Jan. 10, 1928. 1,655,476

J. E. REGAN

CONVEYER SYSTEM

Filed April 9, 1927 2 Sheets-Sheet 1

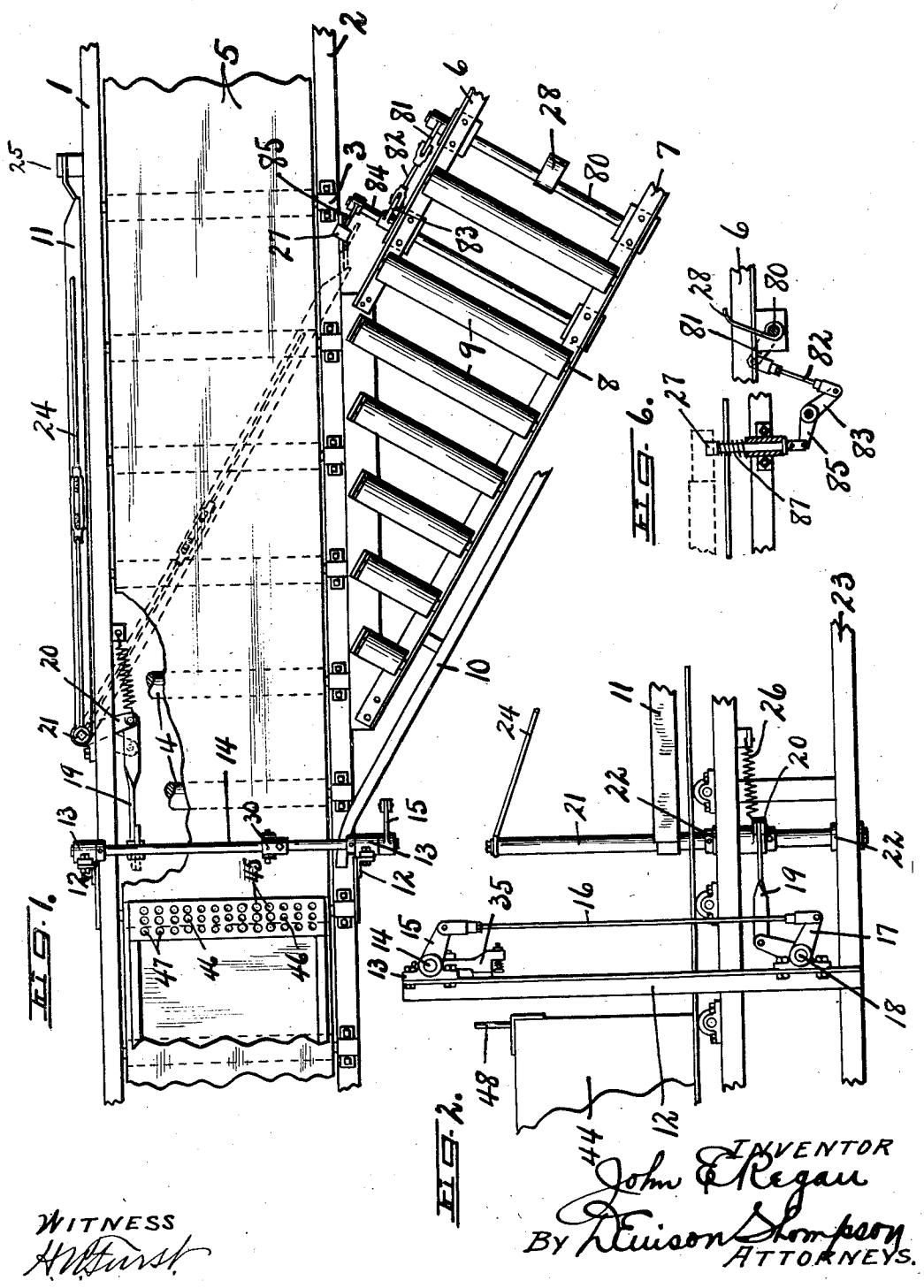


FIG. 1.

FIG. 6.

FIG. 2.

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FIG. 3.

