

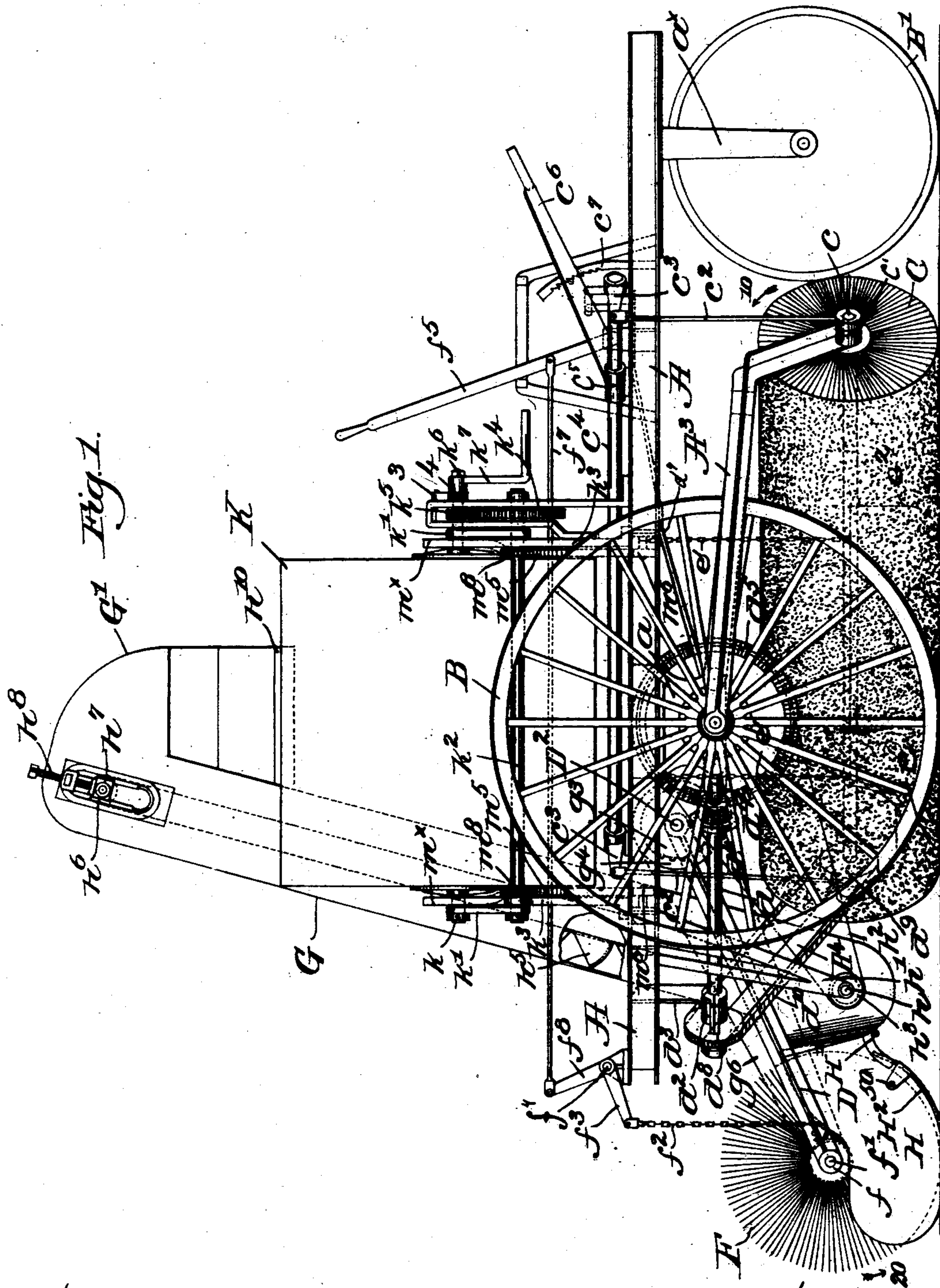
(No Model.)

3 Sheets—Sheet 1.

W. L. TOBEY.  
STREET SWEEPER.

No. 525,751.

Patented Sept. 11, 1894.



Witnesses.

Fred S. Gunkel.

