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PATENTED JAN. 8, 1907.

T. ROBINS, JR. & C. K. BALDWIN.

TRIPPER OR DELIVERER FOR CONVEYING APPARATUS.

APPLICATION FILED MAY 5, 1906.

3 SHEETS—SHEET 1.

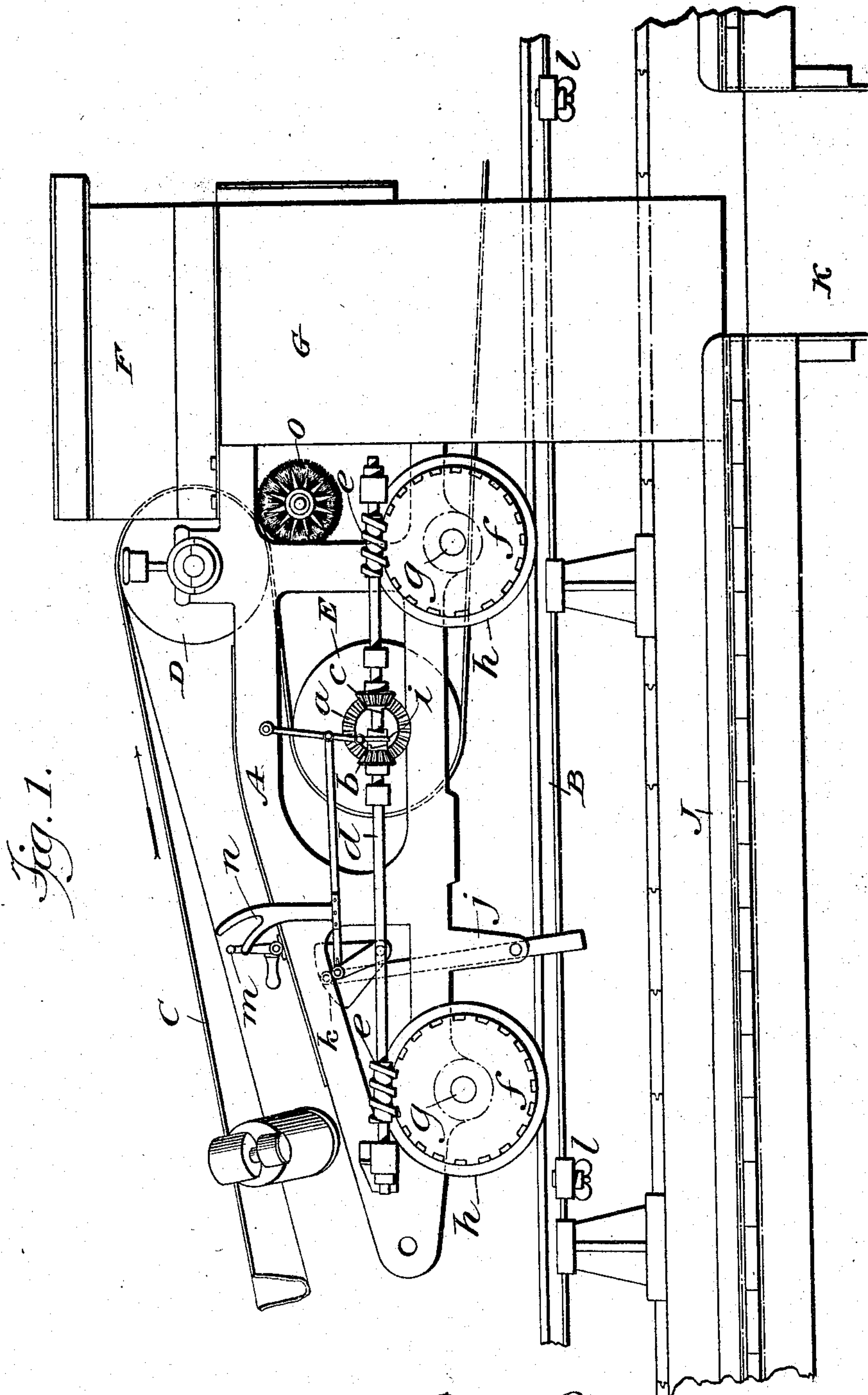


Fig. 1.