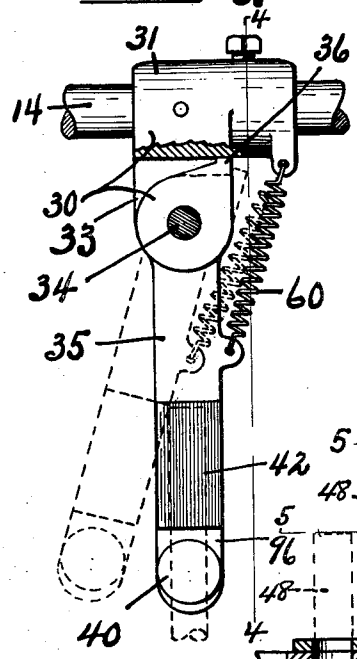


FIG. 4.

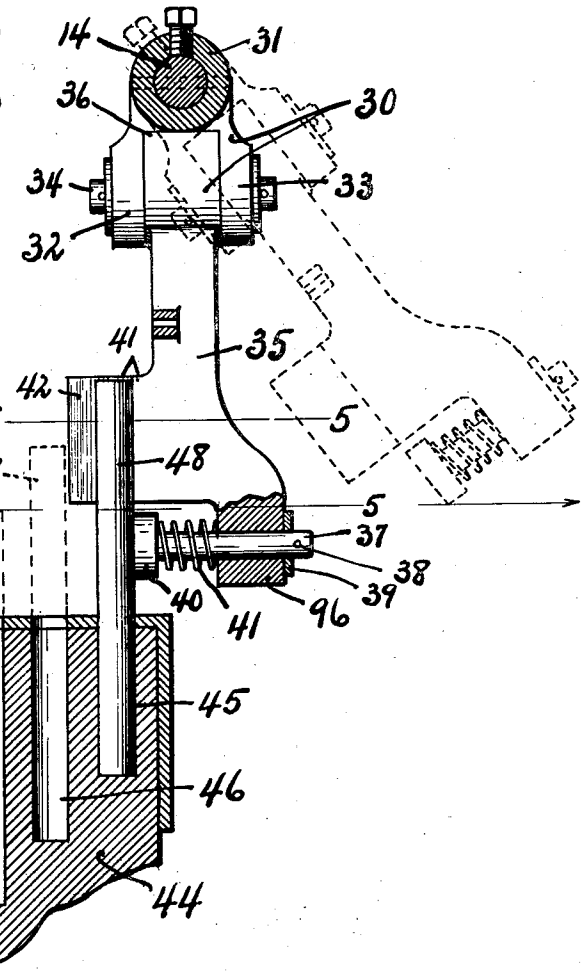
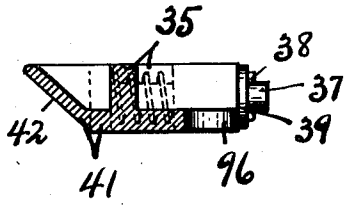


FIG. 5.



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UNITED STATES PATENT OFFICE.

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CONVEYER SYSTEM.

Application filed April 9, 1927. Serial No. 182,412.

This invention relates to certain new and useful improvements in conveyer systems.

The invention pertains more specifically to an automatic means for selectively diverting carriers from a main track into any one of a number of other tracks, and the main object of the invention is to provide for a substantial increase in the number of selector devices whereby a corresponding increase in the number of main tracks and branch tracks leading therefrom may be effected.

More specifically the invention resides in a novel tab mechanism for actuating a switch or deflector bar to deflect a carrier or carriers onto a branch track, and in which the tab is moved in one direction by a pre-determined actuating means to actuate the switch, and a portion of the tab is moved in a different direction by one or more actuating means of a different height to permit the passage of such last-named actuating means without actuating the switch or deflector bar.

Other objects and advantages relate to the details of the structure and the form and relation of the parts thereof, all as will more fully appear from the following description taken in connection with the accompanying drawings, in which:

Figure 1 is a fragmentary plan view of a conveyer system embodying this invention.

Figure 2 is a fragmentary elevation of a portion of the conveyer system shown in Figure 1.

Figure 3 is an elevation of the tab of this invention.

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

Figure 5 is a section on line 5—5, Figure 4.

Figure 6 is an elevation of a latch mechanism and its releasing means.

