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Stewart

[11] **3,762,143**

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[54] **APPARATUS FOR PNEUMATICALLY CLEANING OPEN-END SPINNING MACHINES**

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[21] Appl. No.: **203,686**

Related U.S. Application Data

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[52] **U.S. Cl.** **57/56**, 15/301, 55/283, 134/21, 134/37

[51] **Int. Cl.** **D01h 11/00**, B01d 35/12

[58] **Field of Search** ..... 134/21, 37; 15/301, 15/306 R; 57/56, 58.89–58.95; 55/283, 274, 341

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Primary Examiner—Morris O. Wolk
Assistant Examiner—D. G. Millman
Attorney—Paul B. Bell et al.

[57] **ABSTRACT**

Means for maintaining a substantially constant high pressure suction air stream at a plurality of open-end spinning units while alternately filtering the air stream through a pair of generally parallel filter-containing air flow chambers in advance of a high pressure suction fan whereby fiber waste may be removed from each chamber and its filter while the air stream flows through the other chamber without reducing the efficiency of the air flow at the spinning units as effected by the fan.

8 Claims, 5 Drawing Figures

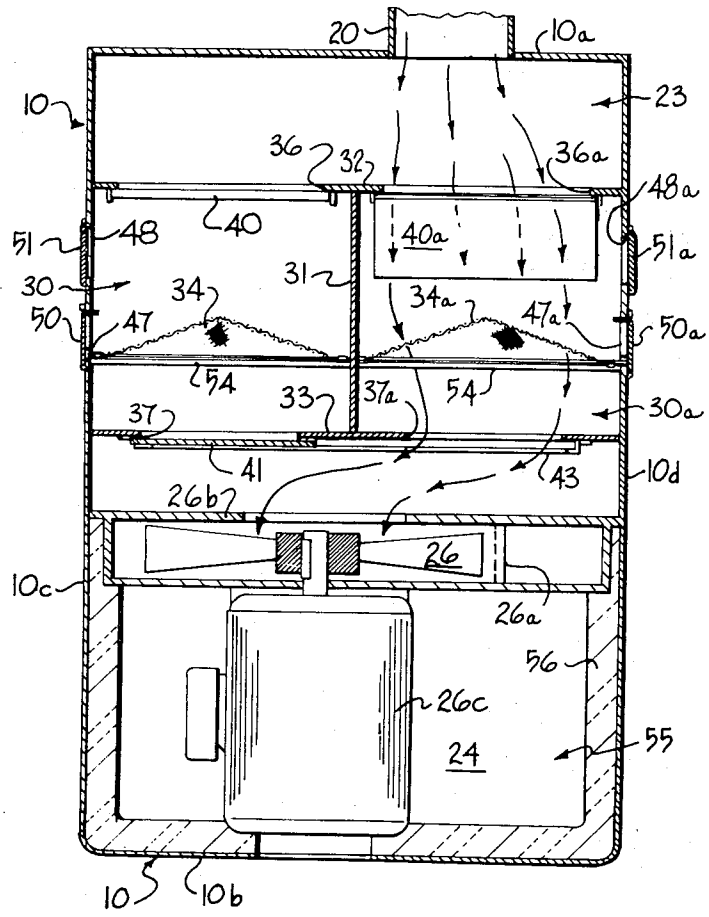
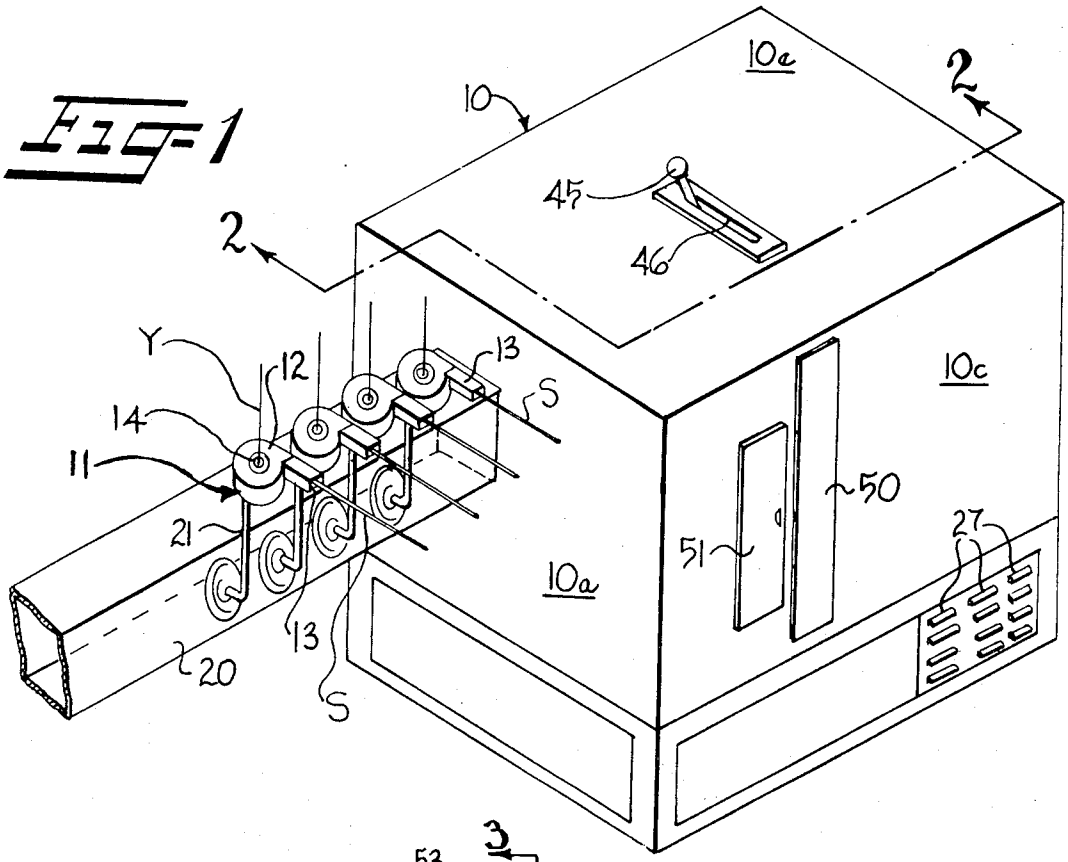


