N. CAMPBELL.

STREET SWEEPER.

No. 190,956. Patented May 22, 1877.

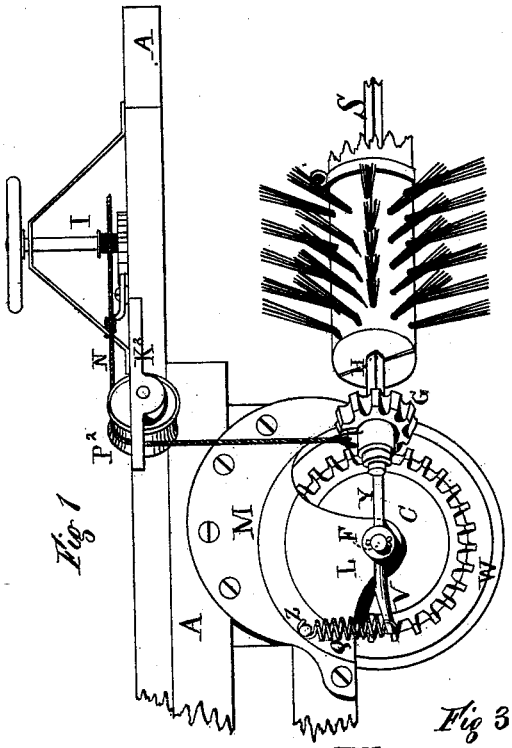


Fig 1

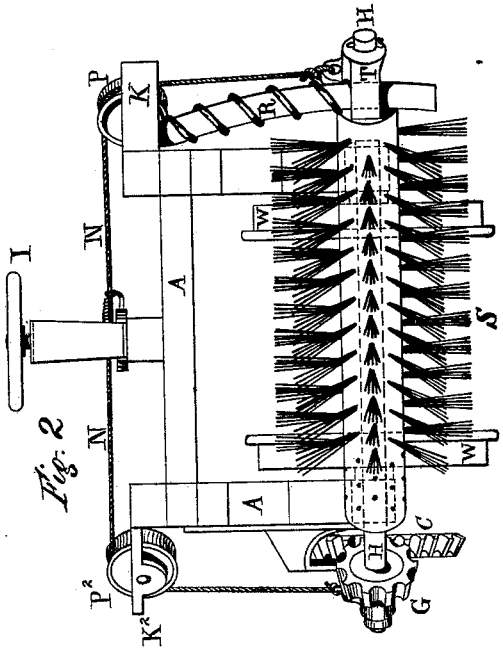
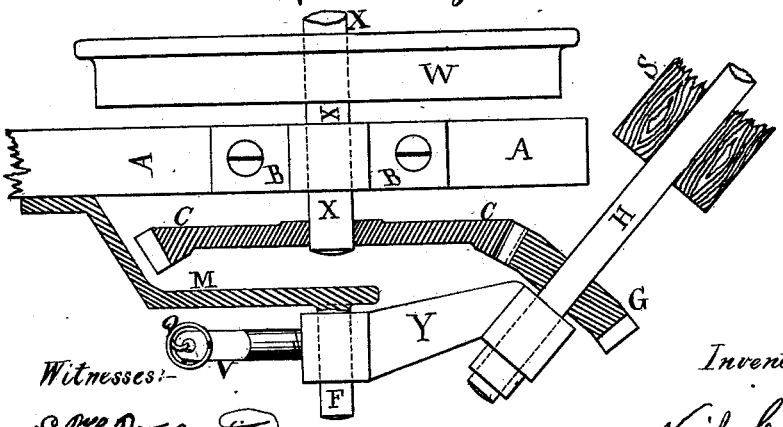


Fig. 2

Fig 3



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NEIL CAMPBELL, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN STREET-SWEEPERS.

Specification forming part of Letters Patent No. **190,956**, dated May 22, 1877; application filed July 5, 1876.

To all whom it may concern:

Be it known that I, NEIL CAMPBELL, of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Street-Sweepers or Sweeping-Machines; and that the following specification, taken in connection with the drawings accompanying and forming a part of the same, contains a full, clear, and exact description of my said invention, sufficient to enable those skilled in the art to construct and operate the same.

Figure 1 is a side view of the sweeping apparatus and gear. Fig. 2 is an end view of my improved sweeping-machine. Fig. 3 is a cross-section of the gear-wheels and the shield-plate, seen vertically, with a vertical view of the yoke, car-wheel, and sweeper-shaft.

My invention is peculiarly adapted for application to car-trucks, and to be used for cleaning the bed of horse-railroads from snow and other similar obstructions.

