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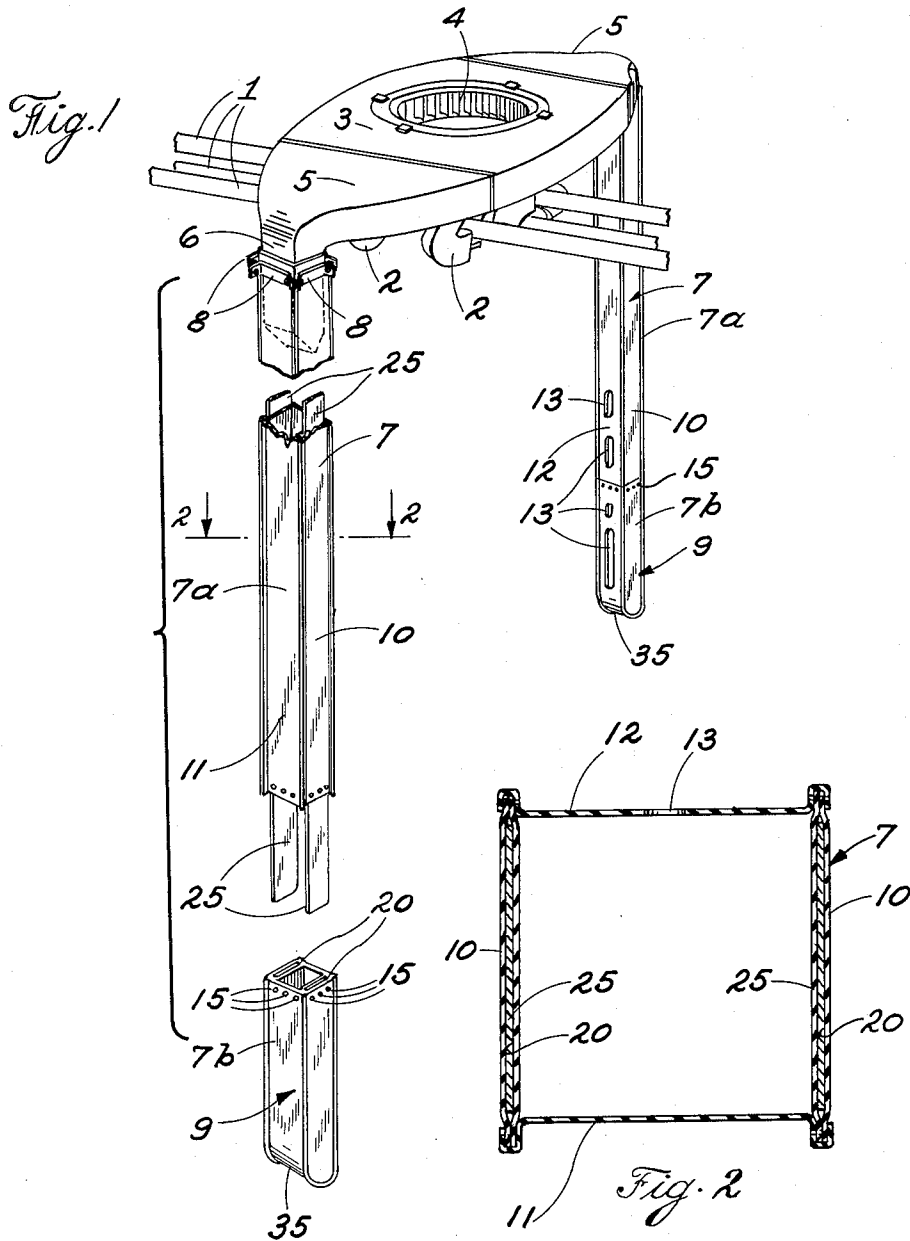
C. L. FELL

