

(No Model.)

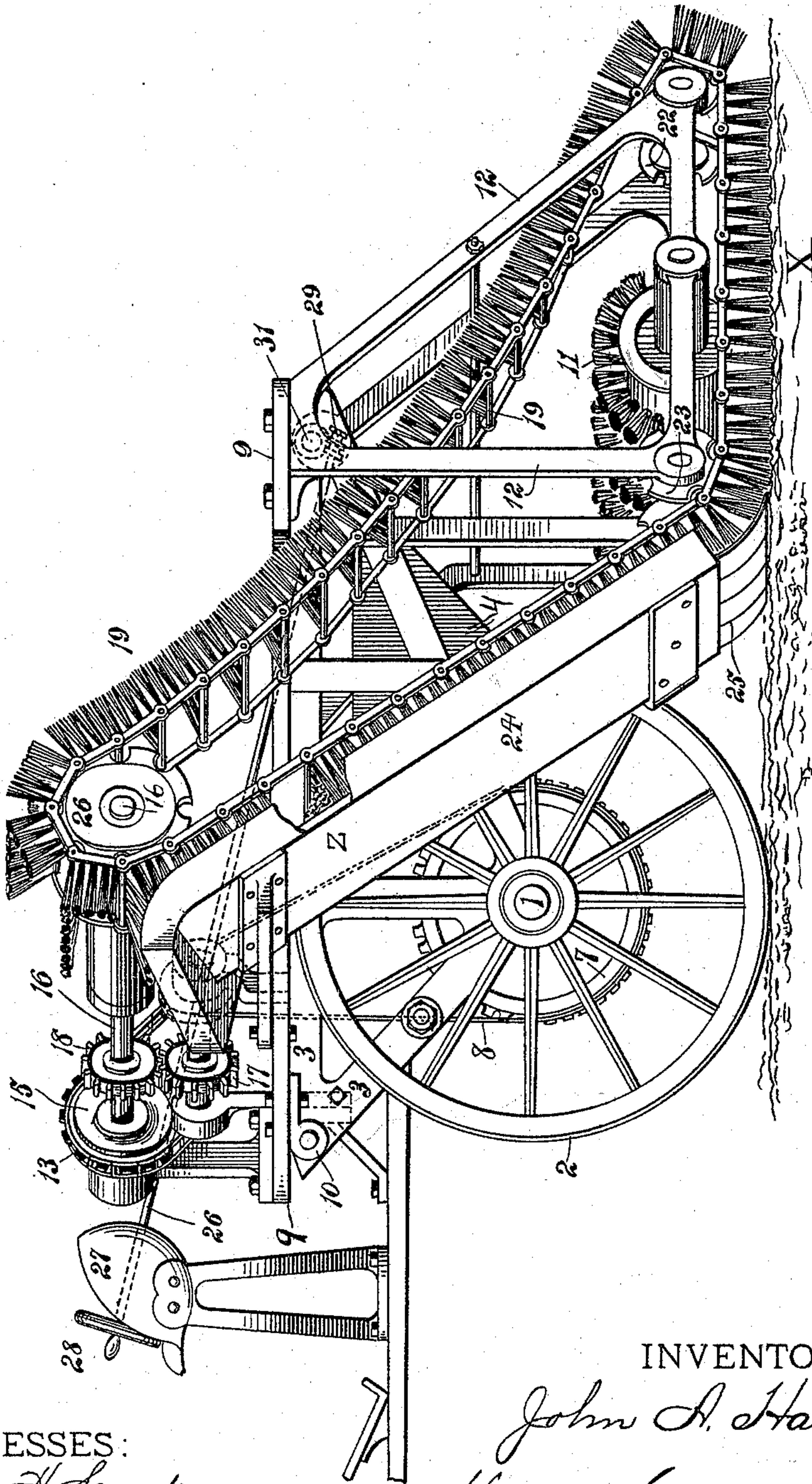
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J. A. HANLON.  
STREET SWEEPER.

No. 585,933.

Patented July 6, 1897.

