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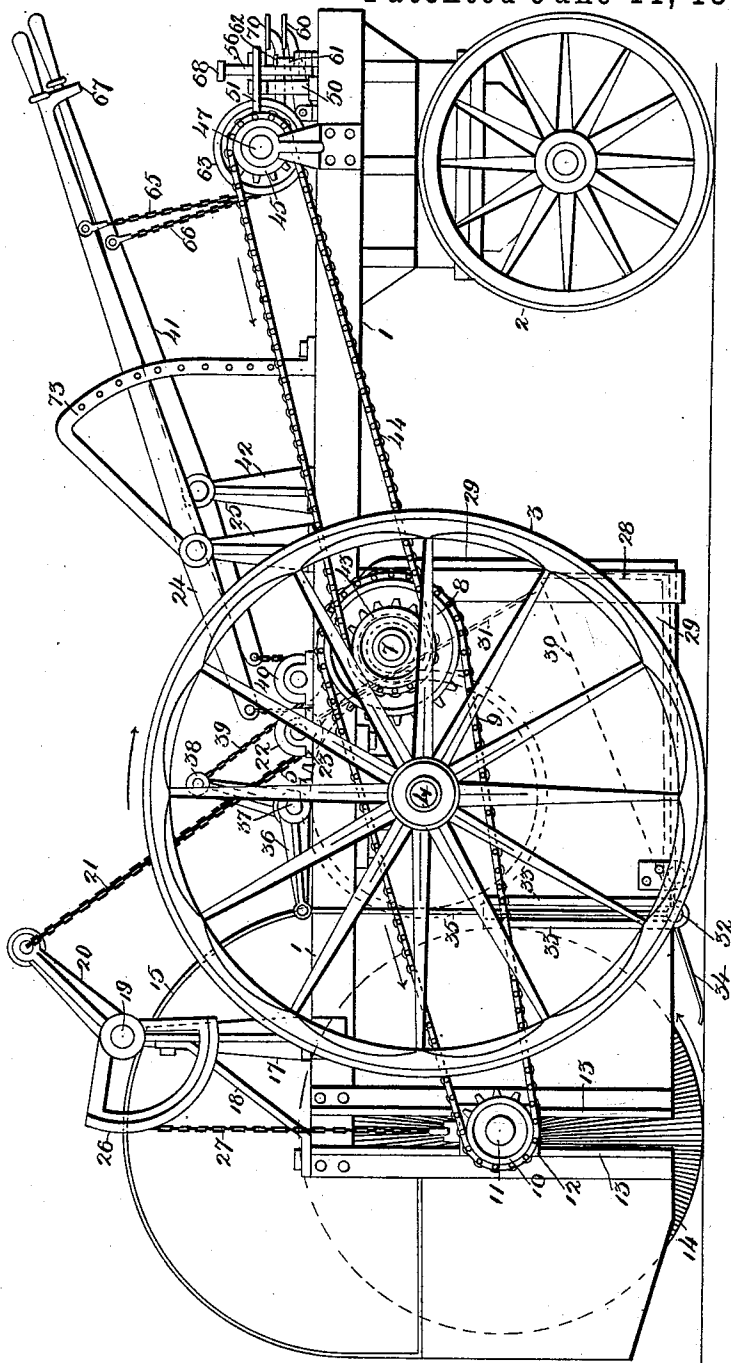
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H. MUELLER, Jr.
STREET SWEEPER.

No. 540,754.

Patented June 11, 1895.

Fig. 1.