Thomas J. Drummond.

Inventor.  
William L. Tobey,  
by Crosby & Crosby  
attys.



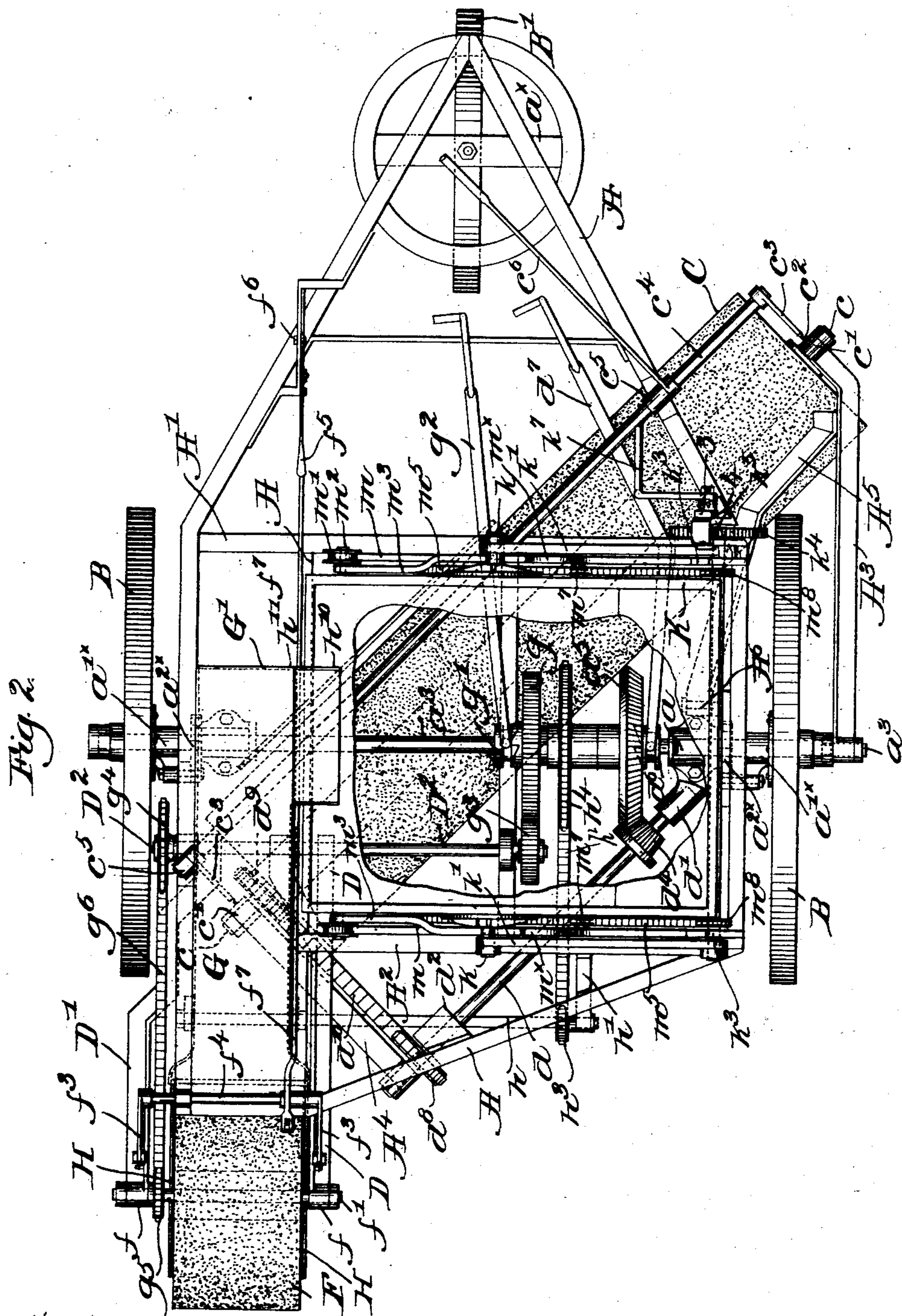
(No Model.)

3 Sheets—Sheet 2.

W. L. TOBEY.  
STREET SWEEPER.

No. 525,751.