The apparatus here illustrated as an embodiment of the invention comprises a main track having side rails —1— and —2—, such rails being provided with series of journals —3— for the reception of the axles of rollers —4—. Resting upon the several rollers is the upper run of an endless belt —5—, the lower run of which is not illustrated. Such belt may be driven from any suitable source of power and in any suitable and well known manner.

Diverging from the main track is a second track comprising the side rails —6— and —7— having journal openings for the axles —8— of a series of rollers —9—. This second or branch track may or may not be provided with an endless belt, as desired, and is here illustrated as not provided with power-driven impelling means and represents, for instance, the upper end of a downwardly inclined gravity conveyer track. However, it will be understood that this disclosure is merely illustrative of one embodiment of the invention.

A guide rail —10— is provided extending from the main track some distance along the side of the branch track to prevent carriers moving along the track from being thrust sidewise off the conveyer tracks when deflected by the action of the switch-bar —11—.

At a point adjacent the juncture of the branch track with the main track there is provided a pair of upright posts —12— positioned upon opposite sides of the main track and secured respectively to the side rails —1— and —2—. These posts extend some distance above the main track and are provided with brackets —13— in which the transversely extending rock-shaft —14— is journaled. The rock-shaft —14— is positioned some distance above the main track so as to be out of the path of movement of the carriers moving along the track and the rocking movement of the shaft —14— is designed to actuate the switch or deflecting bar —11—. This deflecting bar —11— is shown in its normal position in full lines (Figure 1) and is out of the path of movement of carriers passing along the main track, and for the purpose of shifting the switch-bar to a position diagonally across the main track, the shaft —14— is provided with a crank-arm —15— connected by link —16— to another crank-arm —17— secured to shaft —18— journaled in bearings upon

the post —12— below the side rails —1— and —2— of the main track.

The shaft —18— extends transversely of the main track and at a point adjacent the side rail —1— is provided with a crank-arm —18— connected by a link —19— to a crank-arm —20— secured to a vertical shaft —21— journaled in bearings —22— secured to the side rail —1— and the longitudinal frame bar —23—.

The switch or deflecting bar —11— is secured to the rock shaft —21— in any suitable manner, and at a point preferably slightly above the upper run of belt —5—. A brace bar —24— is secured to the upper end of shaft —21— and has its other end connected to the deflecting bar —11— near the outer end of the latter. Spring means is preferably provided for maintaining the deflecting bar in the position shown in Figure 1 with its end portion in contact with the stop —25— and for the purpose of illustration there is here shown spring —26— connected to a bracket on the side-rail —1— and to the end of the rock-arm —20—.

Suitable mechanism is provided for rocking the shaft —14— to shift the switch or deflecting bar —11— to the position shown in dotted lines (Figure 1) diagonally of and across the main track, and the deflecting bar may be temporarily held in this position by a latch mechanism —27— of any suitable and well known construction, and released in any suitable and well known manner, as for instance by the passage of a carrier over an actuating bar —28— disposed in the path of movement of a carrier moving along the branch track.

This actuating lever —28— is mounted on a rock shaft —80— journaled in the side rails —6— and —7— and whenever a carrier rests on the lever —28—, the shaft is rocked, in turn rocking arm —81— connected by a link —82— to a rock arm —83— on shaft —84— which in turn rocks arm —85— on shaft —84— to draw the latch —27— downwardly against the action of spring —87—, thereby releasing deflecting bar —11— which returns to normal position, and the deflecting bar will not again be latched in its carrier-deflecting position until the carrier moves from contact with the lever —28— so that when a branch track is full no further carriers will be directed into it.

As stated, when the deflecting bar —11— is released by the latch mechanism —26— it is returned to the normal position shown in full lines (Figure 1) by spring —26— to permit the free passage of carriers along the main track.

The tab mechanism of this invention comprises a two-part lever —30—, the portions of which are capable of relative movement, and this two-part lever consists of a bearing section —31— rigidly mounted on rock shaft —14— and formed with depending spaced jaws —32— and —33— provided with aligned openings for the reception of a shaft —34— upon which the upper end of the other section —35— is pivotally mounted. The upper end of the section —35— fits within the space between the jaws —32— and —33— and is formed at one side with a stop flange —36— adapted to contact with the bearing portion —13— to prevent rocking movement of the lower section —35— in one direction beyond a pre-determined line which in this instance is substantially vertical.