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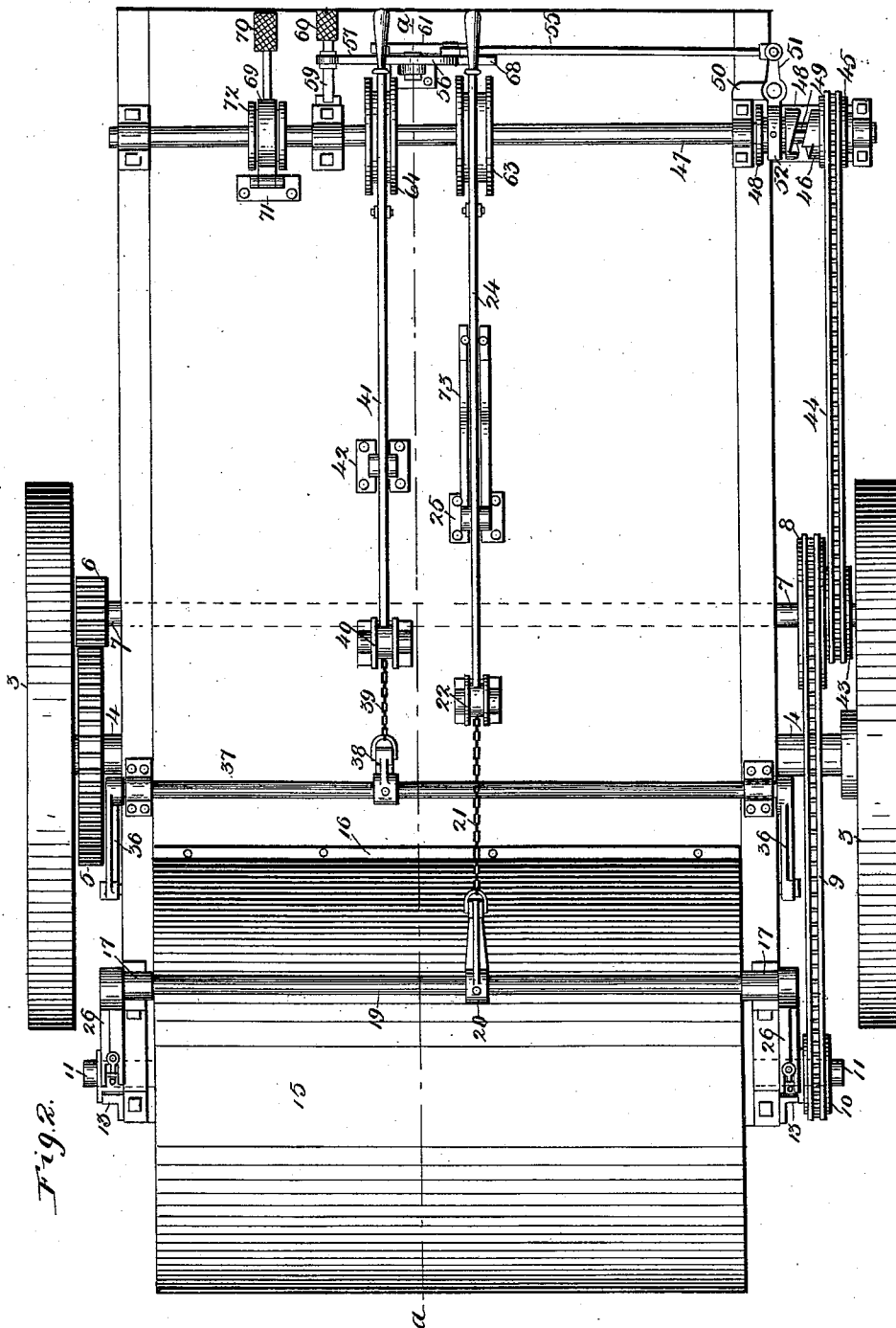
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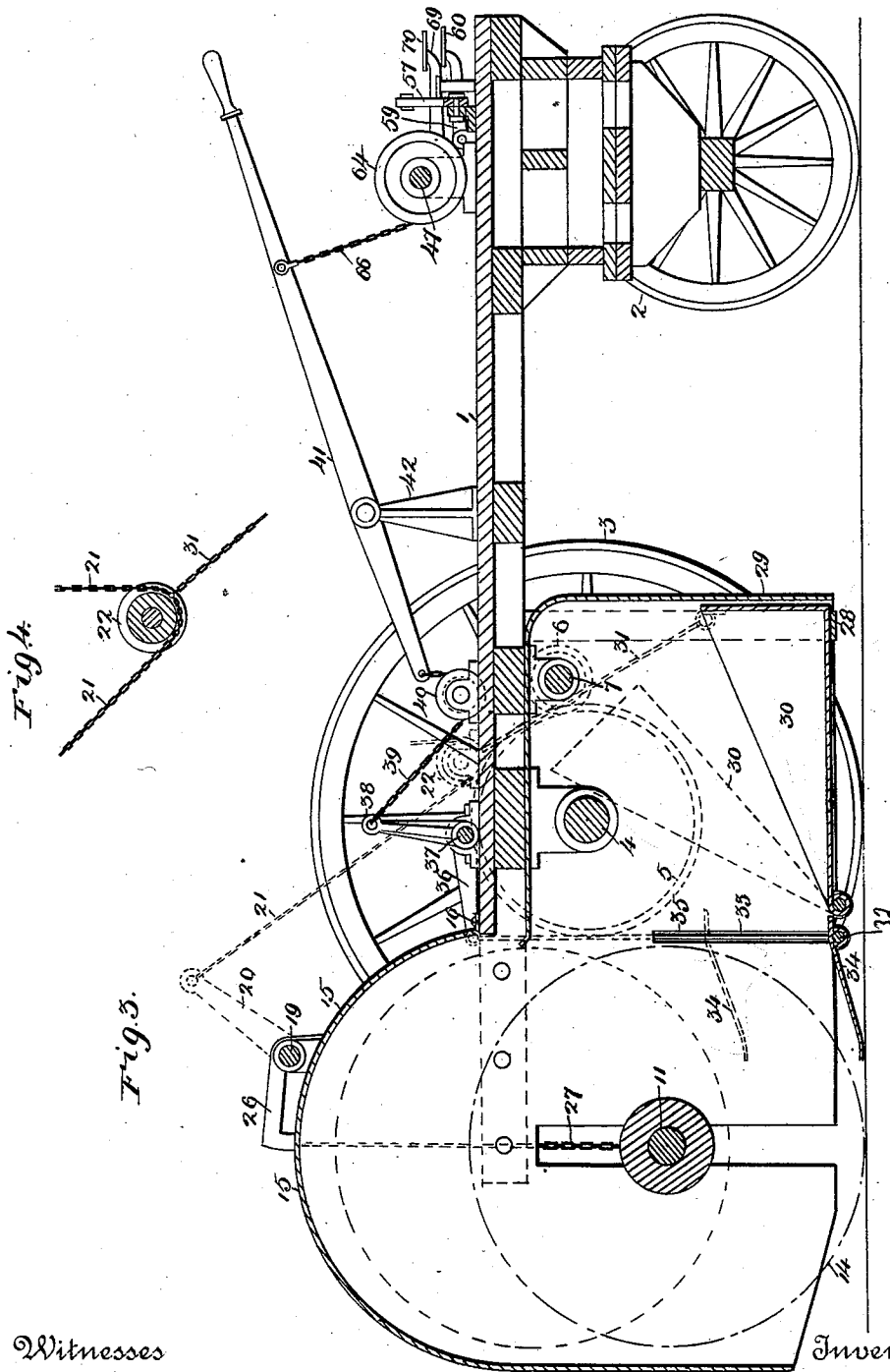
