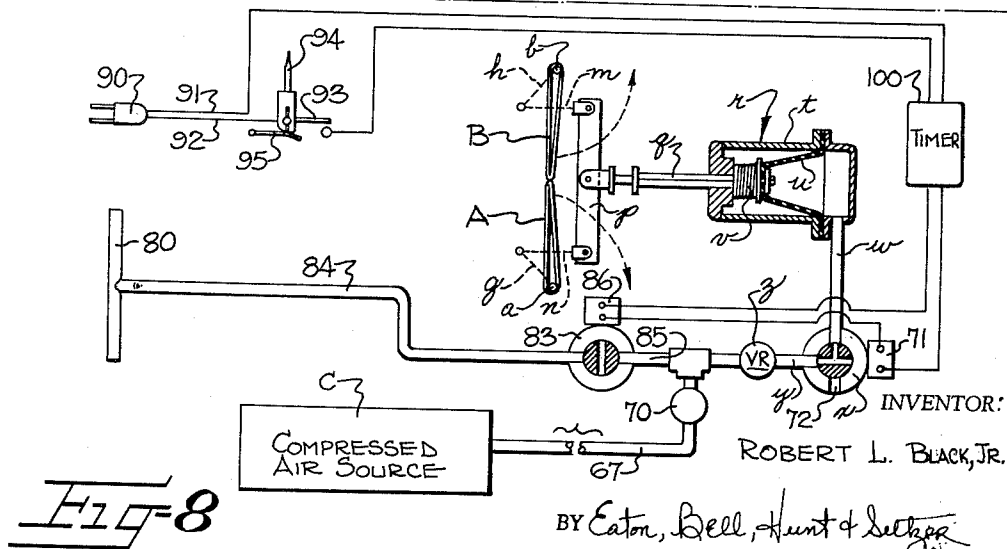
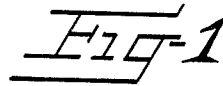


Filed May 12, 1961

2 R. L. BLACK, JR
TEXTILE SUCTION CLEANING METHOD AND APPARATUS
HAVING A WASTE COLLECTION SYSTEM
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3,046,162

