No. 886,263.

PATENTED APR. 28, 1908.

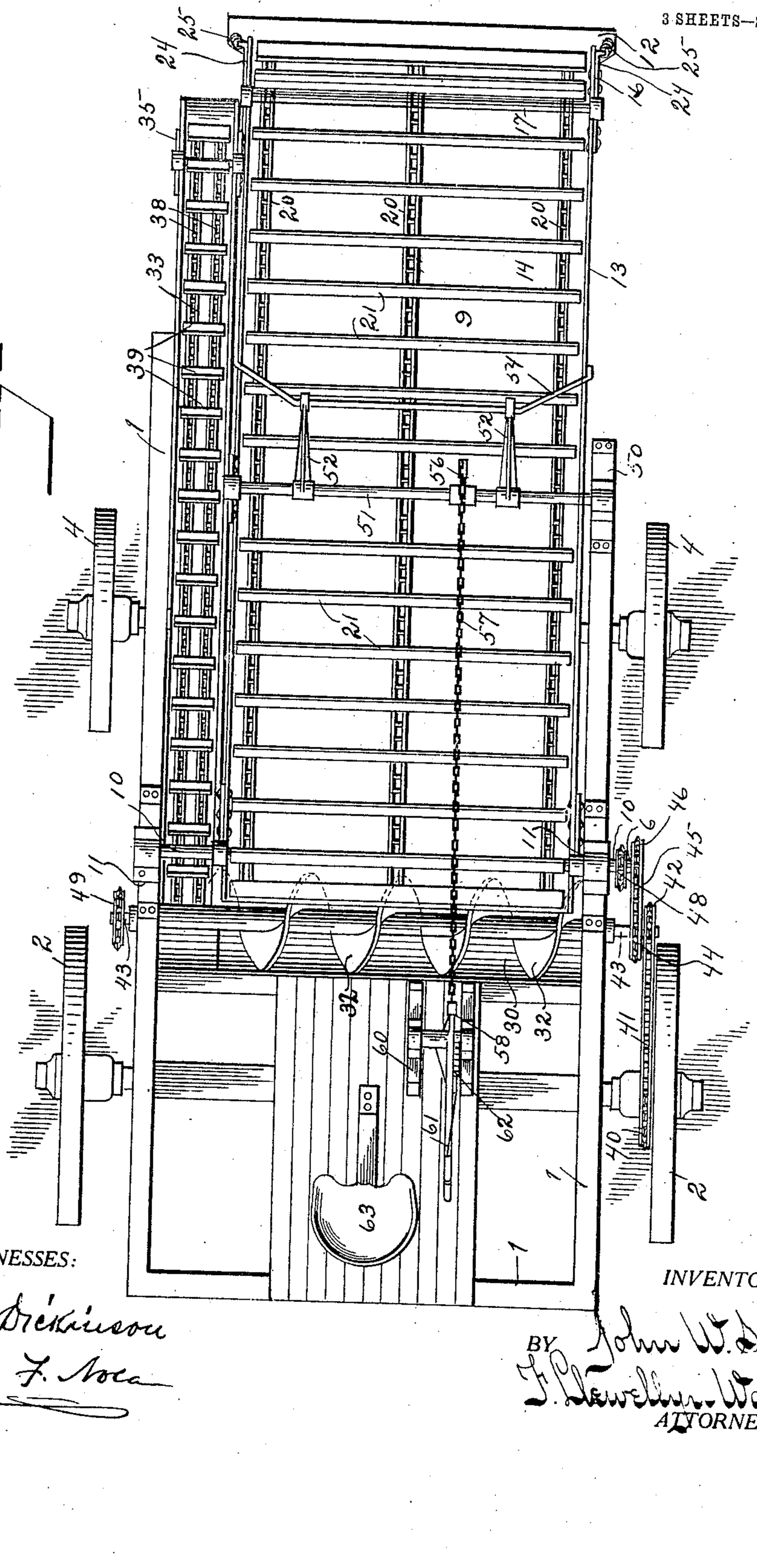
J. W. SMITH.

STREET CLEANER.

APPLICATION FILED NOV. 29, 1907.

3 SHEETS—SHEET 1.

FIG. 1.



