

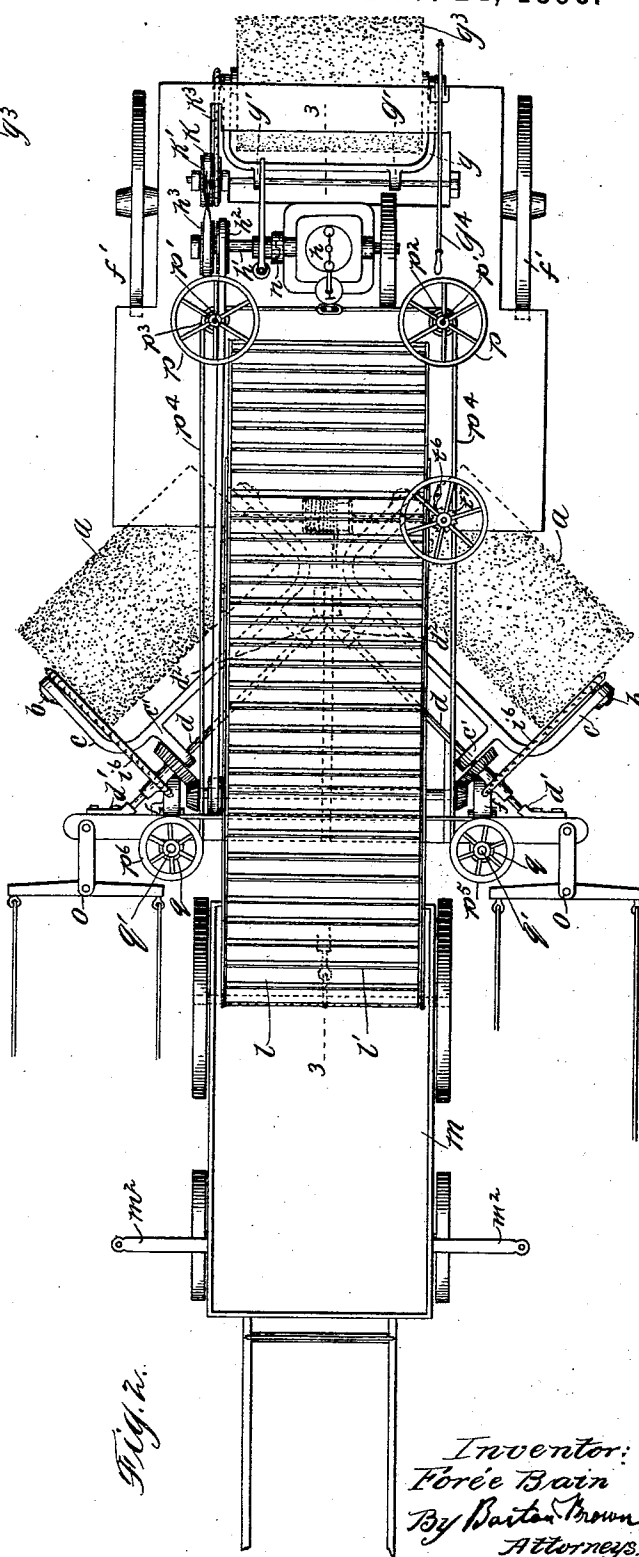
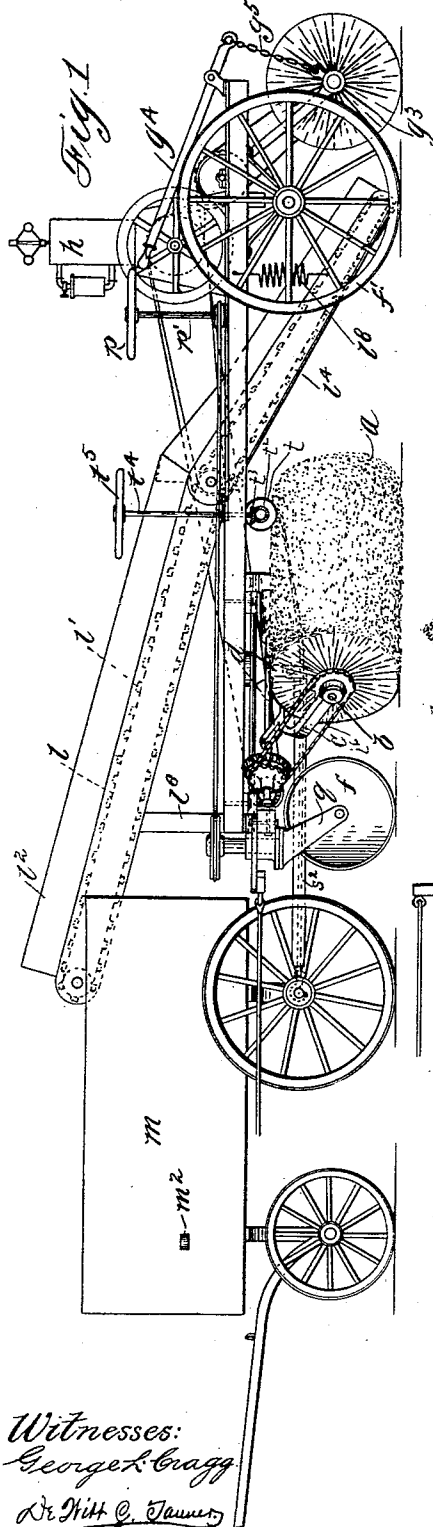
(No Model.)

