

No. 847,309.

PATENTED MAR. 19, 1907.

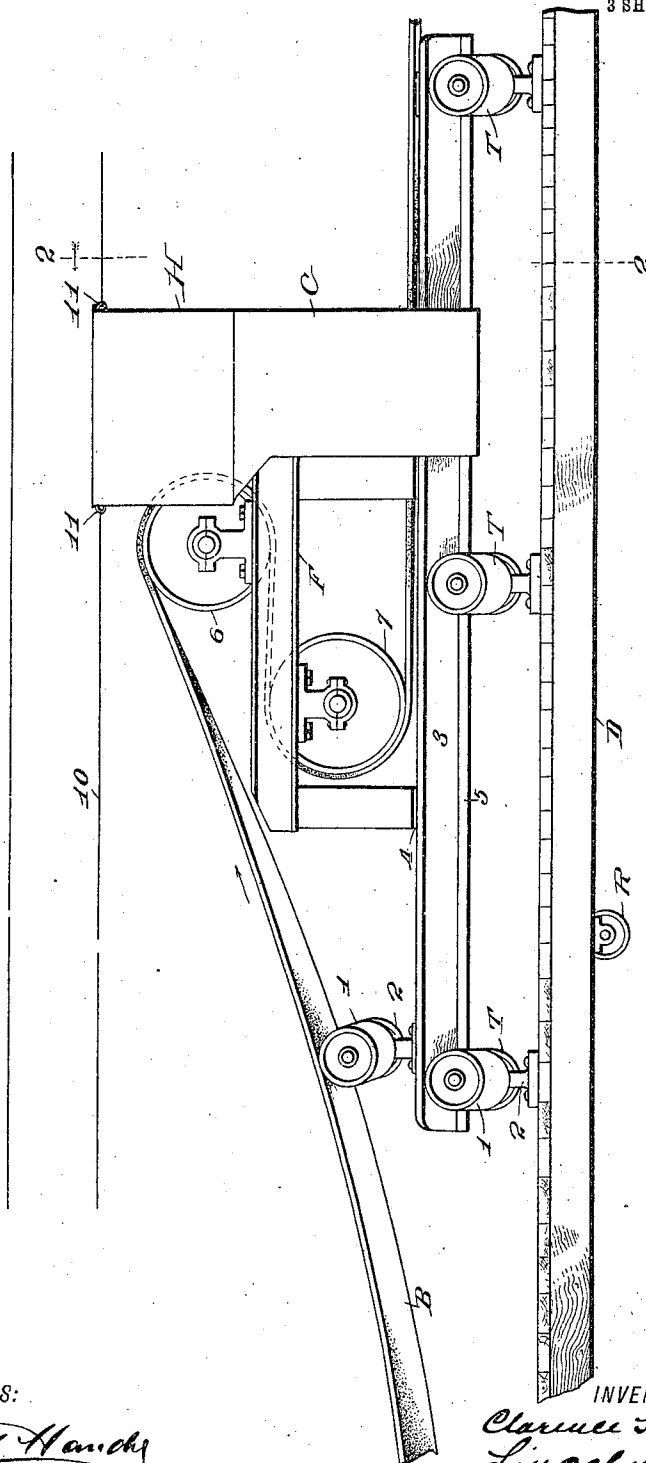
C. K. BALDWIN & L. MOSS.

TRIPPER OR DELIVERER FOR CONVEYERS.

APPLICATION FILED MAY 16, 1905.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

FIG. 2.

