Feb. 28, 1950 J. TEERLINK ET AL 2,499,336

METHOD AND APPARATUS FOR INSERTING ATTACHMENT LINKS IN CONVEYER CHAINS

Filed Sept. 29, 1948 4 Sheets-Sheet 1

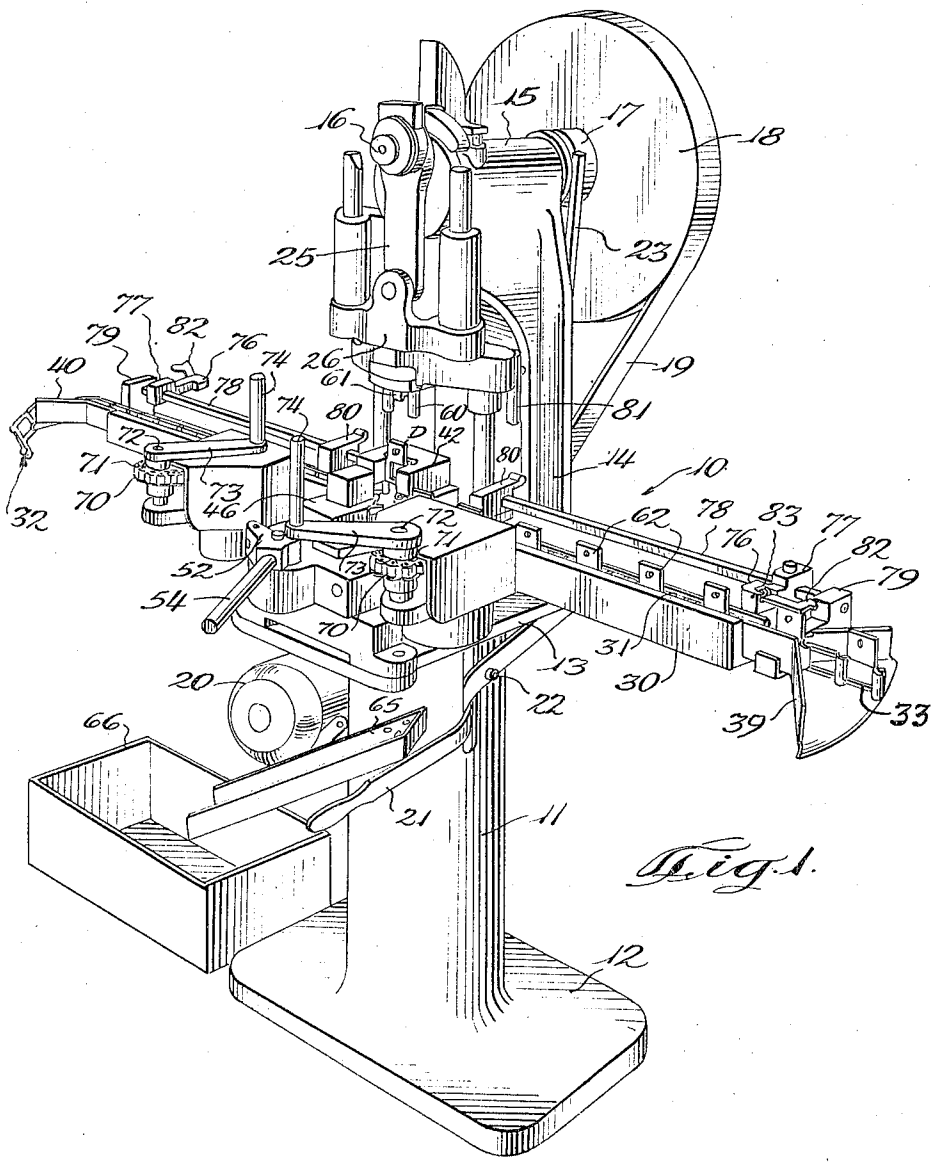


Fig. 1.