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APPARATUS FOR REMOVING LINT FROM TEXTILE MACHINES

Filed Jan. 28, 1957

2 Sheets-Sheet 1



INVENTOR.
CHARLES L. FELL

BY
RICHEY, WATTS, EDGERTON & McNENNY
R. D. Watts
ATTORNEYS

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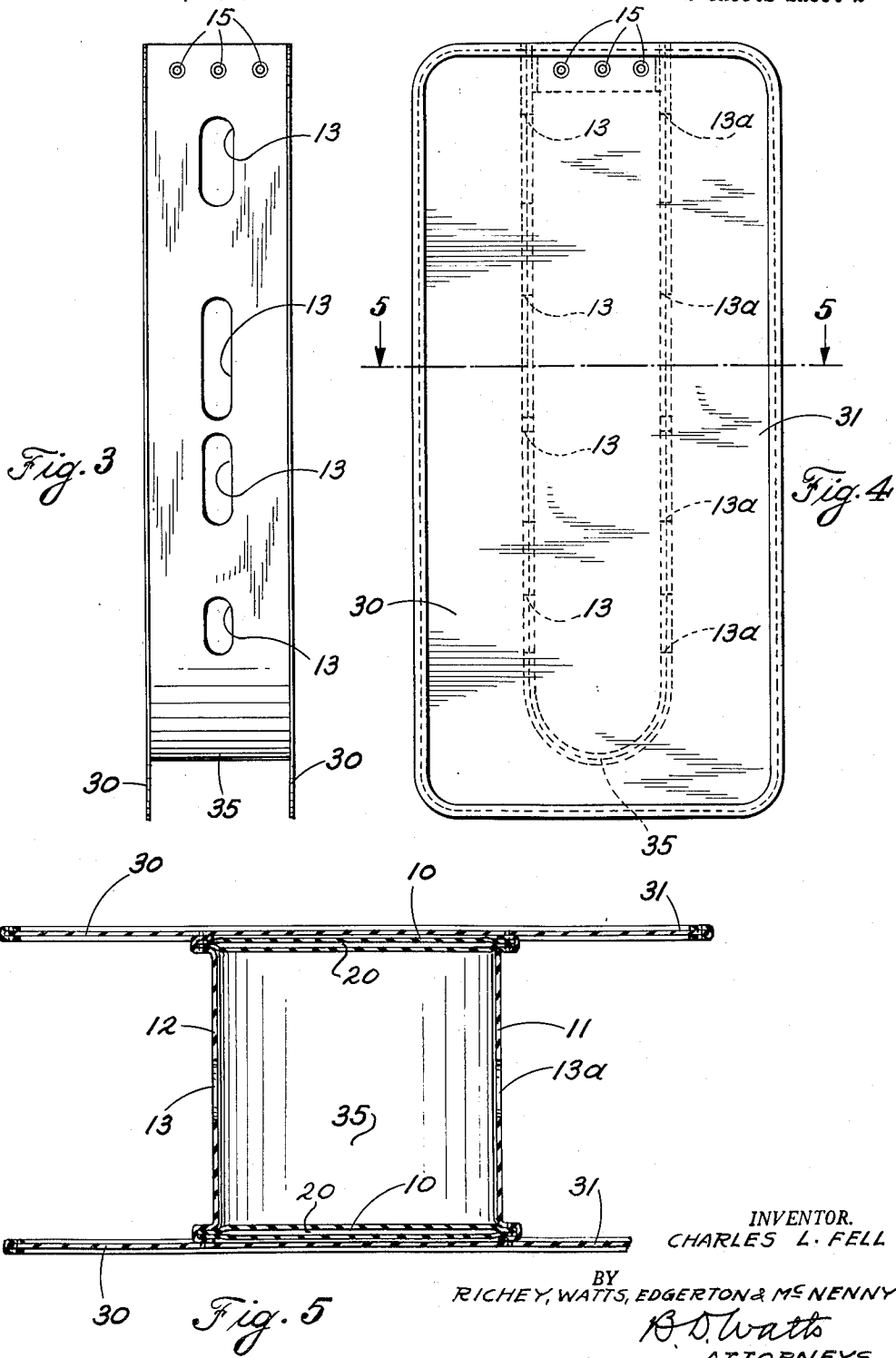
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INVENTOR.
CHARLES L. FELL

BY
RICHEY, WATTS, EDGERTON & MC NENNY
B. D. Watts
ATTORNEYS

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APPARATUS FOR REMOVING LINT FROM
TEXTILE MACHINES

Charles L. Fell, Rocky River, Ohio, assignor to The American MonoRail Company, Cleveland, Ohio, a corporation of Ohio

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9 Claims. (Cl. 15—312)

This invention relates generally to the art of cleaning textile machines and is particularly concerned with an overhead traveling device by which streams of air at high velocity may be directed inwardly into the underframe sections of spinning machines.

Blowers of various types have been used commercially for many years in removing lint from the upper or creel parts of spinning machines, but none of these blowers was capable of satisfactorily cleaning the mechanism within the underframe of the spinning machines.

