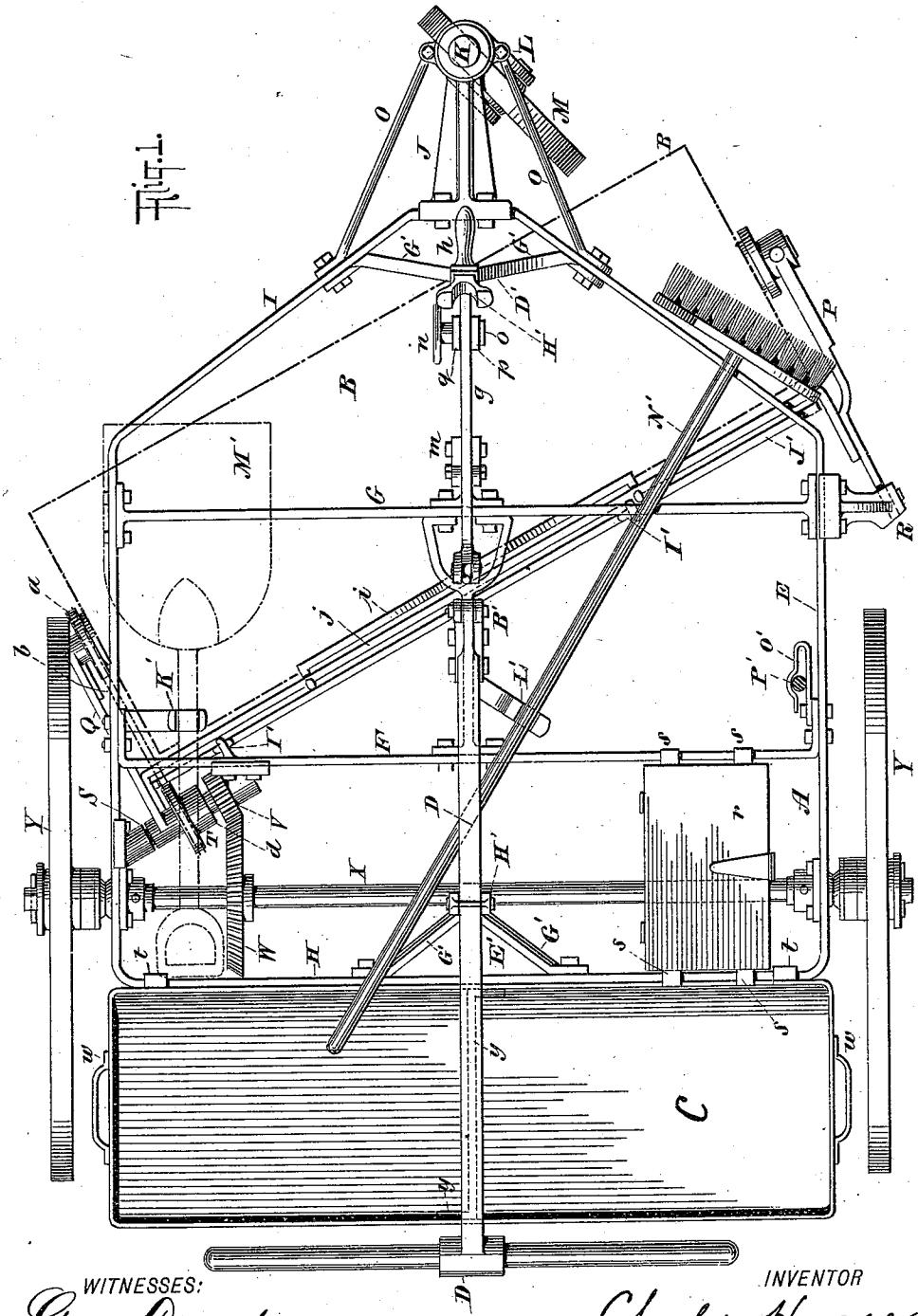
(No Model.) 2 Sheets—Sheet 1.

C. HVASS.

STREET SWEEPER.

No. 548,202. Patented Oct. 22, 1895.



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(No Model.) 2 Sheets—Sheet 2.

