Aug. 13, 1940. J. G. JONES ET AL 2,211,332

LEADER BAR FOR THREADING ROLLER MACHINES WITH STRIP MATERIAL

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FIG. 1.

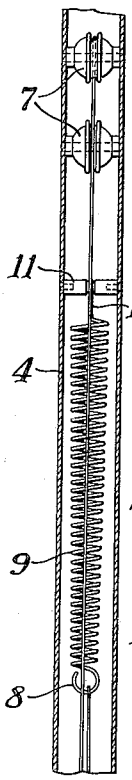


FIG. 2.

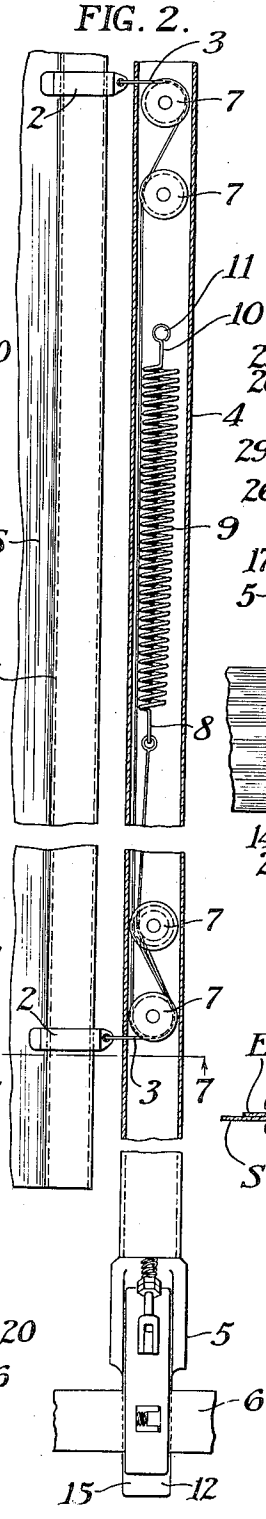


FIG. 3.

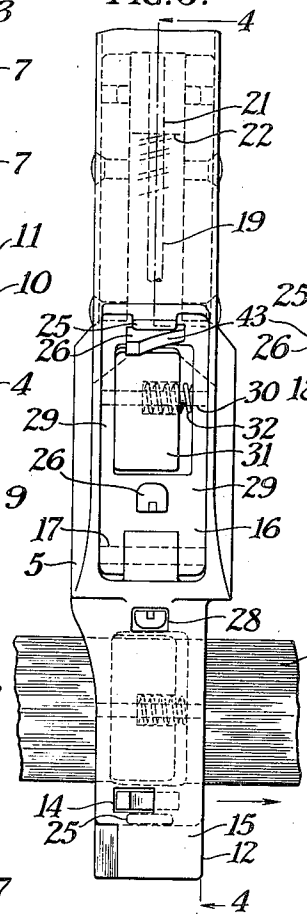


FIG. 4.

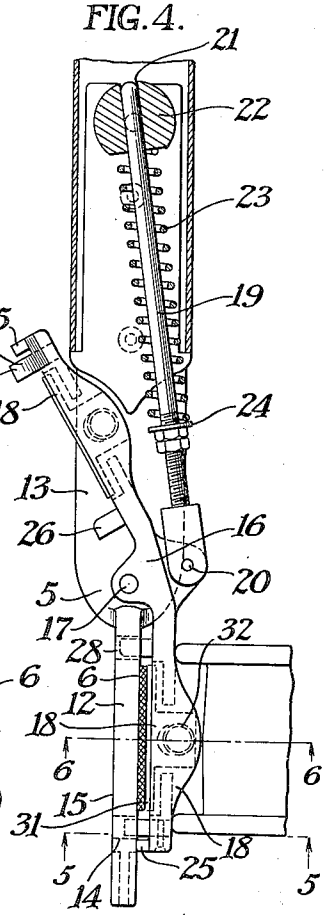


FIG. 7.

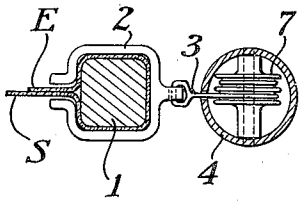


FIG. 5.

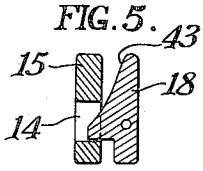
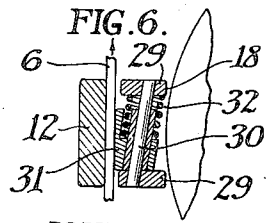


FIG. 6.



