April 12, 1966 J. F. KING, JR 3,245,103

OVERHEAD TRAVELING CLEANER FOR TEXTILE MACHINE

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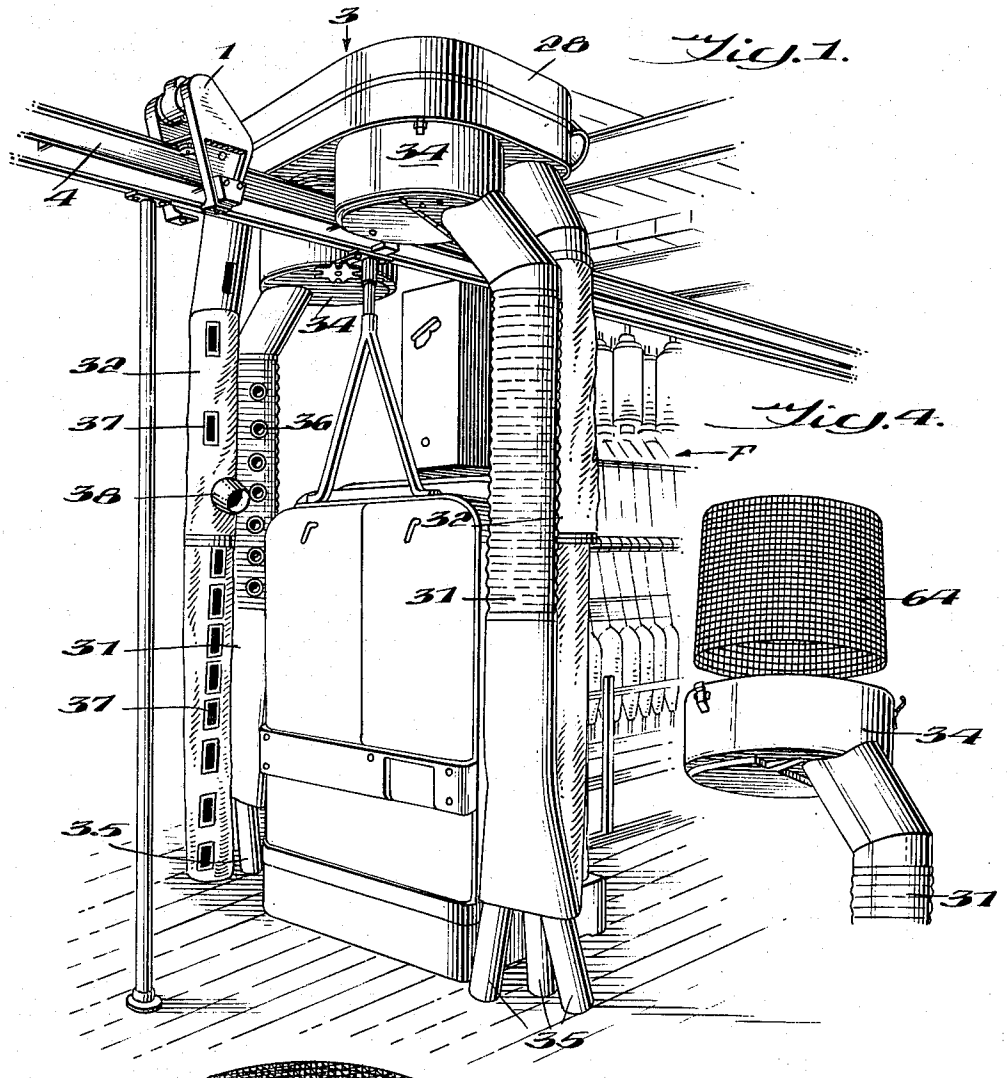


Fig. 1.

Fig. 4.

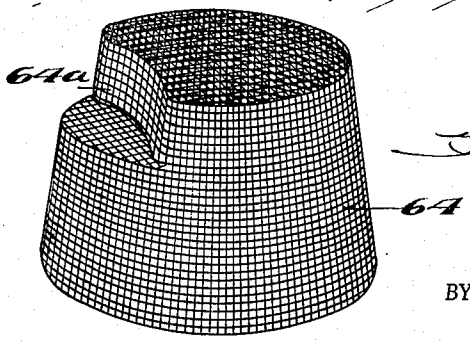


Fig. 5.

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OVERHEAD TRAVELING CLEANER FOR TEXTILE MACHINE

Filed Oct. 11, 1963 10 Sheets-Sheet 2

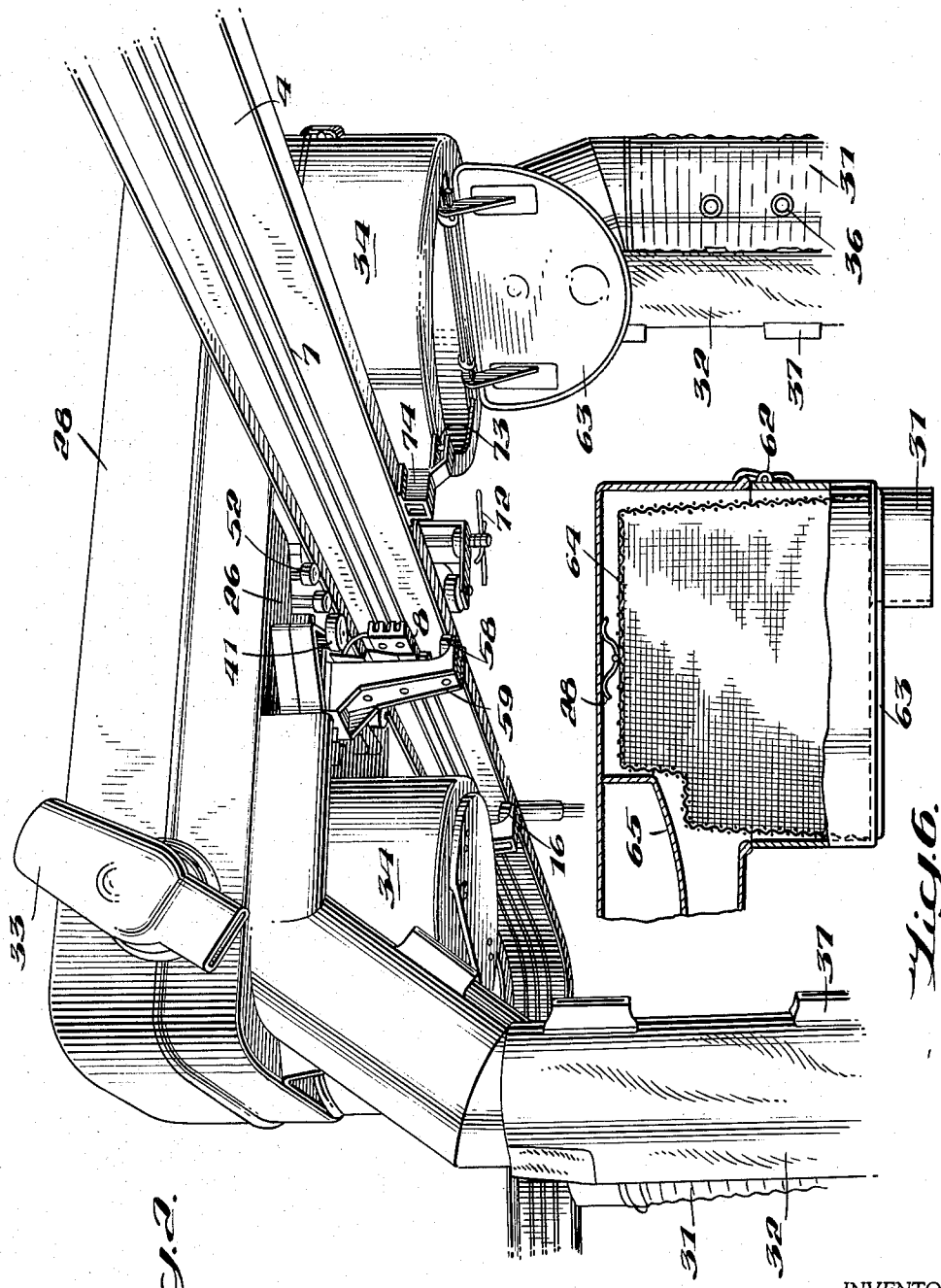


Fig. 2.

Fig. 6.