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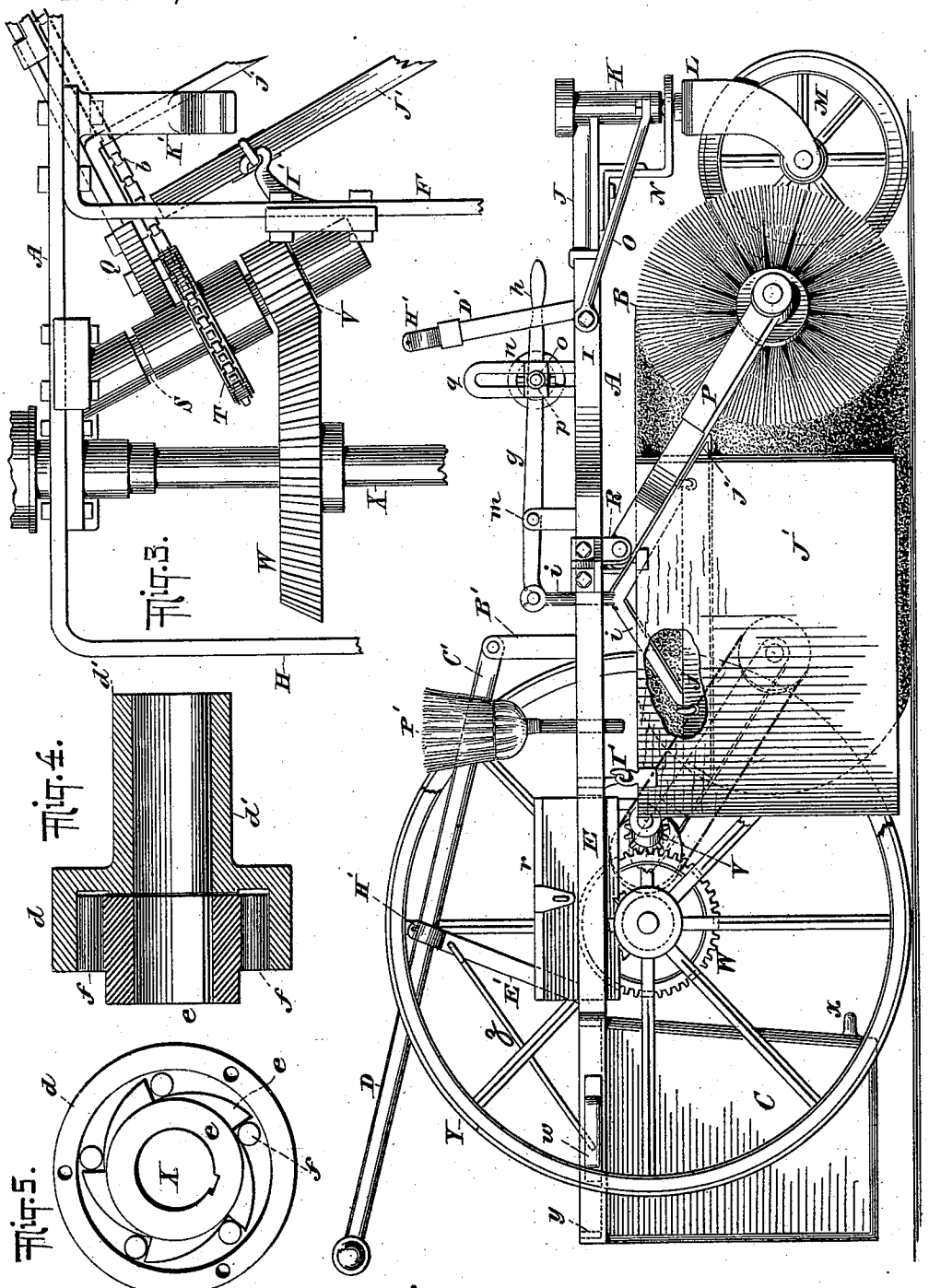

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 2.

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STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 548,202, dated October 22, 1895.

Application filed April 28, 1894. Serial No. 509,316. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HVASS, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Street-Sweeping Machines, of which the following is a specification.

The invention relates to improvements in street-sweeping machines; and it consists in the novel features of construction and combinations of parts hereinafter described and claimed.

The machine constructed in accordance with my invention embodies a novel supporting frame or body mounted on wheels and provided with a revoluble brush, a detachable receptacle to receive the sweepings, a reversible pivoted handle, which may be used at either end of the machine, clutch mechanism to prevent the brush from revolving, except in one direction, and means for raising and lowering the brush, together with auxiliary parts for giving effect to the main features above referred to. The said machine also embodies means, located on the frame, for supporting a shovel and a hand brush or brushes, with which the machine is equipped.

