Sept. 25, 1962 R. L. BLACK, JR 3,055,038

TRAVELING CLEANING APPARATUS

Filed Aug. 1, 1961 3 Sheets-Sheet 1

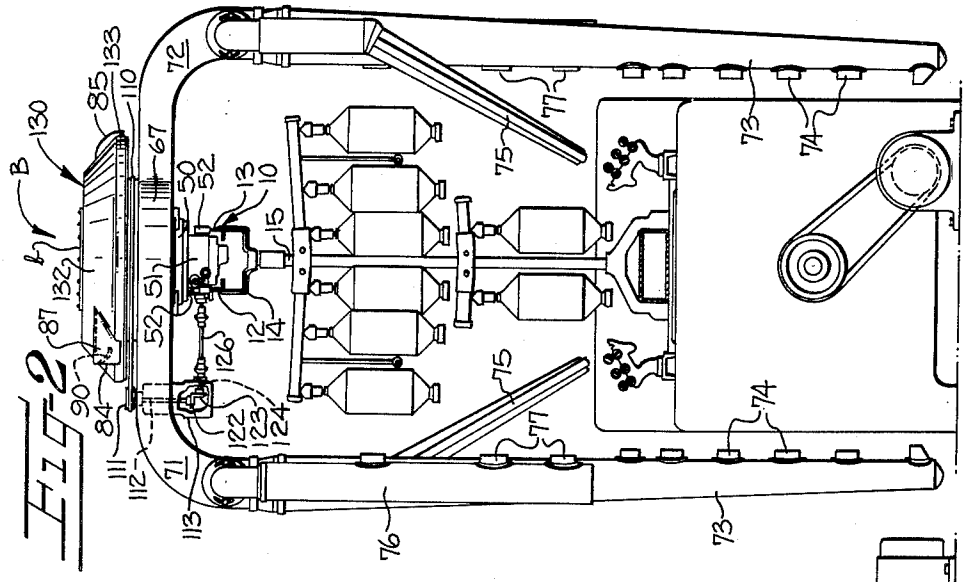


FIG-2

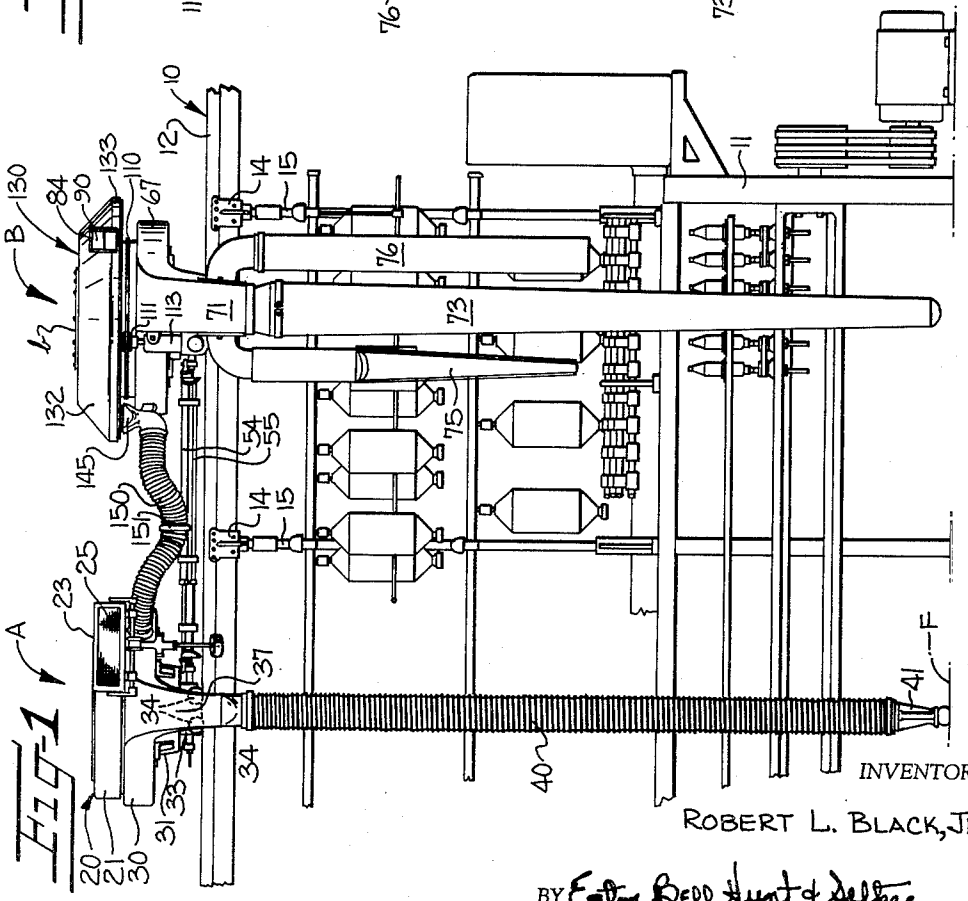


FIG-1

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Filed Aug. 1, 1961 3 Sheets-Sheet 2

