

T. MAC NEIL.
STREET-SWEEPING MACHINE.

No. 172,464.

Patented Jan. 18, 1876.

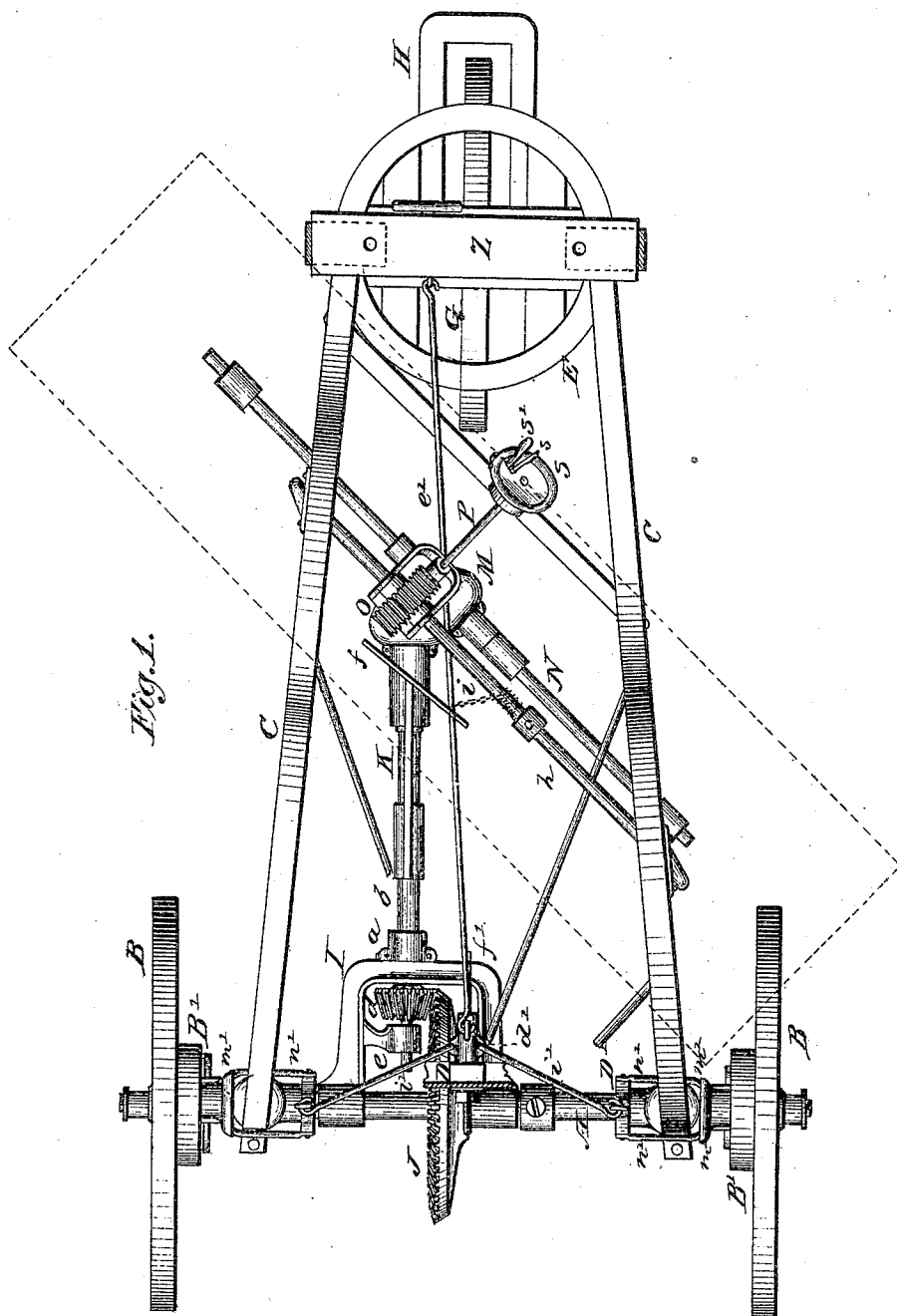


Fig. 1.