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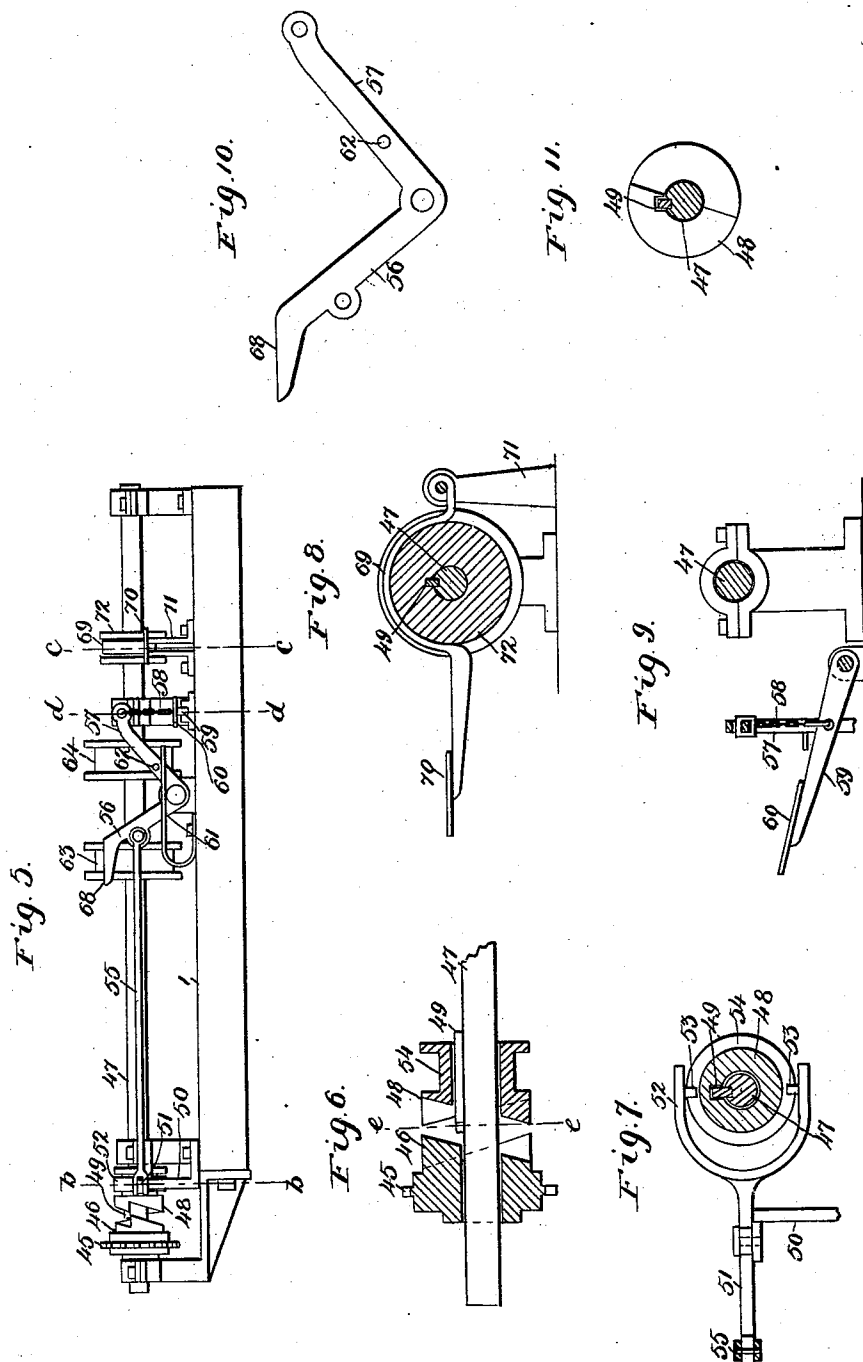
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UNITED STATES PATENT OFFICE.

