

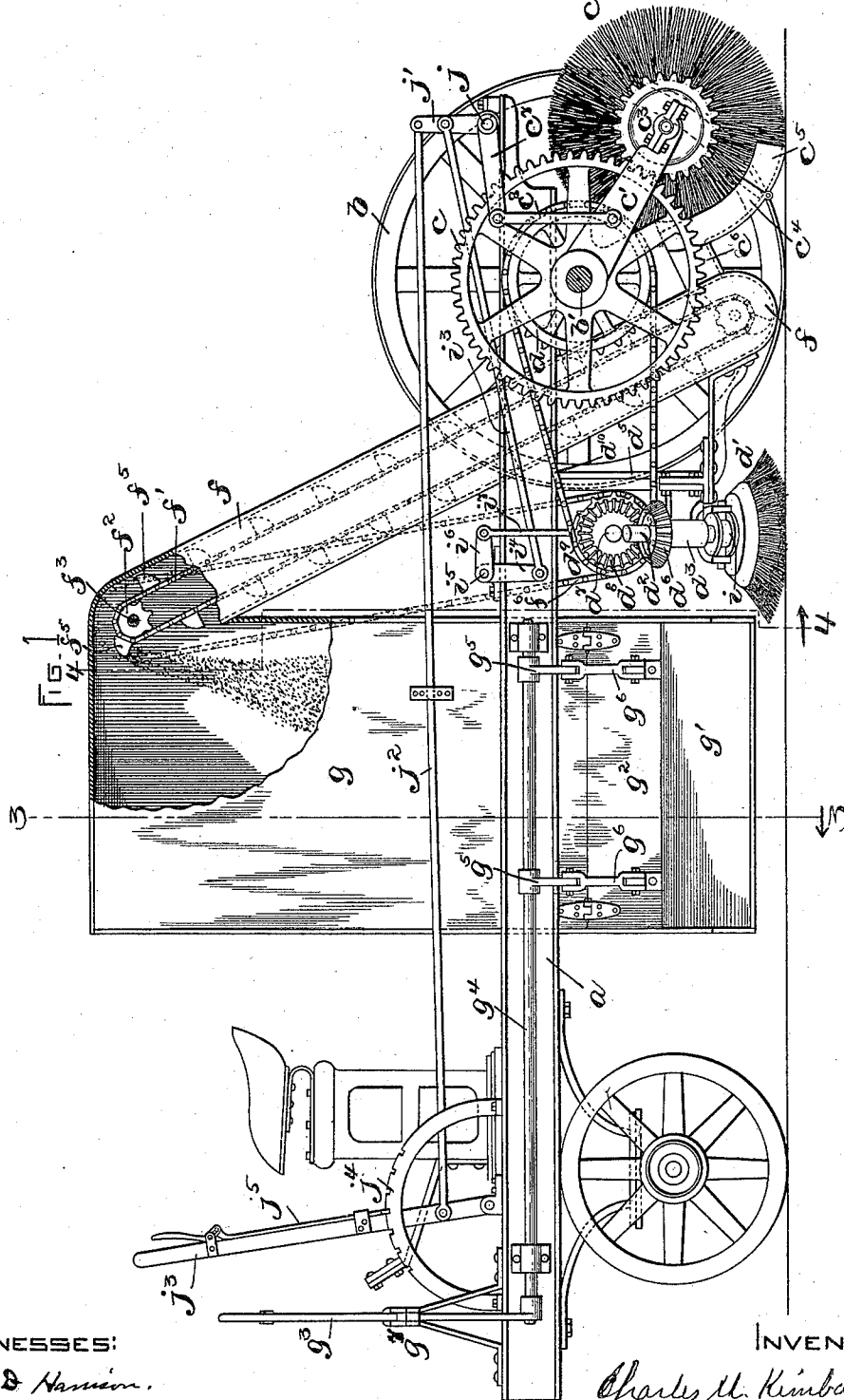
(No Model.)

4 Sheets—Sheet 1.

C. M. KIMBALL.
STREET SWEEPER.

No. 533,222.

Patented Jan. 29, 1895.