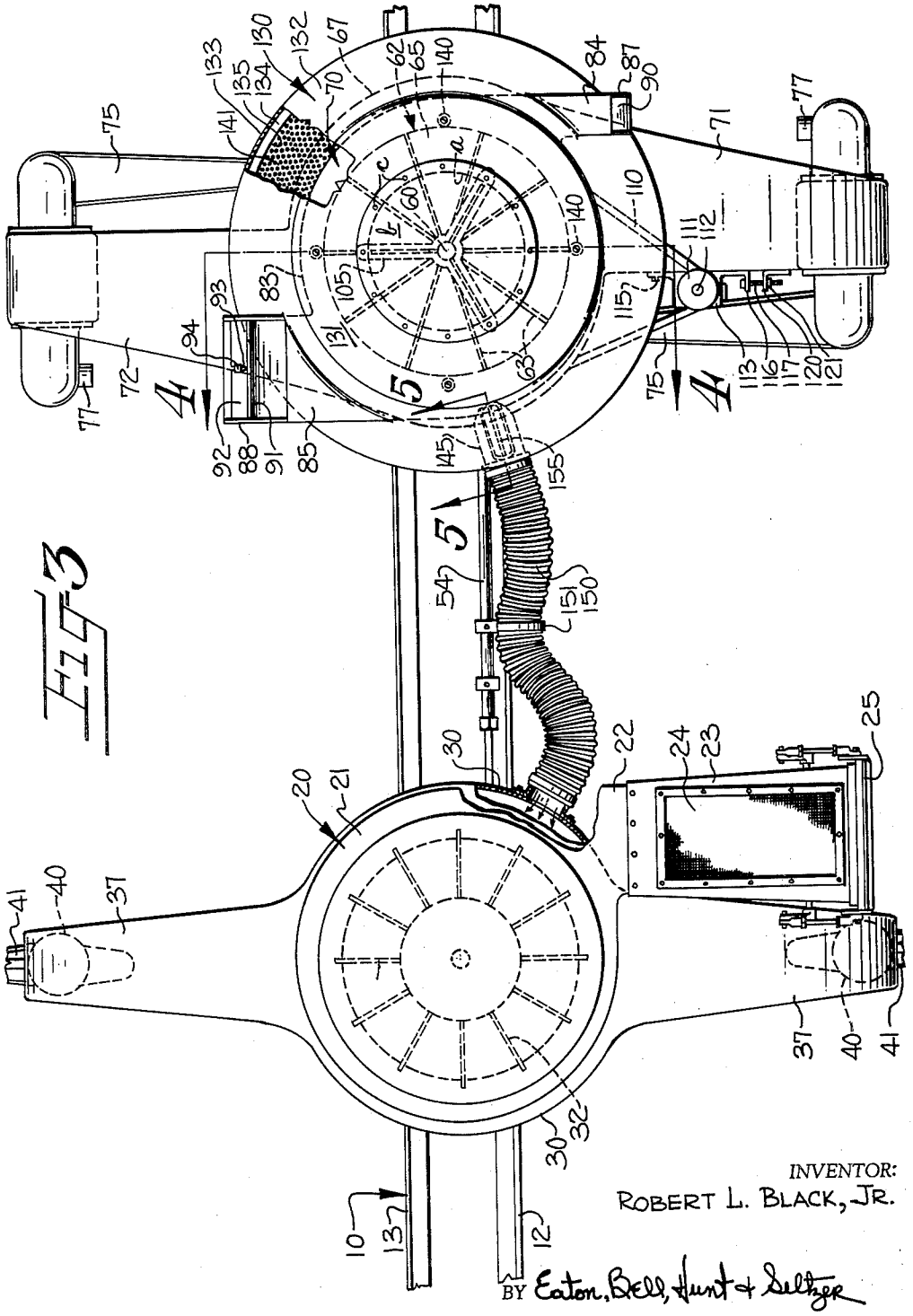


FIG 3

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TRAVELING CLEANING APPARATUS

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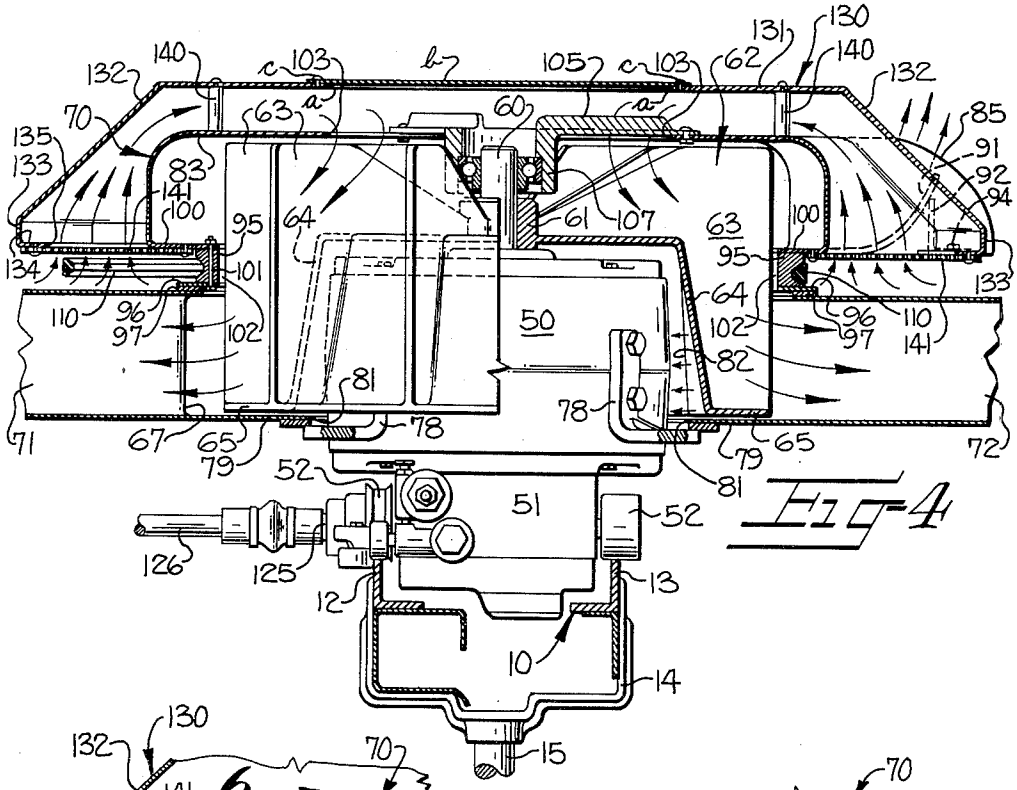


