

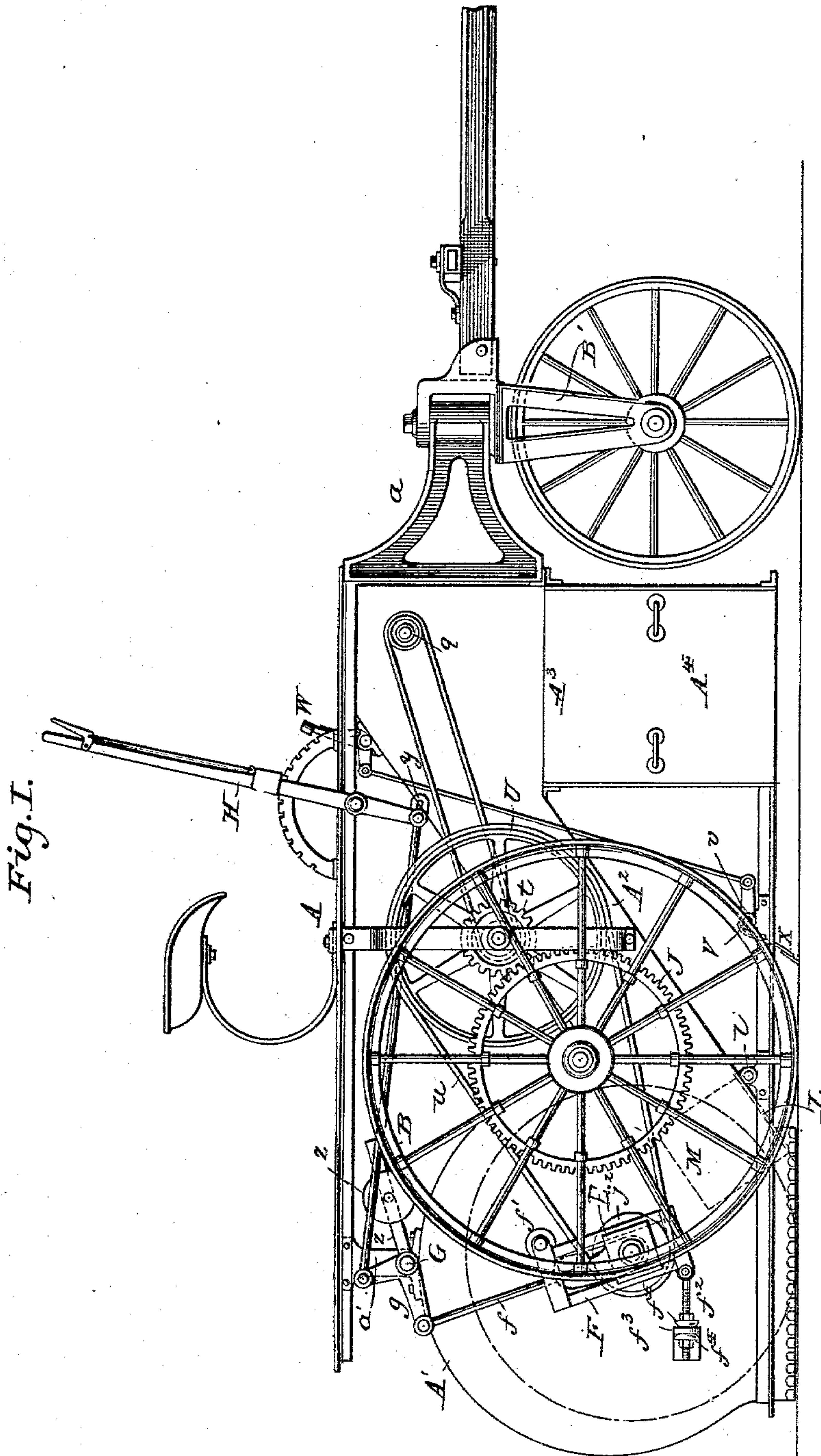
(No Model.)

4 Sheets—Sheet 1.

J. F. S. BRANTH.
STREET SWEEPER.

No. 552,888.

Patented Jan. 14, 1896.