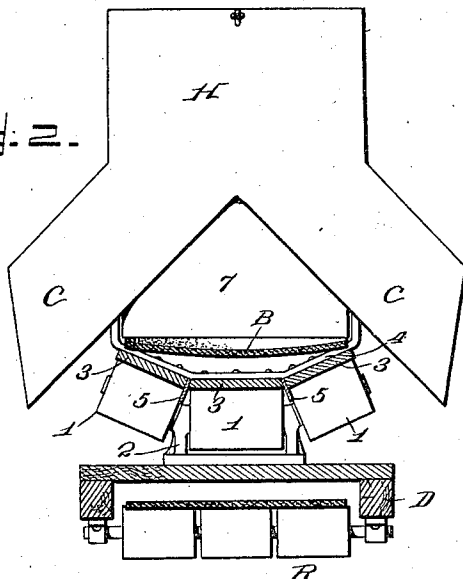
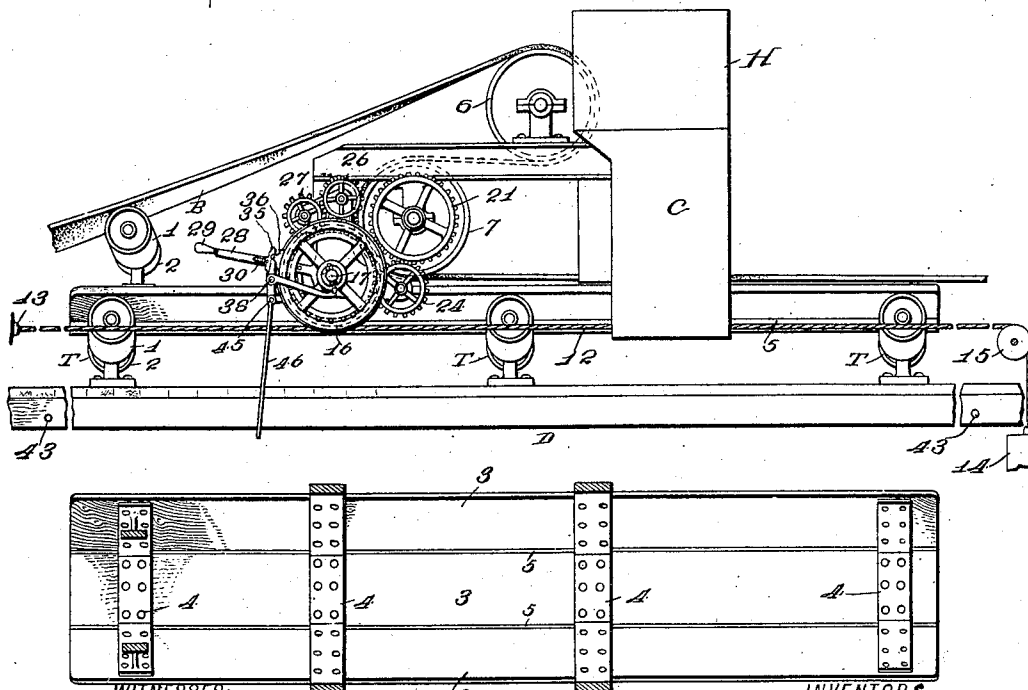


FIG. 4.



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FIG. 3.