WITNESSES:

A. D. Hanson.

L. P. Davis.

INVENTOR:

Charles M. Kimball
Wright, Brown & Currier
Atty

(No Model.)

4 Sheets—Sheet 2.

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FIG. 2.

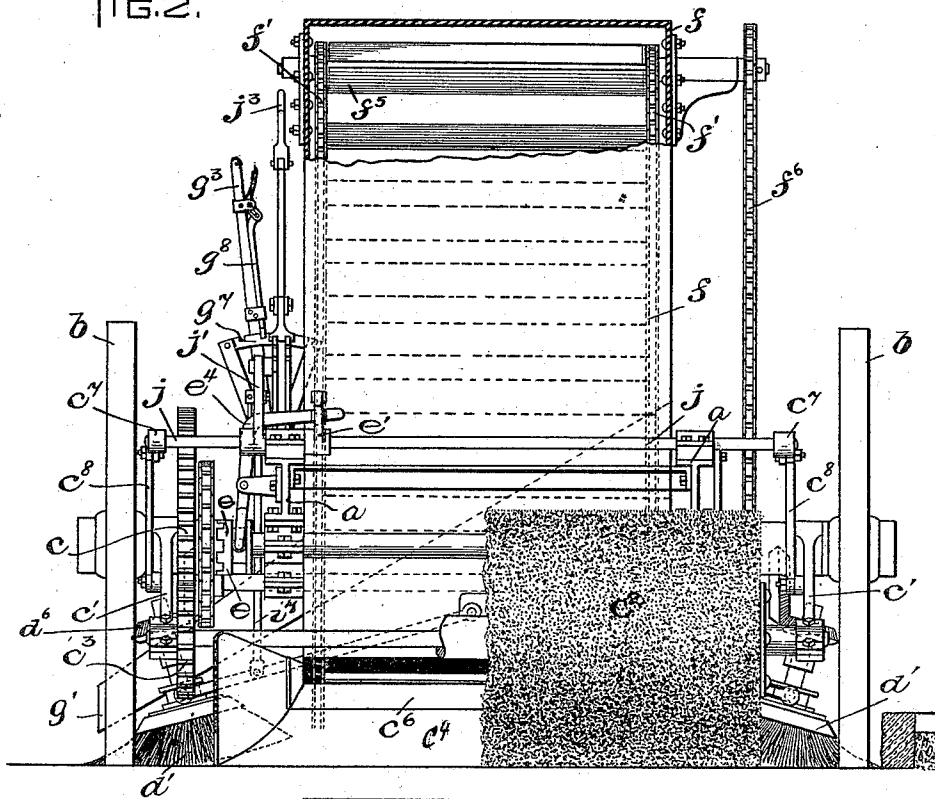
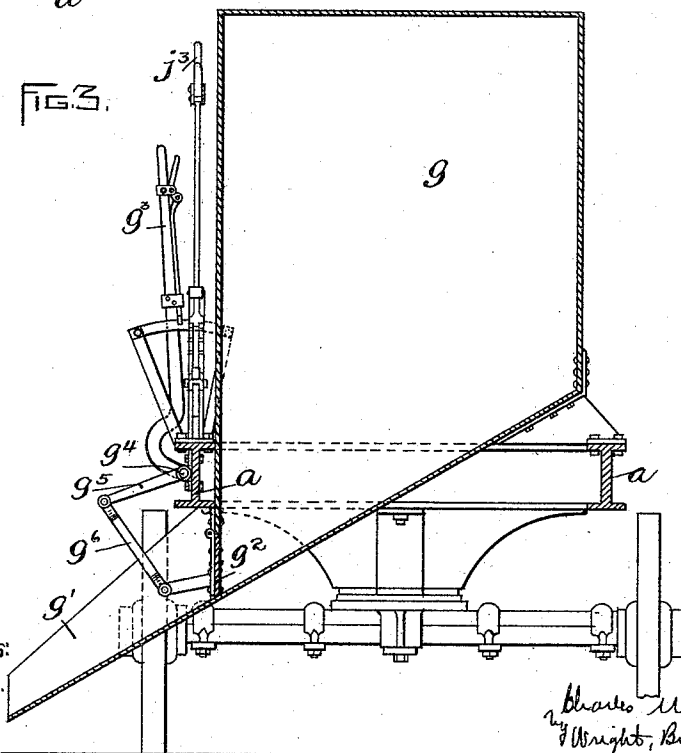


FIG. 3.