Witnesses

G. B. Fowler.

Inventor

Johan F. S. Brauth
by Raymond S. Barnes.
his Attorney

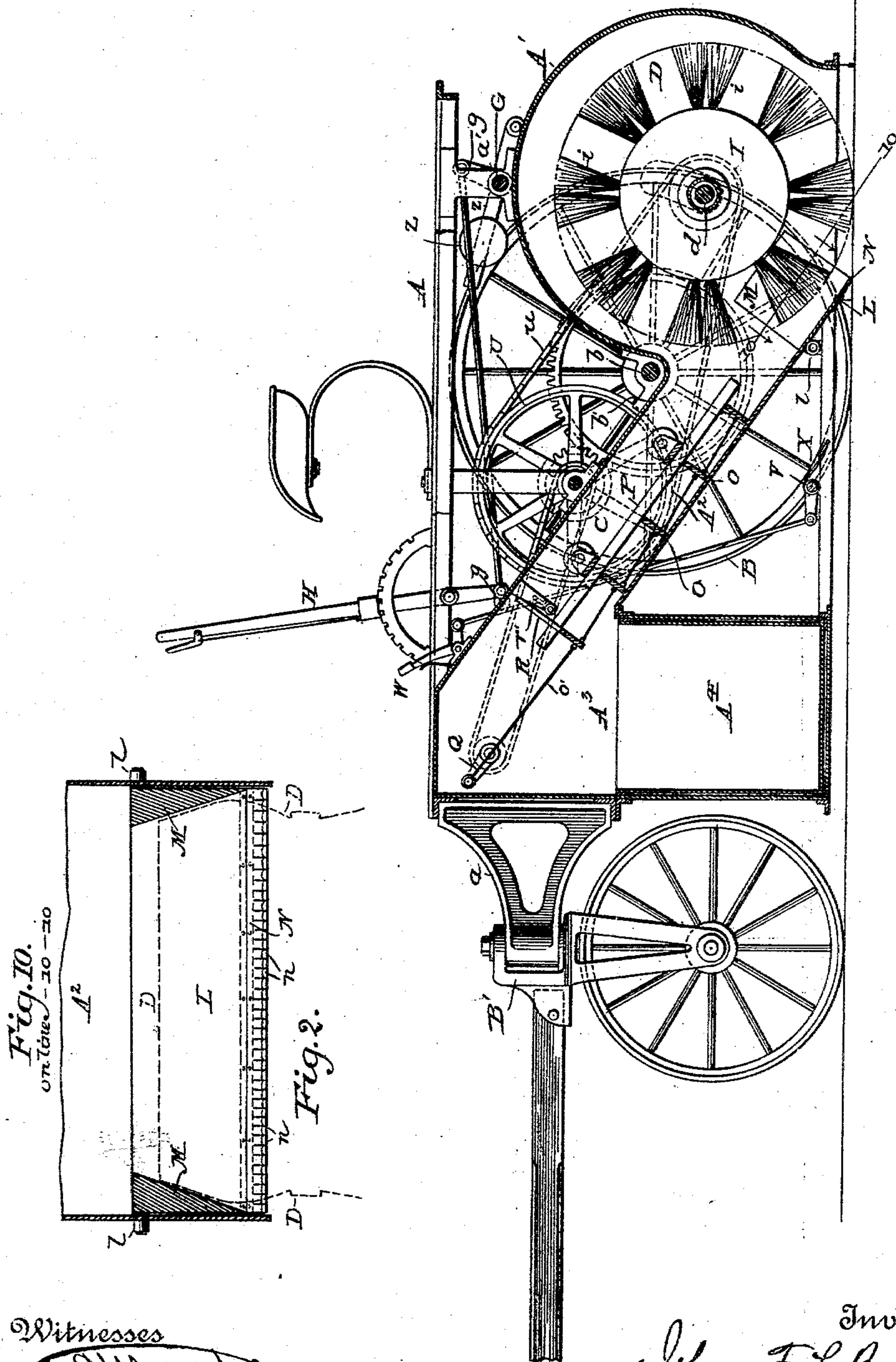
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Witnesses

G. B. Fowler

Inventor
Johan F. S. Branth
by *Raymond P. Barnes*
his Attorney

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J. F. S. BRANTH.
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4 Sheets—Sheet 3.

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Fig. 3.

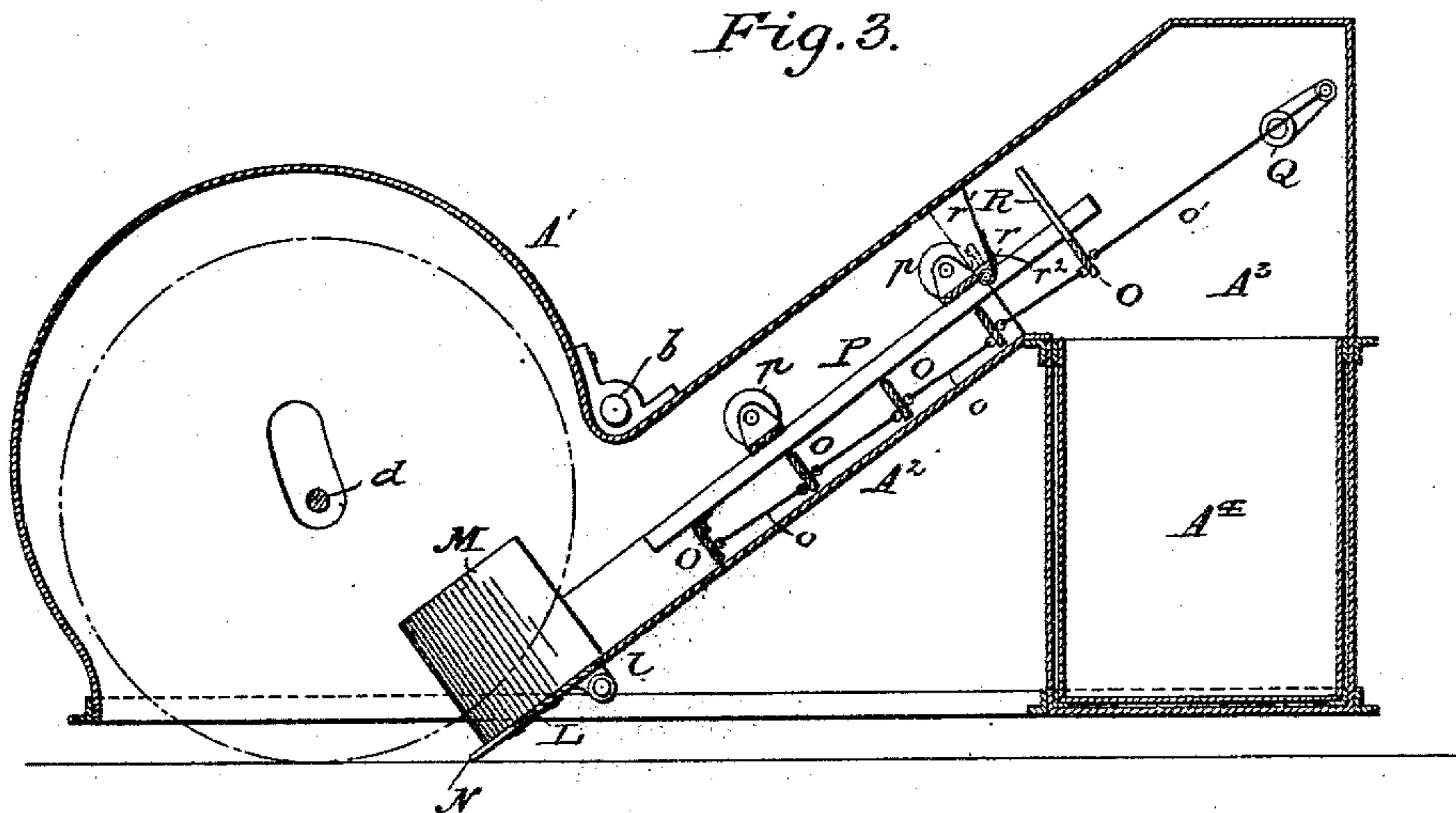


Fig. 4.