More recently blowers have been used commercially which ran back and forth longitudinally of and within the underframe and these devices gave satisfaction but their first cost was fairly high.

Various attempts have been made to blow streams of air downwardly through tubes along the sides of the spinning machines but such devices have not been entirely satisfactory because the air streams were discharged through the open bottom ends of the tubes and, in order that the streams might be directed laterally at least partly through the underframe, the tube carrier was made much wider than the spinning machine and the tubes were inclined downwardly toward the machines at a fairly large angle to the vertical. This lateral extension of the tube carrier brought the tubes out into the aisles between parallel rows of spinning machines where they occupied an undue amount of space, tended to interfere with workers, trucks, and the like, and even so did not direct air effectively into the underframe.

The present invention aims to avoid the disadvantages of the prior devices and attains this aim by providing a blower to run on a track above the spinning machines with straight tubes extending vertically down and fairly close to the sides of the machines, and these tubes are so constructed as to direct air streams at various angles between the vertical and the horizontal into and through the underframes of the spinning machines. These tubes are readily adjustable to accommodate spinning machines of different heights, are readily deflectable so that the tubes will not injure workers or interfere with trucks in the aisles, or be interfered with by the latter, and the first cost is somewhat less than that of the above-described cleaners disposed within the underframe although the cleaning action may not be quite so efficient.

The present invention will be better understood by those skilled in the art from the following disclosure of two forms of the present invention taken in connection with the accompanying drawings in which:

Fig. 1 is a perspective view, partly exploded and with parts broken away, of one embodiment of the present invention;

Fig. 2 is an enlarged cross-sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a front view of a modified form of the bottom end of a tube embodying the present invention;

Fig. 4 is a side elevational view of the device of Fig. 3; and

Fig. 5 is a cross-sectional view taken on line 5—5 of Fig. 4.

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The apparatus shown in Figs. 1 and 2 comprises a blower adapted to run on rails above and longitudinally of a row of spinning machines and including downwardly extending tubes. In Fig. 1, the rails of the track are shown at 1 while trucks of the supporting carriage which runs on the track are shown at 2. These trucks are connected together by means (not shown) and support a fan housing 3, and a motor (not shown) having attached to the upper end of its rotor shaft a centrifugal fan 4. The parts just described are quite like those shown in the pending application of Becker and Miller, Serial No. 354,574, filed May 12, 1953, now Patent No. 2,851,716, issued on September 16, 1958.

Fan housing 3 is thin, that is, it has a short vertical length, is wide horizontally, that is, both transversely and lengthwise of the track 1, and is provided on opposite sides with conduits 5 which extend outwardly beyond the vertical projection of the sides of a spinning machine and have portions 6 which extend downwardly and are substantially straight and vertical. Each portion 6 is fitted with a tube 7 which extends up over the lower end thereof and is secured thereto in any suitable manner, for example, as by a clamp 8 surrounding the tube and pressing it against the portion 6.

Each of the tubes 7 is hollow, has an open upper end to surround portion 6, has a closed bottom end 9, has a substantially rectangular cross-sectional shape, has fore and aft sides 10, that is, the sides at right angles to the direction of travel of the blower, has an outer side 11 and an inner side 12 facing toward the spinning machine and provided with a plurality of openings 13 through which air propelled by fan 4 may escape in directions toward the underframe of the spinning machine. Thus the openings 13 are in the opposed sides of the two opposed tubes 7. Each tube 7 consists of an upper part 7a which is attached to conduit portion 6 and lower part 7b which includes the bottom end of the tube and which is detachably connected to the upper part in any suitable manner as by means of conventional snaps 15. The fore and aft sides 10 are provided with interior pockets 20 extending lengthwise of the upper portion of the tube 7 and for at least a part of the lower part 7b of the tube, and flat, thin, wide stays 25 are disposed in these pockets with the side sides at right angles to the direction of travel of the tube.

The tubes 7 are composed of bendable or somewhat flexible material, such as rubber covered fabric or plastic material of a composition suitable for directing air streams to the outlets, bending when an obstruction is encountered and retaining their bendability for longer periods of time. The stays are composed of material which is bendable under the application of forces at right angles to the wide sides thereof but substantially non-bendable under forces directed at the edges thereof. The stays in sides 10 serve to reinforce the tubes and prevent bending of the tubes at right angles to the track while permitting the tubes to bend in directions parallel to the track.