Inventors
James Teerlink
John Dimokowski
Nels E. Pearson

By
Dawson, Owen, Bottum & Spangenberg,
Attorneys

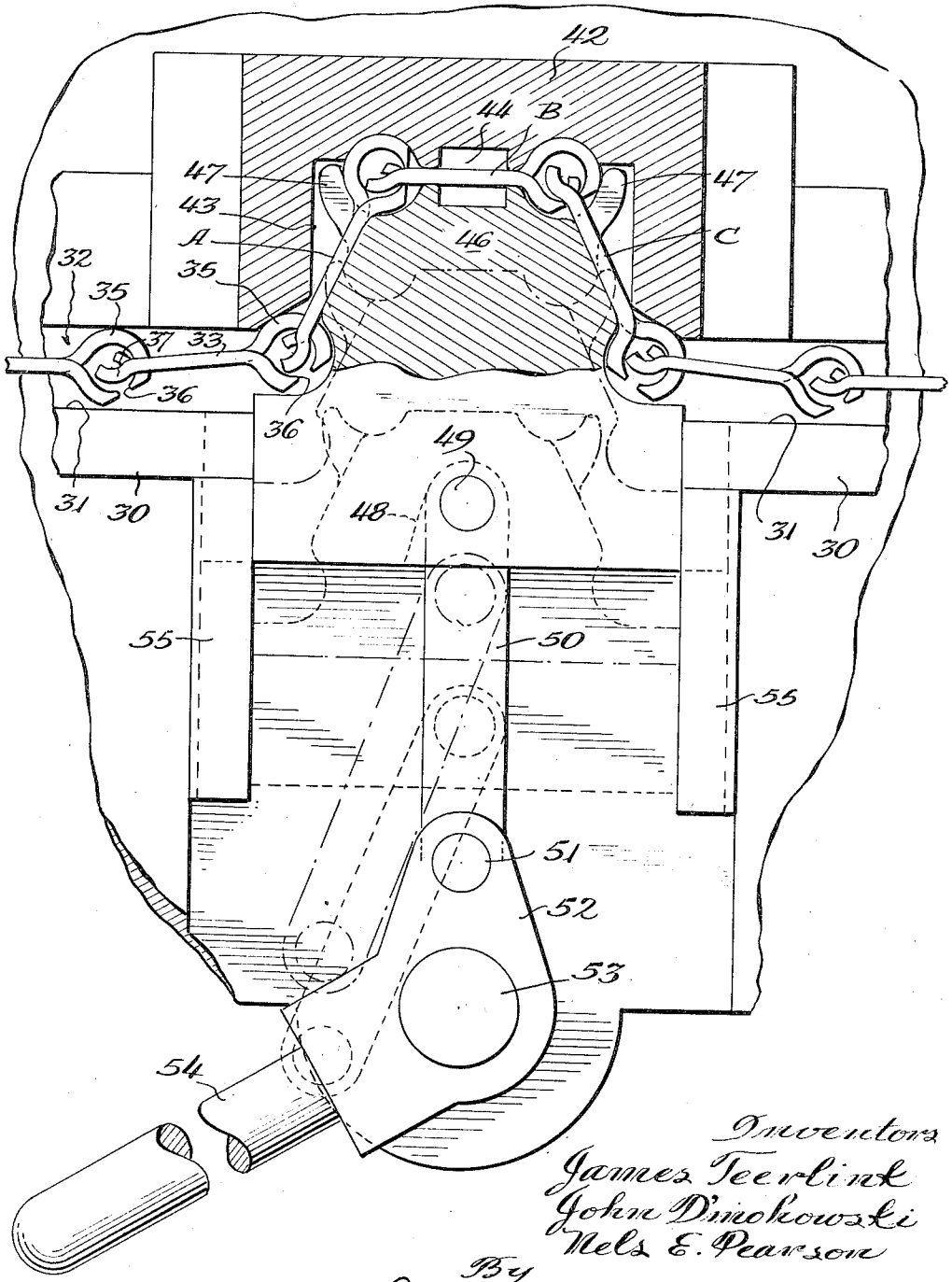
Feb. 28, 1950 J. TEERLINK ET AL 2,499,336

METHOD AND APPARATUS FOR INSERTING ATTACHMENT LINKS IN CONVEYER CHAINS

Filed Sept. 29, 1948

4 Sheets-Sheet 2

Fig. 2.



Inventors
James Teerlink
John D'Imokowski
Nels E. Pearson

By
Dawson, Owen, Britton & Langenbeg,
Attorneys

Feb. 28, 1950 J. TEERLINK ET AL 2,499,336

METHOD AND APPARATUS FOR INSERTING ATTACHMENT LINKS IN CONVEYER CHAINS

Filed Sept. 29, 1948 4 Sheets-Sheet 3

Fig. 5.