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FIG. 8.

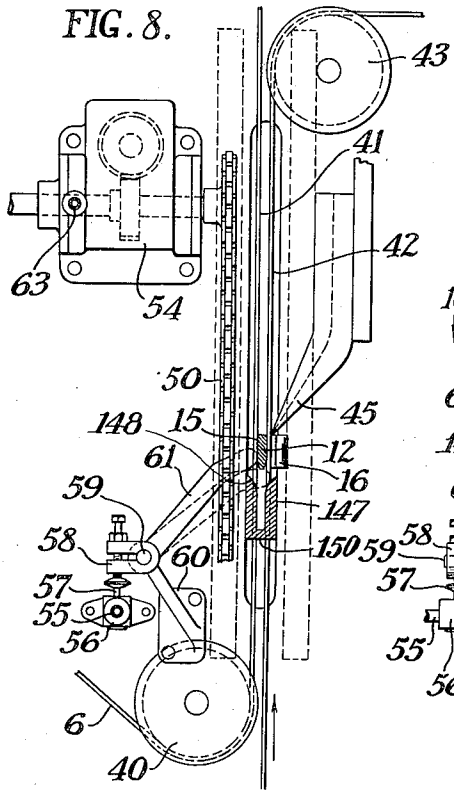


FIG. 9.

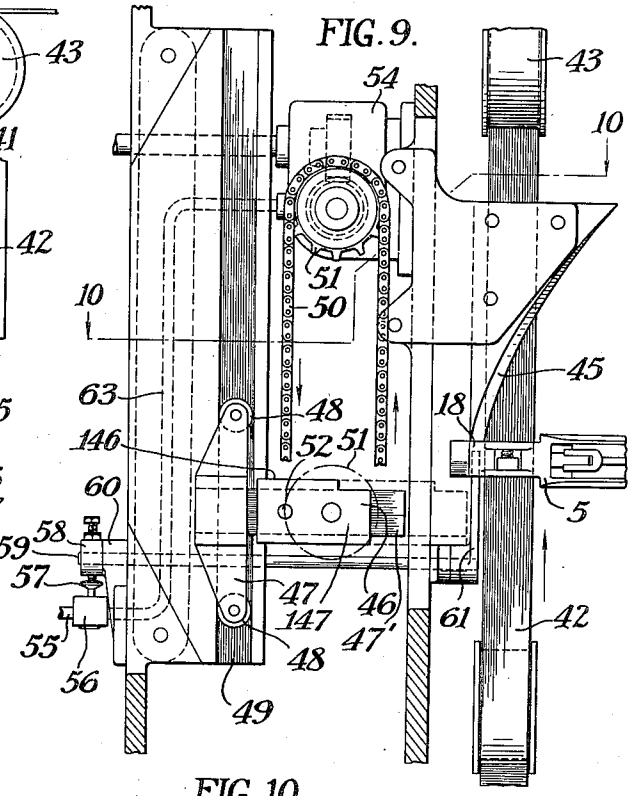


FIG. 10.

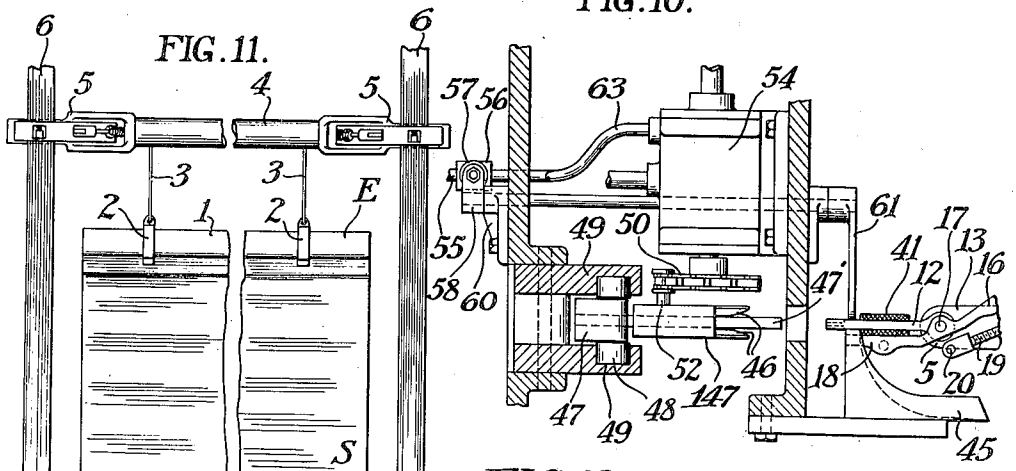
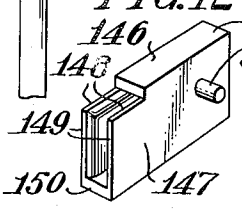


FIG. 11.