The lower end of the section —35— is formed in this instance with a depending rearwardly offset leg —96— having an opening for the reception of a stem —37— which lies at substantially right angles to the rock-shaft —14—. The stem —37— is slidably mounted in the opening in the leg —96— and is held from sliding movement in one direction by pin —38— extending through the stem and adapted to contact with a washer —39— which in turn contacts with the rear side of the leg —96—. The stem —37— upon the opposite side of the leg —96— is formed with a contact disk or head —40— normally held spaced from the leg by spring —41— interposed between the head —40— and the adjacent side of the leg —96—.

Above the head —40— and preferably forwardly thereof, the lever section —35— is formed with a forwardly extending projection —41— provided with a cam surface —42— inclined with respect to the axis of the rock-shaft —14— and also with respect to the axis of the shaft —34— so that any contact pins or actuating members for the lever which extend upwardly along the cam surface —42— will ride along said surface and swing the lower section —35— of the lever laterally of the conveyer, and in a direction substantially parallel with the axis of the rock shaft —14— to permit the passage of such pin without rocking the entire lever including the bearing section —31— whereby the shaft —14— would be rocked and the deflecting bar actuated.

In this particular disclosure there is shown in dotted lines (Figure 4) the forward end —44— of a carrier or box-like structure adapted to be conveyed by the conveyer system and the forward end of this conveyer, as shown in Figure 1, is provided with three transverse rows of sockets —45—, —46— and —47— of different depth and in which transverse rows of pins —48— are adapted to be inserted. A pin —48— in the socket —45— projects above the upper surface of the carrier a distance somewhat greater than a pin —48— in a socket —46—, and in a similar manner a pin —48— in a socket —46— projects above the upper surface of the car-

rier a distance somewhat greater than a pin —48— in a socket —47—.

In the structure shown in Figure 4 the tab mechanism is adapted to be actuated by a pin —48— in a socket —47— to rock the shaft —14— by contact of the pin with the contact disk —40— and pins —48— in either the sockets —45— or —46— in the same line lengthwise of the carrier will strike the cam surface —42— and swing the lower section —35— of the lever —30— laterally of the conveyer and in a direction substantially parallel with the axis of the rock shaft —14— to permit the passage of such pin or pins without rocking the entire lever and therefore without rocking the shaft —14— and without actuating the deflecting mechanism.

The tab mechanism to be operated by a pin —48— in a socket —46— would be of the same construction as that shown in Figure 4 and which latter tab mechanism is actuated for operating the switch by contact with a pin —48— in a socket —47—, but in the case of a tab mechanism to be operated by a pin —48— in a socket —46—, the tab mechanism should terminate at a higher elevation than the tab mechanism shown in Figure 4 so that a pin —48— in a socket —47— would pass underneath the tab mechanism and a pin —48— in a socket —45— would strike the cam surface —42—, while a pin —48— in a socket —46— will strike the contact disk —40— to rock the shaft —14—.

Tabs to be operated by the pin extending to the greatest elevation above the carriers need not be of the construction shown in Figure 4 but may be single levers rigidly connected to the shaft —14— and depending a sufficient distance for contact with the upper end of a pin —48— and a socket —45—.

In the construction here shown, three rows of sockets are shown aligned transversely of the carrier for the reception of the selecting pins, and the pins of each row are disposed lengthwise of the carrier in line with pins of other rows, and in this illustration where three rows of sockets are used it will be apparent that three pins, one in each row, may be placed in alignment with a single tab mechanism for actuating a predetermined tab, or for rendering other tabs inoperative, dependent upon the height of the pins.

As a general rule in operation each carrier will be provided with a single pin to move a particular tab mechanism to actuate a pre-determined switch or deflecting bar. However, in some cases a plurality of pins may be utilized. Preferably all pins are formed of the same length, and as illustrated in Figure 3, are used in connection with sockets of different depths formed in the front end of the carrier, and for illustrative purposes the sockets —45— are of less depth than the sockets —46— and the sockets —46— are in turn of less depth than the sockets —47—, but it is possible to accomplish the objects of this invention by utilizing sockets of the same or substantially the same depth in connection with pins of different lengths.