Fig. 1



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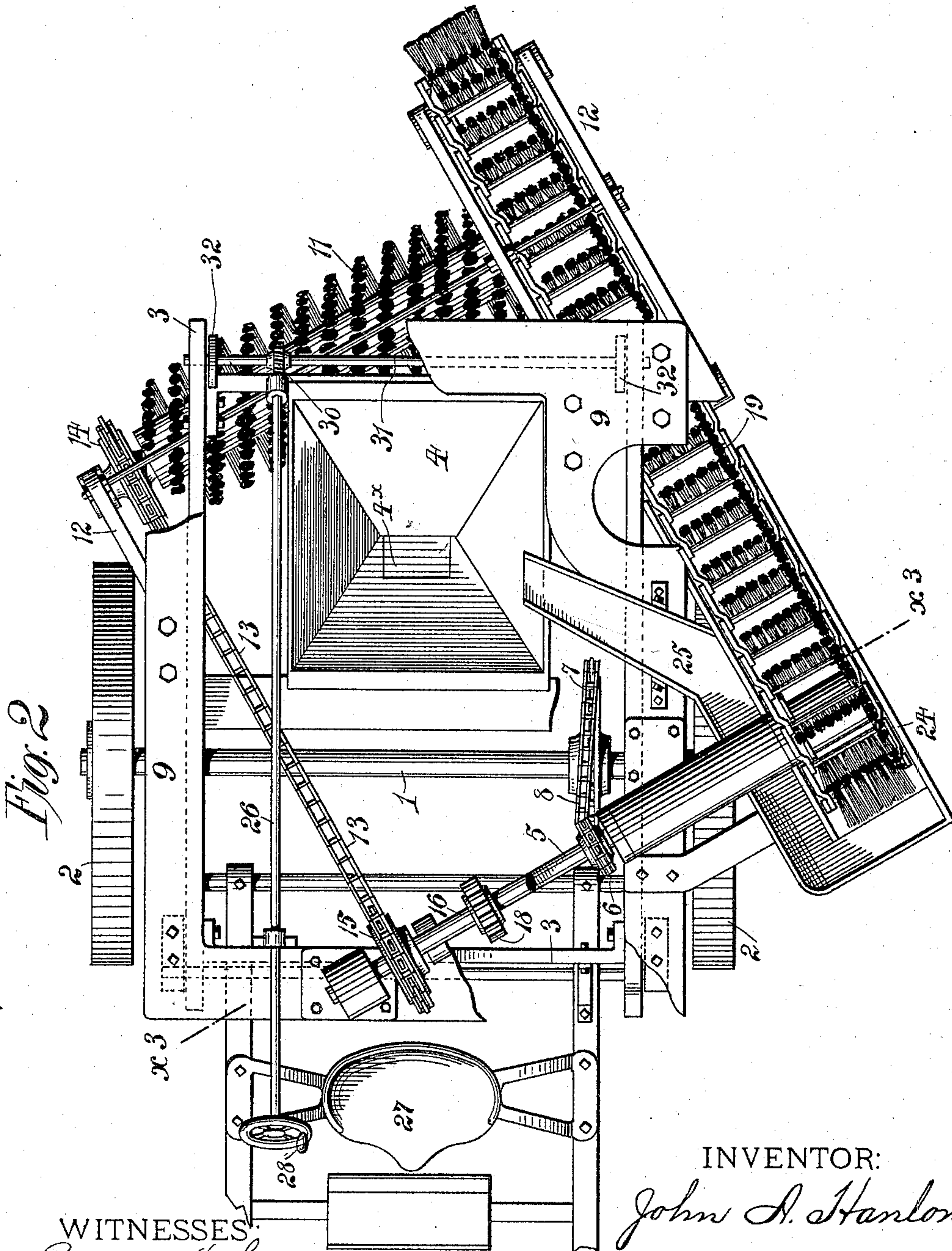
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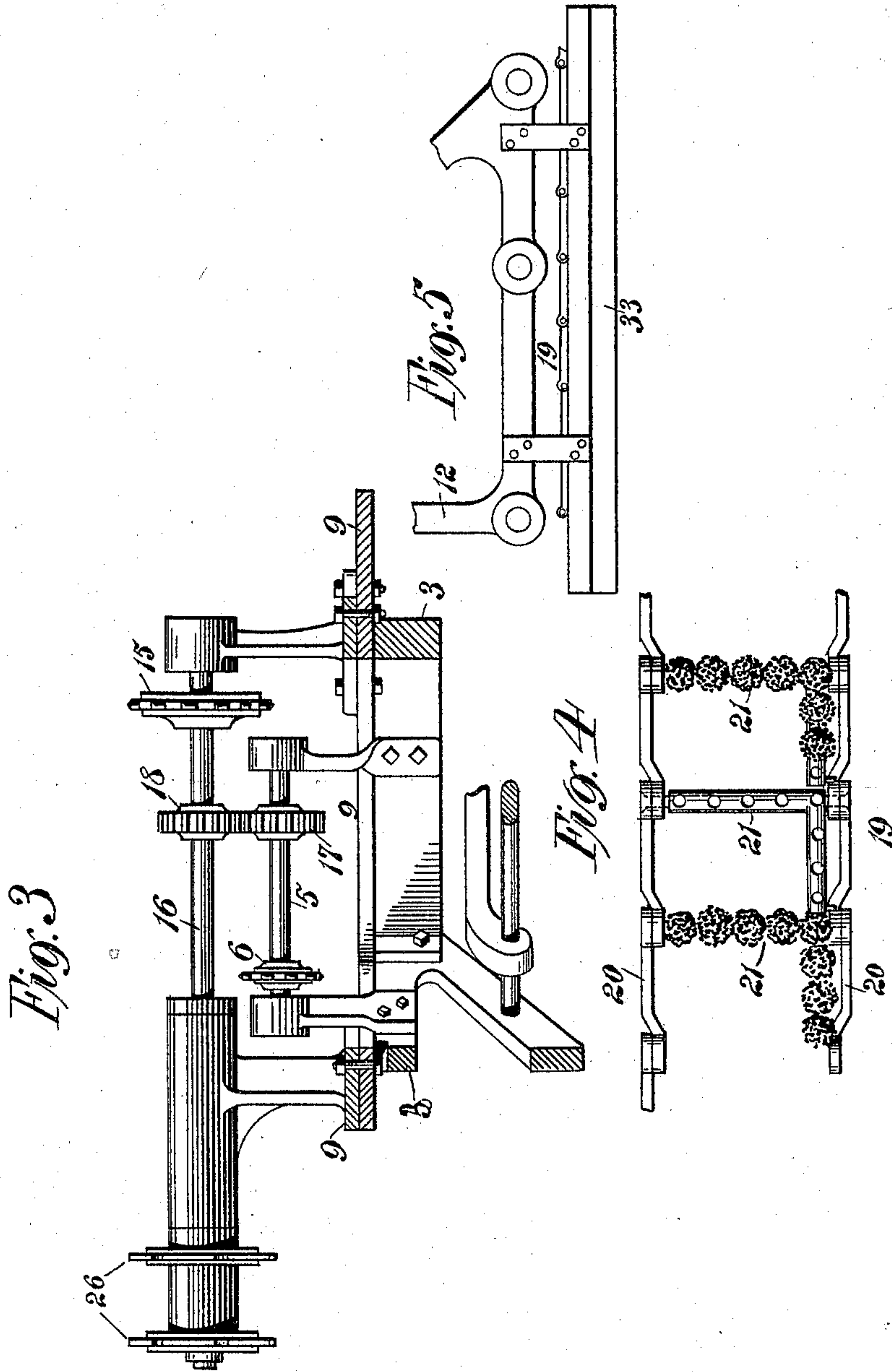
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# UNITED STATES PATENT OFFICE.

