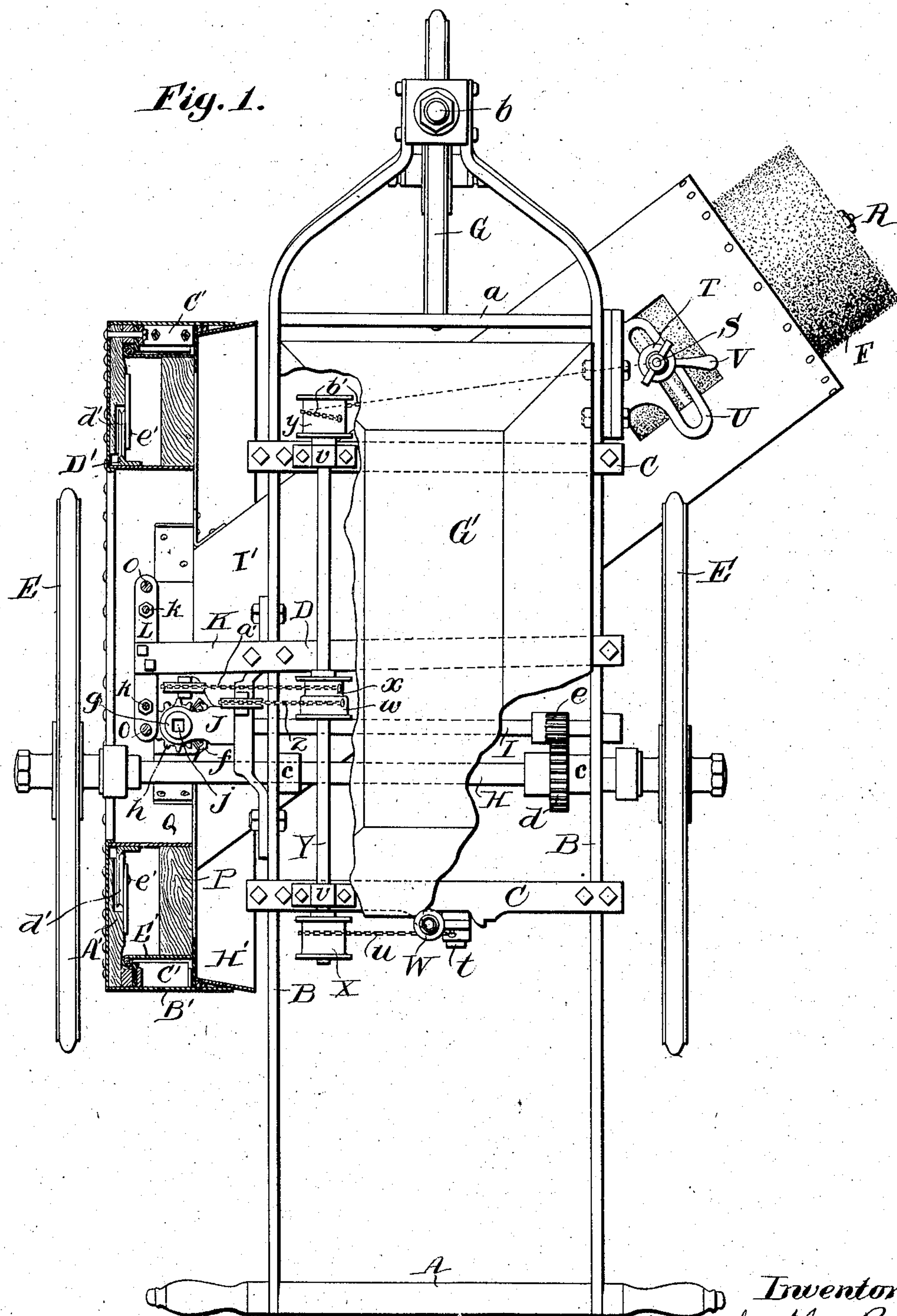


No. 791,206.

PATENTED MAY 30, 1905.

J. A. PAIGE.
STREET SWEEPER.
APPLICATION FILED JAN. 13, 1902.

4 SHEETS—SHEET 1.



Witnesses:
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4 SHEETS—SHEET 2.

