

No. 758,810.

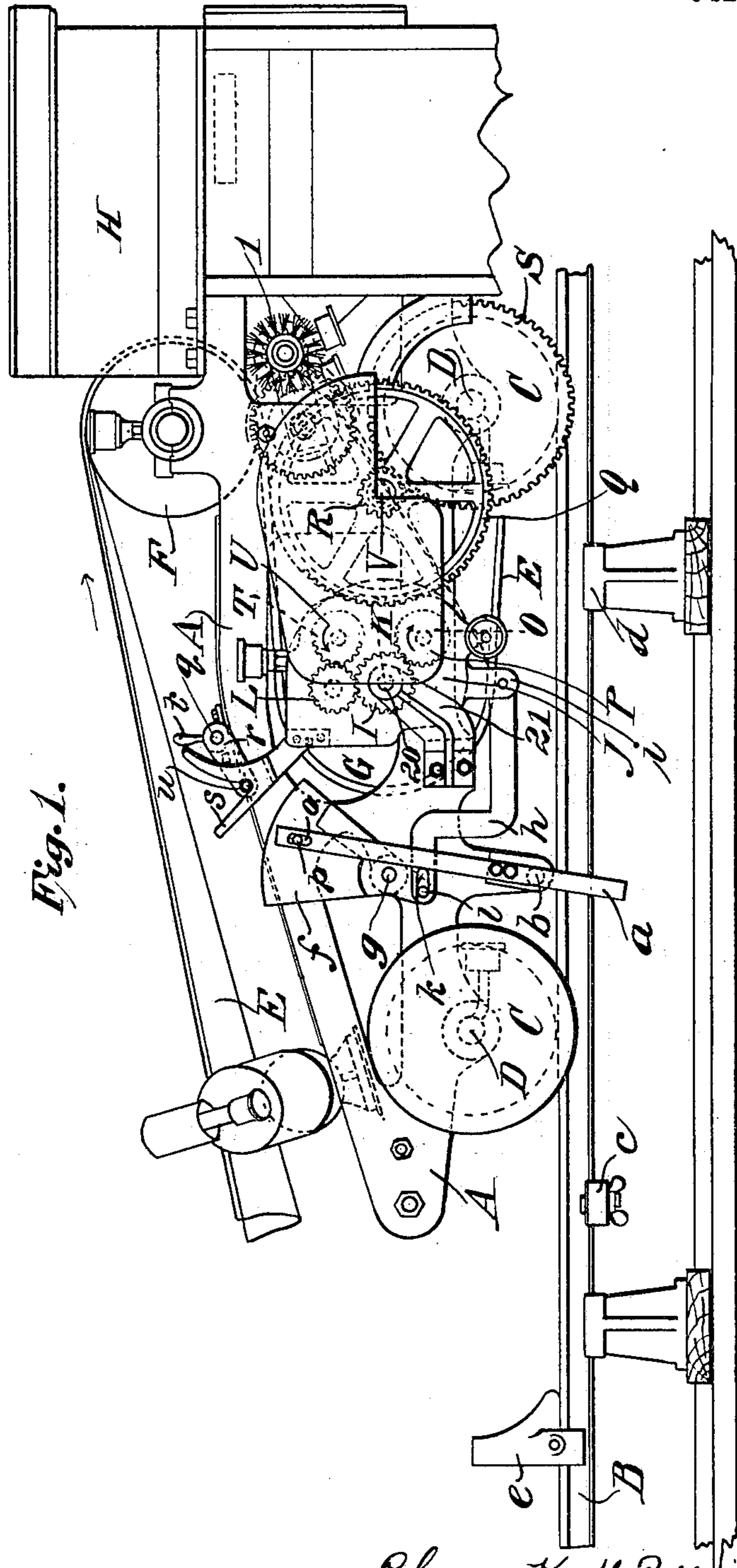
PATENTED MAY 3, 1904.

C. K. BALDWIN & F. E. TICKNOR.
TRIPPER OR DELIVERER FOR CONVEYING APPARATUS.

APPLICATION FILED MAY 26, 1903.

NO MODEL.

