(No Model.) 2 Sheets—Sheet 1.

A. P. PALMER & H. L. PHELPS.

STREET SWEEPER.

No. 513,438. Patented Jan. 23, 1894.

Fig. 1

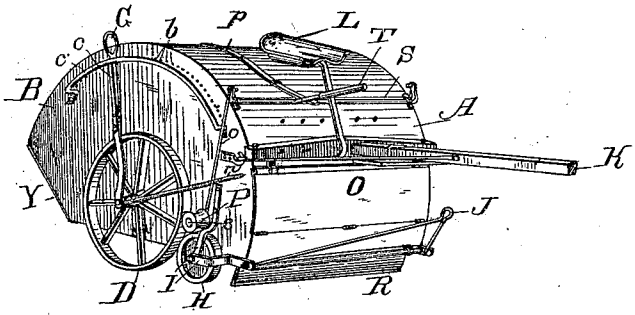


Fig. 2.

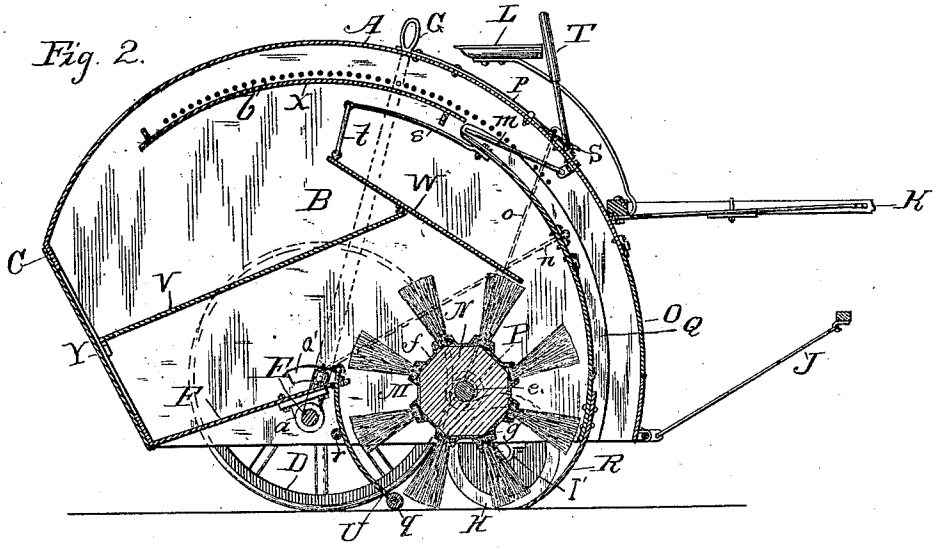
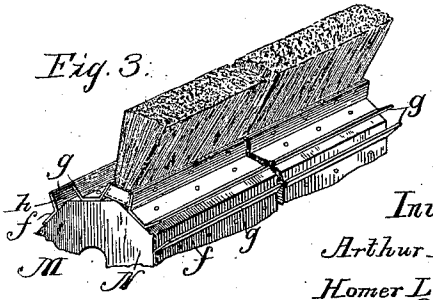


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

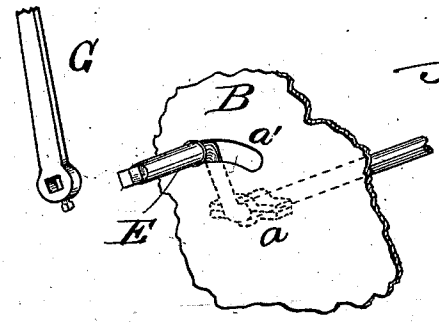


Fig. 5.