Patented Sept. 11, 1894.



Witnesses  
Louise M. Bouill  
Thomas J. Drummond

Inventor.  
William L. Tobey,  
by Crosby & Gregory  
attys.





# UNITED STATES PATENT OFFICE.

WILLIAM L. TOBEY, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE UNIVERSAL STREET SWEEPING MACHINE COMPANY, OF SAME PLACE.

## STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 525,751, dated September 11, 1894.

Application filed December 29, 1893. Serial No. 495,078. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM L. TOBEY, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Sweeping-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 This invention has for its object the production of a sweeping machine which will sweep up the dirt in an efficient and rapid manner, and will thereafter collect the sweepings in a suitable receptacle carried by the machine, said receptacle being so arranged  
15 that it can be readily discharged when full into a cart, or in a pile, as desired.

In accordance therewith my invention consists, in a sweeping machine, of a sweeper  
20 brush to collect the sweepings, a pivotally supported pan having an independent curved bottom pivoted to the sides of the pan and adapted to rest upon and trail over the surface to be swept just in advance of the loading brush, and a cylindrical loading brush to  
25 force the sweepings over said bottom and pan onto a conveyer to convey the sweepings to a suitable receptacle, substantially as will be described.

30 Other features of my invention will be hereinafter described and particularly pointed out in the claims.

Figure 1 is a side elevation, partially broken out, of a sweeping machine embodying my invention. Fig. 2 is a top or plan view thereof;  
35 and Fig. 3 is a rear elevation of a sufficient part of the machine shown in Fig. 2, to be understood, to more particularly show the receptacle for the sweepings and the mechanism  
40 for raising and lowering it.

I have herein shown my invention as embodied in a frame A, of suitable shape to support the operating parts to be described, the said frame being preferably constructed of  
45 channel iron suitably bolted together and provided with suitable bearings to be referred to, front and rear braces A' and A<sup>2</sup> maintaining the frame rigid.

50 Brackets a secured to the sides of the frame form bearings a', shown in dotted lines Fig.

2 and in full lines Fig. 3, for a rotatable shaft a<sup>3</sup> projecting at its ends beyond the sides of the frame A and having secured thereto supporting wheels B, said wheels being loose on the shaft, the hubs a'<sup>x</sup> of said wheels being  
55 provided at their inner sides with like pawls a<sup>2x</sup> to engage ratchet wheels a<sup>3x</sup> fast on the main shaft a<sup>3</sup>, so that retrograde movement of the machine will not rotate the main shaft, and by means of the pawl and ratchet con-  
60 nections the apparatus can turn sharp corners very easily, the main shaft being rotated by the wheels B as the machine is drawn along over the surface to be swept.

A suitable traction wheel B' is swiveled to  
65 the front of the frame by a suitable bracket a<sup>x</sup>, see Fig. 1, the machine being guided in its movements by means of said traction wheel.

The sweeper brush C, of any usual or de-  
70 sired construction, is arranged diagonally with relation to the path of movement of the machine, as best shown in Fig. 2, the axis c of the brush projecting beyond the ends thereof and having bearings c' attached to the lower  
75 ends of depending links c<sup>2</sup>, said links being in turn pivotally connected to arms c<sup>3</sup> of a rock-shaft c<sup>4</sup> mounted in sleeve-like bearings c<sup>5</sup> secured to the frame A, said rock-shaft having attached thereto an actuating lever c<sup>6</sup>, by  
80 means of which the sweeper brush may be raised or lowered to adjust it to the surface to be swept, or to raise the brush altogether from contact therewith.

A suitable notched or other segment c<sup>7</sup> is  
85 adapted to be engaged by the lever c<sup>6</sup> to hold the brush at the desired elevation.

A bent arm A<sup>3</sup> is pivotally supported at one end by the portion of the shaft a<sup>3</sup> projecting beyond the hub of the supporting wheel B,  
90 the other end of the arm terminating in the bearing c', hereinbefore described, while an arm a<sup>4</sup> has formed in it the other bearing c' at the opposite end of the sweeper brush, said arm being pivoted on a shaft to be described.  
95 In order to give greater rigidity to the arm A<sup>3</sup>, a brace A<sup>5</sup> is rigidly secured thereto near one end, the other end of the brace being pivoted to the frame at A<sup>6</sup>, see Fig. 2. The arms A<sup>3</sup> and A<sup>4</sup> thus form a strong and durable  
100



supporting frame for the sweeper brush, the pivotal arrangement of said arms enabling the brush to rise and fall as it passes over inequalities in the surface to be swept.