FIG. 12



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Patented Aug. 13, 1940 2,211,332

UNITED STATES PATENT OFFICE

2,211,332

LEADER BAR FOR THREADING ROLLER MACHINES WITH STRIP MATERIAL

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Application May 9, 1939, Serial No. 272,660

20 Claims. (Cl. 271—2.1)

This invention relates to leader bars which may be attached to an end of strip material to thread the strip material over rollers. Such machines are commonly used for cloth tentering, for drying strip material, for coating and dyeing machines and for other purposes where it is desirable to lead strip material through a long path about a plurality of rollers.

One object of our invention is to provide a leader bar of the type which is adapted to be carried along by belts with jaws for engaging the conveyor belts. Another object of our invention is to provide a leader bar with jaw members at each end which are so arranged that the jaws may be transferred from a clamping position against one belt to a clamping position against another belt. Another object of our invention is to provide a leader bar with a means for grasping a belt with a predetermined grip so that an even tension may be exerted by the belts upon the leader bar as it is passed through the machine. Still another object of our invention is to provide a leader bar with a resilient connection by which it may be attached to an end of strip material and to enclose this resilient connection inside of the bar. Still another object of our invention is to provide a jaw structure which may have jaw members for grasping a belt, the jaw members being so arranged that the belt will be released or will be permitted to slip according to the forces applied to the belt and to the strip material. Other objects will appear from the following specification, the novel features being particularly pointed out in the claims at the end thereof.

It has been somewhat difficult in the past to successfully thread long strips of material about machines including a plurality of rollers spaced apart to provide a tortuous path for the material and this is particularly true where the machines are divided into several sections which may sometimes be used for different purposes. Our invention contemplates a leader bar which can be attached to an end of the sheet material and which has at both ends jaws which resiliently grasp parallel belts which convey the leader bar through the path about the rollers over which the strip material is to be guided. It may be desirable to move the belt slightly in excess of the speed at which the strip material is threaded about the rollers, in which case the leader bar will consequently slip upon its moving belts, or it may be desirable to drive the belts at the threading speed, in which case the slip connection between the jaws and the belts will only be utilized where some undue tension may start to build up on the strip material so that the jaws, by slipping on the belts, may prevent the strip material from being damaged or torn if it should start to thread improperly.

Coming now to the drawings wherein like reference characters denote like parts throughout:

Fig. 1 is a longitudinal section with a portion of a leader bar broken off showing a leader bar and portions of a jaw construction constructed in accordance with and embodying a preferred form of our invention, parts of this figure being shown in elevation.

Fig. 2 is a fragmentary part section and part elevation showing a portion of the leader bar, the section being taken at right angles to the section of Fig. 1 and showing the same leader bar as in Fig. 1.

Fig. 3 is an enlarged fragmentary top plan view showing the jaw structure used at the ends of the leader bar.

Fig. 4 is an enlarged fragmentary section on line 4—4 of Fig. 3, showing the jaw construction partially in elevation and showing a portion of the leader bar in section.

Fig. 5 is an enlarged sectional view across a fixed and movable jaw element showing the relationship of these two jaws and the cam opening into which the jaw separator may project.

Fig. 6 is an enlarged fragmentary section showing the resilient gripper surface of the movably mounted jaw and its relationship to the fixedly mounted jaw and belt.

Fig. 7 is a sectional view taken on line 7—7 of Fig. 2.

Fig. 8 is a fragmentary side elevation showing a portion of the leader bar, in section, of a machine embodying two belt systems and showing a side elevation of the change-over mechanism.

Fig. 9 is an end elevation, partially in section, showing the change-over mechanism for a belt on one side of a machine, it being understood that similar structures are used on both sides—one for each belt.

Fig. 10 is a section on line 10—10 of Fig. 9.

Fig. 11 is a plan view, partially broken away, showing the leader bar with jaws attached to its moving belts, moving an end of strip material for threading a machine, and

Fig. 12 is a perspective view of the end of the slide member.