4 Sheets-Sheet 1



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July 24, 1962

R. L. BLACK, JR
TEXTILE SUCTION CLEANING METHOD AND APPARATUS
HAVING A WASTE COLLECTION SYSTEM

3,046,162

Filed May 12, 1961

4 Sheets-Sheet 2

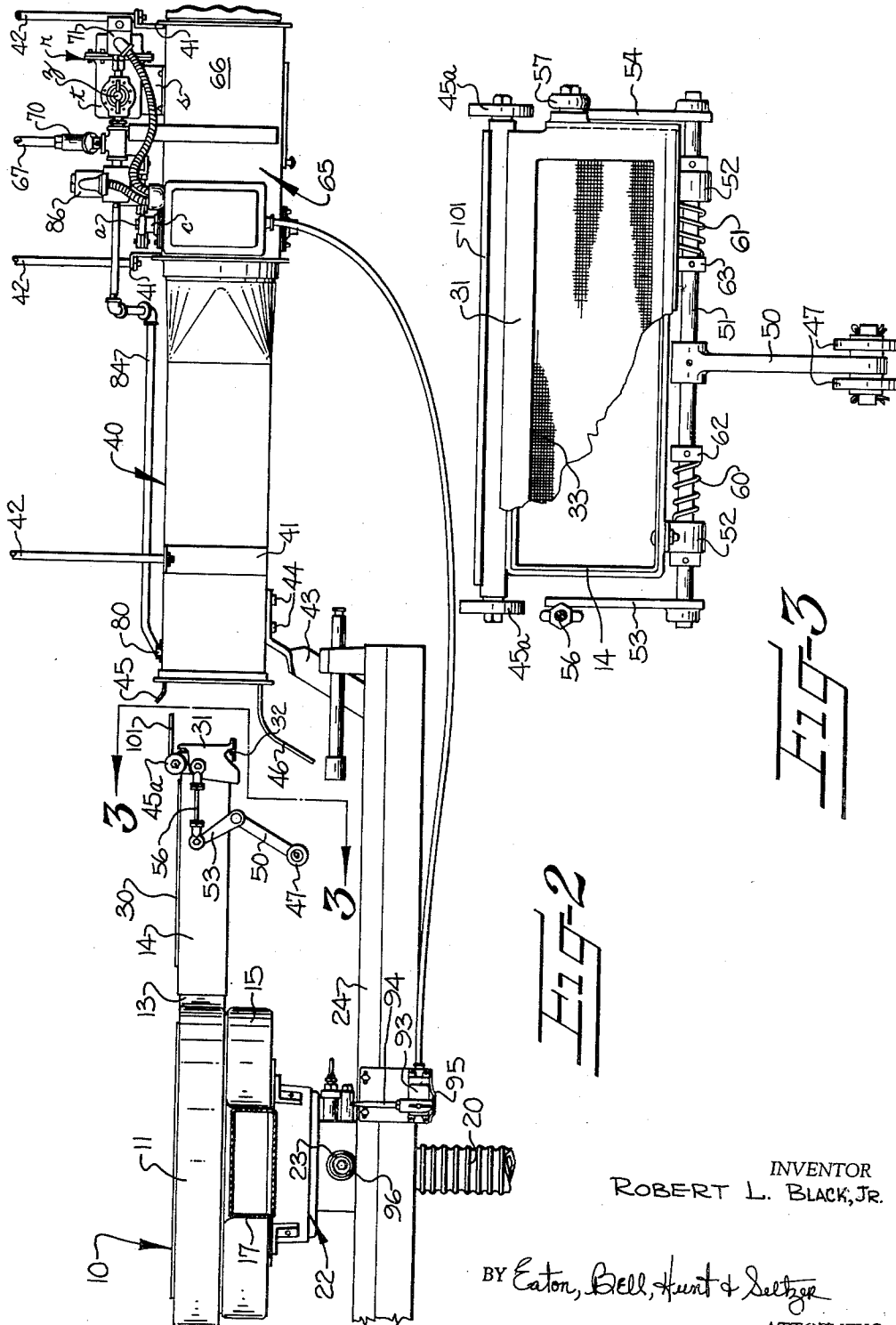


FIG-2

FIG-3

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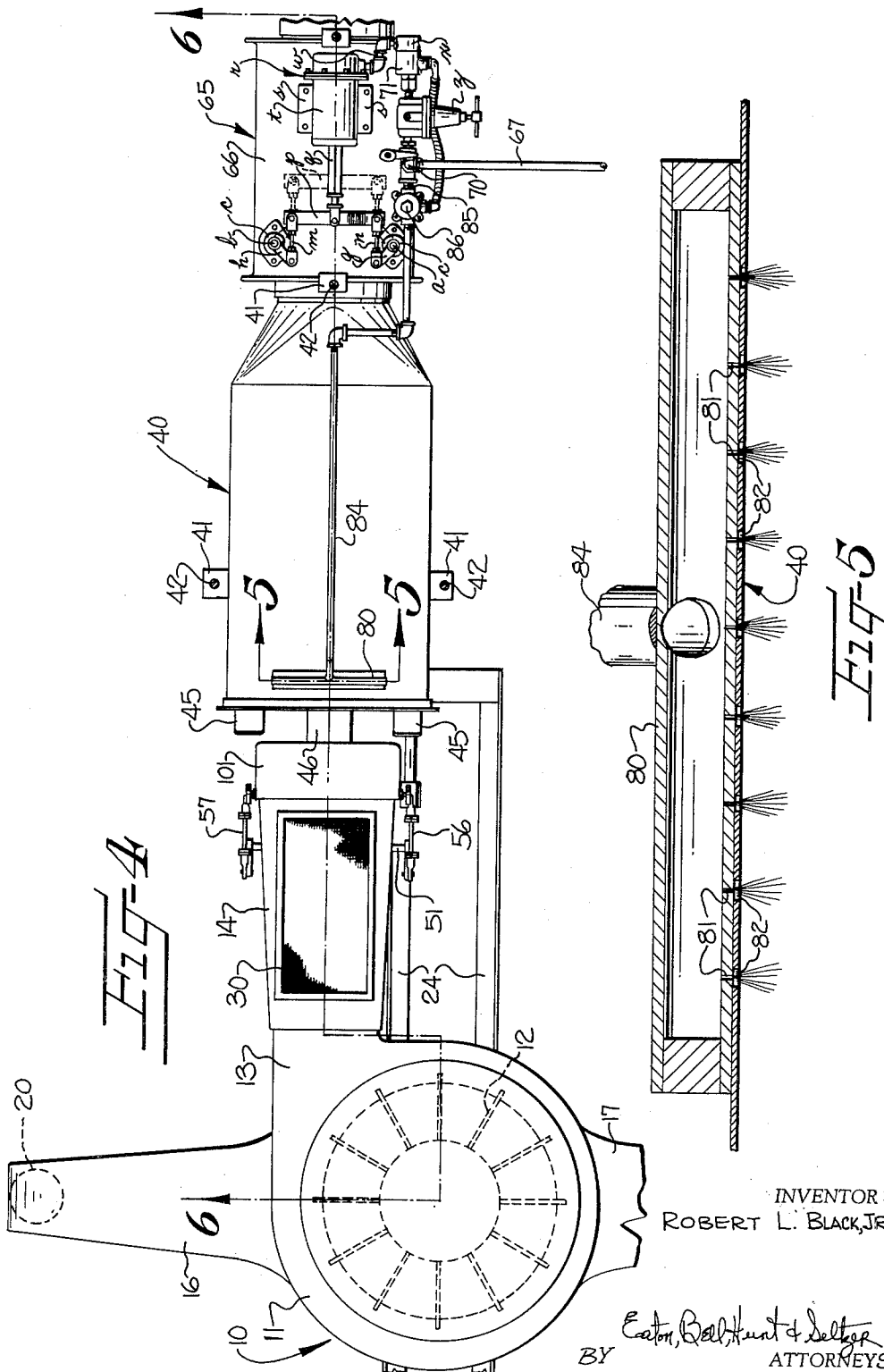
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R. L. BLACK, JR
TEXTILE SUCTION CLEANING METHOD AND APPARATUS
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4 Sheets-Sheet 3