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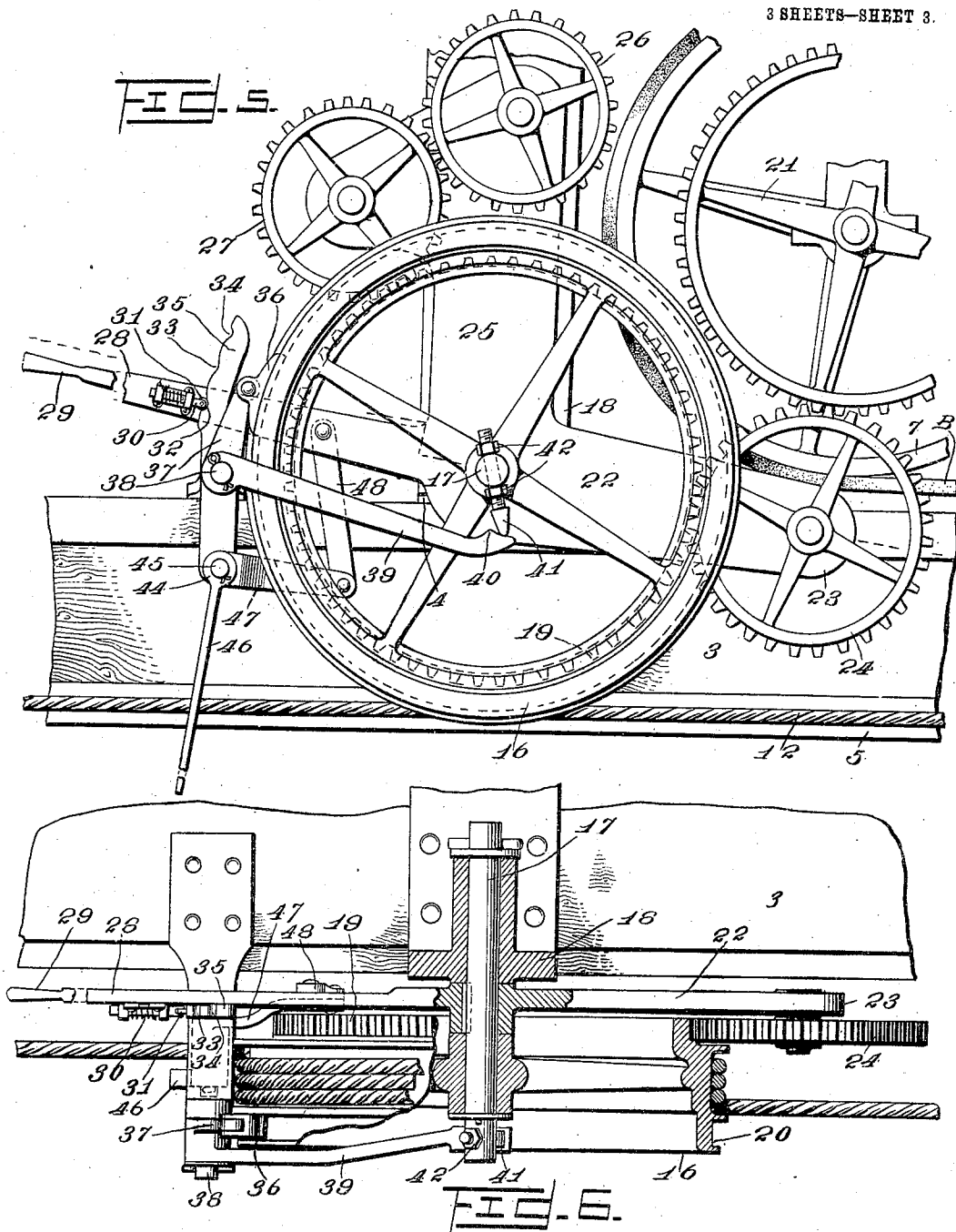
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3 SHEETS—SHEET 3.



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TRIPPER OR DELIVERER FOR CONVEYERS.

No. 847,309.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed May 16, 1905. Serial No. 260,653.

To all whom it may concern:

Be it known that we, CLARENCE KEMBLE BALDWIN and LINCOLN MOSS, both citizens of the United States, and residents of Manhattan, in the city, county, and State of New York, have invented new and useful Improvements in Trippers or Deliverers for Conveyers, of which the following is a specification.

This invention relates to trippers or deliverers for conveyers, and more particularly to trippers or deliverers for belt conveyers, the principal object of the invention being to provide a traveling tripper or deliverer of such construction that the ordinary track-rails and supporting-wheels which are commonly required to provide for the travel of the tripper or deliverer may be dispensed with.

A further object of the invention is to provide a tripper or deliverer for belt conveyers which may rest directly upon the supporting-idlers provided for the conveyer-belt and be caused to travel to and fro upon these idlers.

Still another object of the invention is to provide the tripper or deliverer with an improved mechanism by means of which movement in either direction may be imparted thereto from the conveyer-belt without changing the direction of travel of the belt and without making use of traction-wheels engaging a track or equivalent structure.

The invention also contemplates the production of a novel tripper or deliverer for belt conveyers of very simple and inexpensive design which is adapted for thoroughly satisfactory and efficient operation.

With these objects in view and others, which will hereinafter appear, the invention comprises certain novel features of construction, combination, and arrangement of parts which will be hereinafter described, reference being had to the accompanying drawings, in which corresponding parts are designated by similar characters of reference throughout several views. It is, however, to be understood that changes may be made in the apparatus without departing from the spirit of the invention or exceeding the scope thereof, which is clearly defined in the appended claims.

A tripper or deliverer constructed according to the present invention comprises an elongated or extended base of sufficient

length to extend over and rest at the same time upon a plurality of spaced supporting members, a framework for the support of two or more bend-pulleys or other suitable devices for causing the belt to discharge its load, and a hopper or its equivalent to receive the material discharged from the conveyer-belt. The invention also comprises means for retaining the tripper or deliverer in proper alinement with respect to the supports upon which it rests and suitable mechanism for imparting movement to the tripper or deliverer in the direction of its length.