Referring to Fig. 11, the strip material S may have one end E looped about an auxiliary bar 1, and this bar, in turn, may be attached by suit-

able clips 2 and cables 3 to a leader bar 4 having belt grasping jaws designated broadly as 5 at each end for resiliently grasping a pair of belts 6. Thus, when these belts are moved through any desirable path for guiding the strip material S about a plurality of rollers, the leader bar 4 and the auxliary bar 1 will draw the strip material S through the path defined by the belts 6, thus threading the strip material around the rollers and through the machine.

The particular type of machine embodying a plurality of rollers is not important, and since such machines are well known, they will not be more fully described herein.

Referring to Figs. 1 and 2, it will be noted that the strip material S, which is looped about the auxiliary bar 1, may be held on the bar by means of spring clips 2, or it may be wrapped around the bar, which is preferably rectangular in shape as shown in Fig. 7, and an end portion E may be sewed, glued or otherwise fastened to the strip material S so as to hold firmly to the auxiliary bar 1.

Each of the clips 2 is attached to a cable 3, and the object of these cables is to exert an even and resilient pull on the strip material when the leader bar 4 is moved along by means of the jaws 5 and the belts 6. In order to obtain this resilient and even drag upon the auxiliary bar 1, the cables 3 are trained over a series of pulleys 7 mounted entirely within the hollow leader bar 4, so that each of the two cables will be attached to an end 8 of a coil spring 9, the other end of which, 10, is anchored upon a shaft 11, carried by the leader bar. Thus, the spring 9 exerts equal pressure upon both of the cables 3, and any sudden movement of the leader bar 4 will cause the spring 9 to flex and gently transmit the force to the strip material S.

In order to move the leader bar 4 by means of the belts 6, the leader bar is provided at each end with a jaw structure broadly indicated at 5. This jaw structure includes a relatively fixed jaw member 12 which is attached to the end 13 of the leader bar and which is provided with elongated openings 14 and with smooth belt-engaging faces 15 on each side.

Cooperating with this relatively fixed jaw is a pair of movable jaws carried in one piece 16, pivotally mounted at 17 upon the ends 13 of the leader bar, which are spaced apart a distance sufficient to permit the jaws 16 to move in between the spaced ends. As indicated in Figs. 3 and 4, the pivoted member 16 carries a pair of movably mounted jaws 18, spaced to each side of the pivot 17 and so arranged that either one jaw or the other will be resiliently held against the fixed jaw member 12, by means of a spring plunger 19. This spring plunger may be pivotally attached at 20 to the jaw carrying member 16, and is preferably mounted to slide in a bearing 21 on the oscillatable block 22, this block likewise supporting one end of a spring 23 which exerts a thrust upon the washer 24 to hold the member 16 in a set position.

As will be obvious from this figure, the spring 23 is effective to hold either of the two jaws 18 in an operative position and will increase its force upon the member 16 as it passes a dead center across pivot 17.

Each of the jaw members 18, which are movably mounted with respect to the jaw 12, carry a spacing lug 25 on the extreme outer ends, this spacing lug being adapted to engage with a smooth face 15 of the relatively fixed jaw member to hold the jaw in a definite relation thereto. Each of the movable jaws is likewise provided with a pair of spaced lugs 26 which may engage in the apertures 14 and 28 of the relatively fixed jaw member so that they will serve as edge guides to hold the belt 6 in its proper position between one of the movable jaw members 18 and the fixed jaw member 12.

Each of the jaws is so arranged that it will always exert a predetermined and resilient pressure upon the belt member 6. As indicated in Fig. 6, the movable jaw member 18 may include a pair of spaced side walls 29, carrying a shaft 30 arranged diagonally with respect to the fixed jaw 12 and with respect to a belt 6 lying flat upon the fixed jaw. On this shaft there is a belt gripping member in the form of a shoe 31 which is normally thrust along the shaft by a spring 32, and by selecting the proper springs, the exact degree of pressure upon this member can be readily controlled.

With the belt moving in the direction shown by the arrow in Fig. 6, it will be noted that the spring 32 contacts the shoe 31 with a surface of the belt, gripping it between the shoe and the relatively fixed jaw 12. As the belt moves along, if a sudden force should be applied to the belt, the shoe 31 will tend to move against the pressure of the spring 32 so that the belt is permitted to slip. We have found with this construction that the jaws may be permitted to slip all the time, with respect to the belts, and thread strip material satisfactorily, or they may be adjusted to grip the belt resiliently and move at the same speed as that of the belt while threading the strip material. In both cases it is desirable to have the resilient shoe on the movable jaw member to take care of any emergencies which may arise, such as irregularities in the belt surface, splices or the like, or to permit the jaw members to slip in cases where the machine may be threading improperly for some reason. In any event, a force, above a certain amount, applied to the belt in excess to the possible speed of travel of the strip material will always cause the jaw members to slip.