5 Referring to Fig. 2, it will be seen that the leading end of the sweeper brush projects beyond the supporting wheel B at that side of the machine, so that the machine may be brought very close to a curb or wall and sweep  
10 the space adjacent thereto.

An actuating shaft  $d$  is supported in a bearing  $d'$ , see Figs. 2, and 3, secured to the bracket  $a$  and in a bearing  $d^2$  on a depending lug or bracket  $d^3$  secured to the main frame  
15 A, said shaft projecting beyond the bearing  $d^2$  to receive thereon loosely the upper end of the supporting arm  $A^4$  herein before described. A beveled gear  $d^4$  is secured to the actuating shaft  $d$  in mesh with a large bevel gear  $d^5$   
20 mounted upon the shaft  $a^3$  of the machine, and connected therewith by a suitable clutch  $d^6$ , the said clutch being thrown into or out of operation by a bent lever  $d^7$  capable of being operated from the forward part of the  
25 frame, so that the rotation of the actuating shaft  $d$  is directly under the control of the driver or person operating the apparatus.

A sprocket or other suitable wheel  $d^8$  is secured to the actuating shaft  $d$ , and a similar  
30 sprocket wheel  $d^9$  is secured to the rearmost end of the shaft  $c$  on the sweeper brush, said sprocket wheels being connected by a suitable link or chain belt  $d^{10}$  whereby when the machine is drawn forward or to the right view-  
35 ing Figs. 1 and 2, and the clutch  $d^6$  is in engagement with the gear wheel  $d^5$ , the rotary movement imparted to the main shaft  $a^3$  of the machine will be transferred to the actu-  
40 ating shaft  $d$  and thence to the sweeper brush, rotating the same in the direction of the arrow 10 Fig. 1 and at a comparatively slow speed, to thereby sweep up the surface passed  
45 over by the machine, the diagonal arrangement of the brush with relation to the path of movement of the machine collecting and carrying the sweepings over to the rearmost  
end of the sweeper brush and throwing the sweepings so collected against a shield  $e$  sus-  
50 pended from the frame by flexible connections  $e'$ , the forward end of the shield being rounded as at  $e^2$  to readily surmount slight obstacles, the sweepings delivered against the vertical inner face of this shield being left  
thereby in a species of windrow as the ma-  
55 chine is moved ahead, and the flexible connections  $e'$  permit the shield to move laterally if desired.

Depending arms D and D' are pivotally mounted upon a shaft  $D^2$  to be described,  
60 bearings  $f$  being formed at the lower ends of said arms to receive therein the ends of the shaft  $f'$  of a rotatable loading brush F, the arms being connected by the chains or other flexible connections  $f^2$  to arms  $f^3$  secured to a  
65 rock-shaft  $f^4$  mounted upon the frame A. An actuating lever  $f^5$  pivoted to the frame at  $f^6$  is connected by a link  $f^7$  to an arm  $f^8$  of said

rock-shaft whereby the loading brush F may be raised or lowered.

Viewing Fig. 1, it will be noticed that the  
70 flexible connections  $f^2$  hang slack when the loading brush rests upon the surface to be swept, in order that it may also rest upon said surface whether the same be smooth or irregu-  
75 lar. Were the said connections rigid, such as rods, the loading brush would be lifted from the ground every time the front of the machine descended into a hollow, and in con-  
sequence, a portion of the sweepings would not be engaged by the loading brush. 80

