

Filed March 29, 1962

APPARATUS FOR THE REMOVAL OF WASTE
MATERIAL IN TEXTILE MACHINES

2 Sheets-Sheet 1



Sept. 28, 1965

Filed March 29, 1962

J. F. HERUBEL
APPARATUS FOR THE REMOVAL OF WASTE
MATERIAL IN TEXTILE MACHINES

3,208,202

2 Sheets-Sheet 2

Fig. 3

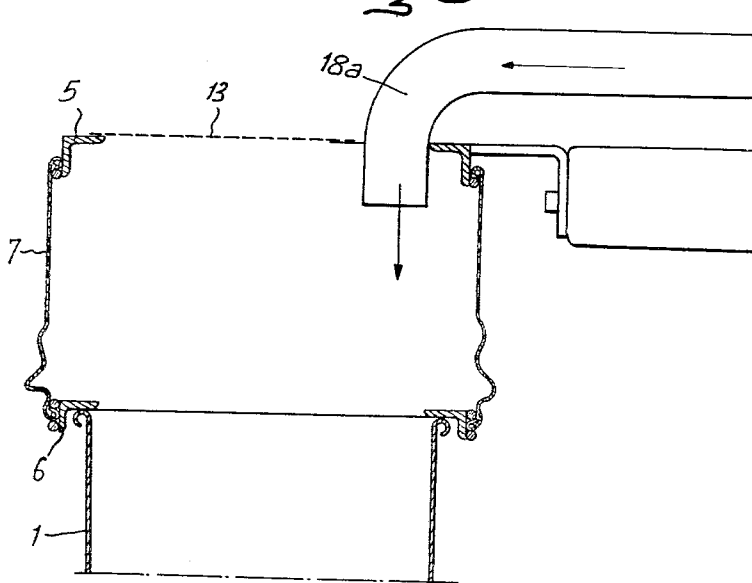
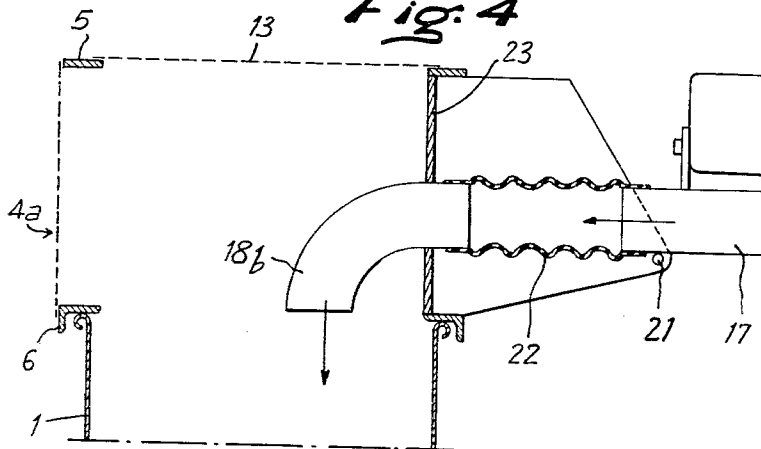


Fig. 4



1

3,208,202

APPARATUS FOR THE REMOVAL OF WASTE
MATERIAL IN TEXTILE MACHINESJean Frederic Herubel, Guebwiller, Haut-Rhin, France,
assignor to N. Schlumberger & Cie, Guebwiller, Haut-
Rhin, France, a French company

Filed Mar. 29, 1962, Ser. No. 183,672

Claims priority, application France, Apr. 5, 1961,
857,743

6 Claims. (Cl. 55-366)

This invention relates to apparatus for the removal of waste, dust, flock and the like from textile machines.

It is known that textile machines in which fibre stock is processed must be cleaned frequently. In fact, the dust, flock, waste and fluff or the like which come from the roving or sliver to be drafted or combed settle inside the machine and are accordingly liable to produce defects in the final product if accumulations of waste or the like are formed on the rolls or on any other elements which have a direct influence on the cleanliness or uniformity of the said product.

In order to overcome these drawbacks, there have been employed mechanical devices for cleaning the rolls. Such mechanical devices have been in the form of brushes, or battens or rolls which are covered, for example, with velvet of the type known as "green plush."

Air cleaning devices are at present known which suck waste from textile machines or flock particles which settle on the rolls.

These devices have the advantage of eliminating to a large extent the periods of stoppage of the machines for cleaning purposes.

The waste and dust particles which are collected by means of suction vents located either in proximity to the areas to be cleaned or at the point of formation of waste are sucked through a passage and are collected in a filter-container, that is to say, a container which separates the waste from the entraining air. The said filter-container is merely a box, the walls of which are formed by a suitable filter surface such as a wire cloth or gauze, for example.

When the box is full, the waste is removed, but the handling of the filled box frequently causes the dispersal of particles which soil the machines. Moreover, if quantity of fluff to be removed by suction is in any way substantial, the capacity of the filter-boxes nearly always proves to be too small.

It is an object of the present invention to provide an installation for the removal by air-suction of fluff and the like which is free from the above-mentioned drawbacks of known installations.