Fig-4

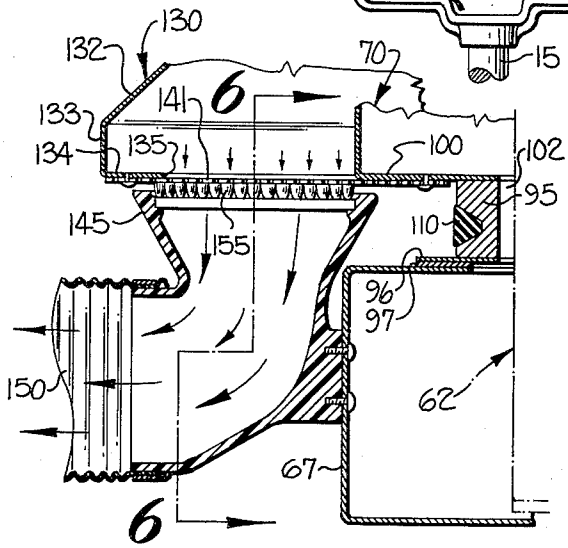


Fig-5

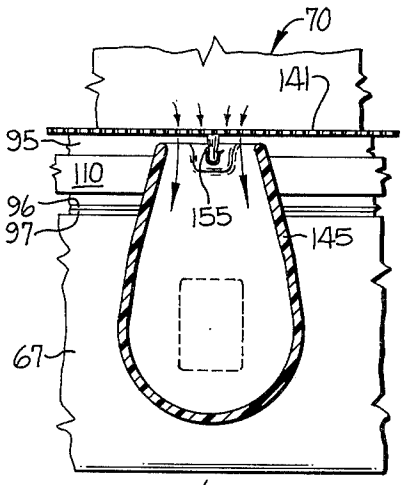


Fig-6

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United States Patent Office

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Patented Sept. 25, 1962

3,055,038

TRAVELING CLEANING APPARATUS

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Filed Aug. 1, 1961, Ser. No. 128,511
16 Claims. (Cl. 15—312)

This invention relates to traveling blower-type cleaning apparatus particularly devised for the removal of lint, dust and other loose material from textile processing machinery and from the floor, walls, ceiling, other surfaces and ambient air in a room containing such machinery.

A number of different types of traveling cleaners are currently being used which generally include a blower means propelled along tracks above rows of textile machines for producing blowing and/or suction streams of air which traverse the machines, the material in process and certain other surfaces in the room. In those types of traveling cleaners equipped with blowing outlets or nozzles which direct streams of air onto the machines, outwardly toward the walls, and/or upwardly toward the ceiling, it is obviously necessary to suck ambient air into the blower means in order to discharge air from the blowing outlets and nozzles.

In the usual traveling cleaners of the above types, no means is provided for filtering the intake air. Since the air surrounding textile processing machinery contains more or less lint shed from the textile material during its passage therethrough, it is a well-known fact that some of this lint or fly is sucked into the unrestricted air inlet of a traveling blower passing over or adjacent to it. Such lint or fly is drawn into the fan and blown through the ducts and air outlets of the cleaner. Consequently, the traveling cleaner, while blowing lint from surfaces of the machinery and material in process, at the same time, blows some of the airborne lint against the machine and product. For many years, this has been a limitation in the effectiveness of traveling blowers for cleaning textile machinery and no satisfactory solution had been found heretofore. Mere covering of the air inlet with a screen or other filter medium would not suffice, because such filter would quickly become covered with lint and prevent ready passage of air therethrough.

It is therefore an object of this invention to provide a traveling cleaner of the type described with means for filtering the air drawn into the blower means before it is exhausted from the blower outlets and/or nozzles and wherein means are provided for keeping the filter clean.

It is another object of this invention to provide a blower-type traveling cleaner of the character described, with a rotatable housing overlying the main air inlet of the blower casing, with at least one relatively large, preferably annular, auxiliary air inlet opening in at least one wall of the housing, preferably in the lower wall thereof, whereby air enters the housing through the auxiliary air inlet, flows over the blower casing and into the air inlet in the top of the blower casing. A filter or foraminate screen is installed in the auxiliary inlet opening to filter lint and the like from the air before it enters the housing and the blower casing.

Another object is to provide means for continuously cleaning the filter during rotation thereof.

It is still another object of this invention to provide means for cleaning the filter including a suction nozzle positioned closely adjacent the rotating filter, attached to and movable with the traveling cleaner, for continuously sucking lint off the outer surface of the filter. In its preferred embodiment, the filter cleaning suction nozzle is connected to the inlet side of a suction blower of a traveling suction floor cleaner moving in tandem with

the first-mentioned traveling cleaner so that the lint sucked off the filter is conveyed into a lint collection chamber movable with the suction blower.

It is a further object of the invention to provide apparatus of the character last described including wiper means engaging said rotating filter adjacent said filter cleaning suction nozzle to assist in dislodging lint from the filter as it is sucked into the filter cleaning suction nozzle.

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—

FIGURE 1 is a side elevation of a preferred embodiment of the improved traveling cleaning apparatus showing a preferred embodiment of the blower housing on a traveling blower cleaner equipped with a filter and with a cleaning suction nozzle connected to the suction blower of a traveling suction floor cleaner, the traveling cleaners being mounted on a trackway above textile machines and only portions of one of the textile machines being shown;

FIGURE 2 is an end elevation looking at the right-hand side of FIGURE 1;

FIGURE 3 is an enlarged top plan view of the structure shown in FIGURE 1, but omitting the textile machine;

FIGURE 4 is an enlarged vertical sectional view taken along line 4—4 in FIGURE 3;

FIGURE 5 is an enlarged vertical sectional view through the filter cleaning means taken substantially along line 5—5 in FIGURE 3;

FIGURE 6 is a fragmentary vertical sectional view taken substantially along line 6—6 in FIGURE 5.