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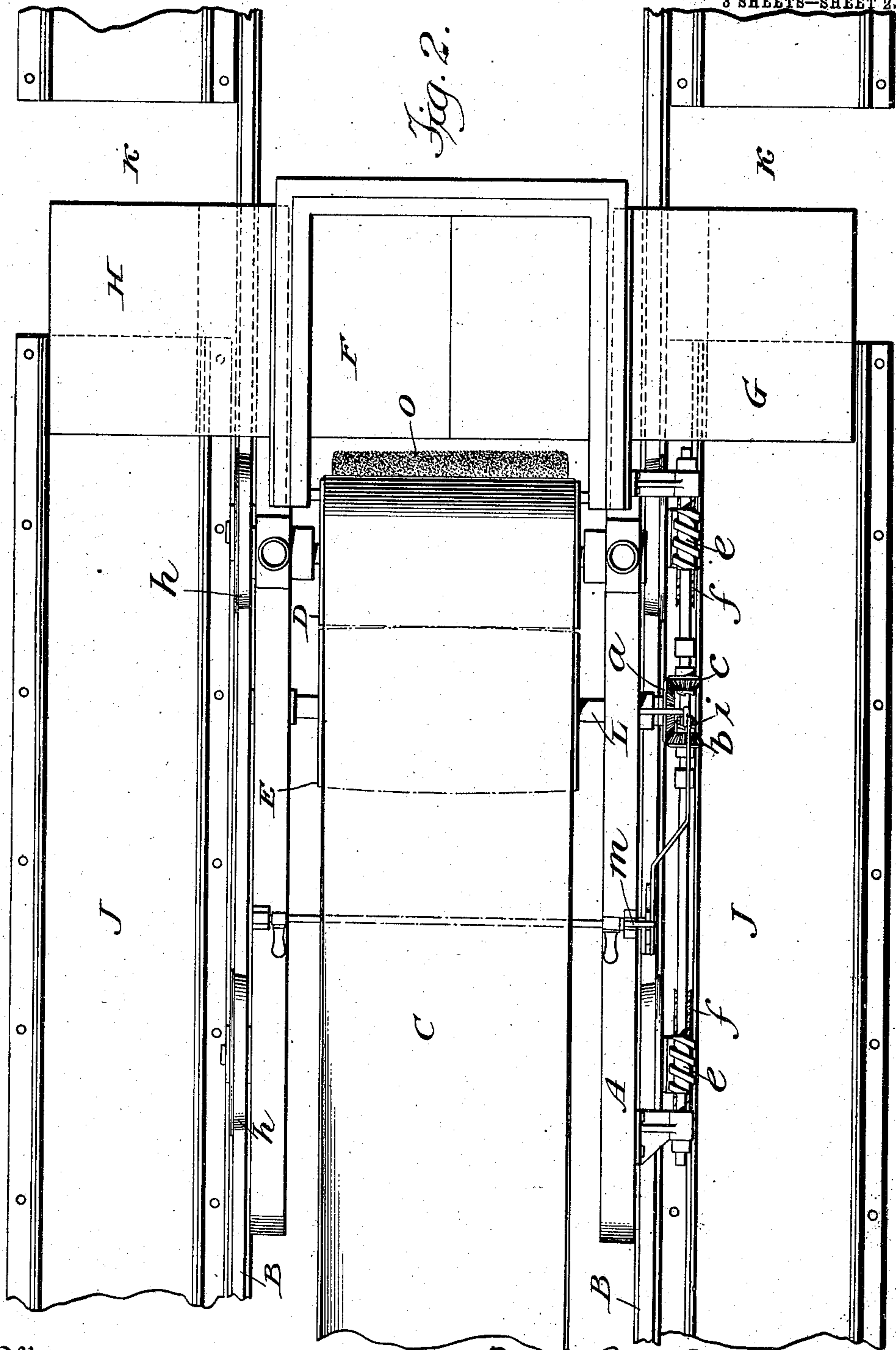