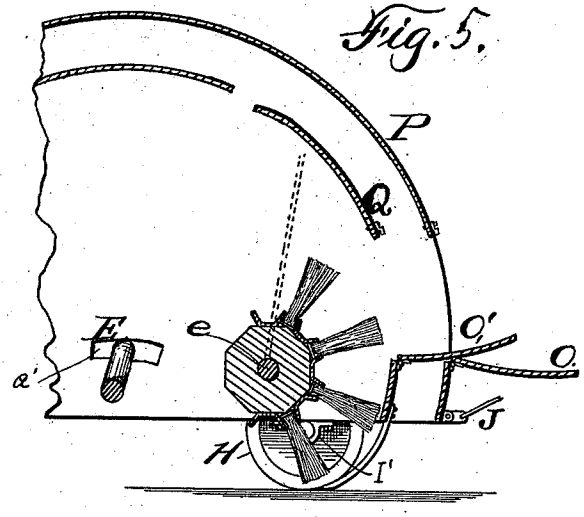
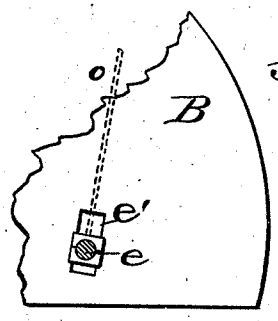


Fig. 6.



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ARTHUR P. PALMER AND HOMER L. PHELPS, OF ATHENS, PENNSYLVANIA.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 513,438, dated January 23, 1894.

Application filed July 26, 1892. Serial No. 441,290. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR P. PALMER and HOMER L. PHELPS, citizens of the United States, residing at Athens, in the county of Bradford and State of Pennsylvania, have invented certain new and useful Improvements in Centrifugal Street-Sweepers; and we do hereby declare the following to be 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.

Our present invention relates to various new and useful improvements in those varieties of street sweepers employing a rotary brush wheel, operating at right angles to the line of movement, and wherein the dust or dirt which may be swept from the street, is retained by, and carried off in the machine, from which it may be removed when desired.

The principal objects which we seek to attain in our present invention, is to provide and produce a street sweeper of novel construction, which has but comparatively few parts, which is compact and attractive in appearance, which can be built and maintained economically, and which can be operated with great facility and effectiveness. We also obtain through the use of our invention, several less important advantages, among which may be mentioned an improved brush wheel of novel construction, and further, the provision of a simple and effective adjustment for the same, whereby all wear may be taken up, as will be more fully hereinafter described and claimed.

For the better comprehension of our present invention, attention is directed to the accompanying drawings, forming a part of this specification, and in which—

Figure 1, is a perspective view of the apparatus; Fig. 2, a sectional view of the same; Fig. 3, a perspective view of a portion of the brush wheel. Fig. 4, is a detail of part of one of the sides of the casing, the cranked axle squared upon its outer end, the slot in the casing, and the lever detached. Fig. 5, is a detail of part of the casing and part of the brush and showing the doors in the casing open to permit access to the brush. Fig. 6, is a detail showing the slot in the casing in which the brush shaft moves vertically.

In all of the above views corresponding parts are designated by the same letters of reference.

A, represents the curved top and front of the device. B, are the sides thereof, and C, the back.

D, are the main supporting wheels, centrally mounted on a crank axle E. This crank axle is mounted on the bottom F, of the machine, about mid-way between the front and back of the machine, so that a greater portion of the weight will be borne by the supporting wheels D, D. The said crank axle E, is mounted in bearings *a*, so that the supporting wheels D, may be moved either to the front or rear, with relation to the body of the machine. The said crank axle E, at one end is made square in cross-section, as shown in Fig. 4, and mounted thereon and held in place by means of a nut, is the lower end of a lever G. This lever G, extends up above the top of the machine and it is provided with a stud thereon, engaging with a series of holes *b*, formed in one side of the machine. The said lever G, is also provided at its central part with a leaf spring *c*, which bears on a suitable rod *c'*, also secured to the side of the machine. By forcing the lever G, outwardly against the tension of the spring *c*, it will be disengaged from one of the holes *b*, and it can then be moved either frontward or backward to allow it to engage with another of said holes *b*. This swinging of the lever partially rotates the axle, causing the cranked portion to traverse the slotway —*a'*— (Fig. 5) and this raises or lowers the body of the machine, and thus also raises or lowers the brush, vertically, and varies the degree of its tension upon the pavement, or raises it clear therefrom, and also moves the wheels forward or back.