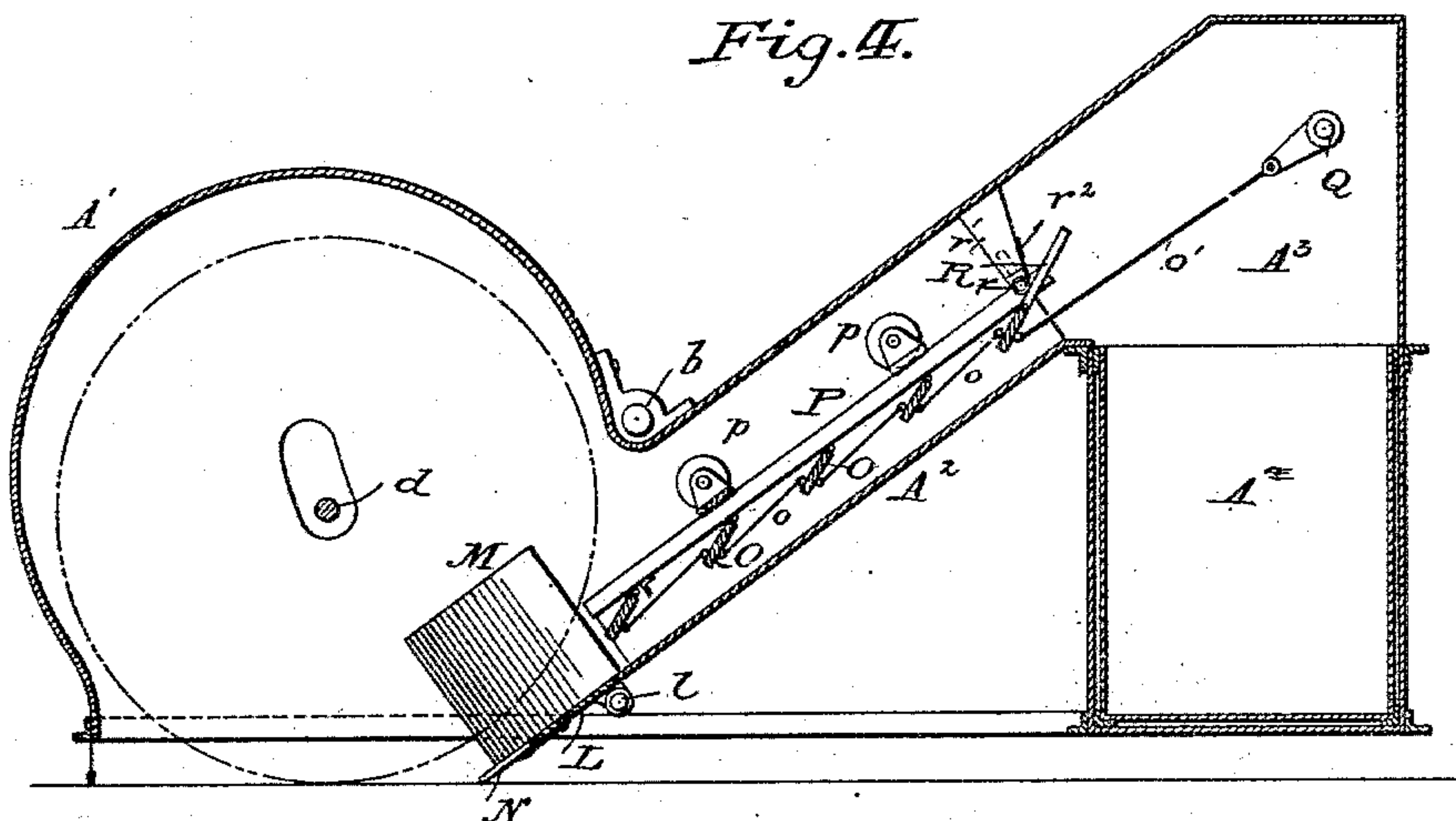
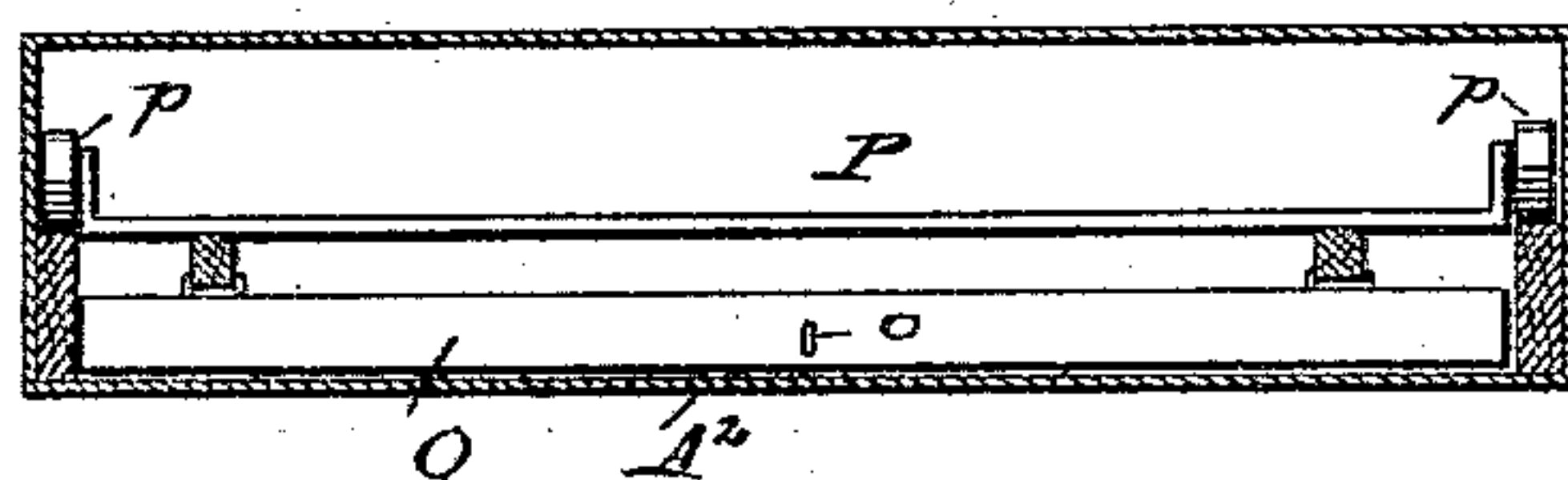


Fig. 5.



