2 Sheets—Sheet 1.

J. ROBINSON.

STREET-SWEEPERS.

No. 184,176. Patented Nov. 7, 1876.

Fig. 1.

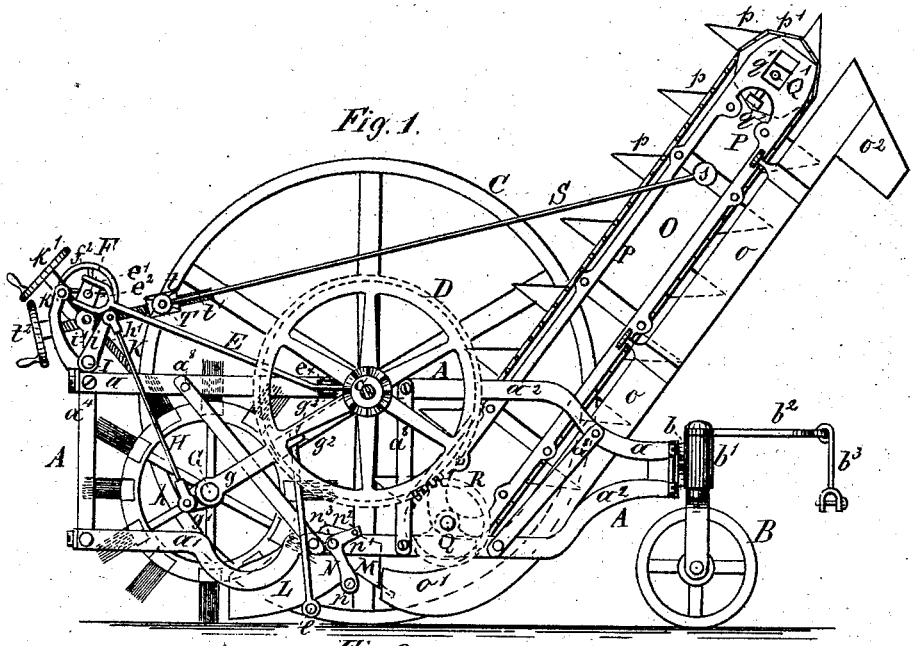
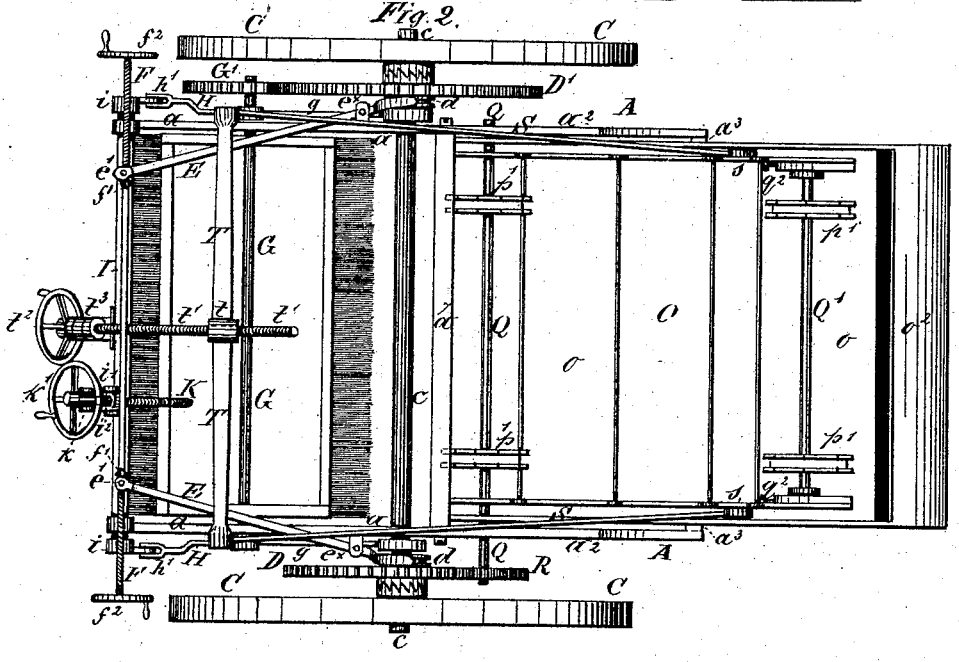


Fig. 2.



Witnesses.
Henri Guillaume
Alfred, L. Leonard

Inventor.
James Robinson
per Henry Orth
atty.

2 Sheets—Sheet 2.

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Fig. 3.

