

E. J. FROST.
CLEANER FOR DUST COLLECTORS.

No. 540,785.

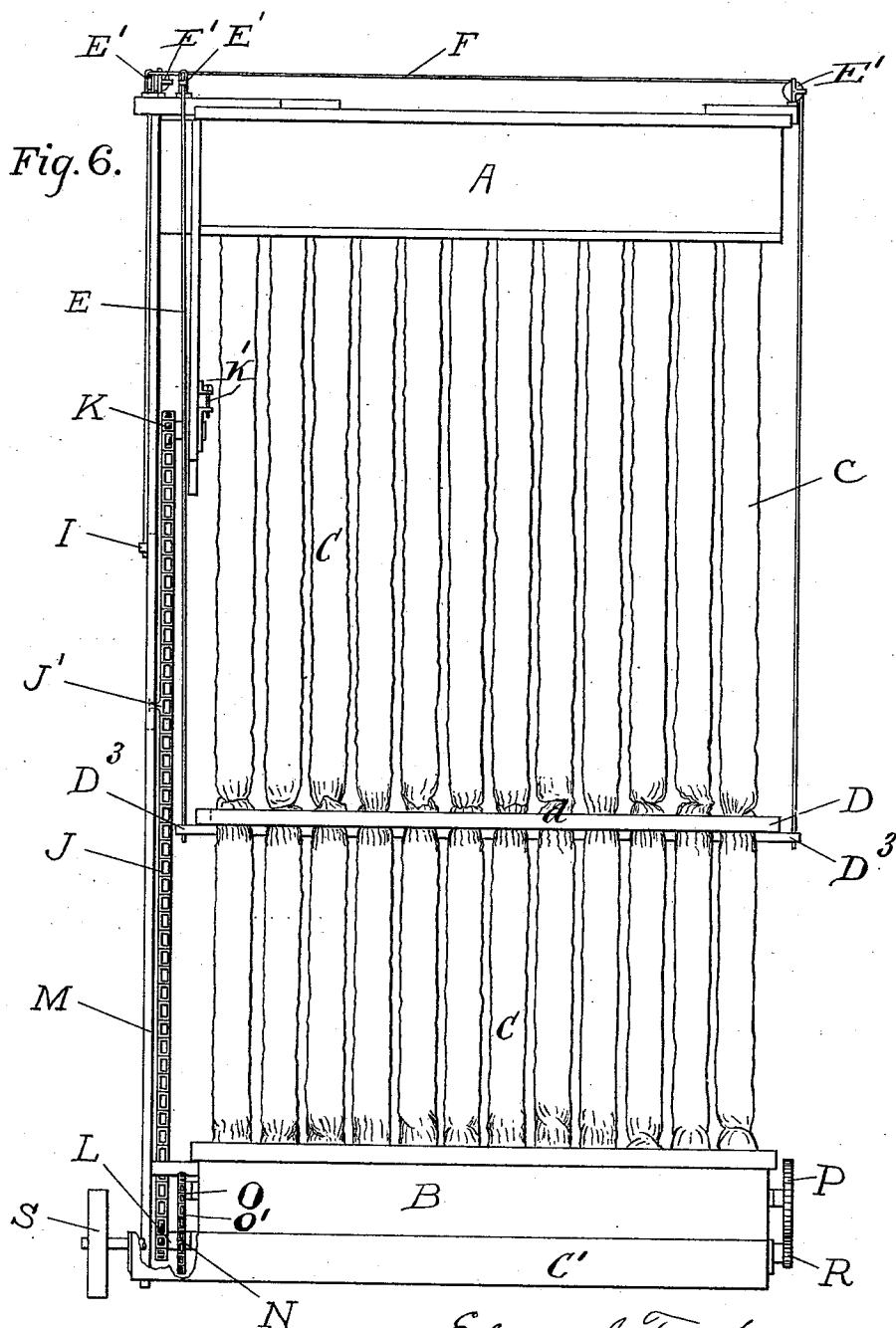
Patented June 11, 1895.

