

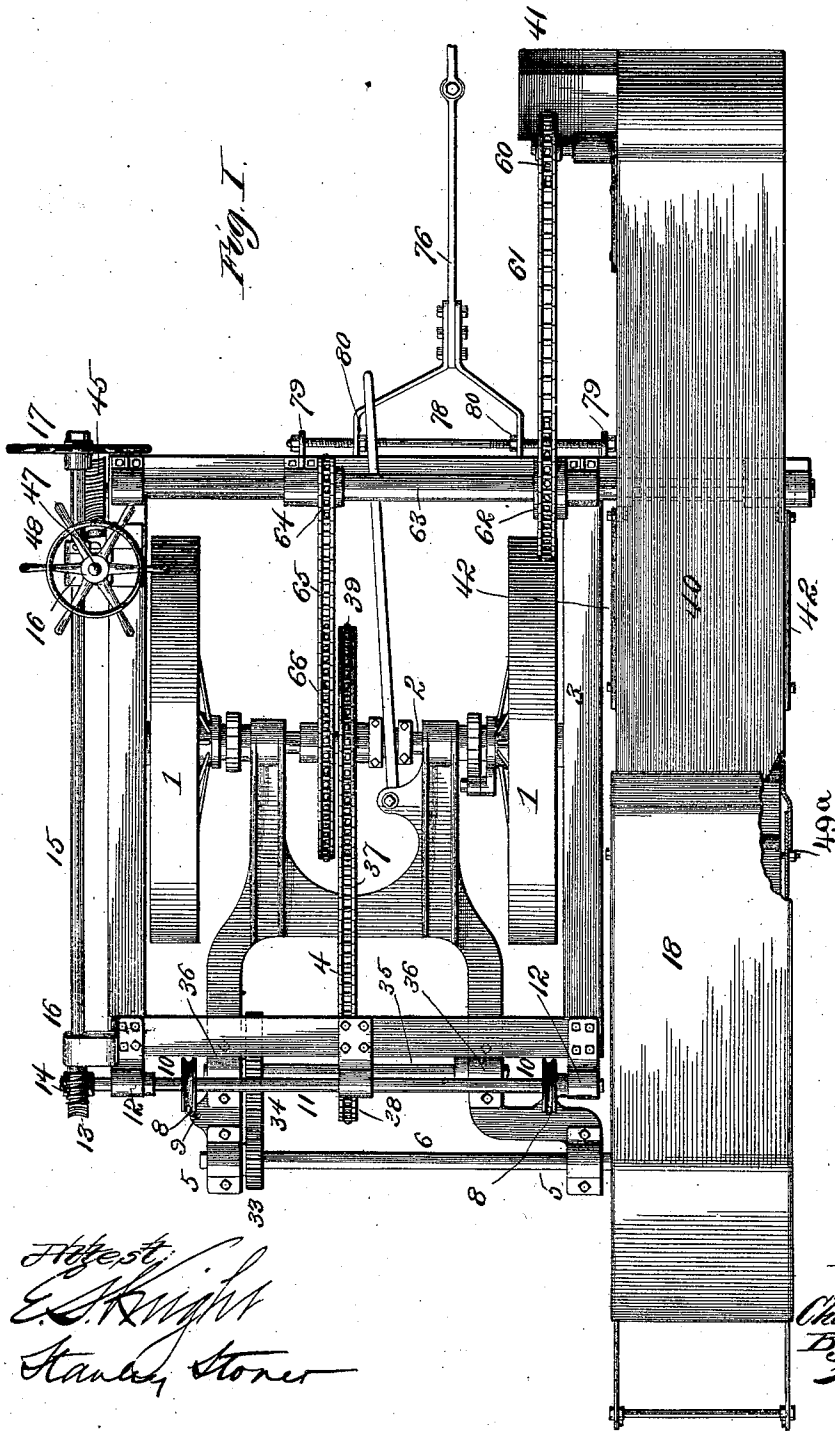
(No Model.)