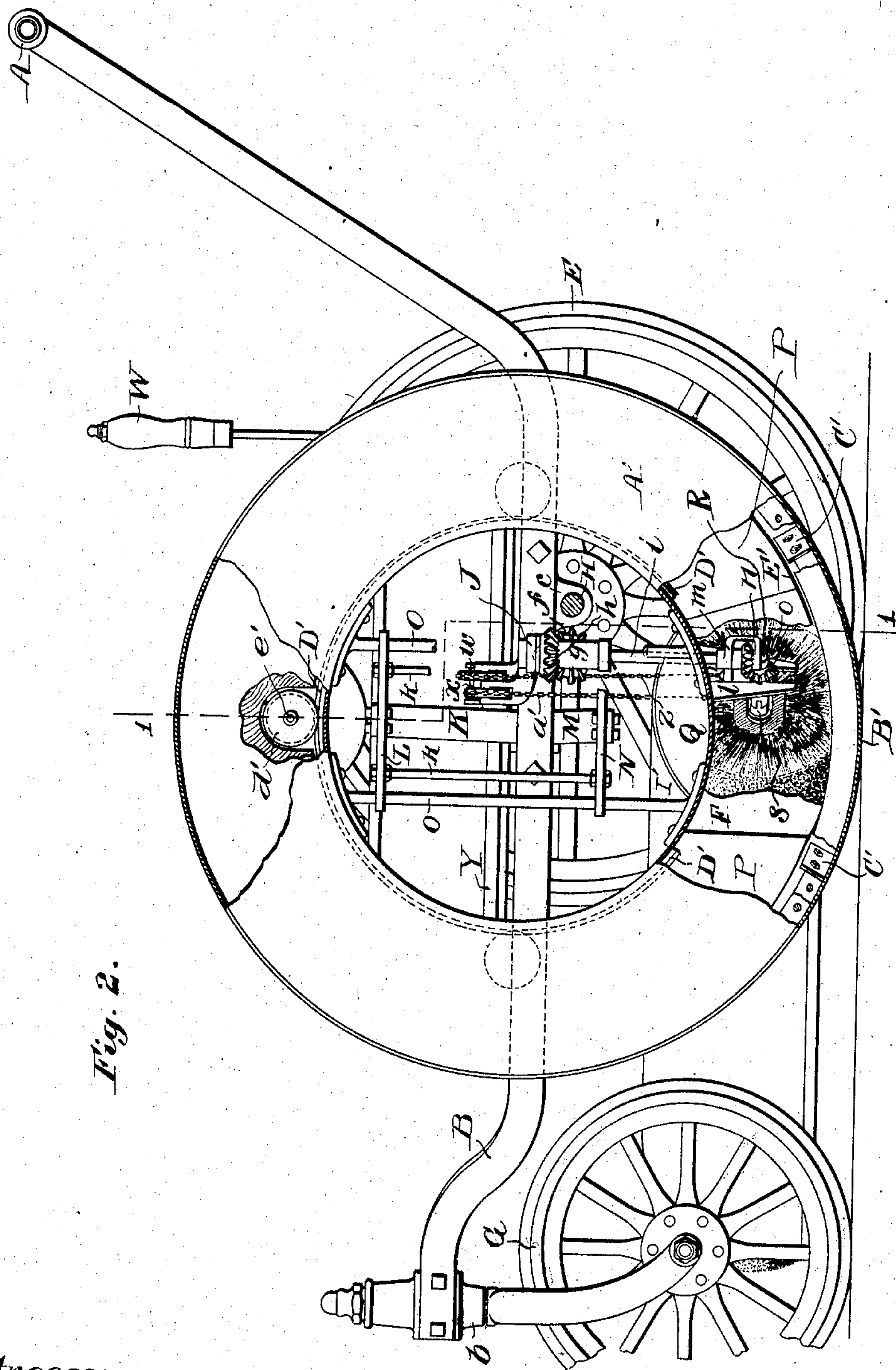


Fig. 2.