In Figs. 3, 4 and 5 a modified form of the lower tube of Figs. 1 and 2 is disclosed. These two forms of tube are generally alike but the tube of Figs. 3 to 5 is provided with flaps 30 which are secured against the fore and aft sides 10 of the tube and extend far enough beyond the inner side 12 to overlap the holes 13, so that if an obstruction is encountered which might enter a hole in the tube and tear the latter, the flap will cover the hole and prevent such action. Flaps 30 project beyond the outer side 11 of the tube far enough to overlap holes 13a in side 11 which are similar to holes 13 in the inner side 12. The holes 13 and 13a are in opposed sides of the same tube while holes 13 are in the opposed sides of the two tubes. When a tube 7 is provided with holes 13a, an air stream may be directed across the

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aisle between two rows of machines and against the machines on the far side of the aisle. When the holes 13 in the outer side of tube 7 are omitted there is no need for flaps to protect that side of the tube and hence such flaps may be omitted.

These flaps 30 are preferably secured only to the lower part 7b of the tube but may also be used on the upper part 7a. The flaps 30 may be secured to the tube part after it has been made by the expedient of sewing the outer edge of the flaps to the outer corners of the tube, then sewing the sides of the flap to the bottom and inner side edges of the tube with the flaps projecting beyond the inner edges and being free to bend about those edges.

It will be understood that the tubes 7 may be adjusted as to length by cutting off the top end of the tube so that its overall length will be as desired. Also it will be understood that holes in the inner sides 13 of the tubes may be made at various places depending on what part of the spinning machine is to be engaged by air discharged from the tube. Since the lower ends of the tube are most likely to come into contact with trucks and are, therefore, likely to be damaged or to wear out more rapidly than other parts of the tube and, since it may be desirable from time to time to alter the location, size or shape of holes in the lower parts of the tube, the tube is preferably made in two detachably connectible parts 7a and 7b, as shown in Fig. 1. It will further be understood that the stays are preferably employed since they maintain the predetermined position of the tubes while permitting temporary bending in their direction of travel and that, by reason of the presence of the stays, lighter material may be used in making the tubes without having them bend or moved to undesired positions by the air traveling within them. Since the extreme bottom ends 35 of the tubes are closed and the air propelled by the fan at considerable velocity may escape only through the holes on the inner sides of the tubes, it will be understood that the air streams must make a right angle change of direction and the streams issuing from the lower-most holes of the tubes will be substantially horizontal. However, the air streams issuing from holes progressively higher up in the tubes will have increasing angularity to the horizontal since, in effect, when the main air stream moves vertically downward in the tube the part flowing along the inner walls of the tubes will be "peeled off" by the lower edges of the openings and hence these streams will have a larger vertical component and a smaller horizontal component than the streams at the bottom of the tube. This action is advantageous because by suitably selecting the location, size and shape of the holes, air streams of various sizes and angularities may be directed at various parts of the spinning machine and hence any desired cleaning may be had and the same parts may be cleaned by streams striking the parts at different angles. No such advantages are realizable with tubes open only through their bottom ends.

Having thus described this invention in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains to make and use the same, and having set forth the best mode contemplated of carrying out this invention, I state that the subject-matter which I regard as being my invention is particularly pointed out and distinctly claimed in what is claimed, it being understood that equivalents or modifications of, or substitutions for, parts of the above specifically described embodiments of the invention may be made without departing from the scope of the invention as set forth in what is claimed.

What is claimed is:

1. In apparatus to travel horizontally over textile machines for removing lint therefrom, a horizontal fan housing having an air intake opening in its top and air outlet conduits on opposite sides thereof, said conduits extending out horizontally from the housing and then downwardly, hollow tubes composed of material relatively

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flexible and bendable as compared with the material of said conduits and having open upper ends surrounding and secured to the downwardly extending portions of said conduits, each tube having pockets in its fore and aft sides, air outlet openings in one side, and a closed bottom end, and flat stays in said pockets and bendable in the direction of travel of the tube but substantially non-bendable at right angles to said direction of travel.