6 SHEETS—SHEET 1.



Witnesses:
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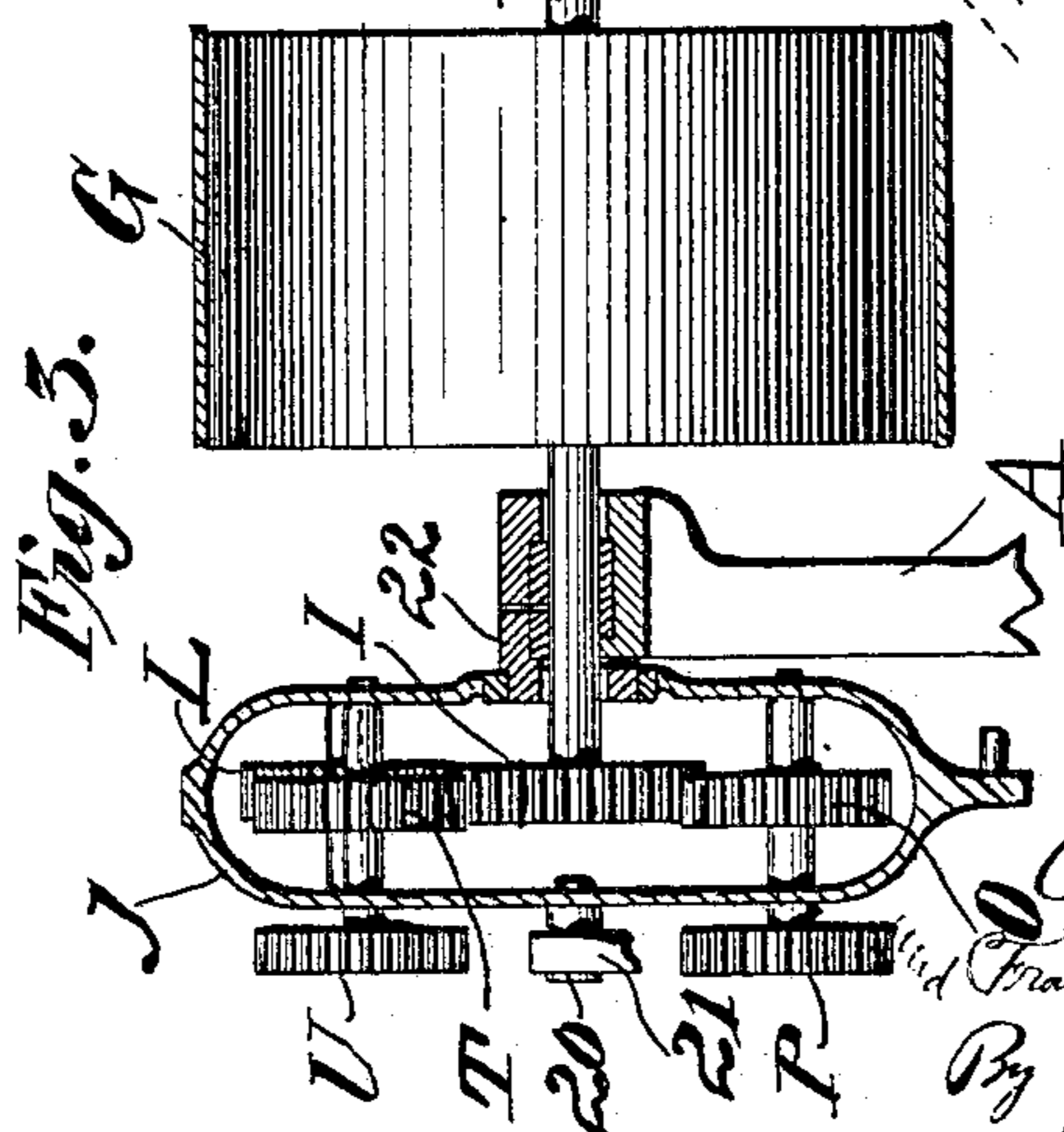
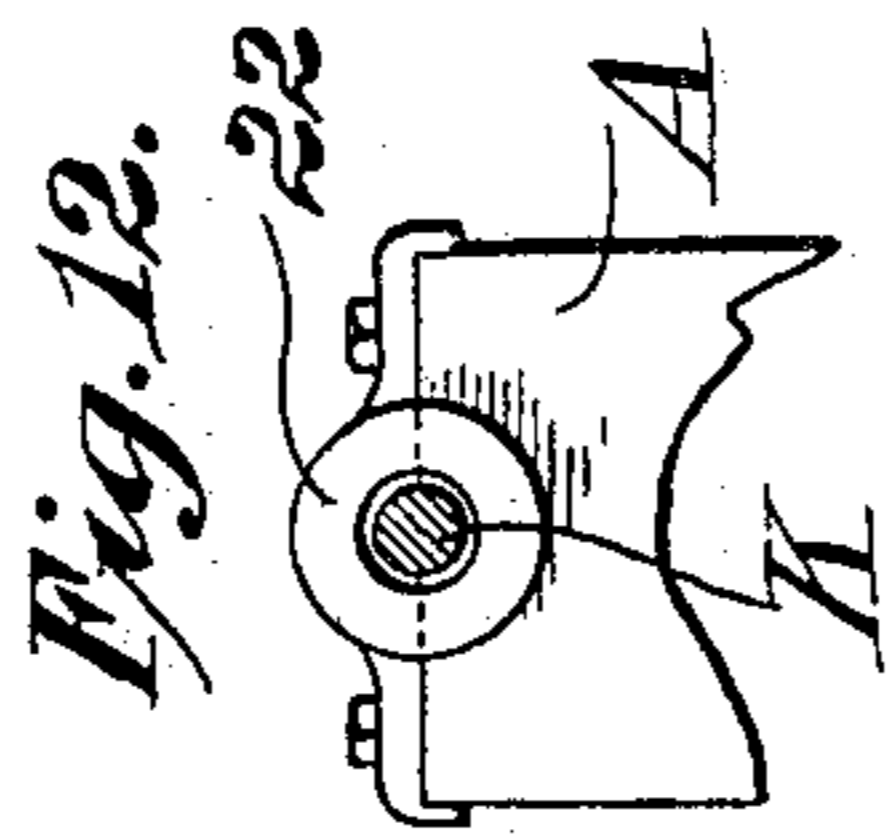
