

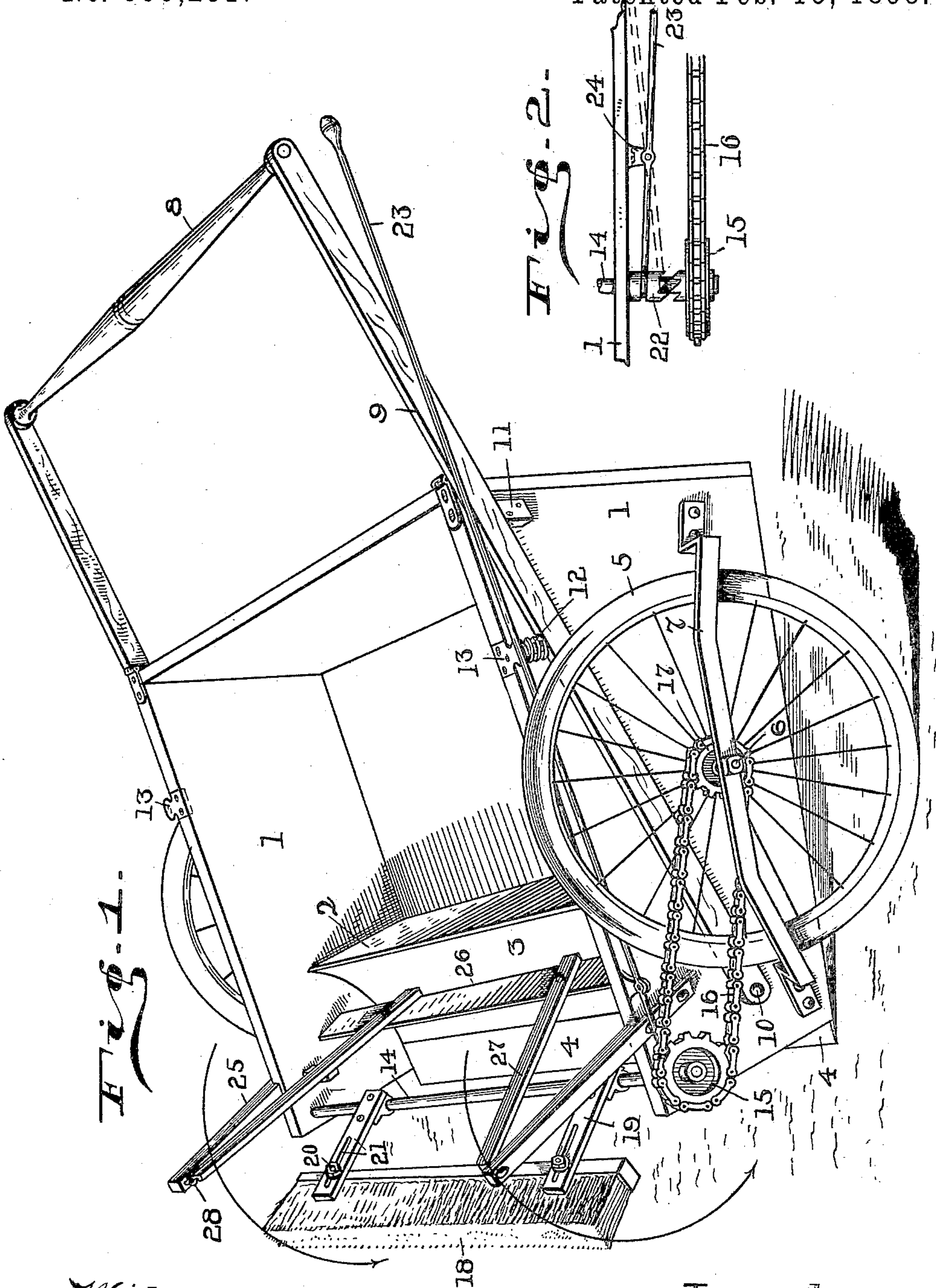
(No Model.)

