(No Model.) 2 Sheets—Sheet 1.

F. G. GAUNTT.

CLEANER FOR DUST COLLECTORS.

No. 566,978. Patented Sept. 1, 1896.

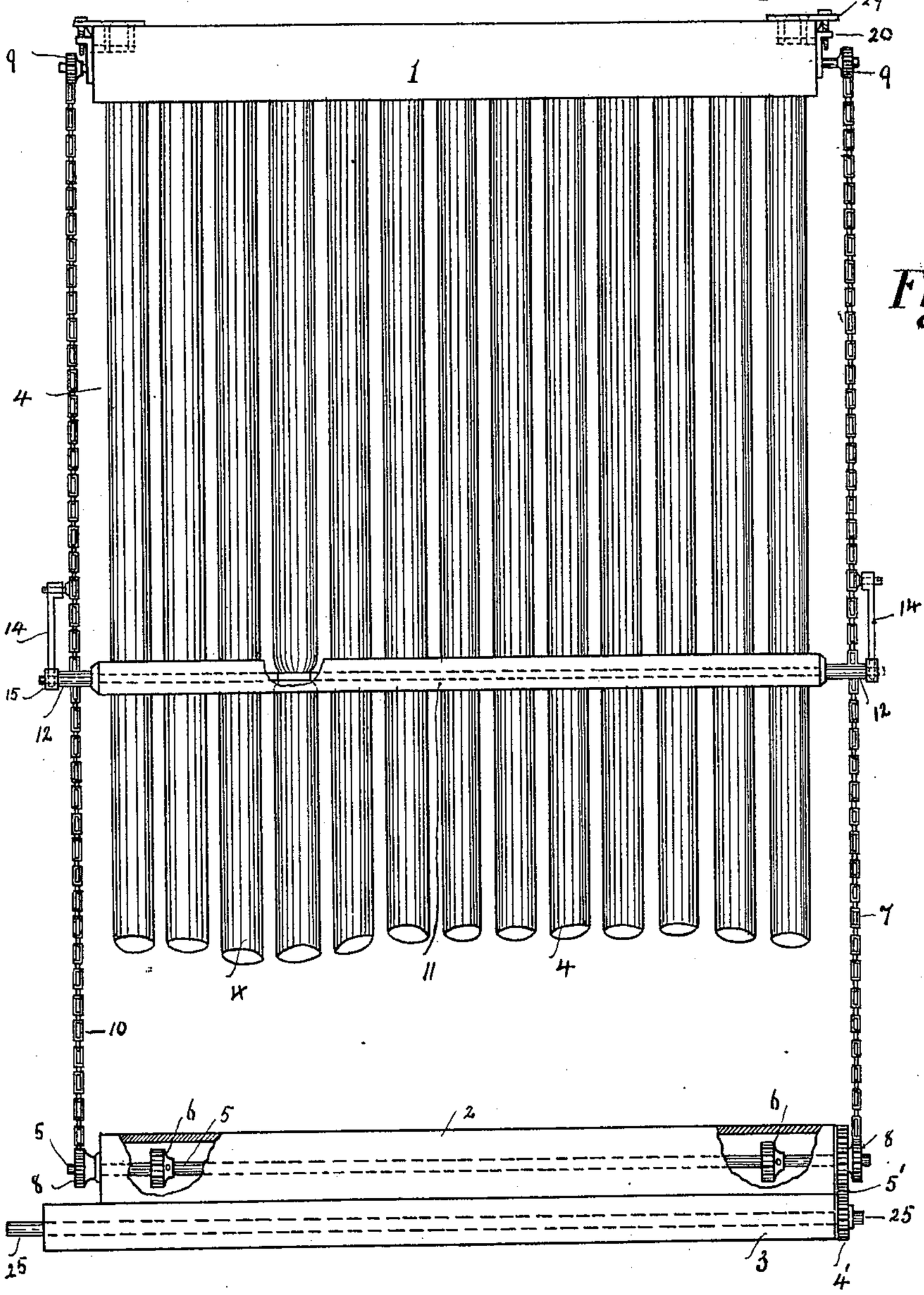

Fig. 1.