Witnesses.
C. H. Watson
Wm. Supperman

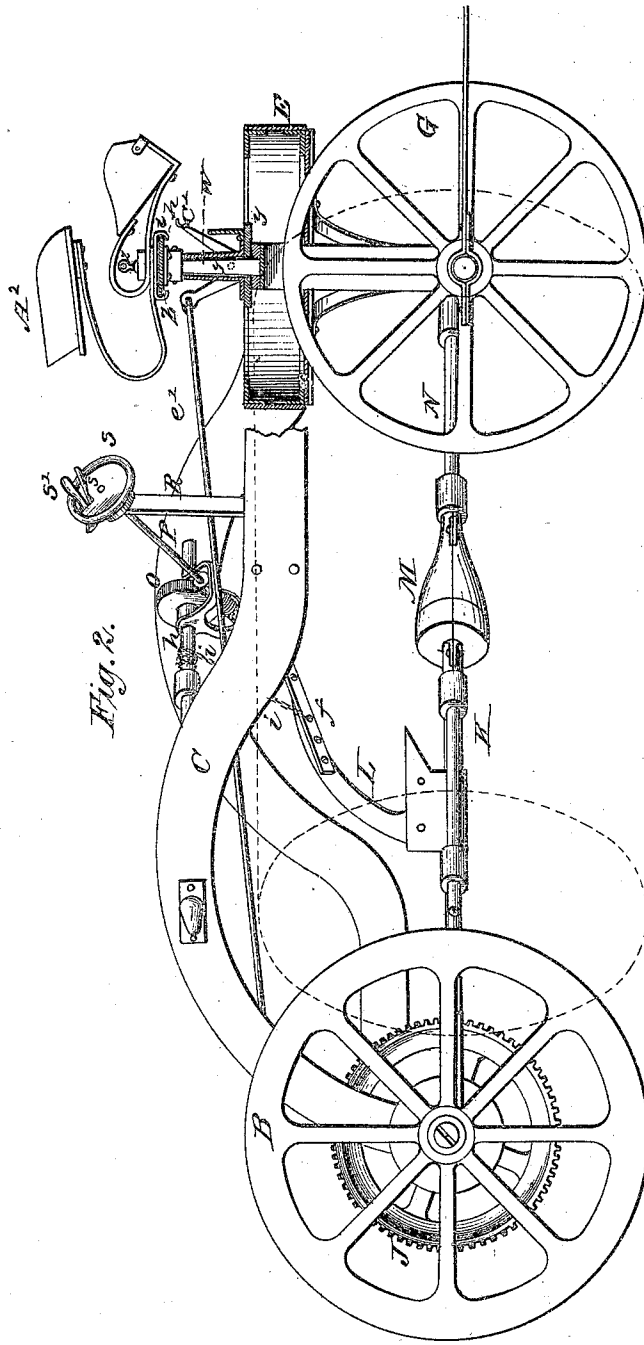
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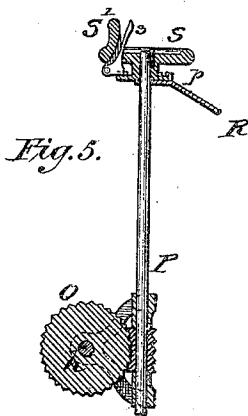
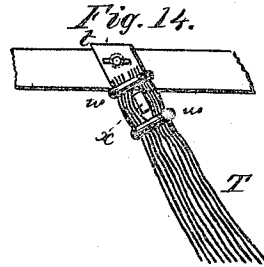
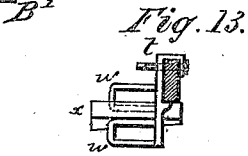
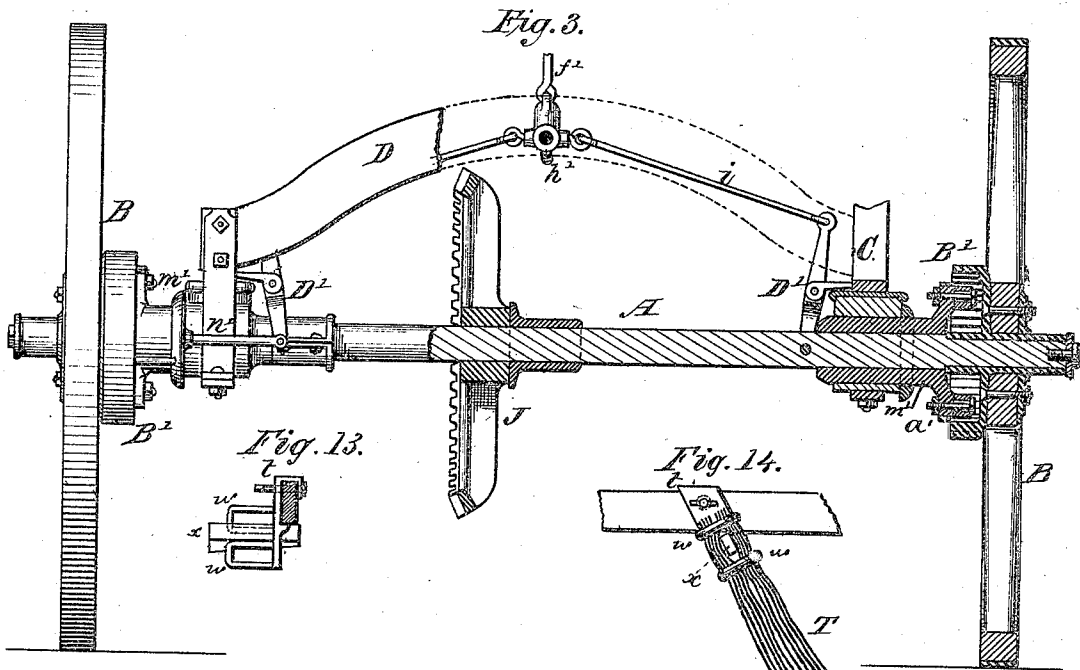