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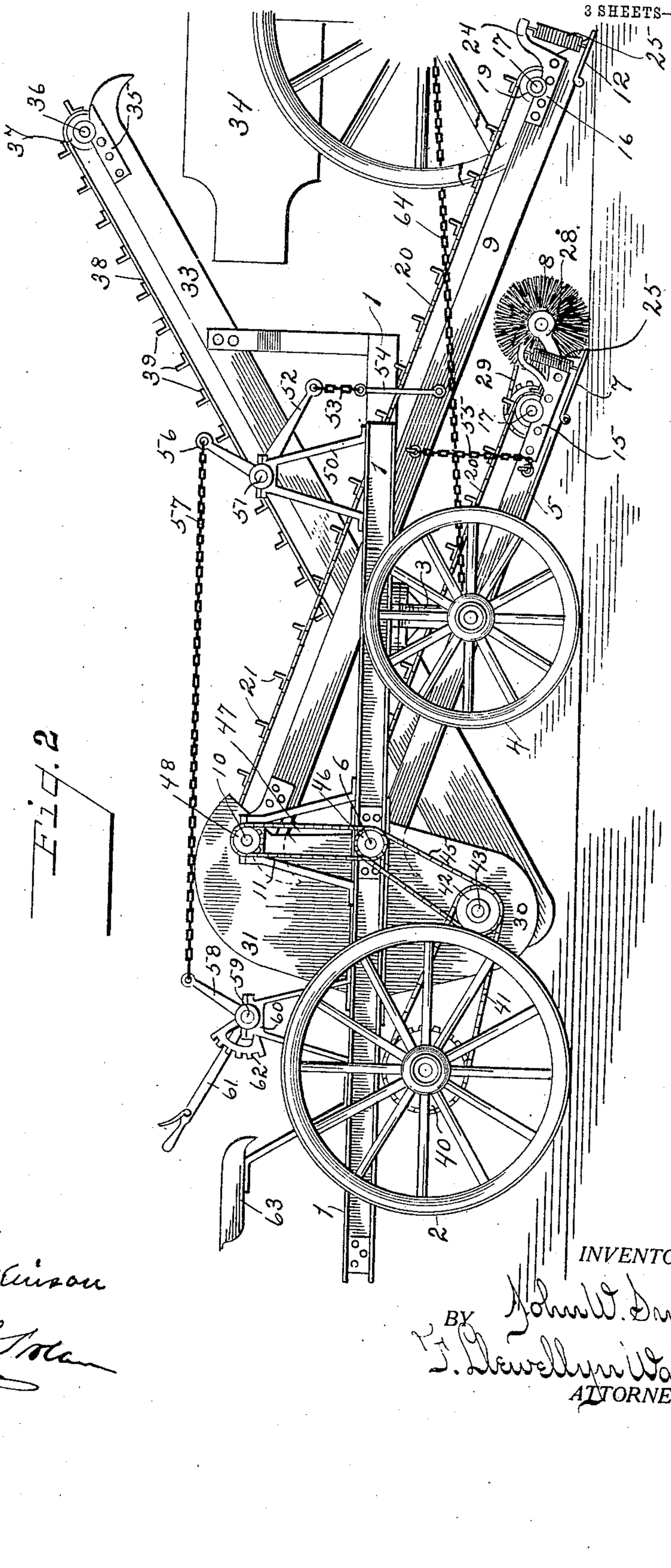

Fig. 2.

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3 SHEETS—SHEET 3.