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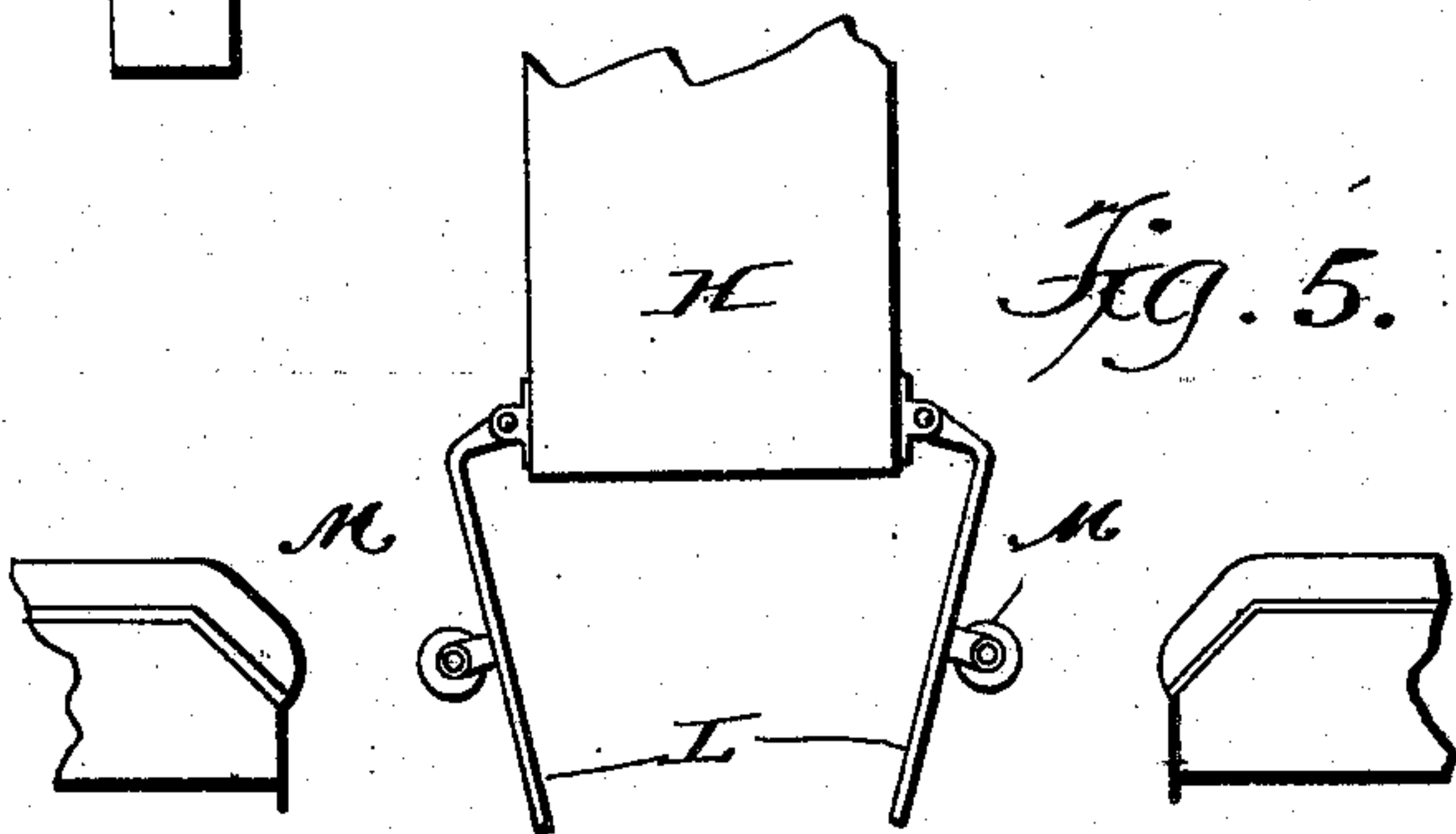