In the drawing, A is the frame or body of the truck, and W W are the wheels, constructed of the ordinary shape, and applied to the axles X, which are attached to the car or truck frame by running through the boxes B B, in the ordinary manner. One end of the axles, however, (preferably the right-hand end,) is prolonged, so as to pass through the box, and afford opportunity for the attachment thereto of a cog-wheel, C. This cog-wheel C is made of a little less diameter than the car-wheels W W, so as to turn free and clear of the street and road-bed, and has its cogs or teeth set on a bevel, so as to gear into the cogs of a smaller wheel, placed in a plane inclined to the plane of the cog-wheel C. S is the brush or sweeper proper, and consists of a shaft, H, to which are fastened rows of reeds or stiff brushes, suitable for street-sweeping, and these rows surround the shaft, so that the sweeping motion shall be continuous as the shaft revolves. This sweeper is supported from the truck-frame in the following manner:

The frame-work of the truck on the left-hand side is made to project forward beyond that on the right-hand side, and at its end is a metal block, K, from which depends a hanger or metal rod, R. On this hanger R is a metallic traveler, T, having two eyes, at right angles to each other. Through one of these eyes the hanger R passes, and through the other eye passes the end of the shaft H. This construction affords a support for the end of the sweeper S while it is revolving, and at the same time permits a vertical movement of the end of the brush, up or down, as occasion demands. The construction of the hanger R, by making it with, and depending from, the metal block K, instead of inserting it in a hole in the frame-work, gives stability to the support, and removes the liability of the hanger to loosen in its socket, or split the frame by the long leverage exerted through it.

I provide a support for the other end of the shaft H in the following manner:

I attach a strong plate of metal, M, to the outside of the frame-work A, just above the axle-box B and the cog-wheel C. This plate is then convexed to project over the top of, and down at, the side of the cog-wheel C, so as to be entirely independent thereof, and yet form a sort of shield over the same. The lower point of this shield-plate at L is narrowed down, and at a point opposite the end of the adjacent axle or center of the cog-wheel C I project a secondary shaft, F, also of metal, and running in a line which would be the same as the axle X if that were projected outward. Y is a yoke, also formed of metal, one end of which is pivoted on the shaft F, and the other end is pivoted on the end of the shaft H. Firmly attached to the end of the shaft H, and near the yoke Y, is a second cog-wheel, G, having about one-third the number of cogs that the cog-wheel C has, and having its cogs or teeth gear into the cogs or teeth of the beveled wheel C. It is obvious from this construction that the sweeper S will be supported both vertically, by the chain N, as hereinafter described, and horizontally, by the hanger R and the yoke Y, entirely independent of the axle X, the only connection with said axle being the communication of revolving action through the cog-wheel C. The yoke Y may be extended beyond the shaft F, or have a projecting arm, as shown at V. To this arm V one end of a strong spring, Q, is attached, the other end of which is attached to the shield-plate M, or frame of the car, by a set-screw, Z, or equivalent means, in such man-

ner that the tension of the spring shall serve at all times to keep the brush down upon the ground, or so far in that direction as the chains N will allow.

The movement of the truck as it is drawn forward will revolve the axle X, carrying with it the cog-wheel C, which will, in turn, impart a revolution of threefold velocity to the sweeper S through the cog-wheel G, and the sweeper, being rapidly revolved in its oblique position in front of the car, will throw all the snow and dirt which it can operate upon clear of its path to the right of the truck.

It is desirable in a street-sweeper of this character to have some means afforded by which the sweepers or brushes can be set at different distances from the road-bed, or their proximity and closeness of action be regulated to provide for heavier or lighter obstructions, &c., and to be self-adjusting to meet inequalities in the surface.

I accomplish this in the following manner, viz: Upon the forward end of the truck-frame or car-body I place a windlass like that of the ordinary car-brake, as shown at I. To the shaft of this windlass I, I attach a flexible wire-rope or chain, N, one end of which runs over a wheel or pulley, P, in the block K, and is attached to the traveler T, just above the end of the shaft H. The other end of the chain N runs over a similar wheel or pulley, P^2, in a corresponding block, K^2, over the other end of the shaft H, and is attached to the end of the yoke Y, which supports the other end of the shaft H. The windlass I is provided with a ratchet like that on the ordinary car-brakes. By turning this windlass I to the right, the sweeper S will be steadily and evenly raised with equal motion at each end to any desired height, while upon unloosing the ratchet the weight of the sweeper will cause it to descend as low as permitted by the chain N.

The ends of the chain N afford the vertical support to the sweeper S at all times when the same is not resting upon the ground.

