July 18, 1933. A. PLAUSICS 1,919,169

DRAG CONVEYER DISCHARGE

Filed June 5, 1931

FIG. 1

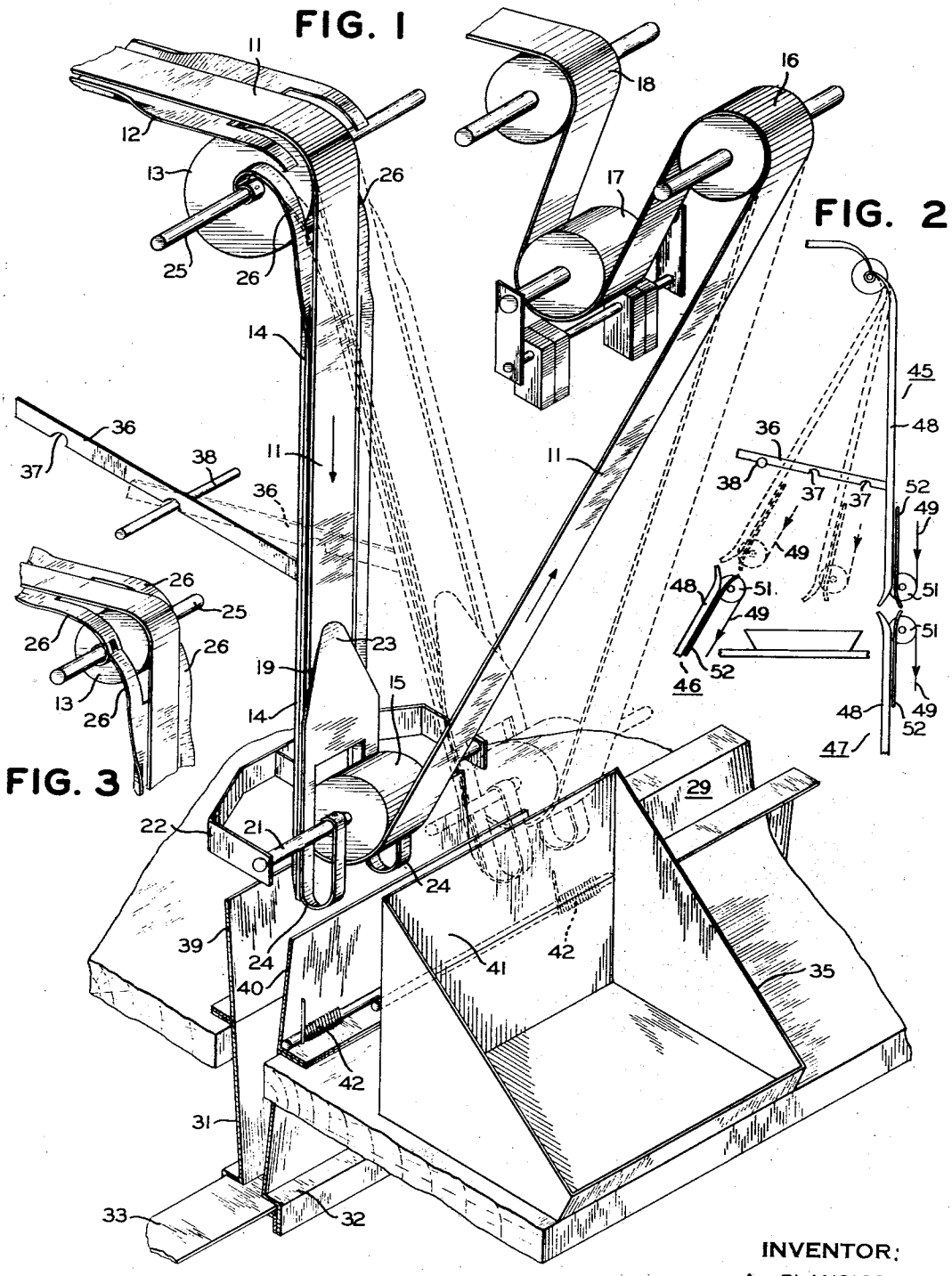

FIG. 2

FIG. 3

INVENTOR:
A. PLAUSICS

BY his ATTORNEY
Eugene C. Brown

Patented July 18, 1933 1,919,169

UNITED STATES PATENT OFFICE

ALEXANDER PLAUSICS, OF BRONX, NEW YORK, ASSIGNOR TO THE WESTERN UNION TELEGRAPH COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

DRAG CONVEYER DISCHARGE

Application filed June 5, 1931. Serial No. 542,410.