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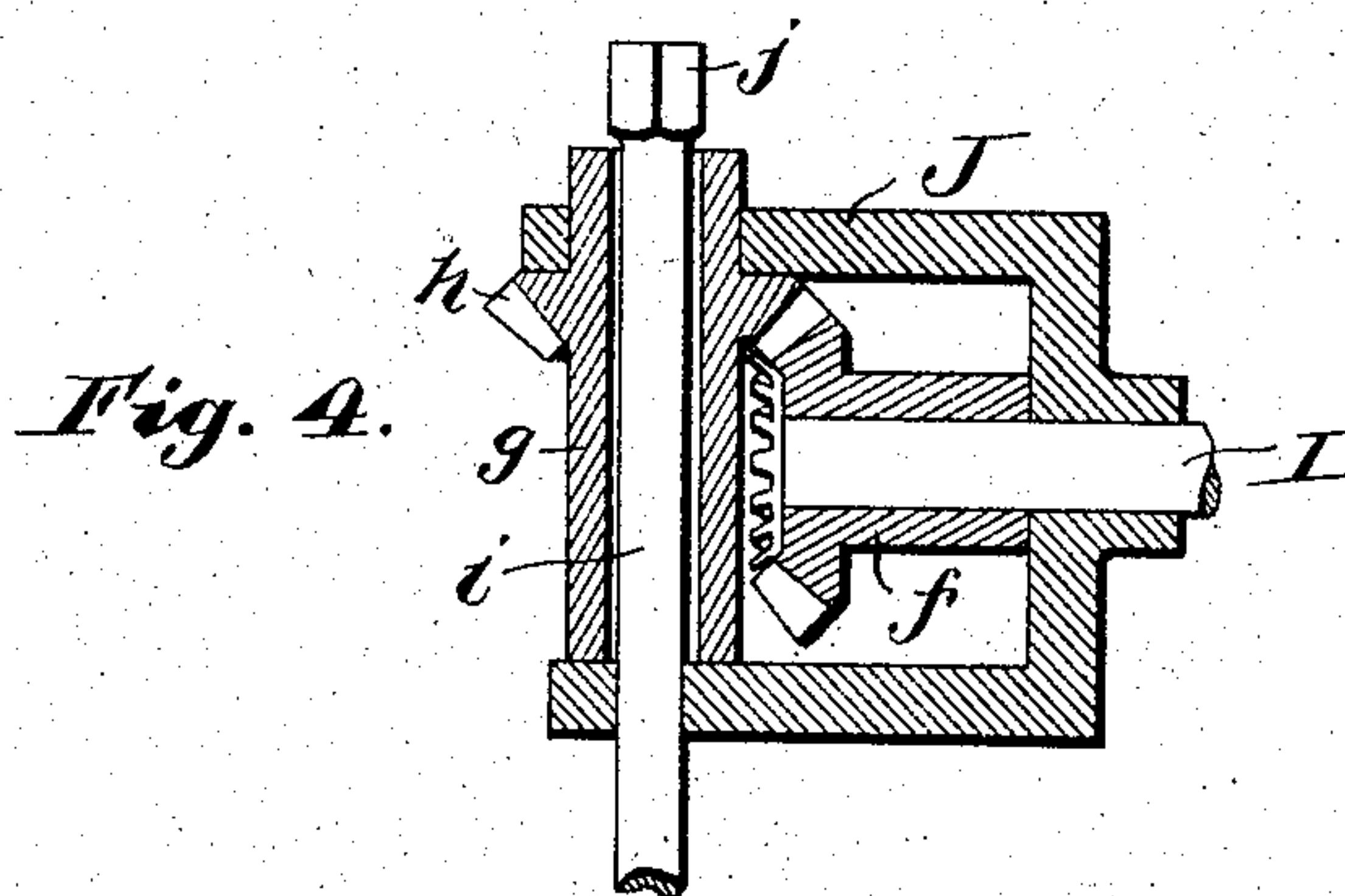
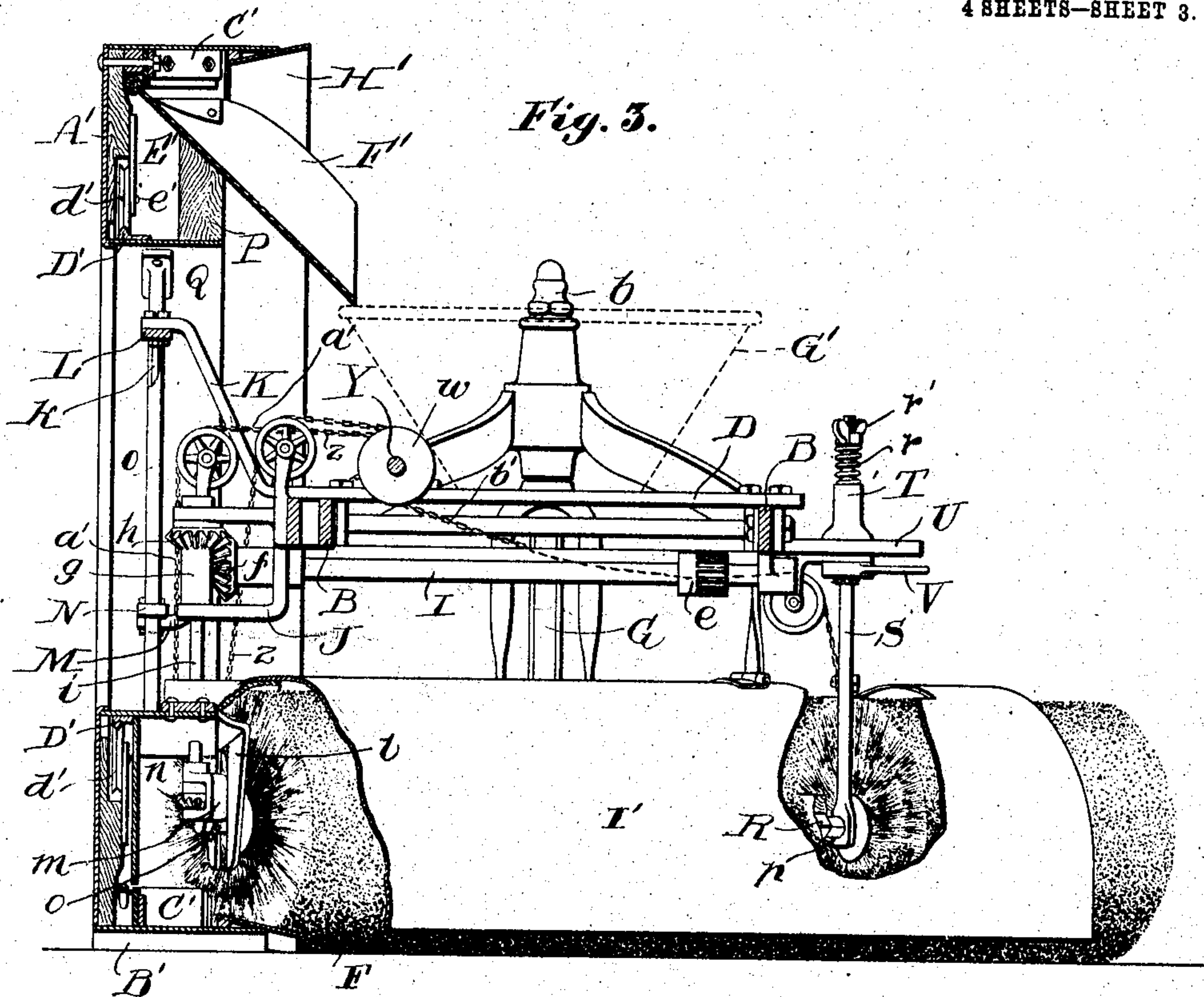
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 5.

