(No Model.) 3 Sheets—Sheet 1.

H. MUELLER, Jr.

STREET SWEEPER.

No. 563,870. Patented July 14, 1896.

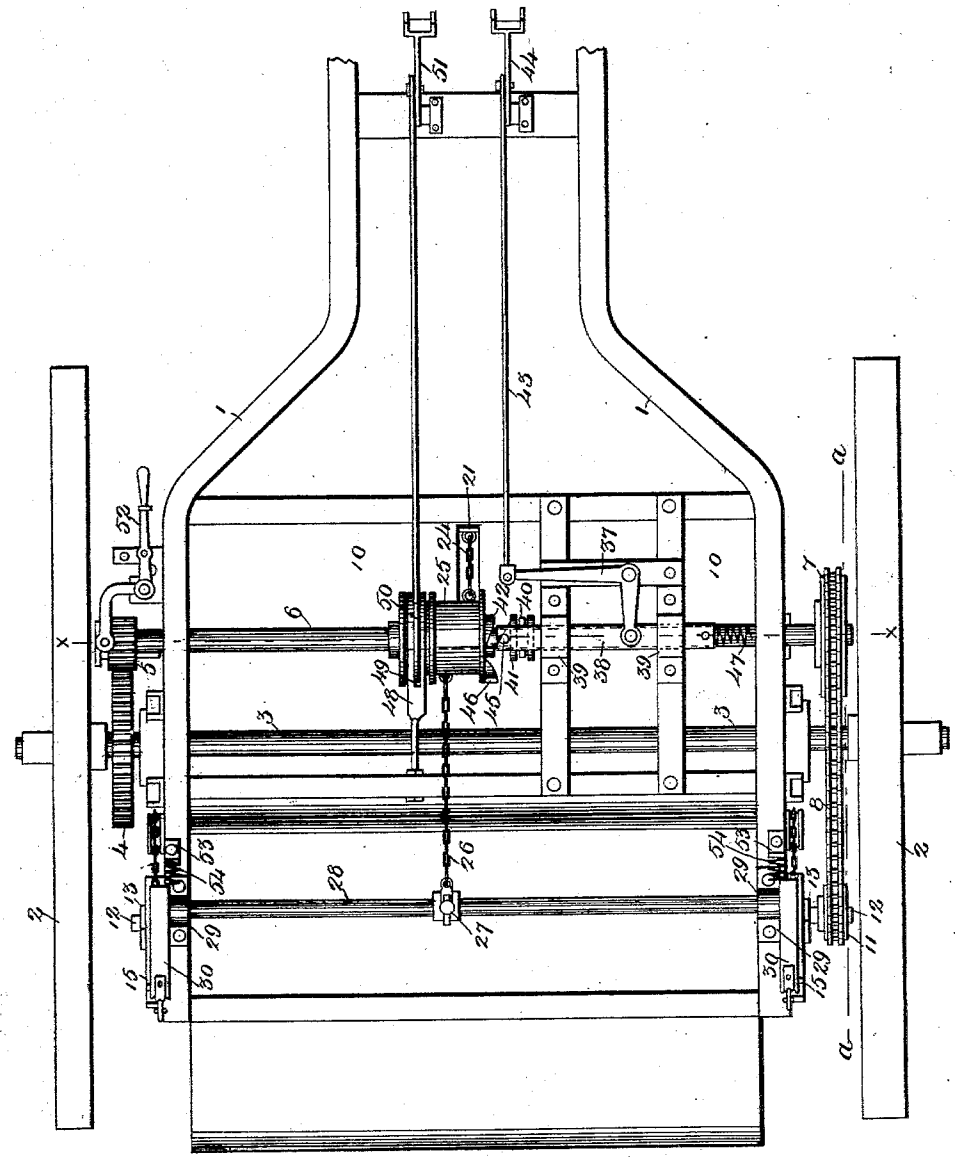

Fig. 1.

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(No Model.)

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H. MUELLER, Jr.

STREET SWEEPER.