5 Sheets—Sheet 1.

C. CHRISTOPH.
STREET SWEEPER.

No. 576,091.

Patented Feb. 2, 1897.



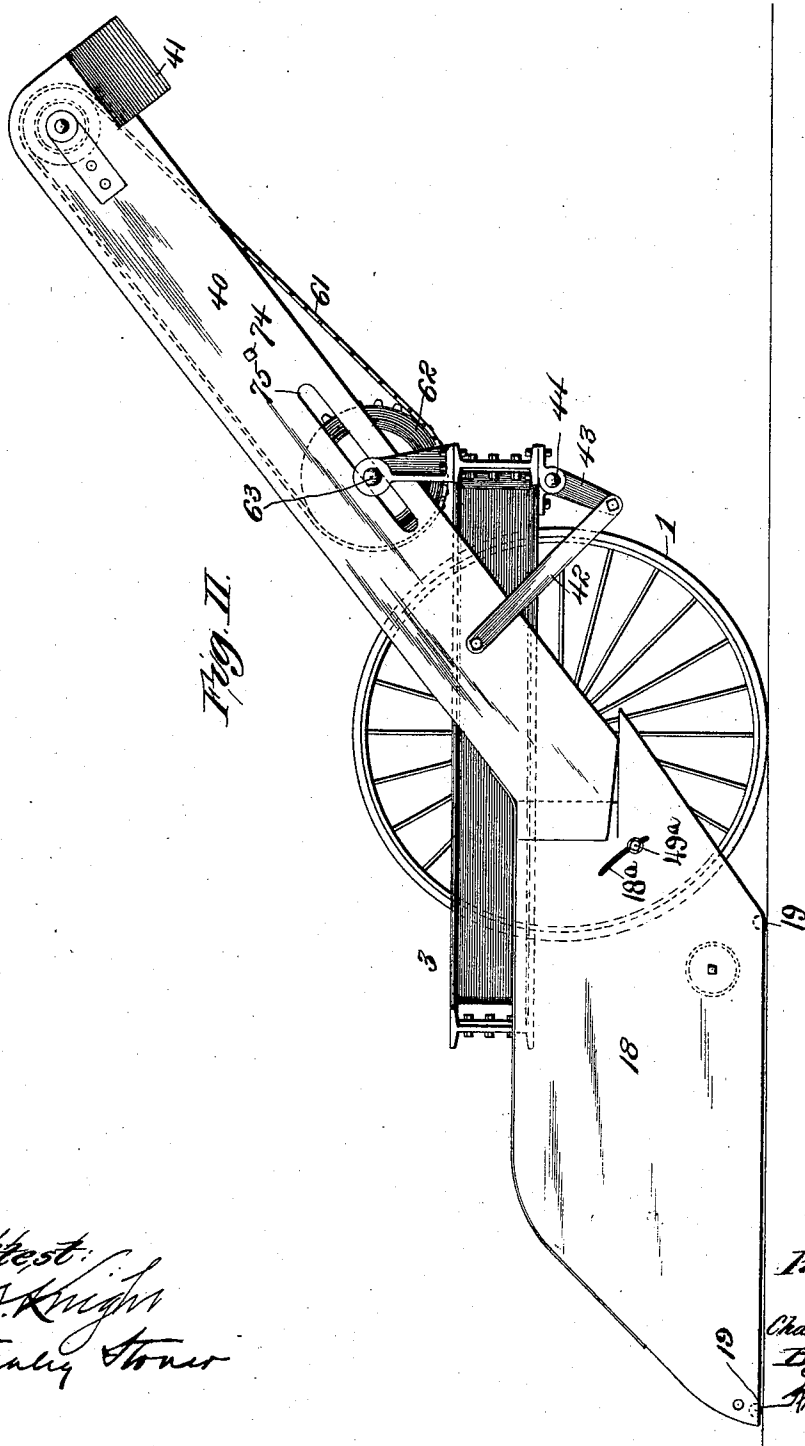
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Attest:
E. S. Knight
Stanley Stoner

Inventor:
Charles Christoph
By
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Atty's.