HENRY MUELLER, JR., OF ST. LOUIS, MISSOURI.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 540,754, dated June 11, 1895.

Application filed February 7, 1895. Serial No. 537,617. (No model.)

To all whom it may concern:

Be it known that I, HENRY MUELLER, JR., a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Street-Sweepers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in street sweepers and consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of my improved sweeper. Fig. 2 is a plan view thereof. Fig. 3 is a middle vertical longitudinal section on the line *aa* of Fig. 2. Fig. 4 is a detail showing the connecting-chains leading from the dumping-lever. Fig. 5 is a detail front view showing the front winding-shaft and the parts controlling the same. Fig. 6 is a detail longitudinal middle section of the clutch carried by said shaft. Fig. 7 is an enlarged transverse section on the line *bb* of Fig. 5. Fig. 8 is an enlarged transverse section on line *cc* of Fig. 5. Fig. 9 is an enlarged transverse section on line *dd* of Fig. 5. Fig. 10 is an enlarged detail side elevation of the bell-crank lever controlling the clutch mechanism, and Fig. 11 is a detail transverse section on line *ee* of Fig. 6.

The object of my invention is to construct a street sweeper having a suitable receptacle for the reception of the dirt swept thereinto, and to construct mechanism whereby the receptacle may be automatically dumped without any exertion on the part of the driver, the dumping being accomplished by the draft animals by which the machine is drawn.

A further object is to provide a construction whereby the parts, after the receptacle is dumped, are restored automatically to their normal position.