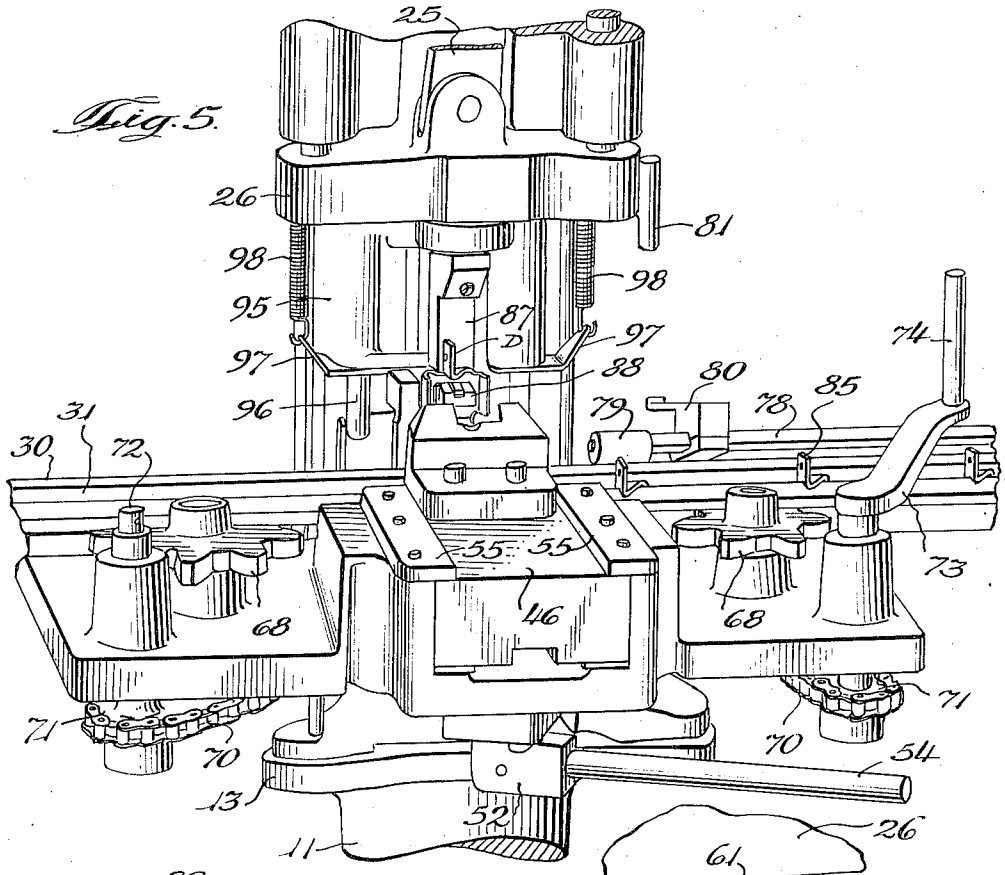


Fig. 6.

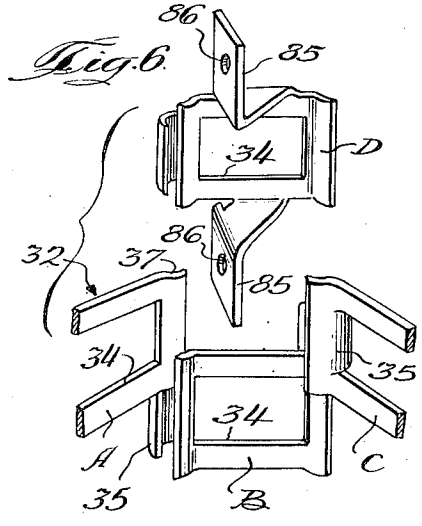
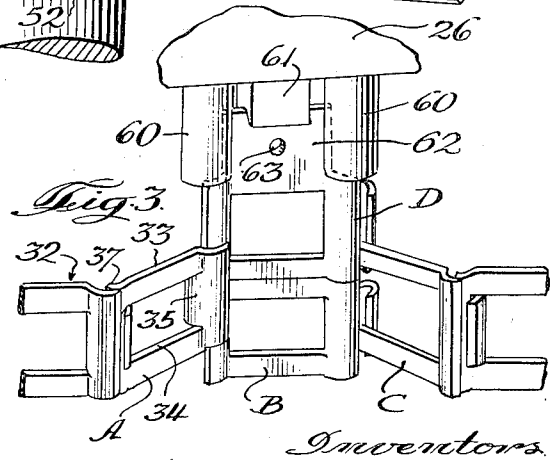


Fig. 3.



Inventors
James Teerlink
John D'mokowski
Nels E. Pearson

By
Dawson, Owen, Bostick & Spangenberg,
Attorneys

Feb. 28, 1950 J. TEERLINK ET AL 2,499,336

METHOD AND APPARATUS FOR INSERTING ATTACHMENT LINKS IN CONVEYER CHAINS

Filed Sept. 29, 1948 4 Sheets-Sheet 4

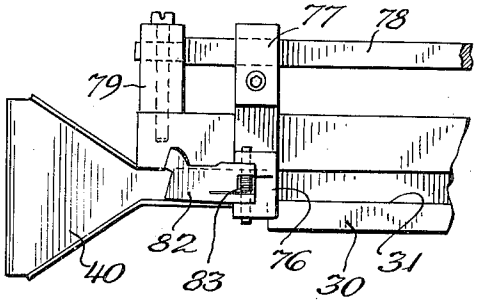


Fig. 11.

Fig. 8.

