

July 17, 1923.

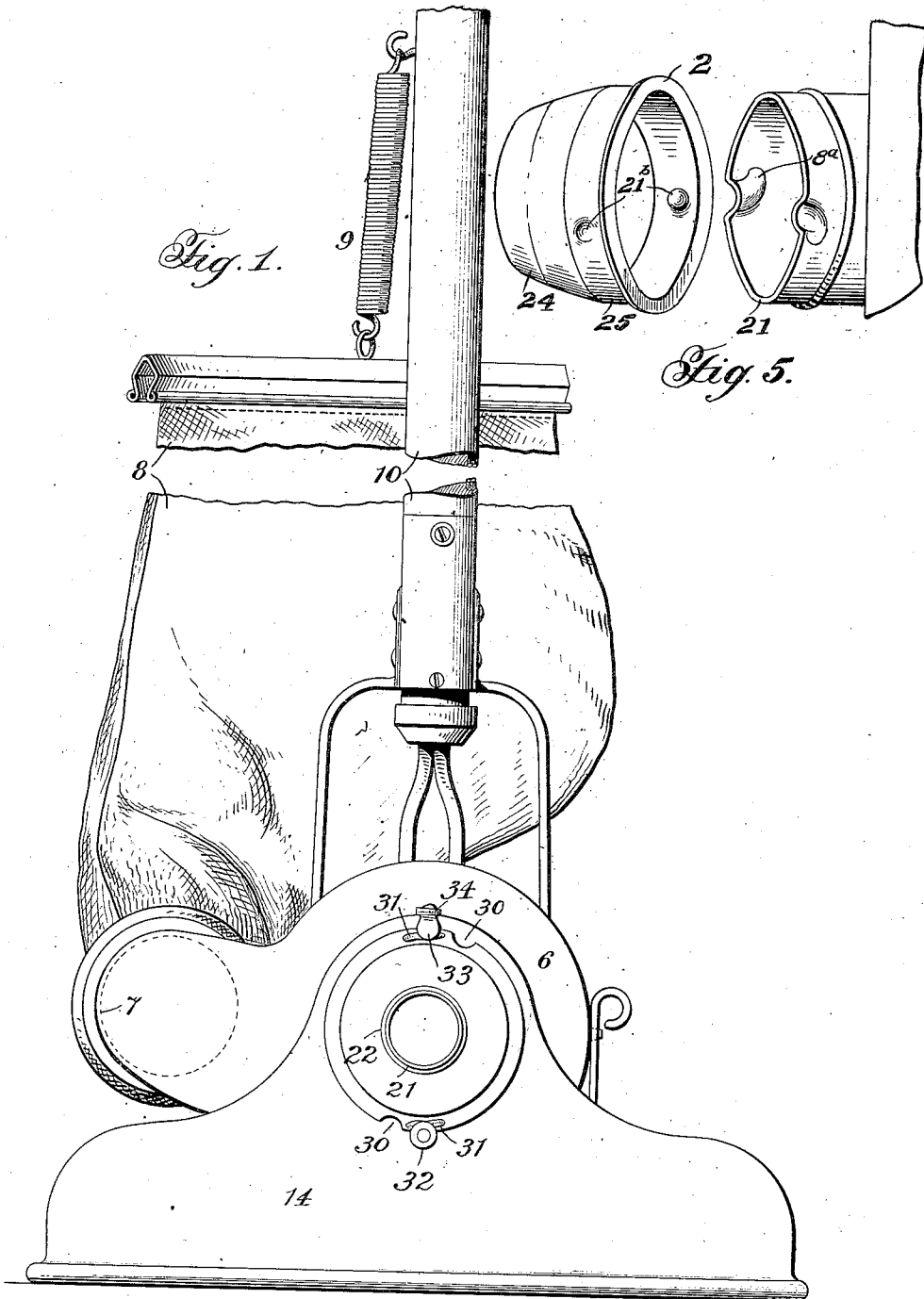
M. S. WRIGHT

1,462,223

VACUUM CLEANING DEVICE

Filed Sept. 21, 1916

2 Sheets-Sheet 1



Witness:  
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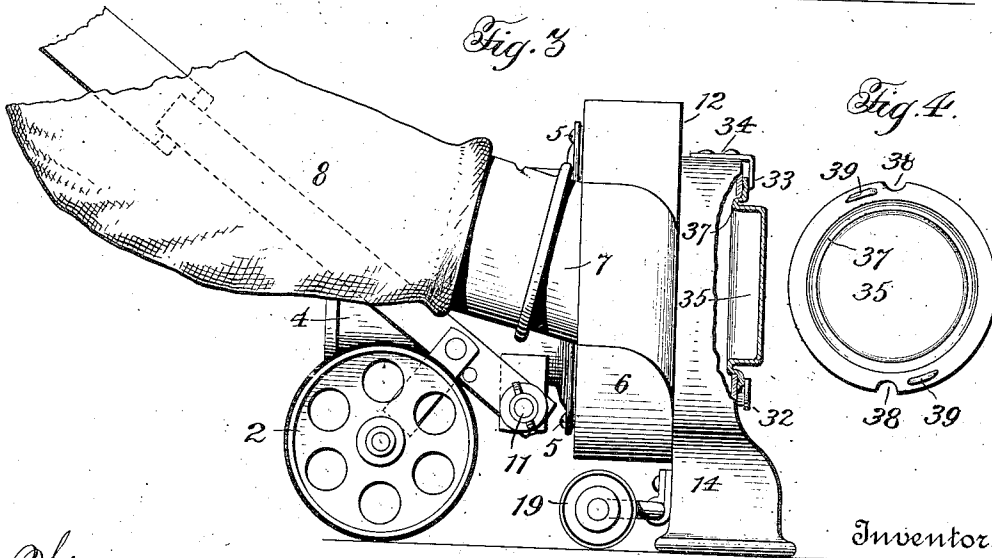
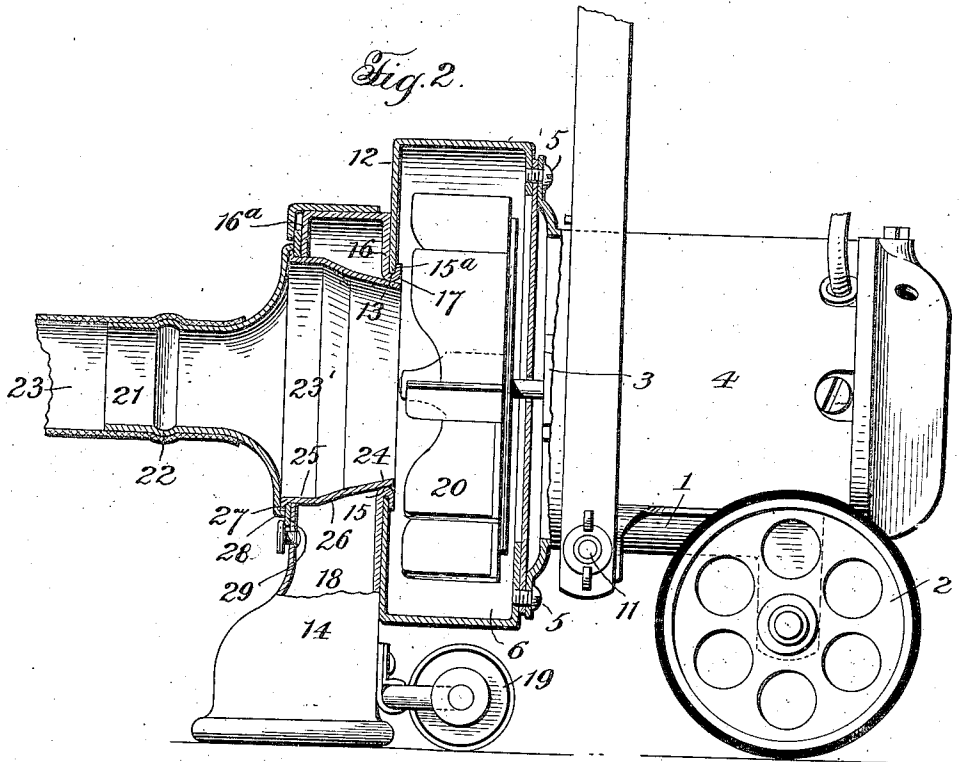
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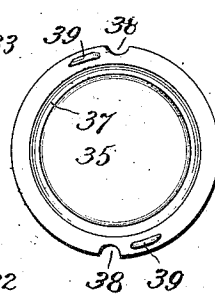
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*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

MORRIS S. WRIGHT, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO M. S. WRIGHT COMPANY, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

## VACUUM-CLEANING DEVICE.

Application filed September 21, 1916. Serial No. 121,479.