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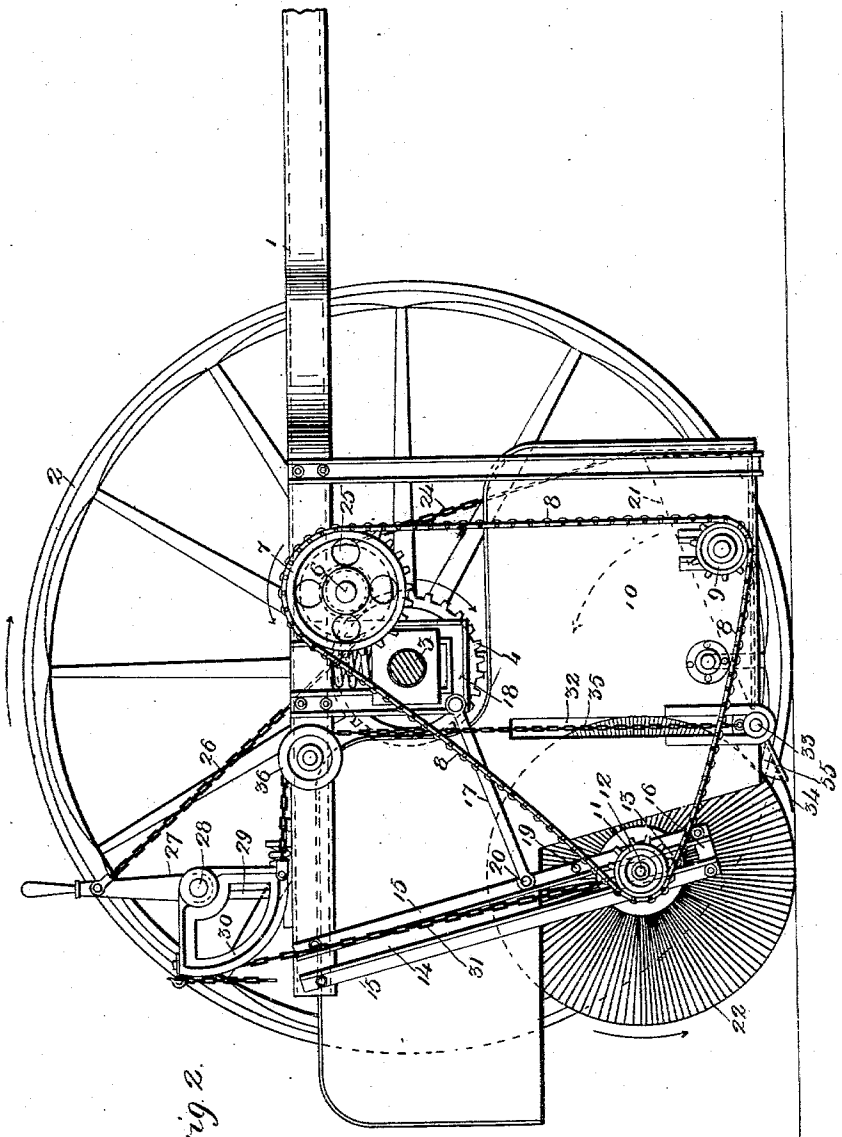

Fig 2.

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(No Model.) 3 Sheets—Sheet 3.

H. MUELLER, Jr.

STREET SWEEPER.

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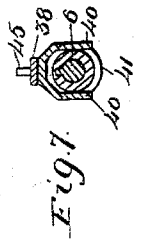

Fig. 7.

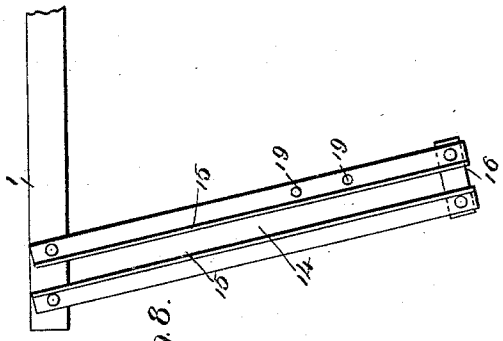

Fig. 8.

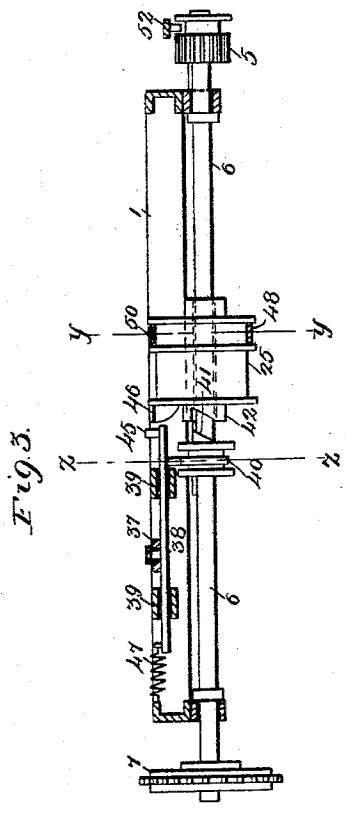

Fig. 3.