2 Sheets—Sheet 1.

R. W. FURNAS.
STREET CLEANER.

No. 599,231.

Patented Feb. 15, 1898.



Witnesses:
F. W. Woerner.
Julia Green

Inventor.
Robert W. Furnas
By V. H. Lockwood
His Attorney.

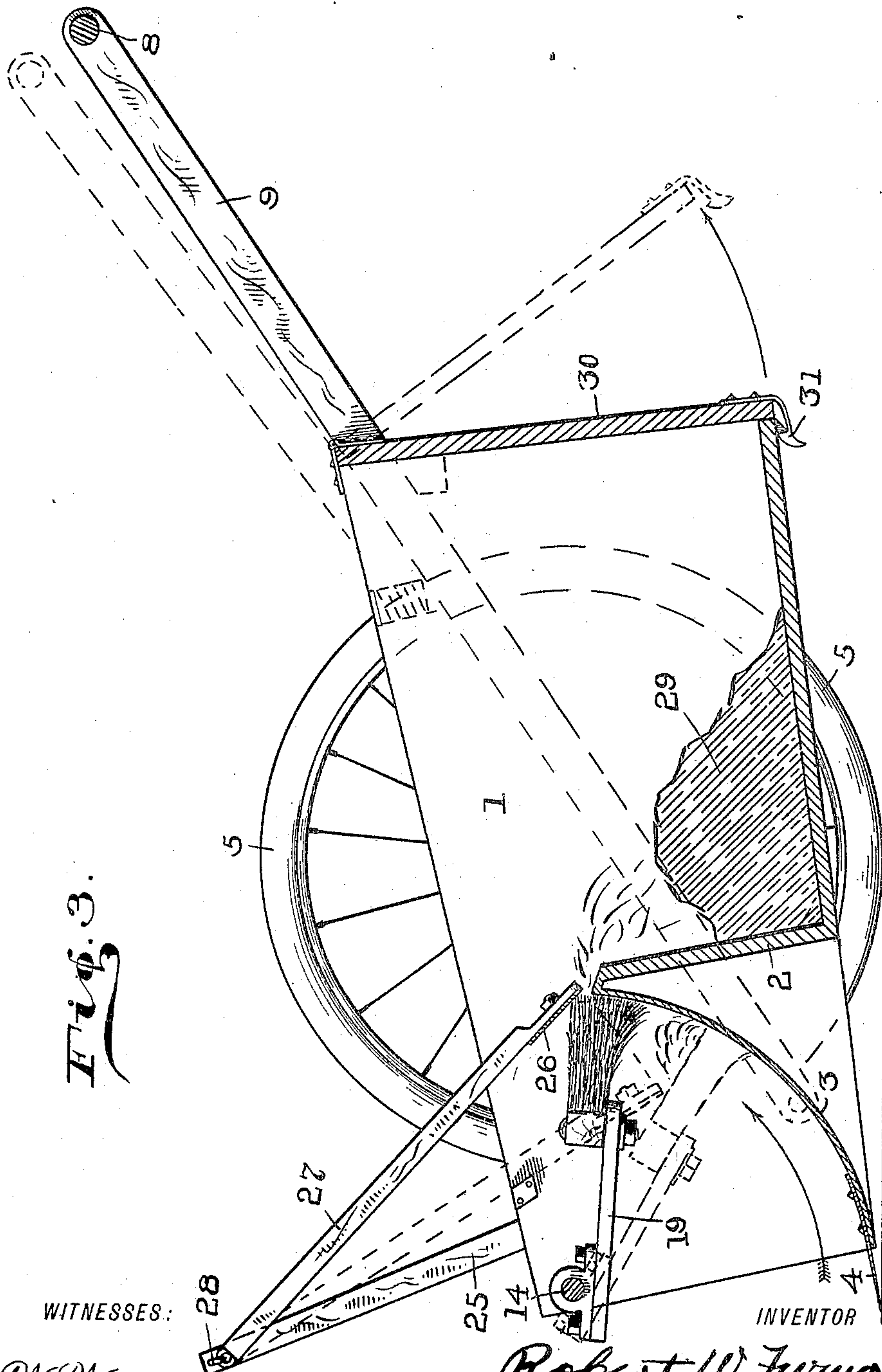
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F. W. Woerner.