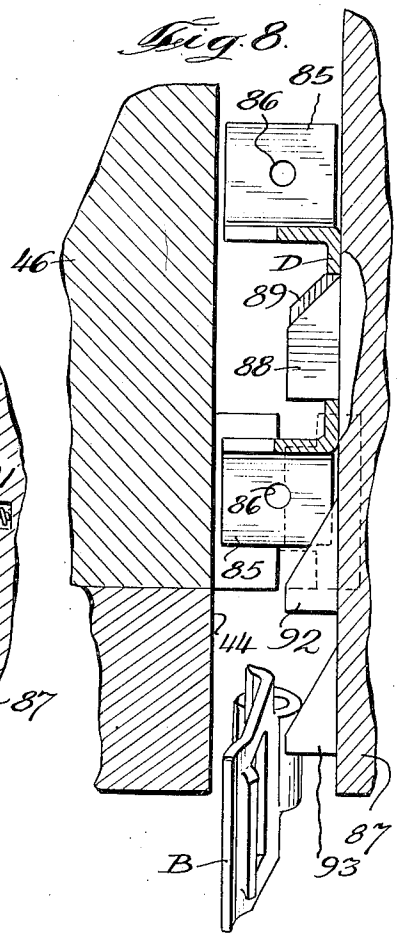
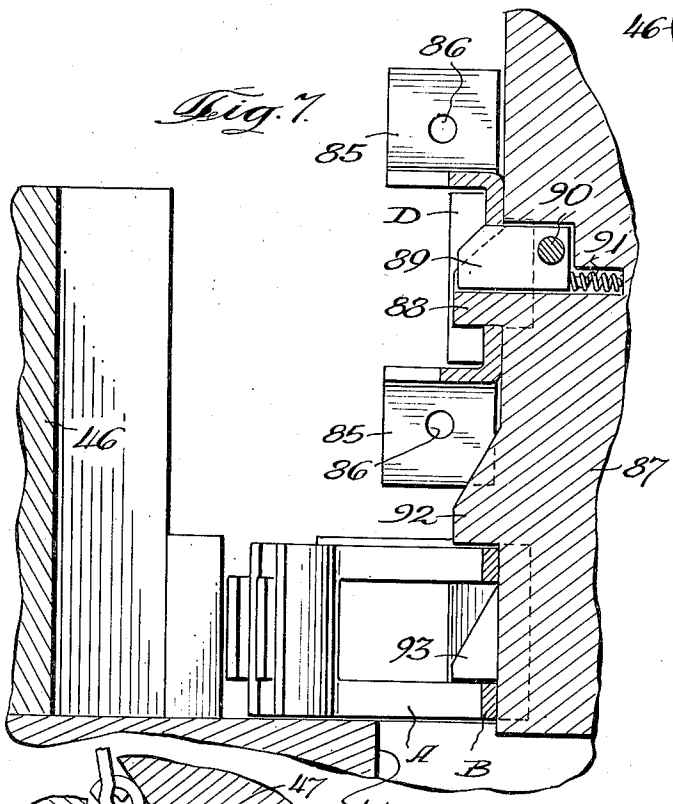
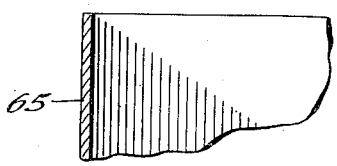


Fig. 7.





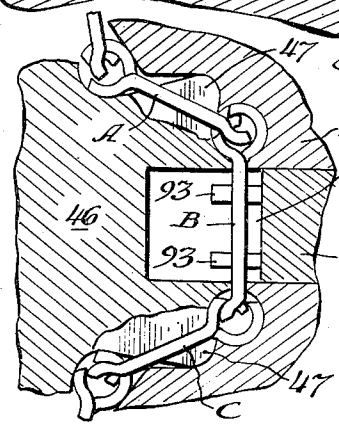


Fig. 9.

Inventors
James Teerlink
John Dmokowski
Nels E. Pearson

By Dawson, Owen, Bottle & Sprangenberg
Attorneys

Patented Feb. 28, 1950 2,499,336

UNITED STATES PATENT OFFICE

2,499,336

METHOD AND APPARATUS FOR INSERTING ATTACHMENT LINKS IN CONVEYER CHAINS

James Teerlink and John D'Mohowski, Chicago, and Nels E. Pearson, Evergreen Park, Ill., assignors to Chains, Inc., a corporation of Illinois

Application September 29, 1948, Serial No. 51,722

15 Claims. (Cl. 59—7)

1

To insert attachment links in the conveyor chain it has been conventional practice for many years manually to separate the chain at desired intervals and manually to insert attachment links between the separated portions of the chain. This was accomplished by angularly positioning two adjacent links of the chain to release position, supporting one of the links on a block and then hammering the other link laterally therefrom to separate the chain. The attachment link was then placed on a block and then the end link of one of the separated chain sections was angularly disposed with respect to the attachment link and laterally hammered into place thereon. The end link of the other chain section was then angularly disposed with respect to the attachment link and also laterally hammered into place.

Thus, three manual operations were required to insert an attachment link into the conveyor chain which of course was time consuming and expensive. Also. great care was required in counting chain links to separate the chain at the correct places. Further, the manual hammering procedure caused the links to bend, spring and distort thereby making an inferior chain which would not stand up under heavy load and operating conditions.

The principal object of this invention is to provide a new method and apparatus for inserting attachment links in conveyor chains wherein the above difficulties are minimized, wherein only a single operation is required, wherein counting of chain links is eliminated and wherein the attachment links are uniformly inserted in the conveyor chain without bending, springing and distorting to provide a uniform chain which will satisfy heavy load and operating requirements.

More specifically, an obect of this invention is to provide a new method of inserting attachment links in a conveyor chain wherein three adjacent links of the conveyor chain are angularly positioned for permitting removal of the center link thereof, wherein the end links of the three links are gripped in angular position, wherein the center link of the three is forced laterally from the conveyor chain, and wherein the attachment link is forced laterally into the conveyor chain in substitution for the center link.

A further object of this invention is to provide a new machine for inserting attachment links in a conveyor chain wherein a clamping member is movable into a cavity in a block for angularly positioning three adjacent links of the conveyor in the cavity and for gripping the end links thereof with the center link over a discharge

2

opening in the cavity, wherein a movable head laterally forces the center link of the three links laterally through the discharge opening and laterally forces the attachment link into the conveyor chain in substitution for the center link, wherein a track may be provided for guiding the chain past the clamping member and block, wherein a device may advance the conveyor chain along the track, and wherein a releasable stop may limit the extent of advance of the conveyor chain.