This invention relates to drag conveyers, more particularly to drag conveyers for conveying sheet material; and it has for an object to provide a selective arrangement for enabling a drag conveyer to communicate with any one of a plurality of other conveyers or material handling apparatus.

The selective arrangement is preferably in the form of a swinging section of the conveyer pivoted at one end so that the other end may be moved from one position to another to communicate with any one of a plurality of other conveyers or material handling apparatus, and having means to set the movable end of the section in any desired one of the positions.

The type of drag conveyer to which this invention is particularly adaptable comprises a conveyer channel having a bottom and outwardly flaring side portions and a belt arranged to travel along said channel in engagement with the bottom and arranged to convey sheet material between the belt and the channel by frictional engagement with the belt. Conveyers of this type have gone into extensive commercial use in connection with handling telegram blanks, messages, letters or other sheet material in office buildings and the like. One field of extensive use is in connection with the conveyer systems employed in district or relay offices of commercial communication concerns where the messages that are received in one section of the building may have to be transferred to another section of the building to be sent out over the proper communication channel. The conveyer system is employed in collecting the messages and routing the same to the proper section for dispatching.

In such conveyer systems, the telegram blanks or messages to be transferred to other sections of the building are deposited into collecting conveyers of any suitable type, which discharge into one or more pick-up conveyers leading to a distribution center or distribution area or which feed into other conveyers which will take the messages to proper sections of the distribution area, such as a table or a moving belt before a number of assorting or routing clerks. At the distribution center the messages are assorted and deposited in routing conveyers which discharge into suitable delivery conveyers by which they are delivered to the proper section of the building for dispatching.

Various applications of this invention may be made to conveyer systems of the foregoing type. However, for the purposes of illustration only one or two examples will be given. As one example, this invention may be effectively applied to a system employing a single conveyer run as the trunk line leading from the pick-up conveyers to the distribution center continuously throughout the day, where the number of messages coming over such route will vary with the amount of business done during different hours of the day. In other words, the business during the most active day hours will be at a maximum while the business at night will drop off considerably and reach its minimum. At the height of the business hours it may require several distribution or assorting clerks to assort and route the incoming messages, while on the other hand, at night one distribution clerk would ordinarily be able to take care of the business. Under such conditions, during the day time it would be desirable to have the incoming messages arriving at the distribution center over this trunk run discharged into a suitable conveyer which will transfer the messages to proper sections of the distribution area available to the required number of clerks. On the other hand, during the night when one clerk is taking care of the business, it would be desirable to have the messages discharged at another point into a suitable receptacle from which the clerk may assort the messages and either carry them to the proper destination or reroute them over other conveyer systems.

Selective discharge means for discharging the messages at either of the locations as outlined above is provided according to this invention, by arranging the trunk conveyer run to embody a downwardy extending section and by arranging the section to be pivoted about its upper end so that the lower or discharge end may be swung back and forth to

position the discharge over either of the two or more receivers provided for the discharged message blanks.

An example of another application of this invention would be to a system in which it is desirable to route the messages from a pick-up conveyer over one trunk run to a distribution center at certain times and over another trunk run possibly to an entirely different distribution center at other times. This would be provided by arranging the pick-up conveyer to have a pivoted or swinging section arranged to discharge into an inlet provided in each of the trunk runs and means to shift the swinging section discharge from one inlet to the other.

The number of receivers into which the movable section can be arranged to discharge is by no means limited to two. On the other hand it can be arranged to discharge into any one of three or more receivers by suitably arranging the receivers with respect to the movement of the discharge section.

Furthermore, by reversing the direction of travel of the conveyer belt in the movable section the discharge end will function as an inlet and, by suitable arrangement, will provide a conveyer which will selectively receive material discharged from any one of a plurality of conveyer discharges or other discharge apparatus.