Gula Green.

INVENTOR

Robert W. Furnas
BY

V. H. Foxwood
His ATTORNEY.

UNITED STATES PATENT OFFICE.

ROBERT W. FURNAS, OF INDIANAPOLIS, INDIANA.

STREET-CLEANER.

SPECIFICATION forming part of Letters Patent No. 599,231, dated February 15, 1898.

Application filed January 28, 1897. Serial No. 621,058. (No model.)

To all whom it may concern:

Be it known that I, ROBERT W. FURNAS, of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Street-Cleaner; 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 a wheel-mounted scraper that is operated by hand. Immediately behind the scraper I place a box to receive the dirt which is gathered up by the scraper. After the box has become filled the workman can easily transport the dirt to any point he desires. By this means he can dump the dirt he collects in a considerable territory at one place.

The device is a substitute for the hand-scraper now in use in cities provided especially with asphalt pavements. The purpose of these hand-scrappers is to gather up the droppings during the daytime, the street usually being cleaned or swept by a large sweeper at night. The scraper which has heretofore been used, so far as I am aware, consists of a sheet of metal with a handle extending rearward, whereby the workman pushes the sheet of metal, scoop-like, forward on the surface of the street under the material he desires to remove, and when it becomes filled with dirt he pushes his scraper to one side of the street and dumps it beside the curb. If he does not dump it in this way at various places along the street where he may happen to be when his scraper is filled, he pushes it to some common place of dumping that he may have on the street. After such a scraper is filled and is pushed on the street loaded it leaves a track of dirt in its path. These little piles that are thus gathered must be taken up by a wagon going from one pile to another until the great number of them has been removed, but where they have been dirt will still be left or considerable work will be necessary in addition to clean the street after the pile is removed. It is obvious that with my device a large territory can be scraped without dumping, and the load can be transported where desired without any escape of dirt. With this construction, too, the workman is enabled to use a

wider scraper. Therefore the wagons and expense of taking up the piles made by the old scraper are avoided, and, furthermore, one man can clean a larger territory with this than with the old wheelless scraper.

Another feature of my invention consists in the means I show of removing the dirt, after it has been scraped up on the scraper, into the dirt-box behind. This is done by a brush or brushes, the preferable arrangement being that shown herein.

Another invention is the striker, which is employed here to push the dirt which has been elevated by the brush off into the box.

These, together with the other features of my invention, will be more fully understood from the accompanying drawings and the description and claims following.

In the drawings, Figure 1 is a perspective of my street-cleaner. Fig. 2 is a detail of the clutch for throwing the brush-shaft in and out of gear. Fig. 3 is a central longitudinal vertical section of my street-cleaner.

In detail the construction which I consider preferable for carrying out the features of my invention are as follows:

1 is a dirt-box with its top open and its front side 2 not extending as high as the other sides. The two end pieces extend for some distance forward of the side 2. A scraper 3 extends from the upper edge of the side 2 of the box down and forward beyond the front end of the end pieces of the box, as seen in Fig. 3. This scraper may be formed of one piece or, as is shown here, of two pieces, a scraper-point 4 being attached at the lower end and made somewhat flexible. The advantage of this is that when the scraper-point is worn out another may be substituted. This scraper extends down to the ground or surface of the street when the device is in an operative position. The scraper is spherical when the brush device which I have here shown is used; but it may be in any suitable form, so long as it permits the brush to elevate the dirt on it.