In addition to providing a new method and apparatus for inserting attachment links in conveyor chain, the invention also produces a supply of individual chain links which may be sold and used for replacement purposes, there being a large demand for such links. It is also found that one man following the teachings of this invention can do the work of four men following the old conventional practice thereby affording a great saving in time and expense.

Further objects of this invention reside in the details of construction of the apparatus and the cooperative relationship between the component parts thereof.

Other objects of this invention will become apparent to those skilled in the art upon reference to the accompanying specification, claims and drawings in which:

Figure 1 is a perspective view of one form of the machine of this invention for inserting one type of attachment link in a conveyor chain;

Figure 2 is an enlarged horizontal view partly in section taken at substantially the center of the machine;

Figure 3 is a diagrammatical view showing the operation of the machine of Figure 1 with one of the links being laterally forced from the chain and with an attachment link being laterally forced therein.

Figure 4 is a detail view of one of the releasable stops;

Figure 5 is a partial perspective view of another form of the machine for inserting different types of attachment links in the conveyor chain;

Figure 6 is a diagrammatical view showing the operation of the form of the machine illustrated in Figure 5;

Figure 7 is an enlarged vertical sectional view taken substantially through the center of the machine illustrated in Figure 5;

Figure 8 is a view similar to Figure 7 but showing a chain link removed and an attachment link being inserted in the chain; and

Figure 9 is a horizontal sectional view through the lower portion of Figure 7.

Referring now to Figure 1, the machine for inserting attachment links in conveyor chains is generally designated at 10 and may include a column 11 carried by a base 12 and provided with a bed plate 13 and an overhead extension 14. The overhead extension 14 is provided with a journal 15 journalling a crank shaft 16 which is connected by a conventional 360° clutch 17 to a fly wheel 18. The fly wheel 18 may be driven by a belt 19 from an electric motor 20 carried by the column 11. An operating lever 21 pivoted at 22 to the column 11 may operate a shifter 23 for operating the clutch 17. The crank shaft 16 is connected by a link 25 to a movable head 26.

The structure so far described is conventional and corresponds to a conventional punch press. When the handle 21 is manipulated the clutch 17 operates the crank shaft 16 through one revolution to cause the head 26 to lower and raise.

The bed plate 13 carries a guide track 30 having an elongated channel 31 for guiding a conveyor chain generally designated at 32. The conveyor chain is of conventional form and is made from a strip of sheet steel by means of progressive dies and includes a plurality of interconnected links 33. Each link as shown in Fig. 3 is provided with a sprocket opening 34, a sleeve end 35 and a pin end 37, the sleeve end of one link pivotally receiving the pin end of the next link. The sleeve end is provided with an opening 36 so that when the links are angularly disposed as illustrated at A, B and C in Figures 2 and 3 the center link B may be forced out of the end links A and C.

The conveyor chain 32 is advanced along the guide track 30 in either direction as desired, and the entry of the chain into the channel 31 is facilitated by the flared ends 39 and 40 extending from the ends of the channels.

At the center of the machine and along side of the guide track there is provided a block 42 having a cavity 43 communicating with the guide track. The cavity 43 has a contour generally conforming to the shape of the three links A, B and C when angularly positioned as illustrated in Figure 2. A discharge opening 44 conforming generally to the shape of link B opens into the bottom of the cavity 43. A clamping member 46 normally arranged on the forward side of the guide track as illustrated in dotted lines in Figure 2 is adapted to cross over the guide track and enter into the cavity 43 as illustrated in solid lines in Figure 2. The contour of the clamping member 46 corresponds to the shape of the three links, A, B and C, when those links are in the angular position illustrated in Figure 2. In addition the clamping member 46 is preferably provided with a pair of projections 47 which extend through the openings 34 in the end links A and C. The clamping member 46 and the projections thereon operate to clamp the end links A and C rigidly in the cavity 43 with the center link B overlying the discharge opening 44 so that the center link B may readily be forced from the conveyor chain through the discharge opening 44.

The outer end of the clamping member 46 is provided with a recess 48 into which a link 50 extends. One end of the link 50 is pinned at 49 to the clamping member 46 and the other end is pinned at 51 to a bell crank lever 52 pivoted at 53 and provided with a handle 54.

Manipulation of the handle 54 to one position retracts the clamping member 46 to clear the guide track 30. Such position of the clamping member 46 is illustrated in dotted lines. When the conveyor chain 32 is properly positioned in the guide track the handle 54 is manipulated to move the clamping member 46 inwardly. As the clamping member 46 is moved inwardly to the position shown by dot and dash lines in Figure 2, the center link B of the three adjacent links A, B and C is moved inwardly into the cavity 43. When the clamping member 46 is moved entirely inwardly to the position shown in solid lines in Figure 2, the end links A and C are rigidly clamped and the center link B is supported over the discharge opening 44. After an attachment link has been substituted for the center link B in a manner to be pointed out more fully hereafter, the clamping member 46 is withdrawn to the dotted line position whereby the conveyor chain 32 with the attachment link therein may be advanced to a new position for the purpose of inserting another attachment link therein at the desired place. The clamping member 46 may be guided in its movement by guides 55.