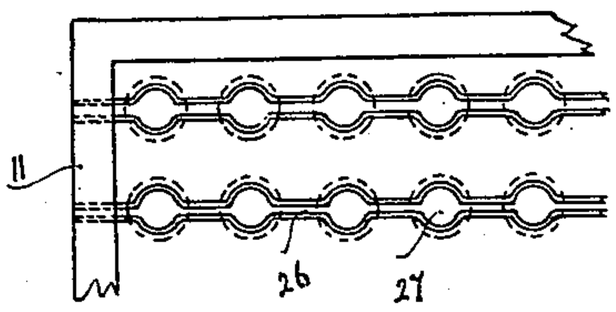

Fig. 7.

WITNESSES:

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James H. Power

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Forest G. Gauntt

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

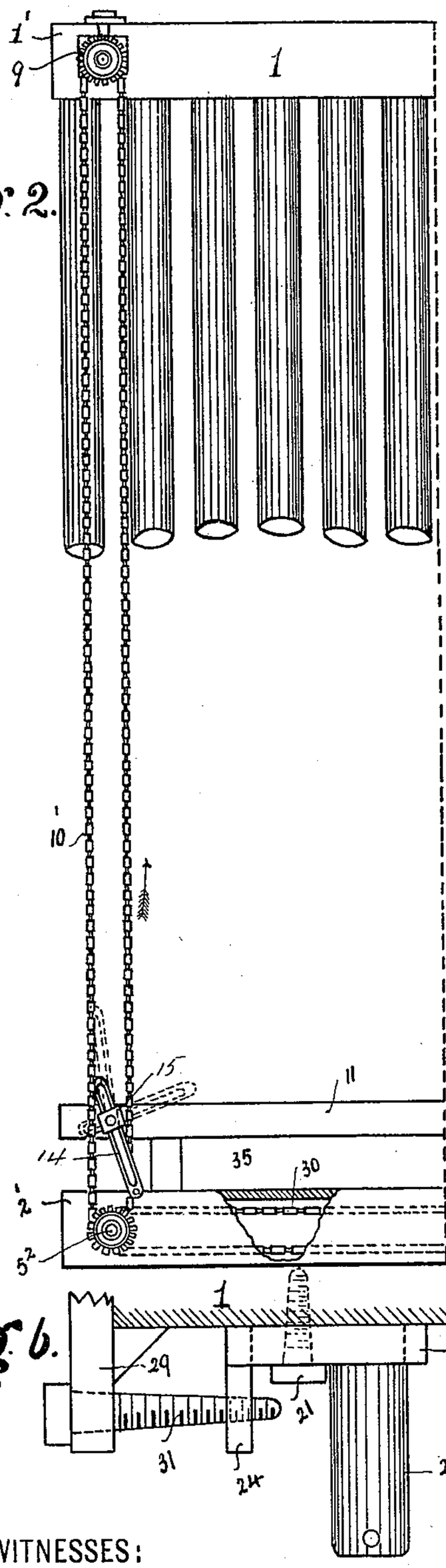

Fig. 6.

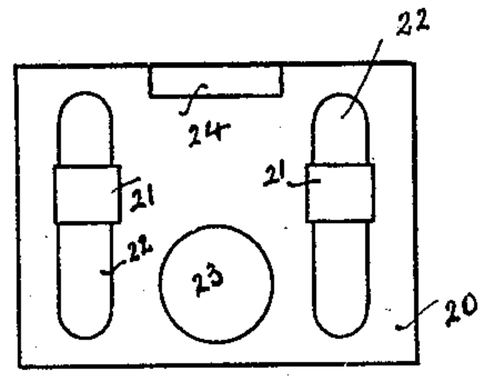

Fig. 5.

