

C. Z. O'NEILL.  
Street-Sweeping Machine.

No. 220,252.

**Patented Oct. 7, 1879.**

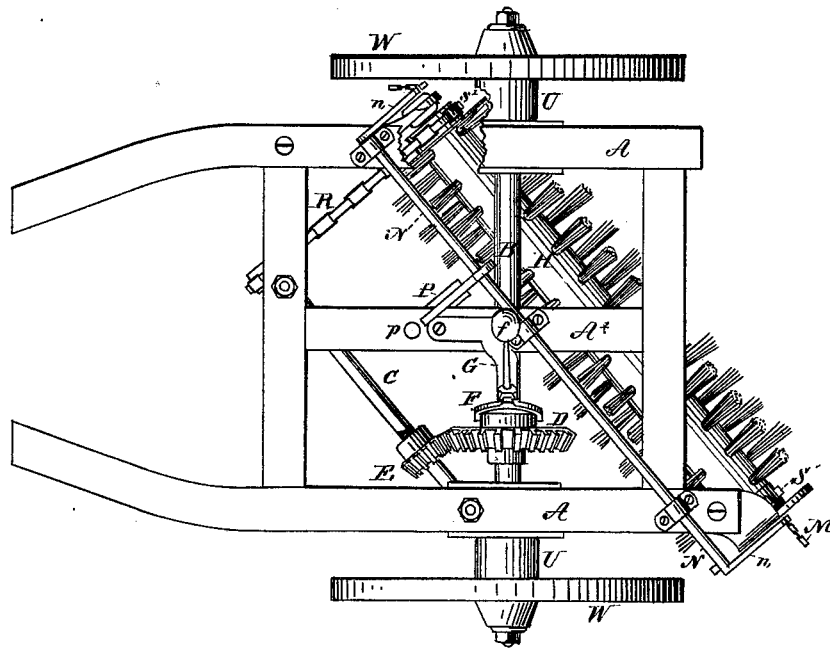


Fig-1.

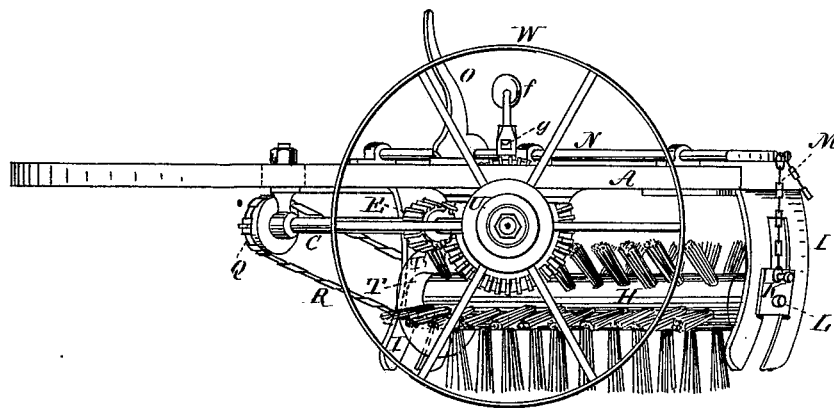


Fig. 2

WITNESSES

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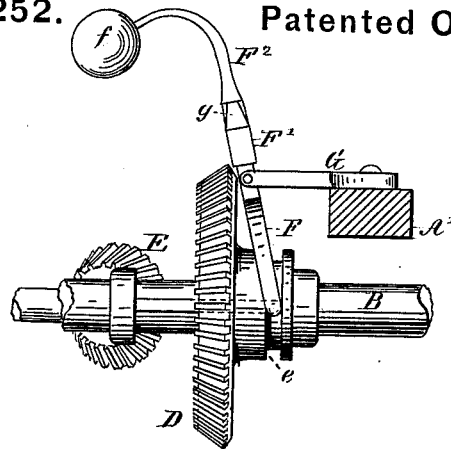


Fig. 3.

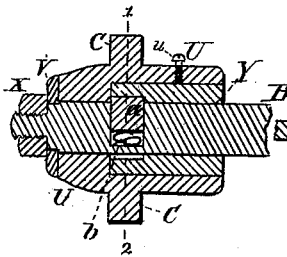


Fig. 4.

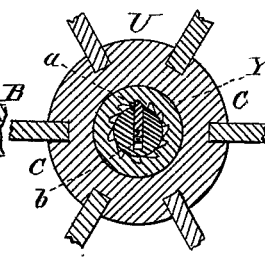


Fig. 5.