In this respect, the installation in accordance with the invention comprises a waste container which is open at the top portion thereof and which can readily be moved. Preferably the container rests on swivelling casters. The container further comprises a filter cap which fits over the opening of the said container and which is connected to the conduit for the removal of waste from each machine by air-suction.

By virtue of this structure, when it is deemed that the container is sufficiently filled with waste, it is merely necessary to replace the filled container with an empty container after the current of air has been cut off, if necessary. Thus, there is no longer any need to handle the waste particles directly and to run the risk of causing these latter to be dispersed and thus soil the surrounding machinery as well as the material which has already been processed.

2

For this reason, the container will be located preferably at the rear of the machines, even beyond the feed cans. In particular, in the case of combing machines, if dust were to form as a result of changing of the waste cans, this dust would only soil those ribbons which have not yet been combed and cleaned.

The present invention also has for an object to provide embodiments which comprise at least one of the following characteristic features:

(a) all the walls of the filter-cap, namely the top and side walls thereof, are designed as filters,

(b) the side filter-wall has a certain flexibility and the bottom rim of the filter-cap is designed and adapted to bear on the rim of the top opening of the container, thereby sealing off the fluff in the container under the action of the weight of the filter cap,

(c) the top portion of the filter-cap is rigidly mounted on the machine,

(d) the filter-cap is pivotally mounted on the machine by means of a hinge and is connected to the air-passage by means of a flexible hose,

(e) the aforementioned container is constituted by a conventional can of the type commonly employed in the textile industry for the purpose of receiving the sliver or roving of fibre stock.

The invention will be more clearly understood with reference both to the description which follows below and to the accompanying drawings in which several embodiments of the invention are shown by way of example, without any limitation being implied.

In these drawings:

FIG. 1 is an elevational view with parts broken away, of an embodiment for the removal of waste in a textile machine in accordance with the invention;

FIG. 2 is a plan view of the embodiment shown in FIG. 1, and

FIGS. 3 and 4 are cross-sectional views of further embodiments of the top portion of the embodiment shown in FIG. 1.

The apparatus for the removal by air-suction of fluff, waste, flock, dust or the like in a textile machine and as illustrated in FIGS. 1 and 2 comprises a waste container or can 1 which has an upper rim defining an open top portion. The container has a cylindrical shape and is preferably constituted by a conventional can of the type commonly employed in the textile industry for the purpose of receiving the sliver or roving of fibre stock, the said can being readily movable and provided for this purpose with swivelling casters 2.

A filter-cap which is generally designated by the reference numeral 4 is disposed above the can 1. The said cap is essentially constituted by a top ring 5 and a bottom ring 6 which are connected together by means of a tubular flexible filter-hose 7 of pervious material. The hose 7 permits the escape of the air which entrain the waste while retaining the waste within the filter-cap. The two rings 5 and 6 each have an angular cross section.. The bottom ring rests by its own weight directly on the top rim of the can 1, thereby ensuring a sufficient airtightness.

The filter-hose 7 is fastened to the rings 5, 6 by any appropriate conventional means, for example by means of strings such as the strings 8 and 9 which are knotted, for example as indicated at 11 and 12 respectively and encircle the downwardly depending peripheral flanges of the rings 5, 6.

The top portion of the cap 4 is constituted by a circular wall 13 which is also constituted of pervious material

such as, for example, wire cloth or gauze and which wall 13 thereby acts as a filter and is fastened to the top ring 5.

When existing cans are employed, the top filter-wall 13 will have approximately the same surface area as the cross-sectional area of the can so as not to be cumbersome, and so that the total height of the cap 4 will be predetermined in such manner as to ensure that the combined unit formed by the top filter-wall 13 and the side filter-wall which is constituted by the hose 7 has a surface of sufficient area to permit a fairly low velocity of the filtered air and to prevent by this means any troublesome external eddy-currents.

The top ring 5 of the cap is fastened to a support 16 which is integral with the machine on which the installation is mounted.

An inlet conduit 17 adapted for connection with a textile machine for the removal of waste therefrom is coupled to the cap 4 in the interior of which opens an elbow or spout 18 of the said conduit, in such manner that the waste particles are projected directly in the direction of the arrow *f* and down towards the bottom of the can 1.

There has also been indicated in the drawings a guide 19 which is rigidly fixed to the machine and against which the can 1 can be brought to bear as and when the latter is fitted in position, thereby ensuring the instantaneous correct positioning of the said can.

In the example, the ventilating-fan which serves to convey the waste particles along with the air from the point at which they are produced to the point at which they are admitted inside the can is located upstream with respect to the said can. When the said can is considered to be sufficiently filled with waste, it is merely necessary to lift the bottom ring 6 of the cap and to replace the full can with an empty can after having cut-off the air current if so desired.

In an installation of this type, the replacement of the cans is carried out practically instantaneously and without any danger of dispersal of the waste particles since the waste does not have to be handled directly or in the immediate vicinity of the machine. The ease with which the cans are replaced permits the frequent and very rapid removal of waste, irrespective of the quantity or volume thereof.