Fig. 4.

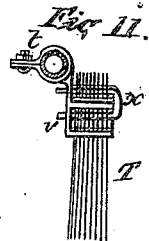
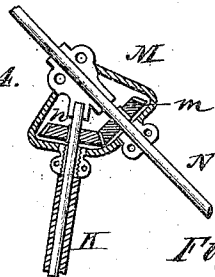


Fig. 12.

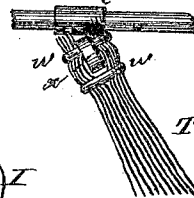


Fig. 6.

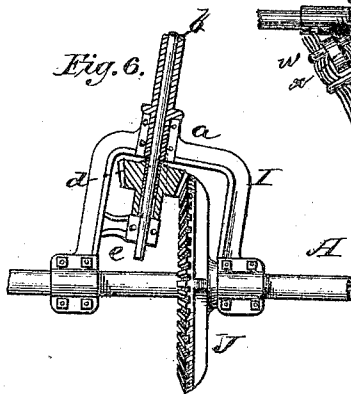


Fig. 9.

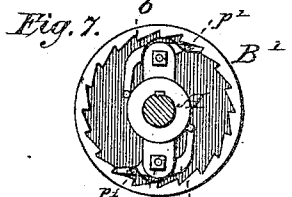
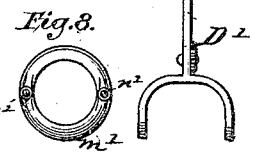


Fig. 10.



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UNITED STATES PATENT OFFICE.

