

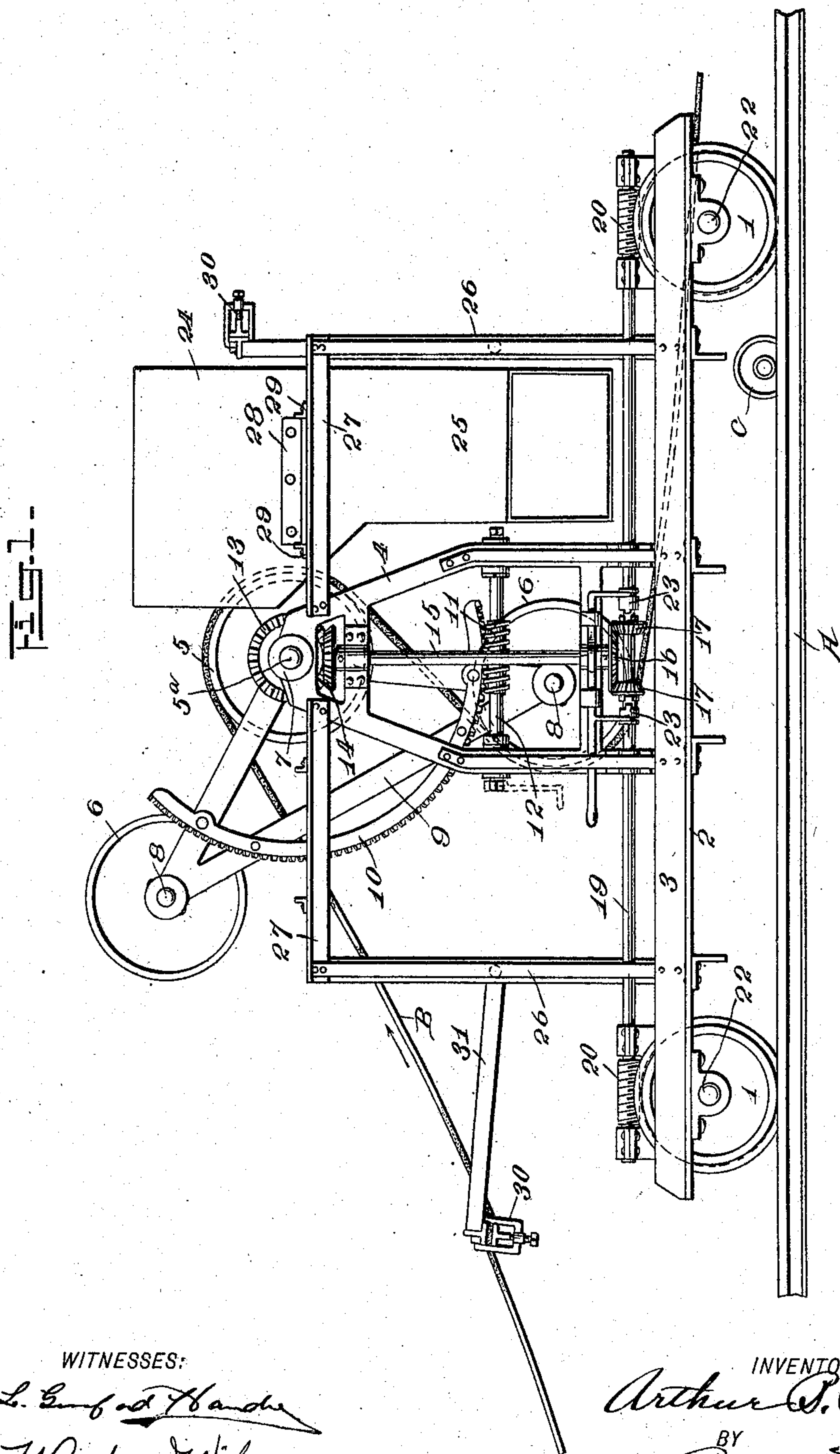
No. 840,585.

