May 14, 1929. J. T. COWLEY 1,712,872

CONVEYER SYSTEM

Filed Jan. 6, 1928

Fig. 1.

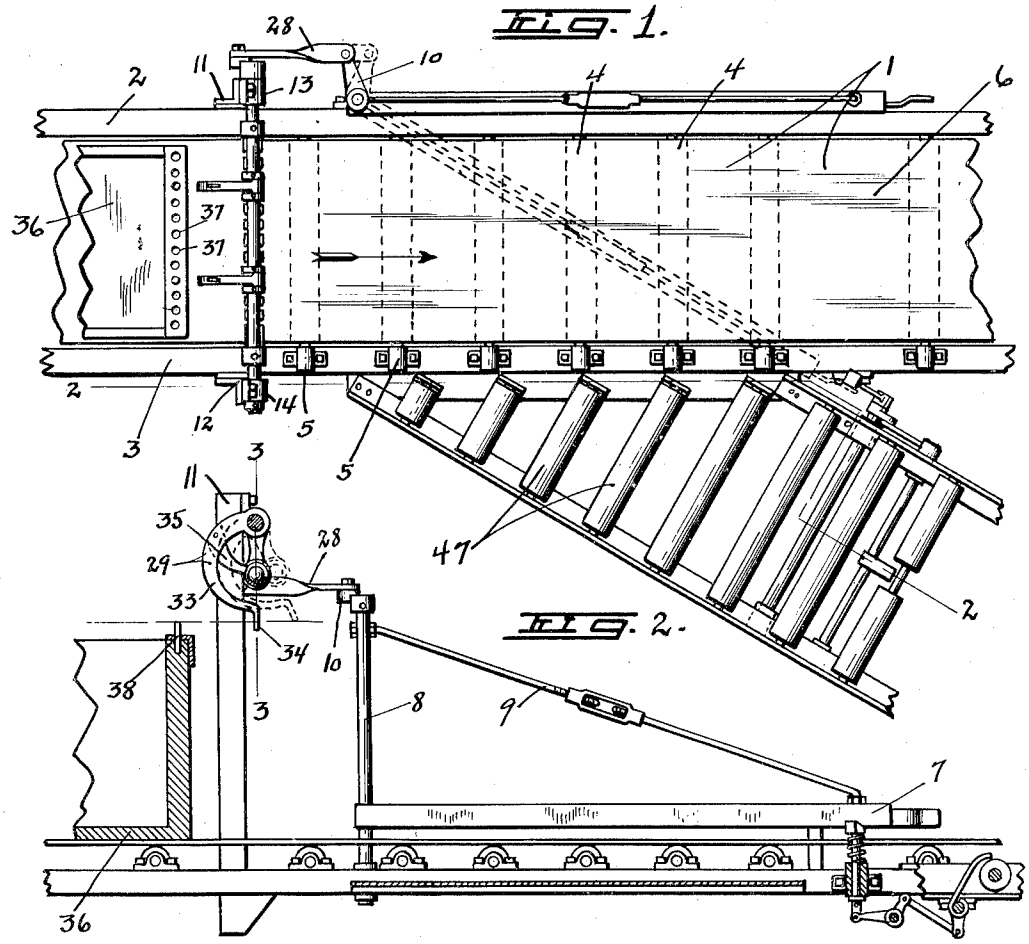


Fig. 2.

Fig. 3.