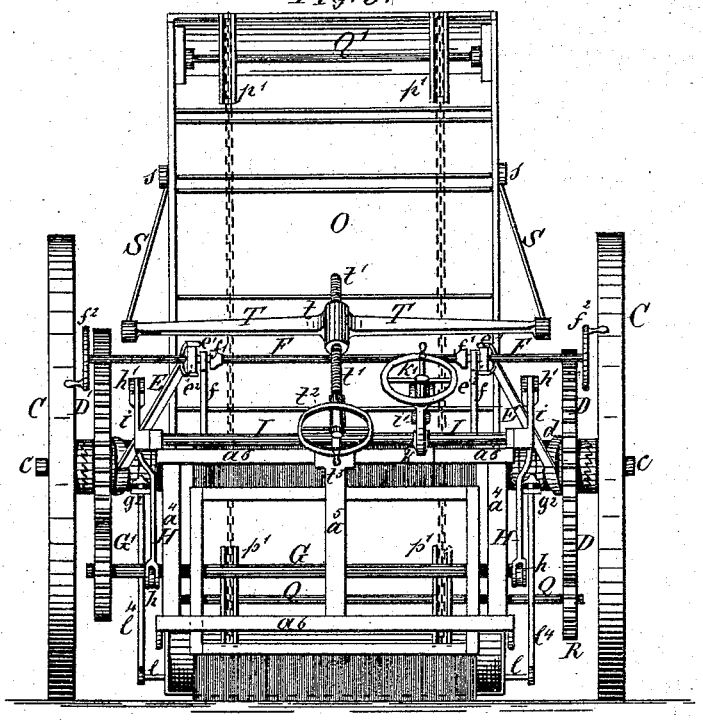
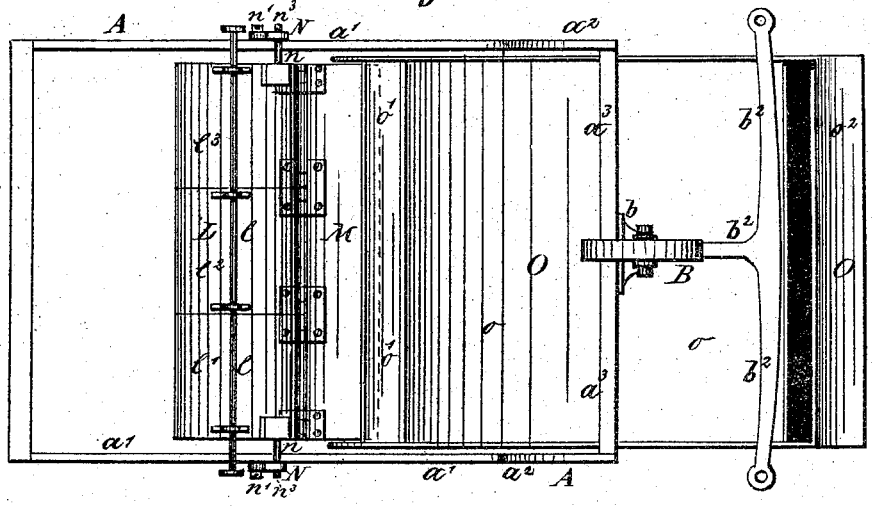


Fig. 4.



Witnesses.
Henri Guillaume
Alfred L. Leonard

Inventor
James Robinson
by Henry Orth
atty.

UNITED STATES PATENT OFFICE.

JAMES ROBINSON, OF HESTON NEAR HOUNSLOW, ENGLAND.

IMPROVEMENT IN STREET-SWEEPERS.

Specification forming part of Letters Patent No. **184,176**, dated November 7, 1876; application filed July 6, 1876.

To all whom it may concern:

Be it known that I, JAMES ROBINSON, of Heston near Hounslow, in the county of Middlesex, England, a subject of the Queen of Great Britain, have invented or discovered new and useful Improvements in Street-Sweeping Machines; and I, the said JAMES ROBINSON, do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof—that is to say:

My invention relates to certain details of construction and arrangement as fully described hereinafter, and shown in the accompanying drawings, in which—

Figure 1 is a side elevation, with the outer drive-wheel, and one of the hand-wheels on shaft I removed. Fig. 2 is a plan view, with the elevator-chains and buckets removed. Fig. 3 is a rear elevation, and Fig. 4 is an under-side view, of so much of the machine to illustrate the arrangement of dirt-receiver and elevator or conveyer.

Similar letters of reference are employed in all the figures to indicate corresponding parts wherever they may occur.

A is the main frame, of suitable form, to receive the operating mechanism and conveyer, and consists of the upper and lower longitudinal girts a a^1, respectively, curved at their forward end, as shown at a^2, where they are connected together by transverse pieces a^3, to which is bolted or otherwise secured the bracket b, in which the fore or guide wheel B is pivoted or swiveled by means of the sleeve b^1 as well as the tongue or shaft b^2, which latter carries clevises b^3, by means of which it is made fast to the wagon which receives the sweepings and to which the draft-animals are hitched, as fully shown by Figs. 1 and 4.