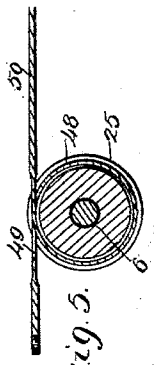

Fig. 5.

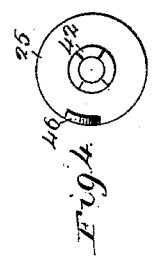

Fig. 4.

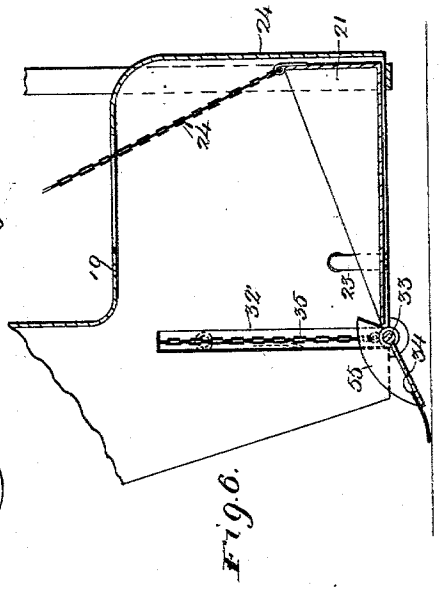

Fig. 6.

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UNITED STATES PATENT OFFICE.

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

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 563,870, dated July 14, 1896.

Application filed November 8, 1895. Serial No. 568,302. (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, in the 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 it 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 top plan view of my invention. Fig. 2 is a vertical longitudinal section on the line *a a* of Fig. 1. Fig. 3 is a transverse section on the line *x x* of Fig. 1. Fig. 4 is an end view of the drum embracing the main drive-shaft. Fig. 5 is a section on *y y* of Fig. 3. Fig. 6 is a detail showing in section the dumping-receptacle and apron in front of the open end of the same and a portion of the casing carrying these parts. Fig. 7 is a section on *z z* of Fig. 3, and Fig. 8 is a detail in side elevation of the adjustable guideway for the broom-shaft.

The present invention is an improvement on the construction of sweeper described in United States Letters Patent No. 540,754, granted to me under date of June 11, 1895, and like it has for its object to provide a receptacle into which the dirt can be swept during the travel of the sweeper over the street or other surface and from which the dirt can be subsequently dumped at intervals by the draft-animals at the pleasure of the operator.

A further object is to reduce to a minimum the number of operating parts of which the machine is composed.

In detail it may be described as follows:

Referring to the drawings, 1 represents the frame of the machine, the front wheels of the same not being here illustrated, as that is an ordinary construction.

2 represents the rear or driving wheels secured to their shaft 3.

To the shaft 3, adjacent to one of the wheels 2 and exterior to the frame, is secured a gear-wheel 4, which is adapted to mesh with a pinion 5, feathered to one end of a transverse shaft 6, whose opposite end has secured thereto a sprocket-wheel 7. Over the sprocket-wheel 7 passes a sprocket-chain 8, the latter passing first over an idle sprocket-wheel 9, carried at the base or lower edge of the lateral wall of the broom casing or hood 10, and thence passing over a third sprocket-wheel 11, carried at one end of the broom-shaft 12. The opposite ends of the broom-shaft are mounted in bearings 13, which are adapted to slide in the guideway 14, formed by the two parallel bars 15 15, pivoted each at their upper ends to the sides of the frame and at their lower ends connected by the connecting-strip 16, which at all times preserves their parallelism. The said guide-bars 15 are held in position by a rod 17, pivoted at one end to the casting 18, which supports the boxing for the shaft of the driving-wheels, the opposite end of the rod being secured to the adjacent bar along points indicated by the position of the holes 19, at any one of which it can be held by a suitable pin 20.