One form of the attachment link to be inserted in the conveyor chain is designated at D and is more particularly illustrated in Figure 3. This attachment link corresponds to the other links of the chain with the exception that it is provided with a flat laterally projecting ear 62 having a hole 63 therein. This attachment link D is adapted to be received in a pocket in the block 42 directly above the center link B as is shown in Figure 1. The head 26 carries a fitting including a pair of grooved posts 60 and a slotted block 61, the grooves in the posts and the slot in the block encompassing the flat projecting ear 62 of the link D. When the head 26 is lowered the fitting engages the attachment link D and forces it downwardly against the center link B. This downward movement causes the center link B to be forced laterally from the conveyor chain through the discharge opening 44 and also causes the attachment link D to be forced laterally into the conveyor chain. Thus, the attachment link D is substituted in the conveyor chain 32 for the center link B in a single operation.

The center link B as it is forced from the conveyor chain 32 through the discharge opening 44 is caught by a chute 65 and delivered to a suitable container 66. These substituted links so collected may be sold and used for replacement or repair links in existing conveyor chains.

The conveyor chain may be advanced along the guide track 31 by a sprocket wheel 68 (Figure 5) extending into the guide track and engaging in the openings 34 in the conveyor chain. The sprocket wheel 68 is carried by a shaft which in turn carries another sprocket wheel which is connected by a chain 70 to a sprocket wheel 71 mounted on a shaft 72. The shaft 72 is provided with a crank arm 73 and a handle 74 so that by manipulating the handle 74 the sprocket wheel 68 is rotated for advancing the conveyor chain 32 along the guide track. As shown in Figure 1, two such advancing mechanisms are illustrated. The one to the right being utilized for advancing the conveyor chain to the right and the other at the left being utilized for advancing the conveyor chain to the left. Thus, conveyor chain may be advanced in either direction through the machine as desired.

In order to eliminate the necessity for counting the links between attachment links there is provided a releasable stop mechanism which includes a stop 76 adapted to be engaged by the projecting ear 62 of the attachment link D as the chain is advanced. When the stop is so engaged further advance of the chain is prevented. The stop is suitably adjusted so that the desired three lengths are brought in alinement with the cavity 43 of the block 42 for the next cycle of operation.

The stop 76 is carried by a block 77 which in turn is adjustably secured to a shaft 78 journalled at each end at 79. The shaft 78 carries an arm 80 which is adapted to be engaged by a pin 81 carried by the head 26 when the head 26 is lowered during a link substituting operation. When the head is so lowered the stop 76 is raised out of the path of the ear 62 of the attachment link. The stop 76 has a bracket 82 pivoted thereto which is biased downwardly by a spring 83. Thus, when the stop 76 is elevated the bracket 82 swings downwardly and engages the guide track for holding the stop 76 upwardly to permit advance of the conveyor chain. When the conveyor chain is advanced the bracket 82 is then tipped horizontally by the extending ear 62 of the attachment link to permit the stop 76 to fall downwardly into the path of movement of the extending ear 62 of the next attachment link for stopping it. In this way the stop 76 operates automatically to regulate the extent of advance of the conveyor chain along the guide track.

If the chain is to be advanced to the right as illustrated in Figure 1 the right hand advancing mechanism and the right hand stop mechanism are utilized, the left hand advancing mechanism merely following along with the movement of the conveyor chain and the left hand stop mechanism being rendered inoperative by moving the stop 76 out of the path of movement of the conveyor chain. As shown in Figure 1, the parts are arranged for right hand advance of the chain. If left hand advance is desired the right hand stop mechanism is rendered inoperative and the left hand stop mechanism is rendered operative.

Summarizing briefly the operation of the machine illustrated in Figures 1 to 4, the conveyor chain is advanced to the extent permitted by the stop mechanism and a substitute link D is inserted in the pocket of the block 42. The handle 54 is manipulated to move 3 adjacent links A, B and C of the conveyor chain into the cavity 43 of the block 42, the end links A and C being gripped in the cavity 43 by the clamping member 46 with the center link B arranged over the discharge opening 44. The handle 21 is then manipulated to lower the head 26 and in so doing the center link is forced laterally out of the conveyor chain through discharge opening 44 and the attachment link D is forced laterally into the conveyor chain. When the head 26 is thus operated the stop mechanism is released. The handle 54 is then manipulated to retract the clamping member 46 and then the handle 74 is manipulated to advance the conveyor chain to the next position as determined by the stop mechanism 76. The machine is then in condition to repeat the next cycle of operation. Thus, attachment links are substituted in the conveyor chain at pre-determined desired points along the conveyor chain.

The form of the invention illustrated in Figs. 5 to 9 is basically the same as that illustrated in Figs. 1 to 4 and like reference characters have been utilized for like parts. The form of the invention of Figs. 5 to 9 differs from that of Figs. 1 to 4 in the manner of forcing the center link B out of the conveyor chain and forcing the attachment link D into the conveyor chain. By reason of the form of the invention illustrated in Figures 5 to 9 various types of attachment links may be inserted in the conveyor chain. For example, the machine of Figures 5 to 9 may insert an attachment link D like that illustrated in Figure 6 wherein the attachment link is provided with a pair of angularly positioned ears 85 having holes 86.

