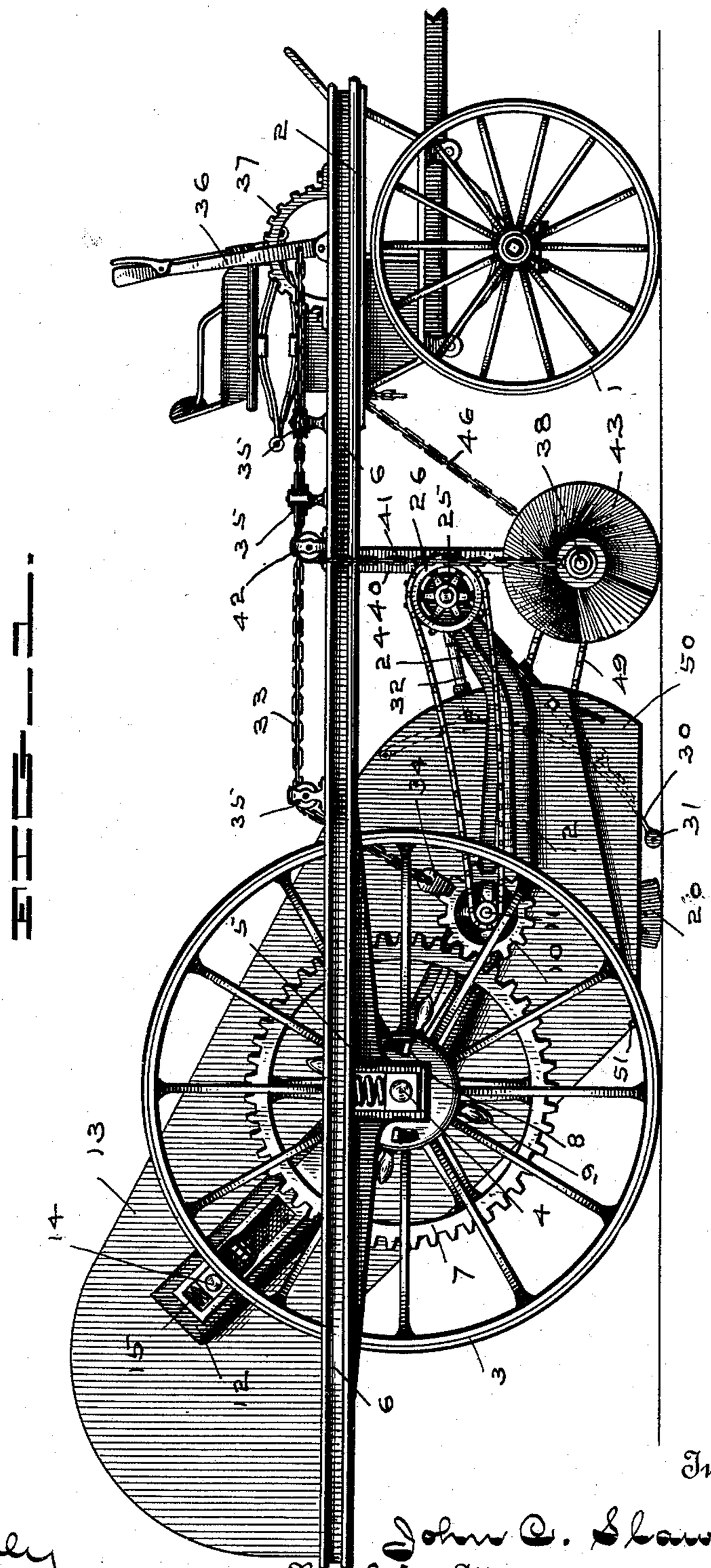
(No Model.)

4 Sheets—Sheet 1

J. C. SLAWSON.

STREET SWEEPER.

No. 505,796. Patented Sept. 26, 1893.



Witnesses

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Geo. J. Murray

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V. B. Lockwood.

(No Model.)