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3,046,162

Filed May 12, 1961

4 Sheets-Sheet 4

Fig-6

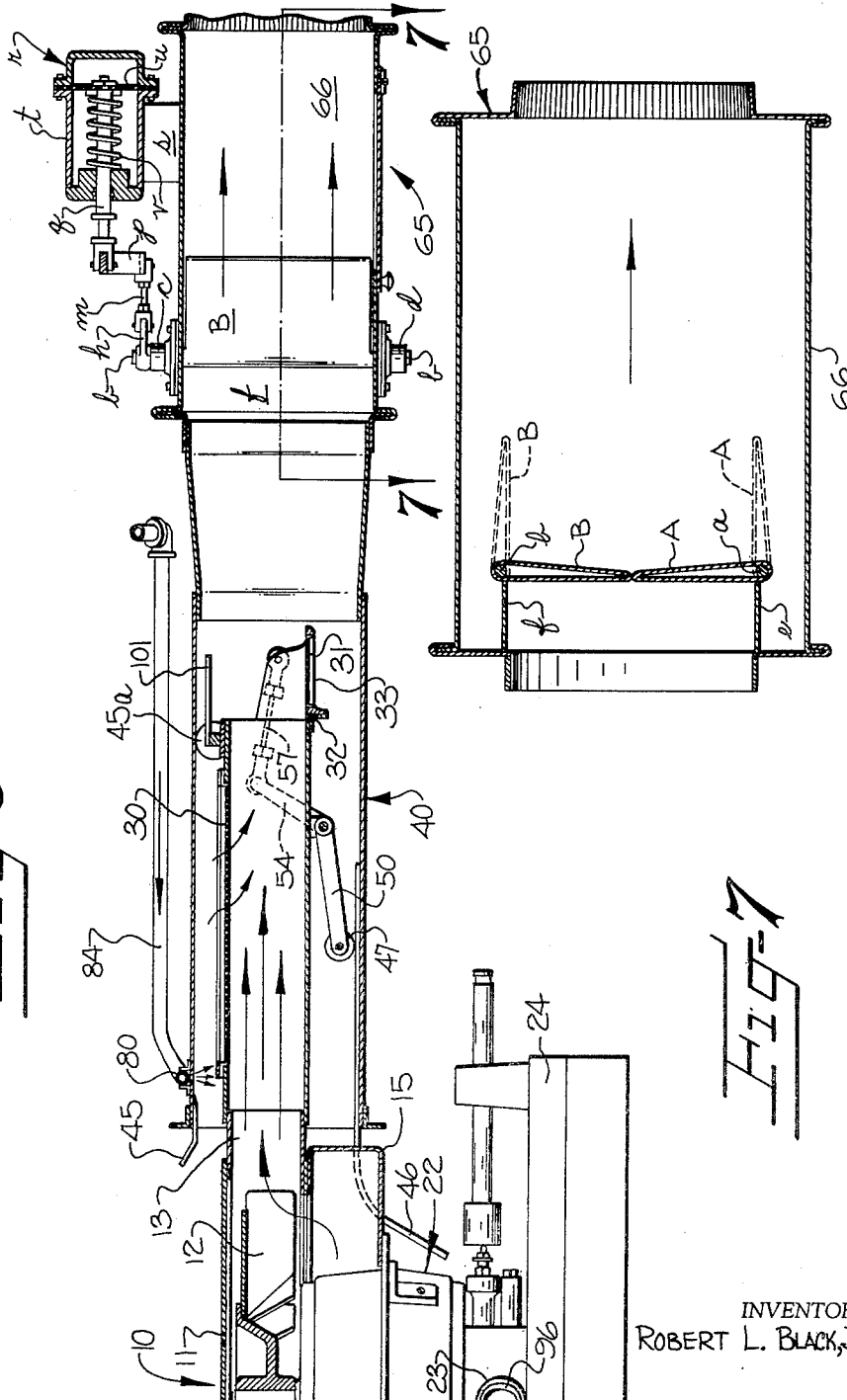


Fig-7

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3,046,162

TEXTILE SUCTION CLEANING METHOD AND APPARATUS HAVING A WASTE COLLECTION SYSTEM**Robert L. Black, Jr., Charlotte, N.C., assignor to Parks-Cramer Company, Fitchburg, Mass., a corporation of Massachusetts**

Filed May 12, 1961, Ser. No. 109,670

17 Claims. (Cl. 134—10)

This invention relates to the art of removing waste, such as lint, dust and other light material, from room and machine surfaces and adjacent areas in manufacturing plants; textile mills in particular. More particularly, this invention relates to a novel waste collection system for traveling suction cleaning apparatus movable back and forth over textile machines and the like, the direction of travel thereof being automatically reversed at the terminal ends of the track system.

The waste collection system of the present invention is particularly devised for use with overhead traveling suction cleaning apparatus of the general type disclosed in the co-pending U.S. application, Serial No. 759,797 filed September 8, 1958, now Patent No. 3,011,202, and entitled Traveling Suction Cleaning Apparatus.

The apparatus of said co-pending application comprises a self-propelled suction blower movable along a track located above a row or rows of textile machines and having one or more suction nozzles depending therefrom which move in sufficiently close proximity to the floor and/or machine surfaces to suck lint or other light material thereinto. Such material is sucked into and passes through the suction blower into a collection chamber carried by and communicating with the blowing outlet of the suction blower and having a filter or the like through which air escapes as the airborne light material is entrapped within the chamber.

An open mouthed, preferably stationary, receptacle is disposed adjacent the path of travel of said chamber and, as the chamber moves into registration therewith, a normally closed discharge door on the outer end of the chamber is opened so that a blast of air from the blower blows the collected material into the receptacle. This open mouthed receptacle of the co-pending application may be located anywhere alongside the track of the traveling suction cleaner. For convenience, it is usually located over spare floor area at a track bend.

In cases where a double-ended type of track layout is used, the stationary waste receptacle need not be located alongside the track, but may be located at either end or both ends of the track. The waste collection system of the instant invention was particularly devised for use with the double-ended track and the novel features thereof herein described insure particularly efficient and dependable operation.

It is therefore an object of this invention to provide a novel waste collection system and method therefor wherein a traveling suction cleaner of the character described has a collection chamber with a normally closed discharge door in the outer end thereof, and an open mouthed, preferably stationary, receptacle disposed in the path of travel of said chamber such that a portion of the collection chamber, including the discharge door, moves into the restricted confines of the receptacle. As the collection chamber moves into the confines of the receptacle, improved means are provided for opening the discharge door and maintaining the same open during the time the collection chamber is within the confines of the receptacle and for subjecting the interior of the receptacle to suction such that in combination the blast of air from the blower and the suction within the receptacle

2

serve to discharge the collected material from the traveling collection chamber into the stationary receptacle.

It is another object of this invention to provide an improved traveling suction cleaning system of the character last described in which means are provided for directing high velocity jets of air from the outside through the filter and into the traveling collection chamber as the same moves into and out of the confines of the stationary receptacle, to remove any lint or other light material which has collected on the inside surface of the filter and to increase the volume of air being directed into the chamber to aid in the discharge of the collected material therefrom into the receptacle.

A more specific object of this invention is to provide a traveling suction cleaning system of the character last described having connections between the end of the stationary receptacle opposite from its mouth and a source of suction, with normally closed valve means interposed therein, a pipe or tube connected to a source of compressed air having a row of small downwardly directed air jet openings therein and overlying the path of travel of the filter of said chamber, second normally closed valve means interposed between the pipe and the source of compressed air, means for opening both valve means as the chamber moves into the open mouth of the receptacle, and means for maintaining both valve means open at least during movement of the traveling collection chamber into and out of the confines of the receptacle.