It is understood that while we have just described a single jaw member consisting of the two movable jaws pivotally mounted on one part which may be moved relative to one fixedly mounted jaw with two belt engaging surfaces, each leader bar has two sets of these jaws, one at each end.

The reason for having this double movable jaw construction is that where it is desirable to transfer the leader bar from one section of a machine to another, or from one belt to another, this can readily be done, as indicated in Figs. 8, 9 and 10. In these figures, a belt 6 is shown passing over a pulley 40, this belt having a parallel run indicated at 41 relative to a second belt 42 which is trained over the guide pulley 43 and which may be driven separately from the belt 6. It is preferable, of course, to have these belts driven at exactly the same speed, although this is not essential. However, it is assumed that the leader bar is carried by a pair of spaced and parallel belts 6 and that it is desirable to transfer the leader bar from the belts 6 to the belts 42, this transfer being accomplished rapidly and without permitting any appreciable quantity of slack to occur between the leader bar and the strip material. This can be accomplished in the following manner: From Fig. 5, it will be noticed that there is a wedge-shaped edge 43 on one

extreme end of a movable jaw member 18 so that if a sharp member enters between the wall 43 and the flat surface 15 of the relatively fixed jaw member, it may cam the jaw member away from the belt 6 and just as soon as it has cammed the jaw member far enough to cause the pivot 20 to pass a dead center with respect to the pivot 17, the spring member 23 will exert a thrust upon the jaw member 18 which is open and cause it to rapidly swing to an operative position with respect to the other side of the fixed jaw member 12. Thus the parallel run 41 of the belts 6 may be released by one set of movable jaw members just before belts 42 are engaged by the opposite set of jaw members.

As will be seen from Figs. 8 and 9, a cam member 45 is provided on each side of the machine, this cam member being arranged in such a position that it will pass between the cam surface 43 of a movable jaw member 18 and the relatively fixed jaw member. However, it is obvious that just as soon as the leader bar comes to a position in which the jaw members are moved by the cam members 45 out of a belt-gripping position, the leader bar can no longer be moved by the belt and must be moved by some supplemental means.

To accomplish this, we have provided a form of elevator at each change-over which operates in the following manner: The elevating mechanism consists of a hollow slidable bar 46 which is carried by means of a carriage 47 having rollers 48 freely movable in the grooved rails 49.

The carriage carries a fixed rail 47' on which the hollow bar 46 may slide. As shown in Fig. 12, the hollow bar 46 has the upper wall 146 cut off short to expose the side walls 147, beveled at the upper edges 148 and beveled on the outer edges 149 to facilitate engaging the ends of the stationary jaw members 12. A flat bottom wall 150 actually performs the lifting operation, each jaw member 12 resting on a wall 150 in which the jaw member is positioned by the side walls 149. This carriage may move up and down and the slide member 46 may be moved in and out by means of the chain 50 passing over a pair of spaced sprockets 51. The chain 50 carries a pin 52 engaging the slide member 46. This chain may be driven by a known mechanism 54 which is adjusted to drive the chain members 50 through one cycle of operations, which, in the present instance, is from the position shown in Fig. 9, to the same position, the pin 52 having been driven in one cycle around the lower sprocket 51, upwardly and over the upper sprocket 51 and back to its initial position. This movement will cause the slide member 46 to move out under the jaw members 5 and to engage the jaw members and move them upwardly. Thus the leader bar is engaged and moved by the slide members 46 before the jaws release one set of belts, and they are still driven at the point where the movable jaw members snap over from one belt-engaging position to a position to engage the other belt. Since the opposite belt is also moving, just as soon as the movable jaw member reaches a belt-engaging position, the belt carries the leader bar forwardly through the machine and the automatic change-over chain has completed its cycle and comes to rest in the position shown in Fig. 9.

The control mechanism is, in the present embodiment, a compressed air system, and the air enters a pipe 55, passing through a valve 56 having a spring valve member 57 which lies in the path of an operating arm 58, pivoted at 59 upon a suitable bracket 60 and having an arm member 61 projecting into the path of the jaws of the leader bar. Thus, as the leader bar moves upwardly, being carried along by a belt, it first engages the lever arm 61, depressing the valve 57 and permitting air to pass through a pipe 63 upwardly into the control box 54, thus releasing a motor to drive the upper sprocket 51 a predetermined distance and then stop. Just as soon as the leader bar pushes the arm 61 upwardly, its upward movement is assisted by the slide member 46, and this slide member applies the force necessary to pass the jaws of the leader bar across the cam members 45 which open the jaws until such a time as spring 23 may close the opposite jaw towards the fixed jaw member for grasping the opposite belt of the parallel run.