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April 12, 1966 J. F. KING, JR 3,245,103

OVERHEAD TRAVELING CLEANER FOR TEXTILE MACHINE

Filed Oct. 11, 1963 10 Sheets-Sheet 3

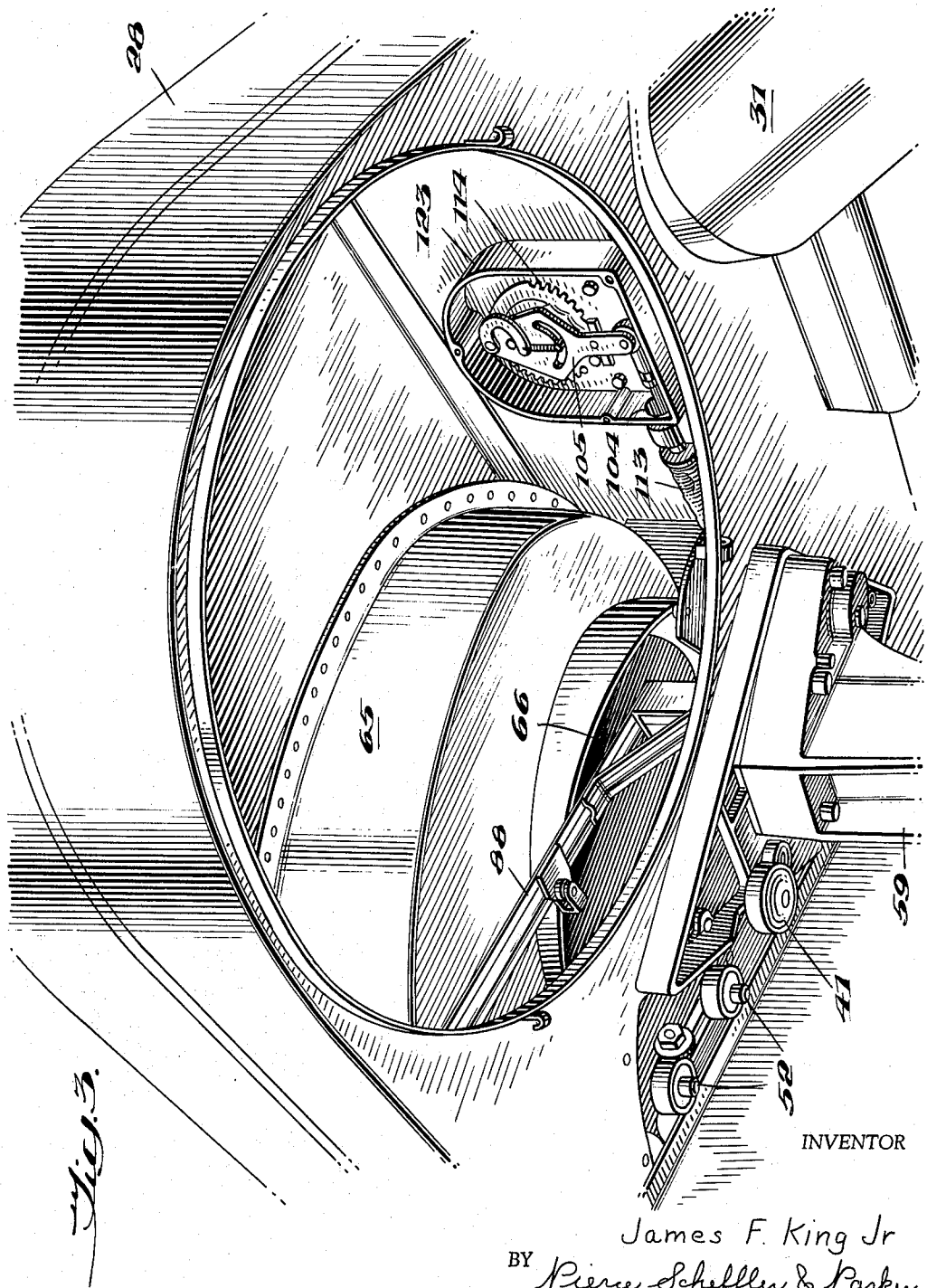


Fig. 3.

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OVERHEAD TRAVELING CLEANER FOR TEXTILE MACHINE

Filed Oct. 11, 1963 10 Sheets-Sheet 4

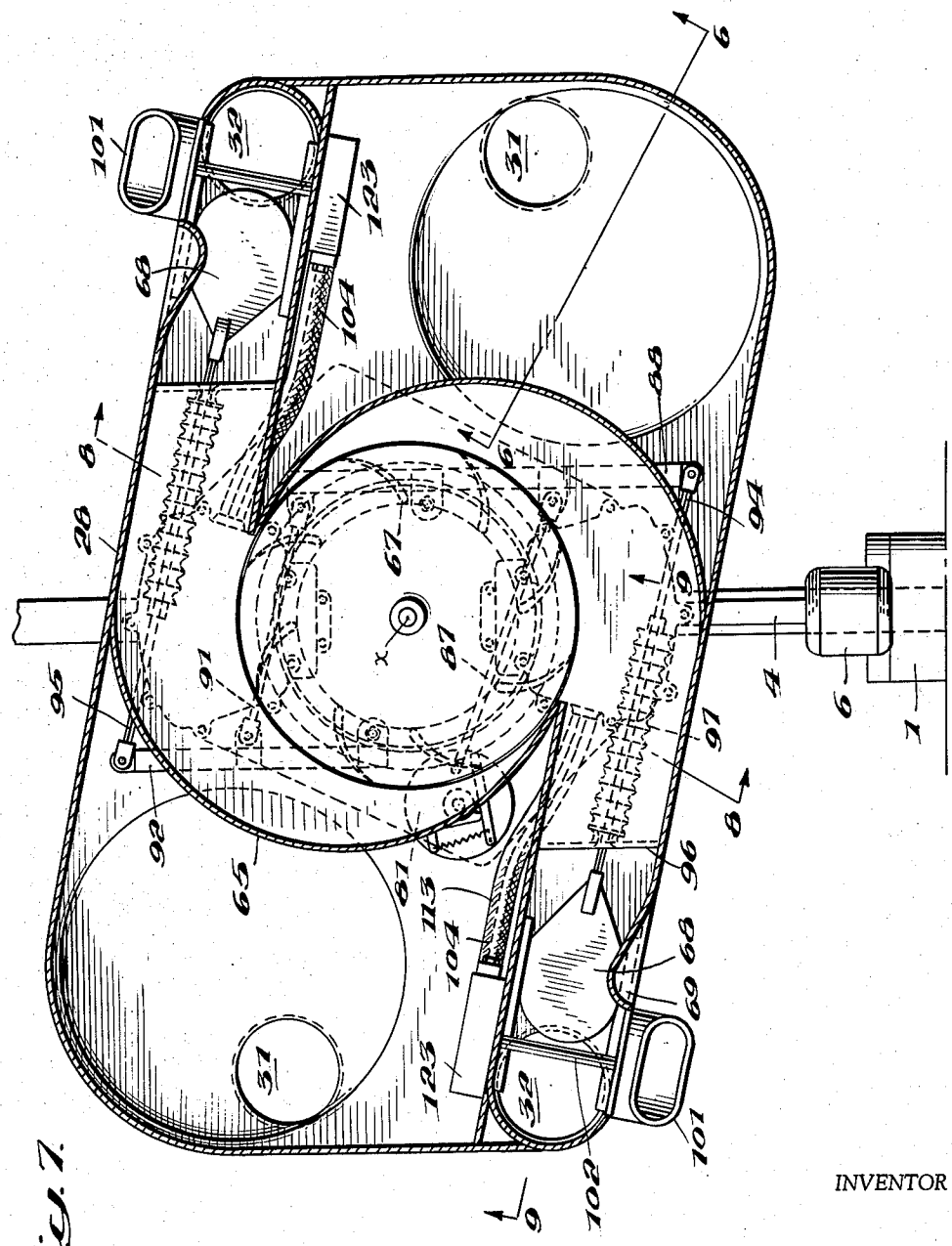


Fig. 7.

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April 12, 1966 J. F. KING, JR 3,245,103

OVERHEAD TRAVELING CLEANER FOR TEXTILE MACHINE

Filed Oct. 11, 1963 10 Sheets-Sheet 5

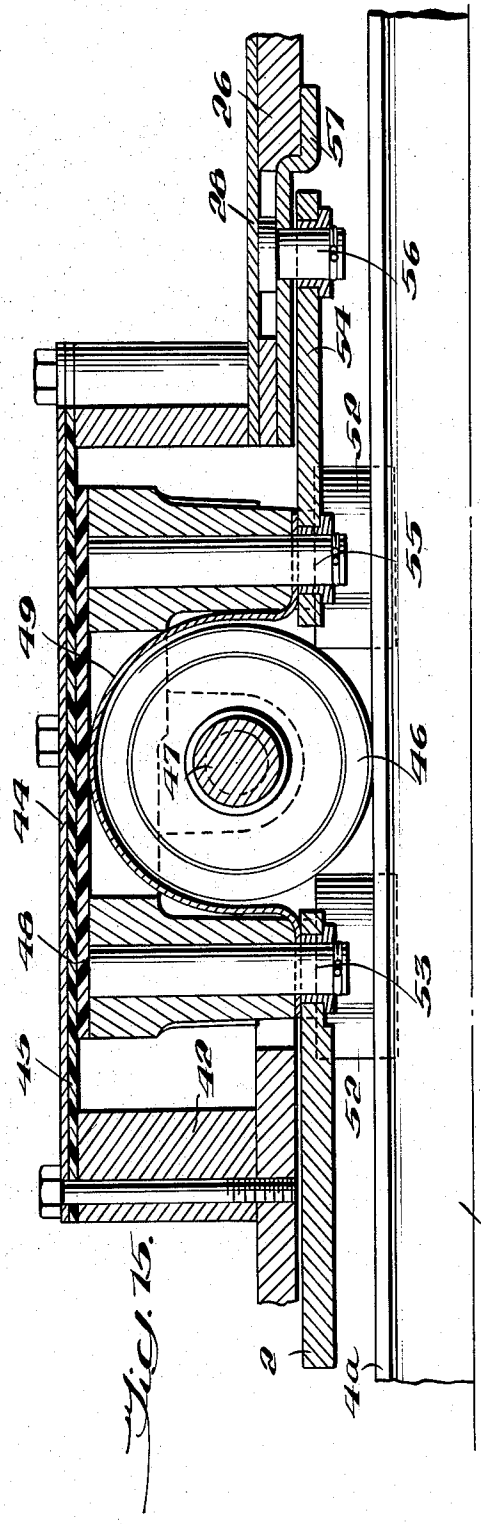


Fig. 7b.