JOHN A. HANLON, OF BROOKLYN, NEW YORK.

## STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 585,933, dated July 6, 1897.

Application filed September 3, 1896. Serial No. 604,798. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. HANLON, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in a Combined Street-Sweeper and Loader, of which the following is a specification.

My invention relates to the class of devices employed for sweeping up dust and dirt from streets with the aid of a rotary broom and then elevating and discharging the sweepings into a receptacle carried by the sweeper.

The principal object of the invention is to provide an apparatus which will take up the sweepings and leave a clean wake, one which will be simple, durable, and inexpensive, and one wherein the draft will not be excessive.

An embodiment of the invention is illustrated in the accompanying drawings.

Figure 1 is a side elevation of the apparatus, the left-hand side being shown. Fig. 2 is a plan of the apparatus. Fig. 3 is a fragmentary transverse section on the line  $x^3$  in Fig. 2, showing the operating-shafts. Fig. 4 is a fragmentary detail plan view of a part of the elevator-chain on a larger scale than the principal views. In this figure some of the brush-tufts are omitted in order to show the form of the L-shaped holder. Fig. 5 is a detail view showing the endless conveyer and elevator provided with another form of side guard than that seen in Fig. 4.

Premising that I do not limit myself to the exact mechanical construction herein shown, but have represented the apparatus in a simple form, I will now describe the same as illustrated in the drawings.