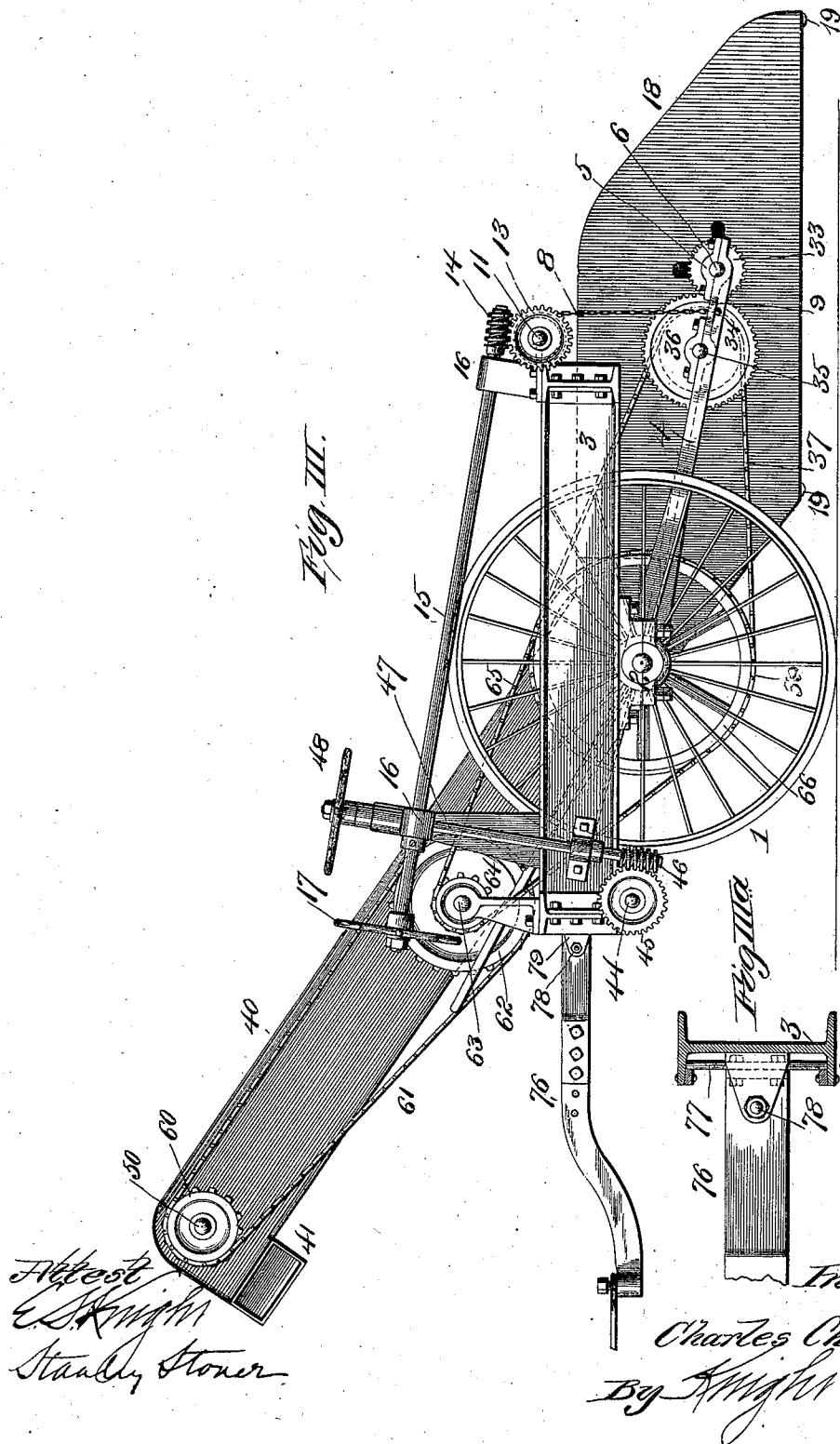
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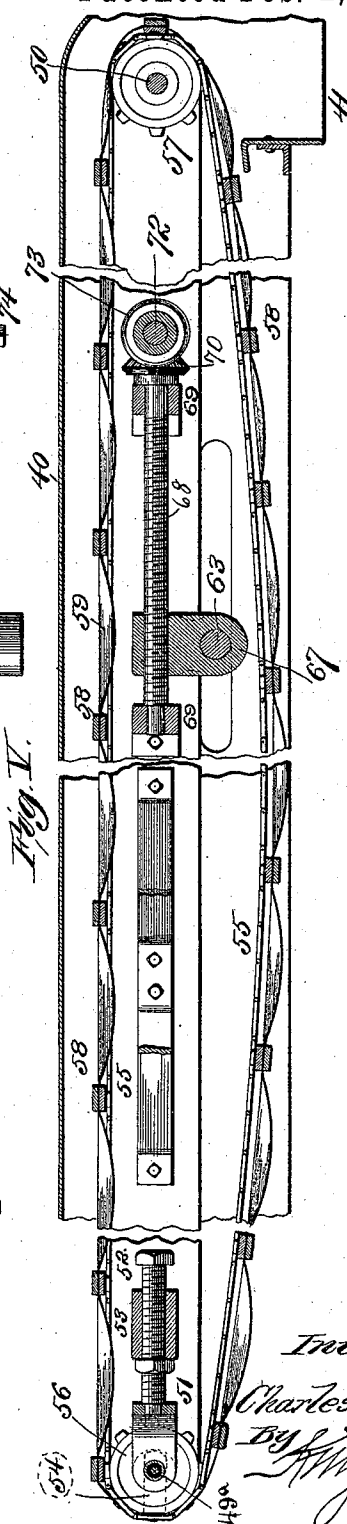