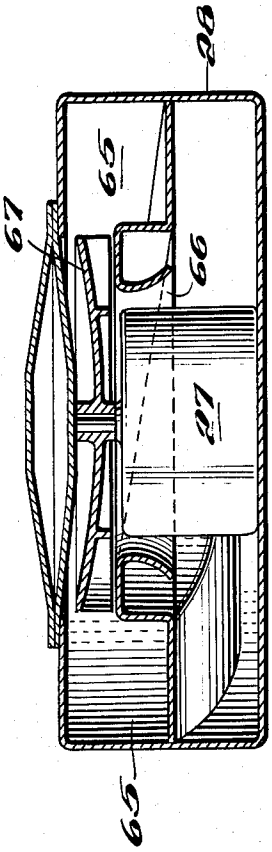


Fig. 7a.

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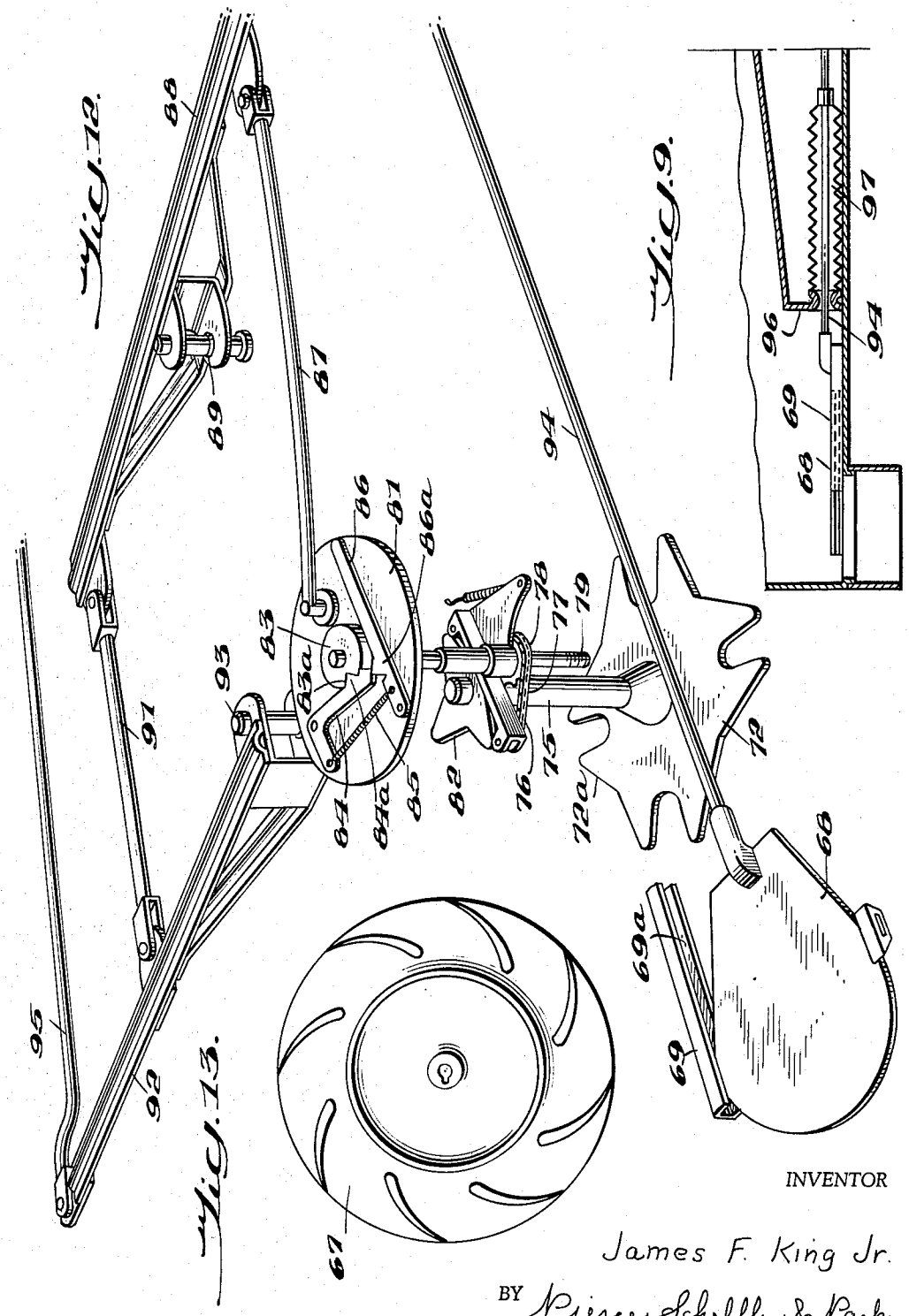
BY Pierce, Scheffler & Parker

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April 12, 1966 J. F. KING, JR 3,245,103

OVERHEAD TRAVELING CLEANER FOR TEXTILE MACHINE

Filed Oct. 11, 1963 10 Sheets-Sheet 6



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April 12, 1966 J. F. KING, JR 3,245,103

OVERHEAD TRAVELING CLEANER FOR TEXTILE MACHINE

Filed Oct. 11, 1963 10 Sheets-Sheet 7

Fig. 11.

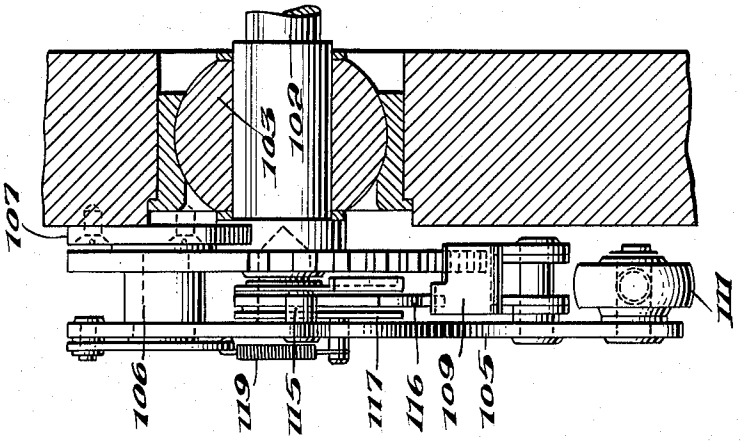
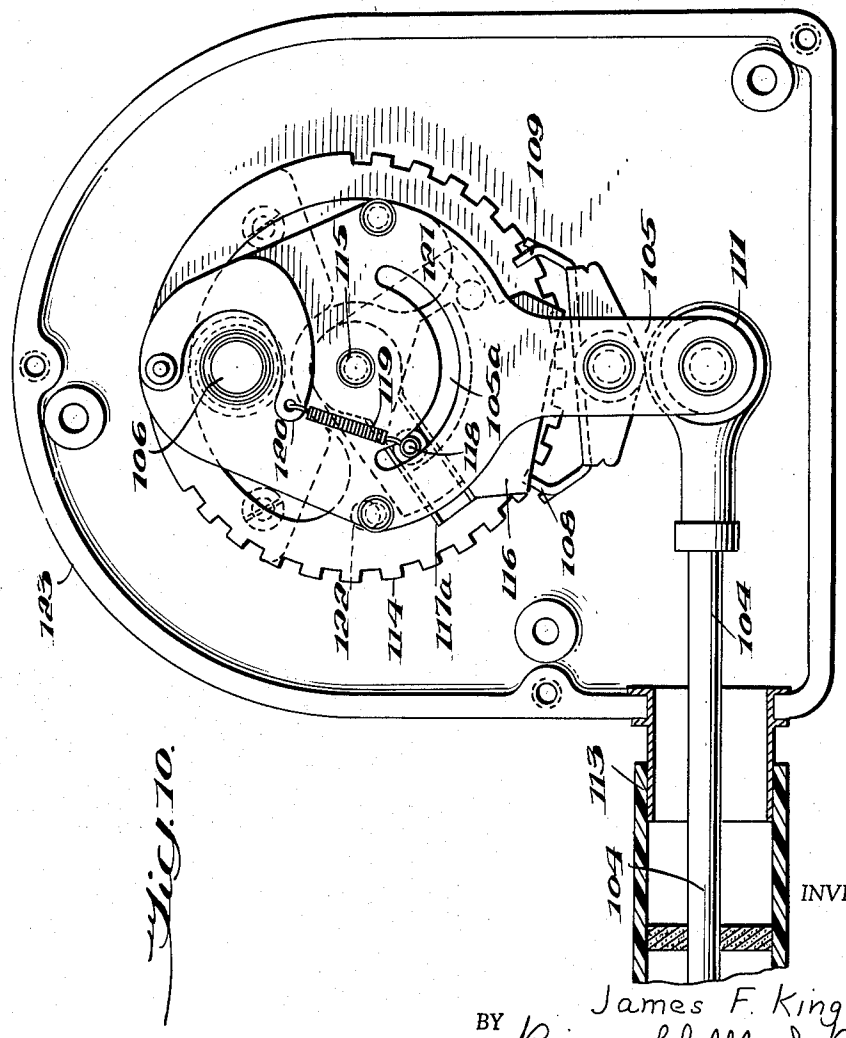


Fig. 10.