4 Sheets—Sheet 2.

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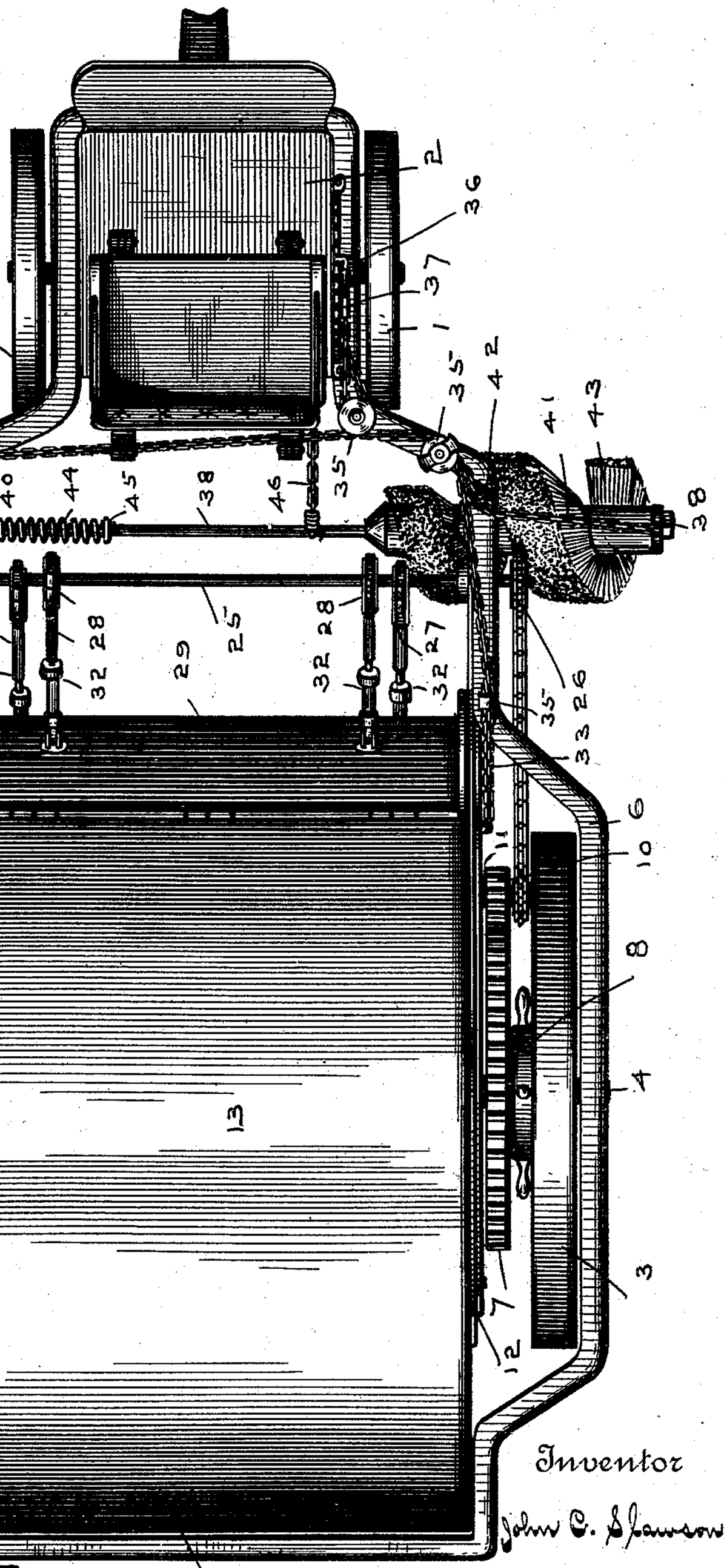

(No Model.) 4 Sheets—Sheet 3.

J. C. SLAWSON.

STREET SWEEPER.

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FIG. 3.

