 37, the latter being fitted between two spaced rearwardly extending legs 38 and 39 which are formed integral with the box 34. The screen 37 provides a means for ventilating the interior of the reel housing 28 and thereby dissipates heat generated by electric current passing through the cord 46 that is wound on a reel 42, carried in the reel housing. The pick-up handle 29 is secured between the rearward ends of the legs 38—39. A bottom cover 41 is secured to and closes the lower open face of the box 34 and thereby encloses the cord-reel 42, and other equipment mounted therein.

Forward or divergent terminals of the tubes 31 and 32 are partly embedded in the rearwardly extending leg portions 38 and 39 of the box 34 and are held thereto by a U-shaped clamp 43 (Fig. 5). The U-shaped clamp 43 has a main body portion that extends transversely between the extreme forward terminals of the tubes 31—32 and also has a pair of legs 38' and 39' that extend rearwardly of this main body portion and which are formed complementary to the legs 38—39 of the box 34. The rearward or convergent terminals of the tubes 31 and 32 enter and are secured to the comparatively narrow hand-grip 33.

The cord-reel 42, which may be of any well known spring biased construction, is rotatably held to the inner face of the box or half-portion 34 by a fixed axle stud 44, and a two-conductor electric cord 46 is pulled from and retrieved by the reel 42 as necessity requires; the cord being provided with the usual connection plug. It will be noted (Fig. 3) that the cord 46 as it leaves the

reel 42 enters the forward terminal of the tube 31, passes therethrough and finally exits through a hole provided in a boss 47 of the hand-grip 33. The forward terminals of the tubes 31 and 32 are so positioned that extensions thereof would be substantially tangent to the periphery of the cord-reel 42. This permits the cord 46 to be unwound from and wound onto the reel without having to pass around sharp bends. For a more complete description of the details of this handle assembly, and especially for a disclosure of one way in which the various parts of the handle may be joined together reference may be had to the application Serial No. 781,836, filed October 24, 1947, by Floyd T. Smith.

As best seen in Fig. 1, it will be noted that the forward or divergent terminals of the handle tubes 31 and 32 are spaced a considerable distance apart and that, as these tubes extend rearwardly toward the hand-grip 33, they converge until their rear terminals at the point where they enter the hand-grip are only about one-half as far apart as are their forward terminals. It will also be noted that the pick-up handle 29 is located substantially one-quarter to one-third of the length of the handle 24 from the pivoted end thereof. With this arrangement, a person, lifting or carrying the cleaner by the pick-up handle 29, lifts the chassis 11 to a position well above the floor level and at the same time finds that the cleaner is well balanced and easy to carry. The center lines of the two handle tubes 31 and 32, the center line of the pick-up handle 29, the joint between the box 34 and the cover 41, and the major portion of the meeting line 51 of the hand-grip lie in the same plane. This construction forms a handle which, when it is in the position shown in Fig. 2, is very close to the floor line and therefore makes it easy to manipulate the cleaner and the handle underneath furniture and the like.

In practice, it has been found that a satisfactory handle is obtained when the divergent terminals of the handle tubes are spaced approximately five and one-half or six inches apart at the point where they extend outwardly from the legs 38 and 39, and wherein the convergent terminals of the tubes are spaced approximately two and one-half to three inches apart at the point where they enter the hand grip 33. The transversely extending pick-up handle 29 extends between the legs 38—39 of the box 34, and between the complemental rearwardly extending legs of the clamp 43. This places the pick-up handle 29 between the divergent terminals of the handle tubes 31 and 32 and thus, in the preferred form, the pick-up handle will be approximately five or six inches long.

The hand-grip 33 comprises an upper shell 48 and a lower shell 49 which join on a surface indicated by the meeting line 51. The two shells 48 and 49 are appropriately recessed and thereby encase the rearward terminals of the tubes 31 and 32. A plan view (Fig. 1) of the main portion of the hand-grip 33 is substantially an isosceles trapezoid, the non-parallel sides of which are parallel to the handle tubes 31 and 32 near their convergent terminals. A grip-portion 52 extends rearwardly and downwardly from the shorter parallel side of the isosceles trapezoidal portion of the hand-grip 33. This grip-portion is substantially in the form of a cylinder and of such size as to be easily grasped by the hand of an operator. The equipment enclosing hand-grip 33 is fitted with a number of control elements including a cord-control button 53, an electric switch 54, a pivotally mounted spring-biased arm 56 for supporting the upper end of the bag 23, and a latch-control trigger 57 which operates a latch (not shown) for holding the handle in any one of several selected positions. A more complete description of these control elements will be found in the application Serial No. 781,836, referred to above.

A vacuum cleaner equipped with a handle embodying the features of this invention is easy to operate and easy to transport from one location to another. If a person wishes to clean a floor covering with the vacuum cleaner of this invention, he will grasp the grip-portion 52 and thereby propel the vacuum cleaner chassis 11 back and forth and at the same time guide it to any part of the floor that needs cleaning. If the operator should decide to move the whole vacuum cleaner from one location to another, he grasps the pick-up handle 29 and since this pick-up handle is positioned transversely between the longitudinal handle tubes and at a position approximately one-quarter to one-third of the length of the handle from the pivoted end, it will be found to be in the proper and most advantageous position for picking up and carrying the whole vacuum cleaner. Since an extension of the handle tube 31 is tangent to the periphery of the cord-reel 42, a minimum of friction will have to be overcome when the extension cord is pulled from the boss 47 in the hand-grip 33.