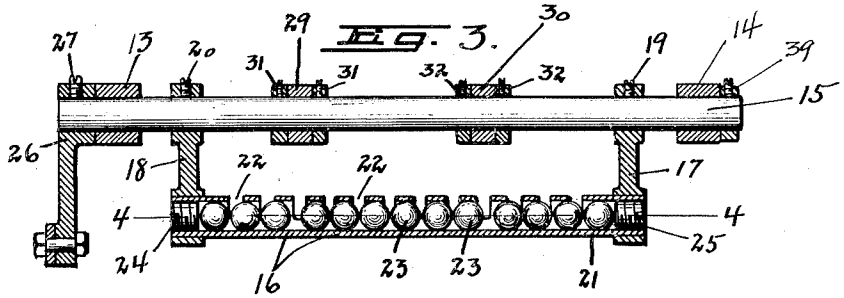
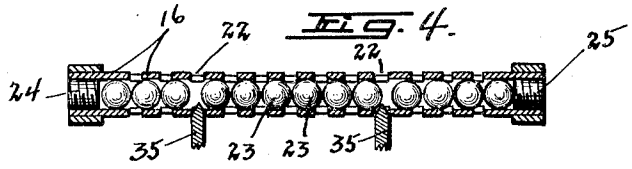


Fig. 4.



INVENTOR
James T. Cowley
BY Denison & Thompson
ATTORNEYS.

WITNESS.
H. Wurst

Patented May 14, 1929. 1,712,872

UNITED STATES PATENT OFFICE.

JAMES T. COWLEY, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE LAMSON COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF MASSACHUSETTS.

CONVEYER SYSTEM.

Application filed January 6, 1928. Serial No. 244,858.

This invention relates to a certain new and improved conveyer system.

The main object of the invention is the production of an efficient and comparatively simple conveyer system in which a greatly increased number of discharge or deflection points can be utilized, thereby substantially increasing the capacity of the apparatus for delivering goods to varied points.

An embodiment of the invention is here illustrated in the form of a belt conveyer having various stations into which articles to be conveyed may be selectively deflected, and it will be obvious that the invention has various other adaptations and uses, and by the expression "an article to be conveyed" as used herein is meant any box, container, pilot car, or article which carries contact members for actuating the apparatus at a discharge station.

In the drawings:

Figure 1 is a top plan view of my device in position on a conveyer.

Figure 2 is a section on line 2—2, Figure 1.

Figure 3 is a section on line 3—3, Figure 2.

Figure 4 is a section on line 4—4, Figure 3.

It will be understood that my device may be used on many different types of automatic conveyers, but for the purpose of describing the manner in which my device operates I have shown it in position on a belt conveyer with the deflector in position to deflect articles from the belt conveyer to a gravity side track.

The structure shown consists of a belt conveyer —1— having longitudinally extending side members —2— and —3— supported from the ground in any convenient way although the means of support is not here shown. A series of rollers 4—4 indicated in dotted lines on Figure 1 are rotatably journaled in side members —2— and —3— in similar journal boxes 5—5 and are positioned in the proper spaced relation to support a moving belt —6—. A section of gravity conveyer —47— is positioned adjacent conveyer —1— and extends outwardly therefrom at an angle to permit the diversion on to it by my deflector of articles being transported on belt —6—.

The deflector itself consists of a cross bar —7— pivotally mounted at one end on an upright tubular member —8— which is supported on side member —2—. Cross bar —7— is positioned at a point just above the top of belt —6— so that when moved across conveyer —1— it will be in the path of merchandise being transported on belt —6—. A tie rod —9— extends from the top portion of upright member —8— to the outer end of the deflector —7— for the purpose of holding deflector —7— at all times in a horizontal position. A crank —10— extends outwardly from the upper end of upright member —8— for a purpose hereinafter to be described.

The operating mechanism for the deflector —7— consists of upright members —11— and —12— supported respectively from side members —2— and —3—. Upright members —11— and —12— carry on their outer ends journal boxes —13— and —14— respectively in which is journaled a shaft —15— having a retaining collar —39—.