Witnesses

[Signature]
C. B. Fowler.

Inventor
Johan F. S. Branth
by Raymond H. Barnes.
his Attorney

(No Model.)

4 Sheets—Sheet 4.

J. F. S. BRANTH.
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Fig. 6.

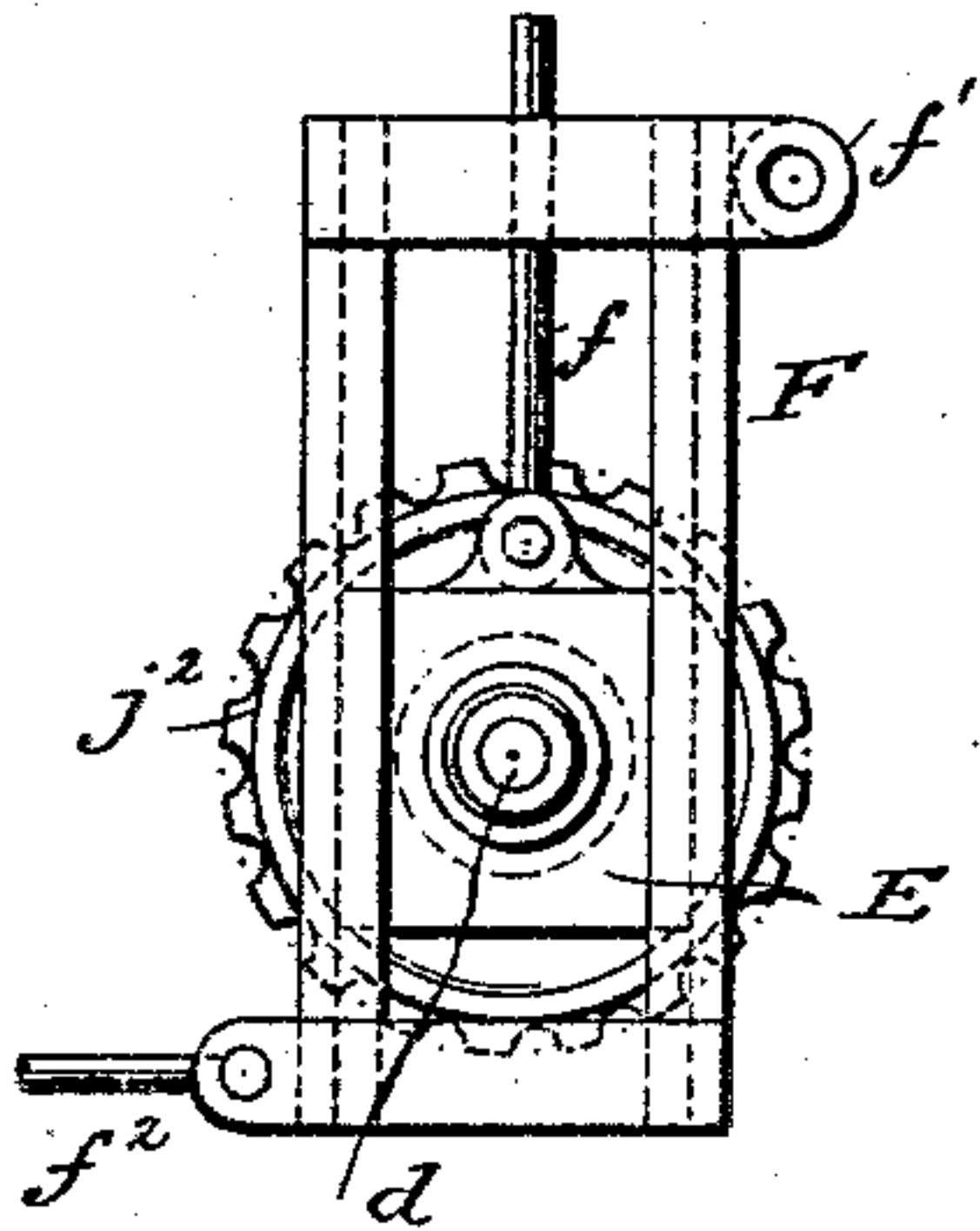


Fig. 7.