In the machine of Figures 5 to 9 there is provided a slide 87 having a projection 88 containing a dog 89 pivoted at 90 and urged upwardly by a spring 91 as seen in Figure 7. The attachment link D is inserted over the projection 88 and dog 89 and is held in place thereon by the action of the spring 91. In this way the attachment link may be pressed upon and carried by the slide 87.

The slide 87 also is provided with a projection 92 adapted to engage the top side of the center link B and if desired, the slide 87 may be provided with a pair of projections 93 adapted to enter the opening 34 in the center link B.

The slide 87 is carried by a sub-head 95 guided by posts 96. The sub-head 95 is also provided with a plate 97 which is attached by springs 98 to the main head 26. The springs 98 provide a one-way strain release connection between the main head and the sub-head 95. When the main head 26 is moved downwardly it carries with it the sub-head 95 and the slide 87 and when the main head 26 is raised, the sub-head 95 may remain down until released whereupon the springs 98 pull the sub-head 95 upwardly.

The clamping member 46 moves the three links A, B and C into angular position as illustrated in Figure 9 and operates to grasp firmly the end links A and C with the center link B located over the discharge opening 44. When the slide 87 is moved downwardly by the downward movement of the head 26 the projections 92 and 93 operate to force laterally the center link B from the conveyor chain through the discharge opening 44 and the projection 88 operates to force laterally the attachment link D into the conveyor chain. In this way the attachment link D is substituted in the conveyor chain for the center link B.

When the head 26 is raised the slide 87 and the sub-head 95 remain down until the handle 54 is manipulated to withdraw the clamping member 46. When this is done the slide 87 is released and the springs 98 operate to raise the sub-head 95 and the slide 87 to position the parts for another cycle of operation.

The form of the invention illustrated in Figs. 5 to 9 is, therefore, capable of inserting any desired type or size of attachment link in the conveyor chain and obviously is also capable of inserting the type of attachment link illustrated in Fig. 3 of any desired size.

While for purposes of illustration two forms of this invention have been disclosed, other forms thereof will become apparent to those skilled in the art upon reference to this disclosure, and therefore, this invention is to be limited only by the scope of the appended claims.

We claim as our invention:

1. The method of inserting an attachment link

in a conveyor chain comprising, angularly positioning three adjacent links of the conveyor chain for permitting removal of the center link thereof, gripping the end links for maintaining the three links in angular position, laterally forcing the center link of the three from the conveyor chain, and laterally forcing the attachment link into the conveyor chain in substitution for the center link.

2. The method of inserting attachment links in a conveyor chain at selected points therealong comprising, selecting three adjacent links at one point along the conveyor chain, angularly positioning said three adjacent links for permitting removal of the center link thereof, gripping the end links for maintaining the three links in angular position, laterally forcing the center link of the three from the conveyor chain, laterally forcing an attachment link into the conveyor chain in substitution for the center link, and selecting three adjacent links at the other selected points along the conveyor chain and repeating said process at each of said selected points.

3. A machine for inserting attachment links in a conveyor chain comprising, a block having a cavity and a discharge opening, a clamping member movable into the cavity for angularly positioning three adjacent links of the conveyor chain in the cavity to permit removal of the center link thereof and for gripping the end links thereof with the center link over the discharge opening, and a movable head for laterally forcing the center link of the three from the conveyor chain through the discharge opening and laterally forcing an attachment link into the conveyor chain in substitution for the center link.

4. A machine for inserting attachment links in a conveyor chain comprising, a track for receiving the conveyor chain, a block having a cavity communicating with the track and a discharge opening, a clamping member movable across the track into the cavity for angularly positioning three adjacent links of the conveyor chain in the cavity to permit removal of the center link thereof and for gripping the end links thereof with the center link over the discharge opening, and a movable head for laterally forcing the center link of the three from the conveyor chain through the discharge opening and laterally forcing an attachment link into the conveyor chain in substitution for the center link.

5. A machine for inserting attachment links in a conveyor chain comprising, a track for receiving the conveyor chain, a block having a cavity communicating with the track and a discharge opening, a clamping member movable across the track into the cavity for angularly positioning three adjacent links of the conveyor chain in the cavity to permit removal of the center link thereof and for gripping the end links thereof with the center link over the discharge opening, a movable head for laterally forcing the center link of the three from the conveyor chain through the discharge opening and laterally forcing an attachment link into the conveyor chain in substitution for the center link, and a device engaging the conveyor chain in the track for advancing the conveyor chain along the track.

6. A machine for inserting attachment links in a conveyor chain comprising, a track for receiving the conveyor chains, a block having a cavity communicating with the track and a discharge opening, a clamping member movable across the track into the cavity for angularly positioning three adjacent links of the conveyor chain in the cavity to permit removal of the center link thereof and for gripping the end links thereof with the center link over the discharge opening, a movable head for laterally forcing the center link of the three from the conveyor chain through the discharge opening and laterally forcing an attachment link into the conveyor chain in substitution for the center link, a device engaging the conveyor chain in the track for advancing the conveyor chain along the track, and a stop associated with the track for engagement with an attachment link to limit the extent of advance of the conveyor chain by the device.