The dirt-box and scraper are carried on wheels, preferably two. I show ordinary bicycle-wheels 5, one on each side, on the axles 6, with one end carried by the box and the other by the bracket 7, which is secured to the box. Any other well-known means for

mounting the wheels may be adopted. The device should be so mounted that when it is held with the bottom parallel with the street-surface it will be within two or three inches of the same—that is, as close as the irregularities of the street will permit. The purpose of this is to decrease the angle between the scraper and the street-surface when the machine is in operation, for the less the angle the less the friction of the contact of the scraper.

The means for propelling the device which I have shown consists of a handle 8, connecting the rear ends of the handle-bars 9, which are pivoted at their front ends to the machine in front of the axle of the wheels. In the device shown they are pivoted at 10 and held from downward movement by the block or stop 11 and from upward movement by the spiral spring 12, placed between the handle-bar and the plate or bracket 13. The spring permits some freedom of movement vertically on the part of the handle. This freedom of movement is very advantageous inasmuch as it reduces the friction of the contact of the scraper with slight elevations in the surface of the street. It makes it easy to keep the scraper in proper contact with the street, and that renders the push of the device easy also.

In the forward extensions of the ends of the box 1 I mount a brush-shaft 14. It is rotated by the sprocket-wheel 15 and the sprocket-chain 16, that is actuated by the sprocket-pinion 17, formed on or secured to the wheel-hub. I have found it sufficient to drive the brush-shaft from one side only.

The brush 18 consists of a long back with rather long fiber secured thereto, as shown in Fig. 1. It is secured by the arms 19 to the brush-shaft rigidly. The contact of the brush with the scraper is adjusted by means of the bolts 20, that are adjustable in the slots 21 in the arms 19. The brush should be so adjusted that its contact with the scraper will be positive and yet easy.

The brush need not operate, for example, when one is taking the machine to work or is transporting a load of dirt. In such case the connection between the driving-wheel and brush-shaft is thrown out of gear. Any clutch mechanism may be used for this, such as is shown in Fig. 2. On the hub of the sprocket-wheel 15 teeth are provided that may be engaged by the sliding sleeve or collar 22, having teeth to engage the teeth on the sprocket-wheel. It is mounted on the shaft 14, so that it will not rotate independent of the shaft that is being held by a spline. In order to operate this clutch, I use a clutch-handle 23, that is pivoted to the side of the box at 24 and extends back to the handle 8 of the machine.

In cleaning a street with this machine the workman pushes it, with the scraper, in contact with the surface of the street. The rotation of the wheels, supporting the machine by means of the mechanism I have described,

causes the brush 18 to rotate. Such means should be geared up so that the brush 18 would not rotate very rapidly. All that is necessary in this regard is that the rotation of the brush shall not be so long as to permit too great an accumulation of dirt on the scraper. The brush in its revolution comes in contact with the front portion of the scraper and moves or pushes the dirt back and up on the scraper until it reaches the top of the side 2 of the box, when the dirt falls over into the box.

To push the dirt off the brush and into the dirt-box, I provide the following means: On each side of the dirt box or frame I secure a standard 25, from whose upper ends I suspend a striker 26, consisting of an ordinary bar or metal strip, secured at each end to an arm 27, which is fastened by a staple 28 at the upper end of the standards 25. The point of connection between the arms 27 and the standards 25 should be substantially over or in front of the brush-shaft and the striker suspended therefrom loosely to the rear of the brush-shaft. When the brush is out of the way, the striker will swing or drop down against the stops 32, so as to engage the brush some time before it reaches the point of discharge, as seen in Fig. 3. The length of the arms 27 should be such that the striker will engage the upper part of the brush fibers some time before the brush reaches the discharge-point, and as the brush is gradually elevated it is obvious that the striker will push the dirt toward the outer ends of the brush fibers and as the brush reaches the discharge-point will push the dirt off the brush and into the box, thus cleaning the brush fibers and relieving the brush of its load. As the rotation of the brush continues past the vertical center the striker 26 will again drop down into the space between the brush-shaft and discharge-point and against the stops 32.