PATENTED JAN. 8, 1907.

A. B. PROAL, JR.
TRIPPER OR DELIVERER FOR BELT CONVEYERS.

APPLICATION FILED MAY 5, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

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2 SHEETS—SHEET 2.

Fig-2.

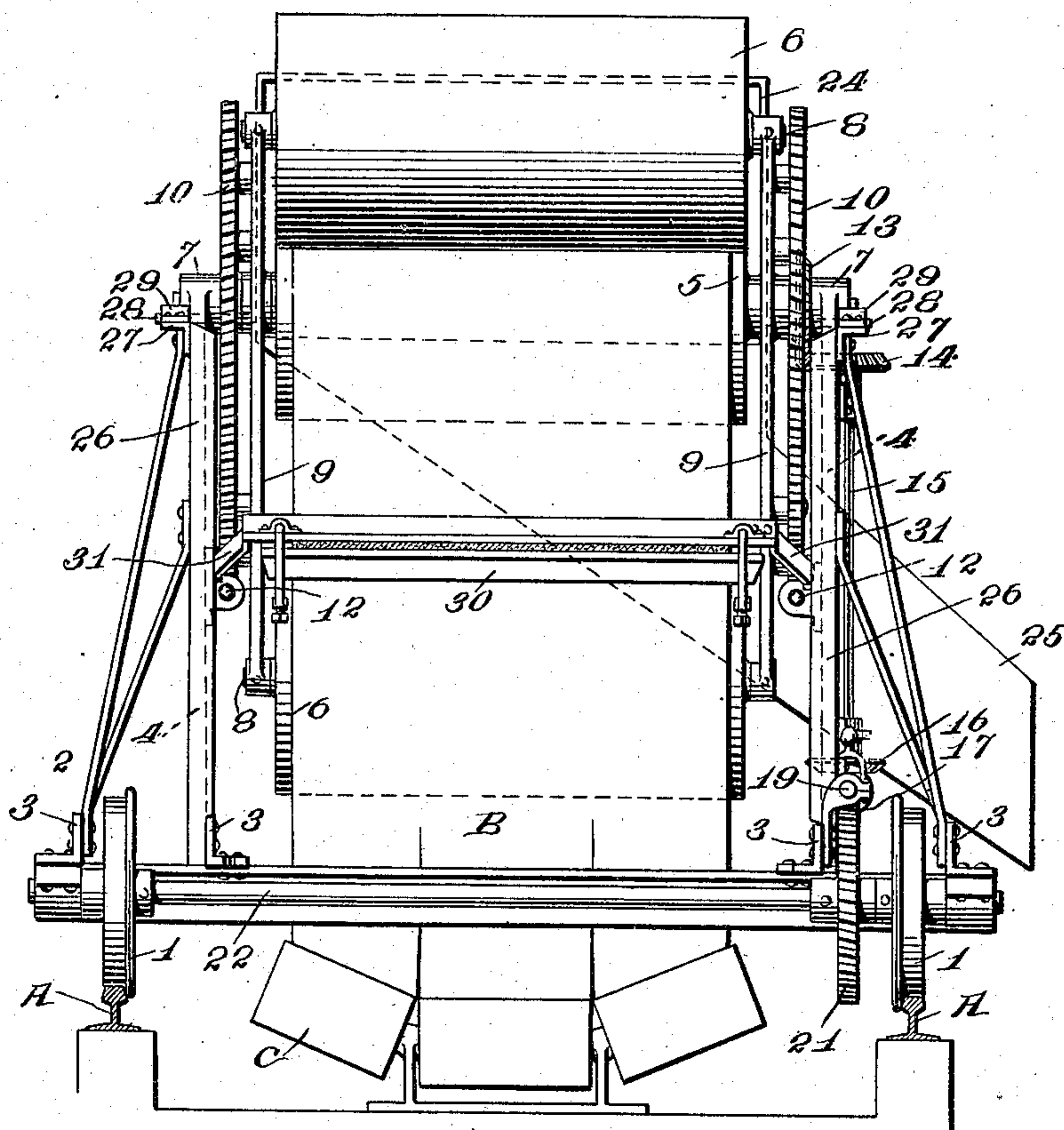
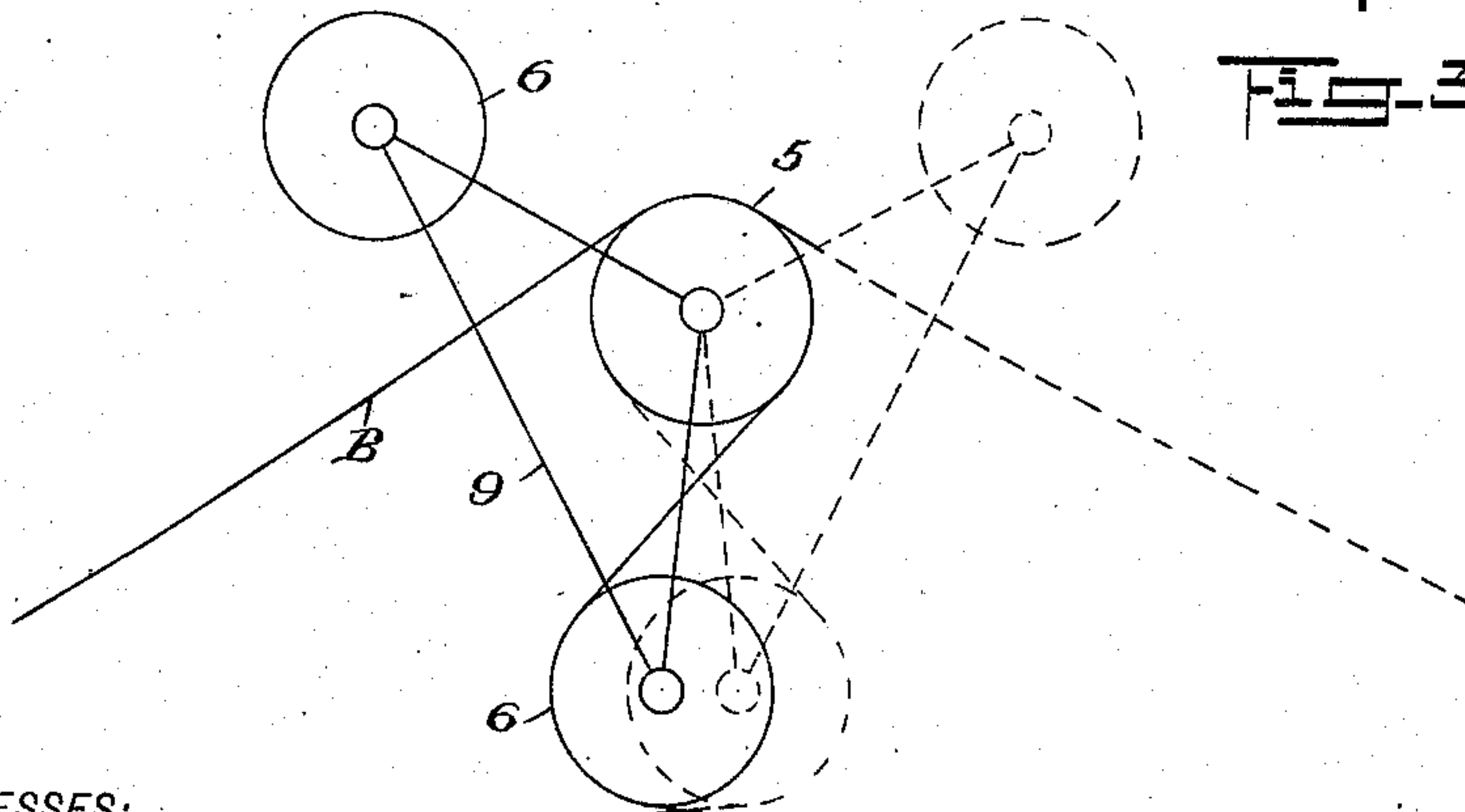


Fig-3.



