

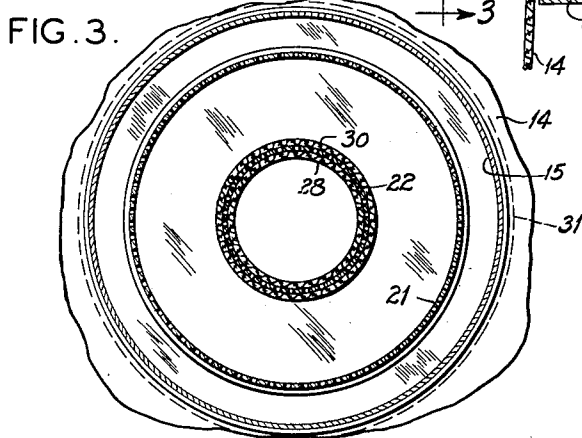
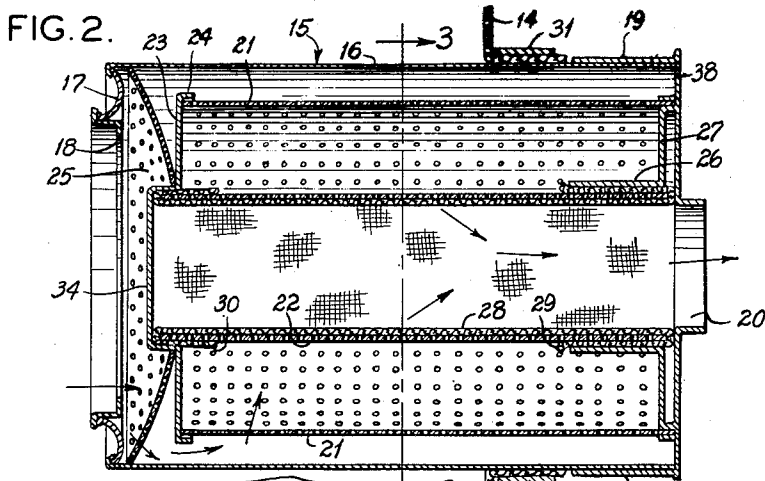
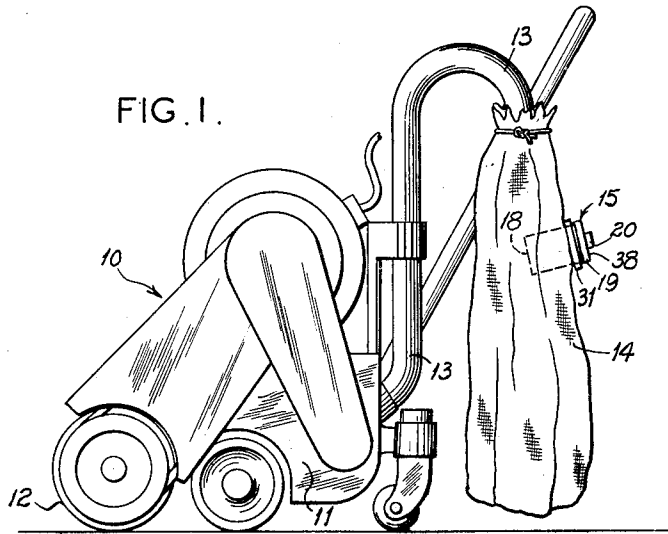
Aug. 22, 1950

D. FRAMER

2,519,897

AIR FILTER FOR DUST COLLECTORS

Filed Feb. 7, 1949



INVENTOR;
DAVID FRAMER.
BY *Lawrence H. Cohn*
ATTORNEY.

UNITED STATES PATENT OFFICE

2,519,897

AIR FILTER FOR DUST COLLECTORS

David Framer, St. Louis, Mo.

Application February 7, 1949, Serial No. 74,989

1 Claim. (Cl. 183—70)

1

My invention relates generally to the dust collecting means used in connection with floor sanders, vacuum cleaners and other machines wherein dust is picked up by vacuum action and carried in an air stream to a bag or other collecting receptacle. More particularly the invention relates to a pressure release filter device for the dust receptacle.

It is well understood that the efficiency of machines of this kind gradually reduces as the collecting receptacle becomes filled, due to increasing back pressure on the blower or fan caused by a reduction of the effective filtering area of the receptacle.

The object of the present invention is to provide a device for effecting a reduction in the back pressure on the blower and for improving the efficiency of the dust collecting means.

Specifically, an object of the invention is attained in the provision of a device to be applied to the upper end of the dust collecting bag to provide an escape passage for filtered air. The device of my invention results in lowering the internal pressure of the bag and enables the machine to function with relatively improved efficiency, particularly as the bag approaches the normal limit of its effective capacity. An object of the invention is thus attained in increasing the effective or operating capacity of the bag without increasing its physical size, and in making it unnecessary for the operator to empty the bag at frequent intervals in order to maintain adequate suction pressure.