WITNESSES:

A. D. Hanson.

B. Davis.

INVENTOR:

Charles M. Kimball
by Wright, Brown & Loring
Attys.

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FIG. 4.

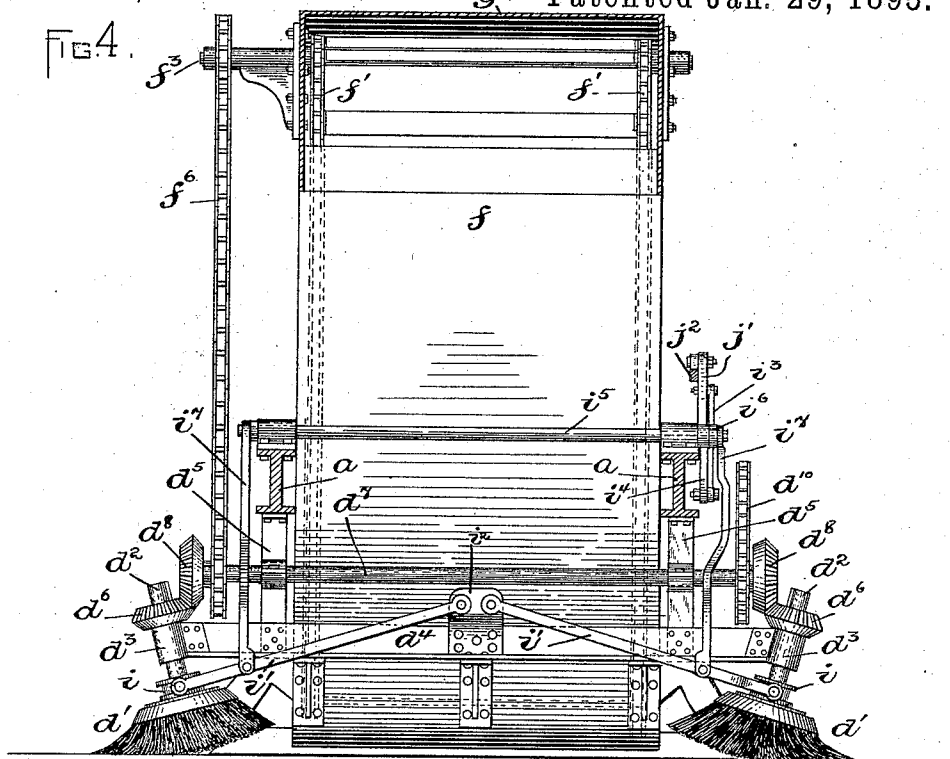
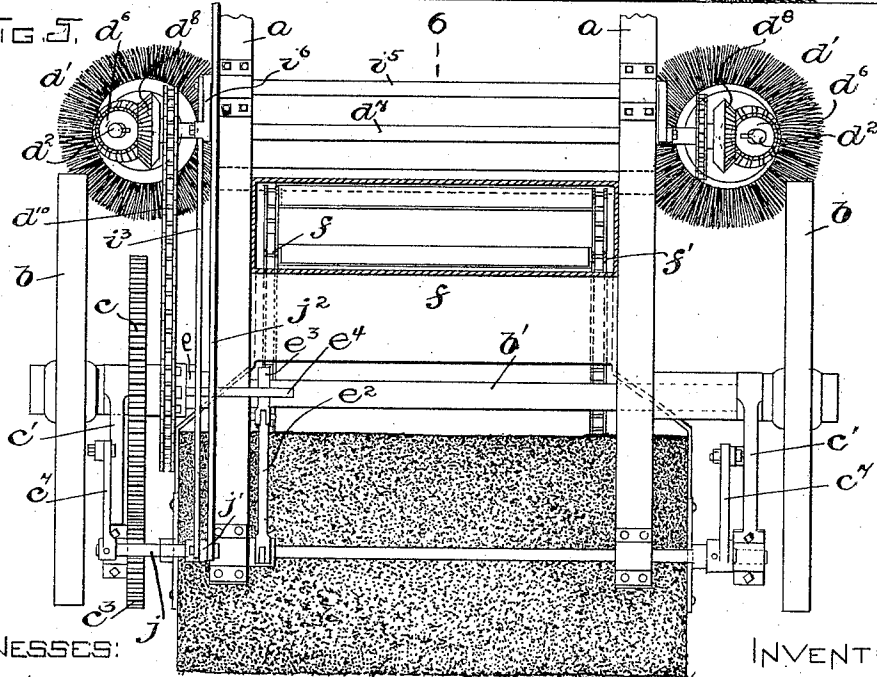