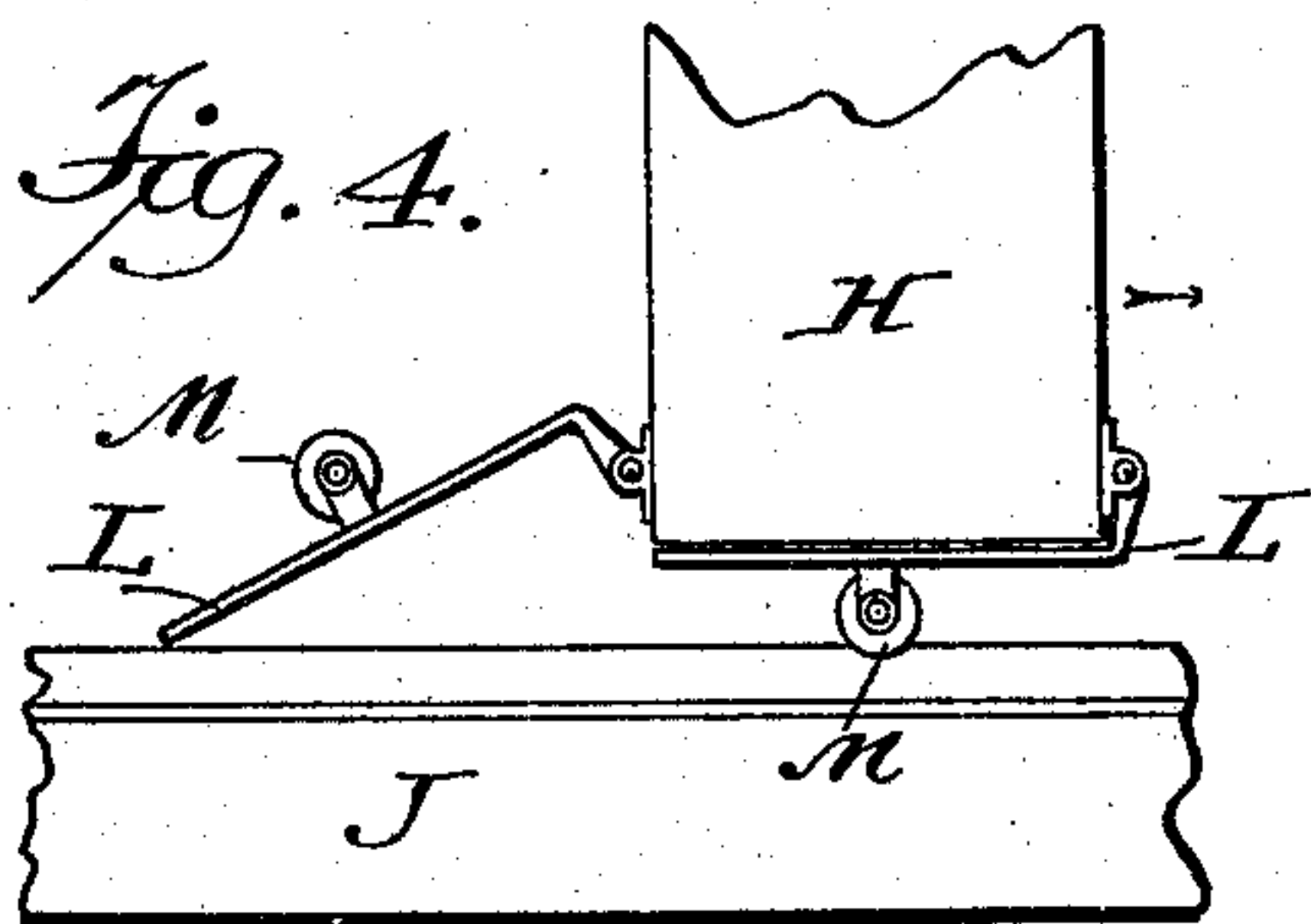
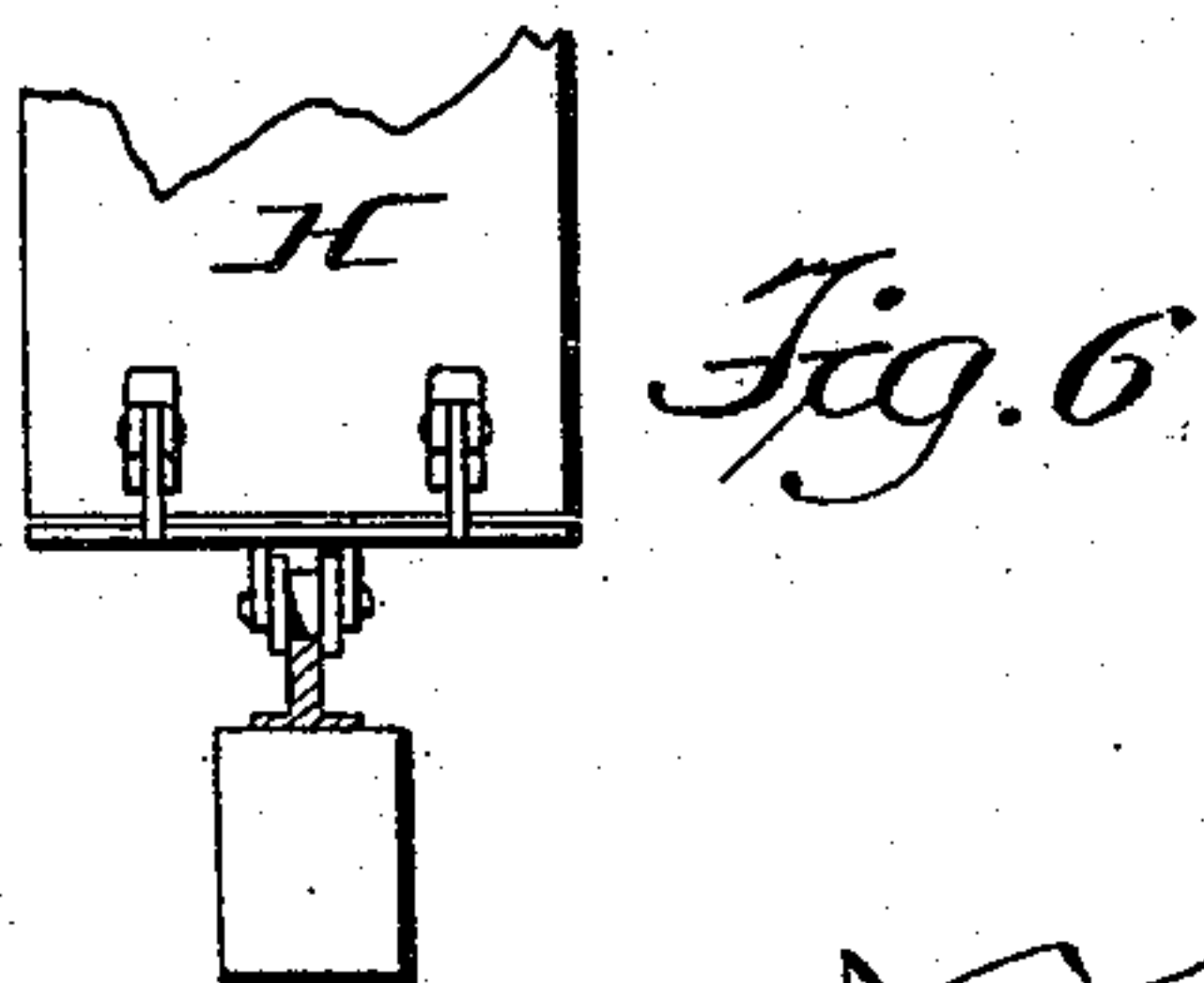