The main shaft  $a^3$  of the machine supports loosely a gear  $g$  adapted to be engaged at  
times by a suitable clutch  $g'$ , see Fig. 2, to rotate with the said main shaft, the clutch  
being controlled by an actuating lever  $g^2$ , and  
85 the shaft  $D^2$  supported in suitable bearings on the frame has fast thereon a gear  $g^3$  in en-  
gagement with the gear  $g$  and to be rotated thereby, while a sprocket wheel  $g^4$  is secured  
to the shaft  $D^2$  beyond the frame of the ma-  
90 chine. A smaller sprocket wheel  $g^5$  is secured to the shaft  $f'$  of the loading brush F and  
said sprockets are connected by link belt or chain  $g^6$ , so that rotation of the shaft  $D^2$  is  
communicated to the loading brush F to ro-  
95 tate the same in the direction of the arrow 20 Fig. 1. This loading brush, as best shown in  
Fig. 2, is located behind and near the rear-  
most end of the sweeper brush C to load the  
sweepings into a trailing dust-pan to be de-  
100 scribed, whence they are conveyed to a suitable receptacle or hopper to be described.

A conveyer or elevator chute G, partially  
broken out in Fig. 1 and composed of a suit-  
able frame-work, preferably covered with  
105 sheet iron, is rigidly secured to the frame-work A of the machine by suitable bolts 3,  
best shown in Fig. 3, a shaft  $h$  passing through and having bearings formed for it in  
the lower part of the conveyer chute, as  
110 clearly shown in Figs. 1 and 2, the said shaft  $h$  extending beyond the conveyer chute for  
some distance at the rear of the machine, its outer end being supported in a suitable bear-  
ing at the lower end of a bracket  $h'$  depend-  
115 ing from the main frame, rotation being trans-  
mitted to the shaft  $h$  by a suitable belt  $h^2$  passing over sprocket or other suitable wheels  
 $h^3$  and  $h^4$  fast on the shafts  $h$  and  $a^3$  respec-  
tively. 120

The conveyer is herein shown as an endless  
series of connected buckets  $h^5$ , see Fig. 1, pass-  
ing around an enlarged portion of the shaft  
 $h$ , within the conveyer chute, and at the up-  
per end over an adjustable roll  $h^6$  having its  
125 bearings in sliding blocks  $h^7$ , regulated by an  
adjusting screw  $h^8$ , whereby slack in the se-  
ries of conveyer buckets  $h^5$  can be taken up.

The upper end of the conveyer chute G is  
notched to form a hood  $G'$  intumed toward  
130 the center of the machine and having an in-  
clined bottom  $h^9$ , a narrow flap  $h^{10}$  pivoted at  
 $h^{11}$  to the side of the chute forming a contin-  
uation of the bottom  $h^9$  and being adapted to



be turned up when the hopper is raised to empty it, as will be described hereinafter.

A trailing dust-pan H is pivoted at H' to the base of the chute, which latter is open at its rear side adjacent the loading brush F, the vertical sides of the dust-pan H extending below the axis of and quite near the ends of the loading brush, the portion H<sup>2</sup> of the bottom of the pan being independently pivoted at 10 to the vertical sides thereof.

The loading brush F gathers up the sweepings left in a windrow by the sweeper brush C and by its rapid rotation throws the sweepings up over the bottom of the trailing pan, and into the open end of the conveyer chute, to be gathered up and carried by the series of buckets h<sup>5</sup> to the top of the chute and there discharged through the hood G'. As the pan is pivoted at H' it is free to rise and fall with the inequalities of the surface being swept, and the independently pivoted portion H<sup>2</sup> of the bottom of said pan will yield somewhat should the machine be pushed backward for any reason, thus obviating any possibility of 25 breakage.

In order to collect the sweepings in a convenient receptacle as they are delivered from the hood G', I have provided a hopper K having at its front and rear sides trunnions k, to which are pivotally connected supporting arms k', the other ends of the arms loosely embracing a shaft k<sup>2</sup> supported in bearings on brackets k<sup>3</sup> extended upwardly from the main frame A, said shaft having fast thereon at one end preferably, and as herein shown the front, a gear k<sup>4</sup> in engagement with a smaller gear k<sup>5</sup> on a crank shaft k<sup>6</sup> and rotated by a suitable crank k<sup>7</sup>, retrograde movement of the crank shaft being prevented by 40 the pawl and ratchet mechanism 3 and 4, of any usual construction.