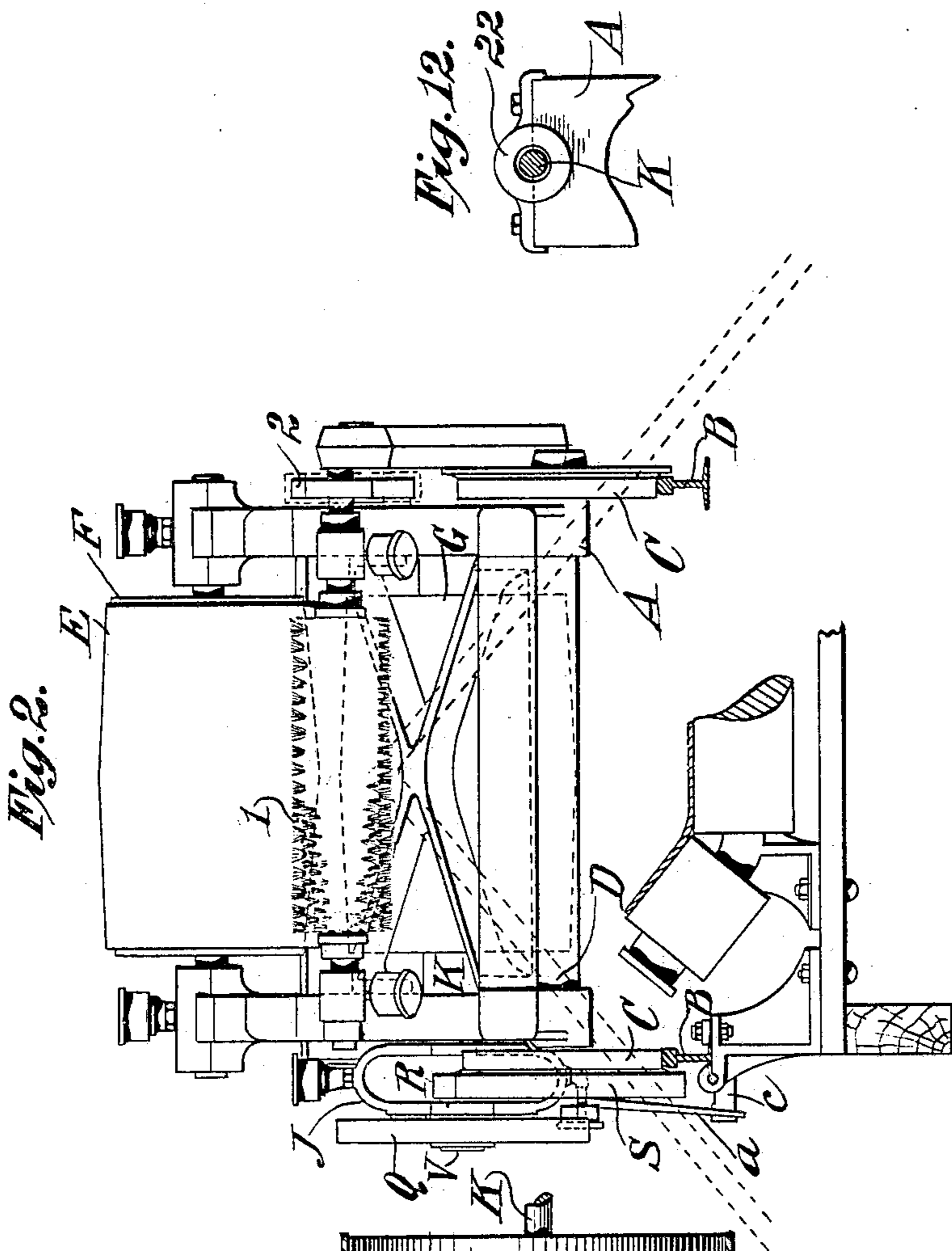
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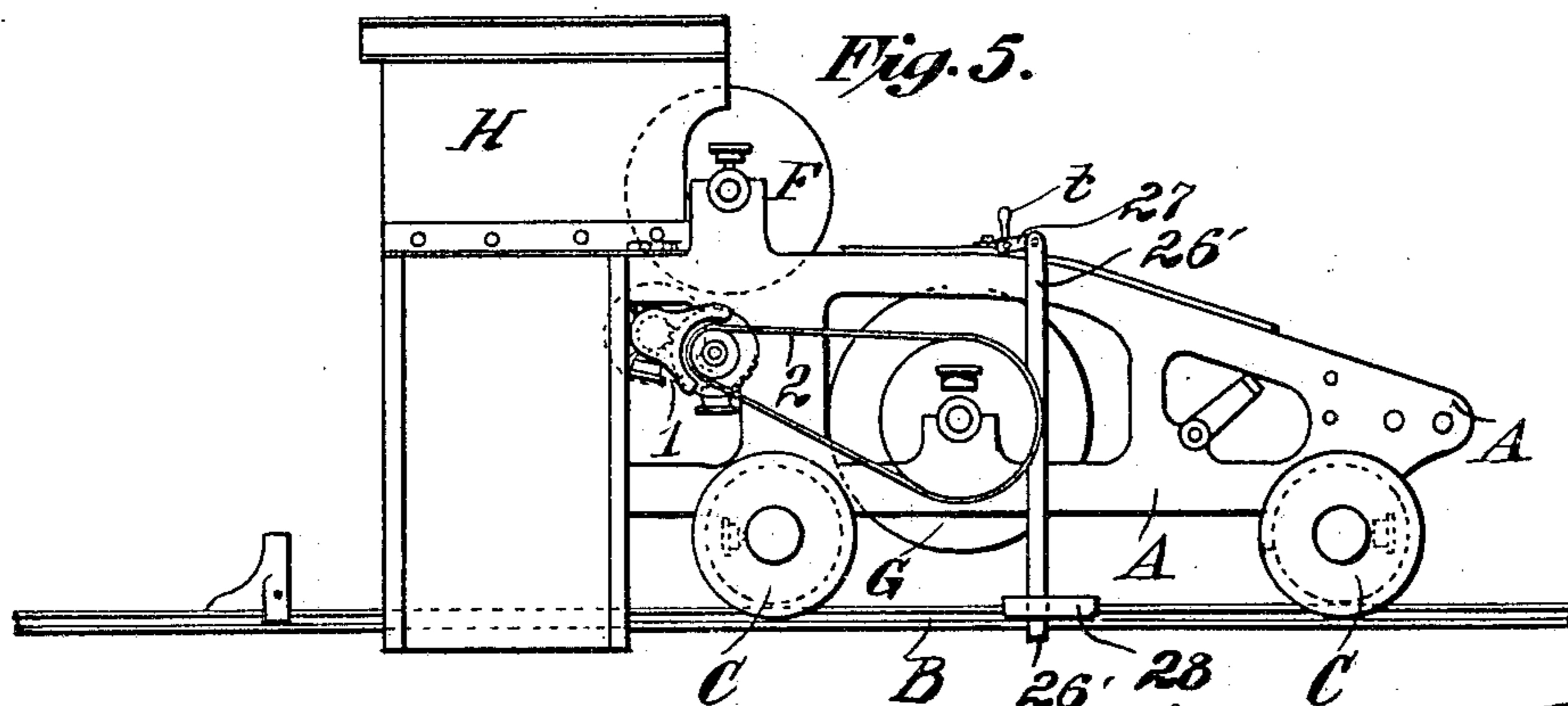
