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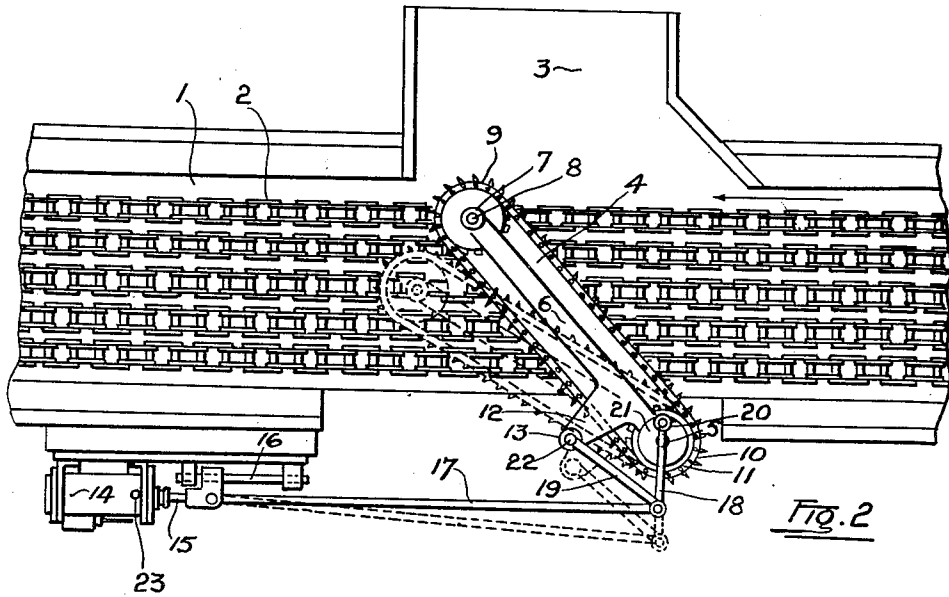
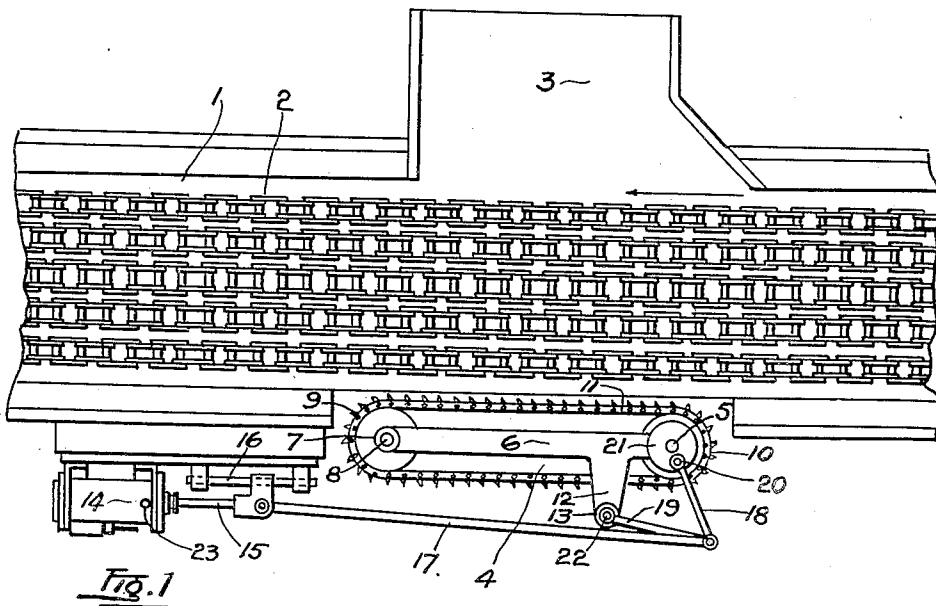
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1,729,671