The machine made the subject of this application involves in its use a new method of cleaning streets and removing the sweepings, the object being to dispense with many expenses and annoyances incident to the present manner of and appliances for cleaning streets.

In accordance with my invention each machine will carry a removable receptacle in convenient position to receive the dirt swept up by the revoluble brush, which receptacle when filled will be detached and left on the street, to be taken up, with other similar filled receptacles removed from other sweepers, by a cart or wagon, which will carry the receptacles thus gathered up to the dumping-ground, where they will be emptied. As soon as the receptacle on the sweeper has been filled, it will, as above stated, be removed, and thereupon another receptacle will be applied to the sweeper and the operation of the latter continued until this second receptacle has become filled, whereupon it will be removed and a further receptacle attached to the sweeper to receive the sweepings arising from the continued use of the machine. The body of each sweeping-machine is specially adapted to receive the receptacles in a convenient manner, and each body will be provided with means for holding a shovel and hand broom or brush, which may also be readily removed for use in gathering the dirt and depositing it in the receptacles.

The invention will be more fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a top view of a street-sweeping machine constructed in accordance with and embodying my invention. Fig. 2 is a side elevation of same. Fig. 3 is an enlarged detached top view of a portion of the machine, showing the gearing for revolving the brush. Fig. 4 is a detached longitudinal section of a clutch which is located intermediate the main supporting-wheels and axle therefor, and Fig. 5 is a detached face view of same.

In the drawings, A designates the main body or frame of the machine; B, the revoluble brush; C, the detachable receptacle to receive the sweepings, and D the reversible pivoted handle.

The frame A of the machine consists of the metal bent-bar E, forming the opposite sides, front and rear, of the supporting-body, the sides being parallel with each other and connected by the transverse bars F G. The bar E between the front end of the sides of the main frame constitutes a transverse bar, lettered H, to which, as hereinafter described, is detachably secured the receptacle C.

At the rear of the machine the bar E outlining the frame thereof forms a tapering rearwardly-projecting section I, at the center of which is secured the casting J, whose outer extremity constitutes the sleeve K to receive the stem of the swivel L, carrying the wheel M. The swivel L and wheel M are of usual construction, but between the casting J and the lower part of the swivel-stem is secured the spring N, whose free end receives the strain exerted by the weight of the rear end of the machine, and during the use of the machine the said spring N receives any shock which may arise owing to the wheel M passing over rough surfaces and relieves the

frame of the machine from all jar and strain. The casting J projects sufficiently rearward to enable the wheel M to have a revolving motion around the vertical axis of the swivel-stem without interfering with the revoluble brush B, and said casting J is sustained and strengthened by the brace-bars O O, extending from the lower portion of the sleeve K thereof to the rear projecting portion I of the main frame of the machine.

The frame A is constructed with a view of obtaining great strength, with lightness in weight, and also to have the same open, in order that the attendant may see and examine all of the operative parts of the machine without difficulty.

The revoluble brush B is mounted at an angle to the transverse center of the machine and is retained at its ends by the arms P Q, respectively, the former of which extends from the lug R, secured to one side of the machine, while the arm Q is journaled on the short shaft S, having the sprocket-wheel T and pinion-wheel V, the latter being in engagement with the bevel gear-wheel W, secured upon the axle X for the wheels Y Y, upon which the machine travels. The shaft of the brush B is journaled in the ends of the arms P Q, and said shaft at one end of the brush is provided with the sprocket-wheel *a*, which is connected with the sprocket-wheel T by means of the chain *b*. The revolving motion of the brush B is imparted to it from the axle X through the beveled gear-wheel W, pinion V, shaft S, sprocket-wheel T, chain *b*, and sprocket-wheel *a*, the brush continuing to revolve during the forward traveling movement of the machine and ceasing upon the stoppage of said machine.

In order that the brush B may not revolve during any backward movement of the machine on the wheels Y there is provided in the hubs of the said wheels clutch mechanism, which during the forward travel of the machine will lock the axle X and the wheels Y together, so that the motion of the wheels Y will be communicated to the axle X, and by it communicated through the gear-wheels W V and sprocket-wheels T *a* to the brush B; but when for any reason the machine shall be given a backward motion, the clutch mechanism will be disengaged and at such time the wheels Y and shaft X will not be locked together, and hence the wheels Y will travel freely upon the ends of the said axle X without revolving the same, the result being that the gear-wheels W V will not be rotated and the brush B will remain at rest.