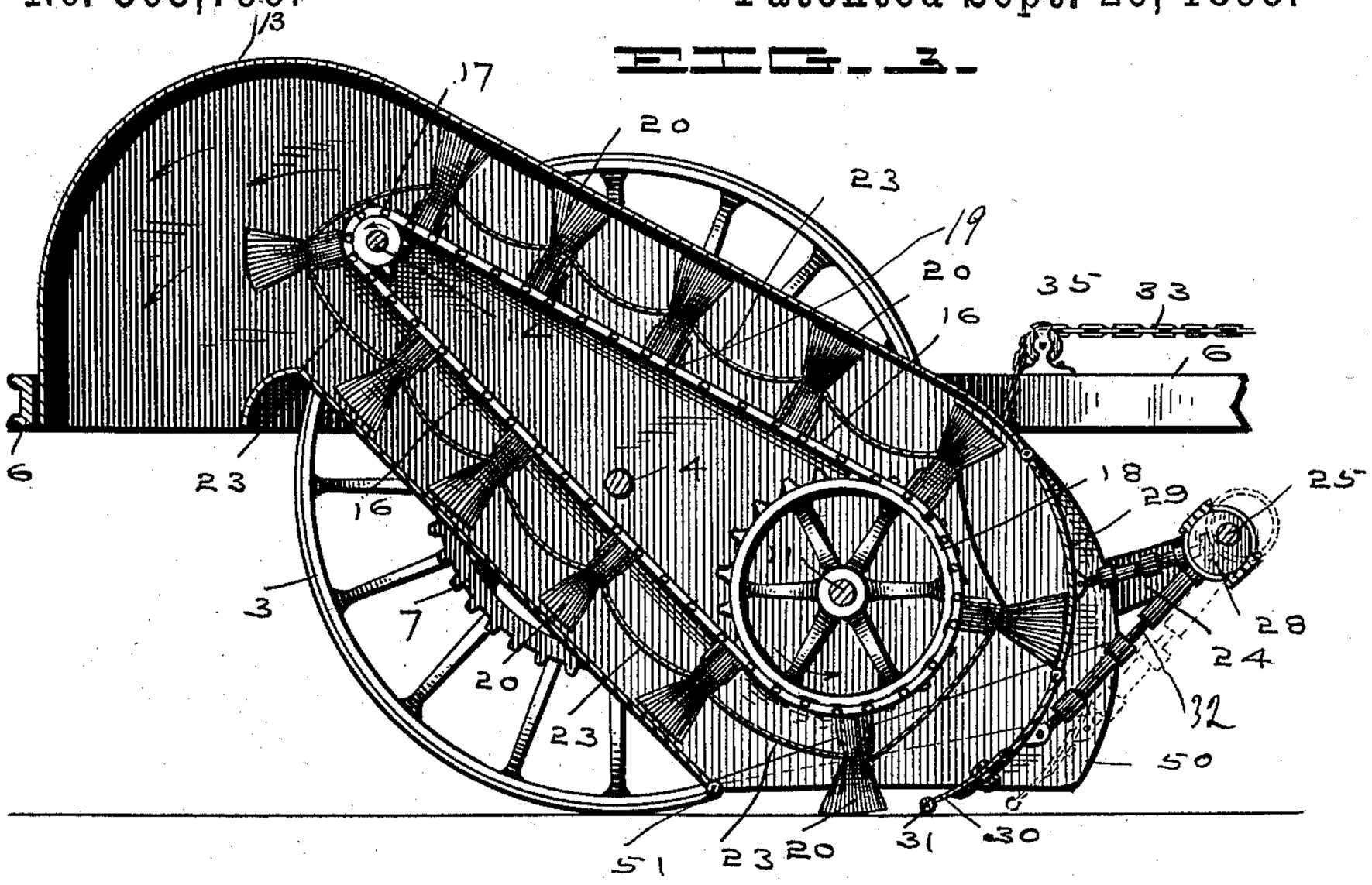
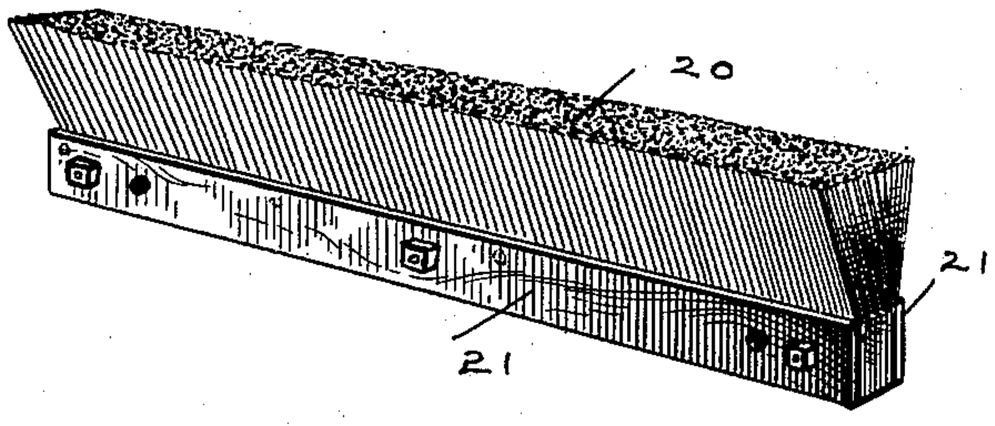


FIG. 4.

FIG. 5.