Having thus set forth the nature of the invention, what I claim herein is:

1. A handle for use with a floor type vacuum cleaner having a chassis, said handle being pivotally mounted on said chassis and comprising, a pair of handle arms widely spaced at their lower terminals and convergent toward their upper terminals, one portion of said handle comprising a hollow casing and a cord reel located in said casing, said casing portion being carried by and a major portion thereof positioned between extensions of the lower terminals of said handle arms and said cord reel casing portion being arranged to hold said arms in spaced relation, and a second handle portion secured to the upper terminals of said handle arms and arranged to hold said arms in converged relation.

2. In a vacuum cleaner, a handle comprising a wide handle portion, a cord-reel housed in said wide handle portion, a relatively narrow hand-grip, and a pair of converging tubes connecting said wide portion and said narrow hand-grip; the forward terminal of at least one of said tubes being positioned on a line that is substantially tangent to said cord-reel.

3. A propelling handle for vacuum cleaners, comprising, a cord-reel housing arranged to be pivotally mounted on the vacuum cleaner, a cord-reel mounted in said housing, a pair of handle tubes extending rearwardly from said housing; the end portions of said tubes proximate to said cord-reel being disposed in lines substantially tangential to said cord-reel, and a pick-up handle extending transversely between said two tubes.

4. A propelling handle for vacuum cleaners, comprising, a cord-reel housing arranged to be pivotally mounted on the vacuum cleaner, a cord-reel mounted in said housing, a pair of convergent-divergent handle tubes secured to said reel housing and extending rearwardly therefrom; said tubes being disposed in lines substantially tangential to said cord-reel, a pick-up handle extending transversely between said two

tubes adjacent said reel housing, and a hand-grip secured to said tubes at their converged ends.

5. A handle for use with floor type vacuum cleaners comprising a pair of hollow handle arms, said arms being widely spaced at their lower terminals and convergent toward their upper terminals, a hollow casing handle portion secured to the lower terminals of said handle arms, a cord-reel take-up carried in said hollow casing handle portion and positioned in such a manner that at least one of said handle arms, if extended, would be tangent to the periphery of said cord-reel, and a hollow hand grip portion secured to the upper terminals of said handle arms and arranged to hold them in converged relation.

6. A handle for domestic type vacuum cleaners comprising a comparatively wide cord-reel housing handle portion; a pair of arms extending from said handle portion for pivotally mounting said handle portion on a vacuum cleaner; a cord-reel mounted in said cord-reel housing; a pair of hollow handle tubes, the forward ends of which are secured to said reel housing in such a manner that a line through the axis of one of said tubes is tangent to said reel; a transversely extending pick-up handle positioned between the forward ends of said tubes; a comparatively narrow hand-grip secured to the rearward ends of said handle tubes; an electric cord extending from said cord-reel into one of said handle tubes and thence into said hand-grip; and exit means in said hand-grip for said cord.

7. A handle for use with floor type vacuum cleaners having a casing provided with a pivot, comprising, a pair of handle arms widely spaced at their lower terminals and convergent toward their upper terminals, a hollow casing portion adapted to receive a cord reel the uppermost part of said casing portion being secured to the lower terminals of said handle arms thereby holding said arms in spaced relation, spaced pivot engaging means secured to the lowermost part of said hollow casing portion, and a second handle portion secured to the upper terminals of said handle arms and arranged to hold said arms in converged relation.

8. A vacuum cleaner assembly, comprising, an ambulatory vacuum cleaner chassis, a pair of similar elongated tubular members disposed in laterally spaced side-by-side relation, means on one pair of the adjacently disposed end portions of said two members for pivotally connecting said two members with said vacuum cleaner chassis, a hollow hand-grip secured to the other pair of adjacently disposed end portions of said two members, a manually controlled means disposed within said hollow hand-grip, control means connecting said manually controlled means with said vacuum cleaner chassis, and a pick-up handle arranged transversely of and bridging the space between said two members, said pick-up handle having its opposite ends secured to said members and being located nearer to the vacuum cleaner chassis than to the hand-grip.

9. A vacuum cleaner assembly, comprising, an ambulatory vacuum cleaner chassis, a pair of similar elongated tubular converging members disposed in laterally spaced side-by-side relation, means on the diverging pair of the adjacently disposed end portions of said two members for

pivotally connecting said two members with said vacuum cleaner chassis, a hollow hand-grip secured to the converging pair of adjacently disposed end portions of said two members, a manually controlled means disposed within said hollow hand-grip, control means connecting said manually controlled means with said vacuum cleaner chassis, and a pick-up handle arranged transversely of and bridging the space between said two members, said pick-up handle having its opposite ends secured to said members and being located nearer to the vacuum cleaner chassis than to the hand-grip.

10. A vacuum cleaner assembly, comprising, an ambulatory vacuum cleaner chassis, a pair of similar elongated tubular members disposed in laterally spaced side-by-side relation, means including a hollow casing entered by one pair of the adjacently disposed end portions of said two members and pivotally connecting said two members with said vacuum cleaner chassis, a hollow hand-grip secured to the other pair of adjacently disposed end portion of said two members, a manually controlled means disposed within said hollow hand-grip, control means connecting said manually controlled means with said vacuum cleaner chassis, and a pick-up handle arranged transversely of and bridging the space between said two members, said pick-up handle having its opposite ends secured to said members and being located adjacent the hand-grip side of said casing nearer to the vacuum cleaner chassis than to the hand-grip.

11. In a vacuum cleaner, a handle assembly comprising, a wide flat hollow casing having two oppositely disposed wide sides and two oppositely disposed narrow sides, a cord-reel housed in said casing, a relatively narrow hand-grip, and a pair of converging tubes connecting said casing and said hand-grip with one pair of the terminal portions of said tubes being disposed within the confines of said casing and with each of such tube terminal portions being disposed adjacent a respective one of said narrow casing sides.

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