Fig. 1


10
10e
2
45
46
2
Y
12
13
S
14
11
21
10c
50
51
27
10a
13
20
S

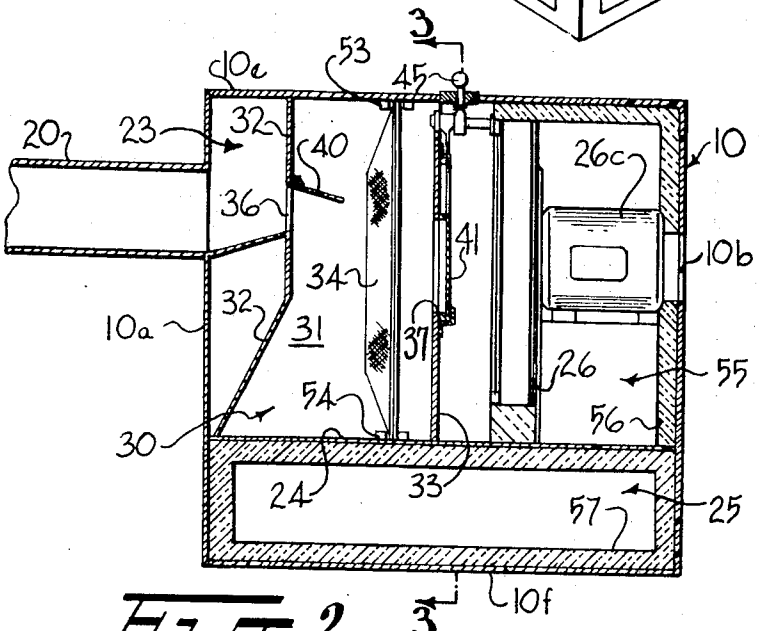

3
10e
53
45
20
23
32
40
26c
10
36
41
10b
34
32
10a
31
37
26
55
54
56
30
24
33
57
25
10f
3