I do not limit the invention to any special form of clutch mechanism intermediate the ends of the axle X and the wheels Y, but recommend that the clutch illustrated in Figs. 4 and 5 be made use of, the said clutch consisting of the toothed wheel *e*, keyed upon the shaft X and inclosed within the casing *d*, fitted to the hub of the wheels Y, the said casing having a sleeve *d'*, which enters the said hub. Intermediate the teeth of the wheel *e* and the interior surface of the casing *d* are the series of rollers *f*. During the forward travel of the machine on the wheels Y the rollers *f*, traveling down the inclines of the teeth of the wheel *e*, will be bound against the interior surface of the casing *d* and thus lock the said casing and wheel *e* together, whereby the wheels Y and axle X will be connected and the motion of the former will be communicated to the latter in a well-known manner. During the reverse movement of the wheels Y the rollers *f* will remain free in the larger part of the recesses retaining them, and hence will not operate to pin the casing *d* and wheel *e* together, and at such time the wheels Y will turn freely upon the ends of the axle X, but will not rotate the latter.

The brush B may be raised or lowered at will by means of the pivoted lever *g*, having a handle *h* at one end and at the other end connected by the suspended bifurcated arm *i* with the cross-bar *j*, extending between and secured to the swinging arms P Q, which connect the brush with the machine. The lever *g* is pivotally mounted in the standard *m* and has at one end the locking-wheel *n*, screw *o*, and clamping-plate *p*. The screw *o* passes through the slot of the vertical guide *q* and carries the said plate *p* at one end and the wheel *n* at the other end, the purpose being to enable the locking of the lever *g* at any desired position along the guide *q* by means of the screw *o*. Upon loosening the wheel *n* the lever *g* may be raised or lowered at will and then secured in any set position by tightening the wheel *n*.

When the machine is in use the handle *h* of the lever *g* will be raised and the brush B thus lowered to the ground, and when the machine is not in use or is in course of transportation the handle *h* of the lever *g* will be depressed, and the other end thereof thus caused to elevate the bar *j*, arms P Q, and brush B.

Upon the frame A is secured the tool-box *r*, which is provided at opposite ends with hooks *s*, adapted to pass upon the transverse bars H F, as illustrated in Fig. 1, and thus detachably retain the said box *r* in place.

At the front end of the frame A is removably secured the receptacle C for the sweepings, the latter, after having been left by the brush B, being thrown into said receptacle by means of an ordinary shovel. The receptacle C is a transversely-elongated metal box extending the full width of the frame A and detachably secured to the front transverse bar H thereof by means of hooks *t*, which are firmly secured to the upper edges of the said receptacle and are of sufficient size to pass downward over the said transverse bar H, as illustrated in Fig. 1. The receptacle C is provided at each end, adjacent to its upper edges, with the handle *w*, and at its lower front side with the handle *x*, the said handles being necessary for use in detaching the receptacle from the

sweeping-machine and for convenience in dumping the same.

The receptacle C has a flat bottom and closed sides and ends and its open top is, when the receptacle is in place on the machine, about on a level with the top of the main frame A. At the center of the upper edges of the receptacle C, and extending across the open top of said receptacle, is provided the connecting-brace *y*, illustrated by dotted lines in Fig. 1, and to which, when the receptacle is in place on the machine, is hooked, through an aperture therein, the lower hooked end of the rod *z*, the upper end of which is secured in an aperture at the upper end of the standard E′. The purpose of the brace *y* is to strengthen the receptacle and afford a means by which, with the use of the rod *z*, the receptacle may be sustained in a truly vertical position and not be permitted to swing inward at its lower end.

The receptacle C is of substantial capacity and its lower edge is adjacent to the surfaces over which the wheels Y travel, and hence the said receptacle will be capable of receiving a large quantity of the sweepings resulting from the action of the brush B and may be lifted to the ground without undue exertion on the part of the attendants, it being simply necessary for them to unhook the rod *z* from the brace *y*, and by means of the handles *w* to elevate the said receptacle sufficiently for the hooks *t* to be relieved from the transverse bar H, at which time the said receptacle may be lowered to the ground.