Some of the objects of the present 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 fragmentary side elevation partially in section showing a traveling suction cleaner mounted on a portion of an overhead track and showing a preferred embodiment of the stationary waste receptacle, traveling collection chamber, discharge door opening means and filter cleaning system of the present invention;

FIGURE 2 is an enlarged side elevational view partially in section of the upper central portion of the apparatus shown in FIGURE 1;

FIGURE 3 is an enlarged end elevation of the collection chamber, with portions broken away, looking in the direction of arrows 3—3 in FIGURE 2;

FIGURE 4 is a top plan view of the apparatus shown in FIGURE 2;

FIGURE 5 is an enlarged fragmentary sectional view taken substantially along line 5—5 in FIGURE 4;

FIGURE 6 is a vertical longitudinal section taken substantially along line 6—6 of FIGURE 4, but with the collection chamber shown within the confines of the receptacle;

FIGURE 7 is a fragmentary horizontal transverse section taken substantially along line 7—7 of FIGURE 6; and

FIGURE 8 (Sheet 1) is a schematic view showing the wiring diagram and air control mechanism of the apparatus of the present invention.

Referring more specifically to the drawings and particularly to FIGURE 1 thereof, a traveling suction cleaner is generally indicated at 10, which may be of the general type disclosed in said co-pending application Serial No. 759,797, now Patent No. 3,011,202, except that the overhead trackway 24 on which the cleaner is adapted to travel is of the non-endless or double-ended type. That is, the overhead track does not form a closed path, but is constructed in a straight or curved path with the ends thereof unconnected. The traveling suction cleaner 10 is adapted to move over the overhead trackway in one direction until it arrives at one of the ends thereof and then its direction of travel is reversed and it moves back over the trackway to the other end thereof, etc.

Generally, traveling suction cleaner 10 comprises a suction blower having an upper or blower casing 11 within which a driven fan or air impeller 12 (FIGURES 4 and 6) is positioned. An outlet portion 13 on blower casing 11 has the inlet end of a collection chamber 14 connected thereto.

Blower casing 11 is mounted on and communicates with a lower or suction casing 15 so that fan 12 produces a suction current in suction casing 15. Air inlet ducts 16, 17 extend from opposite sides of and communicate with suction casing 15 and have the upper ends of suitable flexible tubes or sleeves 20 connected to the downwardly projecting free ends thereof. The lower end of each sleeve 20 may be provided with a suitable suction nozzle 21 of any desired shape which is preferably positioned in close proximity to the floor F which supports the textile machines over which the traveling suction cleaner 10 is adapted to be moved. Impeller 12 draws an air stream laden with lint, dust and other light material through nozzles 21, sleeves 20 and casing 15 into casing 11. Fan 12 then forces the lint-laden air stream to flow through outlet portion 13 into collection chamber 14.

Casings 11, 15 of traveling suction cleaner 10 are mounted on a suitable motor-driven carriage 22 (FIGURE 2) having rollers 23, only one of which is shown, which ride upon trackway 24. Trackway 24 is supported by any suitable means such as posts 25 (FIGURE 1), only one of which is shown, which are positioned along its length and rest upon either the floor F or upon the textile machines over which the traveling suction cleaner 10 is adapted to be moved. Carriage 22 may be propelled along trackway 24 by any suitable means such as is disclosed in U.S. Patent No. 2,011,763, dated August 20, 1935, for example including the means for reversing the direction of travel of the traveling suction cleaner 10 when the same reaches the ends of trackway 24.

Collection chamber 14 preferably comprises a generally rectangular tubular member open at both ends and having an elongated opening in the top wall thereof. A suitable foraminous screen or filter 30 is mounted in the opening in the top wall of collection chamber 14 for allowing the air directed therein by impeller 12 to escape therefrom while retaining lint and other light material therein. A suitable door 31 is hingedly mounted as at 32, adjacent the outer end of the lower wall of collection chamber 14, for pivotal movement to open and close the discharge or egress end thereof. Door 31 is suitably perforate, or has a suitable foraminous screen or filter 33 mounted in a suitable opening therein, to allow the air stream to escape through door 31 when closed, while retaining the lint and other material within the collection chamber, until such time as the collected material is to be transferred from the collection chamber.

A preferably stationary receptacle, generally indicated at 40, is suspended from the ceiling (not shown) of the room by suitable brackets 41 and rods 42. Receptacle 40 comprises a generally rectangular tubular member open at both ends and of a cross-section greater than the outer cross-sectional dimensions of collection chamber 14 such that collection chamber 14 may move within the confines of receptacle 40. A bracket 43 is connected at one end to the bottom of receptacle 40, by suitable bolts 44, and to the trackway 24 at its other end to position receptacle 40 over trackway 24 in the path of travel of collection chamber 14. A pair of guide members 45 are mounted at the top portion of the open mouth of receptacle 40 and are turned upwardly adjacent their outer ends. Members 45 are adapted to cooperate with suitable rollers 45a mounted on the top portion of the outer end of collection chamber 14 for guiding the collection chamber into alinement with the open mouth of receptacle 40 so that the collection chamber may move within the confines thereof.

A cam 46 is mounted on the bottom portion of re-

ceptacle 40 and extends outwardly from the open mouth thereof toward traveling cleaner 10. Cam 46 curves downwardly toward its outer free end and is adapted to be engaged by a pair of cam rollers or followers 47 (FIGURES 2 and 3) carried by an arm 50 depending from a shaft 51 mounted for rotation in suitable bearings 52 on the bottom of collection chamber 14. Shaft 51 has cranks 53, 54 mounted on opposite ends thereof for rotation therewith and which extend upwardly therefrom. Connecting links 56, 57 are connected at one end to the upper ends of cranks 53, 54, respectively, and to door 31 at their other ends. It can therefore be seen that as collection chamber 14 is moved by traveling cleaner 10 into the confines of receptacle 40, rollers 47 engage cam 46 and will thereby rotate shaft 51 through link 50. Shaft 51 thus rotates cranks 53, 54 to move door 31 to open position about its hinge 32 through links 55 and 56. Suitable torsion springs 60, 61 (FIGURE 3) are connected at one end to bearings 52 and at the other end to suitable collars 62, 63 fixed on shaft 51 to bias door 31 to the closed position.

