C. W. CUNNINGHAM.

Street-Sweeper.

No. 210,674. Patented Dec. 10, 1878.

Fig. 1.

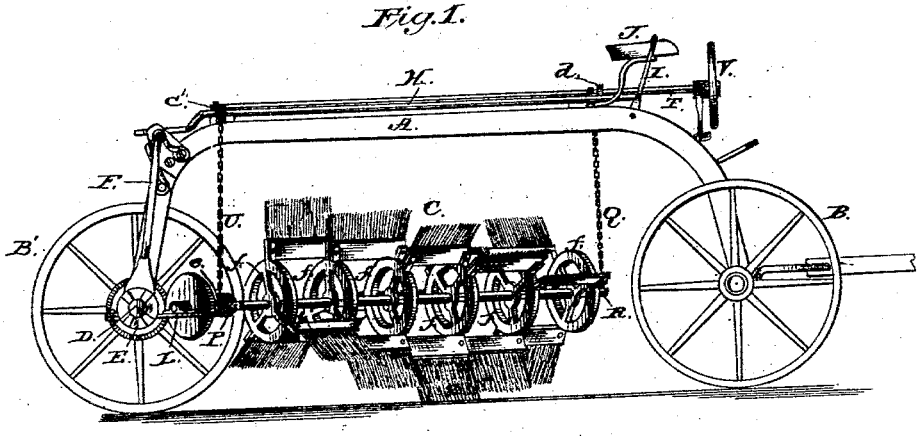


Fig. 2.

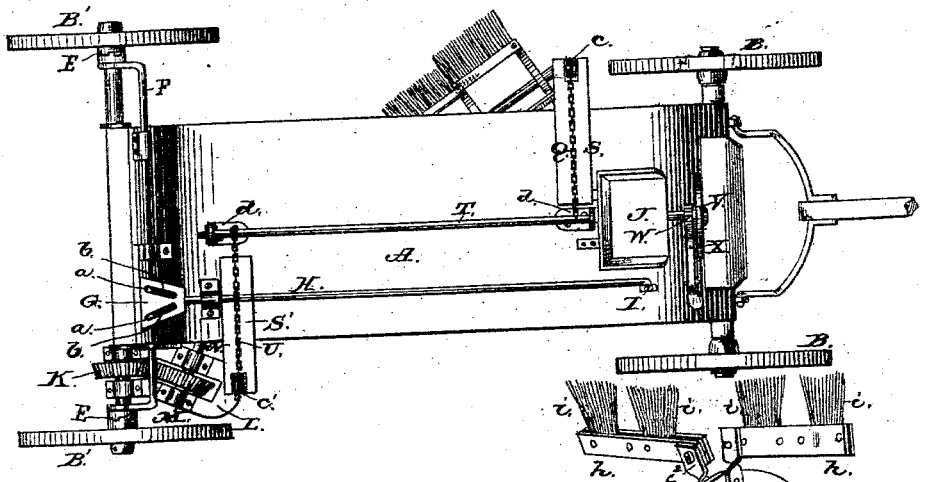


Fig. 3.

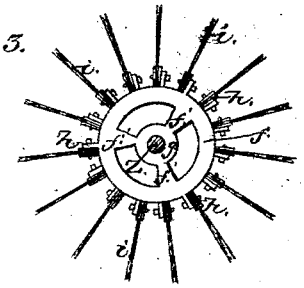
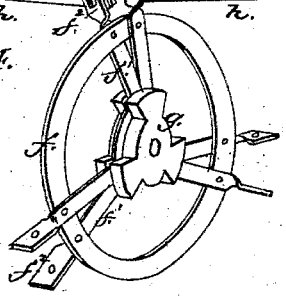


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES W. CUNNINGHAM, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN STREET-SWEEPERS.

Specification forming part of Letters Patent No. **210,674**, dated December 10, 1878; application filed November 29, 1878.

To all whom it may concern:

Be it known that I, CHARLES W. CUNNINGHAM, of San Francisco, in the county of San Francisco and State of California, 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 of the invention, 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 letters of reference marked thereon, which form a part of this specification.

Figure 1 is a side elevation of a machine embodying the improvements in my invention. Fig. 2 is a plan view of the same. Fig. 3 is a cross-sectional view of the revolving brush, and Fig. 4 is a detail view of the construction of a single section of the revolving brush.

This invention has relation to street-sweeping machines; and it consists in the improvements in the construction of the same hereinafter fully described, and particularly pointed out in the claims.