In the drawings, Figure 1 is a view in side elevation of a tripper constructed according to this invention and showing the arrangement of the supporting-idlers upon which the tripper travels, the direction of travel of the conveyer-belt, and a cable extending above the tripper for imparting movement thereto. Fig. 2 is a transverse sectional view upon the plane 2 2 of Fig. 1 looking in the direction indicated. Fig. 3 is a top plan view of the base of the tripper, the superstructure being removed. Fig. 4 is a view in side elevation of a tripper of the character shown in the preceding figures, but provided with a different type of mechanism for operating the tripper. Fig. 5 is a fragmentary view, in side elevation, on an enlarged scale, of the tripper-operating mechanism shown in Fig. 4. Fig. 6 is a fragmentary view, partly in plan and partly in horizontal section, of the tripper-operating mechanism, the view being on the same scale as Fig. 5.

Referring to the drawings by the reference characters marked thereon, D designates the decking of a belt conveyer which is constructed as usual and bears on its upper surface a plurality of suitably-spaced troughing-idlers T. Beneath the decking and between the side pieces are arranged return-idlers R of standard construction. A conveyer-belt B is arranged for travel over the troughing and return idlers in the usual manner, the belt-driving devices being omitted, as they form no part of the present invention. Each of the troughing-idlers T consists of a plurality of pulleys or rollers 1, each idler having preferably three such pulleys or rollers arranged in the same vertical plane, the middle pulley or roller turning on a horizontal axis and the side pulleys or rollers being supported upon inclined axes, as shown. The

pulleys or rollers 1 may be carried by supporting-brackets of any suitable construction, such as 2; but in all cases a small space is left between the adjacent ends of the pulleys or rollers, for reasons that will hereinafter appear.

The base of the tripper comprises a plurality of longitudinal members 3, of planking or the like, and suitable cross-pieces 4, by which the longitudinal pieces 3 are connected. The number of longitudinal pieces 3 corresponds, preferably, to the number of pulleys or rollers 1 of each driving-idler, three such pieces being shown in the construction illustrated and the several pieces being arranged to correspond to the surfaces of the pulleys or rollers upon which they are designed to rest. In order to keep the base of the tripper in proper alinement relative to the supporting-idlers, guide ribs or flanges 5 are provided which extend downward from the under surface of the base and lie in the spaces left between the adjacent ends of the pulleys or rollers. These ribs or flanges 5 may be made of strips of sheet-iron or the like and are preferably perpendicular to the axes of the inclined side pulleys or rollers 1, as best shown in Fig. 2.

The framework F of the tripper may be of any suitable construction, as may be the hopper H, which is mounted on the framework and is provided with one or more lateral discharge-chutes C. In the form of tripper illustrated the discharge of the load upon the conveyer-belt is effected by means of two bend-pulleys 6 and 7, respectively, which are carried by shafts journaled in suitable bearings upon the framework of the tripper. The upper pulley 6 is arranged somewhat in advance of the lower pulley 7, so that the belt B in passing around the two bend-pulleys describes an S-shaped or ogee curve, thus causing the material carried by the belt to pass into the hopper H as the belt travels around the upper bend-pulley.

The means for operating the tripper may be simply a cable 10, as indicated in Fig. 1, the cable having its ends attached to the hopper H at points 11 near the top and passing around suitable guide-sheaves and driving devices (not shown) near the ends of the conveyer structure. If, however, it is desired to derive the power for operating the tripper from the belt, the mechanism illustrated in Figs. 4, 5, and 6 may be employed. In this mechanism a cable 12 is employed, which is approximately fixed in position and is passed one or more times around a drum carried by the tripper and driven by means of the belt. The cable 12 is preferably fixed to a suitable anchor 13 at one end and at the other end is provided with a counterweight 14 or tension-spring. If the counterweight 14 is employed, the cable passes over a guide-sheave 15. The cable 12 is preferably

passed two or three times around a drum 16, which is rotatably mounted upon a stub-shaft 17, journaled in a bracket 18, provided on the tripper-frame. The drum 16 is preferably provided with external cogs 19 near the margin adjacent to the tripper-frame, and near the other margin the drum is provided with a smooth surface 20 for the engagement of a brake.

