

No. 648,575.

Patented May 1, 1900.

G. D. SCHEIFFLER.
DUST COLLECTOR.

(Application filed May 1, 1899.)

(No Model.)

2 Sheets—Sheet 1.

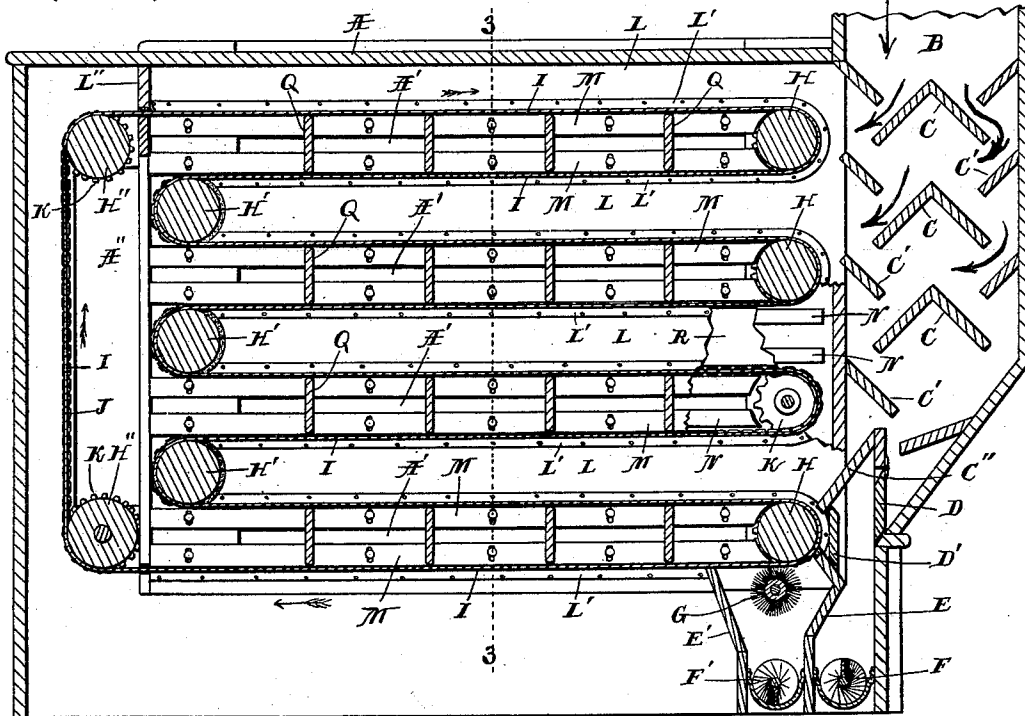
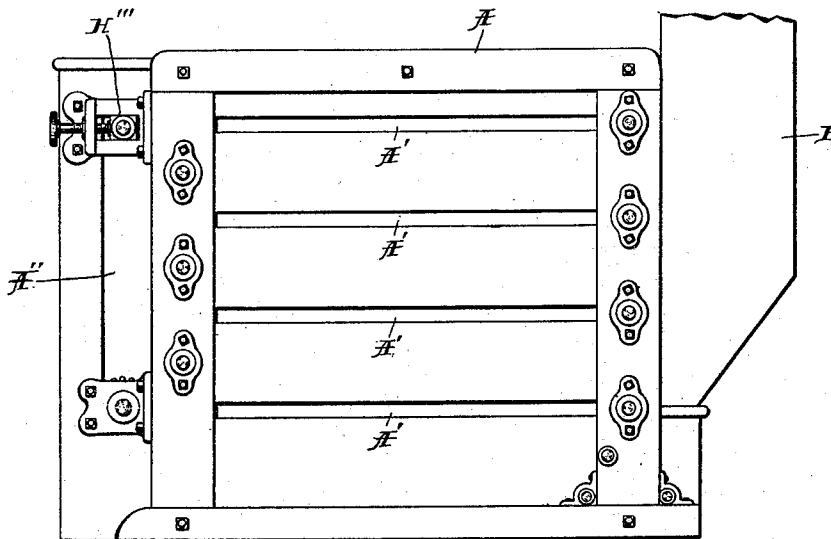


Fig. 2.



WITNESSES:

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Fig. 1.

INVENTOR:

George D. Scheiffler.

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No. 648,575.