2. In apparatus to travel horizontally over textile machines for removing lint therefrom, a tube approximately rectangular in cross-section, composed of flexible, non-metallic material and having an open top end, a closed bottom end, fore and aft sides having pockets therein, a closed outer side and an inner side adjacent to a textile machine provided with air outlets, and flat, wide, thin stays in said pockets positioned edgewise relative to said outer and inner sides, said stays being bendable under forces applied at right angles to the wide surfaces and relatively non-bendable as compared therewith under forces applied to the edge surfaces, said tube consisting of an upper section and a lower section and means for detachably connecting them together, the fore and aft sides extending beyond the inner side far enough to provide protection for the holes in the inner side.

3. In apparatus to travel horizontally over textile machines for removing lint therefrom, a horizontal fan housing having an air intake opening in its top and air outlet conduits on opposite sides thereof, said conduits extending out horizontally from the housing and then downwardly, hollow tubes composed of material relatively flexible, non-metallic as compared with the material of said conduits and having open upper ends surrounding and secured to the downwardly extending portions of said conduits, each of said tubes having fore and aft sides, air outlet openings in its side adjacent to a textile machine and a closed bottom end, and flat stays secured in place adjacent to the fore and aft sides and bendable in the direction of travel of the tubes but substantially non-bendable at right angles to said direction of travel.

4. In apparatus to travel horizontally over textile machines for removing lint therefrom, a tube approximately rectangular in cross-section, composed of flexible, fiber containing material and having an open top end, a closed bottom end, fore and aft sides having pockets therein, a closed outer side and an inner side adjacent to a textile machine and provided with air outlets, and flat, wide, thin stays in said pockets positioned edgewise relative to said outer and inner sides, said stays being bendable under forces applied at right angles to the wide surfaces and relatively non-bendable as compared therewith under forces applied to the edge surfaces, said tube consisting of an upper section and a lower section and means for detachably connecting them together.

5. In apparatus for removing lint from textile machines, a tube approximately rectangular in cross section, composed of flexible, non-metallic, fiber-containing material and having an open top end to receive a stream of air under pressure, a closed bottom end, and a side to be opposed to a textile machine and provided with outlets to direct streams of air toward said machine, and substantially parallel, flexible flaps extending beyond said side toward a textile machine far enough to cover the air outlets upon deflection and thereby to provide protection for said outlets.

6. In apparatus to travel horizontally over textile machines for removing lint therefrom, a tube approximately rectangular in cross-section, composed of flexible, fiber containing, readily bendable material and having an open top end, a closed bottom end, fore and aft sides having pockets therein, a closed outer side and an inner side opposed to a textile machine and provided with air outlets, and flat, wide, thin stays in said pockets positioned edgewise relative to said outer and inner sides, the fore and aft side extending beyond the inner side far enough to provide protection for the holes in the inner side.

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7. In apparatus to travel horizontally over textile machines for removing lint therefrom, a tube approximately rectangular in cross-section, composed of flexible, readily bendable material and having an open top end, a closed bottom end, fore and aft sides having pockets therein, a closed outer side and an inner side opposed to a textile machine and provided with air outlets, and flat, wide, thin stays in said pockets positioned edgewise relative to said outer and inner sides, said tube consisting of an upper section and a lower section and means for detachably connecting them together, the fore and aft sides extending beyond the inner side far enough to afford protection for the holes in the inner side.

8. In apparatus for removing lint from textile machines, a tube composed of flexible, non-metallic, fiber-containing material having an open top end to receive a stream of air under pressure, a closed bottom end, a side to be opposed to a textile machine and provided with air outlets, and sides at approximately right angles to said outlet-containing side provided with pockets, flat, wide, thin stays in said pockets positioned edgewise relative to said outlet-bearing side and flaps extending toward a textile machine from said outlet-containing side to protect said outlets.

9. In apparatus to travel horizontally over textile machines for removing lint therefrom, a tube composed of flexible, fiber-containing material to be suspended in vertical position from said traveling apparatus and having an open top end to receive a stream of air under pressure, a side to be opposed to a textile machine and provided with vertically spaced outlets to discharge separate streams of said air under pressure against vertically

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spaced parts of the textile machine and fore and aft sides, and means strongly resistant to bending of the tube in one direction and weakly resistant to bending of the tube in a direction at substantially right angles thereto, said means including a flat, wide, thin stay extending substantially the length of the tube and fixed in at least one of the fore and aft sides thereof and having wide side surfaces disposed at substantially right angles to the direction of travel of the tube and to the side of the textile machine, said stay being substantially non-bendable in directions parallel to its side surfaces and readily bendable in directions at right angles to its side surfaces.

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