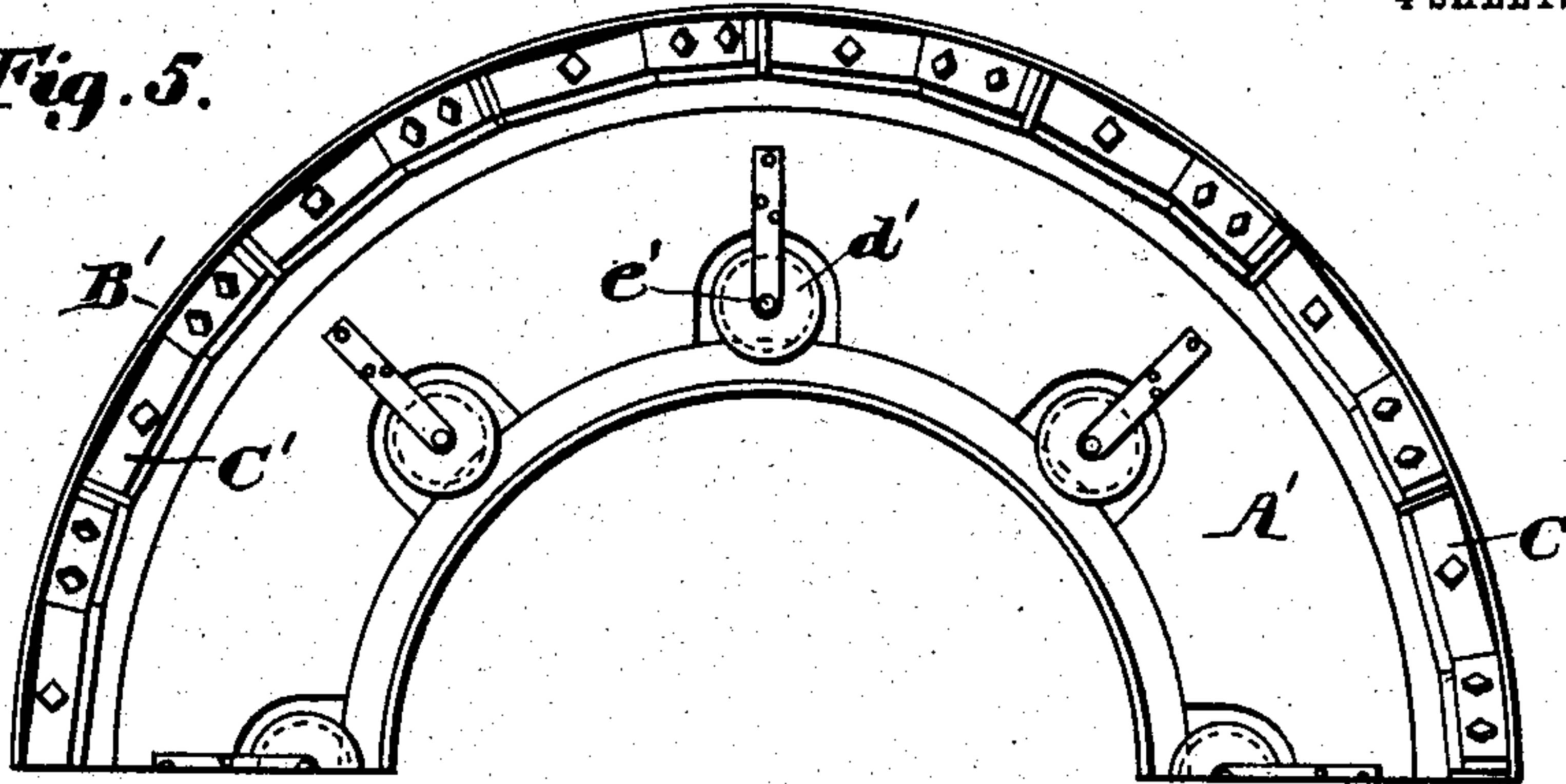


Fig. 6.

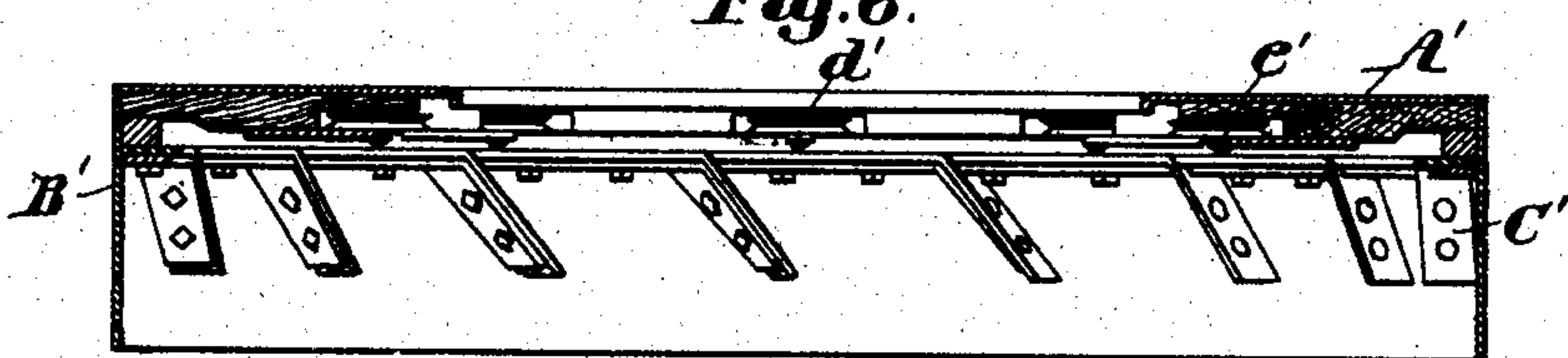


Fig. 7.