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TRIPPER OR DELIVERER FOR BELT CONVEYERS.

No. 840,585.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed May 5, 1906. Serial No. 315,338.

To all whom it may concern:

Be it known that I, ARTHUR B. PROAL, Jr., a citizen of the United States, residing in New York city, in the county and State of New York, have invented new and useful Improvements in Trippers or Deliverers for Belt Conveyers, of which the following is a specification.

This invention relates to trippers or deliverers for belt conveyers, and more especially to a tripper or deliverer adapted for use when the belt is traveling in either direction.

The object of the invention is to provide a tripper of the character specified in which the curve of the belt necessary to effect the discharge of the material therefrom can be reversed by a comparatively small movement of bend-pulleys and in which one of the bend-pulleys turns about a fixed axis.

One embodiment of my invention is illustrated in the accompanying drawings, forming a part of this specification, and is hereinafter described in detail; but it is to be understood that the structure described and shown may be varied as to the proportions and mode of assembling the elements without departing from the spirit of the invention or exceeding the scope thereof, which is hereinafter defined in the appended claims.

In the drawings, Figure 1 is a view in side elevation of one embodiment of the invention. Fig. 2 is a view in end elevation of the tripper shown in Fig. 1, parts of the conveyer structure being shown in section. Fig. 3 is a diagram showing in solid lines one position of the bend-pulleys and showing in dotted lines the position into which the bend-pulleys are shifted to adapt the tripper for operation after the direction of movement of the belt is reversed.

Referring to the drawings by the reference characters, A designates the track-rails upon which the tripper moves, B the conveyer-belt, and C the troughing-rollers over which the belt travels, these being all of any suitable construction. The tripper is mounted on wheels 1, as usual, and is provided with a supporting-frame 2, carried by the wheels 1 and constructed in the present instance of angle-bars. The frame 2 is preferably made with double side bars 3 to afford points of attachment for the standards and braces for the superstructure. Midway between the ends of the frame 2 are arranged a pair of heavy supporting-arches 4, upon which the bend-pul-

leys are three in number and comprise the upper bend-pulley 5 and two lower bend-pulleys 6, but one of the lower bend-pulleys being in operation at any time. The upper bend-pulley 5 is rigidly mounted on a shaft 5^a, turning in bearings 7, formed in the tops of the supporting-arches 4, and the lower bend-pulleys 6 turn on shafts 8, turning in bearings formed at the base-angles of a pair of triangular frames 9, which are pivoted on the shaft 5^a, to which the upper bend-pulley is secured. When the belt is traveling in the direction indicated by the arrow in Fig. 1, the bend-pulleys should be arranged in the position shown in that figure, and in order to bring the bend-pulleys into position and hold them after being brought into position a pair of segmental worm-racks 10 are rigidly secured to the frames 9 and are in mesh with worms 11, mounted on shafts 12, which turn in bearings provided on the supporting-arches 4. The shafts 12 are of course adapted at their ends to receive cranks, so that power may be conveniently applied to the shaft to turn the worms and shift the frames 9, in which the lower bend-pulleys are carried.

Travel is imparted to the tripper from the belt by means of power-transmitting connections arranged between the upper bend-pulley 5 and the traction-wheels 1. Various power-transmitting devices may be employed, but that illustrated is especially suitable on account of its simplicity. A bevel-pinion 13 is rigidly connected with the upper bend-pulley 5, and motion is imparted from this bevel-pinion to a second bevel-pinion 14 on the upper end of a vertical shaft 15, turning in bearings provided in one of the supporting-arches 4. At the lower end of the shaft 15 a bevel-pinion 16 engages with two oppositely-arranged pinions 17, which are loose upon a shaft 19, extending longitudinally of the tripper-frame and employed to transmit motion through worms 20 and intermediate worm-gears 21 to the axles 22 of the traction-wheels. To connect the bevel-pinions 17 with the shaft 19, a pair of clutches 23 are provided, the clutches being so arranged that only one can be in engagement at any time, and both may be disengaged simultaneously, if desired.

