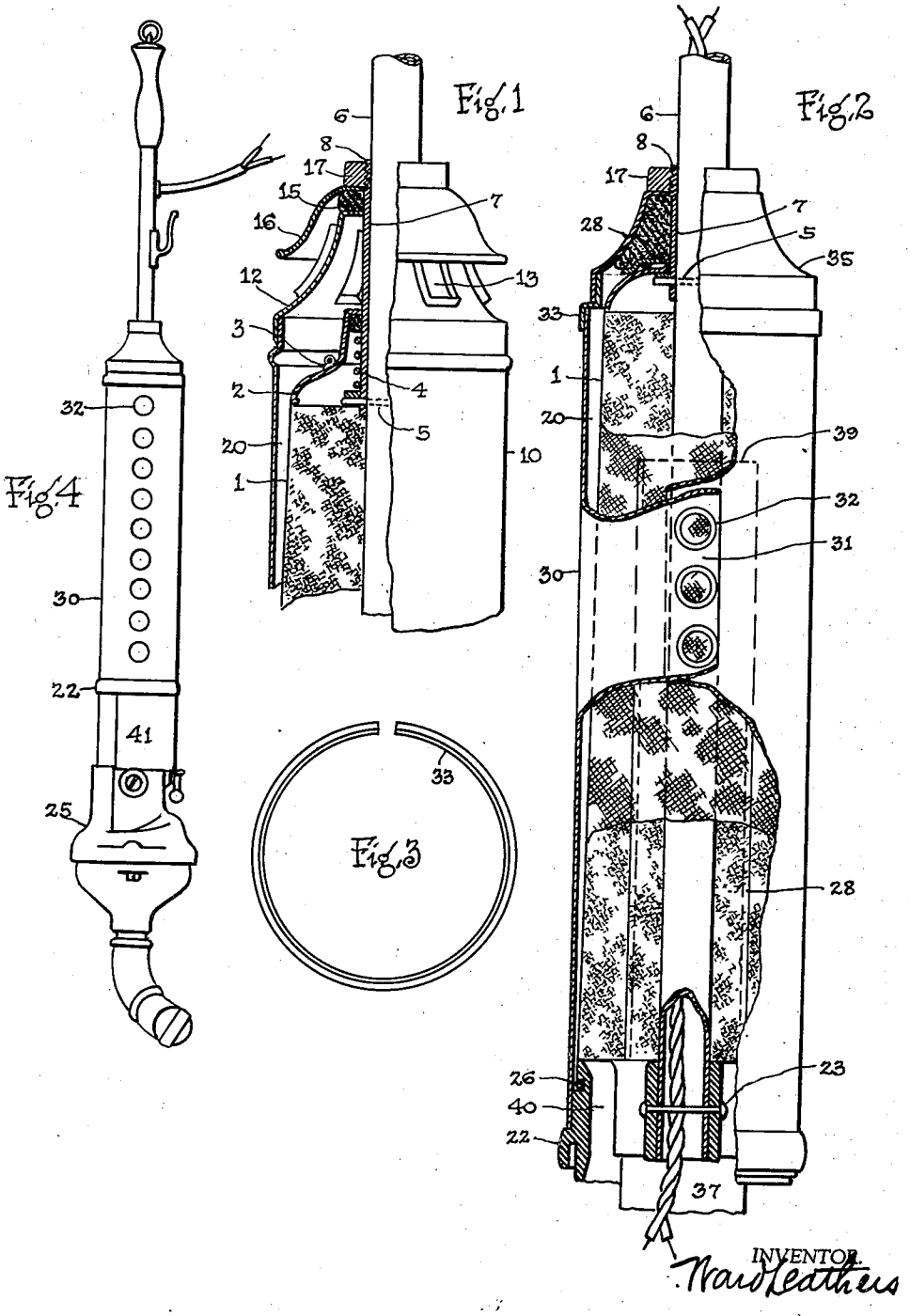
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COVERED FILTER FOR VACUUM CLEANERS

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COVERED FILTER FOR VACUUM CLEANERS

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The general object of my invention is to produce an improved light weight suction cleaning device for vacuum cleaner purposes. It refers especially to the type of vacuum cleaner having a motor-suction-unit rigid with the handle thereof; it has to do particularly with the making of a filter and solid cover therefor, surrounding the handle of said cleaner.

This specification is a continuation in part of that set forth in my application for Letters Patent, Serial No. 713,347, filed February 28th, 1934.

My many Letters Patent granted and applications pending pertaining to the type of suction cleaner above mentioned, indicate the many advantages of the present invention which places the filter beyond service contact with the user and makes the same accessible in case of stoppage or for other reasons.

The present invention is expressed as a fabric cylinder for filtering purposes, concentric with the handle, and housed by a sleeve or cylinder of solid material, preferably hard fibre. The hard fibre is desirable in that it avoids denting which would occur with light weight sheet metal and only light weight sheet metal can be used without adding unduly to the weight of the machine. My invention makes practical the construction of such cylindrical cover from such material and provides means for permitting the escape of air from between the filter and protective cover and enables the operator or service man to remove the cover from the machine in the simplest possible manner. The constructions as set forth herein, provide means of quick and practical assembly, of locking the outside cover firmly into place by a single lock or thumb nut, and at the same time provides a substantially dust-tight seal at the top of the filter.

In order to set forth my invention so that those familiar with these arts may understand, I have prepared this specification and appended drawing hereto of which:—

Figure 1 shows a partial cross-section of the upper portion of the filter mechanism with the air escape at the top.

Figure 2 shows a partial cross-section of filter and cover with air escape on the sides.

Figure 3 is a locking ring.

Figure 4 is a side view of a suction cleaner with the filter mechanism of Figure 2.