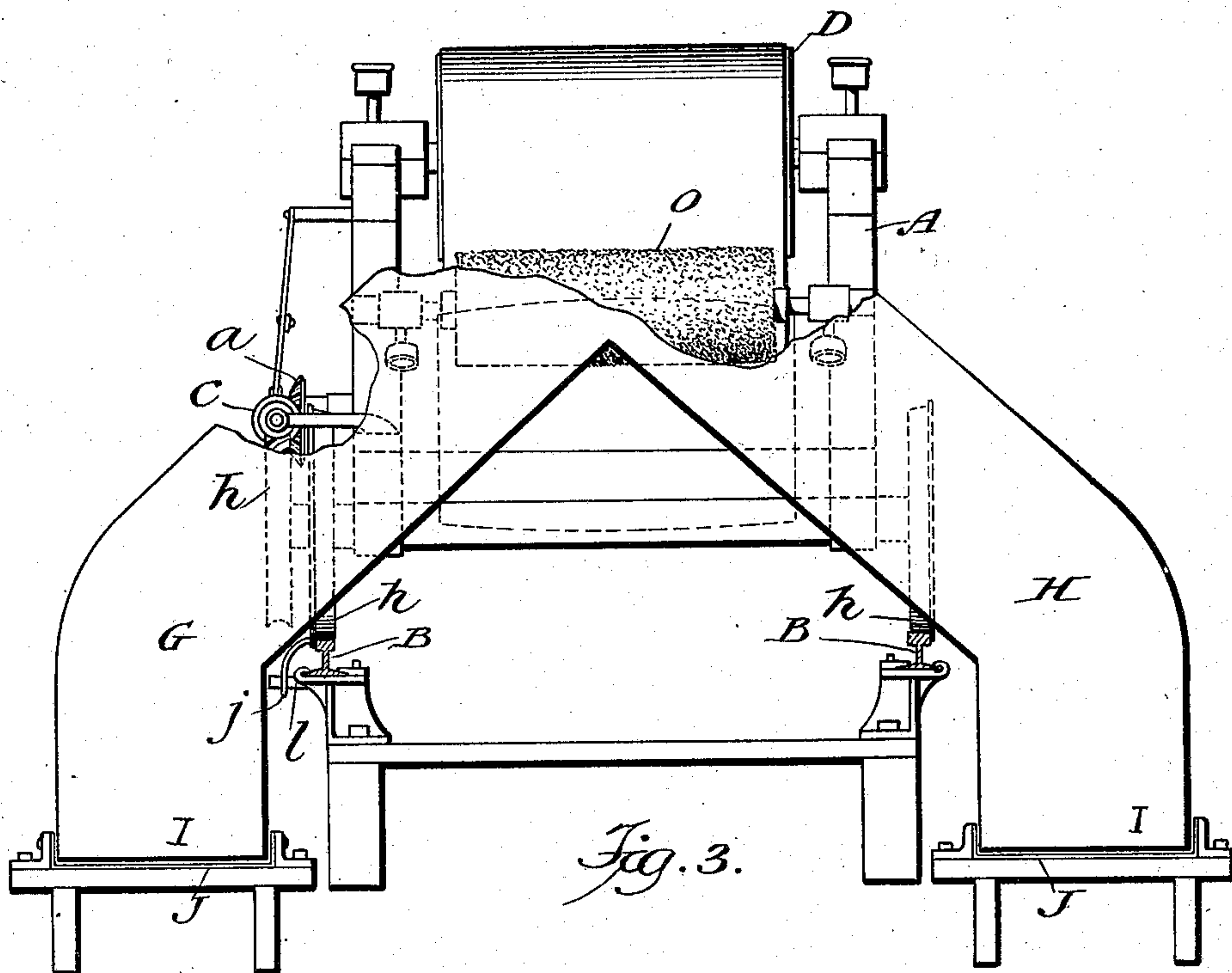
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

