

(No Model.)

2 Sheets—Sheet 1.

J. F. S. BRANTH.
STREET SWEEPER.

No. 552,887.

Patented Jan. 14, 1896.

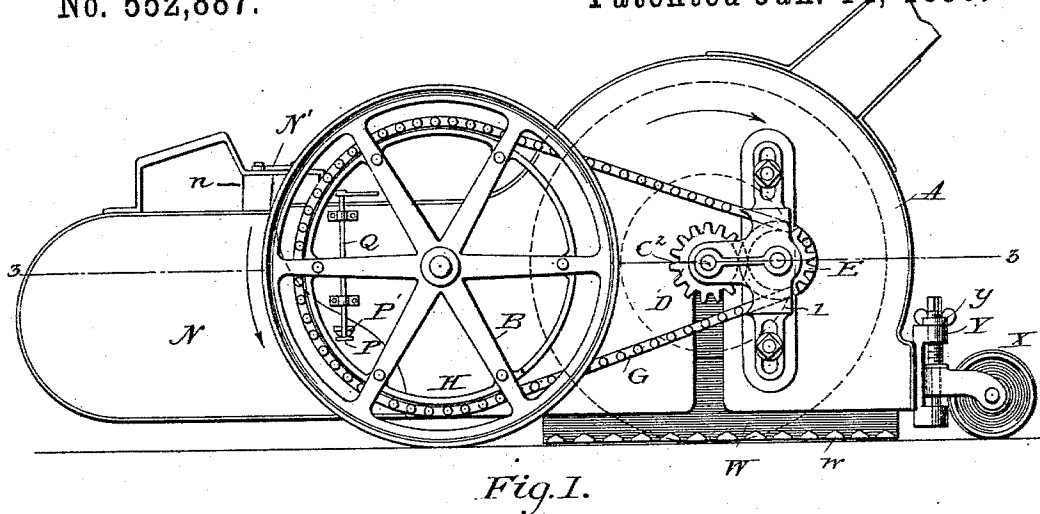
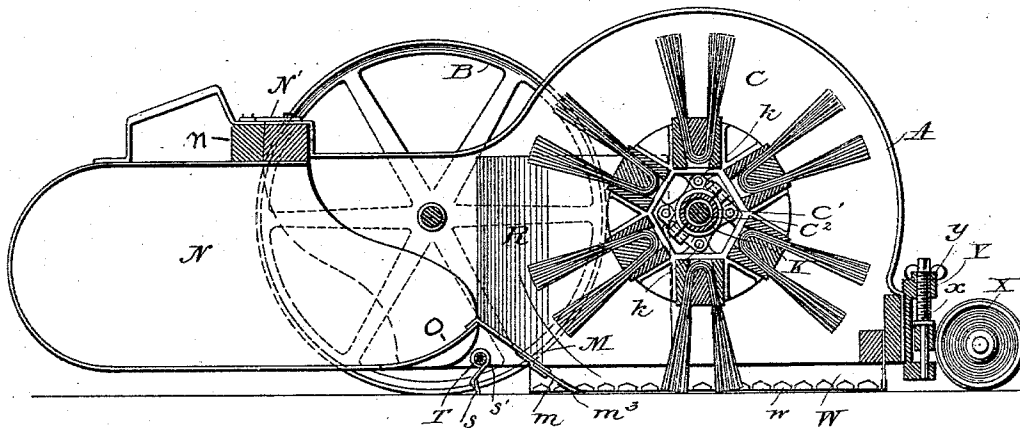


Fig. 2.
on line 2-2.



Witnesses

[Signature]
F. S. Elmore

Inventor
J. F. S. Branth
by Raymond Barnes.
Attorney

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.
on line 3-3.