Fig. 2

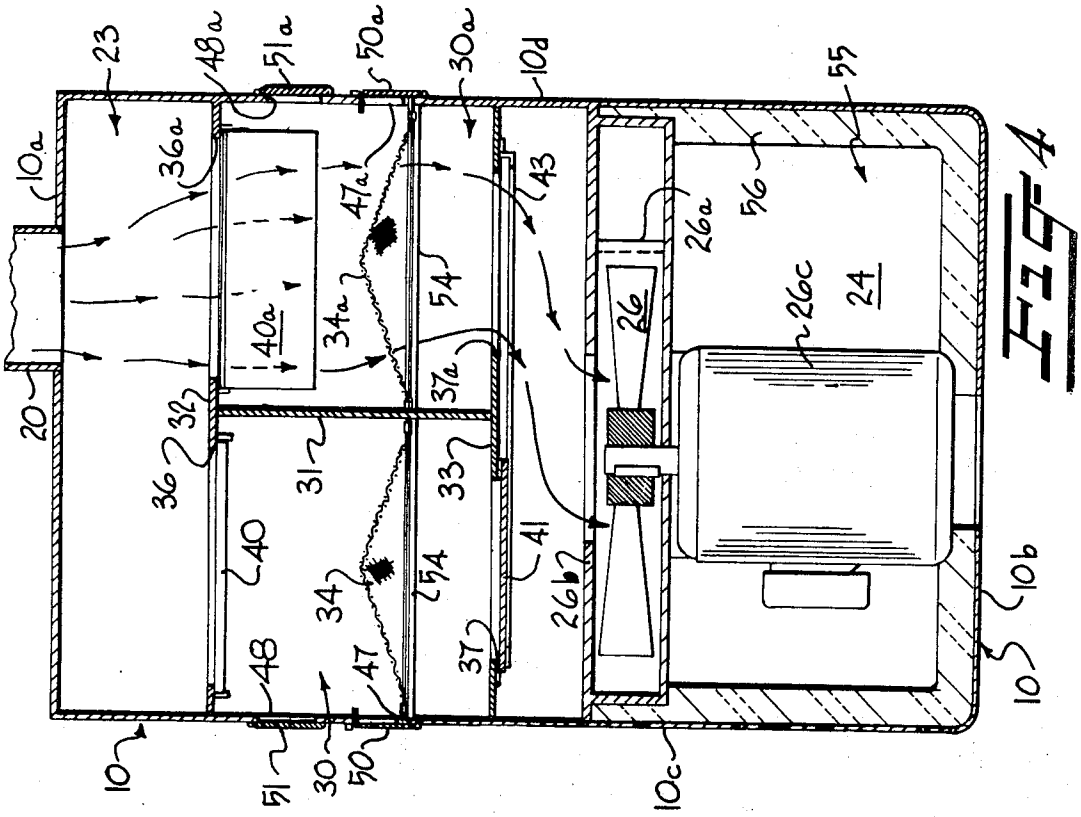

23
48a
51a
50a
30a
10d
55
10a
36a
47a
43
56
26a
54
26
26c
24
40a
34a
37a
20
32
36
31
33
40
41
34
54
26b
48
47
37
10b
10
51
30
50
10c