On an axle 1 are the ground-wheels 2, which may be ratcheted on the axle in a well-known way to permit the wheels to rotate backward without turning the axle. On the axle is mounted a strong frame 3, in which is mounted the receptacle or bin 4 to receive the sweepings, and mounted also on the frame 3 in suitable bearings is a driving-shaft 5, Fig. 3, on which is a sprocket-wheel 6, which is geared to a sprocket-wheel 7 on the axle through the medium of a chain 8. Thus the axle drives the shaft 5 when the apparatus is drawn over the ground.

On the frame 3 is mounted an upper bed-frame 9, which is hinged to the frame 3 at the front end, as seen at 10. In Fig. 2 a part of the upper frame 9 is broken away to better show the construction. This upper bed-frame carries the rotary broom 11 and the mechanism for elevating and depositing the sweepings. The broom 11 is arranged obliquely to the axle, as shown, and has bearings in suitable bracket-frames 12 on the bed-frame 9. It is driven through the medium of an endless chain 13, gearing together a sprocket-wheel 14 on the broom-axis and a sprocket-wheel 15 on a counter-shaft 16, mounted in the frame 9, the shaft 16 being driven from the shaft 5 through gear-wheels 17 and 18 on the respective shafts 5 and 16, as clearly shown.

The sweepings from the broom 11 are elevated by means of an endless brush elevator and conveyer, (designated as a whole by 19,) which is arranged to move in a plane at right angles, or substantially so, to the broom-axis, so as to cross diagonally the line of sweepings thrown up by the broom as the apparatus moves along. As herein shown, this endless elevator is composed of two endless chains 20 and L-shaped flights or brushes 21, (see Fig. 4,) mounted at intervals in said chain. One arm or branch of the brush extends across transversely from one chain to the other and constitutes a flexible or yielding flight and sweeper and the other branch extends along the outer side of the conveyer and elevator from one brush-flight to the next, forming together a wall or keeper along the outer side of the elevator. This endless elevator 19 is mounted on pairs of sprocket-wheels 22 and 23 in the bracket-frame 12, one pair back of and the other pair in front of the broom 11, so that the portion of the elevator at X in Fig. 1 moves over the ground and level thereof with substantially. In front of the pair of wheels 23 the elevator enters an inclined chute 24, mounted on the frame 9 and provided at its lower end with a rearwardly-projecting apron 25, which I prefer to form of thin flexible steel strips which will rest on and readily adapt themselves to the inequalities of the ground being swept. At the upper end of the chute 24 the endless-chain conveyer is



supported on a pair of driving sprocket-wheels 26, fixed on the counter-shaft 16. Thus the rotation of said shaft drives the endless-chain elevator and conveyer and causes it to carry the sweepings up the chute 24, as indicated at Z in Fig. 1, where the side of the chute and the lateral brushes of the conveyer are broken away to illustrate the operation.

It will be noted that the characteristic feature of my apparatus is the arrangement of the endless-chain conveyer and elevator in a vertical plane obliquely across the line of movement of the apparatus and substantially at right angles to the axis of the obliquely-arranged broom, a portion of the conveyer and elevator sweeping over the surface, as seen at X in Fig. 1, at the point where it moves across the line of the broom-axis. This arrangement enables the conveyer to take up all of the sweepings clean.

The flights of the conveyer and the portions making up the side guard form V-shaped pockets which sweep over the surface in the direction of the line of draft and also obliquely thereto by their own movement. Thus the flights do not move forward one directly behind another, as in other constructions, and the apron 25 is placed laterally substantially out of the path swept, so that it may rest on the ground. The apparatus is thus adapted for sweeping debris of considerable size as well as dust.

At the upper end of the chute 24, which will be properly elevated above the platform or frame of the apparatus, a spout 25<sup>a</sup> receives the sweepings and carries them by gravity down to the bin 4, which may have a slide 4<sup>x</sup> in its bottom for discharging its contents.

As before stated, the upper frame 9, carrying the broom and endless conveyer, is hinged at its front end to the front end of the lower frame 3. The purpose of this construction is in part to enable the operator to lift the broom, &c., clear off the ground when going to and from work and in part to lift the wheel 18 out of gear with the wheel 17, and thus throw the broom and elevator out of gear.

Any simple lifting mechanism may be employed for raising the rear end of the upper bed-frame 9. That shown herein comprises a shaft 26, extending from the driver's seat 27 back to the rear of the frames. This shaft has an operating-crank 28 on its front end and a screw 29 on its rear end, the latter gearing with a worm-wheel 30, fixed on a cam-shaft 31, rotatively mounted in bearings on the frame 3. On this shaft 31 are fixed cams or eccentrics 32, which take under and raise the bed-frame 9 when the shaft 31 is rotated. This is a simple and convenient means for accomplishing the result, but other means may be employed as well.