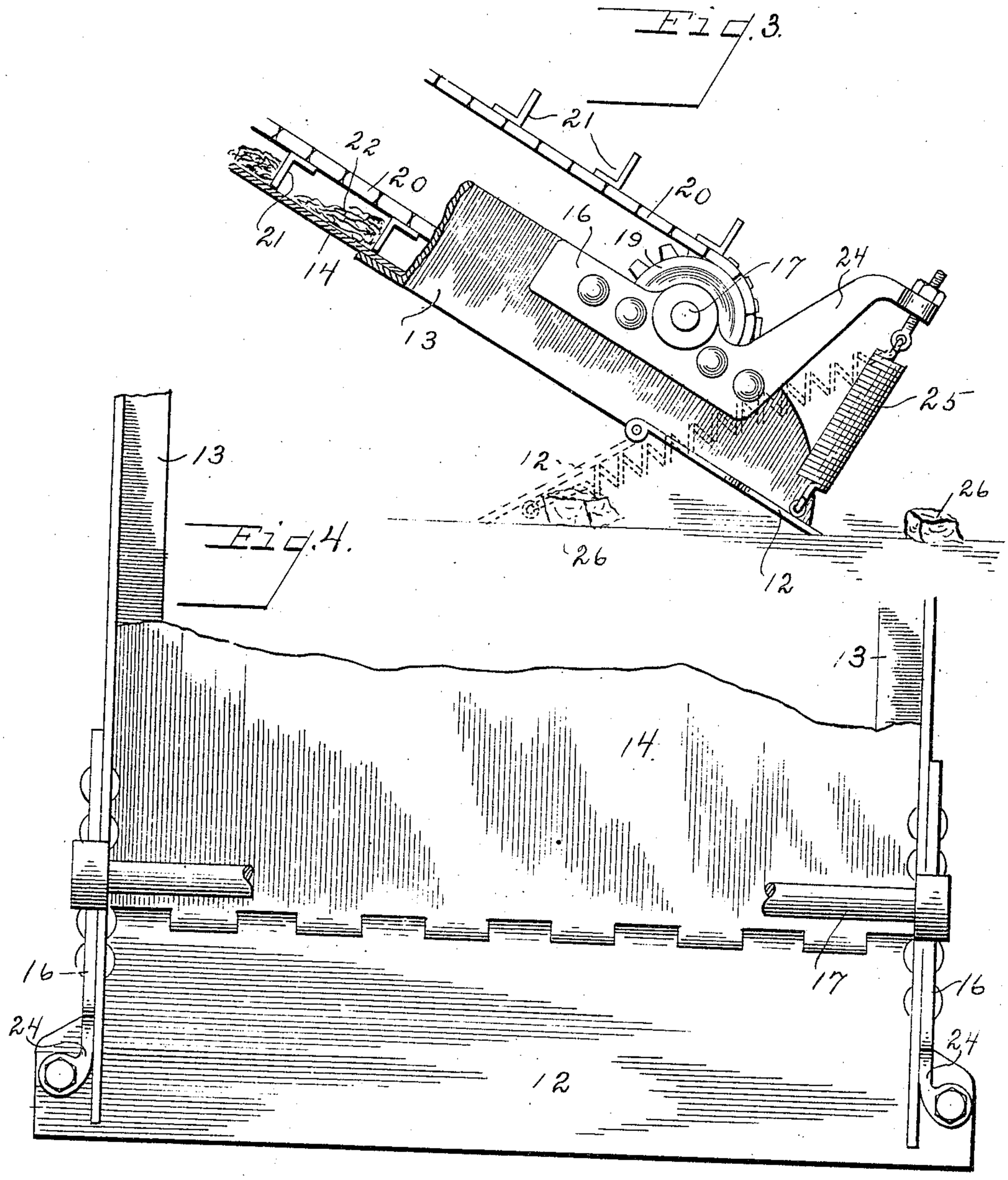

Fig. 3.

Fig. 4.

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STREET-CLEANER.

No. 886,263. Specification of Letters Patent. Patented April 28, 1908.

Application filed November 29, 1907. Serial No. 404,290.

To all whom it may concern:

Be it known that I, JOHN W. SMITH, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Street-Cleaners, of which the following is a specification.

My invention relates to cleaners and sweepers and particularly to street cleaners adapted to be drawn through the street by horses or other motive power.

The object of the invention is to greatly simplify the construction as well as the means and mode of operation of such machines, whereby they will not only be cheapened in construction, but will be rendered more efficient in use and unlikely to get out of repair.

The street cleaners now in common use are adapted to take up the dirt and dust only when in a substantially dry condition, and only such dirt as can be loosened from the pavement by the brush, which also diffuses the dirt in a cloud of dust.

One of the primary objects of the present invention is to provide a machine adapted to take up the mud and muck, as well as the dry refuse, and further one that will remove all the coarse material which may adhere to the pavement by scraping, and subsequently remove the finer particles and dust by a combined sweeping and scraping process.

A further object is to provide a device which may be attached to the rear of a wagon, and to provide means whereby the material gathered from the ground will be discharged into the wagon.

A further object is to provide an improved yielding scraper blade as hereinafter mentioned.

With the above primary and other incidental objects in view as will appear from the specification, the invention consists of the means, mechanism, construction, and mode of operation, or their equivalents hereinafter described and set forth in the claims.