Material is discharged from the belt B into a hopper 24, having a discharge-chute 25 and removably supported upon the superstructure of the tripper. This superstructure consists of uprights 26, arranged near either

end of the tripper-frame, and top pieces 27, arranged between the uprights 26 and the supporting-arches 4. Upon the top pieces 27 the supporting-lugs 28 of the hopper rest, being kept in position by lugs 29, carried by the pieces 27. When the belt travels in the direction indicated by the arrow, the hopper 24 is in the position shown in Fig. 1, and when the direction of travel of the belt is reversed the hopper is supported at the other side of the upper bend-pulley.

Belt-clamps 30, carried at the free ends of pivoted arms 31, are provided for engagement with the belt to prevent the entire belt from becoming slack when the bend-pulleys are shifted preparatory to the reversal of the travel of the belt.

From the foregoing description and the accompanying drawings it will be observed that the adjustment of the tripper to adapt it for use with the belt after its direction of movement has been reversed is very simple. The belt-clamps 30 are first brought into engagement with the belt, as shown at the left side of Fig. 1, the receiving-hopper is removed from the superstructure of the tripper, and the clutches 23 are disengaged. The worm-shafts 12 are then turned, by means of cranks, until the frames 9 move from the position shown in solid lines in Fig. 3 to the position indicated in dotted lines, thus throwing the lower bend-pulley previously in operation out of engagement with the belt and bringing the bend-pulley 6, which had been previously idle, into operation. The angle through which the frames 9 are swung is, as will be observed, slightly over one hundred and twenty degrees instead of over three hundred and sixty degrees, as in other trippers of the type to which this invention relates.

It will be obvious that only one worm-rack 10 and one worm 11 are required to effect the shifting of the bend-pulleys above described; but two racks and two engaging worms are shown as being desirable in order to prevent excessive strains upon the bend-pulleys and the triangular frames upon which they are carried.

It will be noted that the power for imparting movement to the tripper is supplied from the belt and is transmitted to the traction-

wheels from the upper bend-pulley, which is constantly in driving connection with the loose bevel-pinions on the shaft 19, but which are not always in driving connection with that shaft. As the upper bend-pulley never changes its position, the amount of slack produced in the belt when the lower bend-pulley is shifted is less than in other trippers of this type, and less time is required to effect the shifting of the bend-pulleys preparatory to a reversal of the travel of the belt.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a tripper or deliverer for belt conveyers of a fixed upper bend-pulley and two shiftable lower bend-pulleys, only one of which is adapted to operate at one time.

2. The combination in a tripper or deliverer for belt conveyers of one bend-pulley turning about a fixed axis and two other bend-pulleys turning about shiftable axes and so connected that one only of the latter bend-pulleys is adapted to operate at one time.

3. The combination in a tripper or deliverer for belt conveyers of a suitable supporting structure, a bend-pulley mounted on said supporting structure and turning about a fixed axis, a rocking superstructure pivoted to swing about the axis of said bend-pulley, and a pair of shiftable bend-pulleys carried by said rocking framework and adapted to operate one at a time only.

4. The combination in a tripper or deliverer for belt conveyers of a suitable supporting structure, a bend-pulley carried by said supporting structure and turning about a fixed axis, a pair of triangular frames pivoted to swing about said fixed axis, and a pair of bend-pulleys having their supporting-shafts mounted in the base-angles of said triangular frames.

In testimony whereof I have signed my name in the presence of two witnesses.

ARTHUR B. PROAL, JR.

Witnesses:

OTTO MUNK.

BAXTER MORTON.