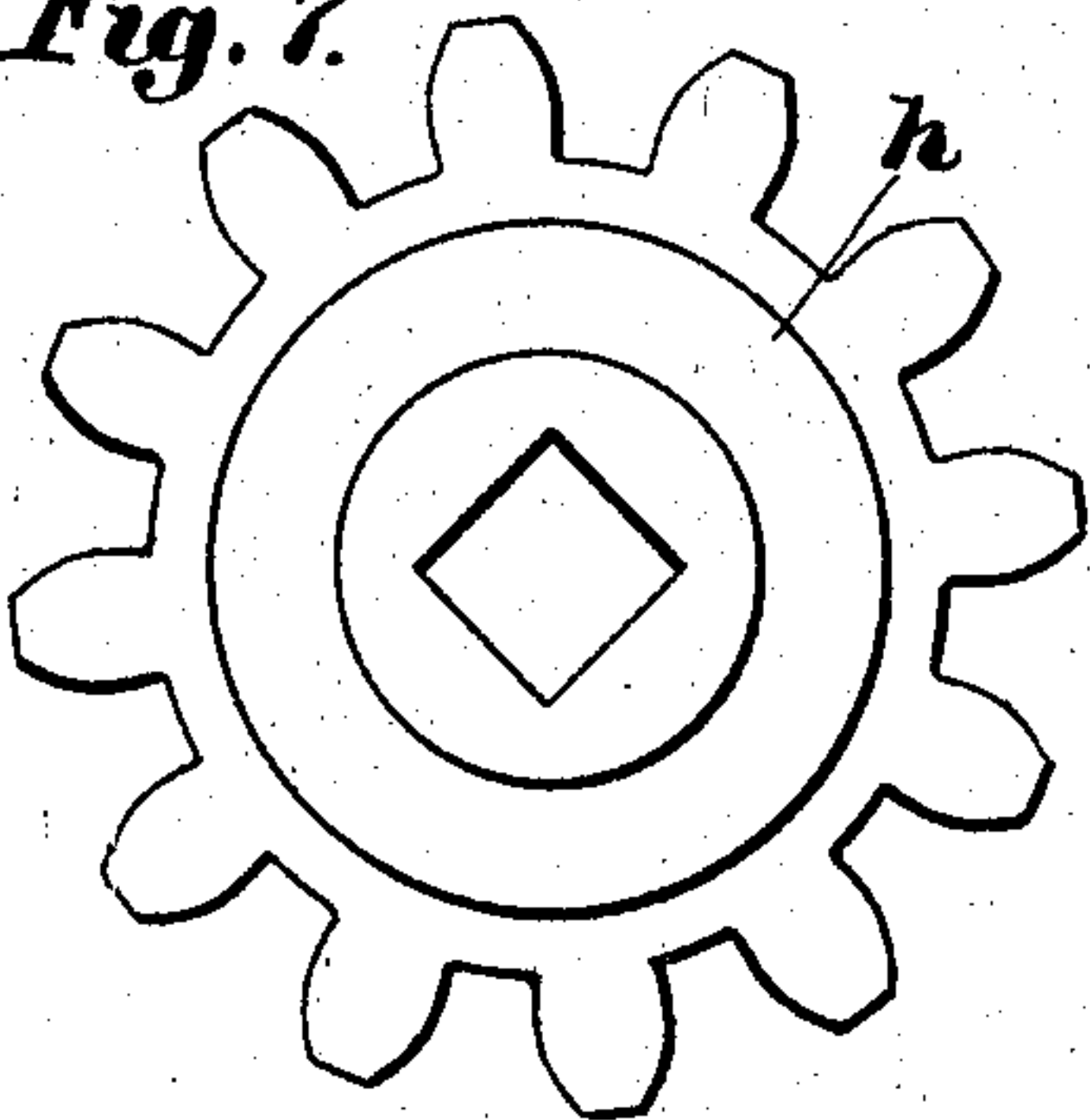


Fig. 8.

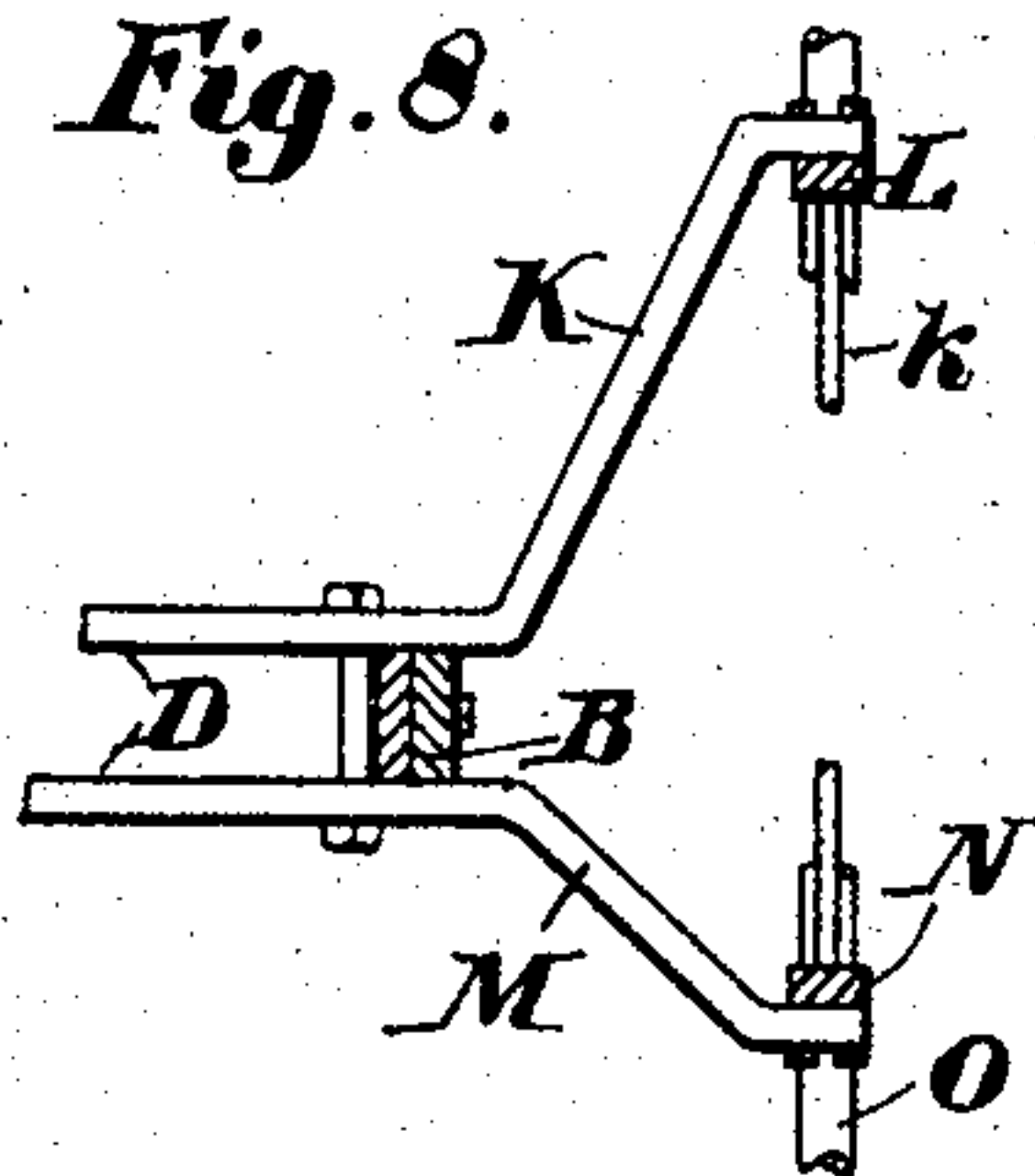


Fig. 9.

