

Oct. 30, 1928.

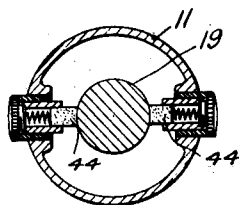
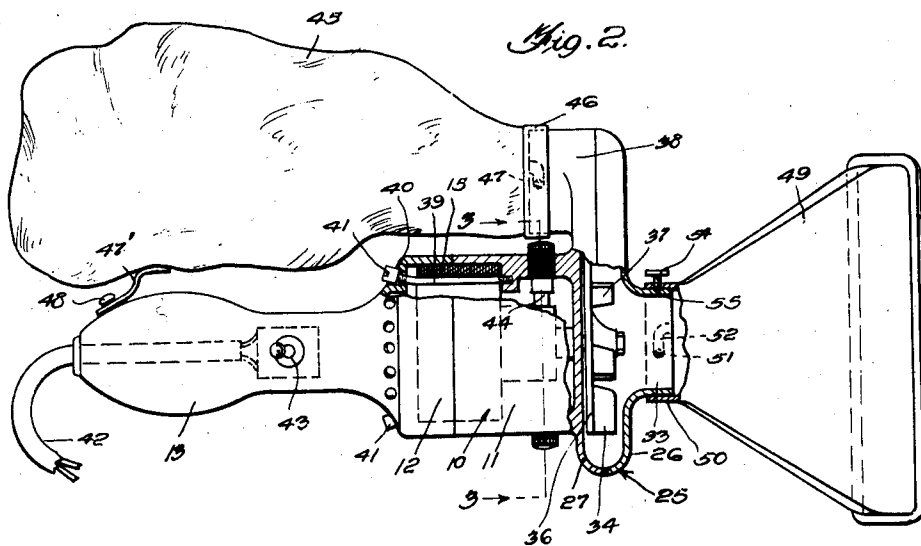
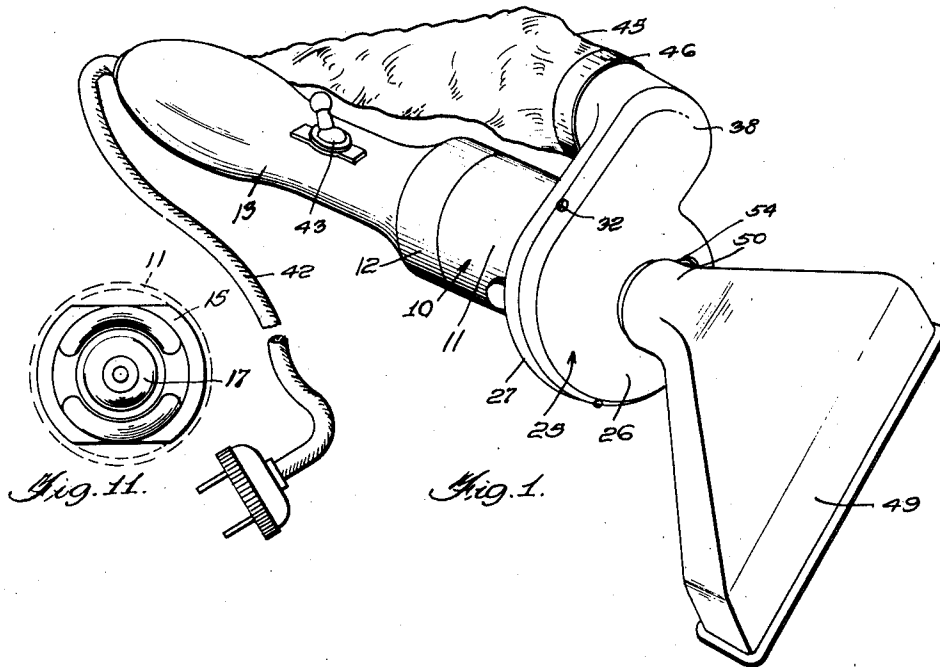
1,689,580