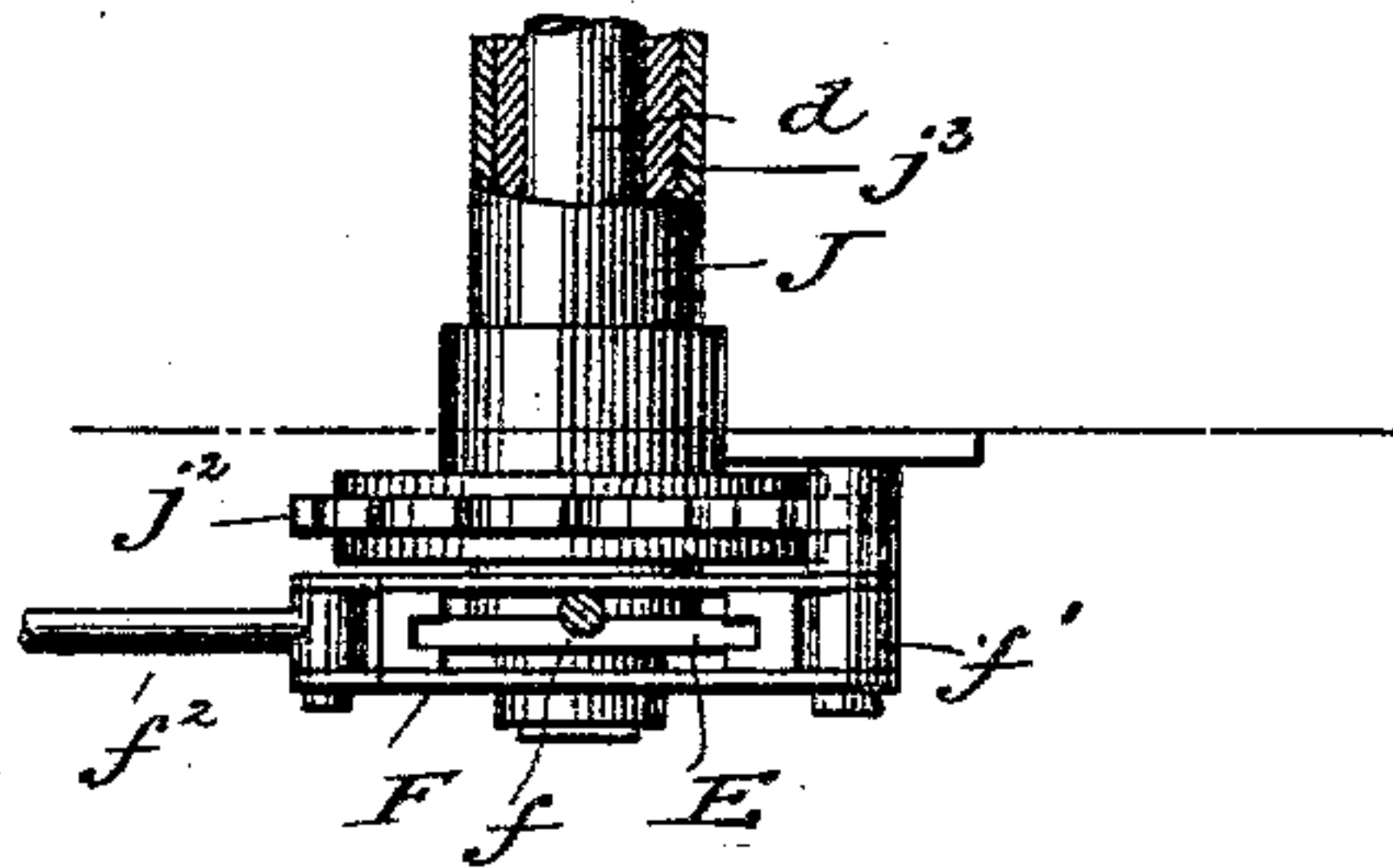


Fig. 11.

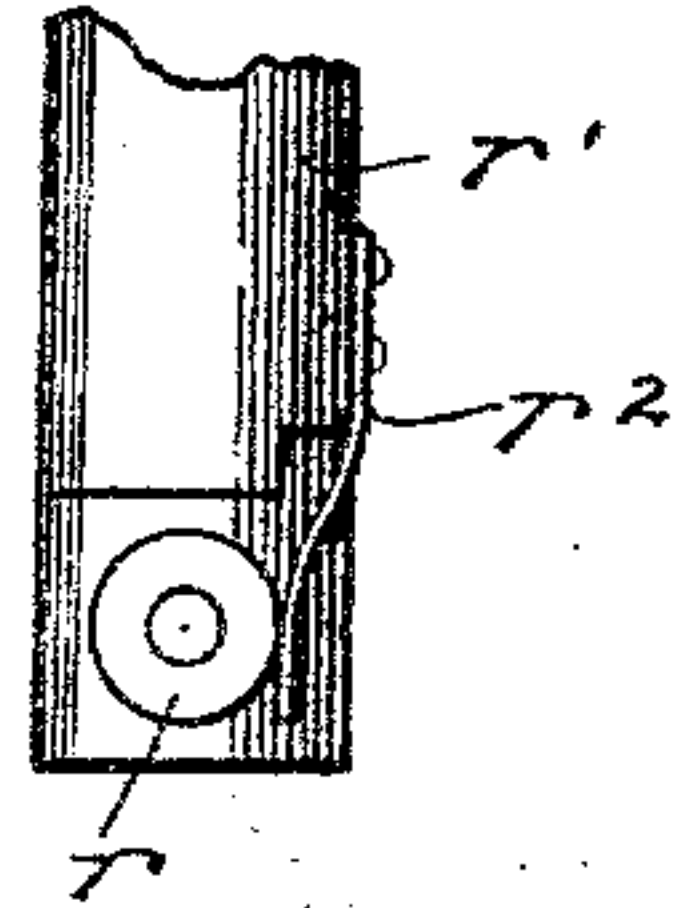


Fig. 8.

