Smith & Hartman.

Street Sweeper.

No. 12,354. Patented Feb. 6, 1855.

Fig. 1.

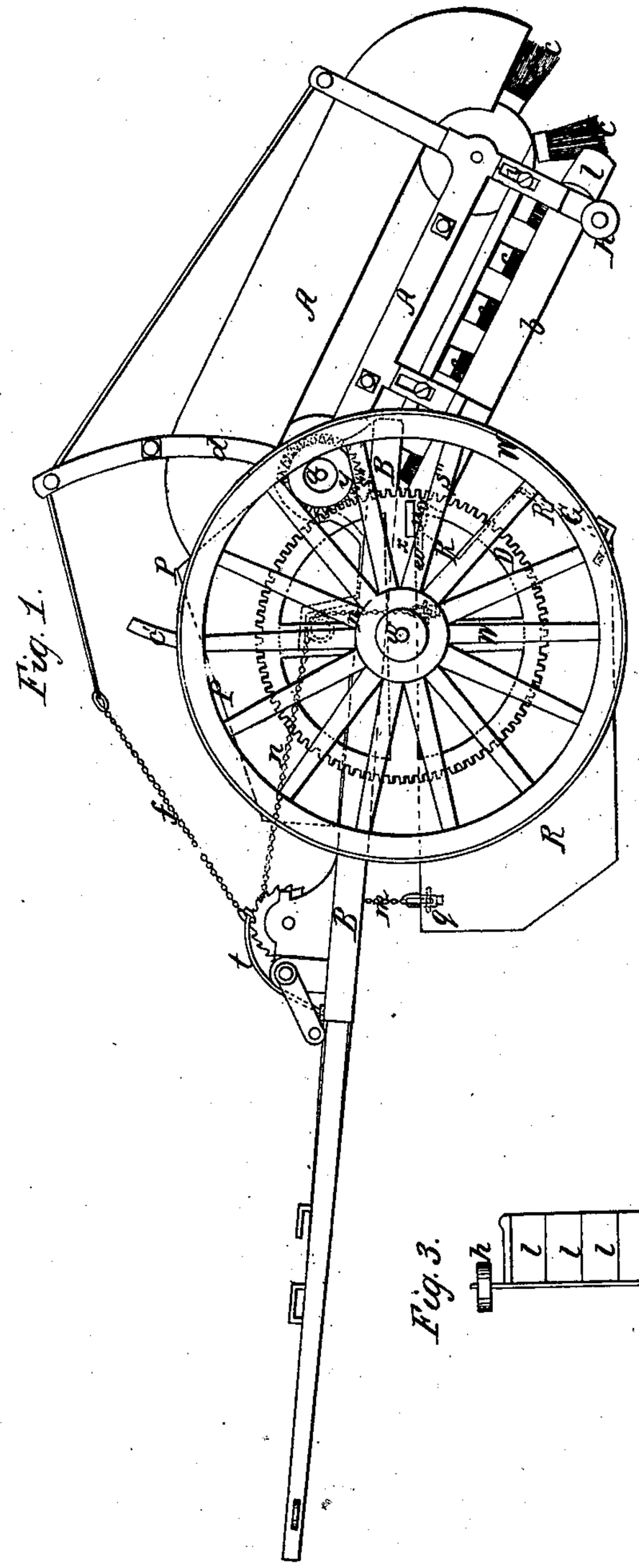


Fig. 2.