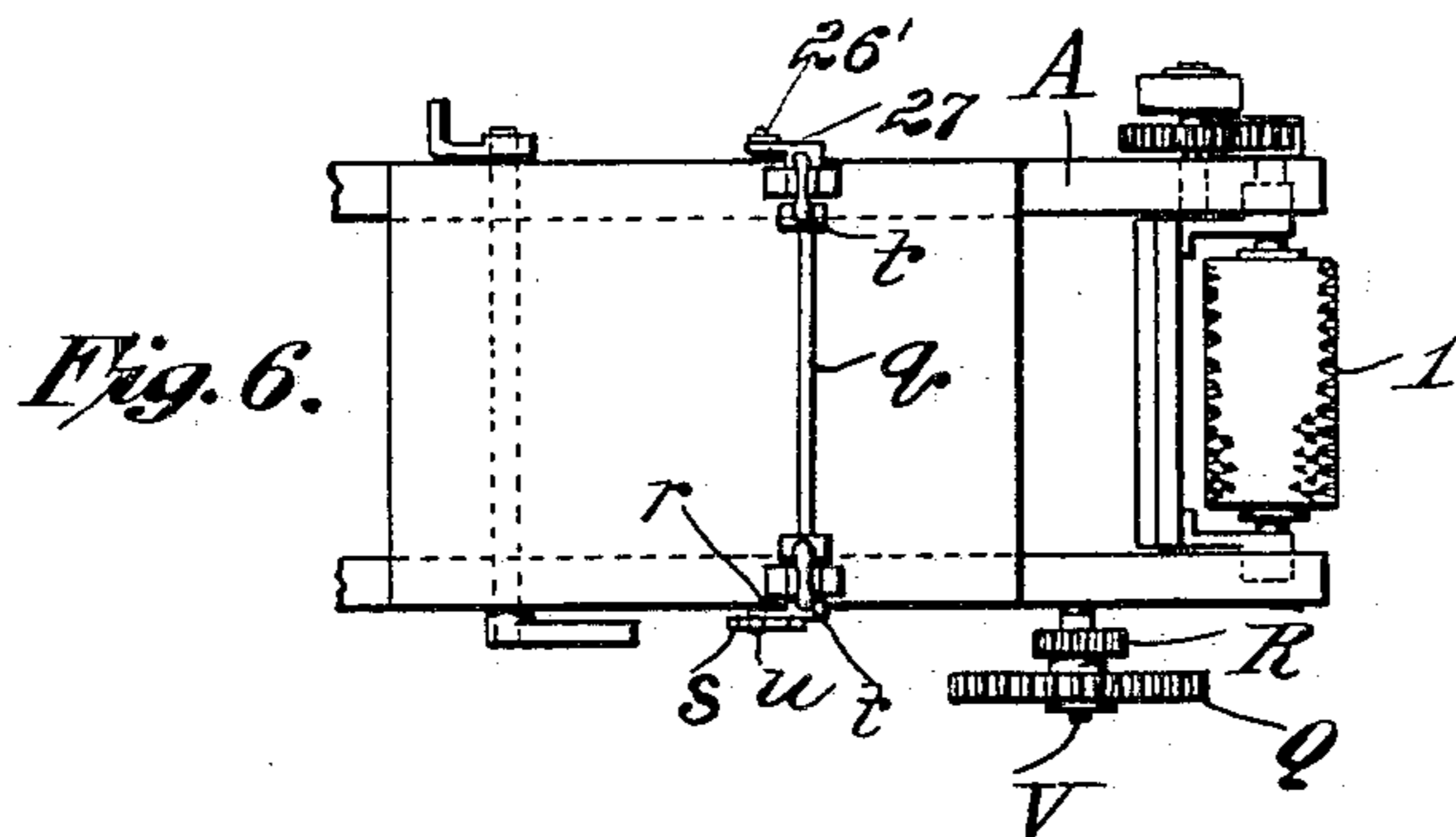
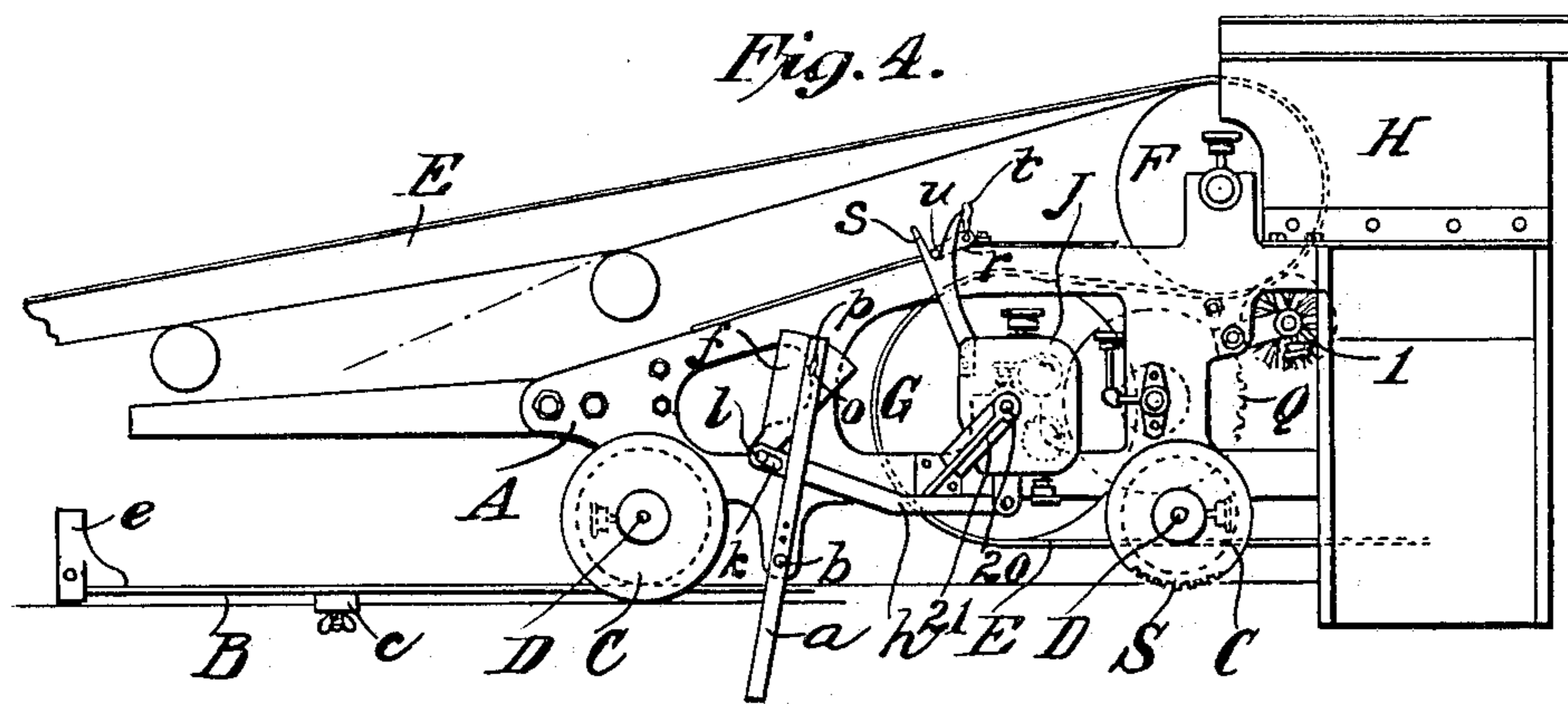
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5 SHEETS—SHEET 3.