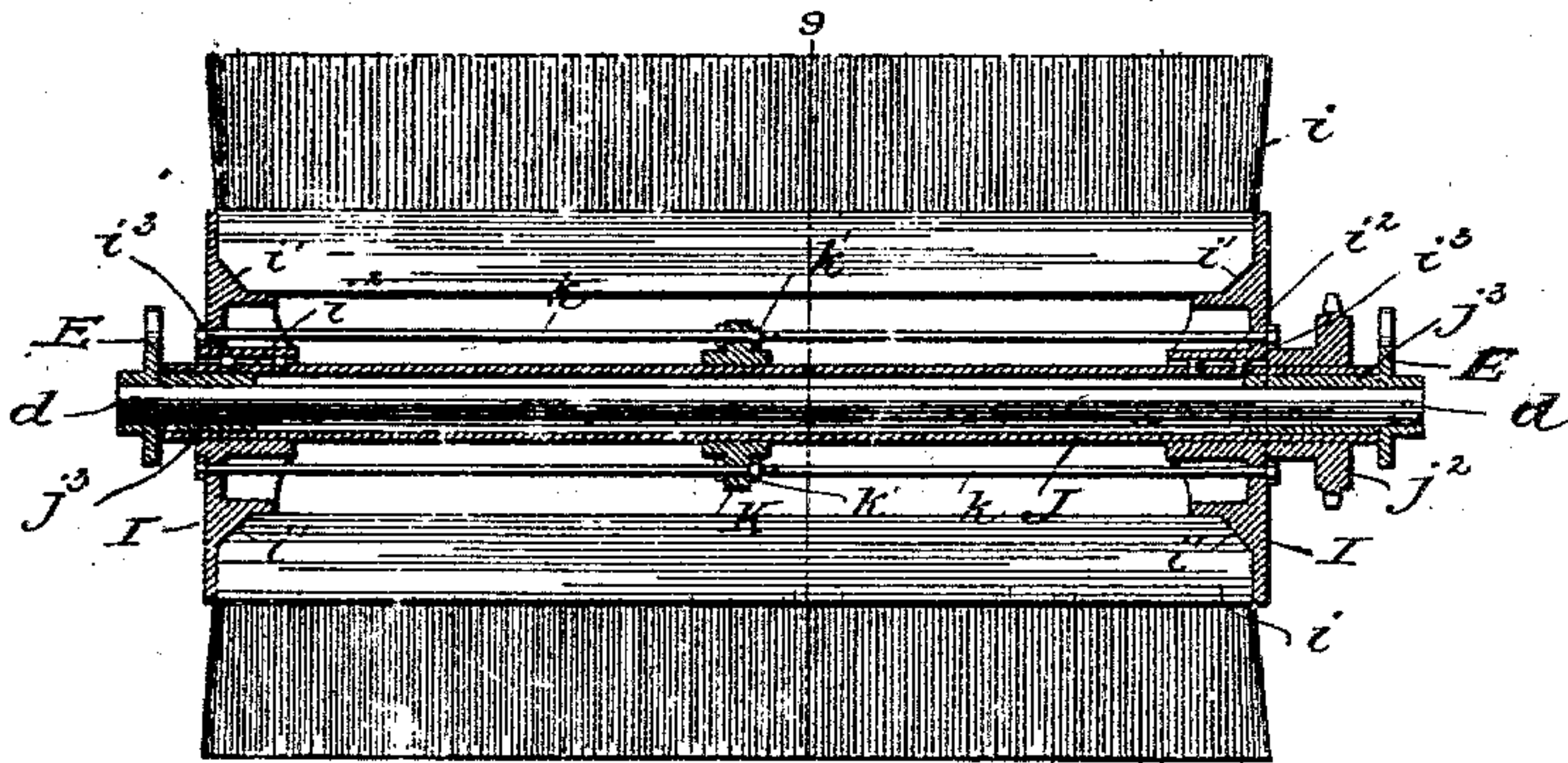
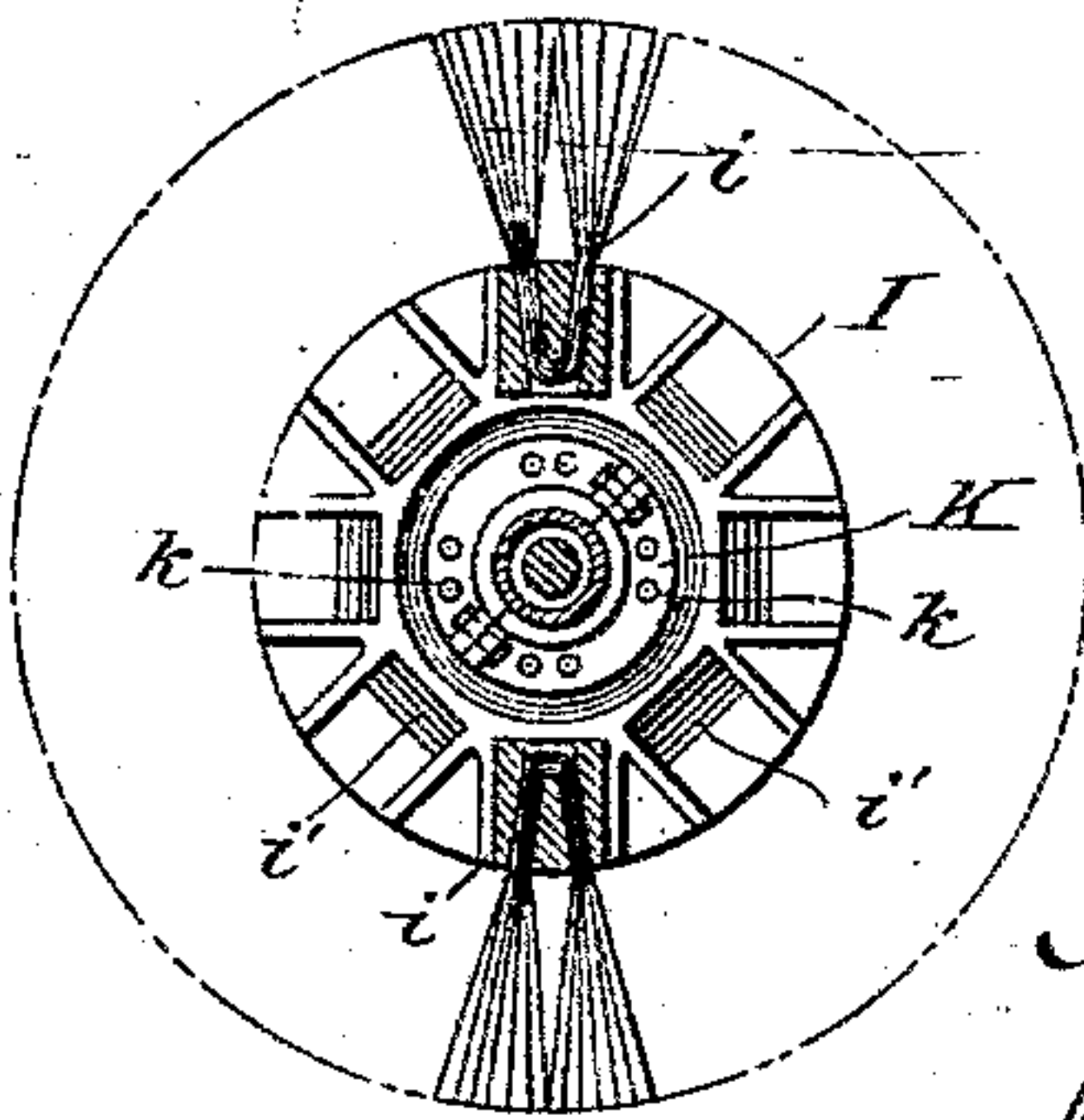


Fig. 9.
on line 9-9.



Witnesses

G. B. Towles

Inventor

Johan F. S. Branth
by *Raymond B. Barnes*
his Attorney

UNITED STATES PATENT OFFICE.