The hopper K is pivotally supported on its trunnions k so that it can be tipped upon them as a center and it can also be raised on the supporting arms k' to a position above the wheels B of the machine, as shown in dotted lines Fig. 3, by mechanism to be described so that it may be tipped on its trunnions to be emptied. When in its normal 50 full line position, the pivoted apron h<sup>10</sup> rests upon the top of and projects slightly into the hopper, so that the sweepings will readily pass from the hood G' to the hopper.

Tracks m are secured to the cross braces A' and A<sup>2</sup> and to the brackets k<sup>3</sup>, to receive thereupon rotatable rolls m' mounted upon suitable studs m<sup>2</sup> secured to the lower ends of links m<sup>3</sup> loosely surrounding the trunnions k of the hopper; and to an ear m<sup>4</sup> secured to 60 or forming a part of each link m<sup>3</sup> I have secured an actuator, herein shown as an endless belt or chain m<sup>5</sup> passing over guides m<sup>6</sup> and m<sup>7</sup>, secured to the braces A', A<sup>2</sup>, and to the tracks m respectively, the belt or chain 65 also passing over a suitable sprocket or other wheel m<sup>8</sup> fast on the shaft k<sup>2</sup>.

The upper ends of the tracks m are up-

turned or hook-shaped as at m<sup>x</sup> to form limiting stops for the rolls m<sup>2</sup> when they have reached their dotted line position Fig. 3. 70

When the hopper is full of the sweepings, collected and conveyed thereto as hereinbefore described, the machine is preferably stopped, and the crank arm k<sup>7</sup> is rotated until the rotation of the shaft k<sup>2</sup> and the consequent movement given thereby to the actuator m<sup>5</sup> causes the rolls m<sup>2</sup> to rise along the tracks m into the dotted line position shown in Fig. 3, such movement swinging the arms k' and elevating the hopper, when it will be 80 held in such elevated position by the pawl and ratchet 3, 4. A cart or wagon may then be drawn up alongside of the machine and the hopper tipped and its contents dumped therein, after which the pawl and ratchet 85 will be released and the hopper will return to its normal position, the pivoted apron h<sup>10</sup> permitting the movement of the hopper described.

It will be noticed that the various actuating levers or cranks are brought to the forward part of the machine where the driver's seat would be placed, to be readily reached by him without interfering with his other duties. 95

I claim—

1. In a sweeping machine, a sweeper brush to collect the sweepings, a pivotally supported pan having an independent curved bottom pivoted to the sides of the pan and adapted 100 to rest upon and trail over the surface to be swept just in advance of the loading brush, and a cylindrical loading brush to force the sweepings over said bottom and pan onto a conveyer to convey the sweepings to a suitable receptacle, substantially as described. 105

2. In a sweeping machine, a sweeper brush, a loading brush, a hopper for the sweepings, and swinging arms to which the hopper is pivoted, combined with actuating mechanism 110 connected to and to raise the hopper and swing the arms, to thereby move the hopper to abnormal elevated position that it may be turned upon its pivots to discharge its contents, and a conveyer to convey the sweepings thereto from the loading brush, substantially as described. 115

3. In a sweeping machine, a sweeper brush, a loading brush, a hopper, supporting arms pivoted to the hopper and to the machine, actuating mechanism connected to and to raise 120 the hopper and turn said arms, to thereby elevate and carry the hopper to one side of the machine into position to be emptied, and a locking device for the actuating mechanism, combined with a conveyer to convey the sweepings from the loading brush to the hopper, and a hinged flap normally projecting from the conveyer chute over the hopper, upward movement of the latter turning the flap 130 out of its path, substantially as described.

4. In a sweeping machine, a sweeping and a loading brush, and a conveyer to convey the sweepings from the loading brush to the



hopper, combined with a hopper, swinging  
arms to which it is pivoted, fixed inclined  
tracks, rolls pivotally connected by links to  
the hopper and adapted to move along said  
5 tracks, and actuating mechanism connected  
to and to move the rolls upon the tracks to  
raise the hopper and swing the arms, substan-  
tially as described.

In testimony whereof I have signed my  
name to this specification in the presence of  
two subscribing witnesses.

WM. L. TOBEY.

Witnesses:

GEO. W. GREGORY,  
JOHN C. EDWARDS.