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INVENTOR,
By Wilhelm H. Rorer
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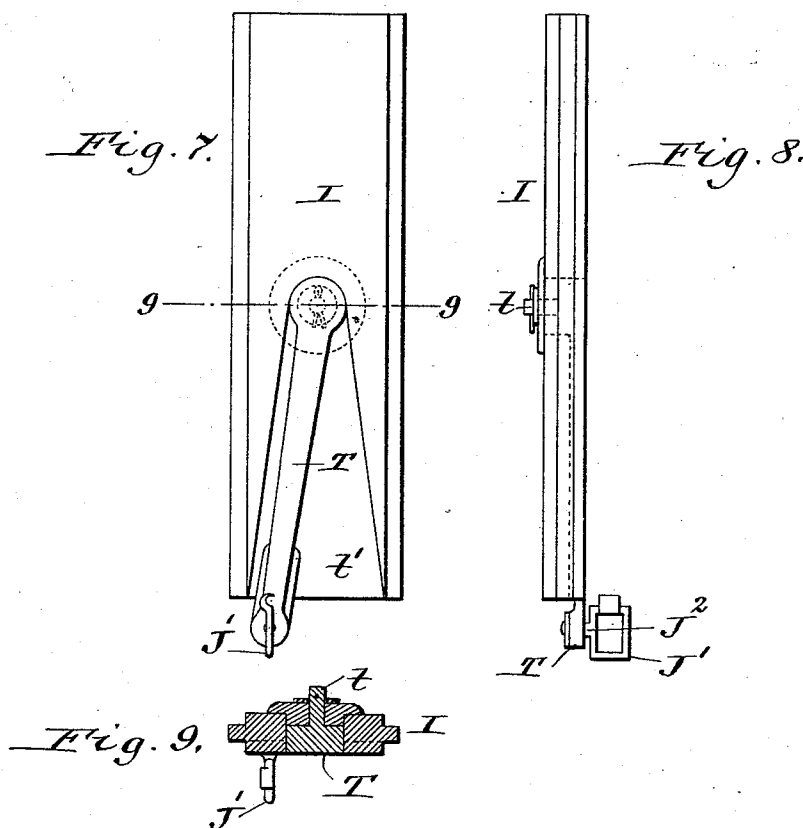
WITNESSES
Thos. L. Popp
Chas. F. Burkhardt

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UNITED STATES PATENT OFFICE.

EDWARD J. FROST, OF JACKSON, MICHIGAN, ASSIGNOR TO THE HARMON MANUFACTURING COMPANY, OF SAME PLACE.

CLEANER FOR DUST-COLLECTORS.

SPECIFICATION forming part of Letters Patent No. 540,785, dated June 11, 1895.

Application filed February 14, 1895. Serial No. 538,316. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. FROST, a citizen of the United States, residing at Jackson, in the county of Jackson, in the State of Michigan, have invented new and useful Improvements in Cleaners for Dust-Collectors, of which the following is a specification.

This invention relates to that class of dust collectors which contain flexible filtering tubes or passages into which the dust laden air is conducted and through the meshes of which the air escapes while the dust is intercepted and drops into a dust receptacle below. Dust collectors of this kind are now often provided with a traveling cleaner which moves up and down along the outer surfaces of the tubes and impinges against the same and thereby dislodges the dust which adheres to the inner surfaces of the tubes.

My invention has reference more particularly to the mechanism whereby the traveling cleaner is actuated and has the object to produce a simple and serviceable mechanism for this purpose which is not liable to get out of order.

In the accompanying drawings, consisting of three sheets, Figure 1 is a fragmentary front elevation of a dust-collector provided with my improvement. Fig. 2 is a fragmentary rear elevation, on an enlarged scale, of the sliding head to which ropes leading to the cleaner are secured. Fig. 3 is a vertical section in line 3 3, Fig. 2. Fig. 4 is a perspective view of the chain-link which carries the stud by which the sliding head is actuated from the drive-chain of which this link forms a part. Fig. 5 is a fragmentary top plan view of the cleaner on an enlarged scale. Fig. 6 is an end elevation of the dust-collector at right angles to Fig. 1, showing part of the conveyer-box broken away. Fig. 7 is a rear elevation, on an enlarged scale, of the sliding head, showing a different means for connecting the head with the drive-chain. Fig. 8 is an elevation at right angles to Fig. 7. Fig. 9 is a horizontal section in line 9 9, Fig. 7.

Like letters of reference refer to like parts in the several figures.

A represents the upper chamber of the dust collector, B the lower chamber and C the vertical filtering tubes connecting these cham-

bers and opening with their upper and lower ends respectively into the same. These parts may be of any ordinary or suitable construction but they are preferably so arranged that the dust laden air is delivered into the upper chamber and moves downwardly through the tubes so that the downward movement of the air in the tubes aids in depositing the dust in the lower chamber from which it is removed by a conveyer C', arranged at one side of the lower chamber in the usual manner.