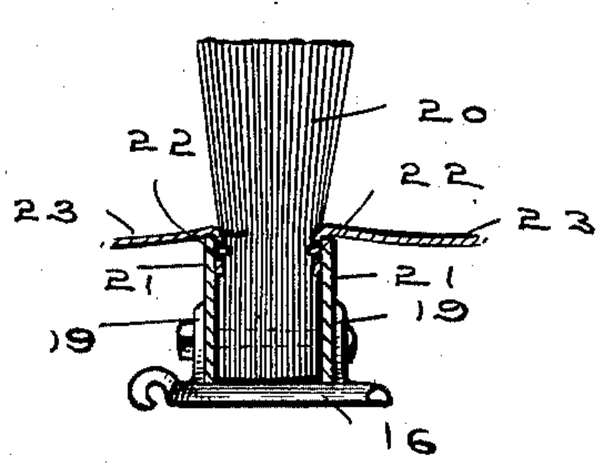
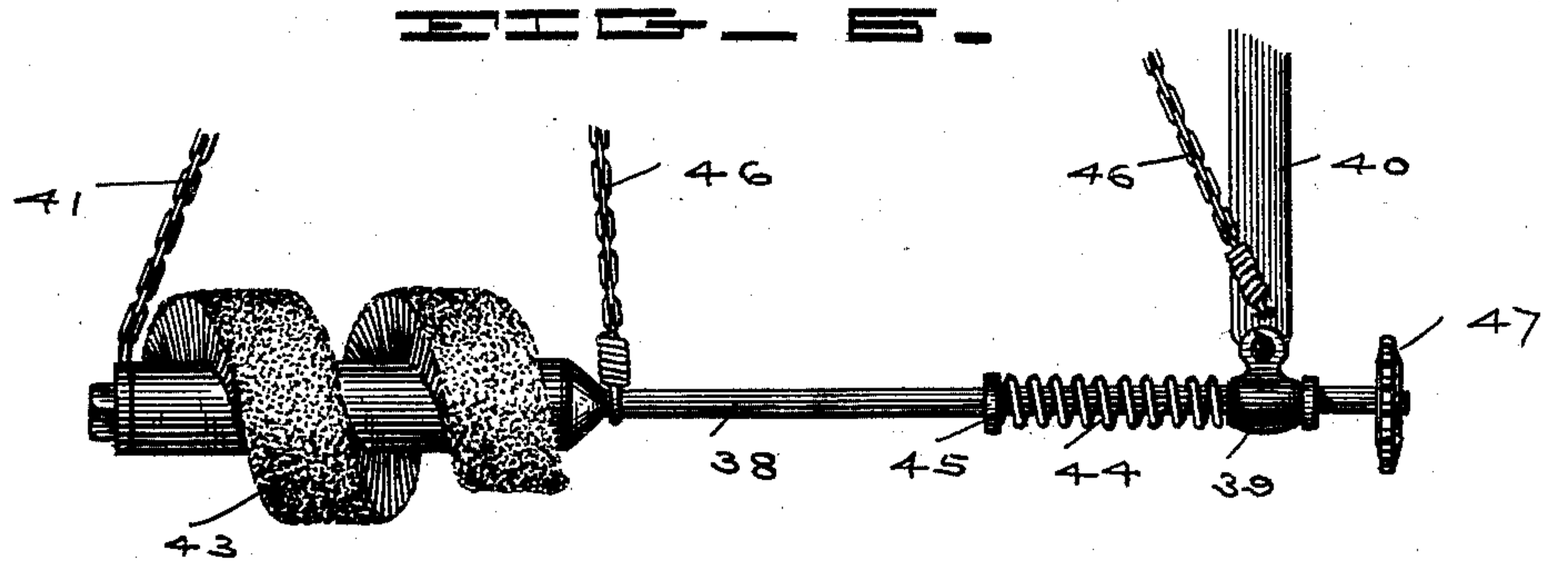


FIG. 6.



Witnesses

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4 Sheets—Sheet 4.

J. C. SLAWSON.

STREET SWEEPER.