Referring to the drawings Figure 1 is a plan view of the assembled machine. Fig. 2 is a side elevation of the complete machine. Fig. 3 is a detail side elevation of the lower forward end of one of the elevators, showing the scraper blade and its range of action. Fig. 4 is a plan view of one of the scrapers with the movable parts of the elevator removed.

Like parts are represented by similar characters of reference throughout the several views.

In constructing the machine there is employed a main frame 1 preferably of channel iron, mounted on four wheels in the form of a truck. The rear wheels 2 are also the drive wheels for the moving parts hereinafter described. The axle 3 of the forward wheels 4 is arched to provide sufficient space for the forwardly and downwardly extending elevator 5. The elevator 5 is pivotally mounted in the main frame 1 on the transverse shaft 6. The elevator 5 is capable of being moved about said pivotal connection, to raise the scraper 7 and brush 8 carried thereby to inoperative position. Arranged in substantially parallel position above the elevator 5 is another elevator 9 journaled on the shaft 10, mounted on suitable brackets 11 on the main frame. The elevator 9 carries at its lower forward end a scraper 12.

Inasmuch as the detail construction of the two elevators 5 and 9 and the respective scrapers 7 and 12 are substantially alike a general description will suffice for both. The sides of the respective elevators are preferably angle irons 13 arranged as shown in Figs. 3 and 4. A flat bottom 14 rests on the inturned flanges of the angle irons, forming a chute. Secured to the lower ends of the angle irons 13 are brackets 15 16 having bearings therein for transverse shafts 17, one on each elevator. Similar brackets are located adjacent the upper ends of the angle irons, and are journaled on the shafts 6 and 10 respectively. Sprocket wheels 19 are mounted on the shafts 17 of the respective elevators. Corresponding sprockets are mounted on the shafts 6 and 10. Endless chain belts 20 are provided on each of the elevators, which chains are extended about said sprockets. The chains 20 of each elevator are connected by transverse bars 21 preferably of angle iron, which are attached to the respective chains, and form carriers by which the dirt and refuse is forced upward. The dirt rests on the bottom 14 of the chute as shown at 22 and is pushed upward by the action of said angle iron bars 21. Hinged to the lower forward end of the chutes of each of the respective elevators is a yielding scraper blade 7 and 12, which normally rests on the ground and collects the dirt, loosening same from the pavement, and collecting the mud and muck as well as the dry mate-

rial. The brackets 15 16 at the forward ends of the elevators are provided with projecting arms 24. A spring 25 is attached at one end to the arm 24 and at the opposite end to the scraper blade 23. There is preferably one of these springs 25 on each side of the blade as shown in Figs. 1 and 4. In event the scraper blade 23 meets with an immovable obstruction as at 26 Fig. 3 in the course of its travel, the blade will yield about its hinged connection against the tension of the spring 25 as shown in dotted lines of Fig. 3. After the obstruction is passed the scraper blade 23 will be returned to normal position by the action of the spring 25. The elevator 9 is provided only with the scraper blade as described and is adapted to collect the muck and coarse material. The elevator 5 is provided with a scraper blade similar to that of the elevator 9 and in addition thereto a revolving brush 8, which follow the scraper of the first elevator, and collect the dust and small particles which may escape the first scraper. In instances where the mud is heavily caked on the pavement the first scraper will remove the uppermost layer, and the remainder will be removed by the second scraper; the revolving brush assists in collecting the loose, light particles.

The brush 8 is journaled in bearings in arms 28 projecting from brackets 15, and is driven by a sprocket chain 29 from the adjacent shaft 17. The upper ends of each of the elevators 5 and 9 overhang a hopper 30 supported on the main frame 1, into which they discharge. A dust hood 31 is mounted on the main frame and incloses the discharge ends of the said elevators. The bottom of the hopper 30 is formed semi-cylindrical, to conform to a spiral conveyer 32 located therein by which the material discharged into the hopper 30 from the said elevators is conveyed laterally to a third elevator 33 which extends forwardly and upwardly as shown in Fig. 1 and serves to convey the material to the wagon 34 to which the cleaner is attached.