*To all whom it may concern:*

Be it known that MORRIS S. WRIGHT, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, has invented certain new and useful Improvements in Vacuum-Cleaning Devices, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to vacuum cleaning devices of the portable type, adapted to move over floor surfaces and the like whereby to, through the medium of suction, cleanse such surfaces of dust laden particles and the like.

More particularly, the invention has to deal with a combination suction cleaning device of a character to be readily altered whereby to convert the device into a machine, for cleaning wall surfaces and the like, as well as floors and the like.

While the improvements embodied herein are susceptible of a variety of adaptations, in that embodiment of the invention illustrated the improvements are conveniently applied to a portable cleaner of the electrical type, such as illustrated and described in detail in a copending application for Letters-Patent filed by myself concurrently herewith.

It is contemplated by the present invention to provide novel and improved means of attachment to the dust inlet nozzle, of a hose coupling whereby to close the main nozzle inlet and establish direct communication between the hose and the outlet port of the nozzle, it being understood of course that the hose has applied thereto a suitable wall or other surface engaging tool.

Further, the invention includes a hose coupling member for nozzles of a character making unnecessary securing bolts, screw threaded fastenings and the like, and of a character making possible an effective sealing connection between the hose coupling and associated parts without the necessity of removing the hose from the coupling and without twisting the hose in the application of the coupling to the nozzle.

Another important feature of the invention resides in the provision of hose coupling means of a character to be applied at will to

either the nozzle or the outlet from the machine thereby converting the machine from a suction cleaner to a blower as desired.

Other and further improvements and novel details in the construction and arrangement of the various parts of the device will be brought out in the following description, which is to be read in connection with the accompanying drawings forming a part hereof, and wherein is disclosed for purposes of illustration, a convenient and satisfactory embodiment of the invention.

In the drawings:—

Fig. 1 is a front elevation of my device, certain parts being broken away.

Fig. 2 a side elevation with parts shown in section.

Fig. 3 is an opposite side elevation.

Fig. 4 is a detail view of the closure cap.

Fig. 5 is a detailed view of the coupling member.

With more particular reference to the drawings, wherein like reference numerals refer to corresponding parts throughout the several views, 1 is a truck or platform having suitable supporting wheels 2 for the rear end of the device. 3 is a horizontally disposed motor having a surrounding casing 4, which latter is secured at its forward end as by bolts 5 to the rear wall of a suitable fan casing 6. The latter has in its periphery a lateral tubular extension forming an outlet conduit 7 adapted to be connected with the lower end of a dust receptacle in the form of a fabric bag 8 which latter at its upper end is yieldably supported at 9 to a push handle 10 pivotally mounted at its lower end upon suitable bearings 11 on the truck. The fan casing is preferably of sheet metal construction and has in the front wall 12 thereof a central aperture of dust inlet 13, said aperture being conveniently circular. 14 is a vertically disposed hollow nozzle member also preferably of sheet metal construction and having in the rear wall thereof an outlet opening 15 adapted to register with the opening 13 of the fan casing. The rear wall 16 of the nozzle has a struck up bendable flange 17 which overlies the wall surrounding the opening in the front wall 12 of the fan casing and being compressed

against the rear surface of said front wall 12, whereby to provide a substantially air tight joint or fixed connection 15<sup>a</sup> between the nozzle and fan casing. The nozzle is provided at the lower edge with the usual dust inlet slot 18, and said nozzle ordinarily engages the surface and constitutes the support for the front end of the device, though in this connection, an adjustable roller or rollers 19 may be provided for elevating the nozzle from the surface at will.

It will be observed that the joint 15<sup>a</sup> between the nozzle and fan casing is of a character not only to effectively close the connection between the nozzle and fan casing, but at the same time the periphery of the opening leading into the fan casing will be devoid of roughened edges or joints thus doing away with any accumulation of dust or dirt, at this point, said dust or dirt readily riding over the smooth surfaces to be taken up by the fan 20. Also the joint 15<sup>a</sup> affords a continuous smooth edge surface for the opening in the rear wall 16 of the nozzle adapted to be engaged by the inner end or terminal of the hose coupling member to be now described.