JOHAN F. S. BRANTH, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR,
BY MESNE ASSIGNMENTS, TO THE INTERNATIONAL SWEEPING MACHINE
COMPANY.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 552,888, dated January 14, 1896.

Application filed October 28, 1892. Serial No. 450,234. (No model.)

To all whom it may concern:

Be it known that I, JOHAN F. S. BRANTH, a subject of the King of Sweden and Norway, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Street-Sweeping Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to street-sweeping machines, adapted to be operated by horse-power, of the form in which a frame or casing is mounted upon ground-wheels geared to drive a rotary brush mounted within the frame or casing, such brush being adapted to deliver the dirt or dust to an elevator which carries it forward to a removable or stationary receptacle; and it consists in the method of hanging the brush in relation to the driving-gear and the surfaces to be operated upon by means of which stretch of the driving-chain is compensated for, in the special construction of the brush by means of which wear in the sections composing the same is taken up, and the sections kept always in the same relative position as regards the working surface, in the construction of the inclined elevator which receives the dirt from the brush, in the construction of the inclined hinged apron and guards for receiving the dirt and preventing its return to the street, and in other details, all of which will be more fully described by reference to the drawings accompanying this specification, in which—

Figure 1 is a side elevation from the right or gear side of the machine; Fig. 2, a central longitudinal section; Figs. 3, 4, and 5, details illustrating the construction and operation of the elevator; Figs. 6 and 7, details of the hanger and bearing for the brush-shaft; Fig. 8, a longitudinal section of the brush and bearings; Fig. 9, a cross-section of the brush on line 9 9, Fig. 8. Fig. 10 is a sectional plan on line 10 10 of Fig. 2, showing the form and

location of the angular guards. Fig. 11 is an elevation, on an enlarged scale, showing the device for causing the action of the slat in passing over the accumulated dirt in the trunk.

The machine consists of a frame or body A mounted upon ground-wheels B B, located slightly in rear of the center of the machine and carried by a shaft *b*, which is supported in bearings *b' b'* mounted on the frame. The forward end of the machine is supported by a bracket *a* which rests upon and is pivoted to a trolley B', to which the draft mechanism is attached.

As will be seen by reference to Figs. 1 and 2, the body A of the machine consists of three parts—a semicircular broom-shield A' located at the rear and supported rigidly from the frame of the machine by brackets *a' a'* depending therefrom, an inclined trunk or body A², which, commencing at the forward end of the broom-shield extends forward and upward and contains an elevating apparatus C, and a depending chamber or cage A³ above which the elevator-trunk terminates, which chamber carries preferably one or more removable drawers or dirt-boxes A⁴, which are so constructed as to be readily removed for the purpose of emptying the contained dirt.

Within the semicircular shield is mounted the brush D, carried upon a fixed spindle *d*, the ends of which project through slots formed in the sides of the shield and are secured in sliding blocks E E, carried in depending frames F F, in which they are mounted to slide vertically, and in which they are sustained by means of links *f f*, attached to the upper ends of the frames. The links are connected with angle-arms *g g*, mounted upon a rock-shaft G, extending across and mounted in suitable bearings upon the frame. The movement of this rock-shaft is controlled by a rod attached at its forward end to a locking-lever H, located conveniently to a driving-seat mounted upon the frame, and retained by a sector-plate and latch of any well-known form.

The depending links F F are pivoted at their upper forward corners *f' f'* to the sides

of the machine and the swinging motion thus given to the broom and its bearings is controlled by means of adjustable eye-bolts $f^2 f^2$ pivoted to the lower rear corners of the frame, said eye-bolts passing through brackets $f^3 f^3$, secured to the frame, and being secured therein by lock-nuts $f^4 f^4$. As a result of this construction the broom-shaft and broom are capable of a double motion, one up and down in relation to the surface on which the brush operates, permitting the raising of the broom from its operative position for transportation, and one back and forth in relation to the gearing which rotates the brush, by means of which stretch in the chain may be taken up.

Referring more particularly to Figs. 8 and 9, it will be seen that the brush consists of a series of sections $i i$, mounted between movable heads $I I$, said heads being recessed to receive the ends of the sections, and the recesses are beveled or inclined at their inner angles, as shown at i' , and the sections correspondingly beveled in order that the brush-sections may be forced outward by the pressure of the heads $I I$. The heads $I I$ are mounted on a hollow shaft J , and secured from rotation thereon by any suitable means which will admit of their movement in a longitudinal direction, preferably by means of a keyway i^2 , in which are mounted one or more set-screws i^3 . One end of the shaft J projects beyond the shield inside the depending frame and carries a sprocket-pinion j^2 , and is sustained upon the broom-spindle by means of annular bearings j^3 , of Babbitt metal carried within the ends of the hollow shaft. In order to control the longitudinal movement of the heads $I I$, I mount upon the hollow shaft at or near its center an annular split ring K , securely held upon the same, and connect the heads to this ring by means of rods $k k$ passing through the heads and held by nuts $k' k'$ secured on their projecting threaded ends. It will be seen that by turning these nuts the heads may be caused to approach each other and the sections of the brush securely held in place—there being sufficient space between the sections for the insertion of a wrench—or the position of the rods may be reversed and the threaded ends caused to project outside the hubs or heads, if desired, the tightening action being the same in either case.