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FIG - 7 -

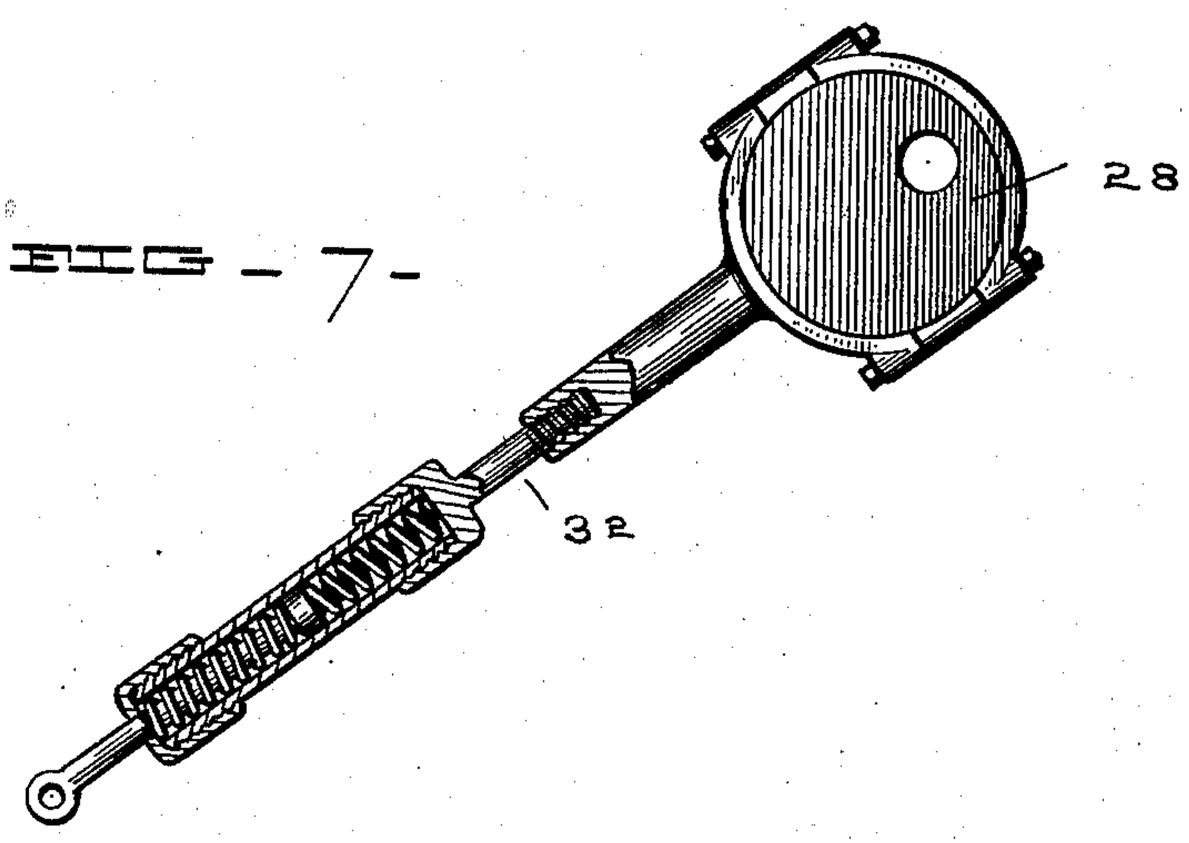
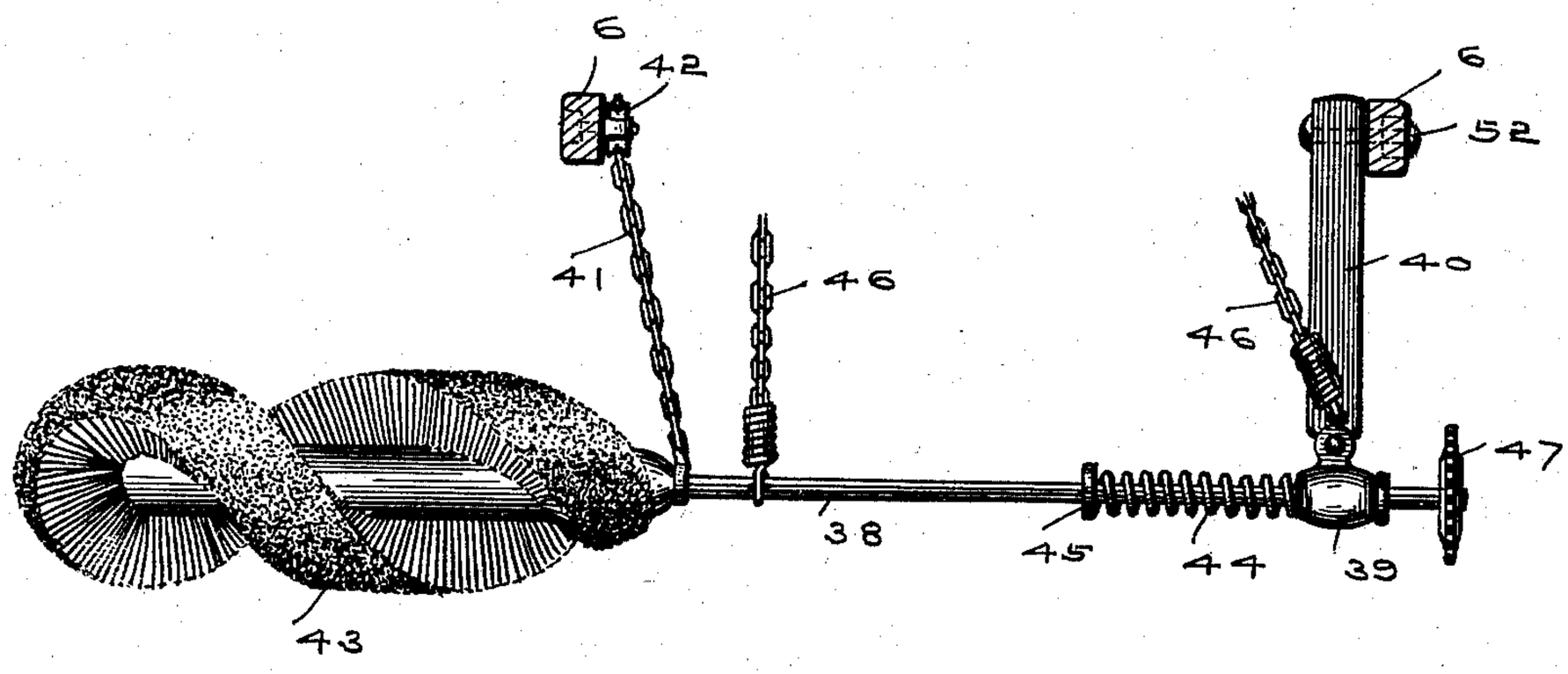


FIG — 8 -



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN C. SLAWSON, OF INDIANAPOLIS, INDIANA.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 505,796, dated September 26, 1893.