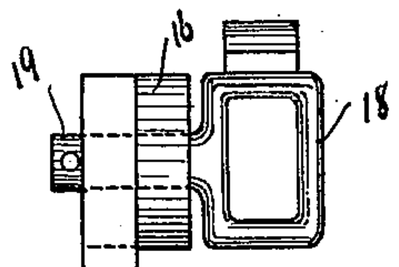

Fig. 3.

Fig. 4.

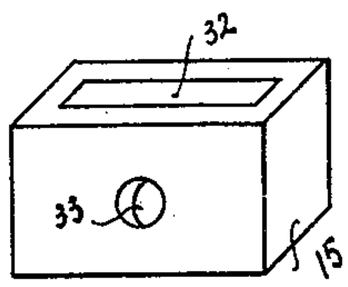

Fig. 8.

WITNESSES:

Charles P. Weatherbogg.

James H. Power

Forest G. Gauntt INVENTOR

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UNITED STATES PATENT OFFICE.

FOREST G. GAUNTT, OF FORT WAYNE, INDIANA.

CLEANER FOR DUST-COLLECTORS.

SPECIFICATION forming part of Letters Patent No. 566,978, dated September 1, 1896.

Application filed September 25, 1895. Serial No. 563,672. (No model.)

To all whom it may concern:

Be it known that I, FOREST G. GAUNTT, a citizen of the United States, residing at Fort Wayne, in the county of Allen, in the State of Indiana, have invented certain new and useful Improvements in Cleaners for Dust-Collectors; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in cleaning attachments for that class of dust-collectors in which the dust-laden air is strained by forcing it through the canvas walls of a series of vertically-arranged filtering-tubes.

My invention consists of improved mechanism for actuating the vertically-movable cleaner for a dust-collector having vertical filtering-tubes, so arranged that the traveling cleaner is mounted upon and carried by a series of endless sprocket-chains, to which it is directly connected by means of automatically-reversible links.

The object of my invention is to provide a cleaning attachment for a dust-collector of simple and economical construction, uniform, positive, and reliable in its action, with small liability of derangement or need of repairs, and so arranged as to clean the filtering-tubes by a simultaneous and successive contraction of their walls throughout their length.

The novel feature of my invention consists in the improved and simplified mechanism for actuating the traveling cleaner.

Referring now to the drawings, in which similar figures of reference indicate corresponding parts throughout the several views, Figure 1 is a side elevation of a dust-collector, partly cut away, showing the manner of mounting my improvement thereon and the means for actuating the same. Fig. 2 is a fragmentary view of that side of the dust-collector adjacent to the side seen in Fig. 1, showing one of the actuating sprocket-chains in the base and also showing in dotted outline different positions assumed by the slotted link in the act of reversing. Fig. 3 is a detail of the slotted link, showing an enlarged view of the connections thereof. Fig. 4 is a detail of the same, showing the perforated head and the extended slot therein. Fig. 5 is a detail of the supporting-plate for the upper sprocket-wheels. Fig. 6 is a plan of the same, showing the arrangement of the adjusting-screw for the sprocket-chain. Fig. 7 is a fragmentary plan of the cleaner, showing the arrangement of the series of openings which embrace the filtering-tubes, with the relative diameter of the same shown in dotted outline. Fig. 8 is the slotted block for the reversible link.

The dust-collector upon which my improvement is adapted to be operated is of the usual and well-understood construction, comprising an upper hollow head 1, which is suspended in any proper manner from the overhead floor, and a lower head or base 2, mounted upon any suitable support and provided with a proper settling-chamber and a proper conveyer 3, whose construction, function, and operation are well understood. The said heads, preferably rectangular in form, are connected by a proper number of canvas flues or filtering-tubes 4, whose upper ends open into an air-chamber in the head 1 and whose lower ends open into the settling-chamber, which discharges into the conveyer in a well-understood manner. The inner faces of the said heads are provided with a series of openings corresponding in number and arrangement with that of the said tubes, preferably circular in form and in which the corresponding ends of the said tubes are secured in any proper manner, preferably in a manner analogous to that of the flue-sheets of a tubular boiler.