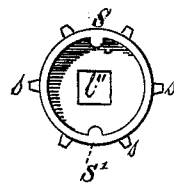


Fig. 7.

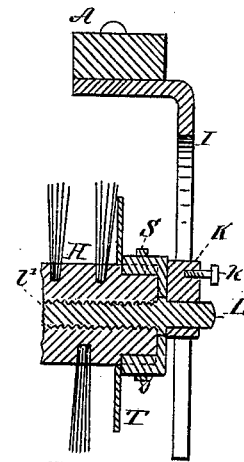


Fig. 6.

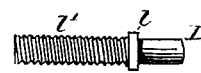


Fig. 9.

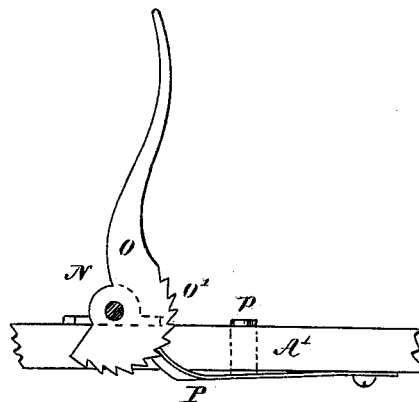


Fig. 8.

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# UNITED STATES PATENT OFFICE.

CHARLES Z. O'NEILL, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN STREET-SWEEPING MACHINES.

Specification forming part of Letters Patent No. **220,252**, dated October 7, 1879; application filed February 13, 1879.

*To all whom it may concern:*

Be it known that I, CHARLES Z. O'NEILL, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Street-Sweeping Machines, of which the following is a specification.

My invention relates to certain improvements in the construction of street-sweeping machines, whereby I gain great simplicity and ease of operation, and at the same time great strength of construction and efficiency of action; and the invention consists in certain details of construction, for the purpose of enabling the rotating brush-roller to be readily raised and lowered, as occasion requires, while in operation, together with other details hereinafter fully set forth.

Referring to the drawings, Figure 1 represents a top or plan view of a machine embodying my improvements. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged view, in detail, of the shipping-lever and bevel-gear wheels for throwing the brush-roller into and out of action. Figs. 4 to 9 are enlarged views, in detail, of the several portions of the machine containing my improvements.

Similar letters indicate like parts in the several figures.

A A' represent the main frame, of the general form shown in Figs. 1 and 2, and is supported in the usual manner upon the shaft B. On the shaft B is mounted the large bevel-gear wheel D, which is arranged to slide on the shaft, but made to turn with the same. C is a counter-shaft journaled in bearings depending from one side and the front cross-bar of the machine, as shown in Figs. 1 and 2. To the shaft C is fixed a smaller bevel-gear wheel corresponding with the gear-wheel D. At the rear of the bevel-gear D is arranged a clutch, F, the arms of which play in the groove *e*, as shown. The clutch or shipping lever F is pivoted to a bar, G, attached to the central beam, A', of the machine. F<sup>2</sup> is a continuation of the shipping-lever, and is swiveled at *g*, so as to turn freely around. The lever F<sup>2</sup> is curved, as shown in Fig. 3, and at its upper extremity is attached a spherical counterpoise, *f*, the object of which is to hold the bevel-gear D in connection with the gear E, or out of connec-

tion with the same, as required, according to the position to which it is turned by the operator of the machine. H is the rotary brush-roller, arranged diagonally across the machine, and of the usual construction. The axes L are journaled in boxes K, Figs. 2 and 6, having grooves in each vertical edge, and are fitted to slide in the curved guides I I, which latter consist of metal plates depending from the frame, and having a central slot or opening, as shown in Fig. 2. The boxes K are suspended by chains M, extending from arms *n n* of a rock-shaft, N, extending across the machine parallel to the brush-roller, as shown. To the rock-shaft N is attached, at a point convenient to the driver, a segmental ratchet, O', attached to or forming a part of an arm or lever, O, as shown in Fig. 8; and to the under side of the central beam, A', of the frame is attached the spring-pawl P, which engages with the ratchet-teeth of the segment O', by means of which, as the lever O is pushed forward to turn the rock-shaft N, the arms *n n* are raised, and thus elevate the brush-roller and hold the same in an elevated position.

When the brush-roller is to be lowered for work, the spring-pawl P is disengaged from the ratchet-teeth O' by pressing upon the tripper *p*, which allows the rock-shaft to turn, and the brush-roller descends by its own weight, the journal-boxes K easily sliding in the guides I to the extent of the chain M. The curved slots in the guides form an arc, of which the driving-chain R constitutes the radius, so that as the journal-boxes K move in the said guides all binding of the same is avoided.