Application filed May 31, 1892. Serial No. 434,958. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. SLAWSON, of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Street-Sweepers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like figures refer to like parts.

My invention relates to the construction and operation of street sweepers, and is an improvement on the one described and claimed in Letters Patent granted to me February 9, 1892, No. 468,458, and it will be understood from the following description.

In the drawings, Figure 1 is a side elevation of a street sweeper embodying my improvements. Fig. 2 is a plan view of the same. Fig. 3 is a central longitudinal section through the rear end of the machine. Fig. 4 is a detail perspective view of one of the brushes. Fig. 5 is a central cross section through the same, showing it clamped in place. Fig. 6 is a front view of the extension brush and its connections. Fig. 7 is a detail view partly in section of one of the arms connecting the oscillating apron with the operating eccentric. Fig. 8 is a front view of a modified form of the extension brush and its connections.

In detail, 1 are the wheels of the front truck 2, and 3 the rear wheels supported loosely on the axle 4 carried in boxings 5 on the under side of the framework 6.

7 are gear wheels rigidly mounted on the axle 4, and adapted to be thrown into connection with the main wheels 3 through a suitable clutch 8 of any ordinary form secured to the wheels 3, and operated by hand wheels 9 on either side. The gear wheels 7 engage with smaller ones 10 mounted on the ends of the shaft 11, which are journaled in arms 12 secured to the sides of the brush casing 13, and pass through the same, the arms 12 and the casing being supported and swung from the main axle as shown.

14 is a countershaft having bearings through the walls of the casing and its ends supported in adjustable boxings 15 at the upper end of the arms 12; the shaft 11 and the countershaft 14 being connected on the inside of the casing by two sprocket chains 16 connecting the sprockets 17 and 18, the lower being larger than the upper ones, as shown in Fig. 3, and at suitable distances the links of the sprocket chain are formed with flanges or brackets 19 thereon, as shown in Fig. 5, in which the removable brushes 20 are adapted to fit, the brushes being formed as shown in Fig. 4 of birch or other switches, and held together at their lower ends by two flat strips 21 which are bolted together, the bolts passing through the brushes. The brushes thus formed are retained within the flanges on the links 16 by bolts which also pass through the base of the entire brush on either side. On the inside of the strips 21 of the brushes are pins or hooks 22, over which the eyeleted edges of the flexible aprons 23 are adapted to be caught and retained, and being supported in a loose manner, as shown in Fig. 3. When it turns around the sprockets, it is stretched out in nearly a straight line. The arms 12 secured to the sides of the brush casing have extensions 24 out beyond the front of the same, and in their ends bearings are formed for the shaft 25 carrying on one of its ends a sprocket 26 which is connected by a chain with a smaller one mounted on the end of the shaft 11.

27 and 28 are eccentrics mounted on the shaft 25, and through which connecting rods 32 operate the oscillating apron 29 pivoted at its top to the shell or casing 13, this apron, as shown in Fig. 3, being formed in two sections hinged to each other, the lower one provided with an adjustable extension 30 attached to such section by headed pins operating loosely in vertical slots. This extension carries on its lower edge a roller 31, and is adapted to operate on the surface of the street. The eccentric arms 32 shown in detail in Fig. 7 are adjustable so as to regulate the apron in its backward and forward movement, springs also being provided on the inside of the eccentric arms to take up any jolt or jar caused by the lower end of the apron striking against any obstruction in the street while in operation.

33 is a chain connected on either side of

the casing to brackets 34 formed on the arms 12, and passes over and around suitable pulleys 35, the chain being connected at the forward end of the machine to another one, which is in turn secured to the operating lever 36 pivoted on the forward truck of the machine, where there is a rack 37 for holding it in any desired position.

38 is a shaft, one end having a bearing in a boxing 39 which is pivoted on the lower end of the vertical arm 40 pivoted at 52 to the framework 6 of the machine, and projecting below the opposite end of the shaft having connected thereto a chain 41 which passes up and over a suitable pulley 42 where it is connected to the main chain 33, by which the casing is lifted, the object being to lift the extension brush 43, which is formed on the outer end of the shaft 38 simultaneously with the lifting of the inner end of the casing 13 for removing the brushes from contact with the street. By the use of the extension brush, the machine is enabled to sweep a wider space, drawing in the refuse in front of the machine, where it is taken up by the main brushes in the ordinary manner.