In detail the machine consists of parts that may be described as follows:

Referring to the drawings, 1 represents the frame of the machine, mounted on the front wheels 2 and drive wheels 3, which latter are keyed to their shaft 4. To the shaft 4 adjacent to one of the wheels 3, is secured a gear wheel 5 which meshes with a pinion 6 carried

at one end of a parallel transverse shaft 7, whose opposite end has secured thereto a sprocket wheel 8. Over the sprocket wheel 8 passes a sprocket chain 9 the latter passing around over a similar but smaller sprocket wheel 10 at one end of the broom shaft 11 whose bearings 12 are vertically adjustable within the lateral depending guide-ways 13 on either side of the frame. The broom 14 is secured directly to the broom shaft 11. A suitable hood 15 covers the broom to confine the dirt as it is being swept by the broom into the dumping receptacle, the said hood being secured to the frame by suitable bolts or nails driven through the transverse ledge 16 of the hood into the frame, and by further nails driven from the inside through the side walls of the hood as shown in Figs. 2 and 3. Of course the particular method of securing the hood to the frame is unimportant.

Belted to the rear end of the frame on either side of the hood 15 are suitable posts or standards 17 reinforced by braces 18, in the tops of which posts is mounted a rock shaft 19, which along a convenient portion of its length carries an operating arm 20, the free end of which has attached thereto one end of a chain 21 passing under a guide-pulley 22 mounted in suitable bearings 23 on top of the frame. The opposite end of the chain 21 is secured to the end of the short arm of a dumping lever 24, the said lever being pivoted on top of a post 25 mounted on the frame. The opposite ends of the shaft 19 are secured the quadrants 26 over each of which is adapted to wind a chain 27 secured directly to the movable bearings of the broom shaft.

Depending from the lower surface of the cross timbers of the frame, and further secured by the U-shaped strap 28 depending from the frame is a shield 29 for the protection of the dumping receptacle 30 which is pivoted along its open end to the side walls of the open hood 15, the free or rotating end of the receptacle being secured to one end of a lifting chain 31, whose upper end is secured to the chain 21 at a point where the latter passes under the guide pulley 22.

From the above description it will be apparent that as the dumping lever 24 is depressed it will draw on the chain 21, tilting the arm 20 downwardly, by which action the

quadrants 26 will be rocked in an upward direction, thus winding up the chains 27 and raising the broom shaft within the guide-ways 13, thus pulling the broom into a position out of the way of any pile that may have been dumped from the receptacle, and allowing the sweeper to freely pass over said pile. At the same time and by the same operation, as the chain 21 is drawn about its guide pulley by the free end of the short arm of the lever 24, it will draw the chain 31 secured thereto, with it, thus dumping the receptacle 30, tilting it to the dotted position indicated in Fig. 3.

Adjacent to the pivoted open edge of the dumping receptacle is a transverse rod 32 whose free ends are guided within the guide-ways 33 formed by suitable angle irons projecting from the side walls of the hood 15, the said rod having secured to it an apron 34 which normally drags along the ground during the sweeping operation, directing the dirt into the receptacle. The opposite ends of the apron are carried by the supporting bars 35 pivotally secured to the rod 32, and having their upper ends pivotally secured to the projecting arms 36 carried by a shaft 37 mounted in suitable bearings on top of the frame. Along the shaft 37 is secured a tilting arm 38 from whose free end extends a chain 39 the latter passing under a guide pulley 40, and having its opposite end secured to the short arm of an operating lever 41 pivoted on top of a post 42. During the dumping operation it is desirable that the apron 32 be raised out of contact with the ground, and it is obvious that by drawing down on the lever 41, the chain 39 will tilt the shaft 37 in a manner to raise the bars 35 and thus draw after them the apron carried by the lower ends of the same. The foregoing sets forth the construction by which the several parts can be operated by hand. It is now in order to describe the construction by which these same parts are operated automatically by the draft of the animals attached to the sweeper.

Carried by the shaft 7 adjacent to the sprocket wheel 8 is a second sprocket wheel 43 from which extends a sprocket chain 44 to the front of the sweeper, said chain passing over the sprocket wheel or disk 45 forming part of the continually rotating member 46 of a clutch mounted on a transverse front shaft 47 mounted on top of the frame 1. The other member 48 of the clutch mechanism is keyed by a feather 49 to the shaft 47, being free to slide along said feather.