FIG. 4

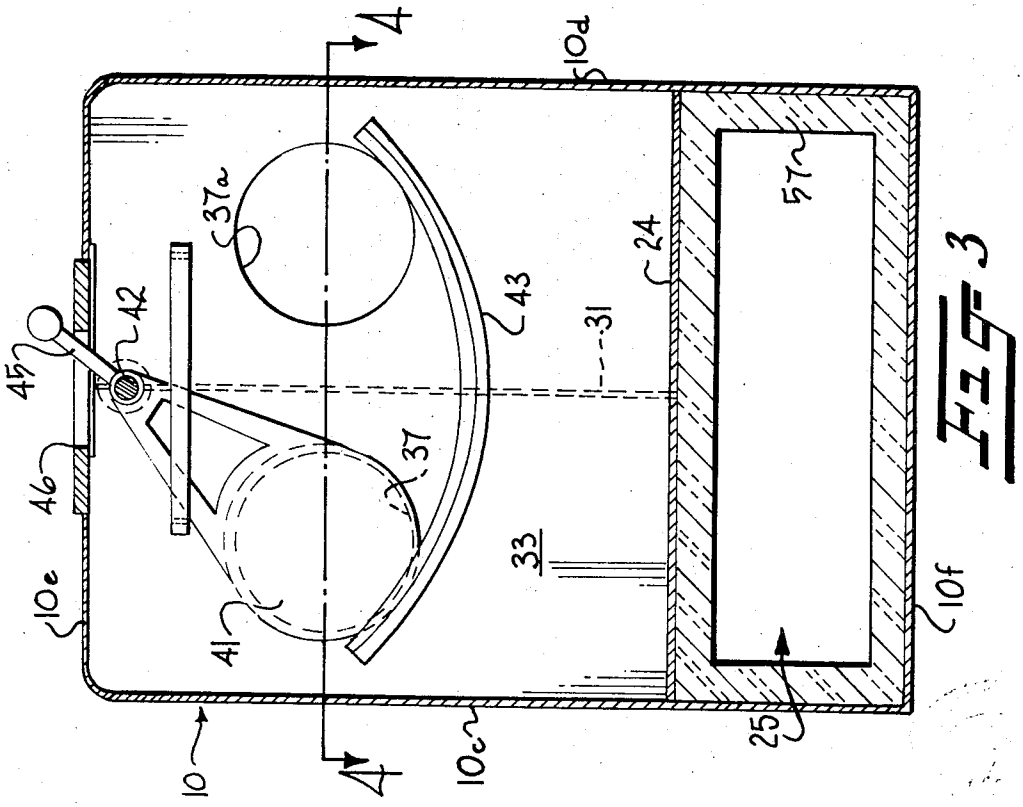

4
10d
37a
57
24
42
43
31
45
46
37
33
10e
41
10f
10
10c
25

FIG. 3

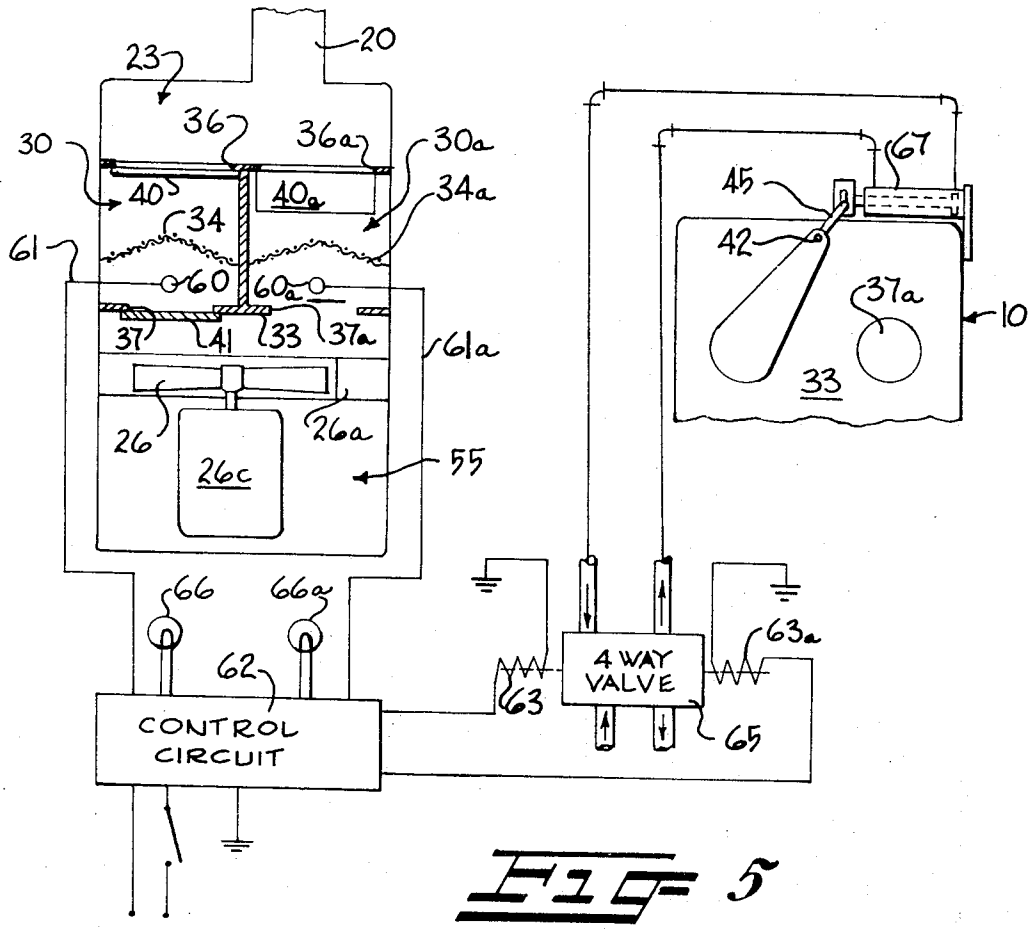

20
23
36
36a
30
30a
40
40a
34
34a
61
60
60a
37
41
33
37a
61a
26
26a
26c
55
66
66a
62
63
63a
4 WAY VALVE
65
CONTROL CIRCUIT
67
45
42
37a
10
33

Fig. 5

APPARATUS FOR PNEUMATICALLY CLEANING OPEN-END SPINNING MACHINES

This application is a division of my earlier application Ser. No. 831,915 filed June 10, 1969 entitled METHOD AND APPARATUS FOR PNEUMATICALLY CLEANING OPEN-END SPINNING MACHINES, now U.S. Pat. No. 3,627,584.

Recent advances in the technology of spinning textile fibers into yarn having resulted in the development of various types of open-end spinning machines designed to form yarn without utilizing spinning rings, travelers or spindles. Generally, open-end spinning units each include a hollow spinning rotor into which separated fibers are fed via a tube which discharges the fibers nearly tangentially onto the collecting surface of the rotor chamber where the fibers are subjected to centrifugal forces so they are pressed against the collecting surface. The fibrous strand thus formed is withdrawn from the chamber while twist is inserted therein to form the yarn. As the yarn strand is withdrawn, new fibers are introduced into the rotor chamber, making spinning continuous. An example of one type of open-end spinning unit is disclosed in the U.S. Pat. of Hans Landwerkamp et al. issued Feb. 4, 1969, under the No. 3,425,205.

Dust and fly is produced by the spinning operation within the spinning rotors of open-end spinning machines, and the formation of the yarn is detrimentally affected if such waste material is not continuously and promptly removed from each rotor under a high pressure suction system. Therefore, it is very important that the high pressure suction air flow be maintained substantially constant at all times adjacent the spinning units during the spinning operations. Also, it is important that the high pressure system is designed so that the fiber waste does not reach the fan producing the high pressure air stream, since materials handling fans; i.e., fans capable of propelling textile fibers efficiently, are inefficient at the high pressures required to effect prompt and efficient removal of waste material from the spinning rotors of open-end spinning machines.

It is therefore the primary object of this invention to provide a method of and means for continuously removing fiber waste from the rotors of an open-end spinning machine during operation thereof in which a substantially constant high pressure suction air flow is maintained at the rotors by utilizing filters located between the rotors and a high pressure suction air fan for fiber waste entrained in the air flowing through such rotors, and wherein the filters may be cleaned without interrupting the flow of air or adversely affecting the efficiency of the flowing air stream.

It is a more specific object of this invention to provide a method of and apparatus for maintaining a substantially constant high pressure suction air flow through the rotors of an open-end spinning machine for conveying fiber waste and separating such waste from the high pressure flowing air in its course to an air flow producing means or fan wherein the air flow is directed alternatively in first and second paths; each by-passing the other, and wherein fiber waste is entrapped against first and second filters in the respective first and second paths. By directing the air stream in the first and second paths in alternation, the first filter may be cleaned while the air flows in the second path, and vice versa, without interrupting or reducing the efficiency of the air flow, and without fiber waste reaching the air flow producing means or fan downstream of the filters even though the filters may be removed alternatively from the two air flow paths.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which:

FIG. **1** is a perspective view of a preferred form of filter separator unit for carrying out the method of the present invention and schematically illustrating an open-end spinning machine in association therewith;

FIG. **2** is a longitudinal vertical sectional view through the filter separator unit taken substantially along line **2—2** in FIG. **1**;

FIG. **3** is a transverse vertical sectional view through the filter separator unit taken substantially along line **3—3** in FIG. **2** showing means for selectively closing the downstream walls of the air flow chambers;

FIG. **4** is a sectional plan view through the filter separator unit taken substantially along line **4—4** in FIG. **3**; and

FIG. **5** is a schematic view illustrating mechanism for alternately closing the air flow channels or chambers of the filter separator unit automatically at predetermined intervals.