2 Sheets—Sheet 1.

F. BAIN.
STREET SWEEPER.

No. 571,891.

Patented Nov. 24, 1896.



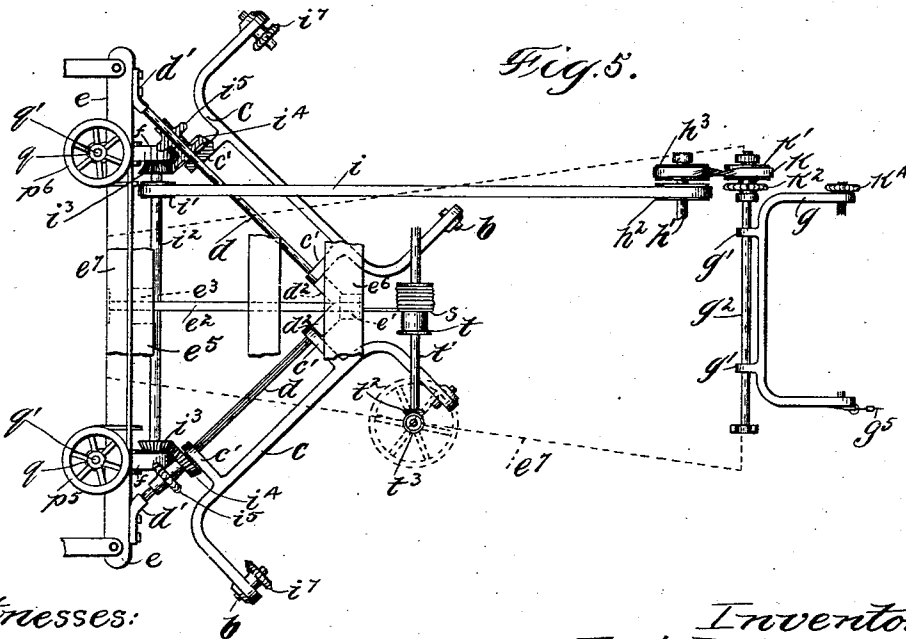
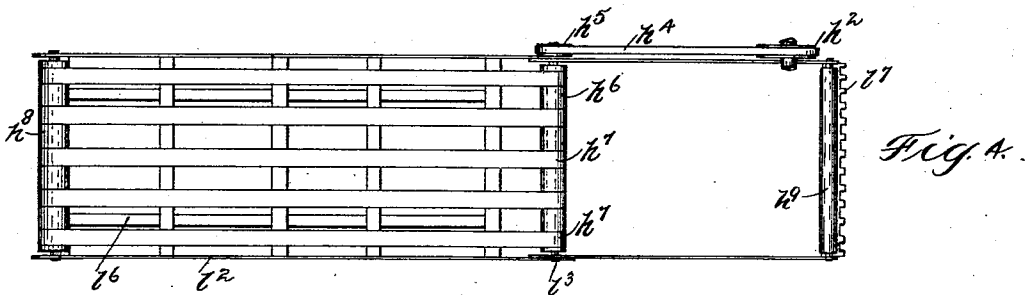
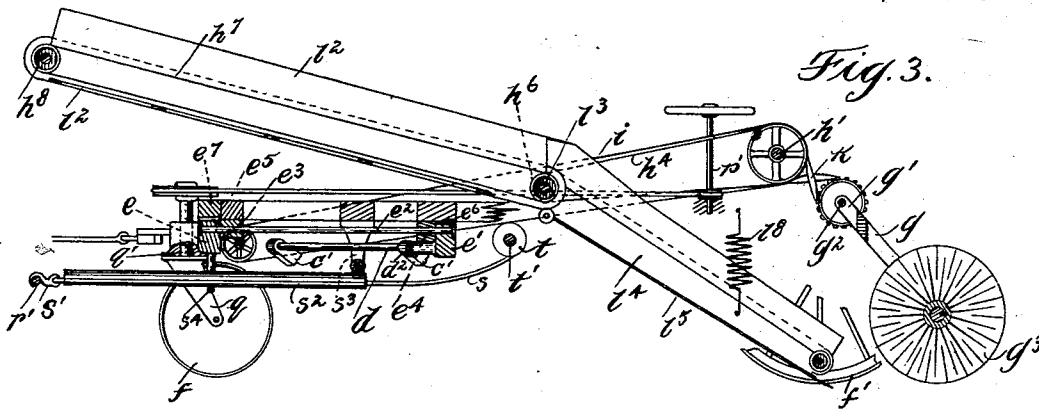
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2 Sheets—Sheet 2.