The object of securing the guide-bars 15 in the manner here indicated is for the purpose of varying the position of the lower end of the guideway with respect to the open end of the dirt-receptacle 21, into which the dirt is swept by the broom 22. As the periphery of the broom wears away it is obvious that it must be brought nearer the open end of the dumping-receptacle 21 to properly throw the dirt into the same. This is accomplished by simply securing the free end of the rod opposite an opening 19 lower down in the series, thus bringing the guideway (carrying the broom-shaft) nearer the dirt-receptacle, and accordingly bringing the periphery of the broom nearer the open end of said receptacle. The dirt-receptacle is triangular in longitudinal section, being suspended from the inner walls of the broom-casing by arms 23, the rear wall of the receptacle normally resting against the adjacent closed end or wall 24 of the casing or hood.

The dumping-receptacle has secured thereto a chain 24′, whose opposite end is secured to the surface of a drum 25, embracing the shaft 6, and about which the chain is adapted to be wound. Diagonally opposite and to the periphery of the drum is secured one end of a chain 26, also adapted to be wound on said drum, the opposite end of the said chain

being secured near the free end of a lever-arm 27, carried at the middle of a rock-shaft 28, mounted in bearings or standards 29 a suitable distance above the frame.

To the opposite ends of the rock-shaft 28 are secured quadrants 30, over whose curved periphery is adapted to wind a chain 31, whose one end is secured to the quadrant at one end of each curved winding-periphery, and whose opposite end is secured to the sliding bearing carrying the broom-shaft. Adjustable within vertical slots 32, cut in the side walls of the broom-casing, is a rod 33, running parallel with the open end of the dumping-receptacle and parallel with its free edge. To this rod is secured a rubber-edged apron 34, adapted to direct the dirt swept into the receptacle. In the dumping of the latter it is essential that the apron be raised off the ground, and accordingly at either end of the rod 33 I secure one end of a chain 35, which passes over a pulley 36, the opposite end being secured to the quadrant 30 at the end of the curved surface thereof opposite to that at which the chain 31 is secured.

It is obvious from the foregoing that if the machine be drawn so as to impart rotation to the driving-wheels, as indicated by the arrow, Fig. 2, the shaft 6 and broom 22 will revolve as indicated, the broom sweeping dirt into the receptacle 21.

It is obvious, too, that if the drum 25 be coupled to the shaft 6 while the latter is being revolved the chains 24 and 26 will be wound on said drum, thereby dumping the receptacle 21 and at the same time drawing the lever 27 downward and rocking the shaft 28, so as to rotate the segments or quadrants 30 upward, thereby causing the chains 31 to wind upon said segments and thus raise the broom-shaft and its bearings in the guideway 14, and thus lifting the broom off the ground. At the same time the segment or quadrant in its rotation will draw the chain 35 over the pulley 36 and raise the apron in its guide-slots 32, so that, as the receptacle is dumped, the broom and apron are both raised off the ground by the general mechanism controlling these parts, just as in the patented invention above referred to.

To dump the receptacle at intervals, I provide the following mechanism: Pivoted on top of the frame is a bell-crank lever 37, to the end of whose short arm is pivotally connected a shifting-bar 38, guided in suitable bearings 39, and superposed directly over the shaft 6. The shifting-bar is provided with a depending yoke 40, adapted to embrace the male member 41 of a clutch mechanism feathered to said shaft. The female member 42 of the clutch forms an integral part of the drum 25, which loosely embraces the shaft 6. To the end of the long arm of the bell-crank lever 37 is pivotally secured a connecting-rod 43, hinged to a pedal-lever 44, pivoted at the front of the frame.

It is apparent that if the pedal-lever 44 is depressed by the foot of the operator while the machine is being drawn along the street, the bell-crank lever 37 will be tripped so as to shift the male member 41 of the clutch along the shaft 6, driving said member into engagement with the female member 42, and thus setting the drum 25 into rotation and effecting the dumping of the receptacle 21, as previously explained. One revolution of the drum 25 is sufficient to dump the receptacle and raise the broom and apron off the ground, so that it is essential that the clutch members 41 and 42 be uncoupled at this juncture to prevent tearing of the chains in their tendency to keep on winding on the drum. The end of the shifting-bar adjacent to the drum carries an upwardly-projecting pin 45, which is adapted to be struck by the rounded surface of a laterally-projecting lug 46, carried at the adjacent end of the drum; and should the operator keep his foot on the pedal-lever 44 too long said lug 46 will strike the pin 45, and thus shift the bar 38 and consequently the male member 41 of the clutch to their normal position, leaving the drum again free on the shaft 6, it being understood that the bar 38 and the clutch member 41 are normally held retracted out of engagement with the female member 42 by a spring 47, having one end secured to the frame and the opposite end to one end of the shifting-bar 38. (See Fig. 3.) The drum 25 thus left again free on the shaft 6 will allow the chains 24 and 26 to unwind, letting the several parts assume their normal and lowest positions; but to prevent a too violent return of the several parts and consequent jarring of the frame I provide a brake-band whose wide lap 48 has its end secured to the frame, said lap encircling the drum at one end, and being provided with a slot 49, through which the narrow lap 50 is passed and continued forward, where it is pivotally connected to a foot-pedal 51, pivoted at the front end of the machine-frame. Upon depression of the foot-pedal 51 the band is tightened around the drum, preventing the same from unwinding too rapidly and letting the several parts down easy. When it is desired to disengage the pinion 5 from the gear-wheel 4, it may be uncoupled therefrom by the shifting-lever 52.