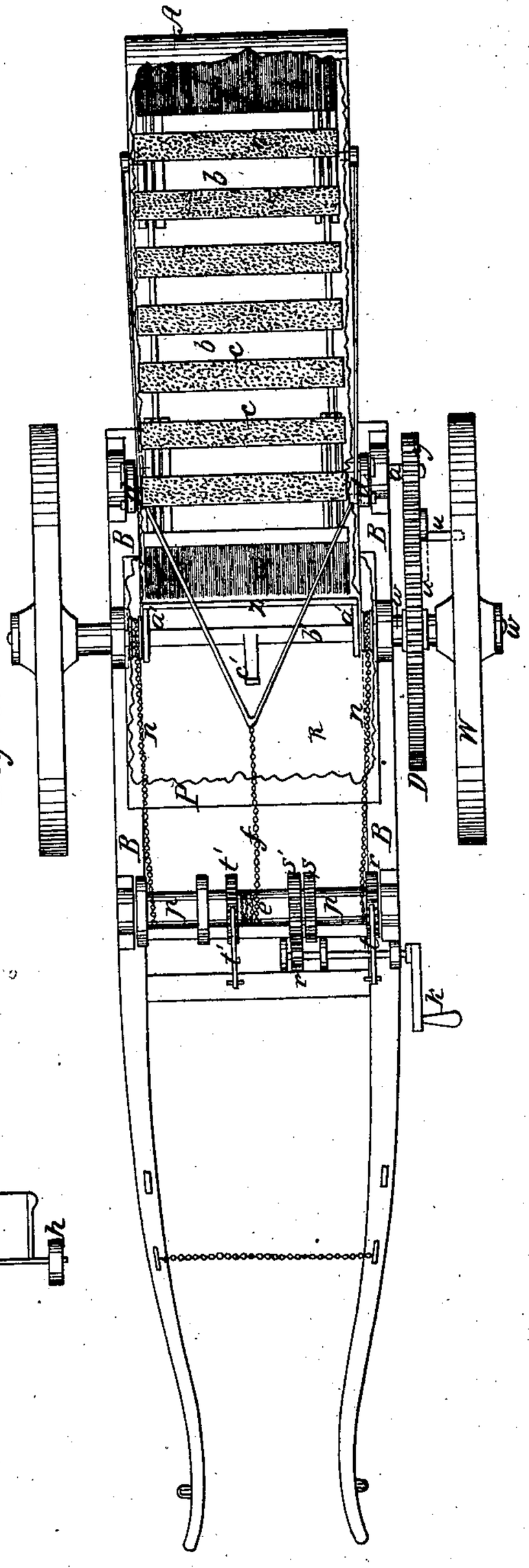
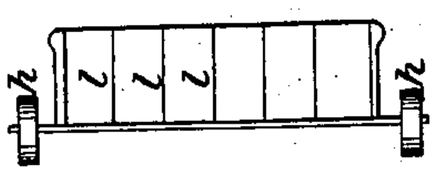


Fig. 3.



UNITED STATES PATENT OFFICE.

ROBERT A. SMITH AND JOHN HARTMAN, JR., OF PHILADELPHIA, PENNSYLVANIA.

STREET-SWEEPING MACHINE.

Specification of Letters Patent No. 12,354, dated February 6, 1855.

To all whom it may concern:

Be it known that we, ROBERT A. SMITH and JOHN HARTMAN, Jr., of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Street-Sweeping Machines; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, forming part of this specification, in which—

Figure 1 is a side elevation of our improved machine. Fig. 2 is a top view of the same with cover removed. Fig. 3 is a top view of the sectional tail piece, detached from inclined plane.

Similar characters of reference in the several figures denote the same part of the machine.

The street sweeping apparatus which forms the basis of our improved machine is that in which the dirt is carried up and inclined plane to the receiver by means of an endless chain of brushes.

Our invention consists in the construction of the machine with a detachable dirt receiver, and the combination of mechanical devices by which that is effected.

It moreover consists in the peculiar manner of connecting the sweeping apparatus with the driving wheels of the machine, so as to regulate at will in a simple manner the operation of the machine.

The invention further consists in an improvement in the inclined plate by attaching rollers to its rear extremity and the construction of the swinging tail piece in sections, so that it shall conform to the inequalities of the surface passed over.

The general features of the machine being well known to persons skilled in the art, will not require particular description except so far as to show their connection with the invention here considered, the construction and operation of which will be readily understood by reference to the drawing.

The sweeping portion of the machine consists of a brush chamber A connected by a shaft *a* with the rear portion of the frame B, so that one extremity thereof may fall to the ground and permit its bottom *b* to form the inclined plane up which the dirt is carried by the endless chain of brushes *c*. This chamber is moved about the shaft *a* by reason of the connection of the uprights *d* of said chamber with the windlass *e* through the chain *f*; permitting thereby the elevation of the sweeping apparatus for purposes hereafter to be described. The bottom *b* of chamber A is adjustable by slots *i* to accommodate the wear of the brushes; its rear extremity when in operation rests on the rollers *h*, behind which is the series of sectional flaps or tail pieces *l*, which by conforming at all times with the surface passed over insures the driving of the dirt upon the inclined plane *b*.