F. BAIN.
STREET SWEEPER.

No. 571,891.

Patented Nov. 24, 1896.



Witnesses:

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UNITED STATES PATENT OFFICE.

FORÉE BAIN, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO JOHN P. BARRETT, OF SAME PLACE.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 571,891, dated November 24, 1896.

Application filed July 2, 1895. Serial No. 554,680. (No model.)

To all whom it may concern:

Be it known that I, FORÉE BAIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented a certain new and useful Improvement in Street-Sweepers, (Case No. 1,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part
10 of this specification.

My invention relates to street-sweeping machines; and it consists in the novel combination and association of parts hereinafter described in connection with the accompanying
15 drawings, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the apparatus of my invention. Fig. 2 is a plan view thereof. Fig. 3 is a sectional
20 view of the sweeper on line 3 3 of Fig. 2 with parts removed to show clearly the working parts thereof. Fig. 4 is a plan view of the conveyer and the driving mechanism in connection therewith. Fig. 5 is a plan view of
25 the sweeper, the brushes and other parts being removed to show clearly the working parts thereof.

Like parts are indicated by similar letters of reference in the several views.

30 The brushes *a a* are fixedly mounted upon shafts *b b*, preferably at angles of forty-five degrees with the line of travel. The shafts *b b* are journaled within the frames *c c*, upon which are provided arms *c' c'*, through which
35 the shafts *d d* are passed, as shown, the frames *c c* being thus rotatably mounted upon said shafts *d d*, which in turn are supported upon brackets *d' d' d² d²*, mounted upon the cross-piece *e* and block *e'*, respectively.

40 A central rod *e²* is fixed with relation to the cross-piece *e* and block *e'* and journaled within blocks *e³ e⁴*, supported upon the cross-pieces *e⁵ e⁶* of the bed of the machine. The cross-piece *e* is supported upon wheels *f f*. Said
45 cross-piece *e*, block *e'*, shafts *d d*, and rod *e²* constitute a truck which accommodates itself to the position that the wheels *f f* may assume by reason of any irregularities that may exist
50 supporting the brushes *a a*, being loosely mounted upon shafts *d d*, the brushes accom-

modate themselves independently to the surface of the street.

The forward portion of the bed *e⁷* of the sweeper is supported upon the wheels *f f* 55 through the medium of the cross-piece *e*, rod *e²*, block *e³*, and cross-piece *e⁵*, while the rear portion of the bed is supported upon wheels *f' f'*. The wheels *f f* are preferably made in the form of disk-wheels, as shown, to prevent
60 any obstacles which might be cast forward by the brushes *a a* from interfering with the progress of the sweeper.