Shaft —15— carries a depending actuating member —16— which consists of two depending arms —17— and —18— fixed to shaft —15— by means of set screws —19— and —20— respectively. A tubular member —21— connects the lower ends of depending members —17— and —18—. Tubular member —21— is provided with a series, in this case shown as twelve, of openings —22—22— therethrough and has in its interior a plurality, in this case shown as thirteen, of balls 23—23 which are retained therein by means of plugs —24— and —25—. The end of shaft —15— which is on the same side of conveyer —1— as upright member —8— carries a depending crank arm —26— secured to shaft —15— by means of set screw —27—. The crank arm —26— is connected to crank arm —10— by means of link —28— so that when the shaft —15— is rotated the crank arm —26— will be moved forward and crank arm —10— through link —28— will also be moved forward which will cause upright member —8— to rotate and move deflector —7— across conveyer —1— until it is in position to deflect the merchandise being transported on belt —6— on to gravity section —47—.

The rotation of shaft —15— is accomplished in the following manner: Actuating members —29— and —30— are pivotally mounted on shaft —15— and are held in spaced relation intermediate member —17— and —18— by means of collars —31— and —32—. Actuating members —29— and —30— are similar in construction and a description of one will be a description of both.

Actuating member —29— consists of a curved arm —33— which extends downwardly around and below tubular member —16— and carries an offset end —34— extending downwardly towards belt —6—. Actuating member —29— also carries an intermediate arm —35— which extends forwardly and is so positioned and of such size that it will register with an opening —22— and if such opening is unobstructed may pass therethrough. Similarly actuating member —30— carries a similar arm which registers with another opening —22—. Balls —23— are of such a size with reference to the length of member —16— and are so positioned with reference to openings —22—, that if a single arm —35—, of either actuating member —29— or actuating member —30—, is moved forward into its registering opening —22— the balls —23— adjacent such opening —22— will separate a sufficient distance so that the arm —35— may pass through member —16— without affecting its position. If, however, arms —35—35— of both actuating members —29— and —30— are moved forward towards their registering openings 22—22 balls —23—23— adjacent such openings 22—22 can not be separated sufficiently to admit arms —35—35— into openings 22—22 and a further forward movement of such arms —35—35— will cause member —16— to move forwardly and upwardly, and this movement of member —16— will cause the rotation of shaft —15— and deflector —7— will be moved across conveyer —1— in the manner just described.

The forward movement of actuating member —29— and —30—, carrying their respective arms 35—35, is accomplished in the following manner: The merchandise conveyers —36— in which merchandise is transported are preferably boxes carrying on their forward end in the upper side thereof a series, in this case shown as twelve, of holes —37—37— in spaced relation extending transversely of conveyer —1—. I provide a plurality of pins —38— which may be placed in any selected holes 37—37 and which are of a size and shape so that when the merchandise conveyer —36— moves forwardly along belt —6— a pin —38— will contact with the offset end —34— of actuating member —29— provided it has been placed in a hole —37— which is in line with offset member —34—.

It will be understood that if a pin —38— is placed in a hole —37— so that it will contact with offset member —34— of actuating member —29— and another pin —38— has been placed in another hole —37— so that it will contact with offset member —34— of actuating member —30— then when pins 38—38 contact with actuating members —29— and —30— arms 35—35 will be carried forward into contact with member —16— to cause rotation of shaft —15— and the consequent movement across conveyer —1— of deflector —7—.

On the other hand if two pins 38—38 are placed in position in holes 37—37 so that one pin —38— will contact with actuating member —29— but the other pin —38— is in a hole where it cannot contact with actuating member —30— then in that case actuating member —29— only will be moved forward and inasmuch as under these conditions the arm —35— on actuating member —29— is permitted to move forward through its registering opening —22— in member —16— no movement will be imparted to member —16— and the merchandise conveyer —36— will pass forward under actuating member —29— and —30— without causing the movement of switch —7—. After the pin 38 has passed out of contact with actuating member —29—, actuating member —29— by gravity will return to its original position.

It will be understood that each switch positioned along conveyer —1— will have actuating members —29— and —30— disposed in a different relation to each other and to the holes 37—37 in the merchandise conveyers —36— so that the operator may insert pins 38—38 in whatever combination or holes 37—37 he may desire and predetermine which set of actuating members —29— and —30— will be simultaneously moved by pins —38—38—.