The present apparatus is particularly adapted for use in removing lint, and other loose light material from rows of textile machines and other surfaces in a room in which the textile machines are located. Therefore, the present apparatus is shown mounted upon a trackway **10** which extends longitudinally above a spinning frame **11**. Spinning frame **11** is representative of a row of machines above which the suction blower of a traveling suction floor cleaner A and the blower unit of a traveling blower cleaner B are mounted, and to which movement may be effected substantially as disclosed in U.S. Patent No. 2,011,763 issued to W. B. Hodge et al. on August 20, 1935.

In this instance, trackway **10** includes a pair of tracks **12**, **13** supported on brackets **14** which are, in turn, supported on the upper ends of posts **15**, only one of which is shown in FIGURES 1 and 2. Posts **15** may be supported upon the spinning frame, as shown, or the floor between adjacent spinning frames as desired.

The traveling suction floor cleaner may be of a type described and claimed in a copending application of Grover B. Holtzclaw, filed September 8, 1958, Serial No. 759,797, now Patent No. 2,011,202, and assigned to the assignee of the present invention. Therefore, only so much of the traveling suction floor cleaner A will be described as is deemed necessary to clearly describe its manner of cooperation with the traveling blower cleaner B.

It will be observed in FIGURES 1 and 3 that the traveling suction floor cleaner A comprises a centrifugal blower in the form of a volute upper blower casing **20** having a substantially circular body **21** provided with an offset outlet portion **22** to which one end of a box-like traveling collection chamber **23** is communicatively connected. The upper wall of chamber **23** has a suitable foraminated or screened opening **24** therein which serves as a filter through which air escapes from the collection chamber **23** leaving behind the fibers and other particles

directed into the collection chamber from the volute casing **21**.

The free end of collection chamber **23** is provided with a normally closed screened or foraminated door **25** which is pivotally connected to the bottom wall of collection chamber **23**. Door **25** is opened periodically for discharging the contents of the collection chamber into a stationary waste receptacle, not shown.

The blower casing **20** rests upon and is suitably secured to a lower or suction casing **30**. The proximal walls of casings **20**, **30** are open to provide communication therebetween. The lower wall of suction casing **30** is suitably secured to and encircles the enlarged upper portion of an electric motor **31** having an impeller wheel or fan **32** mounted on its shaft and positioned within the upper, blower casing **20**.

Electric motor **31** rides upon a carriage **33** shown in the form of a gear box fixed to or formed integral with the housing of electric motor **31** and having suitable rollers **34** thereon which ride upon tracks **12**, **13**. One or more of the rollers **34** may be driven by electric motor **31** substantially as disclosed in said patent.

Suction casing **30** is provided with a pair of substantially diametrically opposed, radially and outwardly extending ducts **37** which communicate with casing **30** and each of which curves downwardly at its free end. The free end of each duct **37** has a tube **40**, preferably of pliable or flexible construction, communicatively connected thereto and depending therefrom. A flared or substantially bell-shaped suction nozzle **41** is communicatively connected to the lower end of each tube **40**.

The lower end of each nozzle **41** is disposed in close proximity to the floor F on which the machines of FIGURE 1 are located. Thus, as the traveling suction floor cleaner A moves along trackway **10**, impeller wheel **32** creates a continuous suction current at each suction nozzle **41** which causes lint and other light particles upon the floor F to be drawn into each nozzle **41**, through the respective tubes **40**, into ducts **37** and suction casing **30**. The suction current then passes upwardly into blower casing **20** where it is converted into a blowing or positive air pressure current which passes outwardly through the outlet portion **22** of blower casing **20** and into the traveling collection chamber **23**.

It is with a traveling suction floor cleaner of the character last described that the present traveling blower cleaner B is particularly adapted to be associated. In addition to cleaning the floor of the textile mill, the traveling suction floor cleaner A serves as a source of suction for a filter cleaning means of the present invention associated with the traveling blower cleaner B, although it is to be distinctly understood that other means may be provided for producing suction in the filter cleaning means to be later described.

Blower cleaner B is equally adapted to be associated with other types of traveling suction cleaners such as is described and claimed in a copending application of Robert L. Black, Jr., filed April 21, 1961, Serial No. 105,073, for example.

Traveling Blower Cleaner

The blower-type traveling cleaner B comprises a blower unit including an electric motor **50** which rides upon a carriage **51** (FIGURE 4) in the form of a gear box fixed to or formed integral with the housing of electric motor **50** and also having suitable rollers **52** thereon which ride upon tracks **12**, **13**. One or more of the rollers **52** may be driven by electric motor **50** substantially as disclosed in said patent. However, since the carriages **33**, **51** of traveling cleaners A, B are interconnected in the particular embodiment of the invention illustrated herein, it is apparent that the rollers on only one of the carriages must be driven to propel both of the traveling cleaners A, B along trackway **10**. In this instance, the carriages **33**, **51** are interconnected by a pair of longitudinally extensibly adjustable links or connecting rods **54**, **55** (FIGURE 1), opposed ends of which are suitably pivotally secured to the carriages **33**, **51**.

Electric motor **50** of traveling blower cleaner B has a shaft **60** thereon which preferably rotates about a vertical axis and on which a hub **61** of an impeller **62** is fixedly mounted. Impeller **62** is preferably so constructed as to minimize the height of the improved blower unit of traveling cleaner B above trackway **10**, and to also direct air downwardly and then radially outwardly with respect to motor **50**. Accordingly, impeller **62** comprises a plurality of circularly spaced main blades **63** of inverted substantially L-shaped construction which may be suitably secured to, but are preferably cast integral with, an inverted cup-shaped blade support **64** whose annular side wall preferably diverges downwardly and has an outwardly projecting annular flange **65** thereon to which the lower ends of the main fan blades or impeller blades **63** are connected.