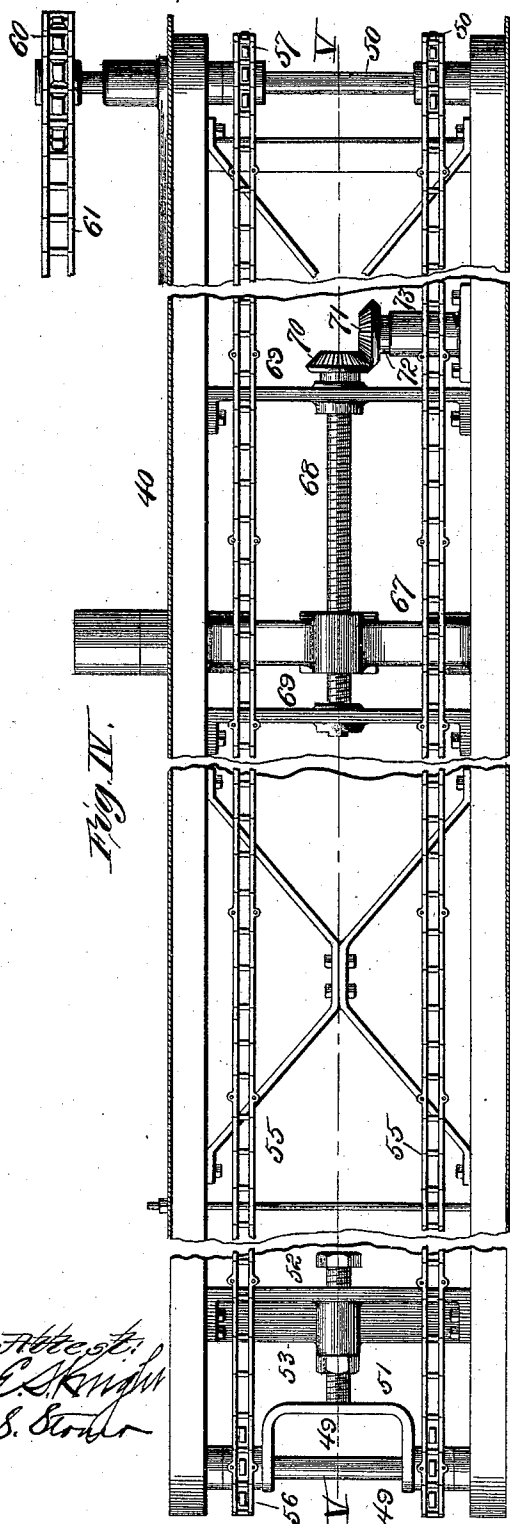
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Patented Feb. 2, 1897.