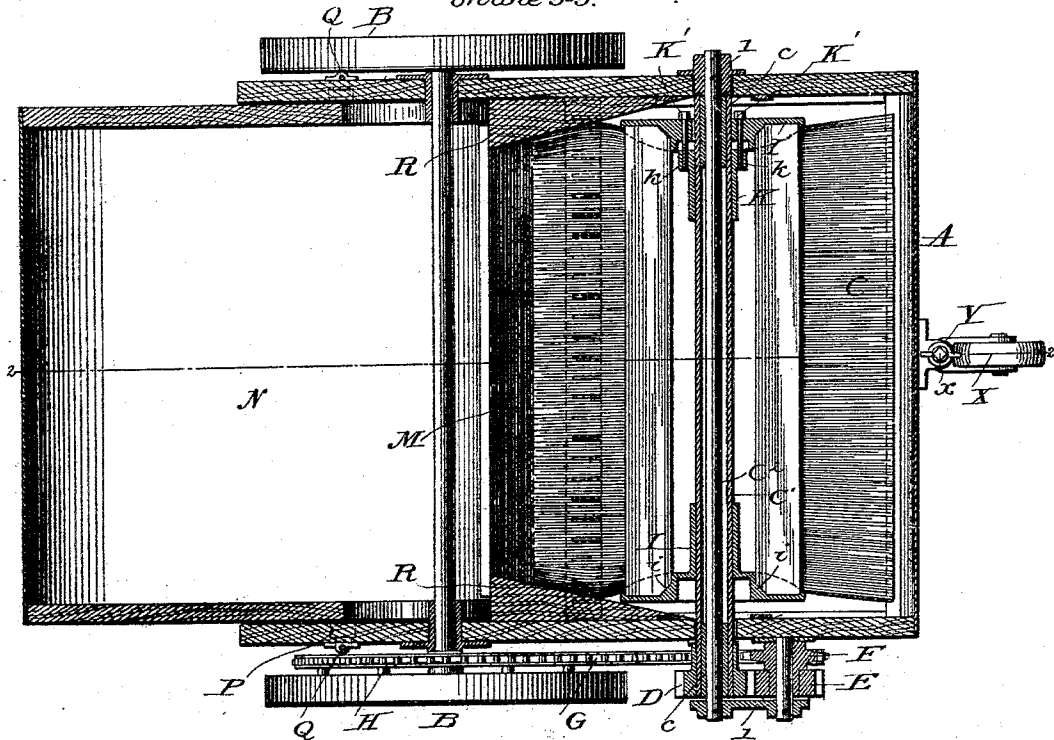


Fig. 4.

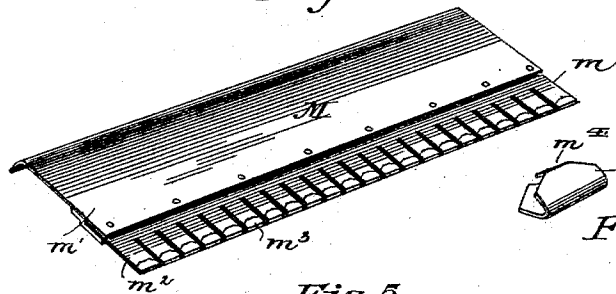


Fig. 5.



Fig. 6.

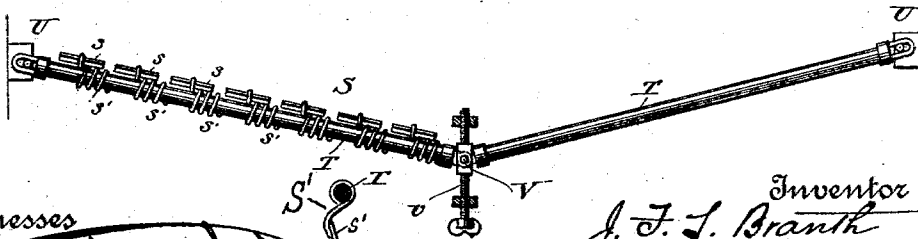


Fig. 7.

Witnesses

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UNITED STATES PATENT OFFICE.

JOHAN F. S. BRANTH, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR,
BY MESNE ASSIGNMENTS, TO THE INTERNATIONAL SWEEPING MACHINE
COMPANY.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 552,887, dated January 14, 1896.

Application filed October 15, 1892. Serial No. 448,964. (No model.)

To all whom it may concern:

Be it known that I, JOHAN F. S. BRANTH, a subject of the King of Sweden and Norway, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Street-Sweeping Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to street-sweeping machines of the class which are provided with a rotary brush driven by suitable gearing from the ground-wheels upon which the machine travels, and provided with an inclined apron for receiving the dust and dirt from the brush, and a removable receptacle for holding and carrying such dirt with the machine in its progress; and it consists in certain details of construction of the rotating brush by which the different members composing the same are held always in the same position relative to the working surface; in an improved bearing upon which the brush is mounted and revolves; in inclined guards for preventing the dirt thrown into the machine by the action of the brush from falling back again into the street; in a scraping device for loosening dirt caked or packed upon the pavement; in the construction of the flexible apron for receiving the dirt from the brush, and certain other details of construction, all of which will be more fully hereinafter described with reference to the drawings accompanying this specification, in which—

Figure 1 is a side elevation of the machine; Fig. 2, a central longitudinal section on the line 2 2 of Fig. 3; Fig. 3, a horizontal section on line 3 3 of Figs. 1 and 2; Fig. 4, a detail of the flexible apron; Fig. 5, details of the scraper, and Fig. 6 a detail of one of the protecting-clips; Fig. 7, a detail showing the method of mounting the scraper-blades.