The discharge end of receptacle 40, which is the end opposite from trackway 24, is connected, by means of a valve mechanism 65, to a suitable duct D which embodies a suitable source of suction. Duct D is adapted to convey the material received within receptacle 40 to a storage station at a point spaced from the textile machines for storage until removed. Valve mechanism 65 comprises a generally rectangular tubular casing 66 which has a substantially rectangular opening therein which communicates with the discharge opening in receptacle 40 and with duct D.

A pair of valve doors A, B are pivotally mounted within casing 66 adjacent the ingress end thereof and adjacent opposite side walls of the casing 66. In this instance, doors A, B are fixed to upright pivot shafts *a*, *b* journaled in bearings *c*, *d* carried by the respective upper and lower walls of casing 66. Doors A, B are movable, by means to be presently described, between the open, dotted-line, position of FIGURE 7 and the closed, solid-line, position. Suitable upright plates *e*, *f* may straddle the inlet opening of casing 66 and extend between the upper and lower walls of casing 66 so as to serve, collectively, as a seat against which doors A, B may be seated when they are closed.

The mechanism for operating doors A, B includes inwardly projecting cranks *g*, *h* fixed on the upper ends of pivot shafts *a*, *b* (FIGURES 4 and 6), which pivot shafts project above the upper wall of casing 66 and above bearings *c*. Extensibly adjustable links *m*, *n* are pivotally connected to respective cranks *g*, *h*, extend away from receptacle 40 and are pivotally connected to opposed end portions of a cross-bar *p* whose medial portion is connected to the outer end of a plunger or piston *q* of a motivating device embodied in an air motor *r*. The housing or cylinder *t* of air motor *r* may be suitably secured to the upper wall of valve casing 66, as by brackets *s*.

The housing *t* has a diaphragm *u* therein which is engaged by one end of a compression spring *v* encircling plunger *q*. Spring *v* also engages the head of cylinder *t* thus normally urging plunger *q* to retracted position in cylinder *t* and normally urging doors A, B to open position. Plunger *q* is moved to an extended position by compressed air being introduced into the cylinder *t* of air motor *r* on the opposite side of diaphragm *u* from spring *v*.

A suitable air supply pipe *w* is connected at one end to air motor *r* and at the other end to a two-way valve *x*. A pipe *y* connects valve *x* to a suitable pressure reduction or regulator valve *z* which, in turn, is connected to a suitable compressed air source C, such as a compressor, by means of a pipe 67. An air strainer 70 may be mounted in pipe 67 between compressed air source C and pressure regulator valve *z* for straining any impurities from the air passing through pipe 67.

Valve *x* is moved between its two positions by a sole-

noid 71 which, when energized in a manner to be presently described, moves valve *x* to a position such that a passage therein aligns with pipe *w* and an opening 72 in the housing thereof, allowing air to escape from air motor *r* which, in turn, allows spring *v* to move plunger *q* to the retracted position to open doors A, B. When solenoid 71 is deenergized, valve *x* is moved to a position where a passage therein aligns with pipes *w*, *y* allowing compressed air to flow from compressed air source C into air motor *r* which moves plunger *q* to the extended position and closes doors A, B.

A novel cleaning means is provided for the filter 30 of traveling collection chamber 14. Said cleaning means comprises a lateral pipe 80 mounted on the top wall of receptacle 40. Pipe 80 has openings or jets 81 formed in the lowermost portion thereof. Openings 81 are formed in pipe 80 over an area at least equal to the transverse horizontal dimension of filter or foraminous screen 39 in collection chamber 14. Openings 81 in pipe 80 register with suitable openings 82 formed in the top wall of receptacle 40 such that high velocity jets of air may be directed downwardly therethrough into receptacle 40. A control valve 83 is connected to pipe 80 by means of a pipe 84. Valve 83 is connected to pipe 67 by a pipe 85 to supply compressed air from compressed air source 66 to pipe 80 at least while collection chamber 14 is within receptacle 40.

A solenoid 86 is connected to valve 83 and operates, when energized, to move valve 83 to a position wherein a passage therein aligns with pipes 84, 85 to allow air to flow through pipes 67, 85, valve 83 and pipe 84 to pipe 80. When de-energized, the usual spring or other yieldable means, not shown, associated with solenoid 86, moves valve 83 to a position wherein the passage is out of alignment with pipes 84, 85 and consequently the flow of air therethrough is stopped. It should be noted that pipe 80 communicates with compressed air source C directly through valve 83 while air motor *r* communicates with compressed air source C through pressure reducing or regulator valve *z*. Thus, high line pressure may be admitted to pipe 80 while a relatively low pressure may be admitted to housing *t* of air motor *r* to prevent damage to the diaphragm *u* from the high pressure at the source C.

A control circuit is provided for controlling the operation of the door opening and filter cleaning means and comprises a plug or electrical connector 90 adapted to be connected to a suitable source of electrical energy, not shown. A power line 91 and ground line 92 are connected to plug 90 and to solenoids 71, 86. Solenoids 71, 86 and a timer 100 may be connected in lines 91, 92 in series to insure substantially simultaneous actuation thereof. A normally open unidirectional switch 93 is mounted on trackway 24 and is connected in ground line 92. A feeler arm 94 is mounted on switch 93 and extends upwardly therefrom to a point spaced upwardly of and outwardly from trackway 24 and is suitably biased to the upright position by a leaf spring 95. Spring 95 is mounted on the housing of switch 93 and engages a suitable cam surface on the bottom of feeler arm 94.

An extension 96 is mounted on and extends outwardly from one of the wheels 23 of carriage 22 for movement therewith, and is adapted to engage feeler arm 94 to close switch 93 momentarily. When closed, switch 93 completes the electrical circuit through lines 91, 92 to solenoids 71, 86 energizing the same.

Switch 93 is suitably positioned on trackway 24 a distance spaced from the open mouth of receptacle 40 such that solenoids 71, 86 will be energized prior to the entrance of collection chamber 14 into receptacle 40 such that doors A, B will be open and high velocity jets of air will be flowing downwardly through openings 81, 82 when collection chamber 14 moves into the confines of receptacle 40 and when the leading edge of filter 30 arrives beneath pipe 80. The prior opening of doors A, B insures that the discharge of the collected material from

collection chamber 14 takes place smoothly without any back pressure being built up in receptacle 40 and also allows time for a maximum build-up of inward air flow into receptacle 40 under influence of the continuous negative or suction pressure present in duct D.