The brush in its rotation delivers the dirt upon an inclined pivoted apron L , mounted on bearings $l l$ carried by the frame, and carrying at each end an inclined guard M between which the brush-sections are slightly compressed as the brush revolves. These guards consist of triangular pieces mounted upon the apron with their apex facing the brush and their base at the upper end of the apron next the elevating mechanism, the result of this construction being that the opening to which the dirt and dust is delivered is less in width than the effective surface of

the brush, and that dust and dirt which falls back toward the rotating brush will come within such surface and be returned once more to the elevating mechanism, and the space between the ends of the broom and the sides of the casing are closed in such manner that no dirt can escape outside the guards between them and the casing, the said guards presenting an angular face to the ends of the brush-sections by which the sections are compressed, and a flat surface at the end of the inclined hinged apron in substantially dust-proof proximity to the sides of the casing. The edge of the apron consists of a flexible serrated strip of rubber N , the ends or points of the same being protected by metal clips n , this construction and the pivoting of the apron being adopted to allow large obstructions to pass under the same without liability to injury. From the apron the dirt is carried upward and forward to the receptacle by the mechanism illustrated more particularly in Figs. 3, 4, and 5, which consists of a series of flat blades O , hinged to a reciprocating frame P , mounted on rollers p , which travel on raised tracks inside the trunk or casing. The blades O are linked to each other by a series of rods o , and the upper one connected by a rod o' to a crank-shaft Q , rotated through a sprocket-pinion q , connected by a suitable chain with the driving-gear. It will be seen that on the upstroke of the crank the boards comprising the elevator proper will take a position at right angles to the inclined surface of the trunk and carry the dirt forward and upward to the receptacle. In order that they may be lifted and passed over the material on the return stroke I provide the forward slat with an upwardly-projecting arm R , adapted to make contact with a roller r mounted upon a bracket r' projecting downward into the trunk or chamber in such manner as to swing the slats bodily on their hinges and lift them over the dirt. The roller is hinged to the bracket in such manner that it swings outward and allows the arm R to pass on the upstroke of the elevator, but is returned to its seat by a spring r^2 and stands in the path of movement of the arm on the downstroke, thereby depressing the slats on their pivots.

The roller r is mounted on a horizontal shaft or spindle projecting laterally from the side of a collar mounted at the lower end of the bracket I on a vertical axis, the arrangement being such that the collar carrying the roller may turn with a swiveling action on its vertical axis. Its turning movement in one direction is limited by stop-shoulders formed on the adjacent edges of the bracket and collar, and the latter is acted on by a spring r^2 which tends to hold the collar with its roller projecting transversely of the trunk in the path of the arm R . On its upstroke this arm will contact with the roller, and the latter will yield and allow the arm to pass in its vertical position. On the return of the arm

it will again contact with the roller, and the latter being prevented from moving by the stop-shoulders, the arm will be depressed and rock the slats, carrying them over the dirt on the inclined trunk.

The driving mechanism consists of a gear J, mounted on one of the ground-wheels, an intermediate pinion *t* with an attached sprocket-wheel U, and a sprocket-chain *u*, connecting the wheel U and the pinion on the broom-shaft.

In the use of these machines it is found that the dirt is sometimes too firmly packed to be removed by the rotating brush. For the purpose of loosening such dirt I use a scraping device consisting of a rotary bar or shaft V, mounted in bearings *v* and controlled by a link-and-foot lever W. This lever is held up normally by a spring mounted under the same. Upon the bar V are mounted spring scraper-blades X. The normal position of the scraper is out of contact with the pavement. When the driver desires to use the same he depresses his foot-lever, and upon releasing the same the parts are raised from contact by the action of the spring.

In sweeping-machines there are two methods of operating the rotary brush—one at slow speed with heavy pressure on the brush, and the other at high speed with comparatively light pressure. In my machine, which is constructed to work on the second plan, the pressure of the brush is regulated and the weight of the same counterbalanced by a weight Z carried by an arm *z* projecting from the rock-shaft G, on the side opposite to the point of support of the brush. Should the operator desire to increase the pressure of the brush, a movement of the weight toward the shaft accomplishes this result, the weight being secured in the desired position by a set-screw or other similar means.

It will be noted that the link connecting the rock-shaft and its controlling-lever is slotted at its point of attachment to the lever, as shown at *y*. This is done in order to allow a certain amount of rise and fall of the brush to allow for irregularities in the surface on which it works.

Certain details embodied in this application having been described and claimed by me in an application now pending before the office, and dated October 15, 1892, Serial No. 448,964, I desire to say that I do not claim such details in this application, except in so far as they enter into combination with other mechanisms not shown in such application.

Having thus described my invention, what I claim is—

1. In a street sweeping machine the combination of a brush shield, a rotating brush mounted therein, an upwardly inclined trunk a reciprocating frame, a series of blades mounted to swing thereon and means for re-

ciprocating the frame and rocking the blades, substantially as described.

2. In a street sweeping machine, the combination with a rotating brush and a receptacle for receiving the dirt of an upwardly inclined receiving surface, a reciprocating frame, rails on which such frame moves, blades pivoted thereto, links connecting the blades, an uprising arm carried by one of the blades, an arm against which it makes contact and means whereby the blades are rocked and the frame reciprocated, as described.

3. In a street sweeping machine the combination of a casing provided with side walls, a rotating brush mounted between said walls, an inclined hinged vertically movable apron, and angular guards fixed to the upper side of said apron with their inner angular faces bearing against the broom sections, and their outer parallel faces in close contact with the sides of the casing; whereby the guards close the spaces between the ends of the brush and the sides of the casing and prevent the escape of dust and dirt to the outside.

4. In a street sweeping machine, the combination of a rotating brush, a casing covering the same, an inclined trunk communicating therewith, an elevator mounted therein, an apron hinged within the casing and angular guards mounted thereon whose inner inclined faces bear against the brush sections and whose outer surfaces rest against the inner sides of the casing.

5. In a street sweeping machine, the combination with a slotted brush shield, of pivoted frames carried thereby, means for controlling their swinging motion, blocks mounted to slide within the frames, means for controlling their movement and a broom spindle carried by the blocks, as described.

6. A rotating brush for street sweeping machines consisting of a hollow shaft carrying interior annular bearings adapted to rotate around a fixed spindle, recessed heads mounted to slide longitudinally on the shaft, an annular disk fixed between the heads, bolts connecting the heads to the disk, and a series of brush sections held between the recessed heads, substantially as described.

7. In a street sweeping machine, the combination with a slotted brush shield of pivoted frames carried thereby, blocks mounted to slide in the frames, links connecting the blocks to a rock-shaft, and an adjustable counterbalance weight carried thereby, whereby the pressure of the brush may be regulated.

In testimony whereof I affix my signature in presence of two witnesses.

JOHAN F. S. BRANTH.

Witnesses:

W. R. KENNEDY,
E. S. HAWKS.