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April 12, 1966 J. F. KING, JR 3,245,103

OVERHEAD TRAVELING CLEANER FOR TEXTILE MACHINE

Filed Oct. 11, 1963 10 Sheets-Sheet 8

Fig. 14.

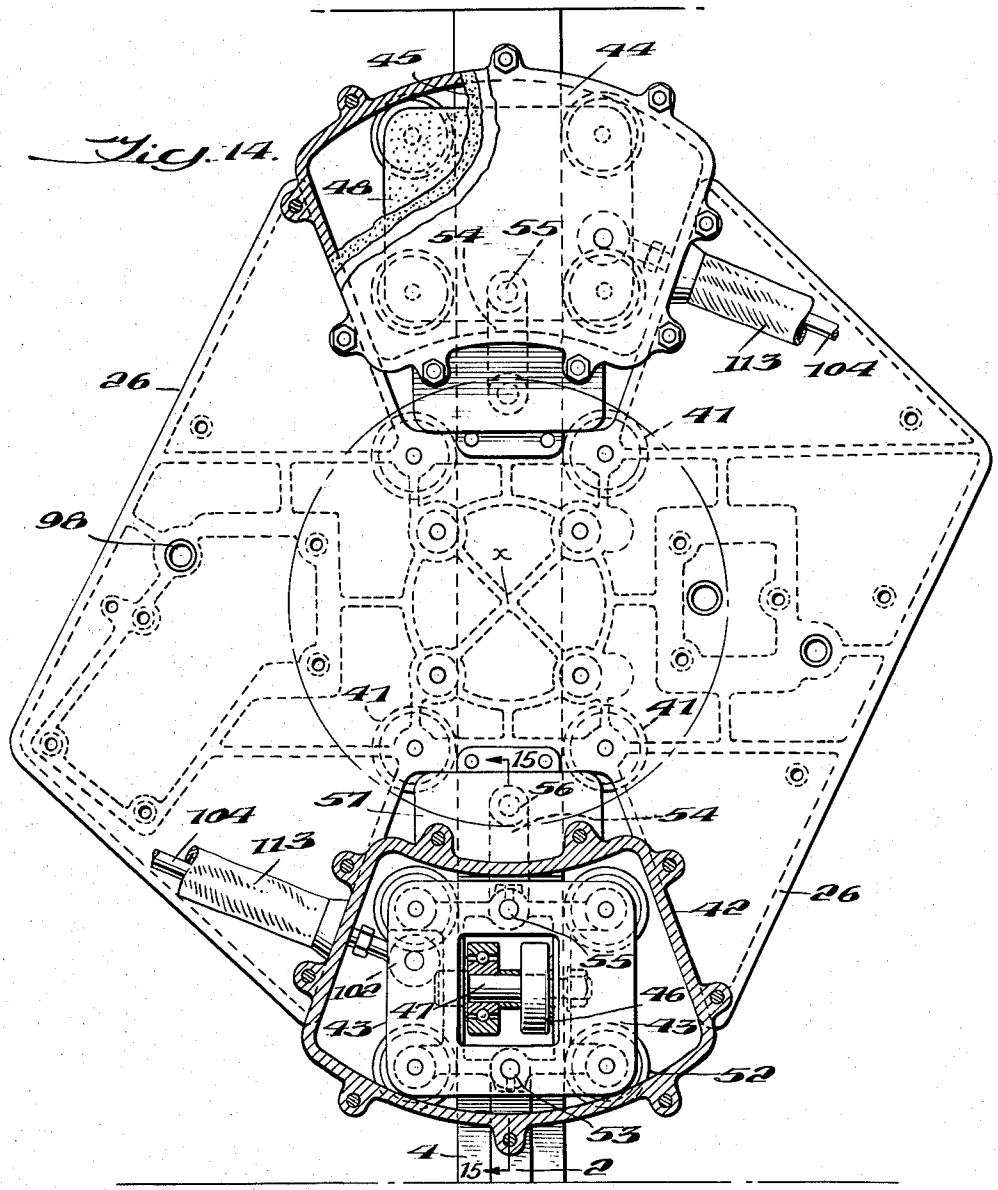
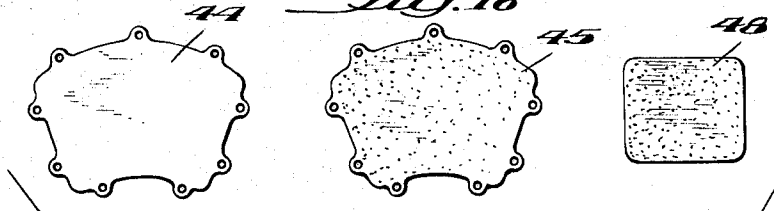


Fig. 16



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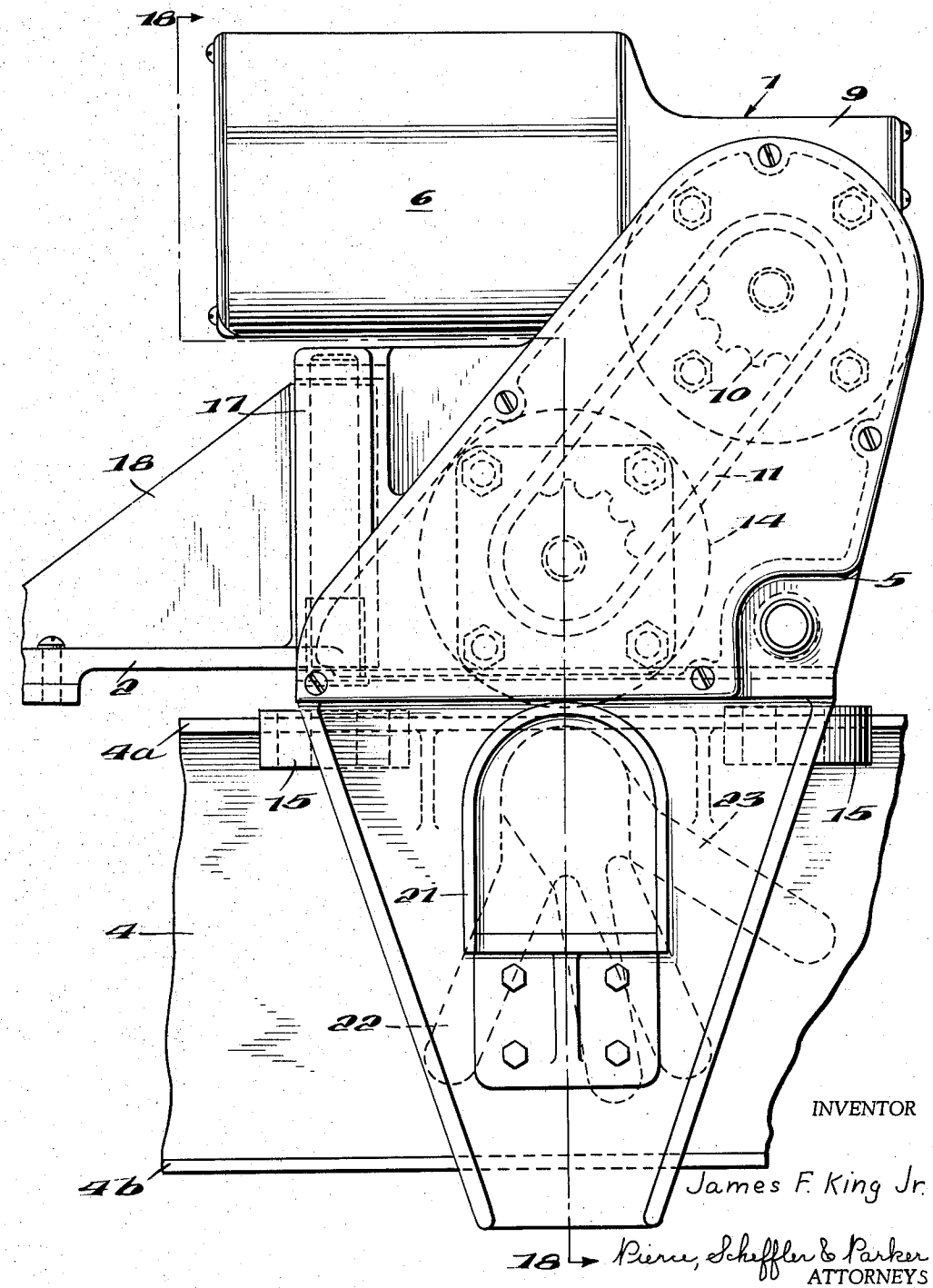
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April 12, 1966 J. F. KING, JR 3,245,103

OVERHEAD TRAVELING CLEANER FOR TEXTILE MACHINE

Filed Oct. 11, 1963 10 Sheets-Sheet 9

Fig. 17.