FIG. 5.



WITNESSES:

A. D. Harrison
J. P. Davis.

INVENTOR:

Charles M. Kimball
by Wright Brown & Lundy
Attys.

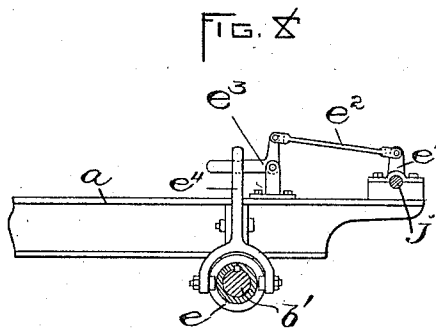
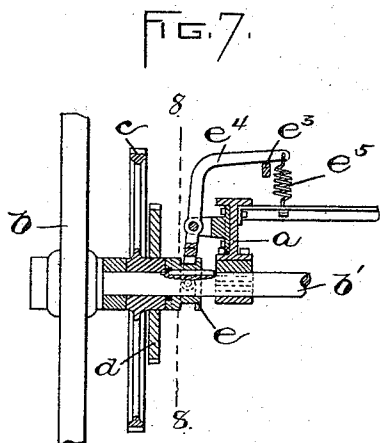
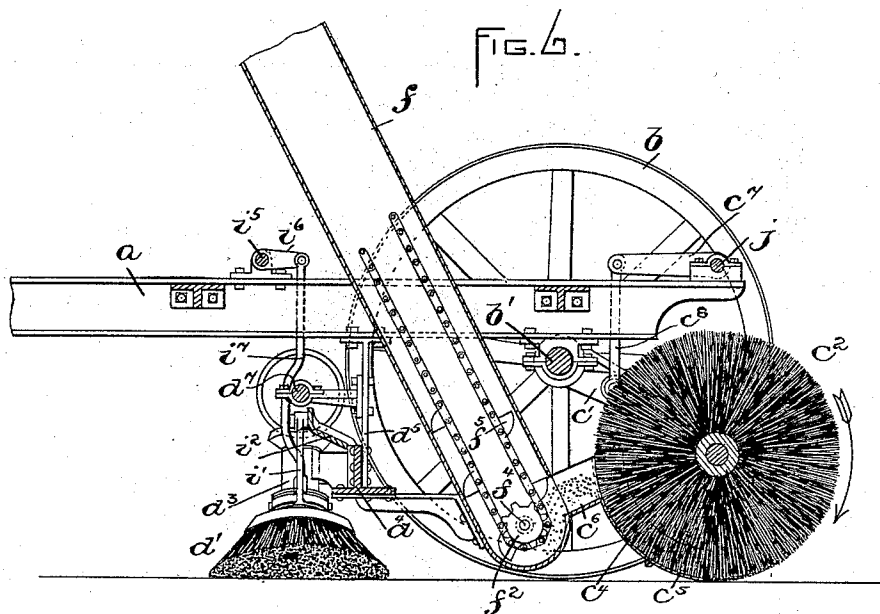
(No Model.)

4 Sheets—Sheet 4.

C. M. KIMBALL.
STREET SWEEPER.

No. 533,222.