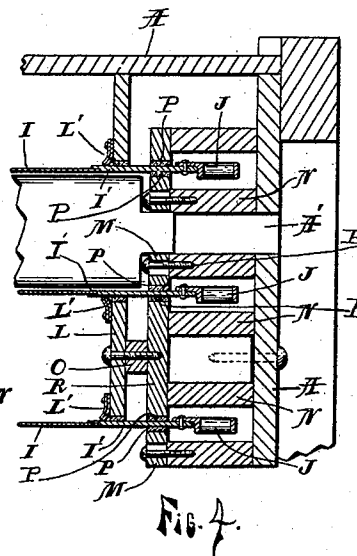
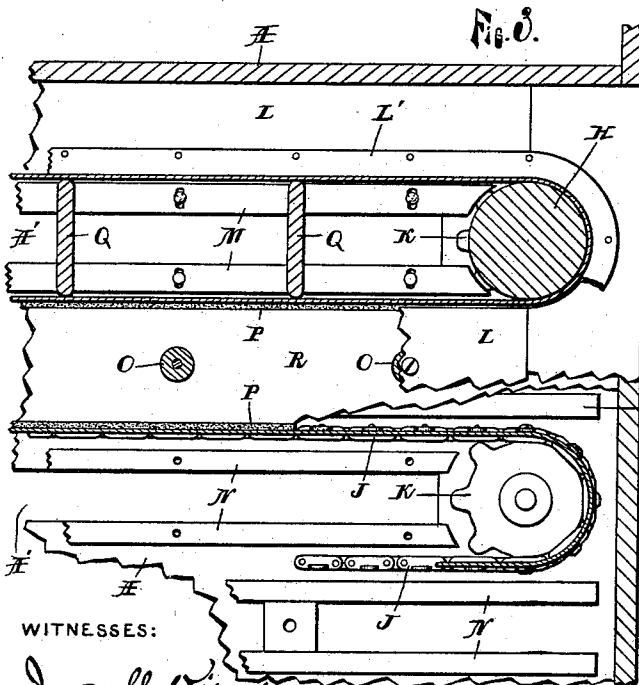
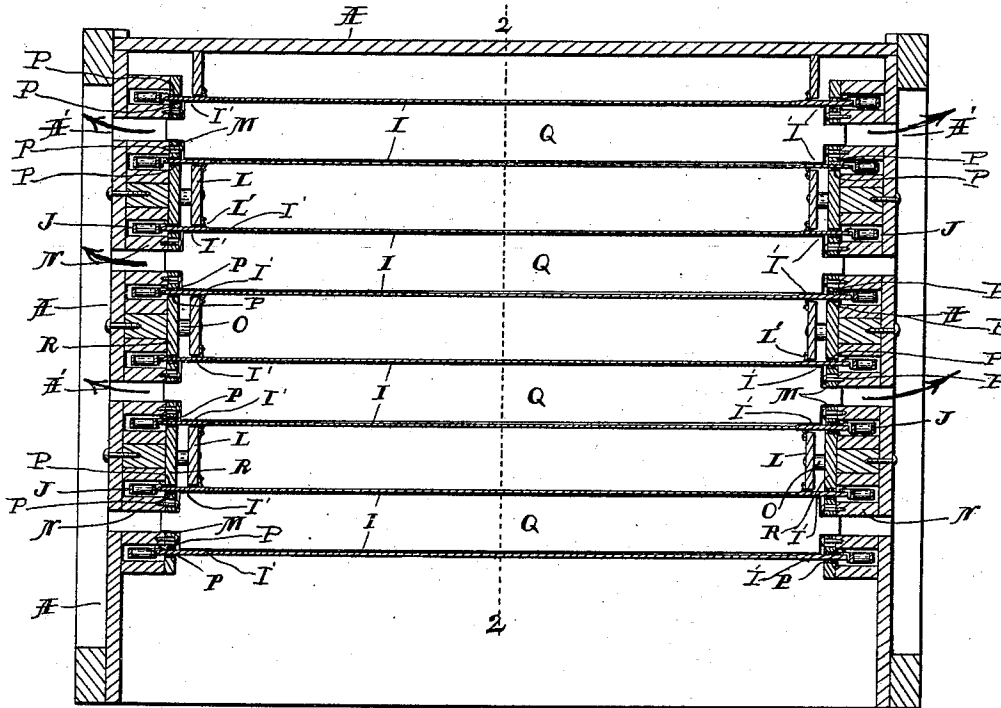
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WITNESSES:

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Fig. 5.