P. DADDIO

VACUUM CLEANER

Filed Oct. 8, 1927

2 Sheets-Sheet 1



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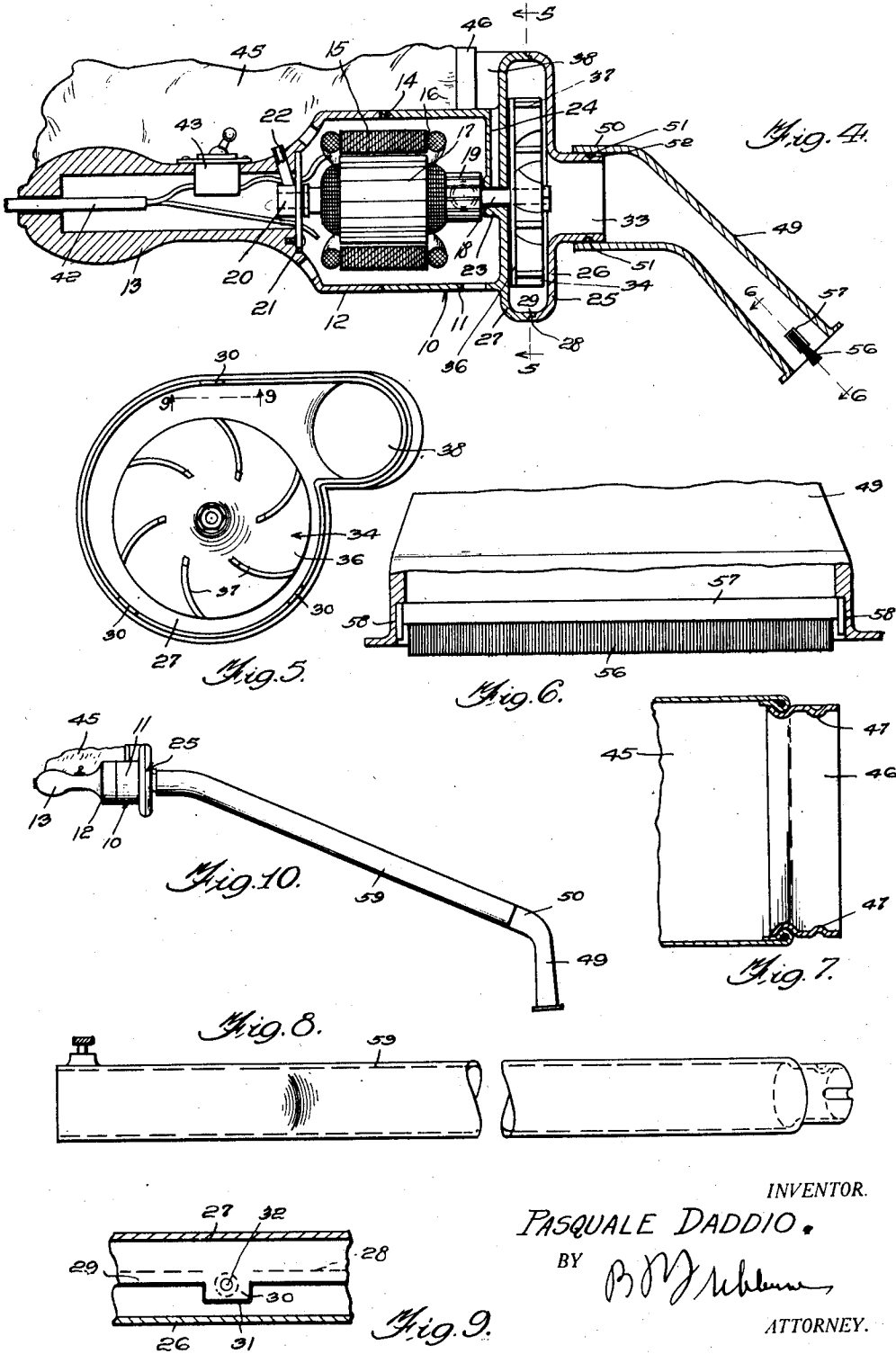
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VACUUM CLEANER

Filed Oct. 8, 1927

2 Sheets-Sheet 2



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Patented Oct. 30, 1928.