By this arrangement a very large number of combinations can be made so that although provision in merchandise conveyers 36—36 is only for a series of, for instance, twelve holes 37—37 which in conveyers of this type heretofore known would permit the selected actuation of only twelve deflectors, my device permits of combinations and thus permits the selective actuation of sixty-six deflectors.

It will be understood that the type of merchandise conveyer used is immaterial as it is only necessary to provide a merchandise conveyer which is capable of carrying a plurality of pins in upright position. It will also be understood that three or more actuating members similar to actuating members —29— and —30— may be provided for the actuation of an individual deflector in which case, of course, three or more pins 38—38 would be carried by merchandise conveyers 36—36, and by increasing the number of actuating members and the relation of balls 23—23 to member —16— it would be possible to actuate a very much greater number of deflectors without increasing the number of pin holes 37—37 in merchandise conveyers 36—36.

It will also be understood that my operating device may be applied to any type of deflector which is to be mechanically moved across a conveyer and also that my device may be used on any type of conveyer along which merchandise containers are trans-

ported, for although I have shown and described a specific structure and form of part as an exemplification of one form of my device, I do not desire to restrict myself to the exact shape, form or relation of parts as various changes may be made within the scope of the appended claims.

I claim:

1. In a device of the class described, a conveyer, an article to be conveyed, a deflector movable across the conveyer, a plurality of contact members carried by the article to be conveyed, and an operating member for actuating the deflector when contacted by the contact members.

2. In a device of the class described, a conveyer, an article to be conveyed, a deflector movable across the conveyer, a plurality of contact members carried by the article to be conveyed, an operating member for actuating the deflector when contacted by the contact members, and means whereby the operating member will remain inoperative when contacted by less than all of the contact members.

3. In a device of the class described, a conveyer, an article to be conveyed, a plurality of contact members carried by such article, a deflector movable across the conveyer, an operating member for actuating the deflector, a plurality of rock arms carried by the operating member and disposed in the path of said contact members, and means whereby the operating member will be made operative when the rock arms are simultaneously contacted by the contact members.

4. In a device of the class described, a conveyer, an article to be conveyed, a plurality of contact members carried by such article, a deflector movable across the conveyer, an operating member for actuating the deflector, a plurality of rock arms carried by the operating member and disposed in the path of said contact members, means whereby the operating member will be made operative when the rock arms are simultaneously contacted by the contact members, and additional means whereby the operating member will remain inoperative when less than all of the rock arms are contacted by contact members.

5. In a device of the class described, a conveyer, an article to be conveyed, means for placing a plurality of contact members on said article, deflectors movable across the conveyer, operating members for actuating the deflectors, means operable in advance whereby an operator may cause a selected deflector to be operated by placing a plurality of contact members on the article to be conveyed.

6. In a device of the class described, a conveyer, an article being conveyed, a plurality of contact members carried by such article, a deflector movable across the conveyer, an operating member for actuating the conveyer, a plurality of rock arms carried by the operating member and disposed in the paths of the contact members, means whereby the operating member will be made operative when the rock arms are contacted by the contact members, and means whereby the operating member will remain inoperative when less than the whole number of rock arms is contacted by contact members, said means including a tubular member operatively connected to the operating member and having openings therethrough registering with the rock arms, and a plurality of balls disposed in the tubular member and movable therein, such balls being of a size whereby they will move from the path of the rock arms to permit their passage through the tubular member when less than the whole number of rock arms is moved towards the tubular member, but which the balls are of such a size that when the whole number of rock arms is moved towards the tubular member the balls will close the openings through the tubular member so that it will be carried forward by the rock arms.

7. A conveyer system comprising a conveyer, a rock shaft, a plurality of trip arms mounted on the rock shaft, an article to be conveyed, a plurality of contact members carried by said article, and additional mechanism actuated by the rocking of said shaft when a plurality of contact members come into contact with respective trip arms.

In witness whereof I have hereunto set my hand this 5th day of January, 1928.

JAMES T. COWLEY.