INVENTOR:

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UNITED STATES PATENT OFFICE.

GEORGE D. SCHEIFFLER, OF JACKSON, MICHIGAN.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 648,575, dated May 1, 1900.

Application filed May 1, 1899. Serial No. 715,139. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. SCHEIFFLER, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Dust-Collectors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in dust-collectors, and more particularly to such devices having a moving web or screen of suitable material through which the air passes and by which the particles of matter suspended in the air are intercepted.

The objects of my invention are to more effectually prevent air or particles of solid matter from escaping over the edge of the screen, to evenly distribute the air-current to the screen, to separate the heavier and coarser particles of matter from the finer ones and discharge the same from a separate conveyer, to separate the coarser particles of matter from the air before it reaches the screen, and to provide the device with certain other new and useful features hereinafter more fully described, and particularly pointed out in the claims.

My invention consists, essentially, in the arrangement of the continuous web of material forming the screen in a series of parallel horizontal planes with suitable rolls and propelling mechanism, providing at each edge of the screen a double air-stop with dead-air space between the same and means for adjusting the air-stop to keep the same tight, a separating and distributing chamber at one end of the machine provided with deflecting-boards by which the air is distributed to the spaces between the layers of the screen and the larger particles of matter separated from the air before it reaches the screen, a brush in a separate chamber to remove the dust from the screen, and separate conveyers for the separating-chamber and the brush-chamber, as will more fully appear by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a device embodying my invention; Fig. 2, a longitudinal vertical section of the same on the line 2 2

of Fig. 3; Fig. 3, a transverse vertical section of the same on the line 3 3 of Fig. 2; Fig. 4, an enlarged detail of a portion of Fig. 3, and Fig. 5 an enlarged detail of a portion of Fig. 2.

Like letters refer to like parts in all of the figures.

A represents a suitable rectangular casing having a series of horizontally-extended openings A' and vertically-extended openings A'' for the escape of the air, and B is a chamber at one end of the casing A, which chamber receives the dust-laden air in a downwardly-flowing current. Below this chamber B is a conveyer F to remove the coarser material that is separated from the air. To effect this separation and distribute the air evenly to the screen, oppositely-inclined deflectors C are provided in the chamber B. These deflectors are arranged at intervals in pairs with the apex of each pair upward and in the middle vertical plane of the chamber and extending transversely across the same. Intermediately between these pairs of deflectors C are other deflectors C' at opposite sides of the chamber B and having their outer edges elevated and inwardly-inclined sides. The air-current is thereby alternately deflected outwardly by the deflectors C and inwardly by the deflectors C', whereby said current is broken up and its inertia checked and the air caused to flow laterally and equally into the alternate spaces between the parallel portions of the screen. At the same time the larger particles in the air become separated from the same and passing downward escape through a flap-valve D and are carried out of the machine by the conveyer F.

The screen I consists of any suitable material through which the air can pass and close enough in its texture to intercept the fine particles of dust. At each edge of this screen I is a strip of close and strong webbing I', through which air cannot pass and which serves to stretch and hold the screen flat and smooth. The outer edge of this webbing I' is attached to a sprocket-chain J, which chain serves to move the screen and further strengthen and stretch the same. This chain, webbing, and screen are extended horizontally in alternate parallel planes within the casing in

as many layers as convenient, and near the respective ends of the casing contact half-way around rolls H and H', arranged in vertical rows and distant from each other about
 5 equal to the diameter of one of the rolls, the rolls H being in alternate horizontal planes with the rolls H'. The extreme upper and lower layers of the screen are prolonged beyond the plane of the rolls H' and pass over
 10 and under rolls H' H'', being extended vertically between these rolls and joined, thus forming a continuous web of much greater length compared to the dimensions of casing than heretofore obtained by previous constructions. This arrangement of the screen
 15 forms the walls of chambers or pockets opening alternately into the chamber B and the openings A' and A''. A suitable stop L' closes the end of the pocket between the upper
 20 layer of the screen and the casing, and partitions E and E' stop off the air from the lower chamber below the screen. Thus the air from the chamber B passes into each alternate pocket, and thence through the screen
 25 to the intermediate pockets, whence it escapes by way of the openings A' A''. To tighten the screen, the upper roll H'' is journaled in horizontally-adjustable boxes H'''. The lower roll H'' is preferably used as a driver to move
 30 the screen longitudinally, all the rolls being provided with suitable sprocket-wheels K to engage the chain J.

