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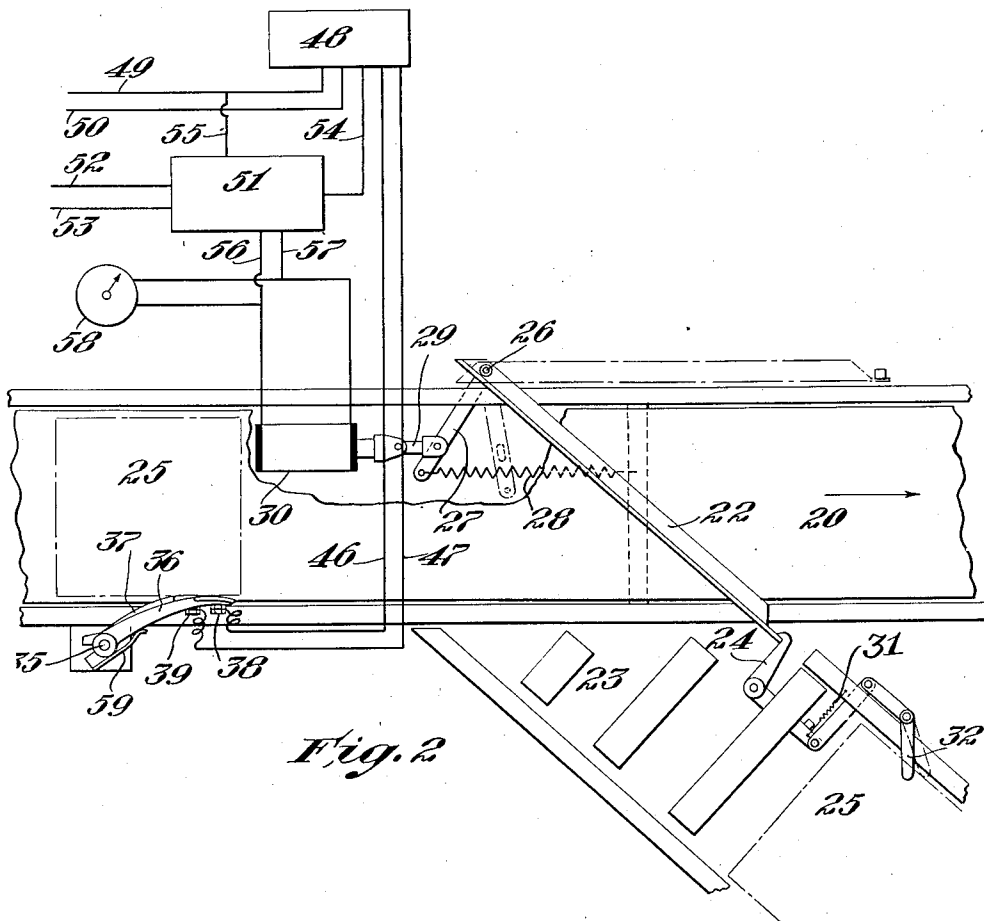
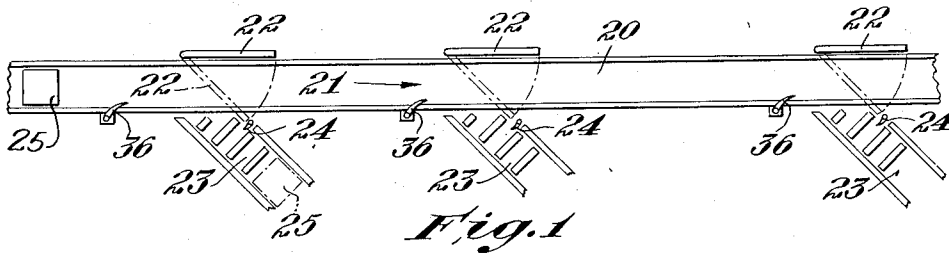
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2,063,230