The blades **63** and the upper planar portion of blade support **64** are suitably connected to and preferably formed integral with hub **61**. It will be noted that the annular side wall of blade support **64** and the lower portions of impeller blades **63** surround motor **50** so that the lower portions of the blades **63** of impeller **62** are positioned within a lower or first volute casing or chamber **67** and the upper portions of the blades **63** are positioned within an upper or second volute casing or chamber, broadly designated at **70**. Upper casing **70** rotates relative to casing **67**. Therefore, although the lower and upper casings **67**, **70** move with carriage **51** along trackway **10**, lower casing **67** may be termed as a stationary casing and upper casing **70** may be termed as a rotary casing. The two casings **67**, **70** collectively form a composite centrifugal blower.

Lower casing **67** is in the form of a hollow body which is substantially circular or elliptical in plan and has a pair of substantially radially extending offset air outlet portions **71**, **72** thereon, which serve as spouts or ducts for directing streams of air outwardly substantially radially of impeller **62**. Each duct **71**, **72** preferably curves downwardly at its free end and has a tube **73**, preferably of pliable or flexible construction, communicatively connected thereto and depending therefrom.

In this instance, each tube **73** is provided with a plurality of outlet openings or orifices **74** for directing blasts of air inwardly against various parts of the spinning frame **11**. Orifices **74** may also direct blasts of air against or along the floor upon which rests the spinning frame **11**. One side of the downwardly curved end of each duct **71**, **72** may be provided with a downwardly and inwardly inclined tubular member **75**, for directing a stream of air toward the drafting rolls, for example, of spinning frame **11**. Each duct may also be provided with a creel-cleaning tube **76** depending therefrom and having orifices **77** for directing blasts of air toward the creels of spinning frames **11**.

The central portion of lower casing **67** may be supported on motor **50** by any suitable means such as a plurality of circularly arranged angle brackets **78**, which extend outwardly and have a bottom wall **79** of lower casing **67** suitably secured thereto. Bottom wall **79** of lower casing **67** is provided with an air inlet opening **81** through which motor **50** extends. Opening **81** is of substantially greater diameter than motor **50** to permit a sufficient volume of air to be admitted to impeller **62** to prevent overheating of motor **50**. In order to induce the flow of air past the body of motor **50**, the inner surface of the annular wall of inverted cup-shaped support **64** has a plurality of circularly spaced cooling fins **82** thereon to thus produce a circulation of air around electric motor **50**.

As heretofore stated, the upper or second volute casing **70** is arranged to rotate relative to the lower or stationary casing **67**, and the same impeller **62** causes circulation of air through both casings **67**, **70**. Accordingly, upper cas-

ing 70 comprises a substantially circular body 83 provided with a pair of substantially diametrically opposed, offset, outlet portions 84, 85 (FIGURE 3) for directing streams of air outwardly, which streams of air move in a substantially rotary path with rotation of upper casing 70.

Substantially U-shaped extensions or nozzles 87, 88 are suitably secured to or formed integral with, and extend outwardly from the outlet portions 84, 85. Opposed side walls of the U-shaped extension 87 have a suitable outwardly and upwardly curved deflector element 90 (FIGURE 2) suitably secured to medial portions thereof so that a blast of air is directed outwardly in a substantially horizontal path from that portion of nozzle 87 below deflector 90, and a blast of air is also directed upwardly in a somewhat angular path from the nozzle 87 above deflector 90. Nozzle 88 also has a curved deflector element 91 extending between the side wall portions thereof (FIGURES 3 and 4). However, in this instance, deflector element 91 is suitably secured to the upper surface of the bottom wall of outlet portion 88 and curves outwardly and upwardly so as to deflect the flow of air from outlet portion 84 upwardly at an angle toward the ceiling and upper portions of the walls of the room in which the apparatus is used.

In order to facilitate adjustment of deflector element 91 and thereby vary the angle at which air from upper casing 70 leaves nozzle 88, deflector element 91 is preferably made from a flexible material, such as sheet metal, and its lower surface, adjacent the free end thereof, is engaged by the upper edge of an inwardly and outwardly adjustable bracket 92 whose lower portion has an adjustment slot 93 therein penetrated by a bolt 94 for securing the same to the upper surface of the bottom wall of nozzle 88. It is apparent that inward adjustment of bracket 92 causes deflector element 91 to extend at a generally steeper angle relative to the bottom of nozzle 88, and outward adjustment of bracket 92 causes deflector element 91 to extend at a more shallow angle relative to nozzle 88.

Upper casing 70 is supported for rotation upon lower casing 67 through intervening elements including an annular grooved or V-pulley 95 which preferably, but not necessarily, has an annular bearing race 96 suitably secured to the lower surface thereof. Bearing race 96 rides upon a similar annular bearing race 97 suitably secured to the upper wall of lower casing 67. The bottom wall of upper casing 70, indicated at 100, is suitably secured to the upper surface of grooved pulley 95. As shown in FIGURE 4, the bottom wall 100 of upper casing 70, grooved pulley 95, and bearing race 96 may be secured together by any suitable means, such as bolts 101.

The top wall of lower casing 67 and bottom wall 100 of upper casing 70 are provided with respective openings therein which are substantially concentric with impeller 62, and these openings, with the bottom race 97 and annular pulley 95, collectively define an opening 102 through which extend the blades 63 of impeller 62, and through which air flows as it is drawn into upper casing 70 through an opening 103 in the top wall of upper casing 70. It is apparent that, as air flows through the inlet opening 103, some of the air is exhausted through the outlet portions 84, 85 and respective nozzles 87, 88 of upper casing 70, and the remainder of the air drawn into inlet opening 103 of impeller 62 is directed radially outwardly from the lower portions of the blades 63 because of the inner edges of the lower portions of the blades being interconnected by the annular wall of inverted cup-shaped support 64 so the air flows outwardly through the ducts 71, 72 and tubes 73, 75, 76 and is exhausted through the orifices 74, 77 and the tubes 75 onto various parts of the textile machines, and the floor, beneath trackway 10.