THOMAS MAC NEIL, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF AND
LEVI P. WRIGHT, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN STREET-SWEEPING MACHINES.

Specification forming part of Letters Patent No. 172,464, dated January 18, 1876; application filed
January 4, 1876.

To all whom it may concern :

Be it known that I, THOMAS MAC NEIL, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Street-Sweeping Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which 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.

The nature of my invention consists in the construction and arrangement of a machine for sweeping streets, as will be hereinafter more fully set forth.

In the annexed drawings, Figure 1 is a plan view of my machine. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged longitudinal section through the rear axle. Figs. 4 to 14 are detailed views of parts of the machine.

A represents the rear axle, upon the ends of which the wheels B B are placed. Near each end of the axle is a sleeve, *a'*, placed on the same, to which the rear end of the side beam C is connected. The rear ends of the two side beams C C are joined together by means of an arched beam, D. The right side beam is arched immediately from the axle, and then extends straight, while the left side beam extends straight from the axle for a suitable distance, and is then arched, so as to allow for the angling position of the brush. The side beams contract toward their front ends, where they terminate in or are secured to a circular frame, E, having a single wheel, G, arranged underneath as a caster-wheel, so as to turn easily in any direction. The side beams C C are suitably braced together and to the rear arch D. To the frame in which the front wheel G turns is attached a clevis, H, so arranged that the draft will be directly on the front axle. By this construction of the frame-work a light and yet strong and durable carriage is obtained, and the draft is close to the revolving brush. On the rear axle A is placed a saddle, I, having a tubular projection, *a*, on its front side, through which

passes a shaft, *b*, having its rear end placed in an arm, *e*, within the saddle, as shown in Fig. 1. On this shaft, within the saddle I, is secured a beveled pinion, *d*, which meshes with a beveled cog-wheel, J, secured on the axle, so that when the axle revolves the shaft *b* will obtain a rotary motion. The shaft *b* extends forward to about midway of the frame, and passes through a sleeve, K, which is provided with a curved arm or lever, L, having an angular bar, *f*, secured to its front end. This bar is, by one or more chains, *i*, connected with a shaft, *h*, set angling, and having its bearings in the side pieces C C. On the front end of the sleeve K is formed an irregular-shaped frame, M, which forms bearings for the brush-shaft N. This shaft has within the frame a beveled pinion, *m*, secured to it, which meshes with a similar pinion on the front end of the shaft *b*, and thus the rotary motion is communicated from the axle A to the brush-shaft N. The brush, hereinafter described, is thus suspended by the chains *t* from the shaft *h*, and accommodates itself to the uneven or irregular surface over which it travels, and, being supported in the center only, it will vibrate from side to side. On the shaft *h* is secured a worm-wheel, O, into which takes a worm on a shaft, P, as shown in Fig. 5. This worm-shaft is held in a standard secured on a brace between the two side beams. This standard R has at its upper end a notched disk, *p*, through the center of which the shaft P passes, said shaft having upon its end a wheel, S, with handle S'. In this handle is arranged a spring-pawl, *s*, to take into the notched disk *p*, by which means the brush may be raised and lowered as required, and held at any height. The shaft N is, on each side of the frame M, provided with two or more collars, having radial arms connected spirally by means of ribs, to which the brushes are attached in the following manner: *t* is a clamp fastened around the rib, which may be either round or flat, as desired, and having a plate, *v*, projecting therefrom at an angle. On this plate are two staples, *w w*, through which the broom-straw T is inserted. A two-pronged wedge, *x* is then pressed in, as shown in Fig. 11, which fastens the brush sufficiently firm.

When worn out it can readily be removed by simply taking out the wedge, and new straw be inserted and fastened in the same manner.

The entire brush is so arranged as to sweep beyond the tread of the wheels B B, so that said wheels will always run on the swept surface, thus preventing the wheels from pressing down the dirt on the street, which dirt can then only be removed by a scraper.