In order to impart movement to the drum 16 in either direction, a gear-wheel 21 is rigidly connected with the shaft of the lower bend-pulley 7, and suitable intermediate gears are provided for transmitting motion from the gear-wheel 21 to the drum through the external cogs 19. These intermediate gears are carried by a rocker 22, which is keyed to the stub-shaft 17 and is preferably arranged between the drum 20 and the bracket 18. The rocker 22 presents an approximately horizontal arm 23, at the end of which is mounted a single intermediate gear or pinion 24, which is always in mesh with the cogs 19 of the drum and is adapted to engage also with the gear-wheel 21. The rocker 22 also has a substantially vertical arm 25, bearing two intermeshing pinions 26 and 27, the former being adapted to mesh with the gear-wheel 21 and the latter being always in mesh with the cogs 19 on the drum.

As shown in Figs. 4 and 5, the pinion 24 is in engagement with the gear 21, and the tripper will be caused to travel in the direction opposite to the movement of the belt as long as the pinion 24 remains in engagement with the gear-wheel. To shift the rocker 22 and throw the pinions 24 and 26 into and out of engagement with the gear 21, a lever-arm 28 is provided on the rocker, which is preferably provided at its free end with a handle portion 29, and this arm 28 is shown as provided with a spring-pressed latch-bolt 30, bearing a roller 31 at its operative end for engagement with a series of rounded notches 32, 33, and 34, formed in a stationary rack 35 upon the tripper-frame. When the roller 31, carried by the latch-bolt 30, engages the notch 32, as shown in Fig. 5, the pinion 24 will be held in engagement with the gear-wheel 21. When the roller 31 is in the notch 34 at the opposite end of the rack 35, the pinion 26 will mesh with the gear-wheel 21, and when the roller 31 lies in the intermediate notch 33 the gear-wheel 21 will be out of mesh with both pinions 24 and 26.

The shifting of the rocker 22 may be accomplished by hand or by automatic devices which are shown in connection with the rocker in Figs. 3, 5, and 6. When the rocker is shifted by hand, it is done by simply grasping the handle 29 at the end of the arm 28 and swinging the arm in the direction desired, and this method of shifting the rocker 22 is employed when it is desired to throw both pinions 24 and 26 out of engagement

with the gear-wheel 21 and hold the tripper stationary. The tripper is held stationary when the pinions 24 and 26 are out of engagement with the gear-wheel 21 by means of a brake having a brake-shoe 36, which contacts with the braking-surface 20 of the drum. The shoe 36 is pivotally attached to the arm 37 of a bell-crank lever fulcrumed on a pin or stud 38, which projects laterally from the base of the rack 35. The other arm 39 of the bell-crank extends beneath the stub-shaft 17, upon which the drum 16 is mounted, and it is provided with a cam 40 at its free end, over which an adjustable finger 41 moves. The finger 41 is rigidly attached to the stub-shaft 17, so that the movement of the rocker 22 causes a corresponding movement of the finger 41. The stub-shaft is preferably pierced to permit the finger 41 to extend through it, and the portion of the finger which extends through the stub-shaft is preferably threaded, as shown, and two adjusting-nuts 42 are provided for adjusting the finger and securing it in adjusted position. As will be seen by close inspection of Fig. 5, when the pinions 24 and 26 are out of engagement with the gear-wheel 21 and the roller 31 of the latch-bolt 30 engages the notch 33 the end of the finger 41 will engage the highest part of the cam 40 on the end of the arm 39 and will hold the brake-shoe 36 in frictional engagement with the braking-face of the drum. As the face of the brake-shoe 36 becomes worn through use the finger 41 can be adjusted by means of the nuts 42 to compensate for the wear and insure satisfactory action of the brake.

To effect the reversal of the direction of movement of the tripper automatically, stops 43 of suitable construction are provided at suitable points upon the sides of the conveyer-decking, and a lever 44, which is operatively connected with the rocker 22, is arranged for contact with these stops. The lever 44 is of the bell-crank type and is fulcrumed on a pin or stud 45, projecting laterally from a downward extension from the rack 35. The arm 46 of the lever, which extends downward and is adapted to contact with the stops 43, is preferably slightly flexible in order to take up gradually any shock of impact with the stops and permit the shifting of one of the pinions 24 and 26 out of engagement with the gear-wheel 21 and the shifting of the other pinion into engagement with the gear-wheel 21 without danger of stripping any of the cogs. The other arm 47 of the lever 44 is rigid and is connected, by means of a link 48, with the arm 30 of the rocker 22.