An arched body, A, is mounted upon four wheels, B B B′ B′, the two B′ B′ of which form the driving-wheels for operating the revolving brush C. The driving-wheels B′ B′ are connected to the rear axle, D, of the machine by clutches E E, which are thrown in and out of gear by bent levers F F, provided on their inner upper ends with short arms *a a*, which project upwardly through slots *b b* in a plate, G, secured to or near to the rear end of a rod, H, which is connected at its front end to a lever, I, pivoted in the body A, within reach of the driver's seat J.

A miter-gear, K, is made solid with the rear axle, D, near one of the drive-wheels B′, and a frame, L, is boxed to the axle D, and furnishes at its forward end the bearings for a second miter-wheel, M, whose shaft N is at an appropriate angle to the axle D to cause the teeth of the miter-wheels K and M to engage, so that motion may be communicated from one to the other.

The revolving brush C is connected to the short shaft N by a universal joint, P, and is suspended at its front end by a chain, Q, encircling its shaft R, running over a pulley, *c*, having bearings in an arm, S, secured to the body A, said chain being connected at its upper end to the shaft T, working in bearings *d*, rising from the body A. A chain, U, near the rear end of the shaft R, leads over a pulley, *c′*, in an arm, S′, and its lower end is connected to an arm, *e*, upon the frame L.

A hand-wheel, V, is secured to the front end of the shaft T, immediately in front of the driver's seat, and this hand-wheel V is provided with a ratchet, W, with which a foot-lever, X, engages, and may be operated to release or hold the hand-wheel V at will. This hand-wheel is used to elevate the revolving brush C when desired, and the foot-lever X is employed to release the wheel and permit the brush C to drop and be again operative.

The revolving brush C itself is of peculiar construction, and the object in having it so constructed is to overcome the useless friction heretofore incurred in street-sweeping.

In the brushes as heretofore constructed, a greater surface than was absolutely necessary to accomplish the work thoroughly has been presented to the surface to be swept.

I have found that by constructing the brush in sections so arranged that only one section or brush strikes the ground at one time, so that the entire surface beneath the brush will during its revolution be swept, I lessen the friction, and consequently the strain upon the horses, and at the same time the street is thoroughly swept.

It is a well-known fact that the most perfect sweeping is done with the ordinary hand-broom, and in this machine I have followed the principles involved in hand-sweeping, and embodied them in the construction of my machine. To accomplish this result I construct the brush of a series of rings, *f*, having radial arms f^1, projecting from hubs *g*, rigidly secured to the shaft Z. To the outer end of these radial arms I rigidly secure the brush-heads *h* in line with the shaft Z. The pairs of radial arms f^1 f^1, of flat wrought-iron, are secured by rivets upon opposite sides of the ring *f*, and project inwardly toward the center of said ring *f*. Projecting portions f^2 of the arms f^1 are twisted as shown. The hub *g* of this circle or ring is formed by casting upon the inner ends of the arms *f* while the ring and arms are in the flask. When the hub *g* is in place upon

the shaft Z, the projections f^2 are in line with said shaft. The brush-heads are suitably secured to the projections f^2, in line with the shaft. The brushes *i* are arranged in three or more series, and each brush in one series is placed slightly in advance of the succeeding one, the entire series occupying from one end to the other an arc of ninety degrees, the three series thus completing the circle.

It will thus be seen that but one brush at a time can strike the surface, and they will each successively come in contact therewith.

The hand-lever I can be operated at any time to throw the driving-wheels B′ B′ in or out of gear.

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

1. In a street-sweeping machine, the combination of the bent levers F F, provided at their lower ends with the clutches E E, and at their upper ends with the short arms *a a*, with the slotted angular plate G, secured to the rod H, provided with the hand-lever I, substantially as and for the purpose set forth.

2. In a street-sweeping machine, the revolving brush C, consisting of the rings *f*, having spokes f^1 extending from beyond the periphery of the rings *f*, and terminating in the hub *g* upon the shaft Z, in combination with the brushes *h i*, secured to the outer ends of the spokes *f*, in line with the shaft Z, in three or more series, each one of a series being slightly in advance of the succeeding one, and equidistant from the other brushes in the same series, substantially as and for the purpose set forth.

3. In a street-sweeping machine, the circle or wheel *f*, for supporting or carrying the brushes *h i*, composed of the arms f^1, the outer ends, f^2, of which are twisted into line with the shaft Z, ring *f*, of wrought-iron, and the hub *g*, cast upon the inner ends of said arms, combined and operating as and for the purpose set forth.

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

CHARLES W. CUNNINGHAM.

Witnesses:

JOHN O'DONNOGHUE,

H. J. ENNIS.

1,250 words.