44 is a spring secured around the shaft 38, one end bearing against a collar 45 on such shaft, and the other against the boxing 39, its object being to take up any jar from the end of the brush.

46 are chains carrying coiled springs on their lower ends, one secured to the shaft 38, and the other to the vertical pivoted arm 40, the other ends of the chains being attached to the framework 6 of the machine, and are for the purpose of retaining the brush in a horizontal position in front of the casing 13, and supporting the gutter brush while it is in operation, the chain 41 being at that time relaxed. The extension brush is driven through a sprocket wheel 47 carried on the opposite end of the shaft from the brush, and is connected to a sprocket wheel 48 mounted on one end of the countershaft 11 by a chain 49.

The operation of the machine is as follows: Upon reaching the street which it is desired to sweep, the brushes are let down into contact with the same, and the main wheels 3 of the machine are thrown into connection with the gear wheels 7 through the clutches 8, and the machine being started will operate through the gears 10 to rotate the brushes mounted on the sprocket chains. At the same time, through the sprocket chains which connect the sprockets on the countershaft 11 and the shafts 25 and 38 carrying respectively the eccentrics for operating the apron 29 and extension brush, will both in turn be operated. The eccentric shaft operating through the eccentrics to oscillate the apron backward and forward in front of the brushes, and the dirt as it is swept up by the brushes will be forced against the apron on its inward movement and be carried up and caught in the pockets formed by the flexible aprons between the brushes, whereby it is carried to the rear of the machine. At the same time the extension brush is sweeping the dirt from the side of the machine toward the center, where it is removed by the main brushes as before mentioned.

In this machine I have shown no means of disposing of the dirt and refuse at the rear of the machine, for there are several plans which operate with equally good results, the first being by securing a platform to the rear of the machine, and catching the dirt and refuse in bags as it is discharged by the brushes after being elevated, as shown in my former patent, secondly by having a receptacle secured directly to the mouth of the casing, with means for dumping the same when it is full, either directly into a wagon for conveying it away, or in a single pile upon the street which may be afterward disposed of, and lastly, by having a wagon or cart drawn behind and below the outlet of the casing into which the dirt will fall, and when full may be removed and another substituted.

The large gear wheels 7 of the machine are of such size in relation to the gears 10 mounted on the countershaft 11 as to greatly increase the revolution of such countershaft over the main shaft, thereby operating the sweeping brushes about such countershaft at a high rate of speed, whereby the centrifugal force is sufficient to effectually discharge the refuse between the brushes. The extension brush is also operated at a high speed and the sizes of the sprockets 47 and 48 are such as to give this result, while the sprockets through which the eccentric shaft is operated are of such size as to give that shaft about one revolution to one of the main wheel, thereby slowly operating the oscillating apron. In some cases it may be desirable to have the extension brush longer than shown in Fig. 6 of the drawings, and in such case the chain 41 which lifts that end of the shaft 38 will not be secured to the end of the shaft, but would be attached on the inside of the brush as shown in Fig. 8, and the brush material itself would extend out over the end of the shaft, and form a buffer and operate practically the same as the coiled spring 44, which, might be used or not, as desired. In both Figs. 6 and 8, however, this spring is shown.

By the construction of the main brushes as shown, they may be readily removed when worn out and new ones substituted, and owing to the construction of the casing they may be worn down very short, for, as shown in Fig. 1, the sides of the casing being formed with an adjustable extension 50 on each side hinged at 51, as the brushes wear down these extensions may be raised, and upon lowering the casing itself the brushes are thus lowered into contact with the ground, the sides of the casing always remaining the same.

Any suitable mechanism besides that described above may be employed to elevate or

lower the main sweeping brushes and the extension brushes either simultaneously or independently of each other.

What I claim as my invention, and desire to secure by Letters Patent, is the following:

1. In a street sweeper, sweeping and elevating mechanism consisting of a series of brushes with flexible aprons between such brushes and secured to them only, substantially as shown and described.

2. In a street sweeping machine, the combination of a brush casing swung from an axle thereof, a main shaft in the lower part and a countershaft in the rear end of such casing, a series of sweeping and elevating brushes operated in such casing, about such shafts, and flexible aprons detachably secured between such brushes to form pockets, whereby the refuse is swept, elevated and discharged at the rear of the machine, substantially as shown and described.

3. In a street sweeping machine, a brush casing, an endless chain carried on sprockets mounted on shafts having bearings in the walls of the same, removable brushes fitting in sockets formed on the links of such chains, with detachable flexible aprons between such brushes forming pockets for receiving the refuse collected, substantially as shown and described.