A reference to Fig. 2 will disclose the fact that a sufficient slack is given the endless chain 8 to permit the broom-shaft to be raised sufficiently in its guideways 14 during the dumping operation. In the line of the rear edge of each quadrant is a lug 53, to which is secured a buffing-spring 54, against which each quadrant strikes when the parts are resuming their normal positions, thereby taking up a considerable jar in this way.

Carried by or secured to the opposite ends of the apron 34 are wings or guide-plates 55, which prevent the dirt swept by the broom from scattering along the sides of the machine, and thus insuring that all the dirt is directed into the receptacle.

Having described my invention, what I claim is—

1. In a street-sweeper, a suitable frame, driving-wheels for the same, a shaft for the drive-wheels, a second transverse shaft a drum loosely embracing said second shaft, suitable gearing between the two shafts, a female clutch member forming a part of said drum, a male member feathered to the second or transverse shaft, a shifting-bar mounted on the frame over the said male member, and controlling the latter, means under the control of the operator for bringing said clutch members into coöperation, and means carried by the shifting-bar and drum coöperating with one another to automatically disengage the clutch members during the rotation of the drum, substantially as set forth.

2. In a street-sweeper, a suitable shaft, a drum loosely mounted on the same, a lug carried at one end of the drum, a shifting-bar adapted to be controlled by the operator, and adapted to clutch the drum to the shaft and cause the same to rotate therewith, a clutch controlled by said bar and a pin projecting from the end of the shifting-bar and adapted to be struck by the lug of the drum for disengaging the members of the clutch mechanism and allow the drum to freely rotate about its shaft, substantially as set forth.

3. In a street-sweeper, a suitable frame, a bell-crank lever pivoted on top of the same, a shifting-bar pivotally connected to the free end of the short arm of the bell-crank lever, guides for the shifting-bar, a spring having one end secured to the frame and the opposite end to the shifting-bar to retract the latter to its normal position, a depending yoke carried by the shifting-bar, a suitable shaft, a male clutch member feathered to said shaft and controlled by the depending fork, and an operating pedal-lever for tripping the bell-crank lever from the front of the machine, substantially as set forth.

4. In a street-sweeper, a suitable frame, driving-wheels for the same, a shaft for said wheels, a second shaft, intermediate gearing between the two shafts, a sprocket-wheel at the end of the second shaft, a sprocket-chain passing over said wheel, an idle-sprocket over which said chain passes, a suitable broom-shaft, a sprocket-wheel at one end thereof, said sprocket-chain adapted to pass over the same, guideways for the ends of the broom-shaft, a pivoted dumping-receptacle mounted below the frame, an apron interposed between the receptacle and broom, slotted guideways for the opposite ends of the apron, a drum mounted on the second shaft, a chain connecting the periphery of the drum with the free or tilting end of the receptacle, a rock-shaft mounted a suitable distance above the frame, a lever-arm for said shaft, a chain connecting said lever-arm with the periphery of the drum, a quadrant carried at either end of the rock-shaft, a chain passing from the upper end of the curved edge of the quadrant to the broom-shaft, a second chain connected to the opposite end of the quadrant, a pulley for said chain, the opposite end of the chain being secured to the apron, and means for imparting rotation to the drum at intervals during the travel of the sweeper, whereby the receptacle is dumped, and the broom and apron simultaneously raised, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY MUELLER, JR.

Witnesses:

ALFRED A. MATHEY,

E. STAREK.