Referring more specifically to the drawings, the novel apparatus includes a filter separator unit for carrying out the method of the instant invention whose housing is broadly designated at **10** and is shown in FIG. **1** in association with an open-end spinning machine having a plurality of spinning units **11** which may be of substantially the type disclosed in said U.S. Pat. No. 3,425,205, for example. Although a single row of spinning units **11** is shown in FIG. **1**, the machine may include two substantially parallel rows of spinning units. Each spinning unit includes a stationary hollow casing **12** provided with a tubular feed guide **13** which discharges previously separated fibers of a textile sliver S into the strand-forming chamber of a rotor which rotates at high speed within the respective casing **12**. The fibrous strand thus formed is withdrawn from the rotor chamber through a withdrawal tube **14** which is substantially concentric with rotor within casing **12** and, as the fibrous strand is withdrawn from the rotor chamber, twist is inserted therein to form the spun yarn Y. The spun yarn Y may be withdrawn from the spinning units **11** by suitable rolls, not shown, and may be wound into suitable packages for subsequent handling and processing.

As heretofore stated, dust and fly is produced continuously by the spinning operation within the spinning rotors and the casings **12** of the spinning units, and the formation of the yarn is detrimentally affected if such waste material is not continuously and promptly removed from each spinning unit by a high pressure suction air stream. Also, the high pressure flow of air through the spinning units **11** must be substantially constant within predetermined limits at all times during the spinning operation.

Accordingly, rotor casings **12** are connected to a common fiber waste conveying suction duct **20** by respective branch tubes **21** (FIG. **1**). One end of duct **20** is connected to the rear wall **10***a* of filter separator housing **10** for communication with an expansion chamber **23** in the upper rear portion of housing **10**. The other end of suction duct **20** may be closed by any suitable means, not shown. Housing **10** includes a front

end wall 10*b*, opposing side walls 10*c*, 10*d* and top and bottom walls 10*e*, 10*f*. An intermediate or auxiliary bottom wall 24 is spaced above main bottom wall 10*f* and defines therewith an air exhaust chamber 25 through which the air stream, produced by an air impeller means or fan 26 thereabove, flows from fan outlet 26*a* (FIG. 4) to be exhausted from housing 10 through a suitable exhaust opening or outlet. By way of example, the outlet may be formed by louvers 27 provided in the lower portion of housing side wall 10*c* (FIG. 1).

Fan 26 may be of the centrifugal type, and the volute casing 26*b* thereof is positioned between side walls 10*c*, 10*d* downstream of a pair of first and second generally parallel air flow channels or chambers 30, 30*a* (FIG. 4) located immediately forwardly of expansion chamber 23 and spaced rearwardly of fan 26. Fan 26 may be driven by an electric motor 26*c*. As best shown in FIGS. 3 and 4, air flow chambers 30, 30*a* are defined by a substantially vertical divider partition 31 located about midway between opposing housing side walls 10*c*, 10*d* and extending from top wall 10*e* to auxiliary bottom wall 24. Air flow chambers 30, 30*a* are also defined by rear and front transverse partitions 32, 33 extending between side walls 10*c*, 10*d* and between top wall 10*e* and auxiliary bottom wall 24. Spaced between transverse partitions 32, 33 and positioned within the respective air flow chambers 30, 30*a* are substantially upright filters 34, 34*a* which are preferably positioned more closely adjacent front transverse partition 33 than they are to rear transverse partition 32, so that a fiber waste collection chamber is defined between each filter 34, 34*a* and the rear transverse partition 32. It is preferred that the lower portion of transverse partition 32 extends downwardly and rearwardly at an angle as shown in FIG. 2 to provide an enlarged collection chamber area for the collection of fiber waste therein.

The rear and front transverse partitions 32, 33 are provided with respective air ingress openings 36, 36*a* and air egress openings 37, 37*a* for the respective air flow chambers 30, 30*a*. Closure flaps or one-way dampers 40, 40*a* positioned within the respective air flow channels 30, 30*a* are pivotally connected to rear transverse partition 32 immediately above ingress openings 36, 36*a* and are adapted to rest against the front surface of rear transverse partition 32 to close the respective ingress openings 36, 36*a* in alternation.

The closure flaps 40, 40*a* cooperate with a shiftable closure member 41 to serve as means for selectively, but alternatively, closing the air flow chambers 30, 30*a* to the flow of air therethrough, which means is operable to open the first chamber 30 whenever the second chamber 30*a* is closed, and to open the second chamber 30*a* whenever the first chamber is closed. Accordingly, closure member 41 is so constructed and arranged as to close the egress openings 37, 37*a* alternatively and so that, whenever it is closing one of said egress openings, the other of the egress openings will be opened.

