

(No Model.)

2 Sheets—Sheet 2.

L. E. SHEETS.

DEVICE FOR CLEANING DUST COLLECTOR TUBES.

No. 584,711.

Patented June 15, 1897.

Fig. 3.

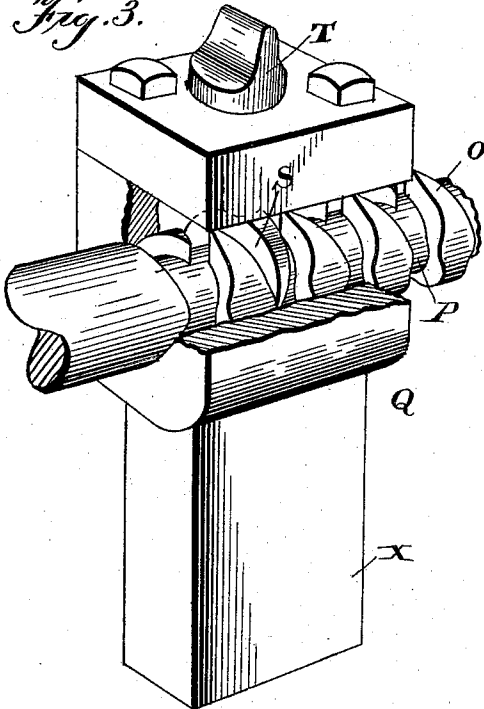


Fig. 4.

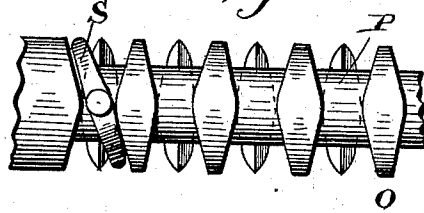


Fig. 5.

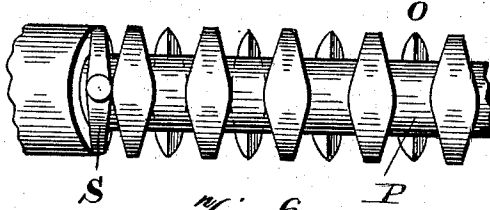


Fig. 6.

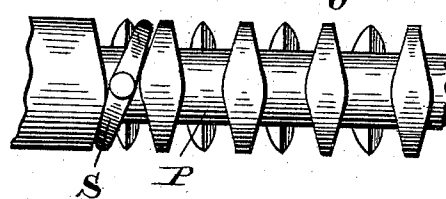


Fig. 7.

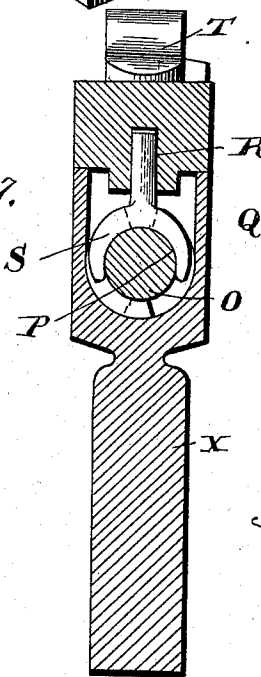


Fig. 8.

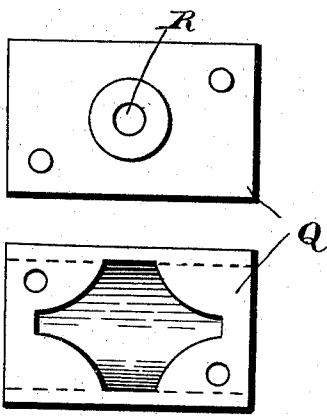
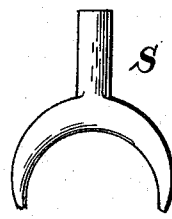


Fig. 9.



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UNITED STATES PATENT OFFICE.

LOUIS E. SHEETS, OF CAREY, OHIO, ASSIGNOR OF ONE-HALF TO WILLIAM J. SIMONIS, OF SAME PLACE.

