C. BOYER.

VACUUM CLEANING MACHINE.

APPLICATION FILED DEC. 8, 1910.

1,012,800. Patented Dec. 26, 1911.

FIG. 1.

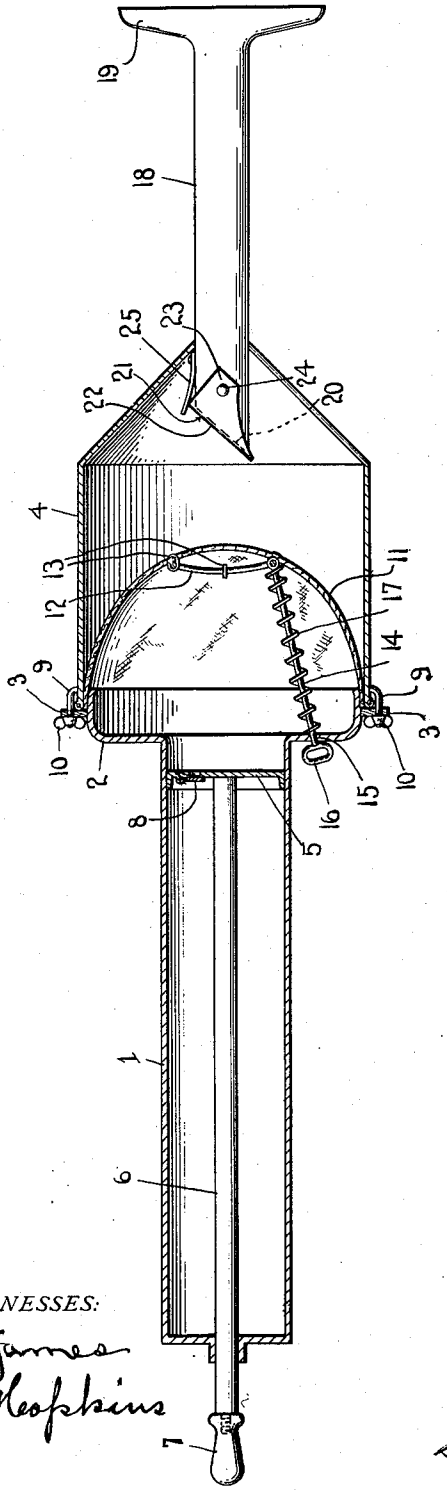


FIG. 3.

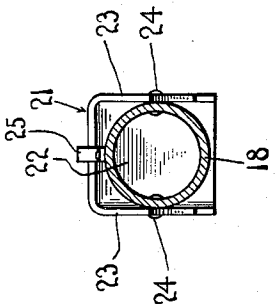
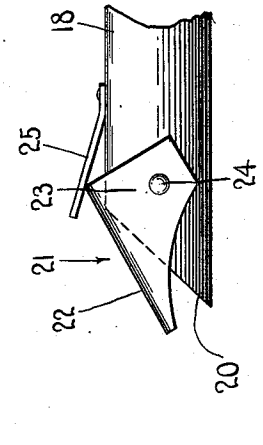


FIG. 2.



WITNESSES:

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VACUUM CLEANING-MACHINE.

1,012,800. Specification of Letters Patent. Patented Dec. 26, 1911.

Application filed December 8, 1910. Serial No. 596,237.

To all whom it may concern:

Be it known that I, CHARLES BOYER, a citizen of the United States, residing at Marengo, in the county of McHenry and State of Illinois, have invented certain new and useful Improvements in Vacuum Cleaning-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in vacuum cleaning machines.

One object of the invention is to provide a vacuum cleaner having an improved means for removing the accumulated dust and dirt from the air filtering bag of the machine and for keeping the bag in an expanded position, thus exposing all possible surface to the action of the air.

With this and other objects in view, this invention consists of certain novel features of construction, combination and arrangement of parts as will be more fully described and particularly pointed out in the appended claim.

In the accompanying drawings: Figure 1 is a central longitudinal section of a vacuum cleaning machine embodying my improvements. Figs. 2 and 3 are detail views of the controlling valve and its mechanism.

Referring more particularly to the drawings, 1 denotes the suction tube or cylinder of my improved vacuum cleaning machine, having on its inner end a head 2 provided with an annular flange 3 to which is firmly secured the dust receptacle 4 of the machine. In the cylinder 1 is slidably mounted a piston 5 having a piston rod 6 which projects through the outer end of the cylinder and is provided with a handle 7 whereby the piston may be reciprocated in the cylinder. The piston 5 may be provided with any suitable form of air valve 8.