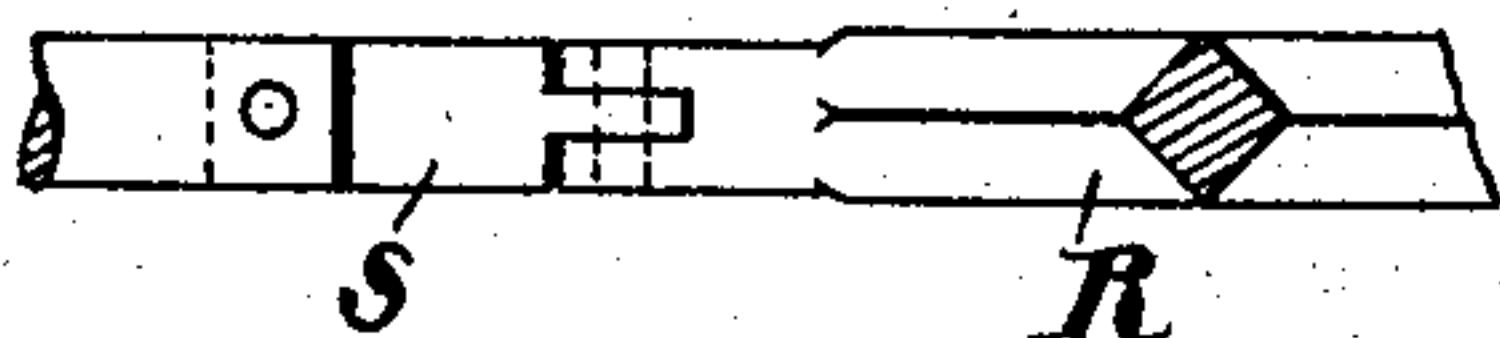
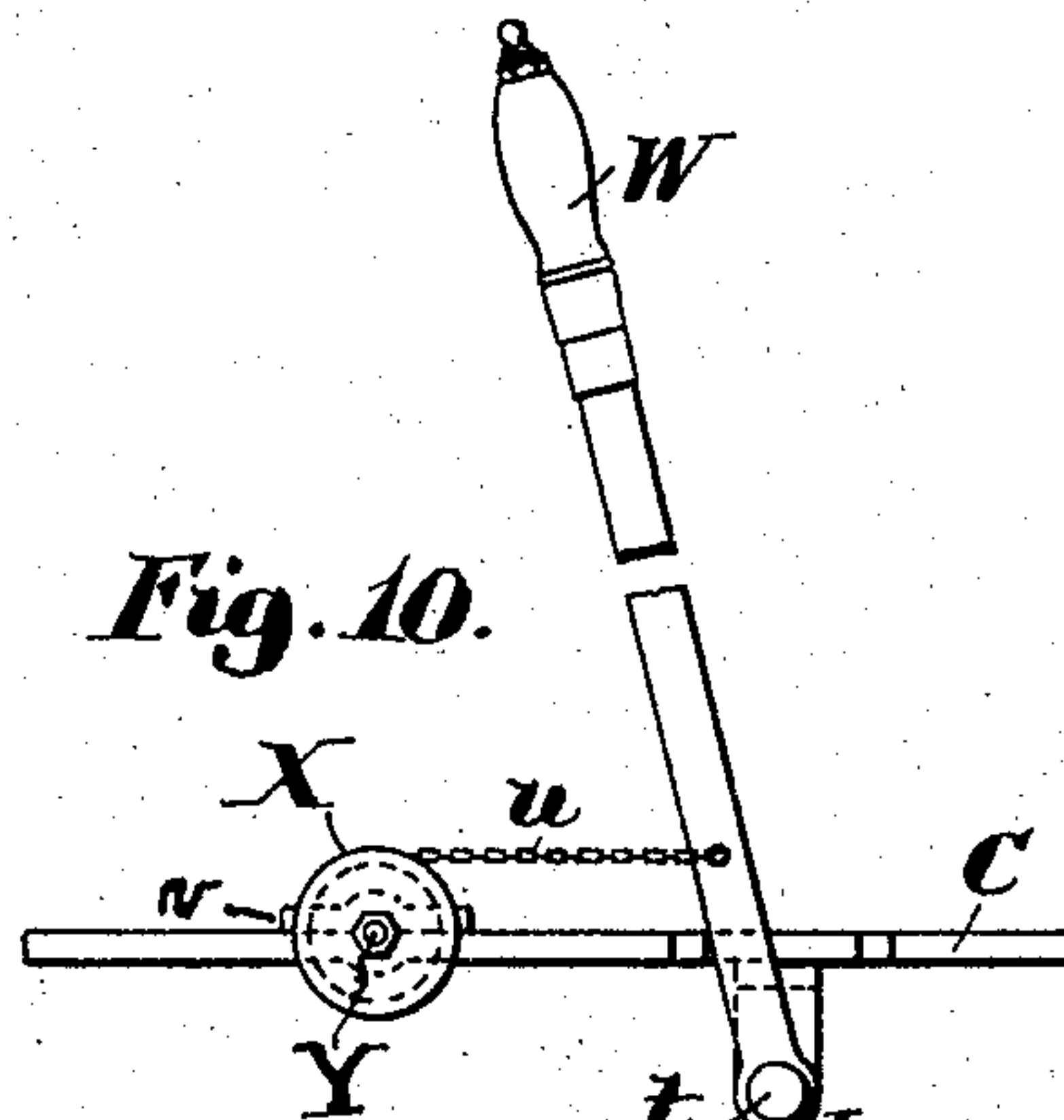


Fig. 10.