To prevent escape of air or dust at the sides of the screen, ribs N extend inward from the casing at each side of the chain and webbing,
 35 and to these ribs are secured the main stop-strips R, with their edges close to the webbing and rolls and provided with elastic facings P, of leather, rubber, or other suitable material, which facings yieldingly engage the
 40 web and rolls to stop the air and dust from passing. This alone I find is not sufficient, and to further insure this result I place on these strips R inwardly-projecting bosses O,
 45 to which are attached auxiliary stop-strips L, provided with similar facing P, engaging the web, and also provided with a flexible edging L', of cloth or other suitable material, secured to the face of the strip L at one edge
 50 and having its other edge inclined inward and resting on the web. This latter I find very effective in preventing the passage of dust. A dead-air chamber is thus formed between the strips R and L, and if any dust
 55 works through into this chamber it is carried by the web and discharged downward at the end toward the chamber B through openings at the ends of the ribs N. To take up wear and properly adjust the contact of the
 60 facing with the web, I provide at the side of the web adjacent to the escape-openings A' other ribs N, supporting narrow strips M, provided with elastic facing P and adjustably secured to the ribs by screws passing
 65 through transverse slots in the strips.

A rotative brush G is provided to engage

the screen at the under side of the lower roll H. This removes the fine dust from the screen, which dust falls into the compartment formed by the walls E and E' and is conveyed out of
 70 the machine by the conveyer F'.

C' is an inclined partition which, together with the valves D and D', cuts off the passage of air from the chamber B to the chamber
 75 having the conveyer F. These valves open and permit the passage of the matter separated from the air, all particles of matter large enough to fall off the screen by gravity passing through the valve D' to the conveyer F and all dust adhering to the screen being re-
 80 moved by the brush G and going to the conveyer F', thus effecting a separation into two grades of the matter removed from the air by the machine.

Any convenient means for rotating the
 85 driving-roll of the screen, the brush, and the conveyers may be utilized.

To further support the screen against the pressure of the air passing through the same, I provide bridge-bars Q at intervals, having
 90 rounded edges engaging the screen and extending transversely across the pockets at the exit side of the screen.

From the foregoing the operation of my machine will be readily understood without
 95 further description.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a dust-collector, a casing, a movable
 100 dust-collecting screen in said casing; webbing attached to each edge of said screen to stretch and strengthen the screen, rolls to support and move the screen, means for actuating said rolls, fixed stop-strips engaging one side
 105 of the webbing, adjustable stop-strips opposite the fixed stop-strips, and engaging the other side of the webbing, and auxiliary stop-strips, supported at a distance from the fixed stop-strips and engaging the same side of the
 110 webbing, substantially as described.

2. In a dust-collector, a casing, a screen adapted to permit air to pass therethrough and to retain dust, webbing attached to each
 115 edge of the screen to stretch and strengthen the same, sprocket-chains attached to the webbing to move the screen, a series of rolls engaging the screen and webbing and having wheels engaging the chains, fixed stop-strips engaging the webbing at one side, and adjustable
 120 stop-strips engaging the other side of the webbing, substantially as described.

3. In a dust-collector, a casing, a movable dust-collecting screen in the casing, webbing attached to the edges of the screen to strengthen
 125 and stretch the screen, main stop-strips engaging the webbing near the outer edge thereof, and auxiliary stop-strips, engaging the webbing near the inner edge thereof, said auxiliary stop-strips being each provided with
 130 a flexible edging attached at one end to the face of the strip and having its other edge

inclined inward and resting on the webbing, whereby a dead-air chamber is formed between the main and auxiliary stop-strips, substantially as described.

4. In a dust-collector, the combination with a casing, a movable dust-collecting screen in the casing, and means for moving the same, a strip of webbing attached to the respective edges of the screen, ribs on the casing at each side of the webbing, fixed stop-strips attached to said ribs and engaging one side of the webbing near the outer edge thereof, adjustable stop-strips attached to said ribs, opposite the fixed stop-strips, and engaging the other side of the webbing, auxiliary stop-strips, supported at a distance from the fixed stop-strips, and engaging the webbing near its inner edge, and elastic facings on the edges of the various stop-strips, substantially as described.