The cleaner upon which my improvement is adapted to be operated consists of a wooden frame 11 of any desired form or size, having parallel rows of wires 26, whose ends are rigidly fixed in opposite sides thereof and are so arranged as to form a series of circular loops or vertical openings 27, corresponding in number and arrangement to that of the said tubes and of a somewhat less diameter, as seen in Figs. 1 and 7, and in which the said tubes are arranged. It is obvious that the said wires may be arranged in a variety of ways to embrace the said tubes, though I prefer the arrangement shown in Fig. 7. A sheet-metal

plate having a suitable arrangement of perforations for the said tubes may be substituted for the frame 11, though I prefer the use of wires, as shown. At or near the extremities and upon two opposite sides of the said cleaner 11 are rigidly fixed the short shafts 12, having an integral base 13, which is secured to the said sides of the cleaner by holding-screws or other proper manner, Fig. 6, and is provided at its free end with a terminal stud 28 of less diameter, on which the reversible link 14 is mounted in a manner hereinafter described. The mechanism for operating the said cleaner is arranged as follows: In the said base 2 and at or near the extremities of the sides 2', Fig. 2, are revolubly mounted the parallel horizontal shafts 5, having upon their outer ends the rigid sprocket-wheels 8, and are also provided near their extremities and within the said base with the sprocket-wheels 6, carrying the sprocket-chains 30, by which the said shafts are connected. Near one end of the said shafts 5 and immediately adjacent to the inner face of the said sprocket-wheels 8, Fig. 1, is mounted an idle gear-wheel 5', meshing with a rigid gear-wheel 4' upon the adjacent end of the shaft 25, which is rotatively mounted in the conveyer 3 and is provided at its other extremity with a fixed pulley or other means of transmitting power. Near the ends of each of the opposite sides of the head 1 and in a direct vertical line with the ends of the said shafts 5 are secured the plates 20, Figs. 1, 5, and 6, having a projecting apertured screw-threaded lug 24, an integral stud 23, on which the sprocket-wheel 9 is mounted, and a pair of parallel vertical slots 22, in which the holding-screws 21 are inserted, on which the said plate 20 is vertically adjustable by means of the adjusting-screw 31, suspended from the overhanging plate 29, which is fixed upon the upper face of the head 1 and engages with the said screw-threaded perforation in the plate 20, whereby the said plate can be vertically adjusted for the purpose of regulating the tension of the vertical sprocket-chains. Upon the said sprocket-wheels 8 and 9 are mounted the endless sprocket-chains 7 and 10 and 10', the chain on one side not being shown in the drawings. The said supporting sprocket-chains 7 and 10 are shown in Fig. 1 as half cut away to show the shafts 12 and sprocket-wheels 8 and 9. The reversible link 14, Figs. 3 and 4, with which each of the said chains are provided, has a circular head 16, provided with a lateral perforation 17, adapted to receive the lateral lug 19 on the sprocket-link 18, on which it is pivotally secured, and is provided with a longitudinal slot 34. Upon this slotted link a block 15 is mounted, having a central rectangular slot 32, adapted to loosely receive the said link, and provided with a circular diametric aperture 33, adapted to loosely receive the stud 28, which also passes through the slot 34 of the said link 14. The block 15, thus loosely mounted upon the said stud 28, is secured thereon by a proper holding-pin in a diametric perforation therein or other proper manner. The said link 14 is thus pivotally fixed at one end to the said link 18 of the carrying-chains, while the other end thereof is adapted for a longitudinal adjustment in the block 15 and on the stud 28 throughout the length of the slot 34 and is adapted for an automatic reversal upon both its approach and as it recedes from the sprocket-wheels 8, in a manner presently to be described.

The operation of my improvement thus described will readily be understood, and briefly stated is as follows: Power being applied to the conveyer-shaft 25 in any proper manner, it is transmitted to the shaft 5 by means of the respective meshing gear-wheels 4' and 5', which also actuate the other parallel shaft 5 (shown in Fig. 2) by means of the parallel sprocket-chains 30 on the sprocket-wheels 6, thus actuating the said four vertical supporting sprocket-chains from which the said cleaner is supported or suspended. In the drawings, Fig. 2, the said chains are represented as moving from left to right, the inner portion of the chain at all times moving upwardly.