The longitudinal girts a a^1 are further connected together by means of the rear triangular uprights a^4, the upright a^5, and the rear triangular transverse pieces a^6, the upper transverse piece a^7, and the braces a^8, thus forming a light and substantial frame-work for the operating mechanism. C C are the main drive or ground wheels mounted upon an axle, c, which has its bearings in the center of the upper longitudinal girts a of the main frame. The inner face of the hub of these wheels is provided with teeth which engage with corresponding teeth formed on the outer face of the hub of two gear-wheels, D D^1, which latter are loosely mounted upon the shaft c, and by means of which and the following mechanism the operating devices are thrown in and out of gear. d d are two grooved pulleys formed on the inner faces of the hubs of the gear-wheels D D^1, and E E are two clutch-levers, which have their fulcra in bearings $e^\times$, which project from the upper longitudinal girts a of the frame. The forks e at the forward end of the levers E E are provided with pins which run in the grooves of the pulleys d, and the rear ends of such levers are also forked, as at e^1, and are at that point pivoted to swivel-blocks e^2, which latter are respectively provided with right and left screw-threaded perforations to receive the correspondingly-threaded ends of a transverse shaft, F, mounted in standards f secured to the main frame at the rear of the machine. The shaft F carries two collars, f^1, which serve as stops to limit the motion of the swivel-blocks, and said shaft carries at its outer extremities a hand-wheel, f^2.

It is evident from the description of this part of the mechanism that by turning either or both hand-wheels to the right or left the toothed hubs of the gear-wheels D D^1 are caused to engage with, or be disengaged from, the toothed hubs of the main drive-wheels C, thus throwing the operating devices in or out of gear as required. G is the brush-shaft, carrying a series of brushes mounted thereon in any suitable or preferred manner, and has a gear-wheel, G^1, mounted at one end which meshes with the gear-wheel D′, from which it receives motion through the intervention of the drive-wheels C. This shaft has its bearings in swinging levers g, the upper or forward ends of which are loosely mounted upon the main axle c, while their lower rear ends, forming the bearings for the brush-shaft, are provided with projection g^1, to which the lower forked ends h of the connecting-rods H are pivoted, while their upper forked ends h^1 are pivoted to crank-arms i mounted on the outer ends of a transverse shaft, I, which has its bearings in brackets secured to the rear

end of the main frame, said shaft I lying below the shaft F, as shown in Figs. 1 and 3. The shaft I carries a short forked standard, i^1, between the fork of which is pivoted the block i^2, which latter has a screw-threaded perforation for the reception of the screw K, the rear end of which carries a hand-wheel, k^1, and has its bearings in a forked standard, k, secured to the rear end of the main frame. This mechanism serves to adjust the brush-shaft and brushes to the surface of the ground or to compensate for the wear of the brushes.

It will be evident from what has been said with regard to this portion of the mechanism that when the hand-wheel k^1 is turned in either direction the screw K will cause the shaft I to rock or rotate backward or forward, thereby raising or depressing the crank-arms i, and with them the connecting-rods H and the levers g, and consequently the shaft G.

Instead of the screw K a lever and ratchet-wheel may be mounted on the shaft I and a pawl to engage with said ratchet-wheel to hold the shaft G in any desired position. I prefer, however, the arrangement shown and described above as being more convenient and especially more substantial, and not liable, when the machine is jolted, to release the brush-shaft.

L M is the dust or dirt receiver, which serves to receive the sweepings and deliver them to the lower end or dirt-box of the elevator O. This receiver is made in two sections, L M, the rear section L being composed of a series of independent curved plates which are hinged to the front section or plate M, which forms the delivery platform or chute over which the sweepings are delivered to the receiving end of the conveyer.

The curved plates l^1 l^2 l^3 of the rear section L correspond to the arc of the circle described by the brushes, and these plates are rigidly connected together by means of a transverse rod, l, which, in its turn, is connected at both ends to vertical rods l^4, which latter slide freely in bearings or ears projecting from the side of the swinging levers g, which levers form the bearings for the brush-shaft G, as already described.

The receiver L M is supported from the main frame by means of angular pivoted levers or links N, which form bearings for the short axles n formed on the outer curved plates l^1 l^3 of the rear section L a little in front of the hinged axis of the two sections, as shown by Fig. 4. The upper arms n^1 of the angular links N carry stop-pins n^2 to limit the oscillation of the two sections upon their axis n^3.