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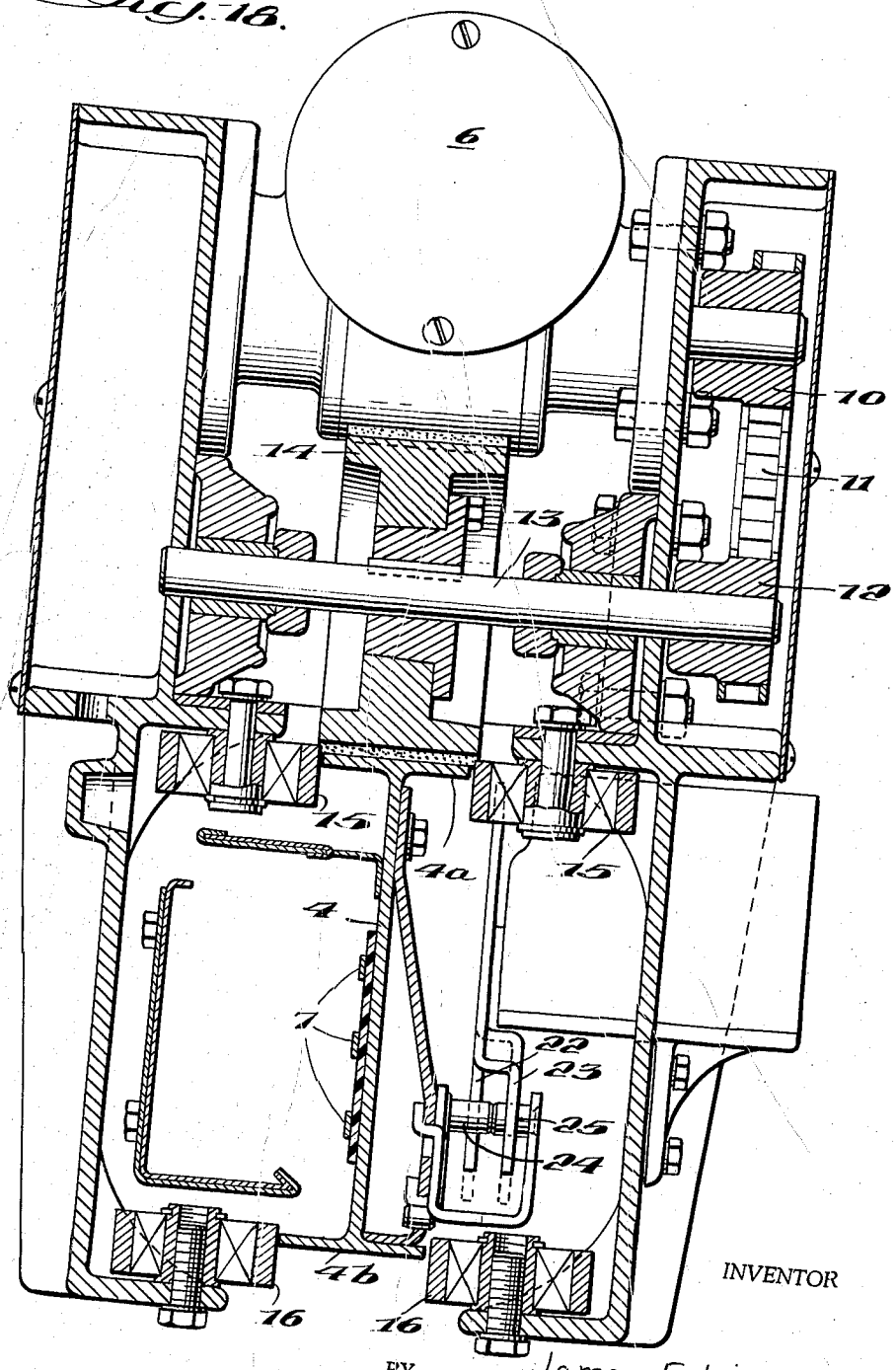
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OVERHEAD TRAVELING CLEANER FOR TEXTILE MACHINE

Filed Oct. 11, 1963

10 Sheets-Sheet 10

Fig. 16.



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United States Patent Office 3,245,103 Patented Apr. 12, 1966

3,245,103

OVERHEAD TRAVELING CLEANER FOR TEXTILE MACHINE

James F. King, Jr., Winston-Salem, N.C., assignor to The Bahnson Company, Winston-Salem, N.C., a corporation of North Carolina

Filed Oct. 11, 1963, Ser. No. 315,515
14 Claims. (Cl. 15—312)

The present invention relates to traveling cleaners for textile machines and more particularly to an improved cleaning apparatus designed to travel on a trackway above and along one or more rows of spinning frames and the like for the purpose of removing and collecting lint from the frames as well as from the ceiling and floor areas and storing the collected lint and such other particulate matter as may be drawn into the collection system into canisters carried on the cleaner.

An object of the invention is to provide an improved apparatus of the above type which is capable of taking care of the complete cleaning requirements for the textile machine.

Another object is to provide a traveling cleaner having depending suction and discharge air trunks arranged at each side of the textile machine and which is so constructed as to travel in a completely stabilized manner thus avoiding any undesirable swinging action of the trunks.

Still another object is to provide a traveling cleaner of the depending air type incorporating a unique guiding and load bearing arrangement which enables the cleaner to maintain its transverse center line perpendicular to a track tangent at the center line of the cleaner while negotiating curves in the trackway. This feature has the advantage of minimizing deviation of the cleaner to the inside of a 180° turn in the track and hence, minimizes the chances of the trunks dragging the end of the spinning frame or its drive motor while negotiating a turn around the track at the end of one row of spinning frames. This is particularly important in mills where a 180° turn in the track maust be accommodated in a limited amount of space between the end of the row and an adjacent wall of the mill room.

A more particular object is to provide a traveling cleaner of the depending trunk type wherein the cleaner is side guided only at its central portion, the weight of the cleaner on the track being borne by track guided wheel trucks at the fore and aft ends and which are arranged to establish a laterally slidable load bearing association with the fore and aft ends of the cleaner so as to enable those ends to shift laterally with respect to the middle side-guided portion of the cleaner as the latter negotiates a curve in the track thus minimizing deviation of the cleaner to the inside of the track when going around the curve.

Another object is to provide a traveling cleaner of the general type described wherein the lint storage canisters have an optimum storage capacity relative to the overall size of the cleaner itself thus eliminating the necessity for frequent clean-outs.

Still another object is to provide a traveling cleaner provided with canister type lint storage compartments in which the lint is collected within a large capacity screen which is easily removable for cleaning.

A further object is to provide a traveling cleaner of the depending trunk type wherein unique means are provided to close off the inlet to the top of the high pressure trunk, from which air is discharged laterally inward against the side of the textile machine, at any location along the machine where such air discharge would prove a disadvantage.

A still further object of the invention is to provide

a traveling cleaner having ceiling nozzles which are arranged to index to different blowing directions, the drive for the indexing mechanism being taken from a relative transverse motion produced between the cleaner body and the captive but free floating load bearing wheel trucks, this relative transverse motion taking place each time the cleaner negotiates a turn in the track.

Another object is to provide a unique traveling cleaner which is constituted by a main cleaner unit and a completely self-contained tractor unit which is coupled to the main cleaner unit by a detachable draw-bar connection which enables the tractor unit to be replaced, if necessary, with a minimum of shut-down time.