The alternative embodiment which is illustrated in FIG. 3 differs from the embodiment of FIGS. 1 and 2 only in that the elbow 18a provided for the admission of the waste inside the filter-cap passes through the top filter-wall 13 of this filter-cap instead of passing through the flexible side-wall 7.

Finally, in FIG. 4, there has been illustrated another embodiment in which the cap 4a forms a rigid assembly which pivots about a horizontal hinge 21 which is fitted on the machine, while the elbow 18b for the admission of waste in the interior of the cap is fixed permanently in the side wall 23 of the cap and coupled to the fixed conduit 17 of the machine by means of a flexible hose 22 which is preferably located in the vicinity of the hinge 21.

It will be understood that the invention is in no way limited to the forms of embodiment which have been described and illustrated and which have been given by way of example, and that a large number of modifications which are within the skill of any person versed in the art can be made therein without consequently departing from the scope or the spirit of the present invention. It accordingly follows, for example, that instead of simply resting on the top rim of the container, the filter-cap could be fastened thereon by any appropriate rapid detachment means of a conventional type, with interposition of a joint if necessary. The present invention is also applicable to centralized installations in which the cap of the waste container or containers may be connected to the passages for removal by air-suction of waste derived from a number of machines.

What is claimed is:

1. Waste removal apparatus comprising a movable container having an upper rim defining an open top, a filter cap covering the open top of the container, said filter cap including a pair of rigid annular upper and lower horizontally disposed members in vertically spaced superimposed relationship, a tubular side wall connecting said annular members together and a top wall supported on and attached to the upper of the rigid annular members closing the opening therein whereby said filter cap is formed as closure with an opening in the lower of the annular members, said filter cap being positioned above said container with the lower rigid member resting detachably on the upper rim in air-tight relation and with communication being provided between the filter cap and the container via the opening in the lower member of the filter cap and the open top of the container, an inlet conduit projecting into the filter cap and adapted for connection to a textile machine for receiving therefrom waste entrained in a gaseous pressure medium, said side wall and top wall being formed of a material permeable to the passage of the gaseous medium to allow outflow thereof while being impervious to the waste material to retain the same in the filter cap and allow the waste to drop into the container, whereby upon completion of the filling of the container, the container can be detached from the filter cap by raising the lower annular member of the filter cap and can be replaced with an empty container.

2. Apparatus as claimed in claim 1 wherein said tubular side wall comprises a rigid portion connected between the annular members to maintain the same in fixed vertically spaced alignment, and means connected to the latter portion of the side wall to provide pivotal movement of the filter cap with respect to the container.

3. Apparatus as claimed in claim 1 wherein said side wall of the filter cap is flexible to enable the lower rigid member to rest by its weight on the rim of the container and prevent outflow of material thereat, while also enabling raising of the lower member to permit removal and replacement of the container.

4. Apparatus for the removal of waste comprising a mobile rigid receptacle having an upper rim defining an open top, a filter-cap covering the open top of the receptacle, said filter-cap including a pair of upper and lower horizontally disposed annular members in vertically spaced axial alignment, said members being rigid and each including a peripheral depending flange portion, a tubular flexible sidewall attached to the flange portions of said members, and a top wall on and attached to the upper annular member closing the opening therein whereby said filter cap is formed as a closure with an opening in the lower annular member; means connected to the said upper member for securing the same in fixed position with respect to the lower member, the lower annular member freely resting on the rim of the receptacle for being raised therefrom and lowered thereon, said filter cap and receptacle being in communication via the opening in the lower member of the filter cap and the open top of the receptacle, an inlet conduit projecting into the filter cap for introducing into the filter cap waste entrained in a gaseous pressure medium, said side wall and said top wall of the filter cap being formed of a material pervious to the gaseous pressure medium to permit discharge of the pressure medium but being impervious to waste to retain the waste in the filter cap and allow the waste to drop into the receptacle, said receptacle being removable by raising the lower annular member of the filter-cap which rests on the receptacle.

5. Apparatus as claimed in claim 4 wherein said conduit projects through the top wall of the filter-cap.

6. Apparatus as claimed in claim 4 wherein said conduit projects through the side wall of the filter-cap.

References Cited by the Examiner

UNITED STATES PATENTS

251,392	12/81	Ward	141—388
832,188	10/06	Hall	55—422
897,342	9/08	Boegel	55—380
2,069,691	2/37	Wilson et al.	
2,123,914	7/38	Replogle	55—375
2,325,820	8/43	White.	
2,338,504	1/44	Foster	55—374
2,496,180	1/50	Smith et al.	55—472
2,951,553	9/60	Kirby	55—378
2,962,121	11/60	Wilber	55—493

3,022,925	2/62	Daniell	222—517
3,086,348	4/63	Fowler et al.	57—56

FOREIGN PATENTS

212,948	2/58	Australia.
---------	------	------------

OTHER REFERENCES

Krantz: German printed application No. 1,081,809, 5/60.

¹⁰ HARRY B. THORNTON, *Primary Examiner*.

REUBEN FRIEDMAN, *Examiner*.