The frame *g* is provided with arms *g' g'*, through which the shaft *g²* is passed, said
65 frame being thus rotatably mounted upon said shaft. Upon this frame *g* is journaled the rear brush *g³*.

Upon the bed of the sweeper and preferably near the rear end thereof I provide a gaso- 70 lene-engine or other suitable source of motive power *h*. Mounted upon the driving-shaft *h'* of the motor are two pulleys *h² h³*, capable of imparting motion to the brushes *a a* and *g³*, respectively.

75 Motion from pulley *h²* is transmitted to the brushes *a a* by the belt *i*, pulley *i'*, shaft *i²*, gear-wheels *i³ i³ i⁴ i⁴*, sprocket-wheels *i⁵ i⁵*, fixedly mounted with relation to gear-wheels *i⁴ i⁴*, (said wheels *i⁴ i⁴ i⁵ i⁵* being journaled
80 upon the shafts *d d*,) sprocket-chains *i⁶ i⁶*, and sprocket-wheels *i⁷ i⁷*, fixedly mounted with relation to said brushes. Motion from pulley *h³* is imparted to brush *g³* by belt *k*,
85 pulley *k'*, fixedly mounted upon shaft *g²*, sprocket-wheel *k²*, fixed with relation to pulley *k'*, sprocket-chain *k³*, and sprocket-wheel *k⁴*, fixed with relation to brush *g³*.

A conveyer *l*, made preferably of canvas upon which cleats *l'* are secured, is mounted 90 to travel between the rear brush *g³* and the cart-receptacle *m*. The frame *l²*, upon which the conveyer is supported, is made in two sections joined at *l³*, the lower section *l⁴* being capable of partial rotation about the shaft *l⁵*. 95

The upper section of the conveyer-frame is anchored at its lower end to the bed of the machine and supported at its upper end upon vertical standards *l⁶*, extending from the bed of the machine. The lower section *l⁴* is 100 provided with a flooring *l⁷* to prevent rubbish from getting beneath the conveyer and inter-

fering with its proper operation. If an obstacle should lie within the path of the conveyer, the floor thereof will come in contact with the obstacle, thereby elevating the section l^4 of the conveyer-frame and that portion of the conveyer at that moment in position between said sections, whereby the rupture of the conveyer or its supporting-frame is prevented. After the obstacle has cleared the flooring l^5 it will then either be brushed upon the conveyer by the brush g^3 or allowed to escape said brush when the same is elevated upon the depression of the manual lifting-lever g^4 , fulcrumed upon the rear portion of the machine and connected with the frame g , upon which brush g^3 is mounted, by the chain g^5 . If any large irregularity in the street should be present, the sections l^4 of the conveyer-frame will in like manner escape the same and be restored of their own weight when the irregularity has been cleared. Motion to the conveyer l is imparted from the pulley h^2 (which also drives brushes $a a$) by belt h^4 and pulley h^5 , fixedly mounted with relation to drum h^6 upon shaft l^3 , belts h^7 passing over said drum h^6 and drum h^8 . The conveyer l is engaged by the belts h^7 , said conveyer being supported upon rollers h^8 h^9 in its travel. The conveyer, sagging more than the belts h^7 , has a frictional engagement therewith which aids the drum h^8 in its function of imparting motion to the conveyer. I prefer to employ a series of belts, as shown, to drive the drum h^8 to secure better engagement with the conveyer throughout its width than would result in the employment of a single broad belt connecting the rollers h^6 h^8 . Longitudinally-supported guides l^6 may be employed to take up the slack in the upper portion of the conveyer, the flooring l^5 performing this function with the lower portion of the conveyer.

Upon the lower end of flooring l^5 are provided prongs l^7 , which serve to partially support the flooring, the dirt escaping thereby to be brushed by brush g^3 upon the conveyer. A flexible support, as a spring l^8 , is provided for the lower section l^4 , said spring being secured at one end to the bed of the machine and attached at the other end to the lower section l^4 , as shown, to relieve the prongs l^7 of most of the weight of the lower portion of the conveyer and conveyer-frame.

When the sweeper is to be operated, the clutch n is thrown into the position shown, thereby permitting motion to be transmitted from the motor h to the brushes $a a$ and g^3 , as heretofore described. The brushes $a a$ gather a wide swath of dirt in a central ridge, which is swept into the conveyer by the following brush g^3 .