LOAD DEFLECTING DEVICE FOR CONVEYERS

Filed July 21, 1927

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

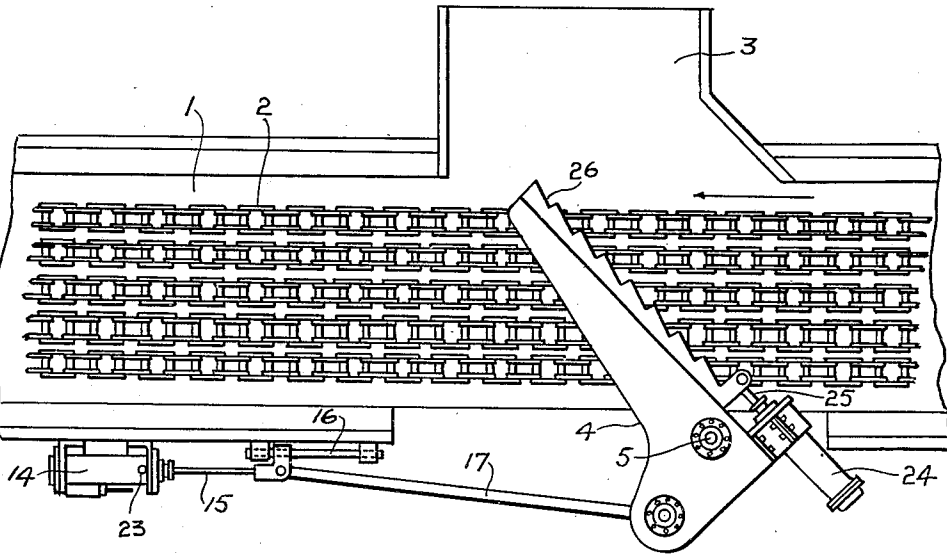


Fig. 3

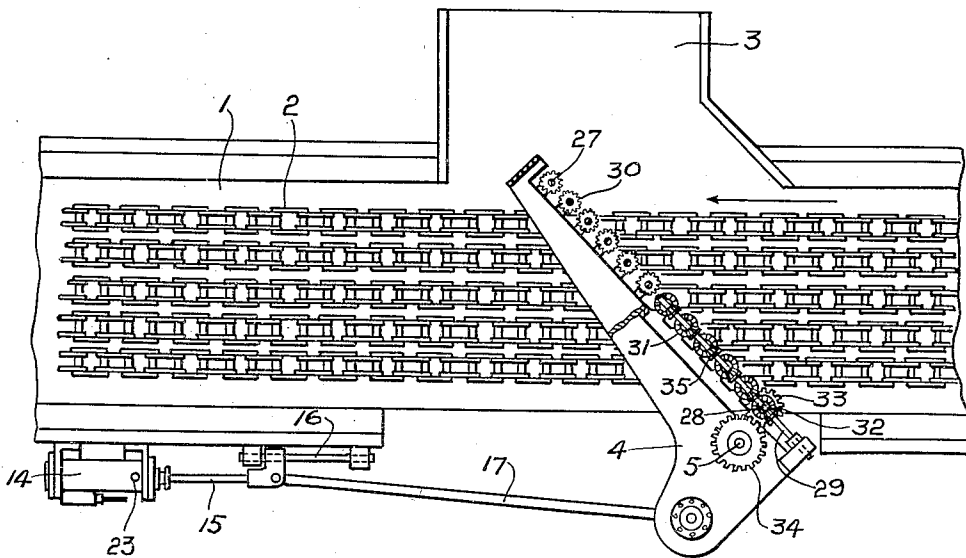


Fig. 4

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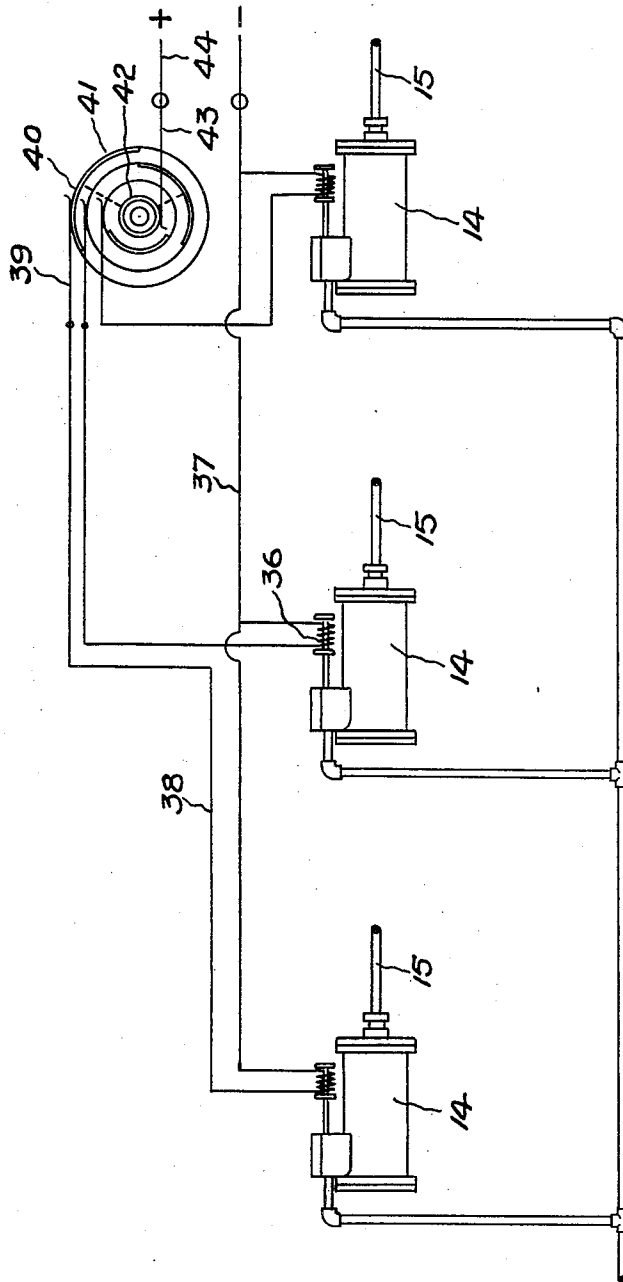
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**1,729,671**

# LOAD DEFLECTING DEVICE FOR CONVEYERS

Filed July 21, 1927

3 Sheets-Sheet 3



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## UNITED STATES PATENT OFFICE

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## LOAD-DEFLECTING DEVICE FOR CONVEYERS

Application filed July 21, 1927. Serial No. 207,468.

Our invention relates to improvements in load deflecting devices for conveyers, which are particularly adapted for use in mills or factories where it is required to discharge the load from a conveyer at one or more points, as for example the delivery of blockwood from an endless conveyer to one or more drum barkers. In installations such as drum barkers, where one or a number of barkers require to be fed with blockwood from an endless conveyer, discharge of the load from the conveyer is commonly effected by hand, men with picaroons or similar tools being stationed at the various points of discharge. This operation is sometimes assisted by the use of removable barriers placed diagonally to the main conveyer, the barriers, by reason of the forward motion of the conveyer, having a tendency to shear the blockwood off to one side. With this arrangements however frequent jams and stoppages take place, with the result that it is usually necessary to maintain at least one operator at each point of discharge.

The objects of the present invention are to provide a barrier, hereinafter referred to as a deflector, which may be quickly and easily withdrawn from or placed in operation, and which, when placed in operation, will perform in such a manner as to discharge the load from the conveyer without manual assistance.

While we are describing the deflectors as applied to the feeding of blocks from a chain conveyer to a battery of barkers, it will be obvious that it may be used with equal efficiency with a wide variety of materials and on numerous types of conveyers, whether endless, live roll, shaker, or chute, as will be more fully shown in the accompanying drawings and described in the following specification, in which:—

Fig. 1 is a plan view showing a portion of the main conveyer, a discharge chute and a deflector disposed in inoperative position to one side of the conveyer.