The pivot *y* of the front-wheel frame passes up through a hollow post or standard, W, on the center of a center-bar, Y, in the front circle E, and on the upper end of said pivot is secured a bar, Z, on which the driver's seat A' is held by catches *z z*, so constructed that the seat can slide to any point on the bar Y desired, thus enabling the driver to locate himself at such point that will be best suited for him to observe the work.

On the inner end of the hub of each driving-wheel B is secured a ratchet-case, B', into which take two spring-pawls, *b' b'*, as shown in Fig. 7, said pawls being pivoted in ears projecting from the outer end of the sleeve *a'*. This causes the axle to revolve with the wheels when going forward, but not when backing. To throw the machine out of gear when going forward there is a foot-lever, C', pivoted to the side of the post W, which lever is, by a rod, *e'*, connected with a sleeve, *d'*, placed on a rod, *f'*, projecting from the arched brace D, and the sleeve held backward by a spring, *h'*. From each side of the sleeve *d'* extends a rod, *i'*, which connects with the upper end of a lever, D', pivoted to the foot of the arched brace D. The lower end of this lever is forked, and the two prongs connect by rods *n'* with a tapering collar, *m'*, placed on the outer end of the sleeve *a'*. By the driver pressing down the foot-lever C' the collars *m'* are moved outward, and act on arms or pins *p'*, projecting from the spring-pawls *b'*, whereby said pawls are thrown out of the teeth of the ratchets B'. As soon as the pressure is removed from the foot-lever C' the spring *h'* throws the parts back to their original position. In use, where obstructions are met, either above or below the line of the street, the broom or brush accommodates itself to the same, from the fact of its being hung back in a vertical line of its suspension, and by means of the saddle I, tubular projection *a*, and shaft *b*.

At the rear end of the sleeve K the feathered shaft *b* passes through the front part of saddle I and the pinion *d*, so that the shaft *b* can reciprocate within the pinion *d* in a longitudi-

nal line, or on a line with the line of direction of the machine, allowing an elasticity to the brush as the machine passes over uneven surfaces while in operation, thus doing more perfect sweeping and requiring less power, by its elasticity accommodating itself, as it does, to uneven surfaces.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a street-sweeping machine, the combination of the axle A with driving-wheels B B, the side beams C C, arched as described, the arched brace D, circle E, and single front wheel G, substantially as and for the purposes herein set forth.

2. In a street-sweeping machine, a rotating brush, supported at the center of its shaft, and suspended substantially in the manner and for the purposes herein set forth.

3. The combination of the saddle I and cog-wheel J on the axle A, the shaft *b*, with pinions *d n*, sleeve K, with frame M, and the brush-shaft N, with pinion *m*, all substantially as and for the purposes herein set forth.

4. The combination, with the shaft *b* and frame M, carrying the rotating brush, of the sleeve K, arm L, with cross-bar *f*, one or more chains, *i*, shaft *h*, and worm-gear O P, substantially as and for the purposes herein set forth.

5. The combination of the clamp *t* with angling plate *v*, staples *w w*, brush T, and forked wedge *x*, substantially as and for the purposes herein set forth.

6. In a street-sweeping machine, the combination, with the driving-wheels B, of the ratchets B', spring-pawls *b'*, having arms *p'*, and the tapering collars *m'*, for the purposes herein set forth.

7. The combination of the foot-lever C', rod *e*, sleeve *d'*, rod *f'*, spring *h'*, rods *i'*, levers D', rods *n'*, and tapering collars *m'*, all substantially as and for the purposes herein set forth.

8. The combination of the yoke-shaped frame I, axle A, gears J, pinions *d*, feathered shaft *b*, reciprocating within the pinion *d*, for giving elasticity to the suspended brush, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

THOMAS MAC NEIL.

Witnesses:

C. L. EVERT,

C. H. WATSON.