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UNITED STATES PATENT OFFICE.

PASQUALE DADDIO, OF NEW YORK, N. Y.

VACUUM CLEANER.

Application filed October 8, 1927. Serial No. 224,936.

My invention relates to portable vacuum or suction cleaners.

Important objects of the invention are to provide a light weight, well balanced appliance for the usual household purposes of cleaning or removing dust from fabrics, more particularly hangings, curtains, furniture, and clothing; to provide such a device that may be easily sustained and moved about by one hand of the operator, leaving the other hand free for manipulating articles undergoing the cleaning process, and with but little physical effort on the part of the operator thereby avoiding the usual fatigue accompanying the use of the ordinary vacuum cleaner; to provide such a device that may be opened by unskilled users for the purposes of interior inspection and cleaning, in case foreign matter becomes lodged therein; to provide such a device having relatively few parts which are arranged in a highly compact manner; to provide such a device wherein the permanent magnet field serves as a coupling element for the motor casing sections, and to provide such a device which is relatively simple in construction and cheap to manufacture.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this specification, and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a perspective view of a vacuum cleaner embodying my invention,

Figure 2 is a plan view of the same, parts being in longitudinal section,

Figure 3 is a transverse section taken on line 3—3 of Figure 2,

Figure 4 is a central vertical longitudinal section through the vacuum cleaner,

Figure 5 is a transverse section taken on line 5—5 of Figure 4,

Figure 6 is a transverse section through the suction nozzle, taken on line 6—6 of Figure 4,

Figure 7 is a detailed section through the dust collecting bag, showing its method of attachment to the ring,

Figure 8 is a side elevation of an extension tube,

Figure 9 is a detailed section showing the specific connection between the suction casing sections, taken on line 9—9 of Figure 5,

Figure 10 is a side elevation of the vacuum

cleaner with the extension tube applied thereto, and Figure 11 is an end elevation of the motor.

In the drawings, wherein for the purpose of illustration, is shown a preferred embodiment of my invention, the numeral 10 designates a preferably cylindrical motor casing, as a whole, embodying a forward casing section 11, and a rear casing section 12, arranged in end to end relation, and held together by means to be described. Formed integral with the rear casing section 12 is a stout handle 13, preferably tubular, and having its longitudinal axis in alinement with the longitudinal axis of the motor casing 10.

Mounted within the motor casing 10 is a high speed motor, preferably series wound designated as a whole by the numeral 14. This motor embodies a permanent magnet field or spider 15, formed of laminated magnetic metal and the field winding 16 is arranged within and carried by the permanent magnetic field 15. Rotatable within the field winding 16 is an armature 17 carried by an armature shaft 18, equipped with the usual commutator 19. The rear end of the armature shaft 18 is rotatable within a bearing 20, attached to the forward end of the tubular handle 13, at 21, and an oil supply tube 22 leads to this bearing. The forward end of the armature shaft 18 is mounted within a bearing 23, and an oil supply port 24 leads to this bearing.

The numeral 25 designates a suction chamber casing as a whole, formed of forward and rear casing sections 26 and 27. The rear casing section is formed integral with the forward end of the motor casing section 11. The adjacent edges of the casing sections 26 and 27 having interfitting marginal tongues 28 and 29, and the rear casing section has forwardly projecting lugs 30, to seat within recesses 31, formed in the periphery of the casing section 25. The lugs 30 are held to the casing section 26 by screws 32, passing through openings in the casing section 26 and engaging within screw-threaded openings formed in the lugs 30. The forward casing section 26 is provided with a forwardly projecting tubular extension 33, as shown. The suction chamber casing 25 is generally cylindrical and is eccentric with respect to the armature shaft 18. The casing 25 receives a centrifugal fan 34, embodying a disc 36 and inclined radial vanes 37. This fan is adapted to draw air inwardly through

the tubular extension 33 and discharge the same radially into the periphery of the casing 25 so that it passes into a tubular outlet 38. The space in the casing 25 between the

5 fan 34 and the periphery of the casing gradually increases toward the tubular outlet 38.