It is to be understood that although this invention is described as being embodied in a conveyer of the drag type in which material is conveyed between a moving belt and a stationary conveyer channel, it is within the scope of this invention to apply the same to other types of conveyers, such as for example double strap conveyers or conveyers in which the material is transported between two moving belts or other conveying elements, or to open type conveyers such as V trough conveyers, or other conveyers in which the sheet material is supported upon the conveying element as it travels.

Therefore a more specific object of this invention is to provide in a conveyer system a pivotally mounted section arranged to be moved back and forth for selectively communicating with any one of a plurality conveyers or material handling apparatus.

It has for another object to provide a drag conveyer with a pivotally mounted section having a terminal at the free end which may be adapted to either discharge or receive sheet material.

It has for a still further object to provide means for securing the movable communicating terminal in any one of the desired positions, which means may be easily regulated to shift the terminal from one position to another.

These and other objects are effected to my invention as will be apparent from the following description taken in connection with the accompanying drawing forming a part of this application, in which:

Fig. 1 shows the movable conveyer section arranged to discharge downwardly;

Fig. 2 shows the movable section arranged to communicate with either of two conveyers of similar type; and

Fig. 3 shows a detail of the pivotal arrangement, at the top of Fig. 2 permitting the conveyer belt to carry material in either direction.

Referring now to the drawing, Fig. 1 shows one form of the invention. At the top is the terminus of a horizontal run of a trunk conveyer over which the message blanks or other sheet material may be carried throughout the day or throughout periods in which the number of blanks carried by the conveyer varies widely. A drag type of conveyer is shown, which comprises an endless belt 11 traveling over the horizontal section of a trunk conveyer channel 12, passing from the end of the horizontal section over a suitable guide roller 13, to a downwardly extending conveyer channel section 14, around a suitable return guide roller 15 at the lower end of the channel section 14 and upwardly over guide rollers 16, 17 and 18 which form a take-up for the belt and guide the latter to its return run. The conveyer channels 12 and 14 are substantially identical and comprise a flat bottom and outwardly flaring side portions. However, a channel of any other suitable shape may be employed. It is to be understood that, even though the main or trunk conveyer run, which might be the transporting part of the conveyer, is shown as disposed in a horizontal direction, it may as readily extend in a vertical or any suitably inclined direction.

The channel section is flattened out adjacent the direction changing rollers so as to permit the message blanks to straighten out transversely and assume a longitudinally curved shape conforming to the shape of the guide roller as the message passes over the roller with the belt. At the lower end of the downwardly extending channel section 14 a deflector plate 19 is supported at the outward side of the conveyer belt which, together with the lower end of the channel section 14, forms the conveyer discharge. The guide roller 15 is supported on a suitable shaft 21 carried in a bracket or yoke 22 secured to the back of the channel member 14. The open end of the yoke is formed to extend well out beyond the edge of the channel member 14 so as not to interfere with the movement of the message blanks along the channel. In this type of conveyer the channel member is relatively of less width than the width of the message blanks or other sheet material being conveyed over the channel and for this reason the sheets extend outwardly beyond the edges of the channel member as they are being

transported therealong. The shaft 21 extends between the outer ends of the yoke 22 and provides a support for the deflector plate 19 as well as for the guide roller 15.

The deflector plate 19 is substantially of the same form as that described and claimed in the copending application of Maurice B. Smith, entitled Terminal for drag conveyer, Ser. No. 435,868, filed March 14, 1930 and assigned to The Western Union Telegraph Company. The deflector plate comprises a body portion extending substantially the full width of the conveyer channel and having a pointed upper end 23 extending upward over the conveyer belt 11 which serves to open out the sheets which may have become rolled or folded back over the edges of the belt, and downwardly projecting portions in the form of strips 24 arranged on either side of the return roller 15. The strips 24 are bent backward to meet the shaft 21 and are secured to the shaft and form, by virtue of their resiliency, yieldable supporting means for the deflector plate. The portion of the strips extending beyond the roller direct the sheets downward so that they are discharged at the end of the conveyer channel and prevent the sheets from following the belt 11 around the roller 15. The deflector plate is supported by the extensions of the strips 24 so that the resiliency of the material forming the strips will provide a yieldable mounting for the deflector plate so that when relatively thick or heavy sheets are carried along the conveyer or when several sheets cling together and form several thicknesses of material, the deflector plate and belt may move outwardly to accommodate the increased thickness of material. The deflector plate is preferably held near the back of the belt and spaced from it a suitable amount to provide clearance between the belt and the deflector when no material is passing this point. A yieldably supported deflector plate is described and claimed in a copending application of W. J. Wright, entitled Drag conveyer discharger deflector, Ser. No. 558,360, filed August 20, 1931 and assigned to The Western Union Telegraph Company.