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(No Model.)

5 Sheets—Sheet 5.

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Fig. VI.

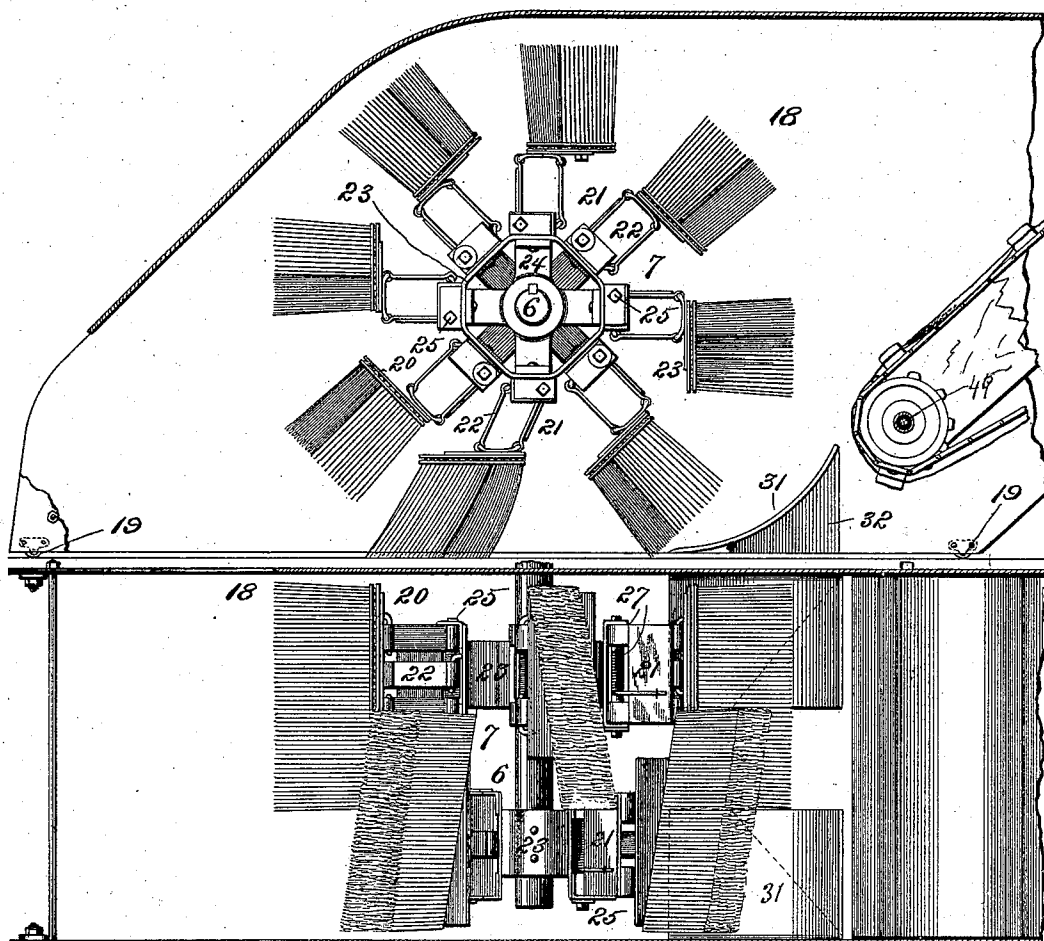
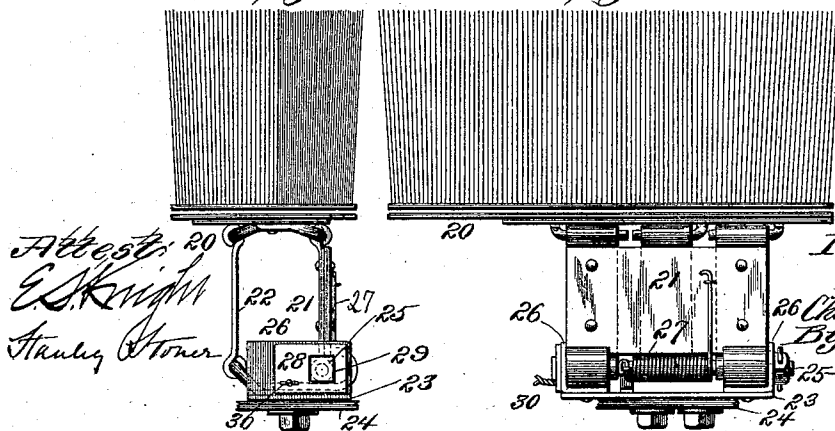


