(No Model.)

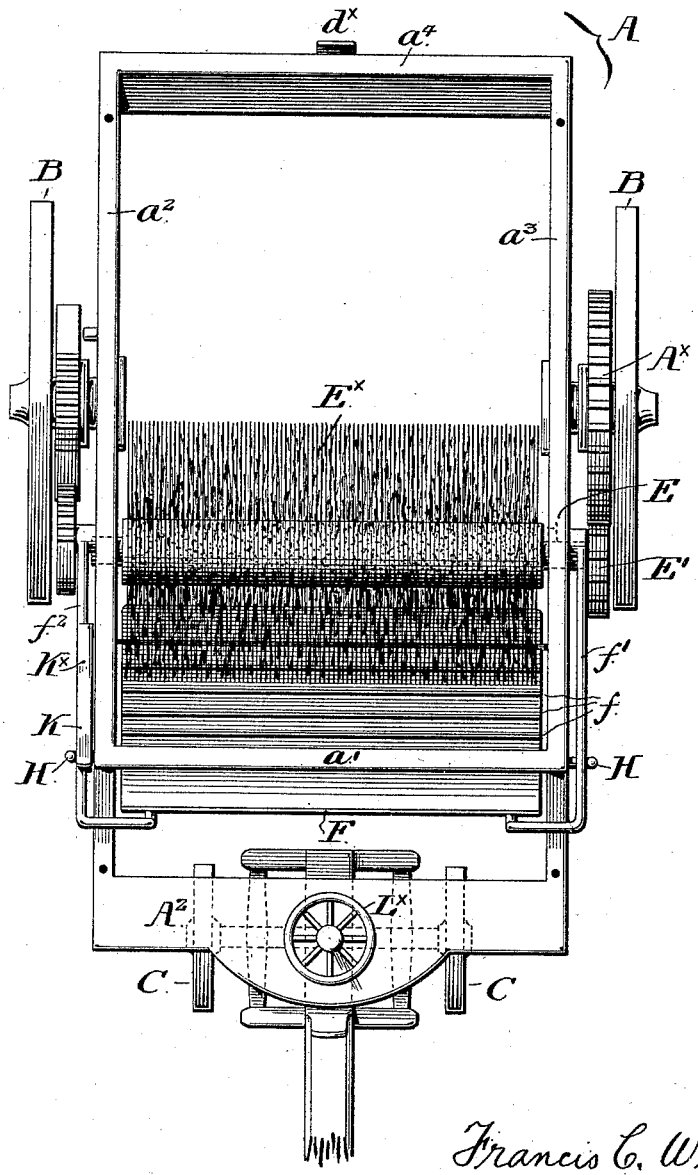
2 Sheets—Sheet 1.

F. C. WILLIAMS.

STREET SWEEPER.

No. 492,489. Patented Feb. 28, 1893.

FIG. 1.



Francis C. Williams.

INVENTOR:

By his attorneys

Strawbridge & Taylor

WITNESSES:

V. E. Paige

H. C. Dunnoc.

(No Model.) 2 Sheets—Sheet 2.

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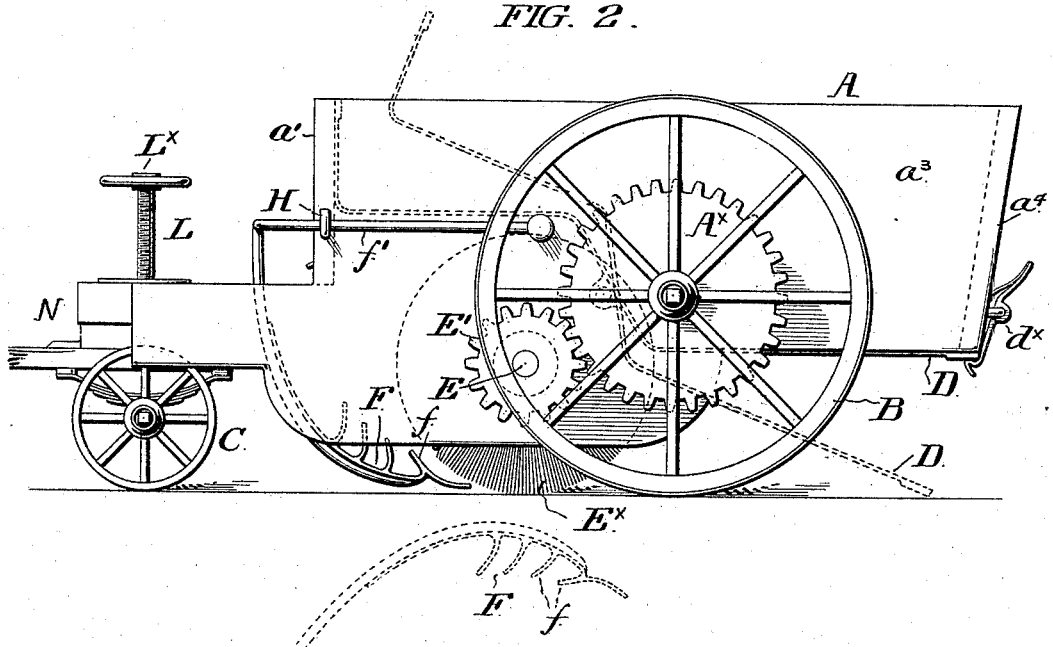
FIG. 2.