Fig. 2 is a plan view showing the deflector swung into operative position diagonally of the conveyer.

Fig. 3 is a plan view of a modified form of deflector.

Fig. 4 is a plan view of a further modification.

Figure 5 is a diagrammatic view of a control for the operation of a plurality of deflectors fitted to a single conveyer.

In the drawings like characters of reference indicate corresponding parts in each figure.

The numeral 1 indicates generally the main conveyer having one or more endwise movable chains 2 which are adapted to engage the blocks to carry them along in the direction indicated. The chains are operated from any suitable source of power (not shown). At suitable intervals of the length of the conveyer, chutes 3 are provided leading to each of the barker machines to be supplied with blocks. Opposite to each chute 3 a deflector generally indicated by the numeral 4 is mounted upon a vertical shaft 5, which shaft is slowly rotated by any suitable means. The deflector is formed with a frame 6 pivotally mounted at one end upon the shaft 5 and having bearings 7 at its free end in which a shaft 8, having one or more sprockets 9, is journaled. On the shaft 5 further sprockets 10 corresponding in number to those on the shaft 8 are secured and a similar number of endless conveyer chains 11 run around the sprockets 9 and 10 in the general direction of the main conveyer when the deflector is in the inoperative position and towards the chute 3 when the deflector is in the operative position. Extending from the frame 6 is a bracket 12 having at its outer end a bearing 13, the purpose of which will hereinafter appear.

Mounted in a suitable position to one side of the main conveyer 1 is a cylinder 14 having a piston rod 15 which is actuated by compressed air or other fluid pressure. The piston rod is provided with one or more guides 16 and with a connecting rod 17 having operative connection with a pair of extension rods respectively numbered 18 and 19. The outer end of the rod 18 is connected to a crank pin 20 upon a crank disc 21 which is keyed to the outer end of the vertical shaft

5, which shaft it will be remembered is constantly driven by any suitable means. The extension rod 19 is fitted at its outer end with a pin 22 longitudinally mounted in the bearing 13 of the bracket 12. The outward stroke of the piston rod 15 exerts a thrust to the connecting rod 17 and tensional strain upon the extension rods 18 and 19, thus returning the deflector to the inoperative position as shown in Fig. 1. When in this position the arc described by the outer end of the connecting rod 17 and that described by the inner, or connecting rod end of the extension rod 19, are so nearly alike that the rotation of the shaft 5 may reciprocate the rod 18 without imparting any appreciable movement to the deflector 4.

On the inward stroke of the piston rod a compressional strain is first imposed on the extension rods 18 and 19 thus swinging the deflector 4 towards the operative position, diagonally of the main conveyer as shown in Figure 2, the constant rotation of the shaft 5 converting the strain upon the extension rod 18 alternately into compressional and tensional, thus imparting corresponding movement to the rod 19 and causing the deflector to rock about its axis within a limited arc as shown. This peculiar movement of the deflector 4, wherein it approaches an oncoming load on the main conveyer 1 and recedes from it alternately, not only transmits a crosswise motion to the load but also greatly reduces the possibility of blocks becoming jammed between the deflector 4 and the main conveyer chains 2.

Furthermore, by reason of the arrangement as already described any pressure exerted on the deflector by the load or by the main conveyer chains will be transmitted to the piston of the cylinder 14. This cylinder 14 is equipped with a relief valve 23, which determines the maximum pressure which can be developed in the cylinder and which thereby protects the deflector against undue strain in the event of momentary jamming of the load, under which circumstances the oscillating motion will be transmitted to the piston rather than to the deflector and the deflector will swing toward the inoperative position until the jam has been cleared.

In the modification shown in Figure 3, the deflector 4 is swung diagonally across the main conveyer and is provided with a cylinder 24 having a piston and a rod 25 preferably reciprocated by compressed air from a suitable valve mechanism to which piston rod one or more saw tooth racks 26 having sliding engagement with the deflectors, are fitted, and which are adapted to impart movement to the oncoming blocks carried by the conveyer in a direction longitudinal to the deflector.