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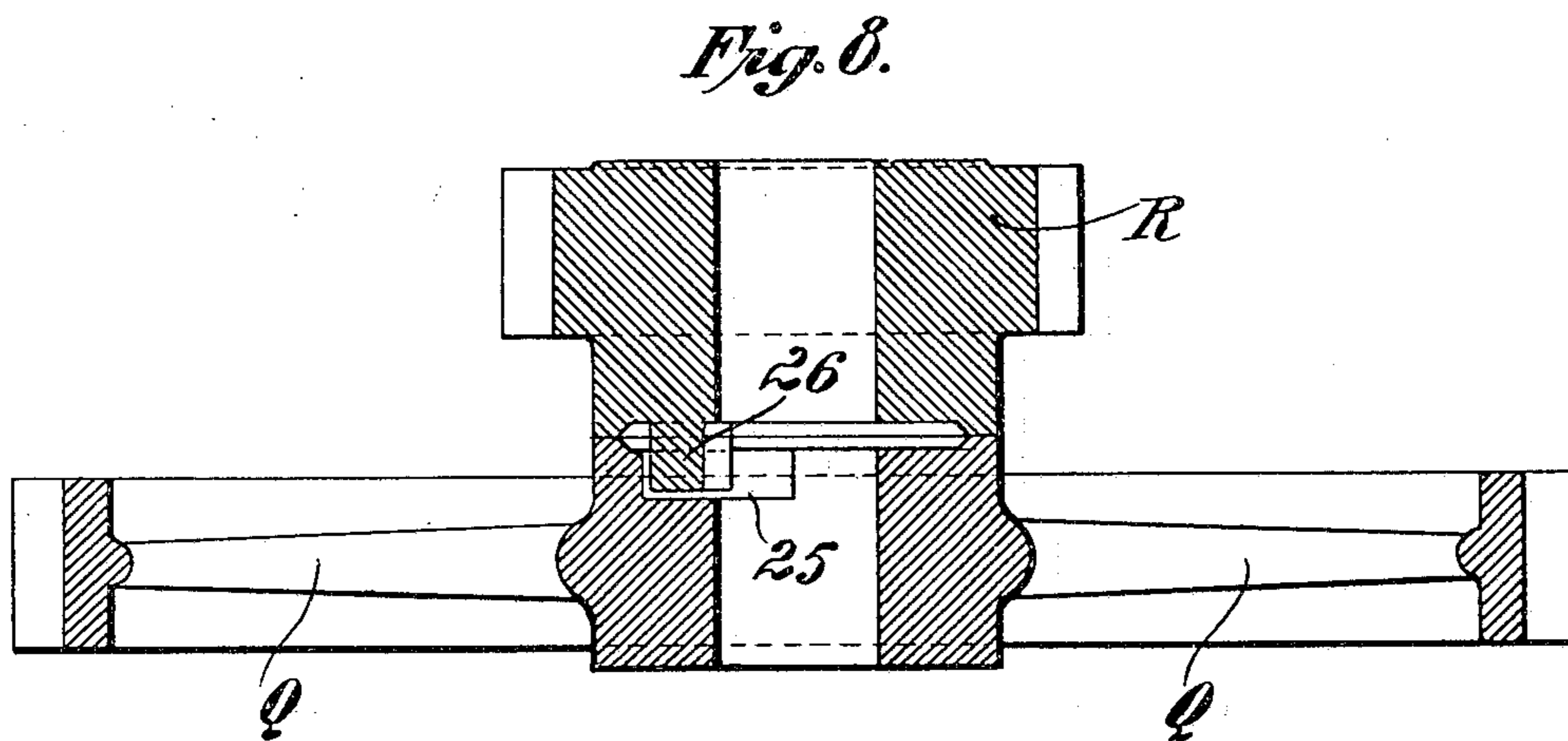
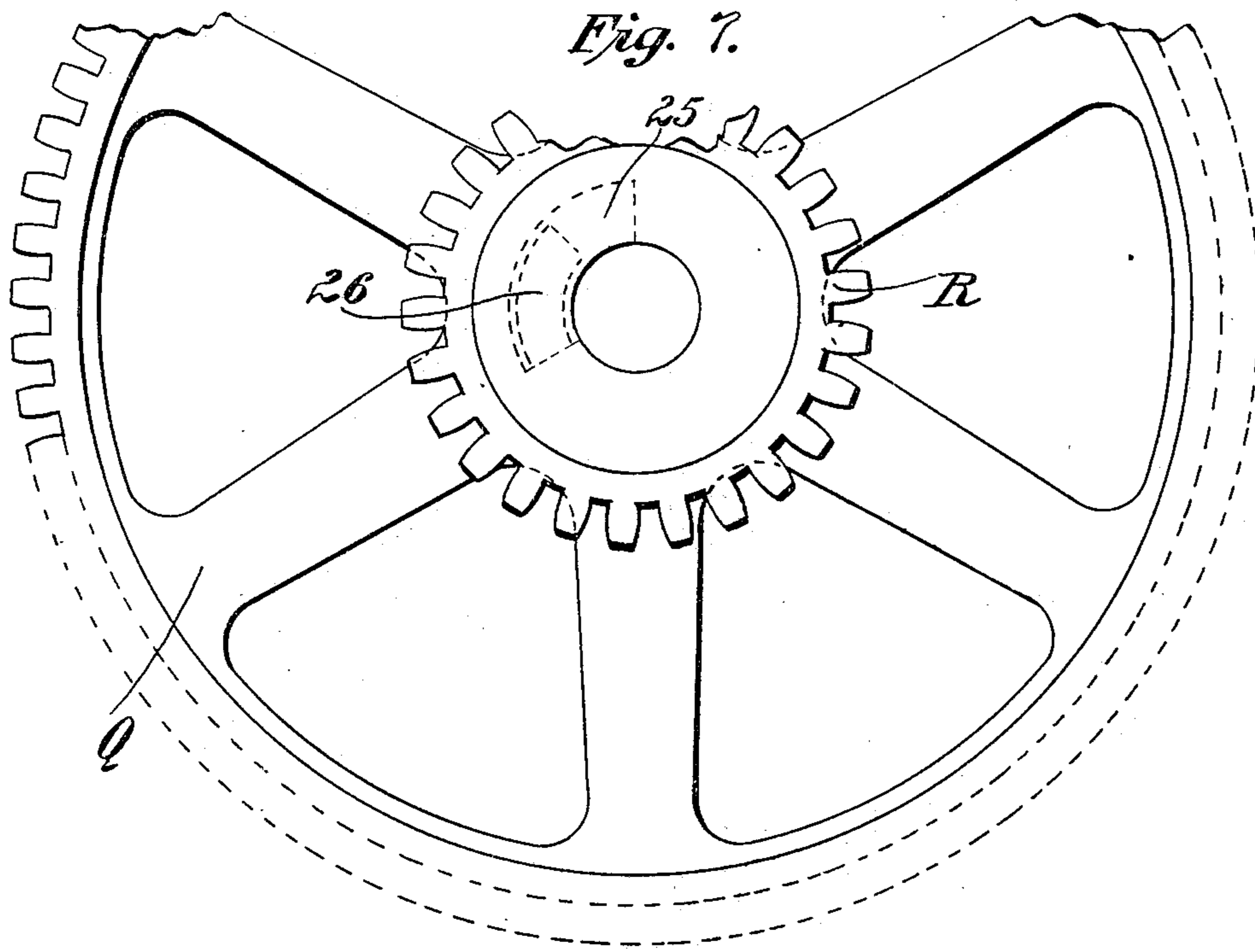
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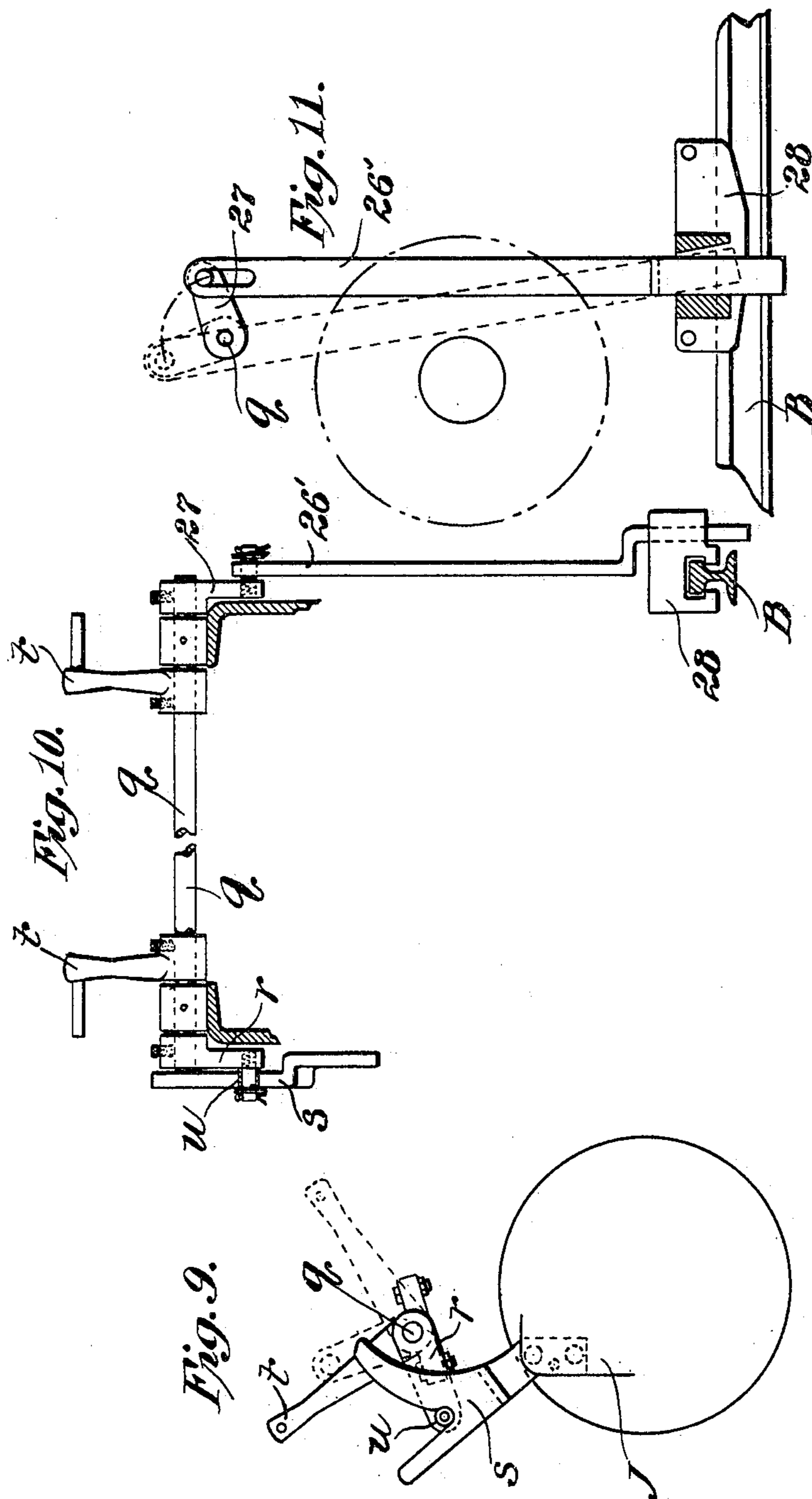
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6 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