THOMAS ROBINS, JR., OF NEW YORK, N. Y., AND CLARENCE KEMBLE
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TRIPPER OR DELIVERER FOR CONVEYING APPARATUS.

No. 840,587.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed May 5, 1906. Serial No. 315,278.

To all whom it may concern:

Be it known that we, THOMAS ROBINS, JR., residing in New York city, county and State of New York, and CLARENCE KEMBLE BALDWIN, residing in Chicago, Cook county, Illinois, citizens of the United States, have invented a new and useful Improvement in Trippers or Deliverers for Conveying Apparatus, of which the following is a specification.

This invention relates to conveying apparatuses, but more particularly to the tripper or deliverer for such apparatus. Its objects are to improve upon the construction of trippers for conveyers, to secure greater efficiency thereof, and especially to provide a form of tripper which will permit of an intermittent discharge being secured therefrom without the necessity of intermittently stopping or lessening the amount of the material supplied to the tripper and without its being necessary to cause any of the material to pass from the tripper back upon the conveyer during the time when it is not desired for the tripper to discharge.

A further object of the invention is the provision of a tripper which will automatically discharge at certain predetermined points and will store and carry the material without discharging between such points, all this being done without stopping or varying the tripper's travel.

Heretofore, so far as we are aware, the only way in which it has been found possible to secure an intermittent discharge from a tripper was by the unsatisfactory makeshifts of stopping the conveyer or the supply of material carried thereby when moving the tripper between the points of discharge or of causing the material supplied to the tripper to discharge back upon the conveyer during the time when the tripper is being moved as above, and in any case the tripper must be kept stationary or must only move over the discharge-point while discharging. We believe, furthermore, that heretofore no form of storage-tripper or of automatic intermittent-discharge tripper has been devised.