From the above description it will be apparent that a desired number of transverse rows of sockets may be formed in a single carrier for use in connection with pins adapted to terminate at different elevations above the carrier, and that the deflecting mechanism will be actuated only by a pin of a proper height to strike the head on disk —40— to thereby bodily move the entire tab, and that the deflecting mechanism will not be actuated by pins of a height to strike the inclined surface —42— whereby section —35— will be shifted or swung laterally, nor will it be actuated by pins of a height to pass underneath the lever —30—, and by reason of this construction and arrangement of parts which permits the use of a plurality of rows of sockets for receiving selecting pins, a greatly increased capacity of apparatus may be produced in which independent selective means is provided for determining the particular track onto which a carrier is deflected.

In the drawing I have illustrated a single main track and one branch leading therefrom, and a single switch and switch-operating mechanism. However, it will be understood that any number of main tracks may be utilized, and that any number of branch tracks may lead from each main track within the capacity of the sockets provided for the reception of selecting pins, and that at each branch track a tab mechanism similar to that shown in Figure 4 is provided which depends above the track the proper distance to be actuated either with or without actuating the deflecting bar in accordance with the height of the particular pin which contacts with the tab mechanism.

For that reason this invention broadly contemplates a plurality of tab mechanisms terminating in different elevations above the track combined with a plurality of selecting devices also terminating at different elevations above the track to correspond with the points of termination of respective tabs so that certain pins of certain heights will pass underneath the tab, certain pins of a different height will actuate the tab to operate the switch mechanism, and certain pins of a still different height will shift or swing the lower section of the tab mechanism laterally out of the path of movement of the pin or pins without operating the switch mechanism.

A spring —60— is provided connected to the lower section —35— of lever —30— and

to the bearing section —31— of the lever —30— for returning the section —35— to a vertical position after each swinging movement, and to normally maintain the section —35— in vertical position in line with a pre-determined longitudinally extending row of sockets in the carrier for receiving selecting pins.

And altho I have shown and described a specific construction of apparatus and particular details of form and arrangement of the parts thereof as constituting an embodiment of the invention, I do not desire to restrict myself to the same as various changes and modifications may be made within the scope of the appended claims.

I claim:

1. In a device of the class described, in combination, a deflecting mechanism, actuating members of varying heights disposed to engage a portion of such mechanism, means whereby an actuating member of a given height upon engagement will operate said mechanism, and means whereby an actuating member of a different height will upon engagement with said mechanism shift a portion of said mechanism laterally to permit the passage of said member without actuating the mechanism.

2. In a device of the class described, in combination, a deflecting mechanism, actuating members of varying heights disposed to engage said mechanism successively, and means whereby an actuating member of predetermined height upon engagement with said mechanism will shift a portion of said mechanism in a direction angularly disposed with respect to the path of movement of the member to permit the member to pass without actuating the mechanism.

3. In a conveyer system, a conveying means, cars carrying selecting members of varying heights, a deflecting mechanism, means whereby such mechanism will be made operative when engaged by pins of a given height, and means whereby pins of other heights upon engagement with said mechanism will shift the engaged portion out of its path of movement in a direction angularly disposed with respect to the path of movement.

4. A conveyer system comprising a carrier having a plurality of transverse rows of selecting pin sockets for supporting pins terminating at different heights above the carrier, a deflecting mechanism and a tab mechanism moved by a pin of one height to actuate the deflecting mechanism and having a portion adapted to be shifted at an angle to and out of the path of movement of a pin of a different height by contact of a pin therewith.

5. A conveyer system comprising a carrier having a plurality of transverse rows of selecting pin sockets adapted for supporting pins terminating at different heights above the carrier, a deflecting mechanism and a tab mechanism moved by a pin of one height to actuate the deflecting mechanism and having a portion shifted laterally by a pin of a different height independently of the deflecting mechanism.

6. In a device of the class described, a deflecting mechanism, a plurality of actuating members successively engaging said mechanism and means whereby certain actuating members by contact therewith shift a portion of said mechanism angularly out of the path of movement of said members to permit the passage of said members without actuating the deflecting mechanism.