CLARENCE KEMBLE BALDWIN AND FRANK E. TICKNOR, OF NEW YORK, N. Y., ASSIGNORS TO THE ROBINS CONVEYING BELT COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TRIPPER OR DELIVERER FOR CONVEYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 758,810, dated May 3, 1904.

Application filed May 26, 1903. Serial No. 158,768. (No model.)

To all whom it may concern:

Be it known that we, CLARENCE KEMBLE BALDWIN and FRANK E. TICKNOR, citizens of the United States, and residents of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Trippers or Deliverers for Conveying Apparatus, of which the following is a specification accompanied by
10 drawings.

This invention relates to conveying-belt apparatus, but more particularly to the tripper or deliverer for such apparatus; and its objects are to improve upon the construction of
15 trippers for conveyer-belts, secure greater certainty and efficiency of operation, and enable the tripper to be given a reciprocating travel by means actuated from a single pulley constantly rotating in a given direction.

Further objects of the invention will hereinafter appear; and to these ends the invention consists of apparatus for carrying out the above objects embodying the features of construction, combinations of elements, and arrangement of parts having the general mode
25 of operation substantially as hereinafter fully described and claimed in this specification, and shown in the accompanying drawings, in which—

Figure 1 is a side elevation, partly broken away, of apparatus embodying this invention. Fig. 2 is an end elevation partly broken away. Fig. 3 is a vertical sectional view through the rocking box and bearings therefor. Fig. 4 is a side elevation of one side of the apparatus, on a smaller scale than Fig. 2,
35 with the outer guard-plate removed. Fig. 5 is a side elevation of the other side of the apparatus. Fig. 6 is a plan view. Fig. 7 is an enlarged detail view of a portion of the gearing, showing the lost-motion connection in the hub of one of the gears. Fig. 8 is a sectional view through the hub of said gear. Fig. 9 is an enlarged detail view of a portion of the
40 rocking box. Fig. 10 is an enlarged detail side view of the locking mechanism for the box. Fig. 11 is a detail end view of a por-

tion of the locking mechanism. Fig. 12 is a detail view of the axle-box of the shaft K.

Referring to the drawings, A represents a
50 suitable frame, adapted to travel back and forth upon a track B in any suitable manner, in this instance the frame A being shown provided with wheels C upon the axles D, suitably journaled in the frame. The conveyer-
55 belt E, a portion only of which is shown, passes over the idler-pulleys F and G, provided with axles suitably journaled in the frame A, and, as shown, the belt forms an ogee curve like the letter S in passing over
60 the pulleys F and G, the material on the belt falling off as it passes around the upper pulley F and being delivered in the chute H. The chute H catches the material and delivers it clear of the belt. We have described a
65 tripper which is adapted to travel back and forth upon the tracks B, and suitable means are provided for automatically giving travel to the tripper and causing it to reverse its direction of travel at certain predetermined
70 points.