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Inventor:
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UNITED STATES PATENT OFFICE.

JEREMIAH ALTON PAIGE, OF MANCHESTER, NEW HAMPSHIRE.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 791,206, dated May 30, 1905.

Application filed January 13, 1902. Serial No. 89,594.

To all whom it may concern:

Be it known that I, JEREMIAH ALTON PAIGE, a citizen of the United States, residing at Manchester, in the county of Hillsboro and State of New Hampshire, have invented a new and useful Street-Sweeper, of which the following is a specification.

My invention relates to improvements in street-sweepers in which a brush, set diagonally with reference to the body of the machine, sweeps up the dirt into a rotary drum with buckets, which raises and conveys the dirt to fall into a hopper on the machine or into other receptacles.

The objects of my improvement are, first, to have the elevator and conveyer rotated by frictional contact with the ground and independently of the wheels which support the body of the machine; second, to maintain such relation of the rotary elevator and conveyer and the brush and such flexible connections of the elevator and conveyer and the brush with the body of the machine that both the elevator and conveyer and the brush will closely and independently follow the contour of the ground, and the dirt will be collected, elevated, and conveyed with the least possible loss and dust; third, to provide for lifting both drum and brush and disconnecting the rotary brush from the driving-wheels, so that neither will be in contact with the ground or rotate while the machine is propelled to or from the place of sweeping; fourth, to provide for ready and effective manipulation and adjustment of the machine whereby the street may be thoroughly swept and the dirt satisfactorily removed. I attain these objects by the mechanism illustrated in the accompanying drawings (four sheets) in which—

Figure 1 is a plan, Fig. 2 an elevation, and Fig. 3 a vertical section on the line 1 1 in Fig. 2, of the machine, certain parts being broken away for better illustration. Fig. 4 shows a vertical section of part of gearing and support therefor. Fig. 5 shows the inner side of one-half of the dirt-elevator, the flexible ring being removed; and Fig. 6 is a plan of a central section of the same. Fig. 7 shows a plan of gear *h*; Fig. 8, a vertical view of the arms *K* and *M* and their connections; Fig. 9, the

flexible or yielding joint *S* of brush-shaft, and Fig. 10 a vertical view of lever *W* and connections. Figs. 4, 7, and 9 are drawn on a larger scale than the other figures.

The machine is shown as adapted to be pushed along by hand, having the handle-bar *A* for that purpose; but it may be of suitable size to be propelled by a horse or other motive power.

The longitudinal rails *B B* and cross-ties *C, C, D, and a* constitute the main framework of the body of the machine.

The body of the machine is supported mainly by the two wheels *E E*, which are the driving-wheels, to cause the rotation of the brush *F*. A third supporting-wheel *G* is shown, which may swivel, as required, by means of a vertical pivot at *b*.

Fastened on the axle *H*, having suitable bearings at *c c* and to which the driving-wheels *E E* are rigidly secured, is a gear *d*, which engages with a pinion *e* on a transverse shaft *I*, which has bearings secured to the frame. On one end of this shaft is fastened a bevel-gear *f*, which engages with a bevel-gear *h*. This gear *h*, with its hub, forms a sleeve *g* and is supported so as to revolve by means of the stand *J*, having bearings therefor, as shown. Concentric with the gear *h* and extending through the sleeve *g* is a vertical shaft *i*, which has a part at the upper end *j* angular to enter and fit the corresponding angular socket of the gear and sleeve when the shaft is dropped down, but will be out of the socket when the shaft is raised, as shown in Fig. 4. This shaft has an upper bearing in the stand *J*.

The cross-tie *D* has an arm *K*, extending upward, to which is secured a short longitudinal piece *L*, and an arm *M*, extending downward, having a corresponding piece *N* fastened thereto. The pieces *L* and *N* are further held in suitable relative and parallel position by vertical tie-rods *k k*. At the end of the pieces *L* and *N* are bearings in which may slide two vertical rods *O O*, which are fastened at their upper and lower ends to an annular plate *P*, which is provided with an interior flange *Q*, extending outward, as shown. To this plate is fastened a stand *l*, which is formed as a vertical guide for a block *m*, which is a bearing

for the lower end of the vertical shaft *i*. On this shaft and within the yoke formed by the block *m* is a bevel-gear *n*, which engages with a bevel-gear *o*, secured to a shaft *R*, located diagonally with reference to the body of the machine, as shown. This shaft bears at its inner end in the block *m* and at the outer end in a bearing *p* at the lower end of a rod *S*, which may slide vertically in a guide-piece *T*, secured in the required position on a slotted stand *U* by means of a lever *V*, which screws on the piece *T*, as shown. A spiral spring *r* between the piece *T* and a nut *r'* on the upper end of the rod *S* provide means for adjusting the pressure of the outer end portion of the brush on the ground. The shaft *R* is loosely jointed, so as to be yielding at *s*, and carries thereon the brush consisting of two parts, the shaft being angular in transverse section, so that the brush having its core correspondingly formed may be slid endwise thereon and caused to rotate therewith.