The machine as shown in the drawings consists, broadly, of a frame A, preferably of wrought-iron, mounted to travel on ground-

wheels B B, attached to the sides of the machine. Within this casing is mounted a rotating brush C, mounted on a hollow shaft C', revolving around a fixed spindle C², which runs through the casing from side to side and projects at either end. Inside the revolving tube C', at each end, is fixed a bearing c, of Babbitt metal or similar material, surrounding the fixed spindle and within the ends of the revolving sleeve. To the outer end of the sleeve, at one end, is fixed a small pinion D, meshing with a second small pinion E, mounted on a short spindle projecting from the side of the frame and rigidly attached to a small sprocket-pinion F, which is connected by a suitable chain G to a sprocket-gear H, mounted on the ground-wheel B.

Within the casing and between the sides thereof is mounted the rotating brush C carried by heads I I'. These heads are recessed to receive the different sections of the brush, and in the construction shown are adapted to carry six sections. One of the heads, as I, is fixed to the hollow spindle, and the other is made movable longitudinally on the spindle C in order to adjust the distance between the two and take up any shrinkage or wear in the brush-sections, and thus keep the brush always in the same relative position in regard to the surface on which it works.

It will be noticed that the inner sides of the recesses in the head are beveled, as shown at i i, and that the ends of the brush-sections are correspondingly beveled. The object of this construction is to force the brush out from the center and compensate for the wear on the ends of the fibers composing the brush.

For the purpose of moving the head I', I fasten to the hollow shaft C, inside the head, a split collar or ring K, having ears k k, threaded to receive the ends of screws K' K', which pass through the head I' and may be turned from the outside, and thus force the head along the sleeve and clamp the parts.

The brush in its rotation delivers the dirt and dust over an inclined apron M into a receptacle N, which is made separable from the body of the machine. The receptacle may be supported in any suitable manner; but the construction preferred is shown in the draw-

ings, in which it is supported from the top by a cross-bar *n*, which may be locked by a catch *N'* to a corresponding cross-bar mounted upon the machine-frame. The under side of the receptacle carries an upturned lip *O* at its forward end, which rests, when the receptacle is in its normal position, under the angle formed by the upper end of the apron. In order to retain this lip in its position, I place at one or both sides of the machine a cam *P*, acting under a shoulder *P'*, fastened to the receptacle, the cam being capable of rotation through a short rock-shaft and handle *Q*.

It will be seen that as the cam is rotated it acts on the under side of the shoulder and lifts the forward end of the receptacle, forcing the lip tightly against the apron, thus closing the receptacle and preventing the escape of dust at this point.

In order to compensate for irregularities in the surface to be operated upon, the apron is constructed as shown in the detail Fig. 4. It consists of a rubber or canvas strip *m*, mounted upon the edge of a sheet of metal *m'* and serrated or cut into a series of fingers or flaps *m²*. Each of these fingers is protected at its end by a clip *m³*, of thin metal, bent over it and fastened to it by turning down one of the points of the clip, as shown at *m⁴*, this construction being shown in Fig. 6, where the point *m* is shown turned down and the clip ready for application to the apron.

In operation, where an obstruction is met with, that portion of the apron which strikes the obstruction will be bent back and ride over it, while the remaining portion of the apron will continue to act to receive the dust and dirt from the broom.

In machines of this character it has been found in practice that the dirt accumulating in the machines will fall back against the broom or brush and be thrown out at each side, leaving a narrow ridge or track of dirt. In order to prevent this action, I construct at each side of the broom angular guards *R R*, having their forward ends at the center of the broom at each side and their bases at the point formed by the upper end of the apron. These guards are so formed that they tend to compress the ends of the broom or brush as it rotates, and thus prevent the dirt which falls against it from being discharged at the side. They also act to completely close the casing at all points except that through which the dirt is received from the broom, the angular faces of the guards gradually reducing the width of the opening until the upper edge of the apron is reached, where it becomes less than the width of the broom. As a consequence of this construction dirt falling back from the receptacle will come within the effective working surface of the broom and be thrown back into the receptacle, and as the rear face or base *S'* of the guards *S* forms an offset at each side at the upper edge of the apron no dirt can escape at the ends of the broom.

In certain instances, where the dirt or accumulation upon the pavement has become packed or caked by reason of travel or other cause, it has been found that a rotating brush, as usually constructed, is not sufficient to remove the material. For the purpose of loosening such accumulations I provide a scraper or loosening device *S* adjustably mounted underneath the apron and in front of the broom or brush. This loosening device consists, as shown, in a series of flat metallic plates *s*, mounted upon spiral springs *s'*, carried by rods *T*, which are joined to the frame at each side, as shown at *U*, and connected at the center by a hinged joint *V*, which joint is made movable, and may be adjusted by a bolt *c*, or other similar means, the object of such adjustment being to throw the two lines of scrapers at an angle to the line of travel of the machine, thus throwing the dirt toward the center of the broom.