CONVEYER MECHANISM

Filed Jan. 17, 1933

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

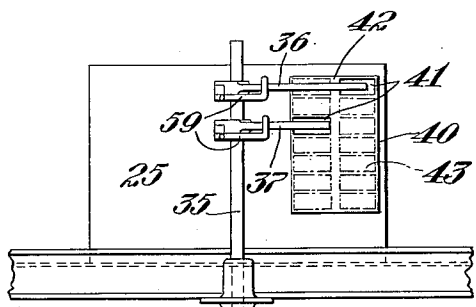


Fig. 3

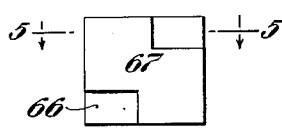


Fig. 4

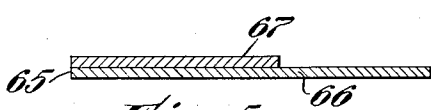


Fig. 5

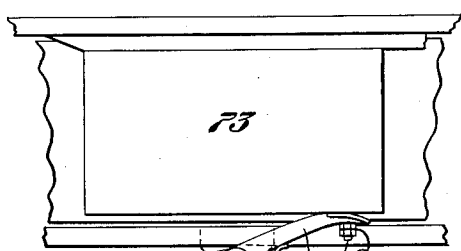


Fig. 6

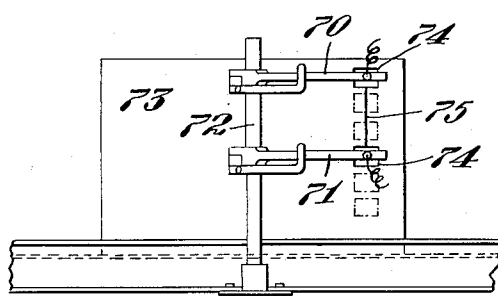


Fig. 7

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UNITED STATES PATENT OFFICE

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CONVEYER MECHANISM

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4 Claims. (Cl. 198—38)

This invention relates to an improvement in conveyer mechanism and more particularly in selective electrical control means applicable to conveyers of various types whereby the course and extent of travel of loads thereon is automatically predetermined, such control means being applicable in many different ways as for example to predetermine the station at which the load is to be deflected from a conveyer line.

The primary object of this invention is to provide in a conveyer system electrical means automatically actuated at a predetermined point in the travel of a load whereby the operation of mechanism, by which the course and extent of travel of the load is affected in a desired manner, is controlled, such means including targets in the form of electrically connected areas upon the load unit (either the load itself or the container therefor) and which, when simultaneously contacted directly by other electrically connected elements, will complete a circuit through said areas and elements and energize a solenoid or other element of the circuit.

Other objects reside in the various details of construction and operation as will appear from a consideration of the following description of certain embodiments of the invention and of the drawings which form a part thereof and in which,

Fig. 1 is a diagrammatic view of a conveyer system having a plurality of stations each of which is provided with control means which embody this invention;

Fig. 2 is a view illustrating a station of a conveyer system provided with selective electrical control means located and arranged to carry out this invention;

Fig. 3 is a side elevation of a portion of the station shown in Fig. 2 illustrating a load unit provided with one type of electrically connected targets;

Figs. 4 and 5 are detail views illustrating another type of electrically connected targets which may be provided on a load unit, Fig. 5 being a section taken on the line 5—5 in Fig. 4; and

Figs. 6 and 7 illustrate an assembly of another type of control elements embodying this invention.

The conveyer system shown in Fig. 1 comprises a conveyer belt 20 on which loads are transported in the direction indicated by the arrow 21. Pivotaly supported on the conveyer frame are deflectors 22 which normally assume positions at one side of the belt 20 and which, by means about to be described, are, upon the arrival of

the loads, destined to be deflected to one of the branch lines or stations 23, swung into the positions shown in dotted lines across the belt and held therein by a latch 24. As illustrating this invention there are shown two load units 25 one in full lines on the belt 20, the other in dotted lines on a branch line or station 23.

The deflector mechanism may be of any suitable type as for instance that illustrated in Fig. 2 wherein the deflector 22 is secured at one end to a post 26 having an arm 27 which is connected to a spring 28 and to a core 29 of a solenoid 30, the spring 28 tending to move the deflector into the dotted line position and the solenoid acting, when energized, to move the deflector into the full line position. The latch 24 is normally held in the functioning position by a spring 31 and is positively moved out of such position by the swinging of an arm 32 from the full to the dotted line position due to the impact of a load on the branch line or station 23.

The present invention relates to the means by which the solenoid 30 illustrated in Fig. 2 is caused to actuate the deflector 22. Mounted upon a post 35 at the side of the conveyer belt 20 are arms 36 and 37 having insulated electro-conducting tips 38 and 39, respectively. Each load unit is provided with a plurality of electrically connected targets. Mounted on the load unit 25 as shown in Fig. 3 is a laminated sticker 40 consisting of an under layer 41 of tinfoil and a covering layer 42 of paper. The covering layer may be divided by perforated lines into tabs 43 and by removing selected tabs the tinfoil thereunder will be exposed to provide targets which are electrically connected. The wall of the load unit carrying the sticker is of wood, pasteboard or other non-conducting material.

The tips 38 and 39 of the arms 36 and 37 are connected by leads 46 and 47 with a photo relay 48 to which power is supplied in the usual way from a suitable source through leads 49 and 50. A relay 51, supplied with power from a suitable source through leads 52 and 53, is connected by leads 54 and 55 with the photo relay 48 and the power lead 49, and by leads 56 and 57 with the solenoid 30, and a counter mechanism 58 is connected across the leads 56 and 57.