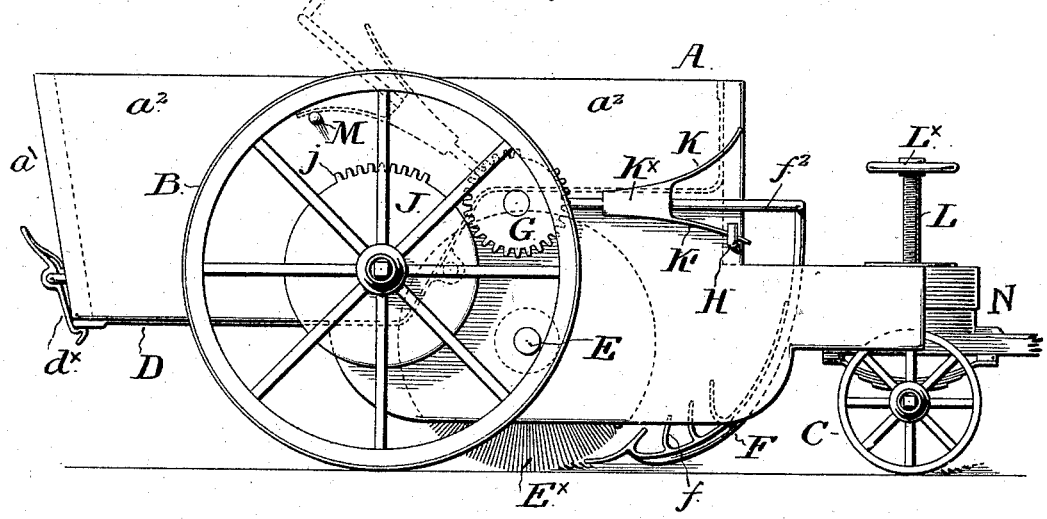


FIG. 3.

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UNITED STATES PATENT OFFICE.

FRANCIS C. WILLIAMS, OF PHILADELPHIA, PENNSYLVANIA.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 492,489, dated February 28, 1893.

Application filed May 7, 1892. Serial No. 432,223. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS C. WILLIAMS, a citizen of the United States, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented an Improvement in Street-Sweeping Machines, of which the following is a specification.

My invention relates to the class of street sweeping machines which are adapted, in connection with their function of sweeping the surfaces of the streets over which they travel, to elevate the refuse and sweepings encountered or operated upon, into a containing receptacle and transport them to a place of ultimate deposit.

It is the object of my invention to provide an apparatus of the foregoing character which shall be less expensive in construction, lighter in weight, and more efficient in operation, than such apparatus as heretofore constructed and arranged.

In the drawings I show, and herein I describe, a good form of a convenient embodiment of my invention, the particular subject matter claimed as novel being hereinafter definitely set forth.

In the accompanying drawings, Figure 1 is a top plan view, of an apparatus embodying my invention. Fig. 2 is a view in side elevation of an apparatus embodying a preferred form of my invention, sight being taken from the left hand side of the apparatus. Fig. 3 is a view in side elevation of said apparatus or machine, sight being taken from the right hand side thereof.

Similar letters of reference indicate corresponding parts.

In the drawings, A indicates the body of the machine, being a structure consisting of the walls a' a^2 a^3 a^4, conveniently of the form shown in the drawings, mounted upon a traveling support shown as consisting of two road or side wheels B and two front wheels C, upon which front wheels the front portion of the body rests through any convenient fifth-wheel arrangement desired.