The sweeper S itself I construct in the following manner: The shaft H, except at the ends thereof, which are turned round, is made of iron in the form of a square bar about two inches in diameter. Around this is placed the brush-head, which is made of wood or metal, and is made in the shape of two half-cylinders, so that when placed together they will encircle the shaft H, and form a cylindrical brush-head or place of fastening for the reeds or brushes. The reeds are fastened into these heads by taking a bundle or wisp of them about three feet long and doubling them at their middle, and then inserting one end of the bundle through one hole, and the other end through an adjoining hole, in the brush-head, and pushing them through, so that the reeds are held there in the shape of a staple, with its two ends projecting through different holes, and held by its middle independent of each other bunch of brushes.

This construction enables one bunch of brushes to be removed without affecting any other set, and also dispenses with the necessity of having the brushes arranged in parallel lines or rows, they being placed wherever the holes can be bored.

After each half of the brush-head is fitted with the reeds in this manner, they are applied to the shaft H and bound on by three hoops or metallic bands, one at each end, and one at the middle, or by screws and flanges, forming a strong, serviceable brush, that can be readily taken apart to have its reeds renewed, at pleasure.

Having thus described my improved sweeping-machine, I do not wish to be understood as claiming all the features which I have described, for some of the elements were known and in use prior to my invention. The body part of the car or frame-work is not new, nor is it new to attach to it an obliquely-acting sweeper; but in the sweepers made prior to my invention, the brush or sweeper S was attached to a rod or hanger, R, which depended from the frame-work itself, and not from the block K—a construction which weakened the frame-work.

In sweepers as heretofore constructed, the cog-wheel G was placed on the axle X, between the wheels W. That construction, of necessity, brought the corresponding cog-wheel G between the wheels W W, and shortened the brush or sweeper, so that it operated only on a part of the track, and the balance of the track had to be cleaned by a second brush operating from the other end of the car. The cog-wheel C, being located between the wheels, was apt to be filled with the snow and dirt thrown back from the brushes S, and its operation choked or impeded.

In sweepers made prior to my invention, the yoke Y also was supported by and pivoted directly on the axle X between the two wheels.

The result of that was, that the downward pressure exerted on the yoke Y by the resistance met with by the sweeper S would be communicated directly to the axle X, and the yoke Y, encircling the axle, would often bind it so that it would not revolve, and the consequence would be, that the wheels W W would slide along the car-tracks without revolving or turning the sweeper.

By my invention, in which the support of the sweeper S is entirely independent of the axle X, the result of any pressure or obstruction to the brush or sweeper S is communicated only to the body of the truck A, holding it down more firmly to the track, while the axle X is as free as ever to revolve. The shield M is also of great advantage in protecting the cog-wheel C from the flying snow and dirt put in motion by the brush or sweeper.

In the sweeping-machines constructed prior to my invention the provision for raising or lowering the sweeper S consisted of a system of rods and levers, operated from the frame

A, over each end of the shaft H, independent of each other.

That method often necessitated the employment of a man at each lever, and, the levers being independent of each other, the motion was not uniform. Their action was too complicated to be reliable, and did not afford the self-adjusting facility afforded by my invention with the flexible chain N.

The construction of the brush-heads or sweepers prior to my invention was complicated and costly. It was customary to make the shaft H of a radiate shape, having hollows, into which were fitted several straight bars or brush-heads, each containing a row of brushes. Each head had to be separately bolted in, consuming time, and necessitating expensive bolting devices. The reeds or brushes, also, were fastened in by bolts, or by a compound of pitch, which would be dissolved and loosened by the salt and snow which were thrown from the track of the railroad, salt being frequently placed thereon to melt the snow.

Having thus described my improved sweeping-machine, what I claim as new, and desire to secure by Letters Patent, is—

1. In a sweeping-machine, the herein-described method of attaching the reeds or brushes to the brush-head, by inserting them in the manner of a staple in holes in the brush-head, and retaining them in position by a shaft running through the brush-head, substantially as described.

2. In a sweeping-machine, the combination of the sweeper S and yoke Y with a support, F, independent of the axle X, substantially as and for the purpose described.

3. In a sweeping-machine, the combination of the axle X, constructed with the projecting end and the cog-wheels C and G, substantially as and for the purpose described.

4. In combination with the frame-work A of a sweeping-machine and the cog-wheel G, the shield-plate M, substantially as and for the purpose described.

5. In a sweeping-machine, the combination of the block K with the hanger R, projecting therefrom, substantially as and for the purpose described.

6. The combination of the arm V and spring Q with the sweeper S, substantially as and for the purposes described.

NEIL CAMPBELL.

Witnesses:

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