D represents the cleaner which moves up and down along the tubes between the upper and lower chamber and which consists preferably of a rectangular frame *d* arranged outside of the group or set of filtering tubes and rods or wires D' which are bent so as to form strippers D², preferably of ring shape, each of which encircles one of the tubes and impinges against the outer side thereof. The strippers are slightly smaller than the tubes or are of different form, or otherwise formed, so that in moving slowly up and down along the tubes they crinkle or wrinkle the fabric and so dislodge the dust adhering to the inner sides of the tubes in a well known manner.

I represents a head or block which slides up and down on the front side of the dust collector between upright guide rails or bars M, and E, F, G, H, are cords, ropes or chains which are secured to the sliding head I and extend from the same over guide pulleys E' on the top chamber to the cleaner and carry the same. The ropes E and H run upwardly from the head to the top of the upper chamber, then horizontally in opposite directions nearly parallel with the front side of the dust collector, and then downwardly on the front side of the dust collector to the cleaner which is provided with two bars D³ arranged fore and aft underneath the cleaner frame and to the front ends of which the ropes E and H are secured. The ropes F and G run upwardly from the sliding head, then backwardly over the top chamber and then downwardly on the rear side of the machine to the rear ends of the bars D³. When the sliding head moves downwardly the cleaner is drawn upwardly by means of the cords and when the sliding head moves upwardly the cleaner descends by gravity.

A positive up and down movement is imparted to the sliding head as follows: J represents an endless drive chain or belt which is arranged on the front side of the machine in an upright position behind the guide rails M and running around a driving wheel L in the lower portion of the machine and around a driven wheel K in the upper portion thereof, which upper wheel is provided with a tightener K' so that the chain can be tightened when required. This drive chain is arranged in close proximity to the rear side of the sliding head and one of the chain links J' is provided with a forwardly projecting stud J² which engages in a transverse or horizontal slot I² formed in the rear side of the sliding head, as shown in Figs. 2, 3 and 4. This slot is preferably formed in a removable plate I' secured in a recess formed in the lower rear portion of the sliding head, and the end of the stud is provided with a detachable head or washer J³ by which the stud is prevented from being drawn out of the slot. This actuating stud travels up and down with the drive chain and moves the head up and down between the guide rails and shifts from one end of the slot to the other in passing with the chain over the wheel at either extreme of its movement. The lower wheel L of the chain is preferably driven from the shaft of the conveyer C' which receives its motion by a pulley S. The motion is transmitted from the conveyer shaft to the shaft of the roller of the dust sweep above the conveyer by gear wheels R and P on the rear side of the machine and a wheel O, chain O' and wheel N on the front side of the machine, the wheel N being secured to the shaft on which the lower chain wheel L is secured. It is obvious, however, that other means for driving the chain may be employed. This chain drive is exceedingly simple and effects a positive movement of the sliding head up and down and is the best device of which I know for producing such positive movement, but mechanical substitutes for this chain drive may be employed for imparting a positive movement to the sliding head.

Instead of connecting the actuating stud of the drive chain with the sliding head by a horizontal or transverse slot formed in the head, the stud may be connected with the head

as shown in Figs. 7, 8 and 9, by a rod T which is pivoted at its lower end to the stud and connected with its upper end to the head by a pivot t. This connecting rod T is arranged on the rear side of the head in a downwardly flaring recess t' which permits the lower end of the bar to swing from one side to the other as the stud moves with the chain over the wheel at either extreme of its movement.

I do not broadly claim the combination with the vertical flexible tubes of a dust collector, of a cleaner adapted to move up and down along the tubes and adapted to rub against the same, and means for moving said cleaner up and down along the tubes, and I do not claim as such means a power driven shaft and cords connecting the cleaner with said shaft and adapted to be wound upon the shaft, thereby raising the cleaner.

I claim as my invention—

1. The combination with a dust collector having upright filtering tubes, of a cleaner capable of moving up and down along the tubes, a sliding head guided to move up and down, cords or chains connecting the cleaner with said head and causing the cleaner to move up when the head moves down and vice versa, and mechanism imparting a positive up and down movement to said head, substantially as set forth.

2. The combination with a dust collector having upright filtering tubes and a cleaner capable of moving up and down along the tubes, of a head connected with the cleaner and capable of up and down movement, and an endless drive chain or belt engaging with the head and moving the same up and down, substantially as set forth.

3. The combination with a dust collector having upright filtering tubes and a cleaner capable of moving up and down along the tubes, of a head connected with the cleaner, upright guides on which the head moves, an endless drive chain or belt having a stud, and a rod connecting said stud with the head, substantially as set forth.

Witness my hand this 7th day of February, 1895.

EDWARD J. FROST.

Witnesses:

G. F. SNYDER,
M. HARMON.