In order to maintain upper casing 70 substantially concentric with impeller 62, the upper wall of casing 70 has a spider member 105 suitably secured thereto, the legs of which overlie air inlet opening 103 and are interconnected at their proximal ends by a bearing block 107 preferably formed integral with the legs of spider 105. Bearing block 107 is journaled on the upper end of motor shaft 60.

In order to impart rotation to upper casing 70 at a relatively slow speed as compared to that of impeller 62 with movement of the traveling blower cleaner B along trackway 10, an endless belt 110 is entrained about grooved pulley 95 and also engages a relatively small V-pulley 111 (FIGURES 2 and 3) fixed on the upper end of a shaft 112 journaled in a bracket 113. Bracket 113 is adjustably secured to one side of arm or duct portion 71 of lower casing 67 so as to be adjusted toward and away from upper casing 70 for taking up any slack in the belt 110. Accordingly, bracket 113 is provided with adjustment slots therein penetrated by screws 115 for securing the same to duct 71 of lower casing 67.

An outwardly projecting portion 116 of bracket 113 is penetrated by a threaded shaft or take-up screw 117 which also penetrates a threaded angle clip or stationary bracket 120 suitably secured to one side of duct 71 of lower casing 67. The outer end of take-up screw 117 preferably has a lock nut 121 threaded thereon for maintaining bracket 113 in the desired adjusted position.

The lower end of shaft 112 in FIGURE 2 has a bevel gear 122 fixed thereon which meshes with another bevel gear 123 fixed on a stub shaft 124 journaled in the lower portion of bracket 113. As heretofore stated, carriage 51 is supported on trackway 10 by rollers 52. At least one of the rollers 52 is fixed on a shaft 125. A connecting shaft 126 is universally connected to the proximal ends of shafts 124, 125. Thus, shaft 125 imparts rotation to upper casing 67 through the intervening connections heretofore described, while lower casing 67 remains stationary with respect to the carriage 51, but while the blower unit moves bodily along the trackway 10.

It is apparent, therefore, that lower casing 67 acts to direct outwardly a portion of the currents of air from impeller 62 in streams of substantially constant direction, while upper casing 70 directs portions of the air outwardly from the upper casing 70 in the form of revolving or rotating streams, so that a single impeller serves to direct currents of air outwardly and downwardly for cleaning various parts of the machines above which the blower unit moves, and also serves to direct one or more currents of air outwardly, as well as outwardly and upwardly, while moving the latter currents in a rotary path so as to remove lint and other loose material from the ceiling and walls and other overhead objects in the room in which the machines are disposed.

As stated heretofore, in those types of prior art traveling cleaners equipped with blowing outlets or nozzles which direct streams of air onto textile machines, outwardly toward the walls and upwardly toward the ceiling of the room, it has been necessary to suck ambient air into the blower means, which ambient air would include a substantial amount of lint. Thus, the blowing streams of air discharged from such outlets and nozzles would direct the lint sucked into the inlet of the blower means back onto the machine, the material in process, and onto other adjacent surfaces, thus reducing the efficiency of the blowing streams of air in removing dust and other light material from the machines, the material in process, and other adjacent surfaces.

Therefore, I have provided novel means for filtering the air drawn into the blower unit before it is exhausted from the blower outlets and/or nozzles, along with means for keeping the filter clean. A preferred embodiment of such filtering means and filter cleaning means will now be described.

In order to lessen the tendency of spray from the usual humidifying systems suspended from the ceiling of the room above the traveling blower cleaner B from entering the air inlet opening 103 of upper casing 70, I have provided a shielding housing 130, somewhat in the form of a canopy, which substantially encloses the upper por-

tion of the blower unit. In this instance, the shielding housing **130** substantially encloses the upper volute casing **70**. Housing **130** comprises an upper, preferably circular, imperforate wall **131** spaced substantially above the upper wall of upper casing **70**. Upper wall **131** preferably has a suitable access opening *a* therein closed by a removable cover plate *b* suitably secured to upper wall **131**, as by screws *c*.

Upper wall **131** of housing **130** may be of very nearly the same diameter as the mean diameter of the body **83** of upper casing **70**, and has a substantially annular frusto-conical side wall **132** connected thereto and extending downwardly and outwardly therefrom. The lower edge of frusto-conical side wall **132** is connected to or formed integral with a relatively short, annular, upright side wall portion **133** to which an inwardly projecting annular bottom wall or flange **134** is connected. The proximal surfaces of bottom wall **134** of housing **130** and bottom wall **100** of upper volute casing **70** define an annular auxiliary air inlet opening **135** therebetween which preferably encircles upper volute casing **70**. Thus, in effect, annular opening **135** is formed in the bottom wall of shielding housing **130**.

It is apparent that annular side wall **132** could also extend in vertical alinement with the narrow side wall portion **133** and the top wall **13** of housing **130** could be correspondingly increased in diameter.

It should be noted that shield housing **130** is connected to upper casing **70** so as to rotate therewith, by means of a plurality of circularly spaced support posts **140** fixed to the proximal surfaces of the top wall of the upper casing **70** and the top wall **131** of shielding housing **130**. Posts **140** also maintain top wall **131** of shielding housing **130** in sufficiently spaced relationship above the top wall of upper casing **70** so that air may flow into housing **130** through the annular opening **135** in the bottom wall **134** thereof, over the top wall of upper casing **70** and thus inwardly through the main air inlet opening **103** of upper casing **70**.

I have provided an annular filter **141** in the annular opening **135** to prevent lint from entering the blower. The filter **141** is preferably formed of relatively thin sheet metal, such as stainless steel, which is suitably perforated to permit air to readily flow therethrough into housing **130**, while preventing airborne lint from entering housing **130**. If desired, the filtered air inlet could be located in side wall **132** or in top wall **131** instead of at the bottom of the rotating member, without departing from the spirit of the invention.