It will be seen from the preceding description that we have provided a leader bar which is resiliently attached to an auxiliary bar which, in turn is attached to the strip material which must be threaded through a machine. Not only is there a resilient connection between the two bars, but there is likewise a resilient connection between each end of the leader bar and the two belts by which the leader bar is driven. The force applied by either pair of movable jaws against either pair of fixed jaws can be nicely regulated and is always the same, since in every case the movable jaws are provided with a resiliently mounted pad which definitely engages the belt. The remaining portion of each movable jaw is spaced away from the fixed jaw by means of spacing pads, and the belts are always confined in a definite relationship to the fixed and movable jaws because of the interengaging belt locating lugs which cooperate with apertures in the opposite jaw member.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. A leader bar for threading strip material about rollers by means of a pair of belts comprising an elongated bar having flat extensions at each end forming fixed jaws, a pivotal support near each of said flat extensions, an arm having two jaw members mounted on each pivot, means for holding one jaw at each end in a belt engaging position with respect to the fixed jaws, and means carried by the bar for resiliently connecting an end of the strip material to the bar.

2. A leader bar for threading strip material about rollers by means of a pair of belts comprising an elongated bar having flat extensions at each end forming fixed jaws, a pivotal support near each of said flat extensions, an arm having two jaw members mounted on each pivot, means for holding one jaw at each end in a belt engaging position with respect to the fixed jaws, means carried by the bar for resiliently connecting an end of the strip material to the bar and means carried by each movably mounted jaw for exerting a predetermined pressure on a belt held between the flat extension and a jaw.

3. A jaw construction for leader bars for grasping a belt comprising a bar, a flat extension carried thereby forming a fixed jaw, a pivot carried adjacent the flat extension, a pair of jaws mounted on the pivot to swing thereon to and from said fixed jaw whereby either jaw may be moved to a belt grasping position adjacent the fixed jaw on the flat extension, and a spring for holding one movably mounted jaw against the fixed jaw in a belt grasping position.

4. A jaw construction for leader bars for grasping a belt comprising a bar, a flat extension car-

ried thereby forming a fixed jaw, a pivot carried adjacent the flat extension, a pair of jaws mounted on the pivot to swing thereon to and from said fixed jaw whereby either jaw may be moved to a belt grasping position adjacent the fixed jaw on the flat extension, and means carried by each movably mounted jaw for exerting a predetermined pressure upon the belt when said jaw is in a belt grasping position.

5. A jaw construction for leader bars for grasping a belt comprising a bar, a flat extension carried thereby forming a fixed jaw, a pivot carried adjacent the flat extension, a pair of jaws mounted on the pivot to swing thereon to and from said fixed jaw whereby either jaw may be moved to a belt grasping position adjacent the fixed jaw on the flat extension, and means carried by each movably mounted jaw for exerting a predetermined pressure upon the belt comprising a shaft angularly disposed with respect to said jaws, and a gripping shoe slidably mounted on the shaft and spring pressed toward that end of the angularly disposed shaft lying nearest the belt.

6. A jaw construction for leader bars for grasping a belt comprising a bar, a flat extension carried thereby forming a fixed jaw, a pivot carried adjacent the flat extension, a pair of jaws mounted on the pivot to swing thereon to and from said fixed jaw whereby either jaw may be moved to a belt grasping position adjacent the fixed jaw on the flat extension, a spring, a mount carried by the bar for one end of the spring and connections between the other end of the spring and the pivoted jaws positioned near the pivot and adapted to hold one movably mounted jaw or the other in belt grasping position when the jaws are swung about through pivotal connection with the bar past a dead center with respect to the mount for one end of the spring carried by the bar.

7. A leader bar for threading strip material about rollers by means of a pair of belts comprising an elongated bar having flat extensions at each end forming fixed jaws, a pivotal support near each of said flat extensions, an arm having two jaw members mounted on each pivot means for holding one jaw at each end in a belt engaging position with respect to the fixed jaws, and means carried by the bar for resiliently connecting an end of the strip material to the bar including a spring, two cables attached to the spring, pulleys over which the cables pass one at one end and the other at the other end of the bar, and means for connecting the ends of the cables to strip material.