H, H, are smaller wheels, mounted in suitable castings I, I', directly in advance of the supporting wheels D, and which bear a smaller portion of the weight of the machine, than the wheels D, owing to the fact, that the latter wheels are located at about the central part of the machine, so that most of the weight rests thereon.

To the castings I, are secured the rods J, to which the team is secured.

K, is a pole, on each side of which is harnessed a horse in the usual way, and said pole

is hooked to the machine so as to be readily removable, as shown in Fig. 1. The said pole also carries a seat L which is mounted on the end of a leaf spring in any well known way.

M, is the brush wheel, mounted on an axle *e*, which engages a bearing within a suitable slot *e'* in each of the sides of the machine. The particular construction of this brush wheel is more clearly shown in Fig. 3. It consists of a suitable core N, which may be a solid cylinder of wood or it may be hollow or of any other construction. To the periphery of this core, are secured sheet metal plates *f*, having bent up flanges *g*, so that a space *h*, will be formed between the flanges of adjacent plates. Within these spaces *h*, are secured the brushes by means of bolts or screws passing through said flanges *g*, and engaging with the solid portion of each brush. In this way when the brushes become worn they may be quickly removed and replaced, and for this purpose hinged plates or doors *o'* (shown in Fig. 5), are formed preferably in the front part of the machine in the casing and dust-shield.

To the axle *e*, of the brush wheel, either at one end or at both ends is secured a friction wheel or pulley P, having a concave face, as shown in Fig. 1. The said friction wheel or pulley P is secured to said axle "*e*" by any convenient and desirable form of friction clutch, whereby the said friction wheel is revolved in one direction; the axle *e* carrying the brush wheel M will be revolved with it, but when the sweeper is moved backward and said friction wheel moves in the opposite direction, the said friction clutch coming into play, will allow the axle "*e*" and brush wheel M to remain stationary. The said friction wheel P rests by its weight between the wheels D and H, the first of which are made convex on their peripheries, so as to engage with and rotate the said friction wheel P.

Q, is a dust shield, placed directly in front of the brush wheel, and having an apron R, at its lower end which drags on the ground. The said apron R, is to be made of rubber, canvas, or similar material, so as to accommodate itself to any unevenness in the ground. The said dust shield Q, is supported at its upper end by a link *m*, and at its middle portion by a rod *n*, on each side, which connect with the crank portion of the axle E, as shown in Fig. 2. As we have before mentioned the friction wheels P, rest upon the bearing wheels D and H. When the brushes in the brush wheel become worn, the lever G, operating as we have before described, is moved back a short distance, so as to throw the bearing wheels D in the same direction. This will open the space between the bearing wheels D and H, so as to allow the friction wheel P, to move downward a short distance, thereby taking up the wear on the brushes. As the friction wheel P, drops downward, it also moves slightly backward since it travels over the periphery of the smaller bearing wheels H, which are stationary, and by connecting to said dust shield Q, and the crank axle E, by means of the rods *n*, the said dust shield will also be moved backward, so that it will always be kept in the same relative position with respect to the brush wheel.

S, is a crank lever pivoted to the front part of the machine, adjacent to the driver's seat, and having its crank portions connected with the axle *e*, by means of suitable rods *o*. The said crank axle S, is provided with a handle T, within easy reach of the driver and by means of which the said crank axle may be operated, so as to raise the axle *e*, and thereby lift the brush wheel off of the ground when it is so desired, as will be readily understood.

p, is a leaf spring which bears on the crank axle S, so that the friction imposed thereby will retain the said crank axle in any desired position.

U, is a dust pan at the rear of the brush wheel, which is mounted within a transverse slot in the bottom F of the machine, so that it may be allowed to move vertically up or down, to accommodate itself to any unevenness in the ground or street. This dust pan is provided with a roller *q*, at its lower end which bears on the street, and a roller *r* attached to the casing keeps it in its relative position with regard to the brush wheel, and at the same time, allows, it to rise and fall. The said dust pan U is also provided with an enlargement at its upper end (see Fig. 2) which prevents it from dropping entirely out from its place in the bottom "F."