Fig. VII.

Fig. VIII.

Fig. IX.



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UNITED STATES PATENT OFFICE.

CHARLES CHRISTOPH, OF ST. LOUIS, MISSOURI, ASSIGNOR OF THREE-FIFTHS
TO JOHN DIETERICH, JR., AND CHARLES ENOCH UXA, OF SAME PLACE.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 576,091, dated February 2, 1897.

Application filed July 22, 1895. Serial No. 556,793. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CHRISTOPH, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Street-Sweeping and Dirt-Loading Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a machine for employment in the removal of the accumulations of dirt on streets, the device being more particularly intended for use in picking up the dirt and loading it after the dirt has been swept into swaths by the ordinary sweeping-machine.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a top view or plan. Fig. II is a side elevation. Fig. III is a side elevation of the opposite side from that shown in Fig. II. Fig. III^a is an enlarged detail view of the draft-adjustment device. Fig. IV is a top view of the conveyer. Fig. V is a vertical section taken on line V V, Fig. IV. Fig. VI shows an end view of the rotary brush and a vertical section of the brush-housing. Fig. VII is a top view of the brush, the housing being shown in horizontal section. Fig. VIII is an enlarged detail end view of one of the brush-sections. Fig. IX is an enlarged side elevation of one of the brush-sections.

Referring to the drawings, 1 designates the ground-wheels, rigidly mounted on the axle 2, and 3 is a four-sided frame mounted on said axle.

4 designates an arm loosely mounted on the axle 2 and having in its outer ends boxes 5 for the reception of the shaft 6 of the rotary brush 7. The brush is arranged to be raised and lowered through the medium of mechanism connected to the arm 4. This mechanism consists of chains 8, each secured at one end to the arm 4 at 9 and secured at the opposite ends to pulleys 10, rigidly mounted on a shaft 11, journaled in boxes 12 on the frame 3. At one end of the shaft 11 is a worm-wheel 13, with which is arranged to mesh a worm 14 on a shaft 15, journaled in boxes 16 on the frame 3. This last-mentioned shaft is provided with

a hand-wheel 17, on the turning of which the shaft 11 is rotated, and the chains 8 are wound or unwound on the pulleys 10 and the brush is elevated or lowered.

The brush is inclosed in a housing 18, provided with rollers 19, that travel on the ground and prevent wear of the housing through contact with the ground. This housing is supported on a shaft 35 and is raised or lowered in the movement of the arm 4. Such housing is very essential to my machine, for the reason that without its employment the dirt is liable to be blown aside as it is elevated by the brush, and, further, were it not for its employment the brush would throw the dirt to one side, and in consequence the work of the machine would not be satisfactory, inasmuch as much of the dirt would be left on the street and the desired end of a clean pick-up be thus defeated.