By this arrangement and construction of receiver its rear section is adjusted to the surface of the ground or to the wear of the brushes, simultaneously with the brush-shaft G, as it will be evident that when the levers g are raised or lowered by means of the devices above described, the connecting-rods l^4 are also raised or lowered, and with them the rear section L of the receiver L M, so that all these devices, the brush-shaft, the receiver, and the conveyer, may be adjusted to the surface of the ground or the wear of the brushes. The connecting-rods l^4 as above stated, slide freely in the ears g^2 on the levers g, for the purpose of allowing the rear section L to automatically rise or fall when the machine is traveling over uneven ground or meets with any obstacles in its path. O is the elevator or conveyer, consisting of the endless-chain frame P, to which is bolted or otherwise secured the inclined elevator-platform o, having a receiving-box, o^1, and a chute or discharge-hopper, o^2. The endless chains carrying the elevator-buckets p travel over octagonal or other suitable groove-pulleys p^1, mounted upon two shafts, Q Q′. The shaft Q′ has its bearings in the upper part of the frame P, said bearings consisting of sliding blocks q^1, which slide freely in recesses formed in the sides of the frame P, and by means of the set-screws q^2 the tension of the chains may be regulated and maintained. The lower shaft Q has its bearings in the sides of the main frame and forms the pivotal axis of the conveyer, upon which it is free to turn when the inclination of such conveyer is adjusted. This shaft carries on its outer end a pinion, R, which meshes with the gear-wheel D, from which it receives its motion through the intervention of the drive or ground wheels C, to operate the conveyer-buckets. Thus, when one or both the hand-wheels f^1 are turned to throw the brush-shaft in or out of gear by means of the devices already described, the operating mechanism of the elevator is also thrown in or out of gear, as will be readily understood.

According to the nature of the work the machine is performing, or the nature of the ground over which it is traveling, the inclination of the elevator must conform, and to regulate this inclination I employ the following means: S S are two connecting-rods pivoted to the chain-frame P at or near its upper extremity, as shown at s, the outer or rear end of said rods being connected to a transverse arm, T, to form a yoke or bail. The arm T has a screw-threaded sleeve, t, formed in its center for the reception of a screw, t^1, which carries at its outer rear end a hand-wheel, t^2, said screw T being supported from and having its bearings in a forked bracket, t^3, bolted or otherwise secured to the rear end of the main frame, and in the center thereof immediately over or to the standard a^5. It will be evident that when the hand-wheel t^2 is turned in either direction the yoke or bail will move the elevator forward or backward to give it the desired inclination, and to that effect it is also necessary that the receiver L M should have a yielding motion to accommodate its delivery-platform M to the receiving end of the conveyer, and enable it to move with the said receiving end of the conveyer as the inclination is varied.

Instead of the screw t^1 and the yoke or bail,

a transverse shaft, carrying two drums, may be employed, and the elevator may be connected to such shaft by means of chains, which latter may be caused to wind upon the drums when the shaft is rotated by means of a hand-lever mounted upon its extremity, and a ratchet and pawl may be suitably arranged to hold the conveyer in any desired position. I prefer, however, to employ the mechanism above described, and shown in the drawings, as being more convenient and effective.

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

1. The combination of an adjustable elevator with a sectional dirt-receiver, having a yielding motion, to allow the delivery platform or plate of said receiver to follow the movements of the receiving end of the elevator when its angle of inclination is changed, substantially as described.

2. The combination, with the conveyer, of a bail or yoke, S T, the transverse arm T of which has a threaded sleeve, and the screw t^1 carrying a hand-wheel, t^2, substantially as described, for the purpose specified.

3. The adjustable hinged receiver L M, in combination with the pivoted angular bearings or links N, and the stop-pins n^2 on the free arms of such links, to limit the oscillation of said receiver, substantially as described, for the purpose specified.

4. The rear section L of an oscillating sectional receiver, constructed as described, in combination with the transverse rod l, the vertical rods l^4, sliding freely in ears or brackets, and the levers g, to allow said front section to rise and fall automatically, substantially as described, for the purpose specified.

5. The rear section L of an oscillating sectional hinged receiver, the transverse rod l, and the rods l^4, with the swinging levers g, connecting-rods H, shaft I, and the screw K, carrying a hand-wheel, substantially as described, for the purpose specified.

6. The brush-shaft G, in combination with the swinging levers g, connecting-rods H, shaft I, and screw K, carrying a hand-wheel, substantially as described, for the purpose specified

7. The combination, with the clutch or grooved pulleys d, the gear-wheels D D′, and the drive-wheels C, and axle c of the clutch-levers E, and shaft F, carrying hand-wheels f^2, all constructed to operate substantially as described, for the purpose specified.

JAS. ROBINSON.

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