Patented Jan. 29, 1895.



WITNESSES:

A. D. Harrison.

J. Davis

INVENTOR:

Charles M. Kimball
by Wright, Brown & Smith
Attys

UNITED STATES PATENT OFFICE.

CHARLES M. KIMBALL, OF TOLEDO, OHIO.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 533,222, dated January 29, 1895.

Application filed September 28, 1894. Serial No. 524,332. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. KIMBALL, of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Street-Sweeping Machines, of which the following is a specification.

This invention relates to street-sweeping machines, and has in view a novel organization possessing superior advantages in the thoroughness of its work and the ease with which it can be manipulated.

The accompanying drawings which form part of this specification, illustrate an embodiment of the invention.

Figure 1 shows the complete machine in side elevation with part of the elevator-casing and of the hopper broken away, and one rear wheel removed, the axle appearing in section. Fig. 2 shows the machine in rear elevation with a portion of the main brush removed and part of the elevator casing broken away. Fig. 3 shows a section taken on line 3—3, Fig. 1, and looking in the direction of the arrow crossing said line. Fig. 4 shows a section taken on line 4—4, Fig. 1, looking in the direction of the arrow crossing said line. Fig. 5 shows a top plan view of the rear portion of the machine with the elevator casing in section. Fig. 6 shows a longitudinal section on line 6—6 of Fig. 5. Figs. 7 and 8 show details of a clutch mechanism, Fig. 7 being a section taken longitudinally of the driving axle, and Fig. 8 being a section taken on line 8—8 of Fig. 7.

The truck or frame of the machine is preferably composed of I-beams, *a*, connected by suitable cross-ties and supporting bearings for the traction or ground-wheels. The rear wheels, *b*, are the drivers and they are fixedly mounted on an axle, *b'*. On this axle there is loosely mounted a large gear-wheel, *c*, and on the extended hub of the latter there is affixed a sprocket-wheel, *d*. Clutch-teeth are formed in the end of the gear-hub and there is a sliding clutch-block, *e*, splined to the axle and adapted to control rotative connection between the latter and the gear and sprocket.

The means for shipping the clutch-block will be hereinafter described in connection with other parts which are operated through the same agencies.

A pair of arms, *c'*, are pivoted upon the axle, *b'*, and they have bearings at their outer ends for the trunnions of a cylindrical brush, *c*², which carries a gear, *c*³, in mesh with the gear, *c*. It will be seen that to whatever position the brush, *c*², is brought by movement of the arms, *c'*, its gear, *c*³, will always be in mesh with the gear, *c*. A segmental pan, *c*⁴, partially embraces the front side of the brush, *c*², and has a hinged section, *c*⁵, adapted to trail on the ground. The brush sweeps the dirt up into this pan, and it will be seen that the brush will always be in close contact with the pan notwithstanding wear of the brush, for when let down to compensate for wear it also moves forward. A flaring chute, *c*⁶, leads from the upper part of the pan, *c*⁴, into the lower end of a casing, *f*, inclosing an elevator, and extending upward on an incline to the upper end of a hopper, *g*. Both these parts, *f* and *g*, are rigidly held between the two beams, *a*.

The elevator is composed of sprocket chains, *f'*, which are carried by sprocket-wheels, *f*², on shafts, *f*³ *f*⁴, journaled in the upper and lower ends of the casing, *f*, and buckets, *f*⁵, fastened to the said chains. The matter swept up by the brush, *c*², is taken by the buckets, *f*⁵, and dumped into the hopper, *g*. The latter has an inclined bottom (see Fig. 3) which is continued beyond the side of the hopper to form an outlet chute, *g'*, which is normally closed by a hinged door, *g*², in the side of the hopper. This door can be opened for discharging the contents of the hopper, by operating a handle-bar, *g*³, which is affixed to a rock-shaft *g*⁴, in bearings on one of the beams, *a*, and carrying arms, *g*⁵, connected by links, *g*⁶, with ears on the door.