Further objects of the invention will hereinafter appear; and to these ends the invention consists of apparatus for carrying out the above objects, which apparatus embodies the features of construction, combination of elements, and arrangement of parts having

the general mode 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 of apparatus embodying the invention. Fig. 2 is a top plan view of the same. Fig. 3 is an end view of the apparatus with the chute partly broken away. Figs. 4 and 5 are side elevations of a form of gate to be used on the tripper-chutes and the rail-support for the gate, and Fig. 6 is an end elevation of the same.

Similar letters refer to similar parts throughout the several views.

Referring to the drawings, A represents a tripper or deliverer which is arranged to travel on rails B and is supplied with coal, ore, or other material by the belt C, (only a portion of which is shown.) This belt passes over the idler-pulleys D and E and forms an ogee curve, like the letter S, over these pulleys. The material carried by the belt, which travels in the direction of the arrow, is discharged from the belt in line therewith as it passes over pulley D and falls into the mouth of the hopper F, which is rigidly supported and carried on the frame of the tripper A. Hopper F is shown as being provided with two discharge-chutes G and H, the bottoms I of which extend at the same angle laterally from the center line of the hopper, so as to clear the belt and the track at their respective sides, as shown, and they then extend vertically downward.

Slightly below the level of the track, outside the rails thereof and parallel thereto in both the horizontal and vertical planes, are the troughs J, one at either side of the track. These troughs are rectangular in cross-section and are so placed and dimensioned that the rectangular discharge end of each chute fits closely in its respective trough, but with enough clearness to permit the chute to slide easily in a longitudinal direction in the trough. At each point where the material is to be discharged from the tripper there is a break in the trough, as at K, and as the material in the hopper and chutes is not supported by the trough at these points it is discharged into the bins, hoppers, or other suitable receptacles beneath the breaks in the trough.

In Figs. 4, 5, and 6 another form of automatic discharging means is shown which may be used in place of the open-bottom

chute and trough, shown in the other figures and described above. The discharge end of each chute is provided with two angular flap gates L, which are hinged on the front and rear sides of the chute, respectively, and normally hang downward, so as to leave the end of the chute open, as shown in Fig. 5. Each of the gates L is provided with a double-flanged roller M, the bearings of which are secured to the outer sides of the gate in the fore-and-aft center line thereof. Beneath this center line of each chute and parallel with the tripper-track is the T-rail N, on which the roller M travels when the gate is closed, as shown in Fig. 4. At the points where the tripper is intended to discharge the rail is curved downward a short distance and is then cut off, so that the distance between the two bent ends of the rail at the discharge-point is considerably greater than the fore-and-aft diameter of the discharge end of the chute. When the chute is over the discharge-point, the two gates hang open, as in Fig. 5, and the material is discharged by gravity. As the tripper moves forward and the chute passes beyond the discharge-point the roller on the forward door takes on the curved end of the rail, and as it rolls up this curve the door is gradually closed, so that when the roller reaches the top of the curve and passes to the plane part of the rail the gate is completely closed. The rear gate meanwhile slides up the rail, and the two gates are then in the position shown in Fig. 4. When the tripper is moved in the opposite direction, the gates after each discharge are in a corresponding position, except that what was formerly the rear gate becomes the front one, and vice versa. The gates are preferably shaped and pivoted as shown in Figs. 4 and 5, so that as each one is closed the flap portion while moving angularly upward at the same time moves toward the opposite side of the chute, and the gate thus closes more easily against any of the material which may be delivered into the chute while the discharge-point is being passed.

A tripper has been described which is adapted to travel back and forth on the rails B and to discharge material into the storage-hopper F and chutes G and H, the discharge ends of the chute being normally closed by the troughs J, and suitable means are shown for automatically discharging the material at certain predetermined points, either while the tripper is stationary at those points or while it is moving over them. Although two discharge-chutes have been shown and means for causing both to discharge at the same point in the tripper's travel, it is obvious that a single chute or a multiplicity of chutes might be used and that the location of the points of discharge of the chute or chutes might be changed without departing from the spirit of our invention.