The prior actuation of valve 83 allows air to flow into pipe 80 and insures that the entire surface of filter 30 is subjected to the high velocity jets of air from pipe 80 as the collection chamber 14 moves into receptacle 40. Also, this actuation insures that the high velocity air jets are directed into collection chamber 14 substantially at the same time that door 31 is opened so that the volume of air passing through collection chamber 14 is at its maximum for the initial discharge of the collected material from collection chamber 14 into receptacle 40.

Since switch 93 is unidirectional, it will be closed only when suction cleaner 10 is traveling toward receptacle 40. Therefore, when traveling cleaner 10 is moving away from receptacle 40, that is, when collection chamber 14 is moving out of the confines of receptacle 40, switch 93 will not be closed and therefore the solenoids 71, 86 will not be energized.

Timer 100 is a time-delay-relay connected in series in lines 91 and 92 for maintaining solenoids 71, 86 energized, after switch 93 opens, for a sufficient length of time to allow collection chamber 14 to move into and out of the confines of receptacle 40. When the collection chamber 14 moves out of the confines of receptacle 40, timer 100 will de-energize solenoids 71, 86 by breaking the circuit thereto and thereby allowing doors A, B to close and valve 83 to shut off the flow of air through pipe 80 and out of openings 81. Since timing devices such as proposed to be used in the above-described apparatus are well known in the art, a detailed description thereof is deemed unnecessary. Reference is made to FIGURE 18 of U.S. Patent No. 2,751,621, granted to G.W. Mitchell June 26, 1956, wherein a timing mechanism of the type preferably to be used herein is shown, although any suitable instant-make time-delay-relay mechanism may be used.

In order to prevent the jets of air from pipe 80 from impinging against the collected lint at the discharge end of collection chamber 14 and into the egress opening thereof during the opening of screened door 31 and while the free end of collection chamber 14 is moving inwardly and outwardly adjacent the free end of stationary receptacle 40, the upper wall of chamber 14 has a cantilever shield 101 (FIGURES 1-4 and 6) fixed thereto and extending outwardly therefrom. It is apparent that shield 101 moves into the path of the jets of air from pipe 80, in advance of the egress opening of chamber 14, as chamber 14 enters receptacle 40 to thereby interrupt and deflect said jets of air away from said egress opening.

In operation, traveling suction cleaner 10 is moved over trackway 24 in the manner described. Impeller 12 draws an air stream laden with lint, dust and other light material through nozzles 21 upwardly through tubes 20 and into inlet ducts 16, 17. Suction casing 15 receives the air stream and material carried thereby from inlet ducts 16, 17 and transmits the same to blower casing 11. Impeller 12 discharges the air stream and material carried thereby outwardly through outlet portion 13 into collection chamber 14. The air stream escapes from collection chamber 14 through filters 30, 33 while the lint and other light material is retained within collection chamber 14.

At a predetermined point along trackway 24; i.e., as collection chamber 14 moves toward the open mouth of receptacle 40, extension 96 on one of the wheels 23 engages feeler arm 94 of switch 93 closing the same and energizing solenoids 71, 86. Solenoid 71 moves valve *x* to align a passage therein with pipe *w* and opening 72 to exhaust air from housing *t* of air motor *r* and allow compression spring *v* to move plunger *q* to the retracted

position and to open doors A, B. Solenoid 86 moves valve 83 to the position wherein a passage therein is aligned with pipes 84, 85, thus transmitting compressed air from source C to pipe 80, which air escapes downwardly through openings 81, 82 into the interior of receptacle 40.

At substantially the same time as that at which doors A, B are opened and air commences flowing outwardly through openings 81, 82, followers 47 engage and start riding up cam 46 to open discharge door 31 of collection chamber 14 through the intervening connections. Thus, the blast of air from impeller 12 and the high velocity jets of air from pipe 80 enter chamber 14 and cooperate in discharging collected material from collection chamber 14 into receptacle 40. Since collection chamber 14 is then positioned within the confines of stationary receptacle 40, the collected material in collection chamber 14 is also subjected to a suction pressure from within receptacle 40 from the suction source embodied in duct D, which aids in discharging the collected material from collection chamber 14 into stationary receptacle 40. It should be noted that collection chamber 14 and receptacle 40 are of such relative cross-sectional area that substantially all of the suction or negative pressure applied to receptacle 40 is applied directly to the collected material being discharged from collection chamber 14 into receptacle 40.

It should be noted that, as the high velocity jets of air from pipe 80 enter chamber 14, they must flow inwardly through filter 30 in the top wall of collection chamber 14. Timer 100 maintains solenoid 86 energized for a sufficient length of time to allow collection chamber 14 to move into and out of receptacle 40 such that filter 30 is subjected to the high velocity jets of air from pipe 80 as the same moves into receptacle 40 and again as the same moves out of receptacle 40 such that any accumulation of lint or other light material on the inside surface of filter 30 will be removed therefrom and discharged from collection chamber 14 into receptacle 40.

Also, timer 100 maintains solenoid 71 energized for the same length of time that solenoid 86 is energized such that doors A, B remain open while collection chamber 14 is within the confines of receptacle 40 and the suction maintained in casing 66 and duct D insure prompt carrying off of the lint and other light material.

It is thus seen that I have provided a novel waste collection system for a traveling suction cleaner wherein an efficient discharge of the collected material from the traveling collection chamber into the stationary receptacle is achieved and which includes automatic means for cleaning the filter or foraminous screen of the collection chamber whereby the filter is periodically subjected to high velocity jets of air as the chamber moves into and out of the receptacle, thus dislodging lint or other light material, which may tend to cling to the inner surface of and in the openings of the filter, and blowing the same outwardly through the discharge end of the collection chamber and into the stationary receptacle.

It is seen further that I have provided means for producing suction in the receptacle at intervals corresponding to the intervals during which the collection chamber is adjacent and within the receptacle so that the suction in the receptacle, the blast of air entering the collection chamber through the filter all cooperate in the cleaning of the filter and in the transfer of the collected material from the chamber into and through the stationary receptacle.