The downwardly extending portion of the drag conveyer is pivotally supported at its upper end about the shaft 25 which also provides a support for the guide roller 13. As shown in the drawing, the upper end of the conveyer channel 14 has a central portion cut away to form an opening for the guide roller 13 and to form flanges or strips 26 which extend backwardly and are coiled around the shaft 25 and secured thereto at their extreme ends. In this manner the flexibility of the flange portions may yield to permit the conveyer section to be swung back and forth, or it may be accomplished by arranging the shaft to be turned in its bearing as the section swings.

The movable conveyer section is shown in the drawing as discharging into a V trough type conveyer 29 which carries the discharge material forward to the desired point. The V trough conveyer consists of a conveyer trough 31 embodying a base 32 within which a belt 33 travels. The material is deposited edgewise from the discharge of the drag conveyer and proceeds along the V trough conveyer on edge substantially in a vertical position. The drag conveyer will ordinarily discharge into the V trough conveyer during the portion of the day in which the business is heavy and the number of message blanks or sheets to be handled is relatively large. However, during periods when the number of message blanks or sheets to be handled is relatively light, it may be desirable to discharge the blanks into a suitable receptacle from which they may be assorted and rerouted.

In the drawing a receptacle 35 is shown positioned along side the conveyer 29. When it is desired to discharge the message blanks into the receptacle 35 the pivoted section of the drag conveyer is brought forward and secured in position with the discharge over the receptacle. For holding the movable section of the conveyer in the desired positions a suitable arrangement such as a notched bar 36 having notches or depressions 37 which fit over a suitable rigid dog 38. One end of the bar 36 is secured to the back of the movable conveyer channel section 14 and the other end left free so that it may be lifted from the dog and moved backward or forward to another notch which is arranged at a suitable place in the bar to hold the conveyer discharge in the desired position.

In order to more effectively direct the message blanks into the conveyer and prevent them from being blown out by cross currents of air before entering the receiver, the deflector plates 39, 40 and 41 have been provided adjacent the various discharge positions. When it is desired to extend the deflector plates upward beyond the discharge end of the conveyer channel 14, it will be necessary to make the plates 40 and 41 movable by a suitable pivot or hinge mounting arranged at the lower edge. In such a case, the plates may be held in the desired upright position by any suitable means such as springs 42.

It is to be understood, however, that this invention, as already indicated, is not limited to a swinging section arranged to discharge only. On the other hand, the swinging section may as readily be arranged to receive material discharged from suitably arranged terminals of two or more conveyer runs or from the discharge of any other type of sheet material handling apparatus. In Fig. 2, a diagrammatic view is shown of a

swinging conveyer section 45 arranged to receive material discharged from either terminal of two separate conveyer sections 46 and 47. The details of the conveyer sections 46 and 47 are substantially the same as described in connection with the foregoing embodiment (Fig. 1) and employ similar channel members 48 in which belts 49 travel. The discharge terminals at the outer ends of each of the channels 48 embody a return roller 51 and a deflector plate 52 similar to the deflector plate 19 in Fig. 1. These terminals are arranged to discharge upwardly and deliver the message blanks substantially in the same non-planiform shape which they assume while traveling along the conveyer channel.

The swinging section 45 is provided with an inlet arrangement embodying substantially the same features as the discharge of the sections 46 and 47. In this case the deflector plate 52 serves as a guide for properly directing the message blanks into the inlet of the conveyer, that is, between the moving belt and the conveyer channel. It will be observed that as shown diagrammatically in Fig. 2 the outward end of the conveyer channels 48 which are similar in each case and the outward end of the deflector plates 52 are curved away from each other so as to provide a flared opening or inlet to properly guide the message blanks across the connection between the two conveyer sections.