8. A leader bar for threading strip material about rollers by means of a pair of belts comprising an elongated bar having flat extensions at each end forming fixed jaws, a pivotal support near each of said flat extensions, an arm having two jaw members mounted on each pivot means for holding one jaw at each end in a belt engaging position with respect to the fixed jaws, and means carried by the bar for resiliently connecting an end of the strip material to the bar including an auxiliary bar, and resilient means for attaching both ends of the auxiliary bar to the leader bar.

9. A leader bar for threading strip material about rollers by means of a pair of belts comprising an elongated bar having flat extensions at each end forming fixed jaws, a pivotal support near each of said flat extensions, an arm having two jaw members mounted on each pivot means for holding one jaw at each end in a belt engaging position with respect to the fixed jaws, and means carried by the bar for resiliently connecting an end of the strip material to the bar including an auxiliary bar, cables connected to the auxiliary bar, said cables including a resilient connection with the leader bar, and means including the cables and resilient mount for holding the auxiliary and leader bars in parallel relation.

10. A leader bar for threading strip material about rollers by means of a pair of belts comprising an elongated bar having flat extensions at each end forming fixed jaws, a pivotal support near each of said flat extensions, an arm having two jaw members mounted on each pivot, means for holding one jaw at each end in a belt engaging position with respect to the fixed jaws, and means carried by the bar for resiliently connecting an end of the strip material to the bar including an auxiliary bar, cables connected to the auxiliary bar, said cables including a resilient connection with the leader bar, and means comprising pulleys over which the cables pass mounted on the leader bar, the cables being directed by the pulleys into a parallel run, and a spring for connecting the parallel cables to the leader bar, whereby each cable may give simultaneously when said spring flexes.

11. In a multiple section machine in which strip material is threaded about rollers by a leader bar, the combination with a plurality of guide belts arranged in spaced parallel pairs, of means for guiding the pairs of belts through separate paths in at least portions of which pairs of belts have parallel adjacent runs, a leader bar, movably mounted pairs of jaws on each end of the leader bar spaced in accordance with the spacing of the belts, each pair of jaws being adapted to cooperate with a fixed jaw to grasp a belt, a pivot on which the movable jaws are mounted and on which they may turn to bring one movable jaw toward the fixed jaw and into a belt engaging position, and means carried by the machine for swinging the movable jaws upon their pivots, said means being located at a parallel adjacent run of the pairs of belts, whereby said jaws may release one of the parallel sets of belts and engage the second parallel set of belts thus transferring the leader bar from one machine section to another.

12. In a multiple section machine in which strip material is threaded about rollers by a leader bar, the combination with a plurality of guide belts arranged in spaced parallel pairs, of means for guiding the pairs of belts through separate paths in at least portions of which pairs of belts have parallel adjacent runs, a leader bar, movably mounted pairs of jaws on each end of the leader bar spaced in accordance with the spacing of the belts, each pair of jaws being adapted to cooperate with a fixed jaw to grasp a belt, a pivot on which the movable jaws are mounted and on which they may turn to bring one movable jaw toward the fixed jaw and into a belt engaging position, and means carried by the machine for swinging the movable jaws upon their pivots, said means being located at a parallel adjacent run of the pairs of belts, whereby said jaws may release one of the parallel sets of belts and engage the second parallel set of belts, and means supplementary to the pairs of belts for moving the leader bar while the jaws are swinging about their pivotal connection with the leader bar.

13. In a multiple section machine in which strip material is threaded about rollers by a leader bar, the combination with a plurality of guide belts arranged in spaced parallel pairs, of means for guiding the pairs of belts through separate

paths in at least portions of which pairs of belts have parallel adjacent runs, a leader bar, movably mounted pairs of jaws on each end of the leader bar spaced in accordance with the spacing of the belts, each pair of jaws being adapted to cooperate with a fixed jaw to grasp a belt, a pivot on which the movable jaws are mounted and on which they may turn to bring one movable jaw toward the fixed jaw and into a belt engaging position, and means carried by the machine for swinging the movable jaws upon their pivots, said means being located at a parallel adjacent run of the pairs of belts, whereby said jaws may release one of the parallel sets of belts and engage the second parallel set of belts, and means supplementary to the pairs of belts for moving the leader bar while the jaws are swinging about their pivotal connection with the leader bar comprising a conveyor, means carried by the conveyor for engaging and moving the leader bar.