In lieu of employing brushes of an L shape on the conveyer 19, the latter may have the transverse brushes or flights only and have a side guard fixed on the bracket-frame 12 at

that side, as shown in Fig. 5, wherein 33 represents such a side guard or keeper of any suitable material, which will of course be parallel with the conveyer and elevator.

It will be noted that the horizontal portion of the conveyer and elevator extends back of or behind the rotary broom, and at whatever angle the axis of the latter may stand with reference to the line of movement of the sweeper the conveyer will be arranged in a plane substantially at right angles thereto, so that an angular space or pocket is formed at the junction of the broom and conveyer with its apex directed toward the rear.

In order to better show the mechanism, I have not shown the apparatus inclosed to prevent the escape of dust. This is a common expedient in street-sweepers, and my apparatus may be so inclosed.

The spiral arrangement of the tufts in the rotary broom serves to drive the sweepings over toward one end of the broom, as will be well understood, and also to cause the tufts to sweep the entire surface over which the broom moves.

It will be understood that the main portion of the sweeping, or the primary portion thereof, is done by the rotary broom. The oblique horizontal portion of the conveyer sweeps up the debris thrown in front of it by the broom and carries it over to the apron 25, where it is taken up the chute.

Having thus described my invention, I claim—

1. In a street-sweeper and loader, the combination with a frame and ground-wheels, a rotating broom arranged obliquely to the line of draft, and a conveyer-chute, also arranged obliquely to the line of draft, and substantially at right angles to the broom-axis, of an endless elevator and conveyer, arranged in the same vertical plane with the chute and having a horizontal portion extending back of the rear end of the broom, whereby, in the forward movement of the sweeper and loader the horizontal portion of the conveyer is drawn over the surface in a path oblique to its own movement, substantially as set forth.

2. In a street-sweeper and loader, the combination with a frame and ground-wheels, of a rotating broom arranged obliquely to the line of draft, a chute arranged obliquely to the line of draft and having its lower end laterally out of the path swept, an endless-chain elevator and conveyer arranged in the same vertical plane with the chute, said elevator and conveyer having a horizontal portion adjacent to the rear end of the broom and extending back of the axis of the same, and a side guard to said conveyer at the side thereof opposite to the rotating broom, whereby the apron of the chute is removed from the path swept, substantially as set forth.

3. In a street-sweeper and loader, the combination with the frame, and the oblique, rotating broom, of the endless conveyer and elevator 19 and the chute, said conveyer and



elevator having L-shaped brushes 21, one branch of such brush extending transversely of the elevator to form a flight and the other branch extending along the outer side of the elevator to form a side guard, substantially as set forth.

4. In a street-sweeper and loader, the combination with a supporting-frame and wheels, of a rotating broom, arranged with its axis oblique to the line of draft, an endless-chain elevator and conveyer arranged in a vertical plane which is also oblique to the line of draft, said conveyer and elevator having a horizontal portion which sweeps the ground and extends back of the rear end of the broom, whereby the transverse flights of the conveyer are presented obliquely to the line of draft, a side guard for said conveyer on the side opposite to the broom and oblique to the line of draft, and the chute for the upright portion of the conveyer, substantially as set forth.

5. A street-sweeper and loader provided with a rotating broom, a moving conveyer and elevator for the sweepings, and a bin to receive the latter when elevated and having a lower frame on which said bin and the driving-shaft are mounted, an upper frame on which the broom, the elevator and the counter-shaft for driving same are mounted, said frames being hinged together as described, and means,

under control of the driver for elevating said upper frame, substantially as set forth.

6. In a street-sweeper and loader, the combination with a supporting-frame, a chute 24, and an oblique, endless conveyer and elevator provided with flights formed of brushes and with side guards on each flight also formed of brushes, said conveyer having a horizontal portion X, substantially as set forth.

7. In a street-sweeper and loader, the combination with a supporting-frame and ground-wheels, and a rotating broom oblique to the line of draft, of the endless conveyer and elevator arranged obliquely to the line of draft and in a vertical plane substantially at right angles to the axis of the broom at the rear end of the latter, and a chute for the upright portion of the elevator, said conveyer and elevator having flights and side guard portions of an L shape, whereby in moving over the surface obliquely to the line of draft, these latter form sweepers and pockets, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN A. HANLON.

Witnesses:

HENRY CONNETT,

A. BELL MALCOMSON.