In the modification shown in Figure 4 the face of the deflector is provided with a plurality of vertical shafts 27 and a further ver-

tical shaft 28 which serves as a driver for the shafts 27 through a horizontal shaft 29. The shafts 27 and 28 are all fitted with corrugated rollers 30 against which the oncoming load carried by the main conveyer is brought into contact. Fitted to the shafts 27 are bevel gears 31 and on the shaft 28 is a similar gear 32. The shaft 28 is also fitted with a gear 33 which is driven by a gear 34 upon the upper end of the shaft 5. Driving connection is established between the shaft 28 and the shafts 27 by a horizontal shaft 29 having other bevel gears 35 which engage the gears 32 and 31, so that the continuous rotation of the shaft 5 will cause the rollers 30 to rotate to drive the oncoming load longitudinally of the deflector towards the chute 3 from whence it falls into the hopper of the barker.

While we have described the deflector as being swung from the inoperative to the operative and from the operative to the inoperative positions by virtue of the force applied by a cylinder, yet it will be obvious that this function can be performed with equal efficiency by several other means, for instance a hand or power operated crank or screw.

Furthermore, while we have described the deflector as being fitted alternatively with endless conveyer chains, reciprocating ratchet, and power driven vertical feed rollers, yet it will be obvious that various other arrangements may be provided which will transmit motion longitudinally of the deflector to the load, as for example by the use of a horizontal spirally fluted feed roll in lieu of the vertical feed rollers 30 as shown in Fig. 4, or by the substitution of a belt in lieu of the endless chains 11 as described in Figures 1 and 2.

When a number of deflectors are fitted to a single main conveyer to serve a plurality of machines, automatic means may be provided to bring the deflectors alternately into operating position, so that the load conveyed may be distributed to the different machines as desired. One such means being shown in Figure 5 wherein the inlet valve to each of the cylinders 14 is adapted to be actuated by a solenoid 36. These solenoids each being in a circuit having a common return or negative conductor 37 and a positive conductor 38 connected to a brush 39 which is adapted to alternately engage and disengage a contact 40 in a suitably rotated drum type controller 41. All of the contacts 40 of the controller are connected to a common contact 42 which is constantly engaged by a brush 43 leading from the positive wire 44 of the circuit. As the contacts 4 are spaced at different intervals about the axis of the controller and the brushes are adapted to engage at similar peripheral positions it will be readily seen that the solenoids will be energized at different intervals the length and timing of said intervals of operation depending on the peripheral

length of the contacts 40 and their disposition about the axis of the controller. An alternative method of accomplishing this result would be by providing a multi-port power driven rotating valve from which the pressure pipes lead to the cylinders of the various deflectors, the arrangement of the ports in the valve being such that the rotation of the valve will cause the fluid to be admitted and released from the cylinder of each deflector in rotation.

What we claim as our invention is:

1. The combination with a conveyer, of a deflector disposed diagonally of the conveyer, and means carried by the deflector for imparting movement longitudinally thereof to the load carried by the conveyer.

2. The combination with a conveyer, of a pivotally mounted deflector disposed diagonally of the conveyer, and means for imparting an oscillating swinging movement to the deflector when in diagonally disposed position, and of means carried by the deflector for imparting movement longitudinally thereof to the load carried by the conveyer.

3. The combination with a conveyer, of a pivotally mounted deflector normally disposed longitudinally of the conveyer, means for moving the deflector diagonally across the conveyer, and means for imparting an oscillating swinging movement to the deflector.

4. The combination with a conveyer, of a pivotally mounted deflector normally disposed longitudinally of the conveyer, means for moving the deflector diagonally across the conveyer, and means carried by the deflector for imparting movement longitudinally thereof to the load carried by the conveyer.