The swinging section 45 is held in proper position to receive the material discharged from the desired lower conveyer section by means of a notched bar 36 having notches 37 engaging a dog member 38. When it is desired to shift the inlet of the swinging section from its position over the discharge of one of the lower conveyers to the discharge of the other, the notched bar is lifted from the dog and the section swung over to the proper position where another notch in the bar 36 will engage the dog to hold the section in position. In case it is desired to feed the messages or other sheet material into the inlet of the swinging section 45 by hand it may be moved to some intermediate position such as shown in dotted outline in the drawing and the material fed upward into the inlet from a suitable tray or other receptacle.

With an arrangement such as diagrammatically shown in Fig. 2 the shiftable conveyer section may be readily changed from an inlet to a discharge section by merely reversing the direction of travel of the conveyer belt. Since the inlet and discharge arrangements preferably are substantially identical in form, the communicating conveyers may be arranged to receive material from the swinging section by changing the direction of travel of their belts also. On the other hand, the conveyers with which the swinging section is arranged to communicate may be both delivery and receiving conveyers. In other words, some of the conveyers would serve at all times as delivery or discharge conveyers while others would serve as receiving or inlet conveyers. The trunk conveyer communicating with the conveyer group through the swinging section 45 might then be operated in either direction and connected with the proper conveyer of the communicating group as desired.

When a conveyer section is to be arranged to operate to transfer material in one direction at a certain time and in the opposite direction at other times, it will be necessary to arrange the pivotal connection with the trunk section of the main conveyer so that material may pass around the direction changing roller from one conveyer channel to the other in either direction. Such an arrangement is illustrated in the fragmentary detail view shown in Fig. 3. In this arrangement the sides 26 of the conveyer channel instead of overlapping each other, as shown in Fig. 1, are arranged to come together at the shaft 25 of the direction changing roller 13. The two channels form a hinged joint about the shaft by arranging the channel sides to embody interleaving prongs bent around the roller or by any other suitable arrangement. When the channel sections are joined together in this manner the material being conveyed around the roller between it and the belt may readily pass from one channel section to the other without a possibility of being caught underneath the overlapping ends. It is to be understood, however, that the above described arrangement is merely illustrative of means for permitting the message blanks to travel in either direction and any other suitable arrangement may be employed for this purpose.

It should be observed, that a conveyer system having either type of shiftable section as heretofore described may be continued in operation while the sections are shifted or moved from one position to another. In other words, the moving of the shiftable section from one position to another may be carried out without in any way interfering with the normal operation of the conveyer belt or any other part of the apparatus. Ordinarily the shifting would take place when no messages were being discharged.

In operation, when the downwardly extending movable section of the conveyer system is operating as a discharge it will be so positioned that the terminal is arranged to discharge into the desired receiver. Message blanks transported over the trunk run of the conveyer will arrive at the end of the trunk section and be directed around the guide roller 13 and along the downwardly extending movable section 14 to the discharge terminal from which they will be directed into the selected receiver. When it is desired

to select a different receiver the positioning bar 36 will be released from the dog 38 and the movable section of the conveyer swung backward or forward to bring the discharge terminal over the desired receiver. In this position, message blanks will be delivered into the selected receiver until such time as it is desired to connect with the other receiver.

When the shiftable or swinging section is operated to receive message blanks or other sheet material instead of discharging the same, it will be set in position to communicate with one of two or more conveyer discharges or other discharge apparatus. Message blanks arriving at the discharge end of the conveyer, with which the shiftable section is set to communicate, will be conveyed from the end thereof into the receiving end of the shiftable section where the traveling belt will engage the message blanks and transport them along the trunk conveyer run. The deflector plate 52 of the discharge conveyer will guide the message blank into the flared opening formed between the deflector plate 52 and conveyer channel 48 of the shiftable section thereby assuring dependable and effective transfer of the material. When it is desired to receive material from one of the other discharging conveyers, the shiftable section is moved in substantially the same manner as already described in connection with this section operating as a discharge.