The construction of the elevator 33 is quite similar to that of the other elevators. It is formed of angle irons and provided with a bottom as before described. Journaled in suitable brackets 35 adjacent to the upper end of the elevator is a shaft 36 carrying sprockets 37. Endless chains 38 having transverse angle iron carrier slats 39 are mounted to travel over said sprockets 37 and similar sprocket wheels at the lower end of the elevator. The various moving parts are driven from the rear carrying wheel 2. A sprocket 40 on said wheel is connected by a chain 41 to a sprocket 42 on the shaft 43 of the spiral conveyer, which actuates said conveyer. A sprocket 44 on the shaft 43 back of the sprocket 42 is connected by a chain 45 to a sprocket 46 on the shaft 6 of the elevator 5 and serves to actuate said elevator chains 20, and thereby the brush 27 through the sprocket chain 29. A similar sprocket on the shaft 6 is connected by a chain 47 with a sprocket 48 on the shaft 10, thereby driving the chains 20 of the elevator 9. The elevator 33 is driven by a sprocket chain 49 from the shaft 43 on the opposite side of the machine. The shafts 6 and 10 being both the drive shafts and the journal shafts of the pivoted elevators 5 and 9, said elevators may be raised and lowered without interfering in any manner with the driving mechanism. The raising and lowering mechanism for the elevators is as follows: Mounted on the forward part of the main frame 1 are brackets 50 in which is journaled a shaft 51. Arms 52 on said shaft are connected by a suitable link or chain 53 with a bail 54 on the uppermost elevator 9. The elevators are connected by a link or chain 55, in order that when the elevator 9 is raised the elevator 5 will be moved to inoperative position also. Secured on the shaft there is also an arm 56 connected by a link or chain 57 to an arm 58 on a shaft 59 mounted in bearings in brackets 60 near the rear of the machine. An operating lever 61 engaging a notched segment 62 is provided for oscillating said shafts to raise and lower the elevators. A seat 63 is provided for the operator. The machine is adapted to be hitched behind a wagon by suitable links or chains 64 as shown in Fig. 2. It is obvious however that horses may be attached directly to the machine and the elevator 33 and spiral conveyer disconnected from their driving mechanism, in which case the material collected will be retained and carried in the hopper 30.

It will be apparent from the above description that there has thus been produced a street cleaner possessing the particular advantages before enumerated as desirable, and which obviously is susceptible of modification in its form, proportion, detail construction, and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

Having thus described my invention I claim:

1. In a machine as described, a main frame, carrying wheels therefor, a forwardly and downwardly inclined elevator, a yielding scraper blade terminating said elevator and adapted to bear upon the ground and to collect refuse material therefrom, and a receptacle into which said material is discharged, substantially as specified.

2. In a machine as described, a main frame, carrying wheels therefor, a forwardly and downwardly inclined elevator, a scraper blade terminating said elevator and adapted to gather refuse material from the ground, a second forwardly and downwardly inclined elevator and a revolving brush coöperating

therewith to gather the material which may escape said scraper, substantially as specified.

3. In a machine as described, a main frame, carrying wheels therefor, a forwardly and downwardly inclined elevator, a scraper blade hinged to the lower portion of said elevator and adapted to bear on the ground and scrape the material therefrom, a spring adapted to return said blade to normal position after the blade has been forced therefrom by contact with an unyielding obstruction, substantially as specified.

4. In a machine as described, a main frame, carrying wheels therefor, a downwardly and forwardly inclined elevator, a scraper blade carried by said elevator and adapted to scrape the refuse material from the ground said scraper blade being further adapted to yield when brought into engagement with an obstruction, and means to return the blade to normal position when the obstruction has been passed, substantially as specified.

5. In a machine as described, a main frame, carrying wheels therefor, a forwardly and downwardly inclined elevator, a scraper blade carried by said elevator and adapted to gather refuse material by scraping the ground, a second downwardly and forwardly inclined elevator, a scraper blade and a revoluble brush coöperating with said second elevator, and following in operation the first named elevator and scraper, and means for actuating said parts, substantially as specified.

6. In a machine as described, a main frame, carrying wheels therefor, two forwardly and downwardly inclined elevators, scraper blades carried thereon, and adapted to operate successively over the same territory, a brush coöperating with said scrapers a hopper into which said elevators discharge, a spiral conveyer within said hopper, an upwardly inclined conveyer adapted to discharge the material from said hopper into an adjacent receptacle or wagon, and means to actuate said parts, substantially as specified.

In testimony whereof, I have hereunto set my hand this 23rd day of November 1907.

JOHN W. SMITH.

Witnesses:
HARRY F. NOLAN,
FRANK L. WALKER.