It will be observed upon reference to Fig. 1 that the axle X of the wheels Y is adjacent to the front portion of the frame A and that the receptacle C is suspended from said frame at a point adjacent to said axle, so that its ends are substantially between the wheels Y Y, while the brush B and swivel L are at a point sufficiently in rear of the axle X to properly balance the weight of the machine at opposite sides of the said axle. When the receptacle C is full of sweepings of the usual character its weight will not elevate the rear of the machine, but on the contrary, the parts of the machine being then about evenly distributed at opposite sides of the said axle, the machine will continue to run freely without undue noise or jarring and with entire efficiency.

At about the center of the frame A is provided the standard B′, in the upper end of which is pivotally secured the handle D, which is of sufficient length to be used at either the front or the rear end of the machine. At opposite sides of the standard B′ are secured the standards D′ E′, the said standards consisting of inclined diverging braces G′, forming at their upper ends the pockets H′, of a size adapted to receive the handle D and permit of the latter being locked therein by a transverse pin. When it is desired that the attendant shall move the machine while at the front thereof, the handle D will be turned frontward and locked in the pocket H′ at the upper end of the standard E′, as illustrated in Figs. 1 and 2, at which time the attendant may grasp the cross-bar on the end of the handle and move the machine at will, while if it is desired that the attendant shall operate the machine from the rear thereof the said handle D will be turned toward the rear and locked in the pocket H′ at the upper end of the standard D′, in which condition the handle may be grasped by the attendant standing at the rear of the machine. The standards D′ E′, constructed in the manner shown and described, are particularly strong and durable and not likely to become bent or broken, no matter how roughly the attendant may handle the machine.

In the front of the brush B there is suspended by means of hooks and eyes I′ the fender or board J′, which extends downward in near relation to the ground and in juxtaposition to the brush B, and the purpose of which is to prevent the dirt being scattered during the revolving of the brush B.

Upon the upper surface of the frame A are provided the pockets K′ L′ for the shovel M′ and brush N′, respectively, said shovel and brush being supported on the frame of the machine and being held at their handles in the said pockets K′ L′, as illustrated in Fig. 1. At one side of the frame A is secured the metal pocket O′ to receive the handle of the brush P′, as illustrated more clearly in Fig. 1. The frame A has been constructed with a view of affording a liberal surface for the support of the shovel M′ and brush N′, and the pockets K′ L′ receiving the handles thereof retain the said articles upon the frame A and prevent their detachment, except at the will of the attendant.

The machine will be equipped with the shovel M′, brush N′, and brush P′, and said articles will come into use during the operation of the machine in cleaning streets.

In the use of the machine the brush B will be lowered and the machine set in motion, the result being that the street will be swept by means of the brush and the dirt directed to one side of the wheel Y, owing to the fact that the brush is at an angle and its edge extends outward beyond the edge of said wheel Y. The dirt swept up by the brush B will be shoveled into the receptacle C until the latter has become filled, whereupon the machine will be stopped and the receptacle C removed and placed aside and an empty similar receptacle applied to the transverse bar H, after which the operation of cleaning the street will be resumed and continued until this second receptacle has become filled, whereupon the machine will be again stopped and the receptacle removed, as before. The filled receptacles C dropped along the route of the cleaning will be gathered up by a wagon or cart detailed for that purpose, and will be taken to the dumping-ground where they will be emptied.

In accordance with the use of the machine made the subject of this application, the dirt is not left in piles along the street, nor shoveled into the ordinary carts from the street, and hence much of the expense and all of the present inconveniences resulting from the handling of the dirt in the streets are avoided.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a street sweeping machine, the main frame mounted on wheels, the centrally arranged standard secured to and extending upward from the said frame, and the reversible bar handle D pivoted to the upper end of said standard and adapted to be turned either to the front or rear over said machine, mechanism below said frame embracing the revoluble brush, gearing intermediate the axle of the wheels and that of the brush whereby the motion of the former is communicated to the latter, and automatic clutch mechanism intermediate said wheels and brush whereby on any backward movement of the machine the motion of the wheels will be automatically cut off from said brush, the whole being arranged and operating substantially as and for the purposes set forth.

2. The street sweeping machine comprising in its structure the main frame mounted adjacent to its front end on the main axle X, the transversely elongated removable receptacle C secured to the front end of said frame between the wheels Y and at the front of the axle X, the swivel at the rear end of said frame, the revoluble and obliquely arranged brush B in rear of said axle, and connecting gearing intermediate said axle and brush; substantially as and for the purposes described.

Signed at New York, in the county of New York and State of New York, this 26th day of April, A. D. 1894.

CHARLES HVASS.

Witnesses:
CHAS. C. GILL,
ED. D. MILLER.