The sliding member 48 is adapted to be clutched or unclutched from the member 46 by the following mechanism: Pivoted to a projecting arm 50 on top of the frame is a shifting lever 51 whose terminal yoke 52 has projecting pins 53 operating in the depression 54 of the sliding member 48. The opposite end of the shifting lever is pivotally secured to a front transverse bar 55 whose opposite end is pivotally fastened approximately the medial portion of the arm 56 of a bell-crank

lever pivoted at its angle to the top of the frame along the front edge thereof. The second arm 57 of the bell crank lever has its free end secured to a chain 58 whose lower end is fastened to a pivoted pedal lever 59 a slight distance from the pivotal point of the latter. The pedal bearing or foot rest 60 of the said lever is within easy reach of the operator and it is apparent that when the pedal lever 59 is depressed by the foot of the driver it will tilt the bell-crank lever in a manner so as to pull on the bar 55, the latter tilting the shifting lever 51 so as to throw the sliding member 48 of the clutch into engagement with the rotating member 46. When the foot is removed, the free ends of the resilient spring plate 61 bolted at one end to the frame, bearing upwardly as it does against the pin 62 projecting from the arm 57 will restore the parts to their normal position as shown in Fig. 5.

When the members of the clutch on the shaft 47 are in engagement then motion will be imparted to said shaft by the sprocket wheel and chain connection operating the rotating member 46 during the travel of the sweeper. Now, upon the shaft 47 are mounted two winding drums or disks 63 and 64 respectively, the former being adapted upon rotation with the shaft 47 to wind upon itself a chain 65 secured to the operating end of the dumping lever 24, and the latter being adapted to wind a corresponding chain 66 secured to the operating end of the lever 41 which controls the apron 34. Therefore, as the drums 63 and 64 rotate and thus wind up the respective chains secured to the levers 24 and 41, they will pull down these levers and thus operate the parts which the said levers control in a manner as already explained, the lever 24 operating the broom and dumping receptacle, and the lever 41 operating or raising the apron. Of course the drums 63 and 64 will continue to rotate so long as the operator keeps his foot on the foot rest 60, and it is obvious that if the foot were kept on said rest too long, the tendency of the drum as long as the machine was being drawn along the ground would be to keep on winding the chains 65 and 66 and tear the latter from their connections with their respective levers or break the chains at the links. Provision is therefore made against such an accident as follows: Near the free end of the lever 24 is a downwardly projecting toe 67 which in the descent of the lever is adapted to come in contact with or hit against the striking surface 68 of the free end of the arm 56. In thus striking the free end, it will trip the bell crank lever into its normal position, throwing the foot of the operator off from the rest 60 and thus restore the parts to their normal position. The parts being thus restored, the broom, dumping receptacle and apron will drop back to their normal positions and in doing so will draw upwardly on the free ends of the levers 24 and 41, and thus unwind the chains 65 and 66 from their respective drums.

To prevent a too sudden unwinding which might cause an unusual jar among the several parts, I provide a brake 69 controlled by a foot rest 70, said brake being pivoted to a post 71, and operating against a brake disk 72 keyed to the shaft 47. In this manner, when the drums on the shaft 47 are unwinding, the parts controlled by the levers 24 and 41 are let down slowly by a proper control of the brake against the disk 72 keyed to the shaft 47.

The arrows in Fig. 1 represent the direction of motion of the several parts when the sweeper is being drawn forward along the ground.

The operation has been sufficiently described above and need not again be repeated. It is obvious that the present machine presents the advantage that it can either be dumped by hand or by the draft of the animals when it becomes inconvenient or inexpedient for the driver to manipulate the levers 24 and 41. By a simple pressure of the foot on the lever 59 at the moment for dumping, the clutch on the shaft 47 sets the latter rotating, thus winding the chains 65 and 66 and dumping the machine; and when the toe 67 strikes the surface 68 of the bell crank lever the clutch becomes disengaged, letting the parts down to their normal positions at a rate commensurate with the pressure placed on the brake lever.