A further step in our invention is the application of the automatic-discharge storage-tripper described above to a form of tripper which is given a reciprocating travel by means actuated by the conveyer apparatus, so that the travel of the tripper back and forth on its tracks, its storing, and discharge are all rendered automatic. Many different ways will be found and many different kinds of mechanism will be devised for accomplishing the ends in view; but a suitable and sufficient mechanism has been shown which has been found to operate satisfactorily for carrying out the above objects. According to the construction shown in Figs. 1, 2, and 3 the power for imparting travel to the tripper is derived from the conveyer-belt C through the lower belt-pulley E, the bevel-gears *a*, *b*, and *c*, the shaft *d*, the worms *e*, the worm gear-wheels *f*, the axles *g*, and the drive-wheels *h*. Bevel-gear *a* is rigidly keyed on the shaft of pulley E and meshes with bevel-gears *b* and *c*, which are revolubly mounted on shaft *d*. Cast on each of the bevel-gears *b* and *c* is one-half of a jaw-clutch, while the other members of these clutches are in one piece *i* and are slidably mounted on shaft *d*. The worms *e* on shaft *d* mesh with the worm-wheels *f*, which are rigidly mounted on axles *g* of the drive-wheels *h*, these wheels being rigidly mounted on the axles *g*, which are revolubly supported in suitable bearings. As shown, the members *i* of the jaw-clutches are slid back and forth on shaft *d* by means of trip-lever *j*, which has a bell-crank and plain lever connection with the member *i*. The trip-lever mechanism is rendered more effective in operation by the weight *k*, which is pivoted on the same center about which the bell-crank lever is operated. The trip-lever *j* is pivoted on the frame of the tripper, so as to be adapted to be thrown in one direction or the other by being brought into contact with the stops *l*, and thus to bring one or the other of the clutch members *i* into contact with its respective member on the bevel-gears *b* or *c*, as the case may be. In this way the direction of travel of the tripper is automatically reversed whenever the trip-lever *j* strikes against one of the stops *l*, and thus the length of travel of the tripper may be varied as desired by changing the location of the stops on the track-rail. By throwing the stop-pin *m* over into engagement with the forked arm *n* the clutch member *i* is held in an intermediate position such that neither of the clutches on *i* is in engagement with its other member and the tripper is not actuated in either direction. At *o* is shown a suitable rotary brush for cleaning the belt as it passes over pulley D.

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

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

1. In a tripper or deliverer for conveyers, the combination with means for supplying material to the tripper of a storage-receptacle for said material, said receptacle forming a part of the tripper, substantially as described.

2. In a movable tripper or deliverer for conveyers, the combination with means for supplying material to the tripper of a storage-receptacle for said material, said receptacle being capable of movement with the tripper, substantially as described.

3. In a tripper or deliverer for conveyers, the combination with means for supplying material to the tripper and a storage-receptacle for said material, said receptacle forming a part of the tripper, of means for discharging the material from said receptacle, substantially as described.

4. In a tripper or deliverer for conveyers, the combination with a storage-receptacle for the material supplied to the tripper of means for automatically discharging said material therefrom at predetermined points, substantially as described.

5. In a tripper or deliverer for conveyers, the combination with a storage-receptacle for the material supplied to the tripper of

means for automatically discharging said material therefrom only at predetermined points, substantially as described.

6. In a tripper or deliverer for conveyers, the combination with a storage-receptacle for the material supplied to the tripper of means for automatically discharging said material therefrom at predetermined points while the tripper and storage-receptacle are in motion, substantially as described.

7. In a tripper or deliverer for conveyers, the combination with means for constantly supplying material to the tripper and a storage-receptacle for said material of means for automatically discharging said material from said receptacle only at predetermined points, substantially as described.

8. In an automatic reversible tripper or deliverer for conveyers, the combination with means for constantly supplying material to the tripper and a storage-receptacle for said material of means for automatically discharging said receptacle only at predetermined points.

In testimony whereof we have signed our names in the presence of two witnesses.

THOMAS ROBINS, JR.
CLARENCE KEMBLE BALDWIN.

Witnesses:

OTTO MUNK,
BAXTER MORTON.