

No. 758,875.

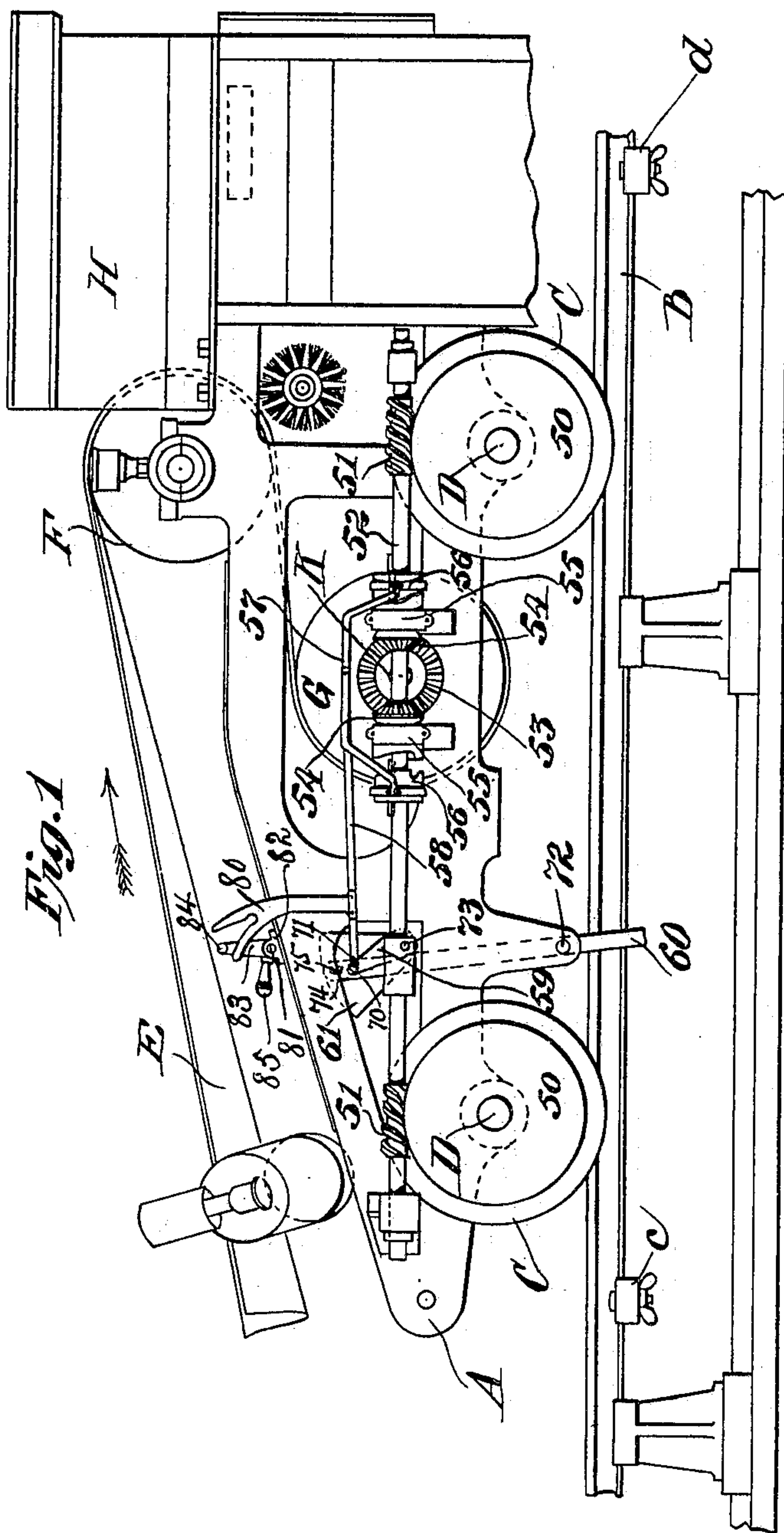
PATENTED MAY 3, 1904.