The filter **141** should be smooth and free of burrs at the perforations thereof. Thus, if the filter is made from stainless steel, it has been found desirable to treat or coat the filter **141** with a plastic material, such as Teflon, so that lint which collects thereon may be easily removed as by suction or brushing.

Means are provided for continuously cleaning the outside surface of filter **141** during rotation thereof with upper casing **70** so as to permit continuous and efficient inward flow of clean air into the air inlet opening **103** of upper casing **70**. In its preferred embodiment, the filter cleaning means comprises a relatively narrow, elongate suction nozzle **145** whose mouth should be of substantially the same length as the width of annular filter **141**. The mouth of suction nozzle **145** is spaced immediately below and in registration with the filter **141**.

Suction nozzle **145** is suitably connected to traveling blowing cleaner B so as to travel therewith while remaining stationary with respect to the rotating filter **141**. In other words, means are provided for effecting relative movement between filter **141** and suction nozzle **145**. In this instance, it will be observed in FIGURE 5 that the lower portion of suction nozzle **145** is suitably secured to the side wall of lower casing **67**. The suction nozzle **145** may be connected to any suitable source of suction so arranged that suction nozzle **145** can move with the traveling blower cleaner B. Of course, it is highly desirable that such source of suction includes means for collecting and storing the lint drawn into suction nozzle **145**.

In its preferred embodiment, the suction nozzle **145** is connected to the inlet side of the traveling suction floor cleaner A. To this end, it will be observed in FIGURES 1 and 3 that one end of a flexible tube or conduit **150** is communicatively connected to the lower end of nozzle **145**, and the other end thereof is connected to the side wall of suction casing **30** of traveling suction floor cleaner A for communication with the interior of suction casing **30**. A medial portion of flexible tube **150** may be suitably secured to connecting rod **54**, as by a strap metal clamp ring **151**.

It is thus seen that, during rotation of filter **141**, it moves continuously past suction nozzle **145**, and suction nozzle **145** sucks any accumulation of lint and other light material off the lower surface of filter **141**. The lint sucked off the filter **141** by nozzle **145** is thus drawn through flexible tube **150**, into suction casing **30** of traveling suction floor cleaner A, into blower casing **20** and is thus blown into traveling collection chamber **23**. Thus, traveling collection chamber **23** serves as a collector for the lint and other light material removed from the lower surface of annular filter **141** by suction nozzle **145**.

A suitable brush or wiper element **155** is preferably provided on, within or adjacent the mouth of suction nozzle **145** to assist in dislodging any lint and other light material from the lower surface of annular screen **141**. In this instance, wiper element or brush **155** is shown as being secured to and extending between opposed end wall portions of the mouth of suction nozzle **145**, from which brush **155** extends upwardly and yieldably engages the lower surface of filter **141**.

It is thus seen that I have provided novel means for preventing airborne lint from being discharged from the blowing outlets and/or nozzles of the traveling blowing cleaner B, without interrupting or retarding the inward flow of air through the blower unit thereof, to any material extent, and wherein means are provided for filtering the air and continuously cleaning the filter and disposing of the lint and other light material removed from the filter, thereby insuring that clean air is discharged from the blowing outlets and/or nozzles of the traveling blower cleaner B and greatly increasing the efficiency of such blowing outlets and nozzles in preventing the accumulation of lint on the machines, floor, ceiling, walls and other objects in the room of a textile mill.

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, the scope of the invention being defined in the claims.

I claim:

1. In a traveling blowing cleaning apparatus for the disposition of lint and other light material in a textile mill having means causing said apparatus to travel over a textile manufacturing operation, said apparatus including a blower having air inlet means and air outlet means; the combination therewith of means at the inlet means for filtering air sucked into said inlet means, means traveling with said apparatus producing a suction air current adjacent a portion of the air inlet surface of said filtering means for cleaning the same, and means traveling with said apparatus for collecting material cleaned from the filter means by said suction air current.

2. A structure according to claim 1, in which said means for producing a suction air current comprises a suction nozzle positioned adjacent the side of said filter means toward which air flows as it is sucked into said inlet means, means effecting relative traversing movement between the filter means and said suction nozzle, and said suction nozzle being connected to a source of suction,

whereby said nozzle sucks accumulation of lint and other light material on the filter means away from said filter means.

3. A structure according to claim 1, in which said blower comprises a casing, said air inlet means including an air inlet in said casing, a housing substantially enclosing at least the air inlet portion of said casing and including a portion extending outwardly of said casing, a wall defining said last-mentioned portion of said housing, said wall having an opening therein through which air passes in its course to the inlet of said casing, and said means for filtering air sucked into said inlet comprising a filter covering said opening.

4. A structure according to claim 3, in which the opening in said wall substantially circumscribes said casing.

5. A structure according to claim 4, in which said means for cleaning said filtering means comprises a suction nozzle positioned closely adjacent the surface of said filter toward which air is moved by said blower and being connected to a source of suction, and means for rotating said housing to move said surface of said filter in a plane adjacent said suction nozzle whereby said suction nozzle continuously sucks lint off said filter during the inward flow of air therethrough.

6. A structure according to claim 5, including wiper means adjacent said suction nozzle and adjacent which said filter moves in engagement therewith to assist the suction nozzle in removing lint and other light material from said filter.

7. In a traveling blowing cleaning apparatus for the disposition of lint and other light material in a textile mill having machines arranged in rows therein, said apparatus including a traveling blower having air inlet means and air outlet means, nozzle means connected to said outlet means, and means for moving said blower longitudinally of and above the machines in a row; the combination therewith of means for filtering air sucked into said inlet means before it is exhausted from said nozzle means, means producing at least one moving stream of air adjacent the face of said filtering means toward which air is moved by said blower for removing lint from said face, and means movable with said apparatus for collecting the lint so removed.