The foregoing as well as other objects and advantages inherent in the invention will become more apparent from the following description of a preferred embodiment and from the accompanying drawings wherein:

FIG. 1 is a view in perspective showing the traveling cleaner at one end of the spinning frame;

FIG. 2 is also a perspective view showing only the upper part of the cleaner;

FIG. 3 is also a view in perspective looking upwardly into one of the openings provided at each side of the casing for receiving the canister type lint storage receptacle;

FIG. 4 is a view in perspective of one of the lint storing canisters together with its generally tub shaped filter screen;

FIG. 5 is also a perspective view of one of the filter screens, as seen from a different angle;

FIG. 6 is a vertical section taken through one of the canisters and lint storing screens in situ within the casing, the view being taken on line 6—6 of FIG. 7;

FIG. 7 is a horizontal section through the casing of the cleaner as would be seen with the top wall removed;

FIG. 8 is a vertical section through the casing taken on line 8—8 of FIG. 7;

FIG. 9 is another vertical section through the casing taken on line 9—9 of FIG. 7;

FIG. 10 is a view in elevation of the ratchet mechanism by which each of the ceiling nozzles is indexed to a different blowing position each time the traveling cleaner negotiates a turn along the track;

FIG. 11 is a vertical section taken on line 11 of FIG. 10;

FIG. 12 is a view in perspective showing most of the mechanical linkage involved in actuating to a closed or open position the slide dampers at the inlet ends of the high pressure trunks in order to cut off flow of high pressure air through these trunks at any desired location along the spinning frame where damage might result from the high velocity air streams which issue through the various outlet nozzles provided on the trunks;

FIG. 13 is a bottom plan view of the impeller element of the double scroll centrifugal blower;

FIG. 14 is a top view of the cast base plate on which the various structural components of the traveling cleaner are mounted; these including the blower motor which drives the impeller element of the dual scroll centrifugal blower, the fore and aft load bearing wheel well housings and wheel trucks by which the cleaner is supported on its rails and the overall casing structure which defines the dual scrolls, the depending low and high pressure trunks and the lint storage canisters;

FIG. 15 is a vertical section on line 15—15 of FIG. 14 through one of the wheel well housings and associated truck;

FIG. 16 is a complete view showing the top cover plate for one of the wheel well housings, the stationary nylon pad located at the underside of the housing cover, and the movable nylon pad located at the top of the wheel truck which permit of a relative sliding movement

between the pads as the cleaner negotiates a curve in the track;

FIG. 17 is a view in side elevation of the motorized tractor unit which pulls the cleaner and is coupled to the latter by a draw bar; and

FIG. 18 is a vertical transverse section through the tractor unit taken on line 18—18 of FIG. 17.

With reference now to the drawings and to FIGS. 1 and 2 in particular, the traveling cleaner is seen to be constituted by two structurally separate units which are coupled together to travel along an overhead rail structure arranged along the longitudinal axis of a textile machine such as a spinning frame and designed to keep the spinning frame and floor area reasonably free from lint accumulations. One unit is the motorized tractor 1 and this is coupled by a draw-bar 2, see also FIGS. 7, 14 and 17, to the cleaner unit 3 so as to pull or push the latter along the trackway 4 and hence, along a row of spinning frames F which are customarily arranged in essentially end-to-end relation on the floor of the mill.

The trackway 4 as illustrated is a monorail with an essentially I-shaped cross-section. However, other forms of trackway, both single and multi-rail can be utilized.

Use of a separate tractor assembly which can be used to either pull or push the cleaner unit has a number of operating advantages since the tractor can then be made a separate entity with its own electrical collection system, guide wheels, etc., which permits the tractor unit to be completely removed from the trackway without disturbing the main cleaner unit. Since the tractor unit is generally the component which requires most attention and field maintenance, a new tractor can be installed on the track and the entire machine put back into service in a matter of minutes whereas, prior known traveling cleaner constructions in which the tractor system is integrated structurally into the overall machine might well require several hours in the event of a breakdown in order to repair the tractor or even replace a tire when worn out. Moreover, use of a separate tractor unit is helpful in accomplishing a main objective of the invention which resides in the unique arrangement provided for guiding the cleaner machine so as to enable the latter to maintain its transverse center line perpendicular to a track tangent at the center line of the machine while negotiating curves in the track. The trackway can be laid out in various known patterns so as to proceed from one row of spinning frames to another in the mill and usually includes some 180° turns at the ends of adjacent rows of spinning frames to another in the mill and usually includes one row to the next.

The tractor unit 1, shown in FIGS. 17 and 18 is comprised of a frame casting 5 on which is mounted an electrical drive motor 6, the power to which is furnished from the track supported collector rails 7 by means of a brush block assembly, not shown in these views, but which can be of the same construction as the brush block assembly 8 shown in FIG. 2 for supplying power to the motor on the main cleaner machine driving the double-scrolled centrifugal blower. Power from the drive motor 6 is transmitted through a gear box 9 and thence through a drive sprocket 10, sprocket chain 11 and driven sprocket 12 to a horizontal drive shaft 13 on which is keyed the single, traction wheel 14 provided with a wear rim or tire that engages the top face of the trackway 4. Side guide wheels 15, there being two on each side of the track and engaging the top flange 4*a* are provided to maintain the tractor unit in alignment with the track at all times. In addition to side guide wheels 15, the tractor unit is also provided with a lower positioned stabilizing wheel 16 at each side of the track and establishing a running contact with the lower flange 4*b* of the track in order to keep the tractor unit supported vertically above the track.

It will be noted from FIG. 17 that a king pin 17 connected at its top and bottom ends to the tractor frame 5 extends through a vertically extending plate 18 provided at this end of the main draw-bar 2.

This vertically widened section 18 of the draw-bar 2 which provides a bearing for the king pin 17 serves to maintain the tractor assembly vertically above the track even though the entire tractor load is supported by the single drive wheel 14.

In the illustrated embodiment, the tractor unit is provided with a reversing switch mechanism 21 which can be employed where needed to reverse the motor 6 and hence, reverse the direction of travel along the track. This reversing switch, not shown in detail, includes a double arm actuating mechanism comprising switch levers 22, 23 arranged so as to engage corresponding pins 24, 25 located along the trackway where a reversal is desired.

The cleaner unit 3 comprises a cast base plate 26 preferably made from aluminum in the interest of weight reduction and which is ribbed on its underside to reinforce it. This plate which is shown in FIG. 14 and partly also in FIGS. 2 and 3 constitutes the base on which the blower motor 27 is mounted and also the overall cleaner housing structure 28 of sheet metal from which depends the low pressure suction trunk 31 and high pressure discharge trunk 32 at each side of the cleaner, as well as two rotationally indexable ceiling nozzles 33 and two canisters 34 for storing a large amount of lint.

Each low pressure suction trunk 31 includes a triple intake nozzle structure 35 adjacent the floor level for sucking up such lint and trash as may be present and a vertical series of spaced intake nozzles 36 beginning at the general level of the drafting rolls on the spinning frame and continuing upward to the top of the creel area.

Each high pressure discharge trunk 32 includes a vertical series of spaced discharge nozzles 37 from top to bottom for blowing transversely inward against the sides of the spinning frame so as to dislodge lint and cause it to be deposited on the floor where it can be readily sucked up by the floor nozzles 35. A special discharge nozzle 38 can be provided in particular at the drafting roll zone.

As can be seen from FIG. 7, the overall casing construction and trunk lay-out is so arranged that a straight line drawn from a position between adjacent trunks on one side, across the center line of the motor 27 in the center and to a point between adjacent trunks on the other side is perpendicular to the trackway 4.

A particularly unique and important structural aspect of the invention concerns the manner in which the cleaner unit is guided and supported for traveling along the trackway. For guiding the cleaner and keeping its transverse center line perpendicular to a track tangent at the center line of the cleaner while negotiating curved sections of the track, four fairly closely spaced wheels 41 serve as guides, two of these wheels being located at each side which establish a running contact with the top flange 4*a* of the I-shaped rail. These wheels 41 are suitably supported in bearings carried by the base 26 and depend from the underface of the plate as shown in FIG. 3 and are located as close as possible to the center of the cleaner represented by the point *x* in FIG. 14.

The weight of the cleaner is carried by two sets of load bearing wheels arranged fore and aft of the center of the cleaner. These load bearing wheels are free to float underneath the cleaner in a transverse direction relative to the cleaner but are individually side-guided to cause them to follow the contour of the track and stay inherently in alignment with the direction of travel at all times. This novel construction is necessitated by the fact that the bottom of the cleaner travels only a very short distance, such as about ¾" above the top of the track and the load bearing wheels must therefore extend up into wells in the bottom of the cleaner. Moreover, the comparatively large blower motor 27 about

10" in diameter, is bolted directly to the base plate 26 on the center line which makes the load bearing wheels and their associated wells exist out beyond the diameter of the motor.

Normally, such a wide separation of the load supporting wheels along the track would cause the longitudinal center line of a machine of this general type to deviate to the inside of a 180° turn in the track by such a large distance that considerable care would have to be taken in the design to make certain that the inside depending trunks would not drag either the end of the spinning frame or the drive motor located at the end of the frame while negotiating the turn around the track at the end of one row of spinning frames. However, the novel construction in accordance with the present invention enables one to restrict this deviation to a much smaller amount than has heretofore been possible which enables the machine to actually start its turn before reaching the end of the spinning frame and thus enables the cleaner to be installed in mills where the end of the frame is somewhat close to the wall.

As explained above, by keeping the four guide wheels 41 for the cleaner near the center of the machine, the latter more nearly turns about its center *x* when negotiating a curve in the track and this has the further advantage in that the trunk assembly on each side of the spinning frame will more closely adhere to a perpendicular from the track, with the perpendicular originating at the center *x* of rotation of the machine as it negotiates a curve. If this condition is not met or closely adhered to, the trunks do not describe a smooth curve as the machine enters a turn and hence, the trunks may have a tendency to swing momentarily into the side of the spinning frame and perhaps cause damage to themselves as well as damage to the textile work being spun.