5. In a dust-collector, a case, a longitudinally-movable screen, webbing attached to the edges thereof, sprocket-chains attached to the webbing, a series of rolls engaging the screen and webbing and having sprocket-wheels engaging the chains, ribs on the case at each side of the chains and webbing and supporting the stop-strips, stationary stop-strips having elastic edges engaging one side of the webbing, and adjustable stop-strips engaging the other side of the webbing, substantially as described.

6. In a dust-collector the combination of a case, a movable screen in the case, means for moving said screen, webbing attached to the respective edges of the screen, ribs on the case at each side of the screen to support the stop-strips, fixed stop-strips at one side of the webbing, adjustable stop-strips at the other side of the webbing, bosses on the fixed stop-strips, auxiliary stop-strips attached to the bosses, elastic facings on the stop-strips and engaging the webbing, and flexible edgings attached at one side to the auxiliary stop-strips and having their free edges engaging the webbing, substantially as described.

7. In a dust-collector a case having inlet and exit openings near its respective ends, a series of rolls near each end of the case arranged in parallel vertical planes and alternate horizontal planes, two rolls located outside the plane of one series of rolls, a continuous screen engaging the rolls and extending in parallel horizontal planes, fixed stop-strips engaging the respective edges of the screen at the side adjacent to the inlet-opening, and adjustable stop-strips opposite the fixed stop-strips and engaging the other side of the screen, substantially as described.

8. In a dust-collector, a case having an inlet-opening at one end, and a series of exit-openings in its sides, a series of rolls adjacent the inlet end of the case, and opposite the ends of the exit-openings, a series of rolls near the other end of the case, and between the exit-openings in the sides of the case, two rolls outside the vertical plane of the last-

named series of rolls, and in the horizontal plane of the upper and lower rolls of the first-named series, a continuous dust-collecting screen engaging said rolls and extending in parallel planes at each side of the exit-openings, stop-strips attached to the case, and having elastic facings engaging the respective edges of the screen, and bridge-bars at intervals engaging the opposing sides of the screen adjacent to the exit-openings in the case, substantially as described.

9. The combination of a dust-collector having a case, and a moving screen arranged in alternate parallel planes, the planes of said screen forming pockets alternately open in opposite directions, a casing at the inlet end of the dust-collector case, having a series of openings opposite the alternate pockets formed by the screen, inwardly and downwardly inclined deflectors at each side of said chamber and oppositely and downwardly inclined deflectors in said chamber, whereby the air is distributed equally to said pockets, and the heavier particles of the dust separated from the air, substantially as described.

10. The combination of a dust-collector having a moving screen arranged in parallel horizontal planes, said screen forming pockets open alternately in opposite directions, a brush engaging the lower plane of said screen, to remove dust from the same, a casing having inlet and exit openings at its respective ends, a casing attached to the inlet end of same, deflectors in said casing whereby the air is distributed to the various pockets formed by the screen, and the heavier particles of dust separated from the air, and a conveyer below the said deflectors to carry away the dust so separated, substantially as described.

11. In a dust-collector, a case having a chamber at one end adapted to receive a descending air-current, and an exit-opening near the other end, a moving screen between said chamber and exit-opening, arranged in parallel horizontal planes, and forming pockets alternately open in opposite directions, a brush and conveyer beneath said screen and inclosed in a separate compartment, a second conveyer below the chamber and separated therefrom by a valve, outwardly-inclined deflectors in said chamber arranged in pairs, and at intervals, and inwardly-inclined deflectors at each side of said chamber, substantially as described.

12. In a dust-collector, a chamber to receive a downward current of air, oppositely-inclined deflectors in said chamber, a valve at the bottom of said chamber, a conveyer below the valve, an endless moving screen arranged in horizontal parallel planes and extended rearwardly and vertically, stop-strips having elastic facings engaging the screen, and auxiliary stop-strips having flexible edgings engaging the screen at a distance from the first-named stop-strips, a case inclosing

the screen and having horizontally-extended openings opposite the spaces between the horizontal portions of the screen, and a vertically-extended opening near the vertical part of the
5 screen, rolls engaging the screen, a brush beneath the screen, and a conveyer beneath the brush, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE D. SCHEIFFLER.

Witnesses:

WM. G. GUTMANN,
CARL FRANKE.