As best shown, in FIGS. 3 and 4, closure member 41 is positioned within the space defined between the casing 26*b* of fan 26 and the front partition 33. The upper portion of closure member 41 is pivotally connected, as at 42, to the partition 33 at a point spaced substantially above egress openings 37, 37*a* and at a point about midway between egress openings 37, 37*a*. A suitable arcuate guide member 43 may be suitably secured to the front surface of front partition 33 for maintaining the lower portion of closure member 41 in close proximity to or against the front surface of front transverse partition 33 when closure member 41 is being shifted from either egress opening 37, 37*a* to the other. The upper end of closure member 41 is provided with an operating lever or arm 45 which, in the embodiment of FIG. 3, projects through a slot 46 provided in the upper wall 10*e* of housing 10 and which may be manipulated for shifting the closure member 41 from either egress opening to the other, as desired.

Upon substantial amounts of fiber waste being collected in the collection chambers defined between the lower portions of filters 34, 34*a* and rear transverse partition 32 and/or upon excessive accumulation of fiber waste on the upstream surfaces of filter 34, 34*a*, such collected fiber waste must be removed from the collection chambers and from filters 34, 34*a*. Accordingly, opposing side walls 10*c*, 10*d* of housing 10 are provided with respective pairs of access openings 47, 48 and 47*a*, 48*a* (FIG. 4) which are normally closed by respective movable closure plates or doors 50, 51, 50*a*, 51*a*. The openings 47, 47*a* provide access to the respective filters 34, 34*a* and are of such size that filters 34, 34*a* may be removed therethrough.

To facilitate insertion and removal of filters 34, 34*a*, the upper wall 10*b* and auxiliary bottom wall 24 are provided with respective transverse elongate guide members 53, 54 (FIG. 2) within each air flow chamber 30, 30a for receiving and guiding the upper and lower edge portions of filters 34, 34*a* as they are being inserted in and withdrawn from chambers 30, 30*a*. The access openings 48, 48*a* are especially provided to permit access to the collection chambers for removal of collected fiber waste therefrom.

The front portion of housing 10 is provided with a motor chamber 55 defined by portions of housing walls 10*b*, 10*c*, 10*d*, 10*e* and by the front wall of fan casing 26*b*. The inner surfaces of the housing walls 10*b*, 10*c*, 10*d*, 10*e* defining chamber 55 may be provided with a lining of acoustical insulation material 56 thereon so that the noise produced by the blowing air stream, the fan 26 and its motor 26*c* will not be audible exteriorly of the housing 10 to such extent as to be annoying to the operator of the open-end spinning machine. It is apparent that fan motor 26*c* is positioned in chamber 55. The inner surfaces of those walls of housing 10 defining exhaust chamber 25 beneath auxiliary bottom wall 24 also may be provided with a suitable lining 57 of acoustical insulation material.

METHOD OF OPERATION

During operation of spinning units 11, motor 26*c* drives fan 26 continuously. Assuming that closure member 41 occupies the position of FIG. 3, in which egress opening 37 is closed and egress opening 37*a* is open, fan 26 produces a continuous high pressure fiber waste conveying suction air stream within duct 20. The air stream is effective to produce a continuous high pressure air flow through each rotor to draw fiber waste continuously from spinning units 11 through the respective branch tubes 21. It is essential that the fiber conveying air stream produces a relatively constant relatively high suction pressure in the branch tubes 21 and the fiber waste conveying duct 20. The pressure in the fan casing 26 should be on the order of about 22 to 30 inches water gauge pressure (wgp) regardless of the

type of staple fibers being spun. Generally, in open-end spinning machines for spinning short staple fibers, such as cotton, into yarn, the air flow through each spinning unit **11** should be on the order of 4 cubic feet per minute (cfm) at 24 inches wgp. In open-end spinning machines for spinning long staple fibers, such as woolen and worsted fibers, into yarn, the air flow through each spinning unit **11** should be on the order of 22 cfm at 18 inches wgp.

The air stream produced by fan **26** flows from duct **20** into expansion chamber **23** of the filter separator unit housing **10** and, since egress opening **37***a* is open and egress opening **37** is closed, the air stream impinges against and maintains open the closure flap **40***a* so the air stream flows freely through the second air flow chamber **30***a*. During flow of the air stream through chamber **30***a* the fiber waste is condensed on the fine mesh filter **34***a* and collected in the corresponding collection chamber. Due to the flow of air in vacuum expansion chamber **23** from the suction duct **20** into the ingress opening of the second air flow chamber **30***a*, a low pressure area or suction area is produced at the air ingress opening which is effective to firmly hold the one-way flow damper or closure flap **40** in the closed position, thus creating a dead air zone in the first flow channel or chamber **30**. Thus, doors **50, 51** may be opened for cleaning filter **34** and for removing fiber waste from the collection chamber rearwardly of filter **34** without causing any reduction in the efficiency of the air stream flowing through conveying duct **20**, chambers **23, 30***a* and fan casing **26***b* to be exhausted therefrom through exhaust chamber **25** and louvers **27**. If so desired, filter **34** may be removed from the first air flow channel or chamber **30** through access opening **47** to facilitate cleaning the filter. It should be noted that communication between chamber **30** and fan **26** then is interrupted by closure member **41** so that fiber waste in flow chamber **30** cannot then escape to the fan **26**. Thereafter, filter **34**, or a similar filter, is reinstalled in chamber **30** and doors **50, 51** and returned to closed position.