The operation of the reversible link 14 is substantially as follows: As the cleaner descends the link 14 will be in nearly a vertical position, with the said cleaner in advance and suspended from the lower end thereof, as seen in Fig. 3, and when the cleaner reaches the limit of its downward movement it will rest upon the supporting-blocks 35, fixed on the base 2, and will so remain until the said link has reversed its position twice, once in passing the sprocket-wheel 8 and again when it has started upon its ascent. When the said cleaner comes to rest upon the blocks 35, the said link will of course continue its downward movement, thereby gradually changing the position of the block 15 on said link to the other end of the slot 34, which thus forces the said link into a horizontal position, and as the pivoted end advances the link will be entirely reversed as it passes the sprocket-wheel 8, after which the upwardly-advancing link again assumes a horizontal position, and then for the second time since the cleaner came to rest the said link is inverted, so that the cleaner is then suspended as before in the slotted end thereof and in its ascent carries the cleaner with it. It is obvious that the said links 14 are so mounted on the sprocket-chains and the cleaner-shafts 12 as to readily and securely pass around the upper sprocket-wheels 9 without any necessity for reversing their position in the manner above described in passing the lower sprocket-wheels 8.

My improved cleaner-actuating mechanism thus described is simple and economical in construction and is positive, convenient, and reliable in operation.

I do not hereby confine myself to the precise form of reversible link shown, as the same

may be indefinitely modified. While my improvement may be operated by ropes or cables, sprocket-chains are preferred, as they are the most reliable and positive in action, and the tension can readily be adjusted, as shown.

Having thus described my invention and the manner of operating the same, what I desire to secure by Letters Patent is—

1. In a dust-collector having upright filtering-tubes, the combination of a traveling cleaner embracing the said tubes as shown, a series of endless carrying-chains arranged as described, upon which the said cleaner is mounted, means for actuating the said chains and the slotted reversible links by which the said cleaner is pivotally connected with the said chains, all substantially as described.

2. The combination in a dust-collector having vertical filtering-tubes, of a vertically-moving cleaner embracing said tubes, as described, a series of vertical endless sprocket-chains adapted to impart a positive up-and-down movement to the said cleaner, means for actuating the said chains, the reversible links 14 adapted to form a pivotal connection of said cleaner with the said chains, and the blocks 15 mounted as shown, and adapted to loosely contain the adjustable ends of the said links, for the purpose specified, all substantially as described.

3. In a dust-collector of the class described, a vertically-movable cleaner adapted to be moved up and down along the filtering-tubes, in combination with a series of endless carrying-chains upon which the said cleaner is mounted, and which are adapted to impart a positive and uniform up-and-down movement to the said cleaner, the parallel driving-shaft connected as shown, by which the said chains are actuated, the slotted reversible links 14 pivotally mounted at one end upon the carrying-chains and adapted to support the said cleaner in the other end, and so arranged as to be adapted for an automatic reversal for the purpose specified, and the slotted blocks 15 arranged as shown, and for the purpose set forth, all substantially as described.

4. In a dust-collector, the slotted links 14 having one end pivotally mounted upon said carrying-chains, and provided at their other ends with the slotted and apertured blocks 15 in which the said cleaner is so secured that the said links are adapted for an automatic reversal, for the purpose specified, all substantially as described.

5. In a dust-collector having upright filtering-tubes, the combination of a traveling cleaner embracing the said tubes, as shown, a series of endless carrying-chains arranged as described, a series of sprocket-wheels on which said chains are mounted, means for pivotally mounting the said cleaner upon the said chains, whereby a positive up-and-down movement is imparted to the cleaner-frame, and means for actuating the said chains, substantially as described.

Signed by me, at Fort Wayne, Allen county, State of Indiana, this 13th day of September, 1895.

FOREST G. GAUNTT.

Witnesses:
HARRY J. OLDS,
MANASSEH G. GARARD.