DEVICE FOR CLEANING DUST-COLLECTOR TUBES.

SPECIFICATION forming part of Letters Patent No. 584,711, dated June 15, 1897.

Application filed January 2, 1897. Serial No. 617,813. (No model.)

To all whom it may concern:

Be it known that I, LOUIS E. SHEETS, of Carey, in the county of Wyandot and State of Ohio, have invented certain new and useful Improvements in Devices for Cleaning Dust-Collector Tubes; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to devices for cleaning dust-collector tubes, the object being to provide cleaners of improved form and also an improved automatically-reversing mechanism for actuating the cleaners.

The invention consists in the novel features of construction hereinafter fully described and claimed, and illustrated by the accompanying drawings, in which—

Figure 1 is a side elevation of the upper portion of a tubular dust-collector, shown partly in section, with my improved cleaner in operative position. Fig. 2 is a plan view. Fig. 3 is a perspective view of the traveler, the same being partly in section. Fig. 4 is a plan view of one end of the screw-shaft, showing the reversing fork working therein and removed from the traveler, the fork having reached the limit of movement in one direction. Fig. 5 is a plan view of the shaft in reversed position from that shown in Fig. 4 and illustrating the course followed by the fork in reversing its position to travel in the opposite direction. Fig. 6 is a view similar to Fig. 4, but showing the fork as having been adjusted automatically, so as to move the traveler in the opposite direction. Fig. 7 is a vertical sectional view of the traveler. Fig. 8 is a plan view of the traveler-sections separated, the top section being in inverted position.

A designates the uprights of the cleaner-frame arranged adjacent the collector, which, together with other suitably-arranged framing, (not shown,) support the cleaner mechanism in proper position.

B are the flexible dust-collector tubes of any of the well-known forms of tubular dust-collectors, and mounted horizontally in the

cleaner-framing above the upper ends of the tubes are shafts C, having mounted thereon the numerous pulleys D and carrying at their ends gear-wheels E. These several gear-wheels are connected together in train fashion upon one side of the dust-collector, as shown, the central wheel being provided at its outer face with the beveled gear F. Shaft G is journaled horizontally in uprights A on a plane with the several shafts C, and mounted on this shaft and adapted to engage opposite sides of gear F are the beveled gears H. These gears H are mounted to turn with the shaft, but are movable toward and away from the gear F by arms I, said arms being pivoted at their lower ends to cross-bar A' of the cleaner-frame. Levers K are also pivotally mounted between their ends on bar A' and connected at their upper ends to the respective clutch-arms I by links K', so that by swinging these levers the gears H may be caused to alternately engage bevel-gear F, and thus revolve the several shafts C in one direction and then in the other, as desired.

Passing over the upper edges of pulleys D are cords L, the opposite ends of each cord depending in adjacent tubes B and at each end carrying a spirally-formed cleaning-brush M and beneath each brush a weight N. By means of this arrangement one end of each cord, together with its brush, is being lowered in its tube while the opposite end of the cord and its accompanying brush is being raised, the mechanism for reversing the motion of shaft C, presently to be described, being such that the movement of the cords is reversed when the brushes have reached the upper and lower ends of the tubes. The weights serve to keep the cords taut and cause the brushes to move evenly in the tubes during their vertical reciprocation. The brushes or cleaners being of spiral form do not interrupt or retard the air-current in the tubes, as said currents are free to pass the brushes by moving in spiral course, as will be understood.

For automatically reversing the movement of the cleaner I provide the shaft O, suitably journaled in horizontal position in uprights A and arranged a short distance beneath the lower ends of levers K. The shaft is formed

with the oppositely-disposed spiral grooves P, and arranged on the shaft is traveling head Q, the same being preferably formed in two sections, the upper portion of its lower section being formed with the recess R to accommodate the shifting fork S, which engages grooves P and which is mounted at its upper stem end to turn in a suitable bearing in the under side of the upper section of the traveling head. On the top of the traveler is the wedge-shaped trip or knocker T, adapted to engage the lower extremities of levers K and to swing said levers, and thus reverse the movement of the tube-cleaning brushes.