According to our invention means are provided for giving travel to the tripper, connected to be actuated by one of the idler-pulleys over which the belt passes. The pulleys
75 F and G are constantly rotating in a given direction, the belt moving in the direction of the arrow, and the means for actuating the driving mechanism of the tripper is connected to be operated by one of the constantly-rotat-
80 ing idler-pulleys, and the mechanism is such that a reciprocating travel is given to the tripper in opposite directions from the one pulley constantly rotating in the same direction.

Many different ways will be found and many
85 different kinds of mechanism may be devised for accomplishing the ends in view; but we have shown a suitable and efficient mechanism which has been found to operate satisfactorily for carrying out the above objects. Accord-
90 ing to the construction shown in the drawings the power for imparting travel to the tripper is derived from the lower belt-pulley G, and in this instance the shaft of said pulley is pro-

vided with a gear I, arranged inside of a rocking box J, pivoted to rock about the same center as the axle K of the pulley G. The gear I meshes with other pinions L and O, also arranged within the box J and supported in bearings on said box. Connected to the same shaft with the pinion O is another pinion P, arranged outside of the box J and adapted to be moved into mesh with a gear Q, supported upon a stud V in the frame A, and upon the same stud is a pinion R, meshing with a gear S, connected to drive one of the wheels C, and it will thus be seen that power is derived from the pulley G to drive the tripper in one direction along the track B when the pinion O is moved into mesh with the gear Q.

The pinion L meshes with another pinion T, supported within the box J in suitable bearings, and upon the same shaft with the gear T is another pinion U outside of the box J and in such position that it may be moved into mesh with the gear Q when the box J is rocked in the proper direction, thereby moving the pinion O out of mesh with the gear Q, and thus connecting the gearing to be driven in a direction to reverse the travel of the tripper on the track B.

By rocking the box J either one of the pinions P or U may be brought to cooperate with the gear Q, and since the shaft or axle K of pulley G is constantly rotating if the rocking box were pivoted directly upon the shaft the friction between the box and the rotating part would constantly tend to actuate the box in one direction. The outer side of the box is pivoted at 20 upon a bracket 21, while the inner side of the box pivots about the axle-box of the shaft K. The shaft K is afforded a bearing on the frame A, Fig. 3, which is bab-bitted, while a cap 22 is adjusted and secured over the shaft upon the frame. The inside bore of the cap is slightly greater than the diameter of the shaft, and the rocking box, as shown, is pivoted upon the cap 22, preferably Babbitt metal being provided for the bearing of the box.

Means are provided for automatically rocking the box J and throwing one or the other of the gears P or U into mesh with the gear Q in order to determine the direction of travel of the tripper, and, as shown, there is a reversing-lever *a*, pivoted at *b* to the frame and adapted to be thrown in one direction or the other by the stops *c* and *d*. The end-casting *e* is provided in case of emergency to prevent the tripper going over the end. The reversing-lever *a* is connected to rock the box J at the ends of the travel of the tripper and reverse the driving connections described. The operative connections between the driving mechanism and the reversing-levers are such that when the arm or lever is moved automatically it may acquire a certain momentum before acting to reverse the driving connections, as shown, there being a lost-motion con-

nection and a weight for the arm which acts automatically when displaced beyond its center of gravity.

The weighted quadrant *f* is pivoted at *g* to the frame and connected at its lower end, by means of the link *h*, to the rocking box J, said link being pivoted to an extension *i* of the box J at one end and provided with a slot *k* at the other end, in which a pin *l* upon the quadrant operates. The upper end of the lever *a* is slotted at *o*, and a pin *p* on the quadrant *f* operates within the slot *o*. According to the arrangement it will be seen that when the stop *c* is struck, for instance, by the lever *a* the lever *a* may rock for a limited distance, determined by the length of the slot *l*, while the quadrant *f* is moved to a central position or slightly beyond its center of gravity, if desired, without disengaging the driving connections. It will thus be seen that the quadrant *f* and lever *a* will acquire a certain momentum before acting, which increases the certainty of operation and insures the reversing of the driving connections in the required direction. One of the stops, as *c*, may be adjusted longitudinally of the track B, to which, in this instance, it is connected to vary the length of travel of the tripper, as desired. Also means are provided for manually locking the box J, and, as shown, a rod *q* extends transversely across the machine, supported in suitable bearings on the frame. A cranked arm *r* at one end of the rod *q* is adapted to cooperate with a forked arm *s* upon the box J, while handles *t* afford provision for the manipulation of the cranked arm from either side of the apparatus. When the arm *r* is thrown downward into the position shown in Figs. 1 and 9, the box is locked in a central position with both pinions P and U out of mesh with gear Q, so that the tripper is stationary. The cranked arm *r* may be provided with a roller *u*, adapted to roll into and out of engagement with the forked arm *s*. In order to start the tripper traveling back and forth, the cranked arm *r* and roller *u* are withdrawn out of engagement with the forked arm *s*, and since in the position of the parts described the weighted quadrant *f* is supported in a position beyond its center of gravity it will immediately fall to one side and rock the box in a direction to move the pinion U into mesh with the gear Q and cause the tripper to travel in a direction toward the stop *c*.

Provision is afforded for moving the pinions P and U into mesh with gear Q with a lost-motion connection, so that there will be no danger of stripping the teeth from the gearing. As shown in Figs. 7 and 8, the lost-motion connection is provided between the gear Q and the pinion R. In this instance the hub of the gear is provided with a slot 25, into which extends a lug or projection 26 on the pinion R, so that when power is supplied to

gear Q motion is not immediately imparted to pinion R and the driving-wheels. By this means a strong resistance is not at once thrown on the teeth of the gearing until they are fully in mesh.

Referring to Figs. 10 and 11, a slotted rod 26' is hung on the cranked arm 27 at one end of the rod q, the lower end of which rod 26' extends through a block 28, slidable upon the rails. This construction has for its object to limit the movement of the tripper should it be started accidentally by belt-friction when the box J is in a central position. The lower end of the rod 26' acts as a stop to limit the movement of the tripper by striking against the limiting-stops on the rails.

Suitable means are provided for brushing the belt and keeping it clean, as shown in this instance, there being a brush 1 journaled in the frame A and connected to be driven from one of the moving parts of the apparatus, as from the shaft K of the pulley G, by means of suitable belting 2. When the apparatus is not in operation, it is desirable to clamp it to the track B in any suitable manner.

There are many obvious advantages in operating the tripper from a single pulley, and our construction has been found to work efficiently and well. But a small number of parts are required, which are not liable to get out of order, and wear and tear upon the apparatus is decreased.