The load bearing wheel assembly at each end of the cleaner machine is shown in FIGS. 14 and 15. The well for each wheel assembly disposed interiorly of the overall casing structure is established by a casting 42 secured by bolts to the base plate 26. The bottom of this casting is open to receive the wheel truck 43 and the top is closed by a cover plate 44 which is bolted into place. Secured in place beneath the cover plate and having an area coextensive with the area inside the casting is a stationary flat pad 45 which is preferably made of nylon or a similar material having a relatively low coefficient of friction.

Each wheel truck 43 is substantially rectangular casting having an area somewhat smaller than the area inside the well casting 42. The center of the truck is open and serves to receive the load bearing wheel or wheels. While a single wheel can be used, the illustrated embodiment makes use of two independently rotatable wheels 46 of the anti-friction type mounted for rotation on a horizontal shaft 47 which is secured within two opposite walls of the truck. Since each wheel of the two wheel set is independently rotatable, they have a differential action which is advantageous in negotiating turns in the track.

Secured in place at the top of each wheel truck and coextensive in area is another flat nylon pad 48 the upper face of which lies in load bearing, slidable contact with the underface of the stationary nylon pad 45. These relatively slidable pads 45, 48 provided at each end of the cleaner machine thus divide the weight of the machine between them.

As shown in FIG. 15, an arcuate dust cap 49 is used to enclose the wheels 46 from above to prevent dust, lint and other foreign matter from reaching the nylon pads.

Each wheel truck is itself side-guided so as to follow the track. For this purpose a guide wheel 52 is arranged in suitable bearings at each corner of the rectangular truck and engages the edge of the top flange 4*a* of the track. It will be noted that each of the guide wheels 52 is located below the base plate 26 and wheel well casting 42 so as not to interfere with the relative transverse movement which takes place between the wheel truck and well casting as the machine negotiates a curved section of the track and the two nylon pads 45, 48 slide transversely relative to each other.

The tractive force is imparted from the tractor unit 1 to the main cleaner machine 3 by means of articulated draw-bars. One such draw bar 2 extends from the king pin connection 17 at the tractor unit to a point of articulation 53 at one end of the wheel truck. Another but relatively short draw-bar 54 extends from a second point of articulation 55 at the opposite end of each wheel truck to an articulating connection 56 on a draw plate 57 which is bolted onto the base plate 26. This draw-bar arrangement thus permits the main cleaner machine 3 to be pulled or pushed along the track from either end by the tractor unit.

It will thus be evident that the novel guide and load supporting structure which has been described enables the main cleaner machine to maintain its transverse center line perpendicular to a track tangent at the center line of the machine while negotiating a curve in the track. The centrally located closely spaced side guide wheels 41, which do not carry any of the downwardly directed load, keep the central part of the machine aligned at all times with respect to the track, and the transversely slidable nylon load bearing pads 45, 48 associated with the load bearing wheel trucks 43 enable the necessary relative transverse movement between the wheel trucks, which must follow the track due to their side guides, and the corresponding end of the machine which must, of course, shift laterally as that end of the machine enters a curved portion of the track.

In order to stabilize the main cleaner machine 3 in a vertical direction, additional side guide wheels 58 are employed. These wheels, one at each side of the track, are located below and between the other set of side guide wheels 41 and are supported by bolted-on brackets 59 which depend from the base plate for running engagement with the lower flange 4*b* of the I-shaped trackway.

As distinguished from some constructions wherein means are provided for periodically and automatically transferring the lint from the storage means on the cleaner into a stationary receptacle located along the trackway, which not only complicates the overall structure but also materially increases its costs, the present construction features the lint storage canisters 34 which have a very large storage caapcity as compared with previously known designs and which make it practical to eliminate the necessity for providing automatic transfer out of the accumulated lint. Thus, with the present invention it becomes practical to so construct the lint storage components of the cleaner that under normal operating conditions they need to be cleaned out only at infrequent intervals and this can then be done by hand.

With reference to FIGS. 2 to 6 in particular, it will be seen that a lint storage canister 34 depends from each side of the main cleaner casing structure and functions to strip the lint from the air stream carried upwardly through each low pressure trunk 31. Each canister is constituted by a generally cylindrical casing which is attached at its upper end to the overall cleaner housing 28 by means of a plurality of circumferentially spaced latches 62. The lower end wall of each casing includes a hinged clean-out door 63 and also serves to support the upper end of each dependent low pressure trunk 31. Located within each casing is a screen 64 having a generally frusto conical configuration, the lower end of the screen being of course open at least in part in the area corresponding to the door area to facilitate lint removal. The upper end wall of the screen extends nearly to the top of the cleaner housing, as shown in FIG. 6 and includes an indenture 64*a* fitting partly around a portion of the

blower scroll 65 so as to enable one to employ the optimum amount of space available within the cleaner housing for lint storage purposes. Lint laden air enters the interior of the screen from the outlet end of the correlated low pressure trunk, the lint is stripped from the air and is retained within the screen and the cleansed air passes through the screen into the low pressure section of the cleaner housing and thence through an annular inlet 66 to the rotor element 67 of the blower as shown in FIG. 8. It will be noticed from this view that the blower intake is obviously larger than the motor diameter so that the blower rotor 67 can be mounted on the motor shaft as near to the motor as possible in order to minimize the total height of the cleaner above the track. The cleansed air is brought in around the motor 27 to aid in cooling the latter and is then turned through 90° to enter the bladed blower rotor 67. Rotor 67 turns the air through an additional 90° and directs it at increased pressure into the dual, opposite directed scrolls 65 which lead to the inlet ends of the air discharge trunks 32.

The traveling cleaner is provided with a feature which enables one to cut off the discharge of air from the high pressure trunks against the sides of the spinning frame at any desired location along the cleaner path where the discharge of air might prove damaging. For this purpose the cleaner includes a slidable damper plate 68 associated with the inlet to each of the high pressure trunks . These damper plates, shown in FIGS. 7 and 12 are actuatable between their open and closed positions in slides 69 and are linked together for simultaneous operation by means of a linkage mechanism controlled by a four-lobed star wheel 72 which depends from the cleaner. This star wheel is adapted to be actuated by a pin 73 shown in FIG. 2 which is mounted pivotally in a bracket 74 secured in the desired position along the trackway, the pin being movable on its pivot between a downwardly pointing, non-operative position clear of the star wheel, and an upwardly pointing, operative position engageable in one of the slots between adjacent lobes 72*a* on the star wheel. When the pin points downwardly, the star wheel travels above the pin and is not contacted so that the damper plates 68 remain in the position in which they have been previously set, either open or closed. When the pin 73 points upwardly, it locks in this position and will engage in a slot of the star wheel and rotate the latter 90°. Rotation of the star wheel is imparted to rotary shaft 75 to which is attached a drive sprocket and detent. Sprocket 76 is linked by chain 77 to a driven sprocket 78 secured upon shaft 79 so as to rotate the latter at a 2:1 ratio and thus effect a 180° rotation of clutch plate 81 mounted on, but not secured to, the upper part of shaft 79 for each 90° rotation of the star wheel. The detent assembly 82 causes the star wheel 72 to rest in a set position which allows it to engage the next operating pin 73 correctly. Clutch plate 81 is bearinged onto shaft 79 so that it can rotate relative to it. A clutch disc 83 is secured rigidly to shaft 79 and is provided with a V-shaped notch 83*a* cut into its outside diameter which makes engagement with a V-shaped projection 84*a* on latch lever 84. This latch lever is pivotally mounted on clutch plate 81 and is pressed against disc 83 by means of a biasing spring 85. A trigger member 86 is also pivotally mounted on clutch plate 81 and its V-shaped projection 86*a* is held tightly against the latch lever 84 by spring 85. If an overload occurs between clutch plate 81 and shaft 79, the V-shaped projection on latch lever 84 is caused to rise, against its spring load, out of the notch and at the same time swing trigger 86 outwardly until the two adjacent pointed surfaces of the latch and trigger cross each other, after which the trigger forces latch lever 84 completely away from clutch disc 83. This assembly thus provides a clutch which breaks away completely when an overload occurs so that no additional strains or wear can exist.

A connecting rod 87 is pivotally connected at one end to clutch plate 81 so that the plate can rotate completely underneath the connecting rod. Since each 90° rotary movement of the star wheel 72 causes clutch plate 81 to rotate to the position shown in FIG. 7, or to a second position 180° opposite from the illustrated position, the damper plates 68 are thus actuated to an open position or to a closed position. The linkage itself is comprised of a lever 88 which is pivotally mounted at 89 intermediate its ends. At one side of the pivot, the other end of connecting rod 87 is connected to the lever, and at the other side of the pivot 89 a second pivotally mounted connecting rod 91 extends to an intermediate point on lever 92 which includes a pivot mounting 93 at one end. From the other end of lever 88 and similarly from the other end of lever 92, pivotally mounted actuating rods 94, 95 extend to the damper plates 68.