A material feature of my invention consists in so constructing a combined sweeping and loading machine that the brush may be run in close contact with the street-curb, and the brush and conveyer are entirely at the side of the running-gear and operating mechanism of the machine, whereby the dirt is carried up remote from the rest of the machine and does not pass over the machine, a very objectionable feature in loading-machines of this class.

The brush is composed of a number of brush-sections, and each section is set at an angle in such manner as to throw the dirt toward the center of the interior of the housing, and each section is mounted in connection with a spring, which permits of independent movement in the event of an obstruction being encountered.

20 designates the brush-sections, which have loose connection with plates 21 and links 22, as clearly illustrated in Figs. VIII and IX. The links 22 are loosely connected to rings 23, secured to spiders 24 on the brush-shaft 6, and the plates 21 are mounted on shafts 25, supported in angle-plates 26, secured to the rings 23. On the shafts 25 are spiral springs 27, one end of which is secured to the shaft 25 and the other end to the plate 21, and one end of each shaft 25 is square and arranged to receive a plate 28, having a square open-

ing 29. This plate forms a lock to prevent the shaft 25 from turning, and is secured to one of the angle-plates 26 by means of a fastening 30. When the shaft has been turned 5 to wind the spiral spring 27 and the spring has received the desired tension, the plate 28 is secured in position and the tension produced is retained.

31 designates a concave plate that forms a 10 guide to direct the dirt onto the conveyer, and at each side of the interior of the housing 18 is a plate presented at an angle, so that the dirt is carried to a central position with relation to the brush in order that the brushes 15 may readily pick the dirt up to transfer it to the conveyer.

The brush-shaft 6 is provided with a spur-wheel 33, that is engaged by a spur-wheel 34 on a shaft 35, mounted in boxes 36 on the arm 20 4. Motion is imparted to the spur-wheel 34 through the medium of a drive-chain 37, that engages a sprocket-wheel 38 on the shaft 35 and a sprocket-wheel 39 on the axle 2, and the motion imparted to the spur-wheel 34 is 25 transmitted to the spur-wheel 33 on the brush-shaft.

40 designates the conveyer-housing, supported on the upper shaft of the inclosed carrier and on its raising and lowering links, 30 which at its lower end is open to the interior of the brush-housing 18, where the conveyer receives the dirt picked up by the brush, and the housing is provided at its upper end with a discharge-spout 41, through which the dirt 35 is emptied into the wagon or cart to which the machine is attached. This housing and the conveyer within it are raised and lowered by the following-described means:

42 designates links, each pivotally connected at one end to the housing 40 and having pivotal connection at the opposite end to 40 arms 43 on a shaft 44, mounted in boxes on the frame 3. The opposite end of this shaft 44 carries a worm-wheel 45, that is engaged 45 by a worm 46 on a vertical shaft 47, provided with a hand-wheel 48, on the turning of which hand-wheel the shaft 44 is caused to rotate and move the arms 43 and the links 42, and thus lift or lower the housing and conveyer.

50 At the lower end of the conveyer-housing is a shaft 49 and at the upper end is a shaft 50. The shaft 49 is a hollow one, and through it extends a bolt 49^a, the ends of which project through curved slots 18^a in the housing 55 18, and through this means the housings 18 and 40 are connected together and the housing 18 is permitted to tilt in passing over an obstruction. The shaft 49 has fitted to it an arm 51, which carries a screw 52, and this 60 screw works in a block 53, secured between the sides of the housing in such manner that by the turning of the screw the shaft 49 will be moved in the elongated slot 54 and the tightness of the conveyer may be regulated.