The sweeper may be drawn by horses harnessed to the singletrees $o o$, attached to the cross-piece e . The sweeper may be guided in its travel by an attendant, who for the purpose mans either of the steering-wheels $p p$ upon the shafts $p' p'$, on which are keyed

the pulleys $p^2 p^3$, to which is secured the wire cable p^4 , which passes about pulleys $p^5 p^6$. The wheels $f f$ are supported on castor-bearings $q q$, the shafts $q' q'$ of which are keyed to the pulleys $p^5 p^6$, so that any rotary motion imparted to said pulleys is also imparted to the wheels $f f$. By turning either of the wheels $p p$ rotary motion is imparted to the pulleys $p^5 p^6$ through the medium of cable p^4 , whereupon the pilot-wheels are directed in a new path, the sweeper being thus capable of direction in any desired path.

After the sweeper has taken the desired path of travel the pulleys $p^5 p^6$ may be relieved of attention, since the pilot-wheels (being mounted as the wheels of a caster, the bearings of the wheels being rotatable about vertical axes to the rear of which the axes of the wheels are normally disposed) will naturally remain in the path in which they have been set.

The cart m , which is provided to receive the sweepings conveyed by conveyer l , is drawn very close to the sweeper and helps to preserve the proper direction of the wheels $f f$.

The cart is attached to the sweeper by means of cable s , one end of which is preferably provided with a hook s' , adapted to engage the axle r' of the cart, while the other end thereof is attached to a windlass t . The cable s is passed through a tubular guide s^2 , pivotally supported at one end by a bracket s^3 and at the other end by a loop s^4 . The guide s^2 is thus supported to permit it and the cable it contains to accommodate themselves to variations that may be caused to exist between the cart and sweeper by reason of irregularities in the surface of the street. The windlass t is mounted upon a shaft t' , upon one end of which is a bevel gear-wheel t^2 , meshing with a gear-wheel t^3 , keyed to a shaft t^4 , to which is also keyed the operating-wheel t^5 , whereby any motion imparted to the wheel t^5 operates the windlass t to reel or unreel the cable s .

When the cart m has been filled, the horses in the singletrees $o o$ are turned from the cart, the pawl t^6 , which, in connection with ratchet t^7 , keyed to shaft t' , normally locks the windlass t in position, is tripped, and the cart is withdrawn a distance from the sweeper, whereupon the hook s' is disengaged from the axle p' . If another cart is to be attached to the sweeper, the first cart having been entirely removed, the hook s' is engaged with the rear axle thereof, whereupon the cart is drawn into the position shown by reeling the cable s about the windlass t .

By providing the detachable carts m the objectionable presence of piles of dirt left after the passage of the sweepers commonly in use is overcome and the expense of employing labor to gather the accumulated dirt is dispensed with. The carts m employed may be of any desirable character. From the sides of the carts I provide extensions $m^2 m^3$, to which the bridles of the horses that

draw the sweeper may be attached, thereby enabling one driver to manage the horses of the sweeper and cart.

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

10 1. In a street-sweeping apparatus, the combination of the sweeper with a separable cart adapted to receive the sweepings therefrom, a cable by which said cart may be attached to the sweeper, and a tubular guide for said cable pivotally supported at or near one of its ends; substantially as and for the purpose specified.

15 2. In a street-sweeping apparatus, the combination of the brushes *a a*, frames *c c* supporting said brushes, shafts *d d*, cross-piece *e* and block *e'* with a rod *e²* suitably supported upon the bed of the machine; substantially as described.

3. In a street-sweeping apparatus, the combination of a vehicle, a brush supported thereon adapted to sweep the surface of the street, an endless conveyer adapted to receive sweepings from said brush, with suitably- 25 supported rollers over which the conveyer is adapted to travel, a belt or belts adapted to travel about said rollers between the same and the conveyer and adapted to engage said conveyer beneath the same, and means for 30 rotating one of said rollers, whereby motion is imparted to said belt or belts and the conveyer engaged thereby, substantially as described.

In witness whereof I hereunto subscribe my name this 22d day of June, A. D. 1895.

FORÉE BAIN.

Witnesses:

GEORGE L. CRAGG,
ARTHUR E. REINKE.