Since fiber waste is prevented from reaching fan **26**, it is apparent that fan **26** may be designed for most efficient propulsion of the air stream, without being subject to limitations in design usually required to propel fiber waste therethrough efficiently.

When the collection chamber rearwardly of filter **34***a* is substantially full, and/or filter **34***a* has an excessive accumulation of fiber waste thereon such as to cause an undesirable reduction in the air flow through second air flow channel **30***a*, closure member **41** is then moved to open egress opening **37** and close egress opening **37***a* and to simultaneously divert the air stream from the second air flow channel into the first air flow channel **30** without loss of suction at the spinning units **11**.

When closure member **41** is moved so that it closes egress opening **37***a* and opens egress opening **37**, the air stream then impinges against and holds the closure flap **40** in open position as it flows through the first air flow chamber **30** to fan **26**. At the same time, the relatively low pressure or suction pressure thus produced adjacent ingress opening **36***a* firmly holds closure flap **40***a* in closed position. The fiber waste then may be removed from within the second air flow chamber **30***a* and from filter **34***a* in substantially the same manner as that described with respect to air flow chamber **30** and filter **34**.

Closure member **41** may be arranged to operate automatically by means of a hydraulic or pneumatic ram actuated electrically through pressure switches located in the air flow channels or chambers **30, 30***a*. Alternatively, closure member **41** may be actuated from a suitable timing mechanism at periodic predetermined intervals. By way of example, there will be observed in FIG. **5** a suitable means for effecting automatic operation of closure member **41**.

The parts shown in FIG. **5** will bear the same reference numerals as are applied in FIGS. **1–4**, where applicable, to avoid repetitive description. As shown, suitable pressure detecting devices **60, 60***a* are suitably mounted in air flow chambers **30, 30***a* forwardly of filters **34, 34***a* and are operatively connected by lines (conduits or electrical conductors) **61, 61***a* to a suitable control circuit **62**. Solenoids **63, 63***a* of a four-way valve **65** are electrically connected to control circuit **62** for alternatively effecting the flow of fluid pressure from a suitable source, not shown, into the two ends of the cylinder of a fluid-operated ram **67**.

The piston rod of ram **67** is pivotally connected, by a suitable slot and pin connection, to operating arm **45** of closure member **41**, and the cylinder is suitably secured to housing **10**. Since control circuits which operate in response to pressure detecting devices are well known, as are solenoid-operated four-way valves, detailed illustrations and descriptions thereof are deemed unnecessary.

In operation, with closure member **41** occupying the position shown in the left and right hand portions of FIG. **4** and **5**, upon the accumulation of fiber waste in air flow chamber **30***a* being such as to cause a predetermined pressure drop sensed by detecting device **60***a*, control circuit **62** energizes solenoid **63***a* to introduce fluid into the right-hand end of the cylinder of ram **67**. Thus, ram **67** moves closure member **41** from left to right in FIG. **5** to open egress opening **37** and close egress opening **37***a*. As explained heretofore, the closing of egress opening **37***a* closes chamber **30***a* to the flow of air therethrough and oepns chamber **30** to the flow of air therethrough, whereupon the collected fiber waste may be removed from air flow chamber **30***a* and its filter **34***a*.

Conversely when detecting device **60** senses a predetermined drop in pressure forwardly of filter **34**, control circuit **62** energizes solenoid **63** to introduce fluid into the left-hand end of the cylinder of ram **67**, thereby returning closure member **41** to the position shown in FIG. **5**, thus completing a cycle in the operation thereof. Circuit **62** may be arranged to effect momentary energization of solenoids **63, 63***a*, or they may remain energized substantially throughout those periods during which the respective egress openings **37, 37***a* are closed, as desired.

If desired, control circuit **62** may be in the form of a timing device for alternatively actuating the solenoids **63, 63***a* at predetermined periodic intervals, in which case the lines **61, 61***a* may be disconnected from the control circuit, or the pressure detecting devices **60, 60***a* and their lines **61, 61***a* may be omitted.

Suitable audible and/or visual warning devices **66, 66***a* (FIG. **5**) are provided exteriorly of housing **10** which respond to and indicate the detection of a predetermined pressure below the desired high pressure in the respective chambers **30, 30***a* to inform the attendant as to which chamber should be emptied and/or

which filter should be cleaned. As shown, warning devices **66, 66***a* are in the form of electric lamps electrically connected to control circuit **62.** Warning devices **66, 66***a* may be triggered to operate only during the periods of relatively low pressure or only during the periods of the desired relatively high pressure in the respective chambers **30, 30***a* as desired, in accordance with air pressure variations detected by detecting devices **60, 60***a*. Similar warning devices also may be provided in instances in which the operation of closure member **41** is not automatic as in FIGS. **1–4.**

It is thus seen that I have provided a novel method and means for continuously removing fiber waste from the interior areas or rotors of open-end spinning units by high pressure suction air flow and for directing the air stream in two different flow paths in alternation and wherein a filter is provided in each flow path or chamber for separating fiber waste from the air stream flowing therethrough. It can also be seen that I have provided means for closing either air flow chamber to the flow of air therethrough while the air stream is flowing through the other chamber so that collected fiber waste in the corresponding chamber, and/or fiber waste adhering to the corresponding filter, may be removed without reducing the efficiency of the flowing air stream and also without any fiber waste reaching fan **26,** even though the corresponding filter may be temporarily removed from the closed chamber to facilitate cleaning the filter.