The opening and closing of the valve means, embodied in the doors A, B, between the stationary receptacle and the source of suction permits the use of a relatively small motor and suction fan at the latter suction source as compared to that which would be required if the latter valve means were not used.

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 suction cleaning apparatus of the type adapted to be moved over textile machines and having suction blower means for removing lint, dust and other light material from a surface to be cleaned by suction, a collection chamber on the blower side of said suction blower means for receiving an air stream and the lint, dust and other light material carried thereby and having a normally closed discharge opening in one end thereof with filter means mounted in said collection chamber for allowing air to escape therefrom while retaining the lint and other light material therein; the combination of, receptacle means positioned in the path of travel of said collection chamber for receiving at least a portion, including said one end, of said collection chamber therein, means for opening said discharge opening in the collection chamber as the same moves into said receptacle means, and means for subjecting the interior of said receptacle means to a negative pressure as said collection chamber moves therein, to assist the air stream being received in said collection chamber from said suction blower means in transferring collected material from said collection chamber into said receptacle means.

2. In an overhead, track mounted traveling suction cleaning apparatus for textile mills having a suction blower, at least one suction nozzle connected to the suction side of said suction blower and adapted to move in sufficiently close proximity to surfaces to be cleaned to suck lint, dust and other light material thereinto, a material collection chamber connected to the blowing side of said suction blower and into which the air stream carrying said material is directed by said blower, a normally closed discharge door means on one end of said chamber, and filter means mounted in said collection chamber for allowing the air stream to escape therefrom while retaining the lint and other light material therein; the combination of, receptacle means positioned in the path of travel of said collection chamber for receiving therein at least a portion of said collection chamber, including said discharge door means, means for opening said discharge door means as said collection chamber moves into said receptacle means, and means for subjecting the interior of said receptacle means to a negative pressure as said collection chamber moves into the receptacle means, to assist the air stream directed into said chamber by said suction blower in transferring collected material from said collection chamber into said receptacle means.

3. The structure set forth in claim 2, wherein said means for opening said discharge door means comprises a cam mounted on said receptacle means, a pivotally mounted cam follower on said collection chamber and linkage connecting said cam follower to said door means.

4. In an overhead, track mounted traveling suction cleaning apparatus for textile mills having a suction blower, at least one suction nozzle connected to the suction side of said suction blower and adapted to move in sufficiently close proximity to surfaces to be cleaned to suck lint, dust and other light material therefrom and transport the same by the air stream created by said suction blower, a material collection chamber connected to the blowing side of said suction blower for receiving the air stream and the lint, dust and other light material carried thereby, normally closed discharge door means mounted on one end of said chamber, and filter means mounted in said collection chamber for allowing the air stream to escape therefrom while retaining the lint and other light material therein; the combination of, open-mouthed receptacle means positioned in the path of travel of said collection chamber for receiving at least a portion of said collection chamber including said discharge door means therein, means for opening said dis-

charge door means as the chamber moves into said receptacle means, means for subjecting the interior of said receptacle means to a negative pressure as the collection chamber moves therein, to assist the air stream directed into the collection chamber in discharging the collected material from said collection chamber into said receptacle means, means positioned between said receptacle means and said negative pressure means for interrupting the application of negative pressure to said receptacle means, and control means operable upon the approach of said collection chamber to the open mouth of said receptacle means for removing said interrupting means.

5. In an overhead, track mounted traveling suction cleaning apparatus for textile mills having a suction blower, at least one suction nozzle connected to the suction side of said suction blower and adapted to move in sufficiently close proximity to surfaces to be cleaned to suck an air stream laden with lint, dust and other light material therefrom, a material collection chamber connected to the blowing side of said suction blower for receiving the lint-laden air stream therein, normally closed discharge door means mounted on one end of said collection chamber, and filter means mounted in said collection chamber for allowing the air stream to escape therefrom while retaining the lint and other light material therein; the combination of, receptacle means positioned in the path of travel of said collection chamber for receiving a portion of said chamber, including the discharge door means therein, means for opening said discharge door means as the collection chamber moves into said receptacle means, means for subjecting the interior of said receptacle to a negative pressure as the collection chamber moves thereinto to assist the air stream directed into the collection chamber in transferring collected material from the collection chamber into the receptacle means when the discharge door means is open, and means for directing high velocity jets of air through the filter means into said collection chamber as said chamber moves into said receptacle for removing accumulations of lint and other light material from the inside surface of the filter means and for increasing the volume of air passing through said collection chamber for aiding the air stream and negative pressure in transferring the collected material from said collection chamber into said receptacle.

6. In an overhead, track mounted traveling suction cleaning apparatus for textile mills having a suction blower, at least one suction nozzle connected to the suction side of said suction blower and adapted to move in sufficiently close proximity to surfaces to be cleaned to suck an air stream laden with lint, dust and other light material therefrom, a material collection chamber connected to the blowing side of said suction blower for receiving the lint-laden air stream therein, normally closed discharge door means mounted on one end of said collection chamber, and filter means mounted in said collection chamber for allowing the air stream to escape therefrom while retaining the lint and other light material therein; the combination of open-mouthed receptacle means positioned in the path of travel of said collection chamber and into and out of which moves a portion of said collection chamber including said discharge door means, means for opening said discharge door means as the collection chamber moves into said receptacle means, negative pressure means for subjecting the interior of said receptacle means to a negative pressure as said collection chamber moves thereinto to assist the air stream directed into the collection chamber in transferring the collected material from the collection chamber when said discharge door means is open, means positioned between said receptacle means and said negative pressure means for interrupting the application of negative pressure to said receptacle means, means for directing high velocity jets of air through said filter means into said collection chamber for removing accumulations of lint and other light material from the inside sur-

face of said filter means and for increasing the volume of air passing through said collection chamber for aiding the air stream and negative pressure in transferring the collected material from said collection chamber into said receptacle, and control means operable upon the approach of said collection chamber to the open mouth of said receptacle means for removing said interrupting means and for actuating said air jet directing means.