In the path or sweep of the lever 24 on top of the frame is a bifurcated standard 73 provided with a series of openings for the passage of a suitable pin or retaining peg, said peg also passing through an opening in the lever whereby the latter can be held in any position and so adjusted as to raise the broom and receptacle from their lowest positions and keep the former from dragging along the ground when the sweeper is not in use.

Having described my invention, what I claim is—

1. In a street sweeper, a suitable frame, a dumping receptacle mounted in said frame, a broom adjacent to the open end of the receptacle for sweeping dirt therein, suitable controlling mechanism for dumping the receptacle, suitable driving wheels carried by the frame, suitable connections between the driving wheels and controlling mechanism, and means under the control of the operator for bringing the several parts into operative connection at intervals during the travel of the sweeper, substantially as set forth.

2. In a street sweeper, a suitable frame, a dumping receptacle mounted in said frame, a broom adjacent to the open end of the receptacle for sweeping dirt therein, a suitable apron for directing said dirt into the receptacle, suitable controlling mechanism for dumping the receptacle, and simultaneously raising the broom and apron, suitable driving wheels carried by the frame, suitable connections between the driving wheels and controlling mechanism, and means under the con-

trol of the operator for bringing the several parts into operative connection at intervals during the travel of the sweeper, substantially as set forth.

3. In a street sweeper, a suitable dumping receptacle, a dumping lever connected with the same, a transverse shaft mounted on the frame, a winding disk or drum on said shaft, a chain secured to the dumping lever and adapted to wind upon said drum, suitable driving wheels, intermediate mechanism between the transverse shaft and driving wheels for imparting at intervals motion to the said shaft during the travel of the sweeper, and means for controlling said intermediate mechanism, substantially as set forth.

4. In a street sweeper, a suitable dumping receptacle, a dumping lever connected with the same, a transverse shaft mounted on the frame, a winding disk or drum on said shaft, a chain secured to the dumping lever and adapted to wind upon said drum, suitable driving wheels, and intermediate mechanism between the transverse shaft and driving wheels for imparting motion to the shaft at intervals and for automatically disengaging the shaft from the driving wheels during the travel of the sweeper, substantially as set forth.

5. In a street sweeper, a suitable frame, a dumping receptacle, a lever controlling the same, a transverse shaft mounted on the frame, means for automatically controlling said shaft, a winding drum on said shaft, a chain secured to the operating end of the lever and adapted to wind on said drum, a revolving clutch member on said shaft, a sliding clutch member feathered on said shaft, a suitable shifting lever for operating the clutch, and means for operating the shifting lever, substantially as set forth.

6. In a street sweeper, a suitable transverse shaft carried by the frame of the machine, a bell crank lever pivoted on the frame adjacent to said shaft, means for tilting one arm of the bell crank lever, a resilient spring plate co-operating with the lever for restoring it to its normal position, a transverse bar parallel to the shaft pivotally secured at one end to the second arm of the bell crank lever, a clutch-shifting lever secured to the opposite end of said bar, a clutch on said transverse shaft, suitable running gear adapted to be thrown into engagement with said clutch, and intermediate mechanism between the transverse shaft and dumping receptacle for operating the latter upon the rotation of said transverse shaft, substantially as set forth.

7. In a street sweeper, a suitable transverse shaft mounted on the frame of the machine, suitable driving wheels, a lever for alternately engaging said shaft with and disengaging the same from the driving wheels, a suitable dumping receptacle, a dumping lever for said receptacle, the free end of said dumping lever adapted to strike or contact with the first named lever and disengage the shaft from the driving wheels, substantially as set forth.

8. In a street sweeper, a suitable frame, a
dumping receptacle mounted in said frame,
suitable controlling mechanism for operating
the dumping receptacle, suitable driving
5 wheels for propelling the sweeper, means co-
operating with the driving wheels and control-
ling mechanism for dumping the receptacle
at intervals and then restoring the same to
its normal position, during the travel of the
sweeper, substantially as set forth. 10
In testimony whereof I affix my signature
in presence of two witnesses.
HENRY MUELLER, JR.
Witnesses:
LEE SALE,
E. STAREK.