The front wall 16<sup>a</sup> of the nozzle is provided with an opening, conveniently circular and of a diameter greater than that of the opening in the rear wall of the nozzle, the said opening being adapted for the reception of a hose attachment comprising a tubular hose engaging part 21 having a peripheral bead 22 adapted to receive a hose section 23, it being understood that the hose has applied to the opposite end thereof a suitable wall or other surface engaging tool. 23' is a tubular part adapted at its inner end 24 to engage the central opening in the rear wall 16 of the nozzle. The tubular member 23' has a portion of increased diameter 25 connecting with the terminal portion 24 by an inwardly tapered part 26. The part 25 has an end flange 27 and the hose engaging part 21 at its inner end has a portion 28 having a flanged or beaded engagement with the flange 27 and terminating with an outwardly projecting flange part 29 adapted to extend over the outer surface of the front wall 16<sup>a</sup> of the nozzle. The parts 21 and 23 of the coupling member just described are preferably formed of sheet metal, stamped or drawn to the desired shape, and the flange 29 of the part 21 is provided in the periphery thereof with oppositely disposed segmental cut-out parts 30 connecting with struck up cam surfaces 31. Positioned on the front wall 16<sup>a</sup> of the nozzle is a headed pin 32 arranged opposite to an inwardly pressed spring arm or clip 33 secured at 34 to the upper edge of the nozzle. The cut out parts 30 of the flange 29 are adapted to readily pass the engaging portions of the retaining mem-

bers 32 and 33 when by giving a slight turning movement to the coupling member the cam surfaces 31 will be brought into contact with the retaining members 32 and 33, which will exert inward pressure on the coupling member, thereby forcing the inner end 24 into position in contact with the wall of the opening in the rear wall 16 of the nozzle.

A temporary closure member 35 is provided for normally closing the opening in the front of the nozzle 16<sup>a</sup>, the said closure being in the form of a cap, the raised portion of which has a roughened periphery to be engaged by the fingers of the operator and said raised portion connecting with an inwardly projecting annular beaded part 37 fitting within the wall surrounding the opening in the nozzle. The periphery of the flange of the cap is provided with segmental cut out parts 38, and cam surfaces 39 similar in design and construction to the cut-out parts and cam surfaces 30 and 31 respectively of the coupling member heretofore described.

The operation of the device thus far described is substantially as follows:—

When it is desired to clean floor surfaces and the like, the hose coupling member is removed and the cap 35 normally closes the opening in the front wall 16<sup>a</sup> of the nozzle, when the dust laden air will be sucked in from the lower edge 18 of the nozzle and into the fan casing through the medium of the suction created by the motor and connected fan, it being understood of course that suitable electrical connections are provided for the motor. By reason of the peculiar connection between the nozzle and fan casing, a smooth and unobstructed passage-way is provided for the dust or dirt which readily finds an exit from the fan casing into the dust receptacle 8. Now, when it is desired to cleanse walls or the like, the coupling member with the hose 23 applied thereto is inserted through the opening in the front wall 16<sup>a</sup> of the nozzle, the closure cap 35 having been removed for this purpose. The flared or tapered portion 26 of the coupling member readily rides over the walls surrounding the opening in the nozzle and the enlarged portion 25 will rest against the wall of said opening when the coupling member is seated, the wall of the opening constituting a guide in the assembling operation. In the application of the coupling, the cut-out members 30 readily engage over the retaining members 32 and 33 when by giving a slight turning movement to the coupling member the cam surfaces 31 will engage the inner surface of the retaining members 32 and 33, thereby forcing the inner end 24 of the coupling member into position within the opening in the rear wall 16 of the nozzle, thus simultaneously clos-

ing communication between the inlet slot 18 and the fan casing and establishing communication between the hose and said fan casing, because of the elimination of screws, or other like means of connection between the nozzle and fan casing, a continuous inner smooth surface is maintained for the nozzle which makes possible a snug engagement between the terminal 24 of the coupling member and the opening in said inner surface. It will also be appreciated that it is not necessary to remove the hose member from the coupling member in the assembling or removal operation, and because of the peculiar retaining means for the coupling member, the latter is readily fixed in position by a slight turning movement, which will not result in any appreciable turning or twisting movement of the hose such as would result from a screw threaded connection or the like for the coupling member.