Extending upward in a convenient situation to be grasped at its upper end by the hand of the operator is a lever *W*, pivoted at its lower end to the frame at *t*. To this lever at a suitable distance above the pivot is fastened one end of a chain *u*. The other end of this chain is secured to a small drum *X*, fastened on a shaft *Y*, having bearings *v* secured to the frame. On this shaft are fastened small drums *w*, *x*, and *y*. To the drum *w* is fastened one end of a chain *z*; the other end of which is fastened to the block *m*. To the drum *x* is fastened one end of a chain *a'*, the other end of which is secured to the flange *Q* of the plate *P*. To the drum *y* is fastened one end of a chain *b'*, which is secured at the other end to the rod *S*. Pulleys shown support and guide the chains *z*, *a'*, and *b'* in the positions shown.

A cylinder (or drum) consisting mainly of an annular plate *A'* and outer flange *B'*, extending inward and having buckets *C'* therein, constitutes the dirt elevator and conveyer. It is held in suitable position by means of the plate and flange *P* and *Q*, the latter being provided with a circular track *D'*, on which may run rollers *d'*, as many as desirable. In this case four rollers are shown as small wheels to revolve on shafts *e'*, held by the plate *A'*. The buckets *C'* are secured to the plate *A'*, and therefore also to the flange *B'*, in an angular position, as required, and thus are carried by the plate *A'* and flange *B'* in an annular space formed by the plate *A'*, flange *B'*, plate *P*, flange *Q*, and another inner flange, *E'*, the latter being fastened to the plate *P*. This cylinder, carrying the buckets, is caused to rotate by being in frictional contact with the ground. A part of the plate *P* is recessed at its lower portion, so that the brush may extend into the rotating cylinder a sufficient distance to convey the dirt into the buckets. There is also an opening in the plate *P* at its upper part, and a spout *F'* is secured in proper po-

sition to conduct the dirt which falls through said opening into a hopper *G'*, (its position indicated by the dotted lines in Fig. 3,) removably located on the machine. The flange *B'* has fastened at its inner edge a flexible ring *H'*, which flares somewhat, so that there is made a close contact of the cylinder with the ground and also with the brush, so that a loss of dirt between brush and cylinder or buckets is prevented. A covering or shield *I'* for the brush prevents the escape of dust, this shield having a close connection with the plate *P'*, as shown.

In operation the brush will closely follow the surface of the ground owing to the yielding joint *S* in its shaft, the vertically-movable bearing *m* for the inner end of the shaft, and the yielding connection of the bearing at the outer part of this brush-shaft. The cylindrical elevator and conveyer will also be in close contact with the ground and close relation to the brush owing to its independent vertical movement with reference to the body and wheels of the machine. Therefore the street will be thoroughly swept and the escape of dirt and dust prevented. The brush and dirt elevator and conveyer are readily lifted from the ground by the hand-lever and when so raised will not rotate, and therefore no dust will be produced and the dirt accumulated in the latter will not be thrown out, thus preventing any scattering of the same.

I claim as my invention—

1. In a street-sweeper, the combination of the body or frame thereof, wheels for supporting said body, a brush located diagonally with reference to said body, gearing connecting said wheels with said brush, and a cylindrical elevator and conveyer maintained in position to be rotated by contact with the ground, but independently of said wheels and gearing, substantially as specified.

2. In a street-sweeper a cylindrical elevator and conveyer for the dirt, supported by the ground when in action and rotated by contact therewith, and means for maintaining the elevator and conveyer in suitable position in the machine, said means being independent of the brush and wheels supporting the body or frame of the machine, substantially as specified.

3. The combination of the carriage of a street-sweeper, a brush maintained in a position diagonal with reference to said carriage, a cylindrical dirt-elevator located at the end of the brush, devices for lifting the brush, and devices for lifting said elevator, the devices for lifting the elevator being independent of the devices for lifting the brush, substantially as specified.

4. The combination of the body or frame of a street-sweeper, wheels supporting the same, a rotary brush located diagonally, gearing connecting said wheels with the brush causing rotation thereof, devices for lifting the

brush, a cylindrical dirt-elevator located at the end of said brush and rotated by frictional contact with the ground and independently of said wheels, and devices for lifting said elevator, substantially as specified.

5. The combination with the carriage and brush of a street-sweeper, of an annular dirt-elevator, a circular guide or track, means for maintaining said guide or track in suitable relation to said carriage, and wheels between said elevator and track, to run on the latter, substantially as specified.

6. In a street-sweeper the combination of a brush located in the machine as specified, a shaft for the brush having a yielding joint near its inner end, a vertically-movable bearing for the brush at each end, and gearing for connecting the brush-shaft with the driving-wheels, said gearing embodying a vertical shaft and means for disconnecting the same when the brush is raised, substantially as set forth.

7. In a street-sweeper, the combination with the body or frame and supporting-wheels thereof, of a cylindrical dirt-elevator, means for maintaining said elevator in such position as to permit its rotation by contact with the ground, and to permit a vertical movement independently with respect to said body and wheels, substantially as specified.

8. The combination of the body or frame

of a street-sweeper, wheels supporting the same, a brush located diagonally with reference to said body or frame, a shaft for said brush having vertically-movable bearings at both ends, a spring between the outer bearing of said shaft and said body or frame, a device for adjusting the tension of said spring, gearing for causing the rotation of said brush by said wheels, a cylindrical dirt elevator and conveyer located at the inner end of said brush, rotated by frictional contact with the ground, and independently with reference to said wheels, a flexible ring on said elevator and conveyer intervening between the end of the brush and the ground, and devices for lifting the brush and said elevator and conveyer, substantially as specified.

9. In a street-sweeper the combination of an annular dirt-elevator, a non-revoluble support therefor providing a circular guide or track concentric with said elevator, rollers intervening between said elevator and guide or track, and vertical rods or guides for permitting a vertical movement of said support with reference to the body of the machine, substantially as set forth.

JEREMIAH ALTON PAIGE.

Witnesses:

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