Obviously some features of our invention may be used without others, and our invention may be embodied in widely-varying forms.

Therefore, without limiting ourselves to the construction shown and described nor enumerating equivalents, we claim and desire to obtain by Letters Patent the following:

1. A tripper or deliverer for a conveying-belt provided with constantly-rotating idler-pulleys over which the belt runs, and means actuated by one of said idler-pulleys for giving travel to the tripper in either direction at will from the same pulley, for substantially the purposes set forth.

2. A tripper or deliverer for a conveying-belt provided with idler-pulleys over which the belt runs, and means actuated by one of said idler-pulleys constantly rotating in the same direction for giving a reciprocating travel to the tripper in opposite directions, for substantially the purposes set forth.

3. A tripper or deliverer for a conveying-belt provided with idler-pulleys over which the belt runs, means actuated by one of said idler-pulleys for giving travel to the tripper or deliverer in each direction, and means for automatically reversing the direction of travel of the tripper or deliverer, for substantially the purpose set forth.

4. In a tripper or deliverer for conveyers, the combination with the frame and continuous-traveling conveyer-belt, of a plurality of

idler-pulleys around which the belt runs and over one of which the material is delivered from the belt, a chute interposed to receive the material and deliver it clear of the belt, and means actuated by one of said belt-pulleys for giving automatic travel to the tripper, for substantially the purposes set forth.

5. In a tripper or deliverer for conveyers, the combination with the frame and continuous-traveling conveyer-belt, of a plurality of constantly-rotating idler-pulleys around which the belt runs and over one of which the material is delivered from the belt, a chute interposed to receive the material and deliver it clear of the belt, one or more driving-wheels, and means for actuating the driving-wheels from one of the said idler-pulleys to give travel to the tripper, for substantially the purposes set forth.

6. In a tripper or deliverer for conveyers, the combination with the frame and continuous-traveling conveyer-belt, of a plurality of constantly-rotating idler-pulleys around which the belt runs and over one of which the material is delivered from the belt, a chute interposed to receive the material and deliver it clear of the belt, one or more driving-wheels, and connections between one of the said idlers and the driving wheel or wheels for actuating the latter, for substantially the purposes set forth.

7. In a tripper or deliverer for conveyers, the combination with the frame and idler-pulleys over which the belt runs, of one or more driving-wheels, a movable box or frame, operative connections for driving the said wheels from one of the idler-pulleys, means for actuating said box or frame to move different portions of the driving connections into and out of operative relation, and means for maintaining all of said connections out of operative relation, for substantially the purposes set forth.

8. In a tripper or deliverer for conveyers, the combination with the frame and continuous-traveling conveyer-belt, of a plurality of idler-pulleys around which the belt runs and over one of which the material is delivered from the belt, one or more driving-wheels, a rocking box pivoted to the frame, operative connections carried by the frame and the rocking box for driving the wheel or wheels in both directions from one of the idler-pulleys, means for rocking said box to engage said operative driving connections, and a stop for maintaining the said connections out of operative relation, for substantially the purposes set forth.

9. In a tripper or deliverer for conveyers, the combination with the frame and continuous-traveling conveyer-belt, of a plurality of constantly-rotating idler-pulleys around which the belt runs and over one of which the material is delivered from the belt, one or more driving-wheels, and gearing interposed between one of the said idler-pulleys and the one

or more driving-wheels, for giving travel to the tripper in both directions, for substantially the purposes set forth.

10. A tripper or deliverer for a conveying-belt provided with upper and lower idler-pulleys over which the belt runs, and means actuated by the lower of said idler-pulleys for giving a reciprocating travel to the tripper in opposite directions, for substantially the purposes set forth.

11. In a tripper or deliverer for conveyers, the combination with the frame and continuous-traveling conveyer-belt, of a plurality of idler-pulleys around which the belt runs and over one of which the material is delivered from the belt, one or more driving-wheels, gearing interposed between one of the idler-pulleys and the one or more driving-wheels, for giving travel to the tripper in both directions, and a lost-motion connection in said gearing, for substantially the purposes set forth.

12. In a tripper or deliverer for conveyers, the combination with the frame and continuous-traveling conveyer-belt, of a plurality of idler-pulleys around which the belt runs and over one of which the material is delivered from the belt, one or more driving-wheels, a rocking box provided with gears deriving power from one of said pulleys, said box being pivotally supported upon the journal-box of the shaft of said pulley, and operative connections for imparting power to the wheel or wheels, for substantially the purposes set forth.

13. A tripper or deliverer for a conveying-belt, provided with constantly-rotating idler-pulleys for the belt, and one or more driving-wheels for giving travel to the tripper, and mechanical connections between one of the said idler-pulleys and the driving wheel or wheels, for actuating the tripper in either direction at will from the same pulley, for substantially the purposes set forth.

14. A tripper or deliverer for a conveying-belt, provided with idler-pulleys for the belt, and one or more driving-wheels for giving travel to the tripper, mechanical connections between one of the idler-pulleys and the driv-

ing wheel or wheels, for actuating the tripper in either direction at will from the same pulley, and means for reversing said connections automatically, for substantially the purposes set forth.

15. In a tripper or deliverer for conveyers, the combination with the frame and conveyer-belt, of a plurality of idler-pulleys around which the belt runs, a traction-wheel, a shaft for driving said traction-wheel, gearing connecting said shaft and traction-wheel, a driving-pinion operatively connected with one of said idler-pulleys and continuously driven thereby, and shiftable power-transmitting connections between said pinion and said driving-shaft through which rotation in either direction may be imparted from said pinion to said driving-shaft while the direction of rotation of said pinion remains constant.

16. In a tripper or deliverer for conveyers, the combination with the frame and conveyer-belt, of a plurality of idler-pulleys over which the belt runs and which are constantly rotated by the belt, gearing constantly actuated by one of said idler-pulleys, a traction-wheel, a shaft geared to said traction-wheel to impart rotation thereto, shiftable power-transmitting connections between said gearing and said shaft, and means for shifting said power-transmitting connections to reverse the direction of rotation of said shaft.

17. In a tripper or deliverer for conveyers the combination with the frame, traction-wheel and conveyer-belt, of an idler-pulley driven by the said belt, a chain of gearing for driving the traction-wheel from the said idler-pulley, said chain of gearing including a reversible connection having a toothed gear meshing with either of two coöperating gears, and means for automatically reversing the said connection of said gears and reverse the travel.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

CLARENCE KEMBLE BALDWIN.
FRANK E. TICKNOR.

Witnesses:

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EMIL CHAS. EGER.