Any suitable means may be adopted for dumping the dirt 29. If the standards 25 are strong enough, the machine may be turned over and dumped like a cart. The means for dumping I have shown here consists in hinging the rear side 30 of the dirt-box at the top and providing at the bottom a latch 31 to engage the bottom of the box. When the latch is released, the hinged side of the box can be turned backward and the handle forced downward, so that the dirt will fall rearward and out upon the ground.

Attention is called to the fact that this device is rendered more effective and capable of doing more and better work than the wheel-less scraper, because the workman has no control over the pressure of the latter upon the street-surface, while with this machine he has such control over it that he can adjust such pressure or remove the scraper from the surface of the street entirely when desired. This is accomplished by elevating or lowering the handle, so as to throw a portion or all of the weight on the wheels. This control of

the scraper in action is due, primarily, to mounting it on wheels, and, secondarily, to the springs on the handle-bars and making the scraper-joint somewhat flexible. The advantages arising from this control over the scraper are that it is easier to push, it can be made to accommodate itself to the irregularities of the street-surface, and it can be lifted entirely from the street when necessary.

The springs on the handle-bars enable the scraper-point to move vertically to accommodate itself to slight elevations or depressions without any corresponding vertical movement of the handle 8, for in use the workman pushes against the handle 8 with his body, and then it does not move vertically, as the scraper-point would. This feature also prevents a push that is too much upward from causing the scraper-point to catch on the street-surface.

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

1. A hand street-cleaner comprising a dirt-box, a pair of wheels to support the dirt-box, a handle to propel the same, a scraper extending from the box forward in the arc of a circle down to the surface of the street, a brush-shaft mounted in the framework at the center of the circle of curvature of such scraper, arms extending from such brush-shaft to the scraper, a brush mounted on the ends of such arms, and means connected up with one of the wheels of the machine for rotating the brush-shaft.

2. A hand street-cleaner comprising a dirt-box, a pair of wheels to support the dirt-box, a handle to propel the same, a scraper extending from the box forward in the arc of a circle down to the surface of the street, a brush so secured to the ends of said arms that its contact with scraper can be adjusted, arms extending from such brush-shaft to the scraper, a brush mounted on the ends of such arms,

and means connected with one of the wheels of the machine for rotating the brush-shaft. 45

3. A hand street-cleaner comprising a dirt-box, a pair of wheels supporting the dirt-box, a handle to propel the same, a scraper extending from the front of the box down to the street-surface to gather the dirt, means for withdrawing the dirt that is scraped up from the scraper into the dirt-box behind, a clutch mechanism on the brush-shaft for throwing it in and out of gear, and means extending from the handle of the machine to the clutch for operating it. 55

4. In a street-cleaner, the combination with a brush to elevate the dirt, of a suspended striker, substantially as shown and described.

5. In a street-cleaner, a dirt-box, a scraper, a rotating brush to elevate the dirt from the scraper into the box, and a striker pivoted eccentrically with the brush so that it will engage the brush behind the dirt as the brush approaches the discharge-point and push the dirt off into the dirt-box. 65

6. In a street-cleaner, a wheel-mounted scraper, a handle pivoted at the front portion of the machine, and a spring at the rear portion of the machine that permits the handle or scraper-point to have some vertical play. 70

7. In a street-cleaner, a wheel-supported scraper and dirt-box, a handle consisting of bars pivoted near the front portion of the machine, and connected at the rear with a handpiece, a stop on the rear part of the box to limit the downward movement of such bars, and a spring to limit the upward movement thereof. 75

In witness whereof I have hereunto set my hand this 15th day of January, 1897. 80

ROBERT W. FURNAS.

Witnesses:

V. H. LOCKWOOD,
ZULA GREEN.