A further object resides in the provision of a device as described which can be easily and quickly detached and disassembled, as for cleaning purposes.

These and other objects and advantages will appear from the following description and accompanying drawing illustrating a practical embodiment of the invention.

In the drawing Fig. 1 is a side elevational view of a floor sanding machine with the pressure releasing device of my invention installed in the dust bag;

Fig. 2 is a longitudinal sectional view taken at a medial plane through the device, and

Fig. 3 is a transverse sectional view taken at line 3—3 of Fig. 2.

Referring now by characters of reference to the drawing, numeral 10 denotes generally a floor sanding machine of conventional design, the machine having a suction fan housed in a casing portion indicated at 11. The fan inducts wood dust produced by the operation of a sanding roll

2

12 and discharges the dust through a pipe 13 into a removable fabric bag 14.

The device of my invention, designated 15, extends through the wall of the bag near its upper end and affords a discharge passage for air from which the dust has been effectively removed by low-resistant screening provisions. The air pressure in the bag and the back pressure on the fan is thereby substantially reduced, the efficiency of the dust collecting means being greatly improved. The improvement is especially manifest when the bag becomes partly filled and which without my device would require emptying to enable the suction means to operate satisfactorily.

The device comprises an imperforate cylindrical metal shell 16 having a wall portion 17 at its inner end provided with a relatively large concentric inlet opening 18. The opposite or forward end of the outer shell 16 is completely open and has mounted thereon a removable cap plate 38, frictionally attached to the outer shell by an annular flange portion 19. A concentric air discharge opening 20 of smaller diameter than the inlet opening 18 is provided in the cap plate.

Concentrically arranged within the shell 15 are two cylindrical filter screens 21 and 22, preferably formed of sheet metal and having small perforations throughout their entire surfaces. The screen 21 is greater in diameter than the inlet opening 18 and is fixed to the end cap 38. At its opposite end screen 21 is closed by an imperforate removable cover 23 having an annular rim 24 which receives the end of the screen. The center area of the cover is depressed to provide a circular socket portion 34 to receive and support the inner end of the screen 22. A dished discoidal screen 25 formed of perforated sheet metal is permanently fixed to the outer surface of the cover 23, the socket portion 34 projecting through a central opening in the end screen 25. The end screen 25 is dimensioned to fit closely within the outer casing 15.

The forward end of the smaller cylindrical screen 22 is removably disposed in the tubular socket portion 26 of a bracket member 27 fixed to the end cap 38. Lining the inner surface of screen 22 is a tubular filtering member 28 formed of fabric material. This member has its end portions 29 and 30 doubled back over the end portions of screen 22 and tightly held between the said screen and the socket portions 26 and 34.

The filtering unit is installed in the bag which is provided with a wall opening to accommodate the same. A metal band 31 clamps the marginal

3

portions of the bag to the outer surface or the shell 15.

The operation of the device is as follows: The dust laden air moves through the inlet opening 18 and through the end screen 25 where some of the dust is filtered out of the stream and deposited. The air stream is caused to pass around the imperforate end plate 23 and moves radially inwardly through the several cylindrical screens 21 and 22 and through the fabric layer 28, after which it discharges through the outlet opening 20. The screening and filtering members are all attached to the cap member 38 and are removable as a unit with that member for easy cleaning. Most of the dust is removed from the air by the metal screens 21, 22 and 25 before reaching the fabric filter 28 and these metal members can be readily relieved of their deposits by wiping. The cloth filter 28 may be removed for cleaning purposes by slipping the inner screen 22 out of the end socket portions, but such is required only at infrequent intervals.

From the foregoing description it will appear that my invention resides in the provision of a device having screening provisions disposed within the confines of the dust receptacle, which increases substantially the filtering surface afforded by the said receptacle without materially increasing its overall dimensions, and wherein the screening parts may be easily and quickly detached as for cleaning purposes, all to the end of enhancing the operating efficiency of the dust collecting provisions of the machine.

4

Having described my invention what I claim and desire to secure by Letters Patent is:

In vacuum type dust collecting apparatus including a filter bag into which dust laden air is discharged, a tubular member mounted on and projecting through the wall of the bag, a porous screening plate covering the inner end of said member, a detachable cap on the external end of said member, air filtering means mounted on said cap said means comprising a plurality of tubular filter screens concentrically arranged within the member, an imperforate plate closing the inner ends of said screens, said plate having a centrally depressed portion forming a socket for holding the inner end of the innermost said screen, a tubular fabric filter element on the innermost said screen, said cap having an air discharge opening communicating with the interior of said filtering element.

DAVID FRAMER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
945,632	Strahl	Jan. 4, 1910
1,561,928	Jaquith	Nov. 17, 1925
1,702,804	Winslow	Feb. 19, 1929
2,174,528	Prentiss	Oct. 3, 1939