From the foregoing it will be observed that I have provided a conveyer system with a shiftable section which may be arranged to selectively communicate with any one of a plurality of conveyers or other sheet material apparatus to either discharge into such apparatus or receive material therefrom.

In addition, I have provided apparatus which may be operated to convey material in one direction at certain times and in a reverse direction at other times according as desired.

Furthermore, it will be apparent to those skilled in the art that by arranging a suitable number of selective discharge means, such as have been described herein, to branch out from a central point, a conveyer system may be constructed which will provide for routing material from a central point to any one of a number of discharge points. Also a conveyer system may be constructed which will enable material to be routed from several separate points and discharged at a single point. In such systems the selective shifting of the movable discharge members may be accomplished by hand or by a suitable centrally controlled system such as electrically operated shifting means controlled from a central point, or any other suitably controlled shifting means.

It is to be understood in connection with this invention that, although I have shown and described the same as applied to drag type conveyers, it may be readily applied to various other types of conveyer systems.

While I have shown this invention but in two forms, it will be obvious to those skilled in the art that it is not so limited but is susceptible to various other changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereon as are imposed by the prior art or as are specifically set forth in the appended claims.

I claim as my invention:

1. In a conveyer system for conveying sheet material, the combination of a drag conveyer embodying a conveyer channel and a belt traveling upon said channel for conveying sheet material between the belt and the channel by frictional engagement with the belt, said conveyer embodying a transporting section and a downwardly extending discharge section communicating with each other, said discharge section being pivotally mounted at its upper end and provided with a discharge terminal, a roller adjacent the discharge terminal around which said conveyer belt passes, a guide member associated with said belt in advance of said roller and having downwardly extending portions spaced apart to extend on each side of the roller, said trough and guide member extending beyond the roller in the direction of travel of the conveyer belt and serving to guide the sheet material out of said conveyer, a plurality of receivers to receive material discharged from the conveyer terminal, guide members associated with said receivers to direct the discharged material into the receiver, and means to selectively position the terminal to discharge material into any one of said receivers.

2. A drag conveyer for sheet material comprising a trough member, a belt arranged to travel in said trough member in contact therewith for conveying sheet material between the belt and the trough, said conveyer embodying a shiftable discharge section and a transporting section communicating with said discharge section, a plurality of receivers for the discharged material, a terminal at the end of the discharge section, means to shift the discharge section to bring the terminal over any selected one of said receivers, said discharge terminal embodying a roller around which said conveyer belt passes, a guide member extending to each side of said roller substantially parallel to and spaced from said trough member for forming a guideway past said roller for directing said sheet material toward the selected receiver.

3. The combination of shiftable conveyer section embodying a conveyer channel hav-

ing a base and outwardly flaring side portions, a belt positioned to travel in said channel in contact therewith for conveying sheet material intermediate the belt and the channel, a roller adjacent the outlet end of said conveyer section around which said belt passes, a guide member associated with said belt in advance of said roller, said channel and guide member arranged to extend beyond the roller in the direction of travel of the conveyer and serving to direct the sheet material as it is discharged from the outlet of the conveyer section, a plurality of receivers including a second conveyer disposed beneath the outlet end of the shiftable conveyer section to receive the sheet material therefrom, and means to shift the conveyer section so that the outlet may be positioned over any one of the receivers.

4. In a conveyer system for conveying sheet material the combination of a conveyer embodying a transporting section and a discharge section pivotally mounted at the end of the transporting section for receiving material therefrom, the pivoted section being provided with a discharge terminal at the end thereof, a common belt arranged to travel over the transporting section and the pivoted section, a belt guide roller at the junction of the transporting section and the pivoted section and a return roller for the belt mounted adjacent the discharge terminal for guiding the belt in a return direction, another guide roller adjacent the junction of the two conveyer sections for guiding the belt back along the transporting section, means for swinging the pivoted section and securing the same with the discharge terminal in any one of a plurality of positions and take up means provided along the return section of the belt to compensate for changes in the distances between the guide rollers of the belt occurring as the pivoted section of the conveyer is swung from one position to another.

ALEXANDER PLAUSICS.