A floor D is mounted in the body A, to form with the walls of said body a containing receptacle for the collected sweepings. This floor is to be placed in such position, and is to be of such form as to allow of the receptacle being of the greatest possible capacity and as, at the same time, to avoid interference with the working parts of the apparatus. In the form of apparatus illustrated, the said floor, which is conveniently of sheet metal, extends from the lower rear portion of the body forward as far as the brush, whereof hereinafter, then upward to clear said brush, and forward to the wall a', where said floor trends upward and extends as a lining up along the inner face of said wall a'.

For convenience of discharge of the contents of the receptacle, the floor is arranged to tilt or drop away from the body: In the drawings said floor is shown as provided with a lug at either side, through which it is so pivotally connected to the walls a^2 a^3 as to be free to tilt into the position shown in dotted lines in Fig. 2. Said floor is normally held in position by a latch $d^\times$, situated at the rear end of the body, with which it automatically engages when said floor, after the discharge of its contents, is returned to its place.

The side walls a^2 a^3 of the body A are extended downwardly and forwardly beyond the floor as cheek pieces, and in said cheek pieces is conveniently journaled the shaft E of the revolving cylinder brush $E^\times$. The left hand end of the shaft E is equipped with a gear wheel E′ with which is engaged a driving gear wheel $A^\times$ connected and rotating with the adjacent road wheel B, and through these gear wheels, the revolution of the road wheels, in the travel of the machine, is transmitted to and occasions the revolution of the brush, in a direction opposite to that of the road wheels, to sweep forward the refuse encountered by it.

F is a carrier, normally existing in position to receive the refuse driven forward and upward by the action of the revolving brush, and adapted to be automatically elevated at predetermined intervals into a position in which its contents are discharged, conveniently by gravity merely, into the containing receptacle of the machine. In the preferred form of apparatus illustrated in the drawings, this carrier extends across the full breadth of the machine, and is from its lower edge, which extends to a point immediately in front of the point of contact of the brush with the ground, curved forwardly and upwardly to any desired height, and is conveniently provided with a series of pockets formed by upwardly

projecting flanges f, existing within the hollow of the carrier, and extending from end to end thereof. This carrier may be made of any suitable material which combines with the requisite lightness the necessary durability.

The means to which I prefer to resort for supporting and operating the carrier are as follows:

f' f^2 are a pair of supporting arms, formed of any convenient rigid material, secured to the carrier, conveniently at the respective ends thereof, extending upward between the cheek pieces, then outwardly away from each other, and then rearwardly along the outside of the body, the arm f' being secured by any suitable swiveled or pivotal arrangement to one side of the body, and the arm f^2 being secured to a toothed pinion G, mounted free for rotative oscillation upon a suitable stud or axle projecting from the side of said body.

H H are a pair of keepers, secured to the respective sides of the body, in which the arms rest to support the carrier in its normal position.

The toothed pinion G is provided with a series of teeth extending around a portion only of its periphery.

J is a gear wheel, rigidly affixed to, so as to rotate with, the road wheel at the right hand side of the machine, and it is provided with a series of teeth extending around a portion only of its periphery, which teeth are adapted to encounter and mesh with the teeth of the wheel G.

K is an upwardly curving spring tongue mounted upon the arm f^2, and K′ is a downwardly curving spring tongue also mounted upon said arm. The springs K K′ are conveniently formed as integral with, or as attachments of, a collar $K^\times$ mounted in any convenient manner upon said arm f^2, and adapted to secure both said spring tongues in position.

L is a screw shaft, having an operating hand wheel $L^\times$, and passing through a cross piece A^2 extending from one cheek piece to the other, and bearing upon and swiveled with respect to the upper member of the fifth wheel mechanism N, as shown. The fifth wheel mechanism N may be such as convenience may require.