4. In a street sweeper, the combination of a frame mounted upon suitable wheels, a brush casing swung from the rear axle thereof, brushes carried upon chains connecting sprocket wheels mounted on countershafts having bearings in such casing and operated through the rear wheels, flexible aprons between such brushes, and an apron formed on the front wall of the casing composed of sections hinged together and automatically movable toward and from the brushes as the latter revolve, substantially as shown and described.

5. In a street sweeping machine, a brush casing supported from the rear axle thereof, shafts having bearings in the walls of such casing, sprocket wheels mounted thereon, chains connecting such wheels and carrying detachable brushes, flexible aprons of any suitable material between such brushes forming pockets for elevating the material swept up, in combination with an apron composed of sections forming the front wall of the casing, and connected to eccentrics or similar mechanism, whereby the apron is oscillated or moved toward and from the brushes, and in front of the same, substantially as shown and described.

6. In a street sweeping machine, a framework supported upon wheels, the rear ones being loose on their axle, gear wheels rigidly mounted on such axles and adapted to be thrown into connection with the main wheels, an inclosing casing swung from the rear axle of the machine, its forward end adjustably supported, a shaft passing through such casing, and having bearings in the walls of the same carrying on its ends gear wheels adapted to engage with the larger ones mounted on the rear axle of the machine, a countershaft having bearings in the upper end of the casing, and carrying thereon sprocket wheels connected by suitable chains with larger sprocket wheels carried on the lower shaft, removable brushes with pockets formed between secured to such chains, and an apron forming a front wall of the casing and adapted to oscillate backward and forward in front of the brushes within such casing, substantially as shown and described.

7. In a street sweeper, the combination of the main sweeping mechanism, with extension brushes having pivoted bearings and buffers to take up lateral jar, such brushes adapted to sweep the refuse from the sides of the machine in front of the main sweeping brushes, and with suitable mechanism to elevate and lower the main sweeping brushes and the extension brushes simultaneously, substantially as shown and described.

8. In a street sweeper, the combination of a brush casing swung from the rear axle thereof and carrying therein suitable sweeping and elevating brushes with flexible aprons between such brushes, an oscillating apron forming the front wall of the casing and adapted to oscillate in front of the brushes revolving within such casing, and an extension brush supported in front of and to one side of such oscillating apron and adapted to be operated simultaneously with such apron and the main brushes, or independently, substantially as shown and described.

9. In a street sweeper, the combination of a framework, a brush casing swung from the rear axle of the sweeper, suitable sweeping and elevating brushes operated within such casing by the movement of the rear wheels of the sweeper, an oscillating apron forming the front wall of such casing adapted to move backward and forward in front of such brushes, such apron formed in sections and provided with an adjustable extension at its lower end, a roller carried on the lower end of such adjustable extension, and an extension brush supported at one end in pivoted boxings and at the other end swung from the framework in front of and to one side of such brush casing, mechanism for operating such extension brush simultaneously with the elevating brushes, or independently, and mechanism for raising and lowering the extension and the main brush casing simultaneously, or independently, substantially as shown and described.

10. In a street sweeping machine, a framework supported upon wheels, the rear ones being loose on their axles, an inclosing casing swung from such axle, suitable shafts having bearings in the walls of such casing, the lower one having gear wheels on its ends adapted to engage with and be operated upon by

larger ones carried on the rear axle of the machine, sprocket wheels mounted on the shafts within the casing, and connected by sprocket chains having brushes removably secured thereto, with pockets formed between the brushes, an apron forming the front wall of such casing and adapted to oscillate in front of such brushes, in combination with an extension brush supported from the framework in front of such oscillating apron, and adapted to be operated simultaneously with the main brushes, and means for raising or lowering the extension brush and the main brushes at one and the same operation, substantially as shown and described.

11. In a street sweeper, the combination of a framework supported on wheels, the rear ones being loose on their axles, gear wheels rigidly mounted on such axle and adapted to be thrown into connection with the main wheels, a brush casing swung from the rear axle, its forward end adjustably supported from the framework, shafts having bearings in the walls of the brush casing, gear wheels mounted on the outer end of the lower shaft adapted to be operated from the main axle of the sweeper, sprocket wheels mounted on such shaft within the casing and connected by sprocket chains with brushes mounted thereon, a flexible apron secured between such brushes for supporting the refuse as it is being elevated, an oscillating apron forming the front wall of the casing, a roller carried on the lower end of such apron, and suitable mechanism for oscillating such apron, an extension brush adjustably secured to the front of the oscillating apron and extending to the side of the machine, suitable mechanism for operating such extension brush, and suitable mechanism for raising and lowering such brush casing and extension brush together, substantially as shown and described.

In witness whereof I have hereunto set my hand this 26th day of May, 1892.

JOHN C. SLAWSON.

Witnesses:

H. D. NEALY,

GEO. J. MACY.