The dust receptacle 4 may be secured to the head 2 of the cylinder by any suitable means whereby an air and dust proof connection is formed between these parts, said receptacle being here shown as preferably provided with a series of longitudinally extending threaded clamping bolts 9 which are secured to the inner end of the receptacle and are adapted to be engaged with passages formed in the flange 3. On the threaded ends of the bolts 9 are thumb nuts 10 which when screwed up into engagement with the outer side of the flange 3 will draw the inner end of the receptacle 4 up into air and dust tight engagement with the adjacent side of the flange thereby securely fastening the receptacle to the head of the cylinder.

Arranged in the receptacle 4 is an air filtering bag 11 which may be constructed of any suitable fabric through which the air may be drawn, but which will prevent the passage of dust. The bag 11 may be secured in the receptacle in any suitable manner but as here shown preferably has its outer edge clamped between the end of the receptacle 4 and the adjacent portions of the head 2 and flange 3 thereon. When the air and dust is drawn into the receptacle 4 by the action of the piston 5 in the cylinder 1 the air will pass through the bag and will be discharged through the valve in the piston or through any other suitable discharge ports while the dust will be caught in the receptacle. In thus drawing the air through the bag more or less dust will accumulate on the outer surface of the latter which in time will become clogged to such an extent as to render the machine difficult of operation. In order to readily remove the accumulated dust from the outer side of the bag without opening the machine, I provide a suitable bag cleaning device comprising a frame 12 which may be formed of wire or other suitable material and of any suitable shape for this purpose and is secured to the bag by stitching or other similar means as shown at 13. To the frame 12 is secured the inner end of a bag retracting and projecting rod 14 the outer end of which passes through and is slidably mounted in a guide passage 15 formed in the head 2 adjacent to one side of the inner end of the tube 1 as shown. On the outer end of the rod 14 is formed a ring or handle 16 by means of which it may be conveniently grasped and operated. On the rod 14 between the frame 12 and the inner side of the head 2 is arranged a coiled spring 17 the pressure of which is exerted when the handle is released to forcibly and suddenly project the frame 12 and bag 11 inwardly when the latter have been retracted or pulled outwardly by the rod 14. When thus forcibly and suddenly projecting the frame 12 and the bag 11 inwardly until the handle 16 contacts with the wall of the receptacle 4, the frame and bag are jarred and shaken with sufficient force to dislodge

all dust which may have accumulated on the outer side of the bag which thus will fall into the receptacle 4 and thus clear the pores of the fabric of which the bag is made thus permitting the machine to be readily operated. The frame 12 is normally held in a projected position by the spring 14 and thus keeps the bag 11 stretched or expanded so that the entire inner surface of the bag is exposed to the action of the air.

The outer end of the receptacle 4 is preferably of tapered or conical form and in said tapered end is secured a tube 18 which may be of any desired length and of any suitable cross sectional shape. On the outer end of the tube 18 is secured any suitable form of dust gathering tool 19. The inner end of the tube 18 projects a suitable distance into the outer end of the receptacle 4 and on said projecting inner end is formed an incline valve seat 20 to co-act with an air and dust controlling valve 21, which comprises a flat plate 22 having on its opposite side edges right angularly formed side plates 23 which are engaged with the opposite sides of the tube 18 and are pivotally connected to said sides as at 24. With the inner end of the valve is engaged a closing spring 25 which is secured to the adjacent portion of the tube 18 in any suitable manner and is adapted to automatically close the valve 23 when the latter is opened by the suction of the air being drawn through the tube 18. By arranging the valve 21 at an oblique angle to the draft or suction of the air through the pipe 18 and receptacle 4, said valve will readily respond and freely open under such suction or pressure and by arranging the spring 25 as shown the valve will be immediately closed and held in a closed position after the suction ceases thus preventing any escape of the air or dust back through the tube 18 when the piston 5 is pushed inwardly on its return stroke.

As clearly shown the spreading member is preferably constructed in the form of a frame which is stitched or otherwise secured to the inner surface of the bag and is centrally positioned therein, a rigid rod secured to the frame and slidably passing through the front wall of the receptacle, and a coiled spring encircling said rod and disposed between the frame and front wall of the receptacle through which the rod passes, whereby when the bag is reciprocated the frame laterally secured to and projecting from the rod will yieldingly hold the bag in an extended position and permit the same to slightly yield during the operation of the machine, and further said frame will yieldingly contact with the bag when the rod is reciprocated, the frame thus positioned forming no obstruction for the free and direct passage of the air through the bag.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claim.

Having thus described my invention what I claim is:

A vacuum cleaning machine comprising a dust receptacle, an air filtering bag arranged therein, means for shaking the dust from the surface of the bag while the machine is in operation, said shaking means consisting of an operating rod projecting into the receptacle and operated from the outside thereof, a yielding frame projecting laterally from said rod and secured to the bag, and a spiral spring encircling the rod and disposed between the frame and wall of the receptacle through which said rod passes.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES BOYER.

Witnesses:
EDWARD JOBE,
FRANKLIN CURTISS.