The operation of the automatic reversing devices will be clear from an inspection of the drawings. When the tripper-operating mechanism is in the position shown in Figs. 4 and 5 and the tripper is moving in the di-

rection opposite to the movement of the belt, the arm 46 of the lever 44 will be brought into contact with the stop 43 at the left of Fig. 4 and the arm 28 of the rocker will be raised, the roller 31 being thrown out of the notch 32 and forced up to the notch 34 by this movement of the rocker. As the roller 31 passes over the notch 33 the brake-shoe 36 will engage the surface 20 of the drum, and so partially stop the movement of the tripper, so that when the roller 31 reaches the notch 34 and the pinion 26 meshes with the gear-wheel 21 the tripper will be practically stationary and be ready to begin its reverse movement without imposing an excessive strain upon any of the gearing.

At the opposite end of its movement the action of the tripper-reversing mechanism will be precisely the reverse of that above described, the pinion 26 being thrown out of engagement with the gear-wheel 21 and the pinion 24 being thrown into engagement therewith.

From the foregoing description of the construction and operation of our invention it will be seen that all need of track-rails and supporting-wheels for the tripper is eliminated and that the tripper can travel freely to and fro upon the idlers provided for the support of the conveyer-belt. It will also be noted that the ribs or flanges on the bottom surface of the tripper-base will keep the tripper in proper alinement with the idlers as effectively as the flanges ordinarily provided upon the supporting-wheels which travel on the track-rails.

The tripper-operating mechanism described and shown, while primarily designed for a tripper which rests directly upon fixed idlers instead of traveling on rails, may also be employed in connection with trippers of the latter type, and we do not limit ourselves to its use in connection with the former type of tripper.

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

1. A tripper or deliverer for conveyers having an elongated base adapted to extend over and rest upon a plurality of fixed spaced supports forming part of a series of such supports, over which the tripper may be moved in a longitudinal direction.

2. A tripper or deliverer for conveyers having an elongated base adapted to rest directly upon a plurality of fixed spaced supports, and means for moving the tripper longitudinally over such supports.

3. In a tripper or deliverer for conveyers, an elongated base adapted to extend over and rest upon several members of a series of fixed spaced supporting members, and means for imparting longitudinal movement to the tripper or deliverer from the conveyer.

4. The combination with a tripper or de-

liverer for conveyers having an elongated base adapted to extend over and rest upon several members of a series of fixed spaced supports, of mechanism for imparting movement to the tripper or deliverer in either direction from the conveyer without changing the direction of movement of the conveyer.

5. The combination with a tripper or deliverer for conveyers having an elongated base adapted to extend over and rest upon several members of a series of fixed supports, of means for transmitting movement in either direction to the tripper or deliverer from the conveyer, and means for automatically reversing the direction of movement of the tripper or deliverer without changing the direction of movement of the conveyer.

6. The combination with a series of fixed spaced supporting members, of a tripper or deliverer for conveyers having an elongated base adapted to extend over and rest upon a plurality of said supports.

7. The combination with a series of fixed spaced supports, each provided with an anti-friction roller or pulley, of a tripper or deliverer for conveyers having an elongated base adapted to extend over and rest upon a plurality of said supports.

8. The combination with a conveyer having a series of spaced troughing idler-pulleys, of a tripper or deliverer for the conveyer having an elongated base adapted to extend over and rest directly upon a plurality of said troughing idler-pulleys.

9. A tripper or deliverer for conveyers having an elongated base adapted to extend over and rest upon several members of a series of fixed spaced supporting members over which the tripper or deliverer may be moved longitudinally, and means for preventing lateral shifting of the tripper or deliverer upon said supporting members.

10. The combination with a series of fixed spaced supporting members, of a tripper or deliverer for conveyers having an elongated base adapted to extend over and rest upon a plurality of said supporting members over which the tripper or deliverer may be moved longitudinally, and means for keeping the tripper or deliverer properly aligned with reference to said supporting members.

11. The combination with a series of fixed spaced supporting members, each provided with one or more anti-friction rollers or pulleys, of a tripper or deliverer for conveyers having an elongated base adapted to extend over and rest upon a plurality of said supporting members, and means carried by the tripper or deliverer for engaging the ends of one or more of the rollers carried by each supporting member to prevent lateral shifting of the tripper or deliverer.