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

APPLICATION FILED JULY 25, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
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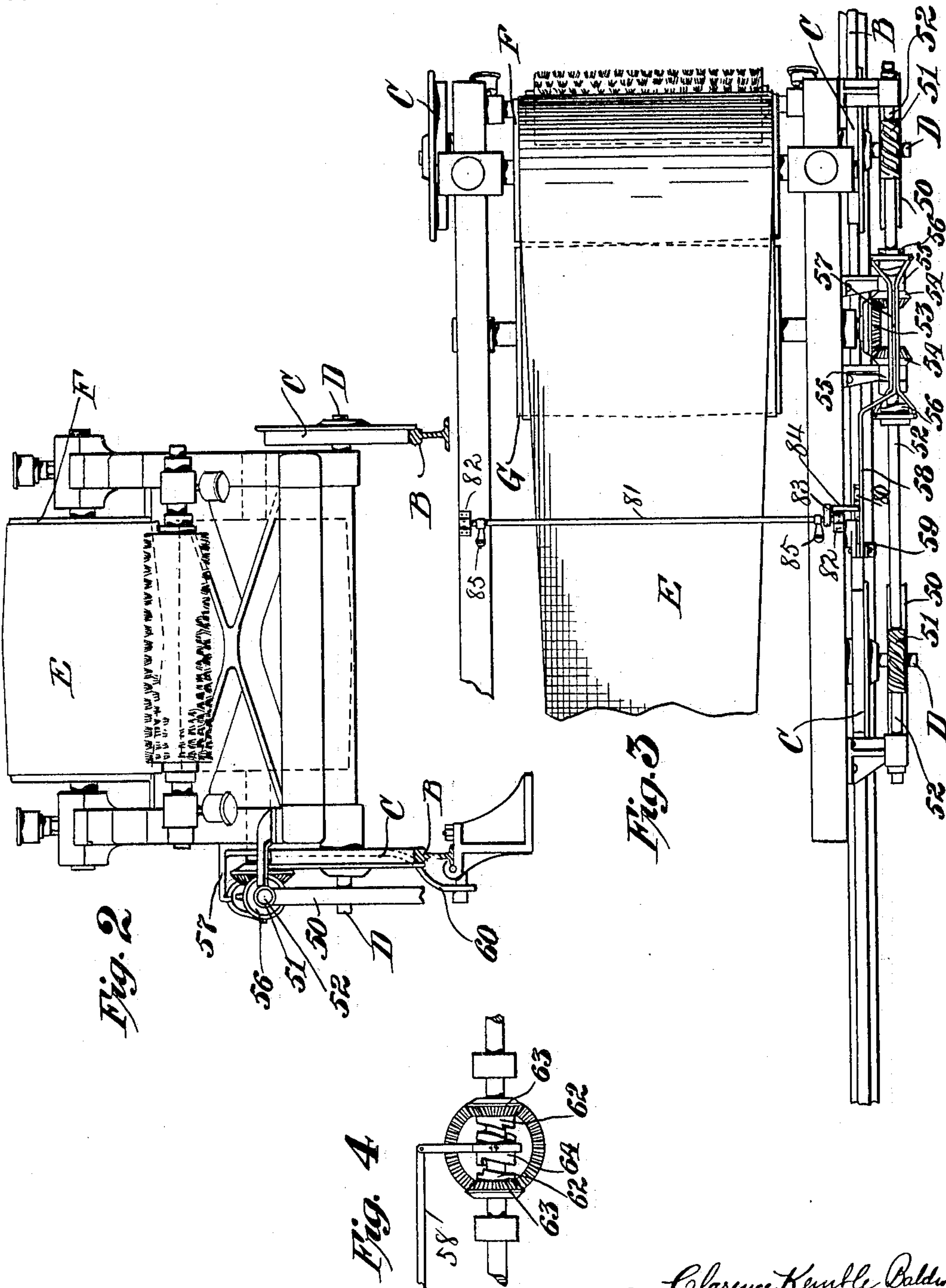
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UNITED STATES PATENT OFFICE.

FRANK E. TICKNOR AND CLARENCE KEMBLE BALDWIN, OF NEW YORK, N. Y., ASSIGNORS TO 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. 758,875, dated May 3, 1904.

Application filed July 25, 1903. Serial No. 167,029. (No model.)

To all whom it may concern:

Be it known that we, FRANK E. TICKNOR and CLARENCE KEMBLE BALDWIN, 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 trippers for conveying-belts, secure greater certainty and efficiency of operation, enable the tripper to be given a reciprocating travel by means actuated from a single pulley constantly rotating in a given direction, secure
15 greater traction, and afford a lock for the tripper, so that it cannot be pulled along by the belt.

Further objects of the invention will hereinafter appear; and to these ends the invention
25 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 of operation substantially as hereinafter fully
30 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 an end
35 elevation of the same with the hopper removed and the frame partly broken away. Fig. 3 is a plan view of the apparatus, partly broken away. Fig. 4 is a detail view of a modified form of the clutch mechanism.

Referring to the drawings, A represents a 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,
45 suitably journaled in the frame. The conveyer-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
50 the pulleys F and G, the material on the belt falling off as it passes around the pulley F and being delivered in the chute H, which catches the material and delivers it clear of the belt. A tripper has been described which
55 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 times. 60

According to this 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
65 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-rotating
70 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 different kinds of mechanism will be devised
75 for accomplishing the ends in view; but a suitable and efficient mechanism has been shown which has been found to operate satisfactorily for carrying out the above objects.