5. The combination with a conveyer, of a pivotally mounted deflector normally disposed longitudinally of the conveyer, means for moving the deflector diagonally across the conveyer, an endless chain movable longitudinally of the deflector for imparting movement longitudinally thereof to the load carried by the conveyer.

6. The combination with a conveyer, of a pivotally mounted deflector normally disposed longitudinally of the conveyer, means for moving the deflector diagonally across the conveyer, means for imparting an oscillating swinging movement to the deflector, and means carried by the deflector for imparting movement longitudinally thereof to the load carried by the conveyer.

7. The combination with a conveyer, of a pivotally mounted deflector normally disposed longitudinally of the conveyer, means for imparting swinging movement to the deflector to dispose it diagonally to the conveyer, means associated with the deflector for imparting motion to the load carried by the conveyer in a direction crosswise of the conveyer to discharge the load therefrom, and

means whereby the deflector is automatically brought from the normal position to the diagonal position and returned from the diagonal position to the normal position at predetermined intervals.

8. The combination with a conveyer, of a plurality of pivotally mounted deflectors normally disposed longitudinally of the conveyer and at different intervals of its length, and of means associated with each deflector for imparting independent swinging movement thereto to dispose it diagonally to the conveyer, and means associated with the deflectors for imparting a crosswise motion to the load carried by the conveyer to discharge the load, and means whereby the deflectors are automatically alternately brought from the normal position to the diagonal position and returned from the diagonal position to the normal position at predetermined intervals whereby the load is automatically distributed by the various deflectors.

9. The combination with a conveyer, of a pivotally mounted deflector normally disposed longitudinally of the conveyer and adapted to be moved diagonally thereof, an endless chain movable longitudinally of the deflector for deflecting the load carried by the conveyer from its normal path of travel, and means imparting endwise movement to the chain.

10. The combination with a conveyer, of a pivotally mounted deflector normally disposed longitudinally of the conveyer and adapted to be moved into operating position diagonally thereof, and means for reciprocating the deflector within a limited arc when in operative position.

11. The combination with a conveyer, of a deflector normally disposed longitudinally of the conveyer and swingably mounted upon a continually rotating shaft, means for swinging the deflector diagonally of the conveyer, said means and the rotating shaft co-operating to swing the deflector within a limited arc when diagonally disposed across the conveyer.

12. The combination with a conveyer, of a deflector normally disposed longitudinally of the conveyer and swingably mounted upon a continually rotating shaft, an endless chain upon the deflector driven from said shaft, means for swinging the deflector diagonally of the conveyer, said means and the rotating shaft co-operating to swing the deflector within a limited arc when diagonally disposed across the conveyer.

13. The combination with a conveyer, of a deflector normally disposed longitudinally of the conveyer and having a frame swingably mounted at one end upon a continually rotating vertical shaft, said frame being adapted to be moved into operating position diagonally of the conveyer, a bracket extending from the frame, a crank upon the shaft, an exten-

sion rod pivotally connected at one end to the bracket on the frame and a similar extension rod pivotally connected to the crank of the shaft, the opposite ends of the extension rods being pivotally secured to the outer end of a suitably operated connecting rod, whereby the endwise movement of the connecting rod and the rotation of the crank imparts an oscillating motion to the deflector when in operative position.

14. The combination with a conveyer, of a deflector normally disposed longitudinally of the conveyer, and having a frame swingably mounted at one end upon a continually rotating vertical shaft, said frame being adapted to be moved into operating position diagonally of the conveyer, a bracket extending from the frame, a crank upon the shaft, an extension rod pivotally connected at one end to the bracket of the frame and a similar extension rod pivotally connected to the crank of the shaft, the opposite ends of the extension rods being pivotally secured to the outer end of a suitably operated connecting rod, whereby the endwise movement of the connecting rod and the rotation of the crank imparts an oscillating motion to the deflector when in operative position, and whereby the rotation of the shaft produces no appreciable oscillation to the deflector when it is returned to normal position.

Dated at Powell River this 29th day of June/ 1927.

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PERCY SANDWELL.