As shown in FIGS. 7 and 9, each damper plate 68 is supported at three points: at its rear by actuating rod 94, (95), and at each side by a groove 69*a* in the slide block 69 preferably made of nylon to decrease friction. Since, as is evident from FIGS. 3 and 7, the linkage mechanism for actuating the damper plates is located within the low pressure section of the cleaner casing, a partition 96 must be provided in the casing structure for each damper unit, each such partition as shown in FIG. 9 including an aperture through which the appertaining damper plate actuating rod passes and an elongated boot 97 surrounding the rod which functions as a sealing element between the high and low pressure chambers on opposite sides of the partition.

Shaft 75 on which the star wheel 72 is mounted, is journalled in a bearing sleeve 98 provided in the base casting 26 and which is shown in FIG. 14.

The two ceiling cleaning nozzles 101, one being located at each side of the machine are preferably arranged so as to index rotationally in increments of 20° through a total of 110° from outside horizontal to a position beyond the vertical center line. Each of the two nozzles 101 is mounted rotationally onto the sheet metal casing structure by means of a large diameter ring bearing and each nozzle is attached to one end of a centrally mounted drive shaft 102 which extends back into the cleaner casing. This is shown in FIGS. 3, 7, 10 and 11. The opposite end of each drive shaft is supported in a spherical bearing 103 shown in FIG. 11 and is terminated by a ratchet assembly adapted to be actuated by means of a reciprocatable drive rod 104. A ratchet pawl and pawl shifting mechanism is mounted on an oscillator plate 105 which is pivoted about a stud 106 mounted on support plate 107. Pawls 108 and 109 are pivotally mounted on oscillator plate 105 at a position near the spherical bearing 111 which connects the oscillator plate to one end of drive rod 104. The other end of each drive rod terminates in a connection 112 to a corresponding one of the captive wheel trucks 43, as shown in FIG. 14, so that each drive rod will be shifted each time the appertaining wheel truck executes a lateral movement relative to the overall cleaner casing structure which takes place each time the traveling cleaner negotiates a curve in the track. Each drive rod 104 is encased in a boot or sleeve 113 which serves as an air seal.

Each stroke of the drive rod serves to move the pawls 108, 109 over the teeth of a rotatably mounted ratchet wheel 114 to which shaft 102 is secured.

A stud 115 is also secured to oscillator plate 105 and this stud serves as a trunnion for a pivotally mounted pawl lifter 116 and for a pawl lifter actuator 117. This lifter actuator has a pin 118 mounted on its outward face which extends through an arcuate slot 105*a* in oscillator plate 105 so that an over-center spring 119 can be connected to an anchor point 120 on oscillator plate 105. This over-center spring causes the lifter actuator 117 to assume one of two positions, and at the same time force the pawl lifter 116 to assume one of two positions, either with the lifter holding one or the other of the two pawls

108, 109 off of the teeth of ratchet wheel 114 but never both on or both off at the same time. Two spaced studs 121, 122 projecting from the face of ratchet wheel 114 are so located that one or the other will contact a lateral projection 117*a* on the pawl lifter actuator 117 dependent upon the direction of rotation of the ratchet wheel and thus cause the actuator to be shifted from one to its other position by the over-center mechanism thus lifting one pawl such as pawl 108 which had been engaged with the teeth on ratchet wheel 114 and pressing the other pawl 109 into engagement with the ratchet wheel teeth, which thus effects a reversal of the direction of rotation of the ratchet wheel 114 and hence of the ceiling nozzle secured thereto.

As the drive rod 104 is thus caused to reciprocate by movement of the wheel truck, the drive shaft 102 extending to the ceiling nozzle 101 will be caused to oscillate through a predetermined number of degrees in a step-by-step manner.

As shown in FIG. 3, each entire ratchet and pawl assembly is located inside of the suction, i.e., low pressure chamber of the overall cleaner casing and is enclosed within its own special housing 123. This housing is provided with a gasketed cover 124 so that the internal mechanism will remain free from lint contamination.

I claim:

1. In a traveling cleaner for textile machines arranged to travel along a trackway positioned above and extending along a row of such machines, and wherein the trackway includes a curved portion at the end of a machine, the combination comprising a support structure, a low pressure air intake trunk and a high pressure air discharge trunk depending from said support structure along the side of the machine, blower means for receiving air from said intake trunk and discharging the air into said discharge trunk, side guide means located at only the central portion of said support structure and cooperative with said trackway for preventing any lateral deviation thereof, and wheel trucks located along said trackway fore and aft of said central portion of said support structure for carrying the weight of said cleaner, each said wheel truck including wheel means arranged for rolling engagement with the trackway, means for side-guiding said trucks on said trackway to prevent any lateral deviation thereof, and laterally shiftable load bearing means disposed between said fore and aft ends of said support structure and the appertaining wheel trucks enabling said fore and aft ends to shift laterally with respect to said non-laterally deviating central side-guided portion as said cleaner negotiates a curve in said trackway.

2. A traveling cleaner as defined in claim 1 wherein each said laterally shiftable load bearing means includes a stationary bearing plate secured to the respective fore and aft ends of said support structure and a movable bearing plate secured to the appertaining wheel truck.

3. A traveling cleaner as defined in claim 2 wherein said stationary and movable bearing plates are made from a material having a low coefficient of friction such as nylon.

4. A traveling cleaner as defined in claim 1 wherein each said wheel truck includes a truck frame within which said wheel means is rotatably mounted.

5. A traveling cleaner as defined in claim 1 wherein each said wheel truck includes a truck frame and each said wheel means is constituted by a pair of truck wheels mounted for rotation independently of each other within said truck frame so as to establish a differential action in negotiating curved portions of the trackway.

6. A traveling cleaner as defined in claim 1 wherein each said laterally shiftable load bearing means includes a stationary bearing plate secured to the respective fore and aft ends of said support structure and a movable bearing plate secured to the appertaining wheel truck, said stationary bearing plate being located in the upper portion of a wheel well casing in which the wheel truck is received.

7. A traveling cleaner as defined in claim 1 wherein said support structure includes a base plate on which said blower and its motor are mounted together with the casing structure providing the support for said depending air trunks and air flow between said trunks and the blower inlet and outlet, said base plate also having mounted thereon fore and aft wheel well casings for receiving said wheel trucks and said laterally shiftable bearing means.

8. A traveling cleaner as defined in claim 1 and which further includes an oscillatably mounted ceiling cleaning nozzle and drive means for said nozzle including a drive rod having one end connected to one of said wheel trucks, said drive rod being actuated by the relative lateral displacement between said wheel truck and said support structure.

9. A traveling cleaner as defined in claim 1 and which includes an oscillatably mounted ceiling cleaning nozzle, said nozzle including an automatically reversing ratchet wheel and double pawl actuating mechanism operated by a reciprocatable drive rod, one end of said rod being connected to an oscillatable plate carrying said double pawls and the other end of said drive rod being connected to one of said wheel trucks.

10. A traveling cleaner as defined in claim 1 and which further includes a structurally independent motorized tractor unit for driving said cleaner along said trackway and articulated draw bar means extending between said tractor and a wheel truck on said cleaner and interconnecting the same.

11. A traveling cleaner as defined in claim 10 wherein said draw bar means includes a vertically extending plate portion at the tractor end including a king pin bearing constituting a vertically extending articulation serving to stabilize said tractor.

12. A traveling cleaner as defined in claim 1 and which further includes a damper associated with the inlet end to said air discharge trunk, and a mechanical actuating means therefor including a star wheel arranged to be rotated by engagement with a stationary abutment on said trackway.

13. A traveling cleaner as defined in claim 12 wherein said mechanical actuating means includes means converting rotation of said star wheel into reciprocating motion of a drive rod connected with said damper, a detent arrangement for effecting a predetermined amount of rotation of said star wheel upon contact with said abutment, and an overload clutch release mechanism.

14. In a traveling cleaner for textile machines arranged to travel along a trackway positioned above and extending along a row of such machines, the combination comprising a traveling support structure including a housing, a blower mounted centrally within said housing, said blower having a low pressure inlet and a pair of oppositely located high pressure outlets, a low pressure air intake trunk and a high pressure air discharge trunk depending at each side of said housing so as to be located on opposite sides of the machine to be cleaned, the relative fore and aft positions of said intake and discharge trunks at opposite sides of said housing being reversed such that the air intake trunk at one side of said housing is located in advance of the air discharge trunk on that same side and the other air intake trunk is located to the rear of the other air discharge trunk at the opposite side of said housing, means connecting the inlet ends of said air discharge trunks to the appertaining high pressure outlets from said blower, a drum shaped canister located beneath said housing at each side thereof, means detachably connecting said canisters to said housing, a removable drum-shaped lint stripping screen open only at the bottom end and positioned within each canister with the open bottom end thereof adjacent the bottom of the canister, each said drum-shaped stripping screen substantially filling the interior of its canister and extending upwardly into said housing, the upper end of each said air intake trunk communicating with the interior of the drum-shaped lint stripping screen appertaining thereto

through a portion of the bottom wall of the canister, a clean-out door provided in another portion of said bottom wall to permit access to the interior of said stripping screen, and means connecting the interior of each canister to the low pressure inlet to said blower.

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