The operation at the station thus described is as follows. The arms 36 and 37 are yieldably held by springs 59 over the belt 20 so that they contact with each load unit transported by the belt. The arm 36 is longer than the arm 37 and the tabs 43 of the sticker 40 are arranged in two parallel vertical rows so separated that the tip 55

38 of the arm 36 will coincide with the leading row at the same time that the tip 39 of the arm 37 coincides with the following row. The arms are so placed at the illustrated station that upon arrival of a load unit having targets formed by the tinfoil 41 exposed by the removal of the upper or number 1 tab of the leading row and the number 3 tab of the following row, the tips 38 and 39 simultaneously contacting the targets being electrically connected with thus complete the circuit through the photo relay 48. The impulse thus set up is transmitted to the relay 51 causing it to energize the solenoid 30, which thereupon swings the deflector 22, which is in its normal dotted line position, into the full-line position shown in Fig. 2. The load unit causing this operation is accordingly deflected onto the branch line or station 23 and upon contacting with the arm 32 releases the deflector which returns to its normal position shown in dotted lines. Each impulse so set up is registered upon the counter mechanism. Obviously the locations of the arms 36 and 37 can be shifted as desired so that each station in the system will operate only upon the arrival thereof of a load unit having the targets correspondingly located.

Another way to determine the destinations of the load units is shown in Figs. 4 and 5 and comprises a laminated sticker 65 consisting of an under layer 66 of tinfoil and a covering layer 67 of paper notched at two places to expose tinfoil areas which act as targets. Stickers 65 having various arrangements of exposed tinfoil areas or targets will, of course, be provided so that the loads may be despatched to any desired station.

Figs. 6 and 7 disclose another embodiment of this invention in which the arms 70 and 71 mounted on the post 72 are equal in length and in which a single vertical row of targets is provided on the carton 73. The arms contact targets 74 connected by a strip 75, the targets and strip being of tinfoil or other conducting material. The simultaneous contact of the tips 76 of the arms 70 and 71 with targets 74 does, as before, complete a circuit, and, through the procedure previously described moves the deflector into the operative position. Other locations at which the targets 74 may be placed are indicated by dotted lines. When targets of this type and arrangement are employed it is obviously necessary that the load units having the targets 74 at the top and bottom must be intended for the first station, while various combinations of pairs of targets may be used on load units intended for the other stations.

It will be understood that the stations illustrated are typical stations, that there are a plurality of such stations served by the main conveyor and that the contact arms at each station are so arranged that only the load units having targets which are associated with the loads destined thereto will be simultaneously contacted by the arms. Thus by arranging the targets, the circuit of which the arms of the predetermined station form a part will alone be closed, the other circuits being unaffected thereby.

While certain embodiments and applications of this invention have been shown and described, I am not limited thereto since other embodiments

and applications may be made without departing from the spirit and scope of the invention as set forth in the following claims.

I claim:

1. In a mechanism of the class described, a sticker adapted to be applied to a load having an underlayer of electro-conducting material and a covering layer of non-electro-conducting material through which at certain areas the underlayer is exposed to form targets.

2. In a mechanism of the class described, a sticker adapted to be applied to a load having an underlayer of electro-conducting material and a covering layer of non-electro-conducting material having a plurality of removable portions, the removal of which exposes the underlayer and provides targets.

3. In a conveyer, means for transporting load units therealong past a plurality of stations, mechanism associated with each of said stations for deflecting load units destined thereto from said transporting means, a solenoid at each station for operating the mechanism associated with that station, and solenoid energizing means comprising at each station a pair of vertically spaced arms which engage the load units and have tips electrically connected with the solenoid and forming therewith a normally open circuit, and a sticker carried by each load unit including an under layer of electro-conducting material and a covering layer of non-electro-conducting material through which at certain areas the under layer is exposed to form a pair of suitably exposed targets suitably spaced vertically and electrically connected, the targets of the load units being so spaced that upon arrival of a load unit destined for a station, the targets thereon are engaged simultaneously by the tips of the element at that station thereby completing the circuit, energizing the solenoid and operating the load unit deflecting mechanism associated therewith.

4. In a conveyer, means for transporting load units therealong past a plurality of stations, mechanism associated with each of said stations for deflecting load units destined thereto from said transporting means, a solenoid at each station for operating the mechanism associated with that station, and solenoid energizing means comprising at each station a post, a pair of arms mounted upon the post and vertically spaced, electro-conducting tips on said arms, said tips being electrically connected with the solenoid and forming therewith a normally open circuit, and a sticker carried by each load unit including an under layer of electro-conducting material and a covering layer of non-electro-conducting material through which at certain areas the under layer is exposed to form a pair of suitably exposed targets suitably spaced vertically and electrically connected, the targets of the load units being so spaced that upon arrival of a load unit destined for a station, the targets thereon are engaged simultaneously by the tips of the element at that station thereby completing the circuit, energizing the solenoid and operating the load unit deflecting mechanism associated therewith.

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