7. A conveyer system including a track, a deflecting mechanism, a plurality of tabs depending above the track and terminating at different elevations above the track, carriers having selecting members terminating at different elevations above the track for actuating different tab mechanisms to operate respective switches and adapted to shift portions of other tab mechanisms at an angle to the path of movement of the selecting members to permit free passage of said members without actuating the deflecting mechanism.

8. A conveyer system comprising a main track, a branch track, a deflecting bar, a rock shaft for actuating the deflecting bar, a tab mounted on the rock shaft, said tab including two sections movably connected together, one of said sections being secured to the shaft for effecting a rocking movement of the latter and the other section capable of independent movement at an angle with the rocking movement of the first section.

9. A conveyer system comprising a main track, a branch track, a deflecting bar, a rock shaft for actuating the deflecting bar, a tab mounted on the rock shaft, said tab including two sections movably connected together, one of said sections being secured to the shaft for effecting a rocking movement of the latter and the other section capable of independent movement in a direction substantially parallel with the axis of the rock shaft.

10. A conveyer system comprising a main track, a branch track, a deflecting bar, a rock shaft for actuating the deflecting bar, a tab mounted on the rock shaft, said tab including two sections movably connected together, one of said sections being secured to the shaft for effecting a rocking movement of the latter and the other section capable of independent movement about a pivotal axis at substantially right angles to the axis of the rock shaft.

11. A conveyer system comprising a main track, a branch track, a deflecting bar, a rock shaft for actuating the deflecting bar, a tab mounted on the rock shaft, said tab

including two sections movably connected together, one of said sections being secured to the shaft for effecting rocking movement of the latter and the other section capable of independent movement at an angle with the rocking movement of the first section, and means for returning the second section to normal position after each independent movement.

12. A conveyer system comprising a main track, a branch track, a deflecting bar, a rock shaft for actuating the deflecting bar, a tab mounted on the rock shaft, said tab including two sections movably connected together, one of said sections being secured to the shaft for effecting a rocking movement of the latter and the other section capable of independent movement about a pivotal axis at substantially right angles to the axis of the rock shaft, and means for returning the second section to normal position after each independent movement.

13. A conveyer system comprising deflecting mechanism including a rock shaft, a tab mechanism mounted upon the rock shaft for effecting rocking movement of said shaft, said tab mechanism comprising two sections pivotally connected together on an axis at substantially right angles to the axis of the rock shaft.

14. A conveyer system comprising a deflecting mechanism including a rock shaft, a tab mounted on the rock shaft and adapted to effect rocking movement of the shaft, said tab mechanism including an upper and a lower section pivotally connected together and the lower section formed with an inclined surface.

15. A conveyer system comprising a deflecting mechanism including a rock shaft, a tab mounted on the rock shaft and adapted to effect rocking movement of the shaft, said tab mechanism including an upper and a lower section pivotally connected together and the lower section formed with an inclined surface, and a contact member carried by the lower section and positioned below the inclined surface.

16. A conveyer system including a track, a deflecting mechanism including a rock shaft, a carrier adapted to move in said system and adapted to be provided with selecting members terminating at different elevations above the carrier and a tab mechanism secured to the rock shaft, and including a portion shifted laterally by contact therewith of pins of a pre-determined height.

17. A conveyer system including a track, a deflecting mechanism including a rock shaft, a carrier adapted to move in said system and adapted to be provided with selecting members terminating at different elevations above the carrier, a tab mechanism secured to the rock shaft and including a portion shifted laterally by contact therewith of pins of a pre-determined height, and including another portion adapted for contact with selecting members of a different height whereby the tab mechanism is moved as a whole to rock the shaft and actuate the deflecting mechanism.

18. In a conveyer system a tab mechanism mounted for movement as a whole about a fixed axis and including two parts movably secured together, one of which is capable of movement independently of the other in a direction substantially parallel with the fixed axis.

19. In a conveyer system a tab mechanism mounted for movement as a whole about a fixed axis and including two parts pivotally secured together upon an axis disposed at substantially right angles to the said fixed axis, one of which is capable of movement independently of the other in a direction substantially parallel with the fixed axis.

In witness whereof I have hereunto set my hand this 30th day of March, 1927.

JOHN E. REGAN.