In Fig. 7 is shown a detail illustrating the spring-carried scraper *S*. The spring *S'* is coiled around the rod *T* and secured thereto at one end, the remaining free end carrying the blade or plate *s*, which is riveted or secured thereto.

In order to prevent the dust thrown up by the broom in its rotation from escaping from the under side of the machine, I surround the lower edge of the frame with a flexible apron *W*, of rubber or canvas, protected on its edge by clips *w*, of metal, substantially similar to those employed on the inclined apron. This protecting shield or apron *W* may be serrated, but in the preferred construction is made continuous.

In order to adjust the pressure of the brush upon the pavement or surface upon which it works, I mount at the rear of the machine a small wheel or trolley *X*. This trolley is mounted to swing on an adjustable pivot *x*, carried in a bracket *Y*, fastened to the frame. The pivot, as shown, is threaded at its upper end and passes through an ear threaded to receive it, and a lock-nut *y* placed above the ear upon the projecting end of the pivot. It will be seen that by turning the threaded pivot the wheel may be raised or lowered with relation to the frame and the pressure of the broom upon the surface increased or diminished.

In order to adjust the broom up and down in the frame, the ends of the fixed spindle which carries the broom are carried in slots in the frame by adjustable bearings *11*, mounted upon the frame at each side of the machine, one of the bearings carrying also the sprocket-pinion and its attached gear. Inside the casing, and surrounding the slots in which the spindle is mounted, I place flat strips of metal to reinforce the sides, where the sides are formed of wood; but when the machine is composed entirely of metal these strips would not be necessary. The annular space inside the hollow spindle and surrounding the fixed spindle may be, and is preferably, used as an

oil-reservoir for lubricating the bearings at each end, for which purpose a tap-hole may be drilled at any convenient place and fitted with an oil-plug.

5 Attention is called to the fact that by constructing the bearing-surfaces on which the broom revolves in the manner shown I am enabled to get the necessary long bearings for the revolving brush and am yet able to
10 bring the ends of the brush close to the sides of the machine, thus utilizing the full width of the machine for work.

While the construction shown and described is preferred by me, it is of course obvious that
15 many of the details might be changed without departing from the spirit of the invention, and such modifications would suggest themselves to any one familiar with the art. All such modifications come within the meaning
20 of my invention.

While the machine shown is adapted to hand-work, it may be modified or enlarged and changed to adapt it for use with horse-power.

I claim—

25 1. In a street sweeping machine the combination of the casing provided with a receptacle and formed with side walls, an upwardly inclined apron leading to the receptacle, a horizontal rotary brush mounted in the casing
30 between the side walls, and guards fixed to the inner sides of the casing, said guards formed at their front with offsets or shoulders and having their inner faces inclined backward and outward in the path of the rotary brush;
35 whereby the spaces between the ends of the brush and inner sides of the casing are closed by the guards and the brush section compressed.

2. In a street sweeping machine, a rotating
40 brush composed of a number of sections, a shaft, a fixed head recessed to receive one end of the sections, a correspondingly recessed

movable head to receive the other ends of the sections, and means for adjusting and holding the movable head to compensate for end wear or shrinkage of the sections substantially
45 as described.

3. In a street sweeping machine, the combination with a vertically slotted casing, of vertically adjustable bearings, a fixed spindle
50 carried thereby, a hollow shaft surrounding the spindle bearings inside the hollow shaft and around the spindle, a head fixed on the hollow shaft, an adjustable head mounted on the same, and a series of brush sections held
55 between the movable and fixed heads, as described.

4. In a street sweeping machine, the combination with a casing mounted on ground wheels, of adjustable bearings mounted on
60 the casing, a fixed spindle carried thereby, a hollow shaft mounted on bearings to revolve around the spindle, a fixed head carried by the hollow shaft, a movable head adjustably mounted thereon, brush sections carried be-
65 tween the fixed and movable heads, a pinion mounted on the hollow shaft, and means whereby the pinion receives motion from the ground wheel, as described.

5. In a street sweeping machine the combination of a rotating brush and a casing closed
70 at all points except that in which the brush operates of an inclined receiving apron, a flexible serrated strip mounted thereon, guards mounted within the casing, and a depending
75 flexible curtain surrounding the broom opening, and clips mounted upon the curtain and serrated strip, as described.

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

JOHAN F. S. BRANTH.

Witnesses:

F. S. ELMORE,
RAYMOND F. BARNES.