65 55 designates drive-chains which travel on idlers 56 on the shaft 49 and on drive-wheels 57 on the shaft 50. These chains have con-

70 nected to them a number of pairs of slats 58, between the inner faces of which slats an apron 59 is secured. The dirt on being picked up by the brush is thrown onto the apron 59, and the conveyer in its movement carries it up through the housing to the discharge-pipe 41. The conveyer is moved by means of a 75 drive-wheel 60 on the shaft 50, which drive-wheel is engaged by a drive-chain 61, that passes around a drive-wheel 62 on a shaft 63, and motion is imparted to the shaft 63 through means of a drive-wheel 64, engaged by a 80 drive-chain 65, bearing upon a drive-wheel 66 on the axle 2 of the machine.

In Figs. IV and V is shown mechanism for regulating the length of distance from the rear end of the housing to the upper end of the conveyer, thereby allowing of a change in the 85 combined length of the brush and conveyer housings. In this mechanism 67 designates a block loosely mounted upon the shaft 63, and 68 is a screw that works in a threaded opening in said block 67 and has a bearing in cross-bar 90 69, and is provided at one end with a bevel-pinion 70, the teeth of which mesh with the teeth of a bevel-pinion 71 on a shaft 72, mounted in a box 73 on the side of the conveyer-housing. The shaft 72 is provided 95 with a square end 74, by which it may be engaged with a wrench for the purpose of turning it. When the conveyer-housing is to be moved by means of this mechanism, the wrench is applied to the end 74 of the shaft 100 72, and on the wrench being turned the bevel-pinion 71 turns the bevel-pinion 70, which turns the screw 68 in the block 67, and owing to the block being rigidly connected to the machine the conveyer-housing is caused to 105 travel in accordance with the direction in which the screw 68 is turned. The slots 75 in the sides of the housing permit of this movement of the conveyer-housing.

76 designates the draft-bar of the machine, 110 which is designed to be connected in any suitable manner to the wagon or cart to which the machine is connected. This draft-bar is made adjustable sidewise with relation to the frame of the machine. The bar is connected 115 to a sliding plate 77, fitting against the front section of the frame 3, and a screw 78, supported in ears 79, passes through the arms of the bar, and on this screw are nuts 80, on the movement of which nuts the draft-bar may 120 be moved sidewise, as desired.

I claim as my invention—

1. In a sweeping and loading machine, the combination of a frame and ground-wheels, a pivoted arm, a brush supported by said arm, 125 a housing inclosing said brush, a conveyer, a housing inclosing said conveyer, said housings being supported by the running-gear of the machine, and a bolt passing through said housings arranged to hinge them together, 130 substantially as described.

2. In a sweeping and loading machine, the combination of a running-gear, a brush supported by said running-gear, a conveyer, a

block supported by said running-gear, a screw-shaft supported in the frame of said conveyer and arranged to operate in said block, a pinion on said screw-shaft, and a shaft provided with a pinion arranged to engage the pinion on said screw-shaft, substantially as described.

3. In a sweeping and loading machine, the combination of a rotary brush formed of sections, the brush-shaft on which said sections are supported, a frame on said shaft, links having pivotal connection with said frame and said brush-sections, plates having pivotal connection with said frame and said brush connections and springs arranged to bear against said plates, substantially as described.

4. In a sweeping and loading machine, the combination of a rotary brush formed of sections, the brush-shaft on which said sections are supported, a frame on said shaft, links

having pivotal connection with said frame and said brush-sections, shafts mounted on said frame, plates mounted on said shafts, said plates having pivotal connections with said brush-sections, springs attached to said shafts and said plates, and locking-plates arranged to prevent the turning of said shafts, substantially as described.

5. In a sweeping and loading machine, the combination of a frame and ground-wheels, a conveyer-housing, a conveyer, a block supported by said frame, a screw-shaft supported in said housing and arranged to work in said block, a shaft supported in said housing, and pinions on said screw-shaft and said shaft, substantially as and for the purpose set forth.

CHARLES CHRISTOPH.

In presence of—

E. S. KNIGHT,
STANLEY STOVER.