V, is an inclined partition formed within the body of the machine, with its end extending a short distance above the brush wheel, so that a receptacle will be formed above and below it. W, is a dust apron hinged to the forward end of said partition V, and having its upper end connected with the dust shield Q, by means of the rod *s*, and the link *t*. By this means it will be observed that when the brush wheel is allowed to drop slightly to take up any wear, and the dust shield Q, is allowed to move backward a short distance, so as to always retain the same relative position with relation to the said brush wheel, the said rod *s*, will be elevated slightly so as to drop the lower end of the said apron W, which will in this way be always kept in juxtaposition to the periphery of the brush wheel.

X, is a partition extending from the upper end of the dust shield Q, to a point near the back of the machine, and some distance from the top thereof, so that an air space will be formed between said partition X and said top.

Suitable vents or holes are pierced within the top or front of the machine to allow for the escape of any currents of air which may be formed therein, by the rapid rotation of the brush wheel, or instead of making use of this specific provision, the said air currents may flow out of the machine at the space

formed between its lower front portion and the lower end of the dust shield Q, as shown in Fig. 2.

Y, is a door or trap at the rear of the machine, which may be opened to allow any dust or dirt which may rest upon the incline bottom F, or upon the inclide partition V, to be dropped out.

The operation of our improved street sweeper, is as follows: The supporting wheels D, engaging with the friction wheels P, will cause the latter to revolve, thereby rapidly rotating the brush wheel. Since the brush wheel rests upon the ground any dust or dirt will be swept up by the same. All dust of a light character, will be thrown up over the dust apron W, on the inclined partition V, and all heavy substances such as dirt, clay and mud, will be thrown upon the inclined bottom F, of the machine by the centrifugal force.

Having now described our invention, what we claim as new therein, and desire to secure by Letters Patent, is as follows:

1. In a street-sweeper, a case, a rotating brush, and its shaft, vertically movable journal bearings for said shaft, mounted in slots in the case, rods connected to said shaft, a crank shaft having its arms connected to said rods, and means to rotate said crank shaft to adjust the brush vertically in combination.

2. In a street-sweeper, the combination with the casing and the front and rear driving wheels, of a rotating brush provided with a shaft and pinions thereon in frictional contact with said wheels, and driven thereby, a crank shaft journaled upon said casing, and connecting rods connected to the crank arms of said shaft, and carrying the journals in which the brush shaft has its bearings, and means to rotate said crank shaft to adjust the brush vertically.

3. In a street-sweeper, the combination with the casing and the front and rear driving wheels, of a rotating brush provided with a shaft and pinions thereon in frictional contact with said wheels and driven thereby, a lever pivoted upon said casing and connected to the crank axle of one of said wheels, and a dust shield in front of said brush wheel and connected to said crank axle and adjustable forward or back, and a dust-pan connected to said dust shield.

4. In a street-sweeper, the combination of the supporting wheels mounted on a crank axle, so as to be moved forward or backward; smaller supporting wheels; a brush wheel; having friction wheels bearing on said supporting wheels; a dust shield in front of said brush wheel and connected with said crank axle, substantially as described.

5. In a street-sweeper, the combination of the supporting wheels; mounted on a crank axle so as to be moved forward or backward; smaller supporting wheels; a brush wheel having friction wheels bearing on said supporting wheels; a dust shield in front of said brush wheel and connecting with said crank axle, and a pivoted dust apron above said dust brush and connected with said brush shield, substantially as described.

6. In a street-sweeper, the combination of the supporting wheels mounted on a crank axle, a lever for moving said wheels forward or backward; smaller supporting wheels; a brush wheel having friction wheels bearing on said supporting wheels; a dust shield in front of the brush wheel and connected with the crank axle; an inclined partition; a dust apron hinged to the forward part of said partition; and connected with said dust shield; a movable dust pan back of the brush wheel and having a roller at its lower end; and a crank axle; and connections for raising the said brush wheel, substantially as described.

7. In a sweeper, the combination with the case, the brush secured upon a shaft journaled in vertically adjustable bearings, rods connected to said shaft, and a crank-shaft operatively connected to said rods to adjust the brush, of a crank-axle, wheels journaled thereon, and a lever connected to said axle to rotate it.

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In presence of—
JOSEPH HINES,
V. GREGORY.