The pivoted fork, being in engagement with one of the grooves P, causes the traveler to move to one end of the shaft, the pivoted fork, when the traveler reaches said end, being in the position shown in Fig. 4. A half-revolution of the shaft brings the fork to the position shown in Fig. 5, and another half-revolution of the shaft so positions the fork as to cause it to engage the other spiral groove, and thus cause the traveler to move backward or in a reversed position. The terminals of the oppositely-disposed spiral grooves form a proper channel for reversing the position of the fork, as will be readily understood.

Levers K are slotted at their pivotal points, as indicated at U, so as to move upward after either gear F has reached the limit of its movement, so as to permit the traveling head to freely pass upon the shaft. Bowed springs W, connected at their upper ends to the pivots and at their lower ends to the levers, serve to hold the levers normally depressed.

The traveling head is provided with the depending extension X, adapted to travel along rod Y, arranged between the uprights A, and in this manner the traveler is prevented from turning with the shaft.

The cleaners reciprocate in the tubes only while the traveler is moving outward from either lever K to the end of shaft O and returning, for in the return movement the lever is engaged and moved to the position shown of the lever in dotted lines at the right hand of Fig. 1, with neither of gears H engaging gear F until the left-hand lever is reached, when the cleaner mechanism will be again actuated for the period above described, but in reverse direction. An intermittent movement of the cleaners is thus secured, the movement occurring as the traveler approaches and recedes from either end of the shaft, and the actuating mechanism is out of gear and the cleaners at rest while the traveler is moving between the levers.

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

1. The combination of tube-cleaning devices, rotatable actuating mechanism therefor, a power-shaft, gears carried thereby for

reversely rotating said actuating mechanism, levers fulcrumed between their ends and slotted so as to move longitudinally on their fulcrums, connections between the upper ends of the levers and the reversing-gears, springs for holding the levers normally lowered upon their fulcrums, the traveler adapted to swing the levers for shifting said gears and to pass beneath the levers by the raising of the latter, the springs returning the levers to their normally-lowered positions, substantially as shown and described.

2. The combination with a tube-cleaning mechanism, a power-shaft, and gears on said shaft for reversely actuating said mechanism, of levers movable longitudinally and connected to said gears, a traveler adapted to swing the levers for shifting the gears, the levers being adapted to move longitudinally when passing from engagement with the levers, the levers being normally extended toward the path of the traveler, substantially as shown and described.

3. The combination with a tube-cleaning mechanism, a power-shaft, and gears on said shaft for reversely actuating said mechanism, of levers fulcrumed between their ends and movable longitudinally on their fulcrums, a loose connection between one end of the levers and the gears, and a traveler adapted to engage the opposite ends of the levers for swinging the same and thus shifting the gears, the levers extending normally toward the path of the traveler but movable longitudinally therefrom when disengaging the traveler, substantially as shown and described.

4. The combination with a tube-cleaning mechanism, a power-shaft, and gears on said shaft for reversely actuating said mechanism, of levers fulcrumed between their ends and movable longitudinally on their fulcrums, pivoted arms embracing the gears, links connecting the arms and the upper ends of the levers, and a traveler adapted to engage the lower ends of the levers for swinging the same and thus shifting the gears, the levers being held normally extended toward the path of the traveler but adapted to move longitudinally therefrom when disengaging the traveler, substantially as shown and described.

5. The combination of tube-cleaning devices, rotatable actuating mechanism therefor, gears for changing the direction of rotation, levers arranged to operate said gears and having depending free ends, a reciprocating traveler, and a wedge-shaped knocker carried thereby for engaging the depending lever ends, substantially as shown and described.

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

LOUIS E. SHEETS.

Witnesses:

C. A. WILLIAMS,
T. W. MCCLURE.