For sweeping out the gutters and getting into the corners at the base of the curb-stones, I arrange side-brushes, *d'*, in advance of the main-brush, *c*², and designed to sweep the dirt into the path of the latter so as to be taken up thereby. These side-brushes are of disk-like form and are set obliquely in order to obtain better action in going into the corners, and they are secured to spindles, *d*², which extend through bearings, *d*³, on the ends of a cross-beam, *d*⁴, supported by hangers, *d*⁵, pendent from the beams, *a*. The spindles are arranged to slide through the bear-

ings, d^3 , so that the brushes may be raised and lowered, and the said bearings support bevel gears, d^6 , which are splined to the spindles. A cross-shaft, d^7 , in bearings on the hangers, d^5 , carries bevel-gears, d^8 , in mesh with the gears, d^6 , and also a sprocket-wheel, d^9 , which is connected by a chain, d^{10} , with the sprocket-wheel, d . The shaft, d^7 , carries another sprocket-wheel which is connected by a chain, f^6 , with a sprocket-wheel on the upper elevator-shaft, f^8 .

The spindles, d^2 , carry grooved collars, i , which are embraced by the forked ends of levers, i' , having studs engaging the grooves. The inner ends of the said levers are pivoted to a bearing, i^2 , fastened to the beam, d^4 .

Mechanism whereby the main-brush, the side-brushes, and the clutch-block are all shifted simultaneously will now be described.

A rock-shaft, j , is journaled in bearings on the beams, a , and carries affixed to it a pair of horizontally extending arms, c^7 , which are connected by links, c^8 , with the arms, c' . The said rock-shaft also carries affixed to it an upstanding arm, j' , to which one end of a long reach-rod, i^3 , is connected. The front end of this rod, i^3 , is connected with an arm, i^4 , pendent from and affixed to a rock-shaft, i^5 , in bearings on the beams, a . A pair of horizontally extending arms, i^6 , affixed to the said shaft, i^5 , are connected respectively by links, i^7 , with the levers, i' .

Referring again to the rock-shaft, j , it carries a short crank-arm, e' , (see Figs. 2 and 8) which is connected by a reach-rod, e^2 , with one arm of a bell-crank lever, e^3 , whose other arm extends under the horizontal arm of a bent-lever, e^4 , pivoted to a bearing on the side of the beam, a , and having a forked lower end embracing the clutch-block, e , which is grooved to receive studs on the fork of the lever.

The upstanding arm, j' , has attached to it one end of a long reach-rod, j^2 , whose forward end is connected with a hand-lever, j^3 , located beside the seat at the front of the machine.

In all the views the parts are shown in the

positions they maintain while the machine is in action.

It will be seen that upon pulling back the hand-lever, j^3 , the brushes, c^2 , and d' , will be lifted from the ground and simultaneously the clutch-block, e , will be thrown out of engagement with the gear, c , and the brush will be stopped. Reversely, when the said hand-lever is thrown forward the brushes are lowered and the clutch thrown into engagement with the gear. A spring, e^5 , (see Fig. 7) exerts itself to engage the clutch-block with the gear.

Racks, g^7 , and j^4 , are arranged in conjunction with the levers, g^3 and j^3 , which are both provided with pawls, g^8 and j^5 , for engagement with said racks. By this means the said levers can be set at any adjustment desired. When the brushes wear the adjustment of the lever, j^3 , is changed to compensate for the wear by lowering the brushes.

What I claim as my invention is as follows:

In a street-sweeping machine, the combination of a truck-frame having side-beams, a cross-beam supported from said side-beams at a lower point, oblique bearings at the ends of said cross-beams, a bracket erected at the middle of said cross-beam, disk-brushes having spindles fitted to slide through the oblique bearings, levers engaged with said spindles and pivoted to the central bracket, a rock-shaft in bearings on the side-beams of the truck and having arms affixed to it, links connecting said arms with the aforesaid levers, means applied to the rock-shaft for turning it and thereby raising or lowering the brushes, and means connecting the brushes with ground-wheels of the vehicle for revolving said brushes.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 22d day of September, A. D. 1894.

CHARLES M. KIMBALL.

Witnesses:

F. W. STURDIVANT,
W. H. ELDRIDGE.