To the forward end of the counter-shaft C is secured the sprocket-wheel Q, which carries the endless chain R, the latter also passing around the toothed cap or shell S, attached to the end of the brush-roller, as shown in detail in Fig. 6, by means of which rotary motion is imparted to the brush-roller when the bevel-gears D and E are in contact and the machine in condition for work. To each end of the brush-roller H is attached a cap or shell, S, of the form shown in Fig. 7. It is firmly fixed on the end of the roller H by means of splines or projections S', fitting in corresponding grooves on the roller, the said splines being on the inside of the rim of shell S, and of

which there may be two or more. The shell S has a square hole,  $b''$ , in its head, as shown in Fig. 7, in which is fitted the square shoulder  $l$  of the axis L, Fig. 9. The axis L is formed with a screw portion,  $l'$ , which is screwed into the end of the brush-roller H, as shown in Fig. 6. The shell S is provided with teeth  $s$  on the outside, with which the links of the endless driving-chain engage at the forward end. Near the forward end of the brush-roller is arranged a metal disk or flange, T, of a diameter somewhat less than that of the ends of the brushes, for the purpose of preventing the brush-knots from interfering with the driving-chain. The said flange fits loosely upon the roller H.

The device by which the wheels are made to turn independently of the axle when the machine is backing or turning, and by which they are connected when advancing, is shown in Figs. 4 and 5, Fig. 4 being a longitudinal section of the wheel, and Fig. 5 a transverse section on the line 1 2 of Fig. 4. U is a hub of the wheel W, and C the rim that receives the spokes.

On a portion of the shaft or axle B, within the hub U, is fitted a sleeve or box, Y, and secured to the same by means of a spline or screw,  $u$ . At the inner end of the box Y are formed ratchet-teeth extending entirely around the inner side, as shown in Fig. 5. In the portion of the shaft B surrounded by the ratchet-teeth is a recess, in which is fitted to slide freely a flat metal block,  $a$ , as shown, and at the bottom of the said recess is a spring,  $b$ , which tends to force out the block, so as to keep it in contact with the ratchet-teeth, so that as the machine moves forward, the bevel-gears D and E being in contact, the block  $a$  will be held against the square ends of the ratchet-teeth in box Y, and thus, as the machine advances, the roller-brush will be caused to turn; but in case the machine moves backward, or in turning, if one wheel turns backward, the block  $a$  will be forced out of connection with the ratchet-teeth, and thus allow the wheel or wheels to turn independently of the axle and without turning the brush-roller.

By placing the ratchet-teeth and sliding block directly in the center of the hub an even bearing is maintained on the hub and all un-

due strain on the wheels prevented, and, moreover, the device is kept free from dirt, and consequently acts more freely and is more durable than the ordinary clutches or pawls placed on the exterior part of the hub.

In case of injury, the box Y can be easily removed and its place supplied by a new one, thereby saving the expense of renewing the whole hub.

The hub U is secured to the shaft B by means of a disk or washer, V, provided with a square hole, and fitting upon the square end of the shaft, where it is secured by the nut X.

The machine is to be provided with a seat for the driver, which is so arranged as to enable him to perform all the necessary manipulations for operating the machine without leaving his seat.

What I claim as my invention is—

1. The swiveled counterbalanced lever  $F^1 F^2$  and clutch F, in combination with the sliding bevel-gear wheel D on the shaft B, as and for the purpose specified.

2. The shell S, provided with exterior teeth and interior splines or projections,  $S'$ , fitting in corresponding grooves in the brush-roller, and having a square opening fitting on the screw-axis L, attached to the brush-roller H, as and for the purpose set forth.

3. The independent or separate box or sleeve Y, fitted on the shaft B within the hub U, and provided with internal ratchet-teeth, in combination with the sliding block  $a$  and spring  $b$ , fitted in a recess in the shaft B, as and for the purpose specified.

4. The combination, in a street-sweeping machine, of the rock-shaft N, provided with the arms  $n$ , and operated by the segmental ratchet and lever O' O and spring-pawl P, the axle-box K, held by the adjusting-chains M and the curved guides I, in connection with the driving-chain R and sprocket-wheel Q on the shaft C, as and for the purpose specified.

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

CHS. Z. O'NEILL.

Witnesses:

J. H. ADAMS,  
T. F. LALLY.