It is sometimes quite difficult to cleanse corners and other inaccessible places, and with this primarily in mind, it is proposed at times to convert the machine into a blower whereby to blow and dislodge the dirt or dust to be afterwards gathered by the suction mechanism. To this end the hose coupling member 21 is preferably of a character adapted to be applied as desired to the outlet conduit 7 after the dust collecting bag 8 has been removed. The outlet conduit has oppositely disposed L-shaped slots or grooves 8<sup>a</sup> adapted to receive lugs 8<sup>b</sup> on a collar 8<sup>c</sup> at the end of the bag 8. Likewise, the hose coupling member 21 is provided with inwardly struck lugs or beads 21<sup>b</sup> in the part 24 thereof adapted to engage in said grooves 8<sup>a</sup>, said part 24 of the hose coupling being of a diameter to form a sleeved engagement with the outlet conduit 7. It is understood of course that when the hose attachment is applied to the outlet conduit for blowing purposes the opening in the front wall 16<sup>a</sup> of the nozzle will be closed and the nozzle elevated from the floor to obviate entrance of dust into the machine. It is to be understood that when the hose coupling has been applied to the outlet conduit 7, after removal of the bag 8, the device is susceptible of a variety of uses in addition to that of blowing dust and dirt, and in this connection the device may be employed with satisfactory results for drying purposes, for instance hair after washing, etc.

What I claim is:—

1. In a vacuum cleaning machine the combination of a fan casing having an opening in one wall thereof, a nozzle having openings in the front and rear walls thereof with the opening in the front wall of increased diameter relative to that of the rear wall, the said rear wall of the nozzle

having a flange part projecting through the opening of the fan casing and turned inwardly whereby to overlie the inner surface of the fan casing, the said flange forming a smooth continuous engaging surface, and a coupling member of sheet metal having a tapered periphery insertable through the openings of the nozzle and adapted to conform to and frictionally engage said engaging surface, and means interposed between the nozzle and coupling member for maintaining such frictional engagement.

2. A nozzle attachment for fan casings having an opening in one of the walls thereof, said attachment comprising a nozzle having registering openings in the front and rear walls thereof, that opening in the front wall being of increased diameter relative to that of the rear wall, said rear wall of the nozzle having a curved flange part adapted to engage over the wall surrounding the opening of the fan casing, and said curved flange part forming a continuous smooth bearing surface, a coupling member insertable through the openings of the nozzle, said coupling member having a tapered wall of thin sheet metal to contact with said bearing surface, and also having a projection overlying the front surface of the nozzle, and means on the nozzle to overlie said projection, and adapted by a rotary movement of the coupling member to force the tapered wall into place.

3. In combination with a nozzle adapted to be applied to a vacuum cleaner fan casing, the nozzle having openings in the front and rear walls thereof with the opening in the front wall of increased diameter relative to that of the rear wall, and the rear wall of the nozzle surrounding its opening having a curved flange part forming a smooth bearing, of a coupling member insertable through the opening of the nozzle, said coupling member being formed of sheet metal and having a tapered surface to engage said smooth bearing, said coupling member having an offset part, and also having an annular part interposed between said offset part and the front surface of the nozzle, and means on the nozzle to engage said annular part upon a rotation of the coupling member to maintain the coupling member in place.

4. In a machine of the character described, the combination of a horizontally disposed casing, a rotatable fan in the casing, said casing having an opening in the front wall thereof, a nozzle formed of sheet metal having a dust inlet slot at its lower edge and adapted to contact at its rear wall against the front wall of the casing, said nozzle having openings in the front and rear walls thereof with the wall surrounding the opening in the rear wall bent back upon itself to form a continuous smooth

engaging collar overlying the exposed  
edge of the opening in the front wall  
of the casing, and a coupling member hav-  
ing a tapered wall to frictionally engage by  
5 a sliding movement said collar, and means  
for engaging said coupling member to main-  
tain the same in place.

In testimony whereof I hereunto affix my  
signature in the presence of two witnesses.

MORRIS S. WRIGHT.

Witnesses:

MABEL I. CHADBOURNE,  
CLIFFORD L. WRIGHT.