The operation of the apparatus will be readily understood: When the machine is propelled, the rotation of the road wheels, through the gear wheels $A^\times$ E′, occasions the opposite rotation of the revolving brush, which normally makes contact with the ground, and carries forward whatever refuse or loose material may be encountered by it. The carrier, which is normally down in the position shown in Figs. 2 and 3, receives and contains the refuse swept forward by the brush,—the dimensions of the carrier being such with relation to the diameter and ordinary rate of revolution of the brush that no part of the refuse escapes over its upper edge. In the travel of the machine, the toothed portion of the wheel J comes into contact with the teeth of the wheel G, and occasions the rotation of the wheel G in a direction opposite to that of the road wheels, and, the arm f^2 of the carrier being rigidly connected to said wheel G, said carrier is, in said rotation, carried bodily upwardly and rearwardly into a position above the containing receptacle, in which position its contents drop by gravity into the containing receptacle of the machine. The number of teeth of the wheels J and G are such that the end tooth j of the wheel J leaves the wheel G, and the blank peripheral portions of the wheels J and G are brought opposite each other, just as the carrier is in a position in which its arms are very slightly inclined from the vertical, so that, in that farther rearward movement of the carrier F which is due to its own momentum, the curved spring K is first compressed by its contact with a stud M extending from the side of the body, and then recoils and throws said carrier forward into a position in which it will drop by gravity to the normal position shown in full lines in Figs. 2 and 3, being cushioned in its descent by the encounter of the spring K′ with the keeper H. As will be understood, the jar or shock of the encounter of the carrier-arm against the stud M will free the carrier from any such materials as adhere to it and do not drop from it by gravity. The proportions of the toothed wheels J and G are such that both the elevation of the carrier and its subsequent descent into its normal position are very quickly accomplished, the brush, during the period of such elevation and descent, driving and maintaining ahead of it such refuse as it may encounter, and depositing it within the carrier immediately upon the descent of the latter. When a load of refuse has been accumulated within the containing receptacle, the screw L may be rotated to occasion the elevation of the front portion of the body to enable the brush to clear the ground, in the travel of the machine, as a vehicle merely, to the place of deposit. When it is desired to discharge the load, the latch $d^\times$ at the rear of the body may be opened, whereupon the tilting bottom of the receptacle may be turned upon its axis, as shown in Fig. 2, and its contents will be discharged by gravity.

The axle of the road wheels may either extend entirely through the body of the machine, or may be formed as independent studs or projections secured to and extending from the respective sides of the machine.

When a sufficient load of refuse has been collected, it is desirable, in the use of the machine as a vehicle merely, in transporting the load to its place of ultimate deposit, to throw the carrier out of operation, and this may be conveniently done by resting it so gently against the stud M that the compression and recoil of the spring K are avoided, and the carrier not thrown forward, and as in such position the blank space of the wheel G

is presented to the wheel J, the carrier is not brought into operation by the rotation of the wheel J, but remains leaning or resting against the stud.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In combination, a traveling support, a containing receptacle, a brush, and means for operating said brush, a carrier, and means for elevating said carrier above the receptacle, substantially as set forth.

2. In combination, a traveling support, a containing receptacle, a brush, and means for operating said brush, a carrier, and means for automatically elevating said carrier at predetermined intervals above said receptacle, substantially as set forth.

3. The combination, to form a street sweeper, of a traveling support, a containing receptacle, a revolving brush, a carrier, arms by which said carrier is pivotally connected to the machine, and gearing adapted to occasion the elevation of the carrier, substantially as set forth.

4. The combination, to form a street sweeper, of a traveling support, a containing receptacle, a revolving brush, a carrier, arms by which said carrier is pivotally connected to the machine, gearing adapted to occasion the elevation of said carrier, and a stop or stud in position to be encountered by the carrier in its throw, substantially as set forth.

5. The combination, to form a street sweeping machine, of a containing receptacle, road wheels, a brush, a carrier, arms by which said carrier is pivotally connected to the machine, and mechanism operated from the road wheels adapted to occasion the elevation of the said carrier, substantially as set forth.

6. In a street sweeping machine, in combination, a traveling support, a containing receptacle, road wheels, a brush, and a carrier, provided with a series of pockets and adapted to be automatically elevated at regular intervals, substantially as set forth.

7. In combination, in a street sweeping machine, a containing receptacle, road wheels, a revolving brush, a carrier pivotally secured to the machine, and provided with a toothed wheel, and a toothed wheel rotating with the road wheels and adapted to mesh with the toothed wheel first mentioned, substantially as set forth.

8. In combination, in a street sweeping machine, a containing receptacle, road wheels, a brush, a carrier pivotally secured to the machine, and provided with a wheel having teeth upon a portion of its periphery,—and a wheel having teeth upon a portion of its periphery, rotating with the road wheels, and adapted to intermittently engage with the first named toothed wheel, substantially as set forth.

9. In combination, in a street sweeping machine, a receptacle, a carrier provided with arms pivotally connected to the machine, keepers adapted to support said carrier normally in position in adjacency to the ground, a brush, and means for operating the brush, substantially as set forth.

10. In combination, in a street sweeping machine, a receptacle, a reciprocating carrier, provided with arms pivotally secured to the machine, springs adapted to cushion the throw of the carrier, a gear wheel rigidly secured to one of said arms and provided with a blank peripheral space, and a gear wheel adapted to be driven by the road wheels, provided with a blank peripheral space, and adapted to encounter the gear wheel first mentioned, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FRANCIS C. WILLIAMS.

Witnesses:
A. J. YERKES,
O. R. PIPPING.