7. A machine for inserting attachment links in a conveyor chain comprising, a track for receiving the conveyor chain, a block having a cavity communicating with the track and a discharge opening, a clamping member movable across the track into the cavity for angularly positioning three adjacent links of the conveyor chain in the cavity to permit removal of the center link thereof and for gripping the end links thereof with the center link over the discharge opening, a movable head for laterally forcing the center link of the three from the conveyor chain through the discharge opening and laterally forcing an attachment link into the conveyor chain in substitution for the center link, a device engaging the conveyor chain in the track for advancing the conveyor chain along the track, a stop associated with the track for engagement with an attachment link to limit the extent of advance of the conveyor chain by the device, and means operated by the movable head for releasing the stop to permit advance of the conveyor chain until the next attachment link engages the stop.

8. A machine for inserting attachment links in a conveyor chain comprising, a block having a cavity and a discharge opening, a clamping member movable into the cavity for angularly positioning three adjacent links of the conveyor chain in the cavity to permit removal of the center link thereof and for gripping the end links thereof with the center link over the discharge opening, means for supporting an attachment link over the center link of the three, and a movable head for laterally forcing the center link of the three from the conveyor chain through the discharge opening and laterally forcing the attachment link into the conveyor chain in substitution for the center link.

9. A machine for inserting attachment links in a conveyor chain comprising, a track for receiving the conveyor chain, a block having a cavity communicating with the track and a discharge opening, a clamping member movable across the track into the cavity for angularly positioning three adjacent links of the conveyor chain in the cavity to permit removal of the center link thereof and for gripping the end links thereof with the center link over the discharge opening, means for supporting an attachment link over the center link of the three, and a movable head for laterally forcing the center link of the three from the conveyor chain through the discharge opening and laterally forcing the attachment link into the conveyor chain in substitution for the center link.

10. A machine for inserting attachment links in a conveyor chain comprising, a block having a cavity and a discharge opening, a clamping member movable into the cavity for angularly positioning three adjacent links of the conveyor chain in the cavity to permit removal of the

center link thereof and for gripping the end links thereof with the center link over the discharge opening, a pocket in the block for supporting an attachment link over the center link of the three, and a movable head for engaging the attachment link to force laterally the center link of the three from the conveyor chain through the discharge opening and to force laterally the attachment link into the conveyor chain in substitution for the center link.

11. A machine for inserting attachment links in a conveyor chain comprising, a track for receiving the conveyor chain, a block having a cavity communicating with the track and a discharge opening, a clamping member movable across the track into the cavity for angularly positioning three adjacent links of the conveyor chain in the cavity to permit removal of the center link thereof and for gripping the end links thereof with the center link over the discharge opening, a pocket in the block for supporting an attachment link over the center link of the three, and a movable head for engaging the attachment link to force laterally the center link of the three from the conveyor chain through the discharge opening and to force laterally the attachment link into the conveyor chain in substitution for the center link.

12. A machine for inserting attachment links in a conveyor chain comprising, a block having a cavity and a discharge opening, a clamping member movable into the cavity for angularly positioning three adjacent links of the conveyor chain in the cavity to permit removal of the center link thereof and for gripping the end links thereof with the center link over the discharge opening, a movable head, a projection on said head for engaging the center link of the three to force laterally the same from the conveyor chain through the discharge opening and a second projection on said head for supporting an attachment link over the center link of the three to force laterally the attachment link into the conveyor chain in substitution for the center link.

13. A machine for inserting attachment links in a conveyor chain comprising, a track for receiving the conveyor chain, a block having a cavity communicating with the track and a discharge opening, a clamping member movable across the track into the cavity for angularly positioning three adjacent links of the conveyor chain in the cavity to permit removal of the center link thereof and for gripping the end links thereof with the center link over the discharge opening, a movable head, a projection on said head for engaging the center link of the three to force laterally the same from the conveyor chain through the discharge opening and a second projection on said head for supporting an attachment link over the center link of the three to force laterally the attachment link into the conveyor chain in substitution for the center link.

14. A machine for inserting attachment links in a conveyor chain comprising, a block having a cavity and a discharge opening, a clamping member movable into the cavity for angularly positioning three adjacent links of the conveyor chain in the cavity to permit removal of the center link thereof and provided with projections entering into the openings in the end links thereof for gripping the end links with the center link over the discharge opening, and a movable head for laterally forcing the center link of the three from the conveyor chain through the discharge opening and laterally forcing an attachment link into the conveyor chain in substitution for the center link.

15. A machine for inserting attachment links in a conveyor chain comprising, a track for receiving the conveyor chain, a block having a cavity communicating with the track and a discharge opening, a clamping member movable across the track into the cavity for angularly positioning three adjacent links of the conveyor chain in the cavity to permit removal of the center link thereof and for gripping the end links thereof with the center link over the discharge opening, a movable head for laterally forcing the center link of the three from the conveyor chain through the discharge opening and laterally forcing an attachment link into the conveyor chain in substitution for the center link, and a sprocket wheel engaging the conveyor chain in the track for advancing the conveyor chain along the track.

JAMES TEERLINK.
JOHN D'MOHOWSKI.
NELS E. PEARSON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
705,842	Howe	July 29, 1902
2,268,225	Rodgers	Dec. 30, 1941
2,444,450	Kellgren	July 6, 1948