The fabric filter 1 is supported on an inner top shell 2 by means of a draw string 3. The inner top shell is held upward by a spring 4 resisted at the bottom by a pin 5 passing through the handle 6. A felt and washer between the spring 4 and the shell 2 makes a substantially air tight joint. The pin 5 also holds in place a sleeve 7 which surrounds the handle and has at its upper end a thread 8. The filter is fastened at the bottom so that the upward thrust of the spring holds the filter taut by means of the shell 2. The filter is surrounded by a rigid housing 10 made of thin material such as sheet metal or hard fibre. The metal cap 12 rests over and around the cover 10 and is provided with air ports 13. There is a soft rubber washer 15, a top bell 16 and a locking thumb-nut 17 which complete the assembly of the filter top. Air escaping from the filter is released to a chamber 20 between the filter and the cover 10. It escapes from the ports 13. The bell 16 interrupts the upward blast of air.

A modification of this construction, see Figure 2, is more especially adapted to an outside protective cover made of hard fibre; and I have found hard fibre to be an exceptionally advantageous material because of its light weight, great strength, resiliency and resistance to indentation. In this modified form, the handle 6 is shown joined to a filter-holder 22 by means of a pin 23. The holder 22 is preferably a die casting rigidly joined to the motor-blower-unit 25 (see Figure 4). The filter 1 is fastened at the bottom by means of wire, welt or other means 26 and at the top brought together with a draw string clamped between two pieces of metal, themselves locked together as shown at 28. An outer protective cover 30 made of a hard-fibre sheet is shown joined at its overlap 31 by means of eyelets 32. These eyelets serve as a means of escape for the air from the chamber 20, preferably the entire length of the filter covering. A split ring 33 (see Figure 3) rests around the upper rim of the cover 30 and is held in place by a top cap 35. The top cap 35 is forced downward by means of the lock-nut 17 on the thread 8 on the sleeve 7 held by the pin 5. Between the filter top parts 28 and the top cap 35 a thick washer of spongy material, such as felt or sponge-rubber, makes a substantially air tight seal for the filter top and holds the filter top in place. An electrical conductor 6' passes through the handle 6.

When the lock nut 17 is removed from its thread the top cap 35 may be moved upward on the handle. The split ring 33 may be removed, and since the inner diameter of the housing 30 is slightly greater than the outer diameter of the cap 35, the cover 30 may be removed from the machine regardless of the fixed obstructions on the handle, such as cord-hook, current conductors, handle grip and the like. It will be noted

that the outer sleeve **30** requires no fastening at the bottom other than a suitable shoulder on the filter-holder **22**. It is locked downward into place by means of the locking nut **17**. The cover may also be used to hold welt or wire **26** at the bottom of the filter tightly in its groove. Thus the lock nut **17**, by means of the cap **35** and the split ring **33** locks the sleeve **30** firmly into place and at the same time holds the filter parts **28** in place. The eyelets **32** may be in any location on the circumference of the case **30** and there may be another row of eyelets on the opposite side if desired.

The dirt laden air is led from the motor-suction-unit **25** through a duct **37** which communicates with a flexible conductor **38** consisting of a piece of fabric sewn to the inside of the filter, to a point somewhere near the top of the filter, as at **39**. The dirt laden air from this point moves downward through the filter, diminishing in speed as the air filters outward, and depositing the dirt at the bottom from, which it passes through a major opening **40** into a removable dirt receptacle **41**.

Having set forth my invention in a form reduced to mechanical practice, it should be understood that there are other types of construction familiar to those versed in these arts which accomplish the same purpose without departing from the spirit of my invention.

I claim:

1. In a vacuum cleaner, a handle surrounded by a filter, a support at the bottom of said sleeve firmly joined to said handle, a dirt-receptacle disposed beneath said filter, a solid substantially cylindrical cover surrounding said filter, said filter joined to the handle at the top in substantially air tight manner, a threaded sleeve joined to and surrounding said handle, a solid cap for said cover holding cap and sleeve firmly in place by means of a thumb-nut surrounding the handle, and engaging the threads of said sleeve.

2. In a vacuum cleaner, a handle surrounded by a filtering sleeve joined at the bottom to a member firmly supported on said handle, a substantially cylindrical casing of hard, thin, substantially non-dentable material surrounding said filter and supported at the top by means of a cap surrounding said handle, and with a row of ventilating eyelets used in the overlapping seam of said cover firmly joining the edges together.

3. In a vacuum cleaner, a handle, a filtering sleeve surrounding said handle joined at the bottom to a ring firmly supported on said handle, a substantially cylindrical cover of thin solid material surrounding said filter and supported on said ring, means of admitting dirt laden air to the bottom of said filter and exhaust of filtered air from said cover, a top cap for said cover surrounding said handle supporting the top of said cover on the handle and a split ring disposed between said cap and said cover for purposes of disassembly.

4. In a vacuum cleaner, a motor-suction-unit, a handle joined to the top thereof, a filtering sleeve surrounding said handle having a substantially cylindrical cover of thin solid material, all substantially concentric with each other, a dirt receptacle disposed between said motor-suction-unit and said filter, electrical conductors inside said handle and means of locking the cover firmly into place by means of its cap, said means consisting of a tubular part surrounding and joined to said handle and a removable locking device engaging said part.

5. In a vacuum cleaner, a handle firmly joined to a motor-suction-unit, a filtering sleeve surrounding said handle having a cover of thin solid material, means of admitting dirt laden air to the bottom of said filter and exhausting filtered air from said cover, a cap for said cover surrounding said handle removably and firmly held thereon and a split ring used as a juncture between said cover and said cap.

WARD LEATHERS.