In the drawings and specification, there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation.

1. In an open-end spinning machine having a row of open-end, rotor containing, spinning units, the combination therewith of means for continuously removing fiber waste from said spinning units comprising a fiber conveying air duct adjacent said row, means communicatively connecting said spinning units to said duct, fan means positioned adjacent said duct for producing a high pressure flowing suction air stream within said duct, housing means defining a first air flow channel and a second air flow channel in generally parallel relation to said first channel between said fan means and said duct, first and second filters in the respective first and second channels for entrapping fiber waste thereagainst as the air stream flows therethrough, said housing means being provided with normally closed access door means permitting access to the respective filters in said channels, means for alternately closing the downstream ends of said channels to divert the flow of the air stream from one channel to the other, and means responsive to said closing means closing the downstream end of one channel and diverting the air stream therefrom to the other channel for effecting closing of the upstream end of said one channel to isolate the same from the other channel and from said fan means whereby the normally closed access door means to the isolated channel may be opened for permitting cleaning the filter therein without disturbing the flow of the air stream through the other channel.

2. Apparatus according to claim **1,** wherein said housing means defines an expansion chamber interposed between said duct and said air flow channels and common to said air flow channels, and said fan means being positioned forwardly of said air flow channels, each air flow channel having an ingress opening communicating with said expansion chamber and an egress opening communicating with said fan means, said means for alternately closing the downstream ends of said channels comprising movable closure means adapted to close said egress openings independently of each other in alternation, said responsive means comprising an independent movable flap for closing and opening each ingress opening, and said flaps being so arranged as to respond to changes in flow of the air through said channels as effected by said movable closure means so that, upon the egress opening of either one of said channels being closed by said closure means and the other channel being opened, the air stream will impinge upon and open the movable flap of said other channel and cause the movable flap of said one channel to close the ingress opening thereof.

3. Apparatus according to claim **2,** wherein said access door means are of such size as to accommodate removal and insertion of the respective filters whereby said first and second filters may be removed temporarily from the respective first and second channels to facilitate cleaning said first and second filters while the air stream is flowing through the respective second and first air flow channels and during which said closure means will prevent fiber waste in the respective channels from reaching said fan means.

4. Apparatus for producing and filtering a continuous flow of air in the vicinity of a plurality of open-end yarn forming units for removing fiber waste therefrom comprising a filter separator unit having a main inlet and a main outlet, duct means communicatively connecting said yarn forming units to said inlet, fan means producing a fiber conveying air stream flowing in said duct means from said yarn forming units through said separator unit, means in said separator unit defining first and second generally parallel air flow channels, a filter in each channel for entrapping fiber waste thereagainst as air flows therethrough, said separator unit having normally closed access door means therein permitting access to said filters in the respective first and second channels, and means for selectively closing each channel to the flow of air therethrough and including means for alternately closing the downstream ends of said channels to divert flow of the air stream from one channel to the other, and means responsive to said closing means closing the downstream end of one channel and diverting the air stream therefrom to the other channel for effecting closing of the upstream end of said one channel to isolate the same from the other channel and from said fan means whereby the normally closed access door means to the isolated channel may be opened for permitting cleaning the filter therein without disturbing the flow of the air stream through the other channel.

5. Apparatus according to claim **4,** wherein each channel has a space therein on the upstream side of the respective filter for collection of fiber waste therein, said filters being removable from said channels through the access door means of the respective channels, said fan means being located downstream of said channels, and said means for alternately closing the downstream ends of said channels including a movable closure member positioned between said channels and said fan means so that fiber waste collected in said spaces is prevented from reaching said fan means when the filter in each respective channel is removed and the corre-

sponding channel is closed to the flow of the air stream therethrough.

6. Apparatus according to claim 5, including means operatively associated with said closure member for automatically moving the same from a first position closing said first channel to a second position closing said second channel and from said second position to said first position at predetermined intervals.

7. Apparatus according to claim 4, including air pressure detecting means in each air flow channel for detecting a drop in pressure with respect to a normal pressure level of the air stream flowing therethrough as an incident of the accumulation of fiber waste on the respective filter, and means responsive to detection of a predetermined pressure drop in either channel then open to the flow of the air stream therethrough for operating said channel closing means to close the corresponding channel to the flow of air therethrough and open the other channel to the flow of air therethrough.

8. Apparatus for removing fiber waste from spinning units of a textile machine comprising a fiber conveying air duct communicating with said spinning units, fan means producing a high pressure suction air stream in said duct, means defining first and second air flow channels between said duct and said fan means, filter means in each channel for entrapping fiber waste thereagainst as the air stream flows therethrough, normally closed access door means permitting access to the interior of each channel, and means for alternately closing said channels to the flow of the air stream therethrough and including means for closing the downstream end of each respective channel to divert flow of the air stream therefrom to the other channel, and means responsive to closing the downstream end of one channel and diverting the air stream therefrom to the other channel for closing the upstream end of said one channel to isolate the same from the other channel and from said fan means whereby the normally closed access door means to the isolated channel may be readily opened for permitting cleaning the filter means therein without disturbing the flow of the air stream through the other channel.

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