12. A tripper or deliverer for conveyers having an elongated base adapted to extend over and rest upon a plurality of fixed spaced

supporting members over which the tripper or deliverer is adapted to move longitudinally, said base being provided on its under side with longitudinal ribs or flanges to prevent lateral shifting of the tripper or deliverer upon its supports.

13. The combination with a series of fixed spaced supports, each having a plurality of anti-friction rollers or pulleys arranged end to end and slightly separated, of a tripper or deliverer for conveyers having an elongated base adapted to extend over and rest upon a plurality of said supports, said base being provided on its under surface with longitudinal ribs or flanges extending between the rollers or pulleys provided on said supports.

14. The combination with a series of fixed spaced supports, each having a plurality of anti-friction rollers or pulleys mounted upon axes slightly inclined to the horizontal, of a tripper or deliverer for conveyers having an elongated base adapted to extend over and rest upon a plurality of said supports, said base being provided on its under surface with longitudinal ribs or flanges arranged perpendicular to the inclined axes of said rollers or pulleys and adapted to engage the ends of said rollers or pulleys to prevent lateral shifting of said tripper or deliverer.

15. The combination with a tripper or deliverer for conveyers, of a drum carried thereby, a fixed cable wound one or more times around said drum, and means for rotating the drum to impart movement to the tripper or deliverer.

16. The combination with a conveyer of a tripper or deliverer for the conveyer, a drum carried by the tripper or deliverer, a fixed cable wound around the drum and mechanism operated by the conveyer for rotating the drum to impart movement to the tripper or deliverer.

17. The combination with a tripper or deliverer for conveyers, of a drum carried thereby, a cable fixed at one end and provided at the other with a tension device, said cable being wound around said drum, and means for rotating the drum to impart movement to the tripper or deliverer.

18. In operating mechanism for a tripper or deliverer for conveyers, the combination with a drum carried by the tripper or deliverer, of a cable wound around the drum and held stationary and under tension, and mechanism for rotating the drum.

19. In operating mechanism for a tripper or deliverer for conveyers, the combination with a fixed cable, of a drum carried by the tripper having the cable passed one or more times around it, a member also carried by the tripper or deliverer and driven by the conveyer, and means for transmitting movement to said drum from said member.

20. In operating mechanism for a tripper or deliverer for conveyers, a fixed cable, a

drum carried by the tripper or deliverer and having the cable wound around it, mechanism driven by the conveyer for imparting rotation to said drum in either direction, means for automatically reversing the direction of rotation of said drum.

21. In operating mechanism for a tripper or deliverer for conveyers, a fixed cable, a drum carried by the tripper or deliverer and having the cable wound around it, means for imparting rotation to said drum, and a brake acting upon said drum to check the movement of the tripper or deliverer.

22. In operating mechanism for a tripper or deliverer for conveyers, a fixed cable, a drum about which the cable is wound, said drum being carried by the tripper or deliverer, mechanism driven by the conveyer for imparting rotation to said drum, means for throwing said mechanism into and out of driving connection with said drum, a brake for engagement with said drum, and means operative when said mechanism is thrown out of engagement to apply said brake.

23. In operating mechanism for a tripper or deliverer for conveyers, a fixed cable, a drum carried by the tripper or deliverer and having the cable passed around it, mechanism for imparting rotation to the drum, a brake adapted to act upon the drum, and means for simultaneously throwing said

mechanism out of driving connection with the drum and applying the brake thereto.

24. In operating mechanism for a tripper or deliverer for conveyers, a fixed cable, a drum carried by the tripper or deliverer and having the cable passed around it, mechanism driven by the conveyer for imparting rotation to the drum, a rocker upon which said mechanism is mounted and by which it may be thrown into and out of operation, a brake adapted to engage the drum, and means carried by the rocker for throwing said brake into and out of engagement with the drum.

25. In operating mechanism for a tripper or deliverer for conveyers, the combination with a fixed cable, a drum carried by the tripper or deliverer and having the cable passed around it, of means for rotating the drum, a brake adapted to engage the drum to bring the tripper or deliverer to rest, a brake-actuating member having a cam thereon, and a shifting member adapted to engage said cam to apply and release said brake.

In testimony whereof we affix our signatures in the presence of two witnesses.

CLARENCE KEMBLE BALDWIN.
LINCOLN MOSS.

Witnesses:

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