8. In a traveling blowing cleaning apparatus for the disposition of lint and other light material in a textile mill having machines arranged in rows therein, said apparatus including a traveling blower having air inlet means and air outlet means, nozzle means connected to said outlet means, and means for moving said blower longitudinally of and above the machines in a row; the combination therewith of means for filtering air sucked into said inlet means before it is exhausted from said nozzle means, suction means for removing lint from the face of said filtering means toward which the air is moved by said blower, and means movable with said apparatus for collecting the lint so removed.

9. A structure according to claim 8, having a traveling suction cleaner in tandem with said traveling blower, said suction cleaner including a suction blower having an air inlet side and an air outlet side, and a collection chamber connected to said suction blower for collecting lint sucked by said suction blower; said suction means for removing lint from said filtering means comprising a suction nozzle adjacent said filtering means, means to effect relative traversing movement between said suction nozzle and said filtering means, means communicatively connecting said nozzle to said inlet side of said suction blower, and said collector chamber serving as said collecting means.

10. A structure according to claim 8, having a traveling suction cleaner in tandem with said traveling blower, said suction cleaner including a suction blower having an air inlet side and an air outlet side, and a collection chamber connected to said outlet side; said suction means for removing lint from said filtering means comprising a suction nozzle adjacent said filtering means, means to effect relative traversing movement between said suction nozzle and said filtering means, means communicatively connecting said nozzle to said inlet side of said suction blower, and said collection chamber serving as said collecting means.

11. In a traveling blowing cleaning apparatus for blowing lint and other light material off of textile machines and other surfaces in a mill and having means causing said apparatus to travel over a textile manufacturing operation, said apparatus including a blower casing having at least one air outlet and at least one air inlet, and means for drawing air into said inlet and exhausting the air from said outlet; the combination of a substantially annular filter through which air must flow before it enters said inlet, means for revolving said filter about an axis substantially concentric therewith, and suction means traveling with said blower casing and positioned adjacent said filter for continuously cleaning the same as it revolves.

12. In a traveling blowing cleaning apparatus for blowing lint and other light material off of textile machines and other surfaces in a mill and having means causing said apparatus to travel over a textile manufacturing operation, said apparatus including a blower casing having at least one air outlet and at least one air inlet, and means for drawing air into said inlet and exhausting the air from said outlet; the combination of a filter through which air must flow before it enters said inlet, suction means traveling with said apparatus and positioned adjacent said filter for cleaning the same, means for producing relative movement between said filter and said suction cleaning means to subject substantially all areas of the filter to the cleaning action of the suction cleaning means, and means traveling with said apparatus for collecting material cleaned by the suction cleaning means.

13. In a traveling blowing cleaning apparatus for blowing lint and other light material off of textile machines and other surfaces in a mill, said apparatus including a blower casing movable above a row of said machines, said casing having at least one air outlet and at least one air inlet, and means for drawing air into said inlet and exhausting the air from said outlet; the combination of a substantially annular filter through which air must flow before it enters said inlet, means for moving said filter about an axis substantially concentric therewith, and a suction nozzle movable with said blower casing and positioned adjacent the path of movement of said filter for sucking lint and other light material off the surface of the filter opposite from said inlet.

14. In a traveling blowing cleaning apparatus for blowing lint and other light material off of textile machines and other surfaces in a mill and having means causing said apparatus to travel over a textile manufacturing operation, said apparatus including a blower casing movable above a row of said machines, said casing having at least one air outlet and at least one air inlet, and means for drawing air into said inlet and exhausting the air from said outlet; the combination of a filter through which air must flow before it enters said inlet, a cleaning element comprising a suction nozzle and a wiper, said cleaning element being positioned adjacent said filter and traveling with said apparatus, means effecting relative movement between the filter and the cleaning element, and means collecting material cleaned from the filter by the cleaning element.

15. In a traveling blowing cleaning apparatus for blowing lint and other light material off of textile machines, the floor, walls and other surfaces in a textile mill, said apparatus including a lower stationary casing movable above a row of machines, an upper casing rotatable above said lower casing, a driven air impeller common to both casings, each of said casings having air outlet means, and said upper casing having an air inlet; the combina-

tion of a housing at least partially enclosing said upper casing and including means enclosing said air inlet, means for rotating said housing, a substantially annular foraminate filter in said housing through which air flows in its course to said air inlet, said filter being substantially concentric with the axis of rotation of said housing and rotatable with said housing, and means adjacent the path of travel of said filter for cleaning lint and other light material off the outer surface of said filter.

16. In a traveling blowing cleaning apparatus for blowing lint and other light material off of textile machines, the floor, walls and other surfaces in a textile mill, said apparatus including a lower stationary casing movable above a row of machines, an upper casing rotatable above said lower casing, means for circulating air through both casings, each of said casings having air outlet means, and said upper casing having an air inlet in its upper portion; the combination of a housing at least partially enclosing said upper casing and including means overlying said air inlet, means for rotating said housing and said upper casing, a substantially annular foraminate filter in said housing through which air flows in its course to said air inlet, said filter being substantially concentric with the axis of rotation of said housing and rotatable with said housing, suction means movable with said apparatus and positioned adjacent the path of travel of said filter for cleaning lint and other light material off the outer surface of said filter, and collector means connected to said suction means for collecting the latter material.

References Cited in the file of this patent

UNITED STATES PATENTS

2,184,732	Brewer	Dec. 26, 1939
2,795,291	Pierce	June 11, 1957
2,823,656	Dolza	Feb. 18, 1958
2,976,558	Fain	Mar. 28, 1961
3,001,222	Preston	Sept. 26, 1961
3,003,178	McEachern	Oct. 10, 1961
3,011,204	Holtzclaw	Dec. 5, 1961

FOREIGN PATENTS

511,455	Great Britain	Aug. 18, 1939
1,178,163	France	Dec. 8, 1958
1,226,751	France	Feb. 29, 1960

OTHER REFERENCES

Parks-Cramer Publication No. 411, published Sept. 25, 1958 (1 page).