According to the construction shown the
80 power for imparting travel to the tripper is derived from the lower belt-pulley G, and in this instance the shaft K of said pulley is provided with a bevel-gear 53. Worm gear-wheels 50 are mounted upon each of the axles
85 D of the wheels C, and two worms 51 on a single shaft 52 mesh with the worm-wheels 50. As stated, the bevel-gear 53 is connected to the lower tripper-pulley G, being keyed to the shaft K of said pulley, and thereby ro-
90 tated in a constant direction. Reversed rotation is given to the worm-shaft 52 by means of two bevel-gears 54, loose upon the shaft and meshing with the gear 53. Cast on each bevel-gear 54 is one-half of a jaw-clutch, while
95 the other members 56 of the clutches slide on

keys on the shaft 52, and means are provided for shifting the clutch members 56 together. As shown, the members 56 are connected by a bar 57, to which is attached one end of a lever 58, the other end of which is attached to the bell-crank lever 59 by means of a pin 70 and slot 71. The reversing mechanism consists of the trip-lever 60, pivoted at 72 on the frame, and the weight 61, pivoted upon the same center 73, about which the bell-crank lever 59 is operated. A slot 74 in the upper end of the trip-lever 60 engages a pin 75 on the weight 61.

The reversing or trip lever 60, pivoted to the frame, is adapted to be thrown in one direction or the other by the stops *c* and *d*. The reversing-lever 60 is connected, as shown, to rock the weight 61 and bell-crank lever 59 to actuate the clutches. The operative connections between the driving mechanism and the reversing-lever 60 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 connection-slot 71 and a weight 61 for the arm, which weight acts automatically when displaced beyond its center of gravity. According to the arrangement described it will be seen that when one of the stops, *c*, is struck by the lower end of the lever 60 said lever may rock for a limited distance determined by the length of the slot 71 in the rod 58, while at the same time the weight 61 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 weight 61 and lever 60 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, so that the length of travel of the tripper may be varied as desired.

In Fig. 4 another equivalent form of clutch is shown, in which the outer clutch members 62 are provided with bevel-gears 63, meshing with the gear 53, while the central clutch member 64 is movable longitudinally of the shaft 52.

The advantages of this tripper are that by using worm-gears provision is afforded for driving both pairs of wheels C, thus giving additional traction. Furthermore, by the use of the worm and wheel in the driving a locking mechanism is provided, so that the tripper cannot be pulled along by the belt, for the worm-wheel cannot drive the worm.

In order to afford provision for centering the clutch mechanism so that the tripper will not be actuated in either direction, any suitable means may be provided, in this instance a forked arm 80 being connected to the rod

58, and an operating-rod 81 extends transversely of the frame of the tripper and is suitably pivoted thereon in the brackets 82. The rod 81 is provided with an arm 83, having a stop-pin 84 thereon, and handles 85 are provided for rotating the rod 81. According to this construction the stop-pin 84 coöperates with the forked end of the arm 80. With the parts in the position shown in Fig. 1 one of the slidable clutch members is in engagement with its coöperating clutch member. When the stop-pin 84 is moved downwardly into the forked end of the arm 80, the clutch member 56 now shown in engagement with its coöperating member is slid along the shaft 52 out of engagement, and the rod 58 is maintained in such a position that neither clutch member 56 is in operative position, and the tripper remains stationary.

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

Therefore, without limiting the 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 the frame and wheels, of a continuous traveling conveyer-belt and a plurality of pulleys for the belt, a worm-shaft connected to drive the wheels of the tripper, and clutch mechanism interposed between one of the idler-pulleys and said shaft, for driving said shaft in either direction, for substantially the purposes set forth.

2. In a tripper or deliverer for conveyers, the combination with the frame and wheels, of a continuous traveling conveyer-belt and a plurality of pulleys for the belt, a worm-shaft connected to drive the wheels of the tripper, clutch mechanism interposed between one of the idler-pulleys and said shaft, for driving said shaft in either direction, and means for automatically operating said clutch mechanism, to reverse the direction of rotation of the worm-shaft, for substantially the purposes set forth.

3. 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 which the material is delivered from the belt, one or more driving-wheels, worm-gearing for actuating said wheel or wheels, and clutch mechanism connected to impart power to said gearing from one of the belt-pulleys, for driving said wheel or wheels in either direction, for substantially the purposes 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, one or more driving-wheels, worm-wheels connected to said driving

wheels, a shaft and worm-gears thereon mesh-
ing with said worm-wheels, and clutch mech-
anism interposed between one of the belt-pul-
leys and the worm-shaft, for operating said
5 shaft in both directions, for substantially the
purposes set forth.

In testimony whereof we have signed this

specification in the presence of two subscrib-
ing witnesses.

FRANK E. TICKNOR.

CLARENCE KEMBLE BALDWIN.

Witnesses:

F. T. WAYNE,

ROSCOE L. PETERSON.