Suspended below the frame B by the chains *m* and *n*, which run over the windlasses *p* and *p′*, is the dirt receiver R; which by reason of the hooks *q* can be detached at pleasure from the body of the machine. The windlasses *p* and *p′* are operated by pinion *r* and wheel *s* in connection with the ratchet and pawl *t*. The same pinion *r* also operates the windlass *e*; it being movable longitudinally to mesh with either wheel *s* or *s′* as desired, and turned by crank *k*.

Upon the axle of the driving wheels W is a loose cog wheel D, having hinged to one of its arms a stud *u*, held in position by spring *v*, so that when said stud projects from the wheel D, it will enter between two of the spokes of the wheel W and produce the rotation of the wheel D on axle *w*, simultaneously with the rotation of the driving wheel W; and when the stud is folded upon the arm *x* as shown by red line, the rotation of the wheel D will instantly cease. This wheel D gives motion to the endless chain of brushes by reason of the wheel *y*, on shaft *a*, meshing into said wheel D.

Extending across the machine is the scraper *z*, attached to arms *a′* of shaft *b′* regulated and adjusted to wear of the brushes by the arm *c′* of said shaft *b′*; this arm projects through opening in the cover P, but may be placed at the side of the machine, and thus obviate the necessity for any opening in said cover.

The operation of our improved machine is as follows: The receiver R is suspended so as to clear the ground, the rear of the sweeping apparatus permitted to descend until it rests on the rollers *h*, the scraper *z* regulated so that each brush *c* will as it rises rub against it, and the stud *u* thrown out from the wheel D between the spokes *s″*. These adjustments being made the machine is driven forward, causing the brushes *c* to sweep the surface passed over, and carry

the dirt thus collected, up the inclined plane *b* and into the receiver R. When said receiver is filled, the machine is stopped, the stud *u* folded upon the arm *x*, the pinion *r* made to mesh with the wheel *s'*, and the crank *k* turned so as to wind the chain *f* on the windlass *e*, until the bottom *b* of the sweeping apparatus assumes a horizontal position; the pawl and ratchet *t'* there holding it. The pinion *r* is then shifted to the wheel *s*, the pawl *t* raised and the receiver lowered to the ground. The chains *m* and *n* are unhooked and the machine driven forward leaving the receiver R upon the ground; to be raised therefrom by a tender furnished with chains and windlasses, and carried off to the place of deposit for the dirt, which leaves the receiver by the opening of the hinged door G, as shown in Fig. 1. On dropping the filled receiver R the machine is backed over an empty one, the adjustments above described performed, and the operation continued as before. The machine being supplied with empty receivers, and the filled ones carried off as rapidly as the working of the machine may require; a sufficient number of tenders being employed for that purpose.

The improvements above described render the machine capable of working with great rapidity, and at the same time performing its work in a thorough manner.

Instead of an endless chain of brushes, an endless chain of buckets may be used, rotary brushes being used at each extremity of the sweeping apparatus; the lower to fill the buckets and the upper to clean them as they discharge into the receiver R.

We make no claim to the employment of the endless chain of brushes, or the movable inclined plane; neither do we claim of itself the detachable dirt receiver, or the receiver when arranged and operated as in the patented machine of I. Whitworth. But

What we do claim as new and of our own invention and desire to secure by Letters Patent, is—

1. The herein described arrangement of detachable receiver R beneath the forward portion of the frame, suspended by chains *m* and *n* attached to hooks *q* on the receiver, from the pulleys *f'* and windlasses *p p'*, so that an empty receiver may be substituted for a filled one with great facility, and the filled receiver removed by a tender as set forth.

2. We also claim, constructing the rear portion of the inclined plane with wheels or rollers *h* and tail piece of loose sections *l* as set forth, so that the rear of the machine may rest on the ground and conform to the inequalities of its surface.

3. We further claim, the employment of the hinged stud *u* in connection with the driving wheel W and loose wheel D for operating the endless chain of brushes as before set forth.

In testimony whereof, we have hereunto signed our names before two subscribing witnesses.

R. A. SMITH.
JOHN HARTMAN, Jr.

Witnesses:
S. P. Rawle,
Stephen H. Simmons.