7. The structure set forth in claim 6, wherein said air jet directing means comprises a pipe connected to a source of compressed air and mounted on said receptacle means adjacent the path of travel of said filter means as said collection chamber moves into and out of said receptacle means, said pipe having openings therein for directing jets of air into said collection chamber through said filter means as the same moves into and out of said receptacle means, and a valve positioned in said pipe between said source and said openings for controlling the delivery of air to said openings.

8. In an overhead traveling suction cleaning system for textile mills including a suction blower, a double-ended track, means to move said suction blower along said track from each end thereof to the other in a reciprocatory manner, at least one suction nozzle connected to the suction side of said suction blower for drawing thereinto lint and other light material and a collection chamber connected to the blowing side of said suction blower and having a filter therein, for receiving said material in said chamber as the blowing air stream from the suction blower passes into said chamber and escapes through said filter; the combination of, a receptacle positioned adjacent at least one end of said track, said receptacle having an open end facing toward the path of travel of said chamber and into and out of which moves said chamber as it approaches and moves away from said one end of the track, means for opening said chamber during its movement into said receptacle, and means for directing compressed air against the outer surface of and inwardly through said filter during movement of said chamber into said receptacle to clean the filter and to assist the blowing air stream from said suction blower in transferring collected material from said chamber into said receptacle.

9. A structure according to claim 8, including means for producing suction in said receptacle at a point opposite from said open end thereof to thereby further assist the blowing air stream from said suction blower in transferring collected material from said collection chamber.

10. A structure according to claim 8, including means under control of said suction blower for initiating production of suction in said receptacle as said apparatus approaches said one end of said track, and means for continuing thereafter the production of suction in said receptacle at least during movement of said chamber into said receptacle to thereby further assist the blowing air stream from said suction blower in transferring collected material from said chamber into said receptacle.

11. A structure according to claim 8, in which said means for directing compressed air against and inwardly through said filter comprises a pipe having a plurality of relatively small air discharge openings therein and positioned adjacent the path of travel of said filter in said receptacle, and means responsive to movement of said apparatus toward and adjacent said one end of said track for introducing compressed air into said pipe for an interval of predetermined duration whereby the compressed air is directed against said filter in the form of jets of air as said filter moves past said pipe.

12. A structure according to claim 8, in which the end of said receptacle opposite from said open end thereof is connected to a source of suction, a first normally closed valve means interposed between said receptacle and the source of suction, and means under control of said traveling cleaning apparatus as it approaches said receptacle for opening said valve means for an interval of predetermined duration.

11
13. A structure according to claim 12, in which said means under control of said traveling cleaning apparatus includes an air motor connected to a source of compressed air and being operatively connected to said first valve means, control valve means normally maintaining an open connection between said source of compressed air and said air motor and thereby normally maintaining closed said first valve means, means engageable by said traveling cleaning apparatus as it approaches said receptacle for closing said control valve means and exhausting air from said air motor, means to open said first valve means upon exhaustion of air from said air motor, and means interposed between said engageable means and said control valve means for maintaining closed said control valve means for an interval of predetermined duration following the closing thereof by said engageable means.

14. A structure according to claim 13, in which said means for directing compressed air against the outer surface of and through said filter comprises a pipe carried by the receptacle and having at least one exhaust opening therein facing toward the path of travel of said chamber as it enters and withdraws from said receptacle, said pipe being connected to said source of compressed air, a third normally closed valve means interposed between said pipe and said source of compressed air, said engageable means being operable to open said third valve means, and said means interposed between said engageable means and said control valve means also being interposed between said engageable means and said third valve means so as to maintain open said third valve means for said interval of predetermined duration following the opening thereof by said engageable means.

15. A method of cleaning lint and the like from textile mills, comprising the steps of removing lint, dust and other material therefrom by traveling suction, directing the lint-laden air stream created by said suction into a collection chamber, allowing the air to escape from the chamber through a filter while retaining the lint and other material therein, moving at least a portion, including a normally closed discharge opening, of the chamber into the restrictive confines of a receptacle while opening the discharge opening, subjecting the interior of the receptacle to a negative air pressure as the collection chamber moves thereinto, and discharging the collected material from the collection chamber into the receptacle by the combination of the air stream directed thereinto and the negative pressure in the receptacle.

16. A method of cleaning lint and the like from textile mills, comprising the steps of removing lint, dust and other material therefrom by traveling suction, directing the lint-laden air stream created by said suction into a collection chamber, allowing the air to escape from the chamber through a filter while retaining the lint and other material therein, moving at least a portion, including a normally closed discharge opening, of the chamber into the restrictive confines of a receptacle while opening the discharge opening, subjecting the interior of the receptacle to a negative air pressure as the collection chamber moves thereinto, directing jets of air into said collection chamber through said filter to remove any accumulation of lint from the inside surface of the filter, and discharging the collected material from the collection chamber into the receptacle by combination of the air stream directed thereinto, the negative pressure in the receptacle and the jets of air directed into said collection chamber.

17. In a traveling suction cleaner for disposing of lint and other light material in textile mills, said cleaner having a suction blower producing a suction air stream which draws lint and other light material thereinto, a collection chamber for receiving airborne material from said air stream, said chamber having a filter for permitting air to escape therefrom and aiding in retaining the collected material therein, and said collection chamber having a normally closed discharge opening therein; the combination of a receptacle adjacent the path of travel of said traveling cleaner and arranged to periodically receive at least a portion of the chamber therein including said normally closed discharge opening, means to subject the interior of said receptacle to a negative air pressure at least during the period when said portion of said chamber is therewithin, and means causing said normally closed discharge opening to be open when it is within said receptacle whereby the material within the chamber is transferred into the receptacle by the combination of the air stream directed thereinto and the negative pressure in the receptacle.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,046,162

July 24, 1962

Robert L. Black, Jr.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 8, line 6, for "textile machines and having" read -- a textile manufacturing operation and having a --; line 7, for "means for removing" read -- with inlet means for drawing there- into --; line 8, strike out "from a surface to be cleaned by suction"; same column 8, line 10, strike out "means".

Signed and sealed this 13th day of November 1962.

SEAL)

test:

RNEST W. SWIDER
testing Officer

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