An important feature of the invention is the method of securing the motor casing sections 11 and 12 together. The permanent
10 magnet field 15 has portions which are cylindrically curved and is adapted to have a close driving fit into the rear end of the casing section 11, while the casing section 12 is adapted to fit snugly upon the rear end of the permanent magnet field 15, which may be slightly
15 tapered, for this purpose. The permanent magnet field 15, therefore, serves as an internal coupling for the casing sections 11 and 12, but fits tighter than the casing section 11
20 and hence will remain therein, when the casing section 12 is removed from the permanent magnet field 15. The casing section 12 is also held to the casing section 11 by means of rods 39, arranged interiorly of the permanent
25 magnet field 15. The forward ends of these rods have screw-threaded engagement within openings formed in lugs 39, cast upon the interior of the motor casing section 11, and the rear ends of these rods are bent outwardly
30 and extend through openings 40 in the forward end of the handle 13, and carry nuts 41, having screw-threaded engagement therewith.

The handle 13 is tubular and the lead wires
35 42 extend through the same, one wire being connected with a switch 43, mounted upon the handle, preferably upon the top side thereof. The lead wires have suitable connection with the field windings 16 and the brushes 44, as is
40 well known in a series wound motor.

The numeral 45 designates a dust receiving bag, the forward reduced end of which is attached to the ring 46, having inwardly
45 punched lugs 47, to engage within L-shaped grooves formed upon the tubular outlet 38. A strap 47' is attached to the rear end of the bag 45 and has a button-hole for detachable engagement over a headed stud or button 48,
50 formed upon the rear end of the handle.

The numeral 49 designates a suction nozzle, tapering rearwardly into a coupling neck 50, and having inwardly projecting lugs 51 to engage within L-shaped grooves 52 formed upon the tubular neck 33 and also carrying a
55 set screw 54, to engage in a recess 55, to lock the suction nozzle against turning movement. Extending longitudinally within the mouth of the suction nozzle, is a stationary brush 56,

having a head 57, the ends of which are frictionally held in grooves 58, Figure 6.

In Figure 10, the suction nozzle 49 is shown as mounted upon an extension tube 59, which is mounted upon the tubular neck 33.

In the use of the vacuum cleaner, the handle 13 may be gripped in the left hand, extending between the handle and the bag 45. The switch 43 may be manipulated by the thumb. The suction cleaner may be manipulated or shifted entirely by the left hand, leaving the right hand free to handle the fabric or material being treated. It is preferred that the motor casing, handle, suction chamber casing, and nozzle be formed of aluminum, due to the lightness of this material, while the invention is not necessarily restricted to the same. By having the longitudinal axes of the motor casing and handle arranged in longitudinal alinement, the parts of the device are well balanced, which aids in its convenient manipulation. The parts of the device are compact and the device as a whole is simple and may be cheaply manufactured.

It is to be understood that the form of my invention, herewith shown and described, is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of my invention, or the scope of the subjoined claim.

Having thus described my invention, I claim:

In a vacuum cleaner, a motor casing including a forward casing section and a rear casing section arranged in end-to-end relation, a suction chamber casing including a rear casing section formed integral with the forward motor casing section, and a forward casing section detachably connected with the last named rear casing section, said suction chamber casing having an inlet and outlet, a motor mounted within the motor casing and including a field member having one end projecting into the forward motor casing section and its opposite end projecting into the rear motor casing section to serve as a coupling between the same, a fan mounted within the suction chamber casing and driven by the motor, a nozzle connected with the inlet of the suction chamber casing, a dust collecting bag connected with the outlet of the suction chamber casing, and a handle carried by the motor casing.

In testimony whereof I affix my signature.
PASQUALE DADDIO.