14. In a multiple section machine in which strip material is threaded about rollers by a leader bar, the combination with a plurality of guide belts arranged in spaced parallel pairs, of means for guiding the pairs of belts through separate paths in at least portions of which pairs of belts have parallel adjacent runs, a leader bar, movably mounted pairs of jaws on each end of the leader bar spaced in accordance with the spacing of the belts, each pair of jaws being adapted to cooperate with a fixed jaw to grasp a belt, a pivot on which the movable jaws are mounted and on which they may turn to bring one movable jaw toward the fixed jaw and into a belt engaging position, and means carried by the machine for swinging the movable jaws upon their pivots, said means being located at a parallel adjacent run of the pairs of belts, whereby said jaws may release one of the parallel sets of belts and engage the second parallel set of belts, and means supplementary to the pairs of belts for moving the leader bar while the jaws are swinging about their pivotal connection with the leader bar comprising a conveyor, means carried by the conveyor for engaging and moving the leader bar, a source of power, a control member for driving the conveyor through the source of power, said control member lying in the path of and adapted to be operated by the leader bar moved by a pair of belts.

15. In a multiple section machine in which strip material is threaded about rollers by a leader bar, the combination with a plurality of guide belts arranged in spaced parallel pairs, of means for guiding the pairs of belts through separate paths in at least portions of which pairs of belts have parallel adjacent runs, a leader bar, movably mounted pairs of jaws on each end of the leader bar spaced in accordance with the spacing of the belts, each pair of jaws being adapted to cooperate with a fixed jaw to grasp a belt, a pivot on which the movable jaws are mounted and on which they may turn to bring one movable jaw toward the fixed jaw and into a belt engaging position, and means carried by the machine for swinging the movable jaws upon their pivots, said means being located at a parallel adjacent run of the pairs of belts, whereby said jaws may release one of the parallel sets of belts and engage the second parallel set of belts, and means supplementary to the pairs of belts for moving the leader bar while the jaws are swinging about their pivotal connection with the leader bar comprising a conveyor, means carried by the conveyor for engaging and moving the leader bar, a source of power connected to the conveyor, a control member for the power source, means comprising a movable arm for moving the control member to drive the conveyor, said movable arm lying in the path of the leader bar moved by a pair of belts, and means for stopping the power drive of the conveyor after said conveyor control bar has passed the swinging arm.

16. In a multiple section machine in which strip material is threaded about rollers by a leader bar, the combination with a plurality of guide belts arranged in spaced parallel pairs, of means for guiding the pairs of belts through separate paths in at least portions of which pairs of belts have parallel adjacent runs, a leader bar, movably mounted pairs of jaws on each end of the leader bar spaced in accordance with the spacing of the belts, each pair of jaws being adapted to cooperate with a fixed jaw to grasp a belt, a pivot on which the movable jaws are mounted and on which they may turn to bring one movable jaw toward the fixed jaw and into a belt engaging position, and a switch carried by the machine adjacent the parallel pairs of belts, said switch comprising pairs of cams adapted to engage the movable jaws moving them upon their pivot to disengage one pair of belts, and spring means acting on said movable jaws to engage the movable jaws with another pair of adjacent belts, and a supplemental means for moving the leader bar while the jaws are engaging the switching cams.

17. In a multiple section machine in which strip material is threaded about rollers by a leader bar, the combination with a plurality of guide belts arranged in spaced parallel pairs, of means for guiding the pairs of belts through separate paths in at least portions of which pairs of belts have parallel adjacent runs, a leader bar, movably mounted pairs of jaws on each end of the leader bar spaced in accordance with the spacing of the belts, each pair of jaws being adapted to cooperate with a fixed jaw to grasp a belt, a pivot on which the movable jaws are mounted and on which they may turn to bring one movable jaw toward the fixed jaw and into a belt engaging position, and a switch carried by the machine adjacent the parallel pairs of belts, said switch comprising pairs of cams adapted to engage the movable jaws moving them upon their pivot to disengage one pair of belts, and spring means acting on said movable jaws to engage the movable jaws with another pair of adjacent belts, and a supplemental means for moving the leader bar, comprising a conveyor, means for moving the conveyor through a cycle through a fixed path, a source of power for the conveyor, and means for starting the conveyor to move by its source of power including a tripping bar lying in the path of the leader bar, said leader bar engaging the tripping bar and starting the conveyor, and means for engaging the leader bar carried by the conveyor whereby the leader bar may be moved past the cams for switching the jaws from one set of parallel belts to another.

18. A leader bar for threading strip material about rollers on a machine by means of parallel belts comprising a tubular member, a flat extension providing a jaw at each end, an arm pivotally mounted near said fixed jaw including two faces constituting a pair of movable jaws, a spring adapted to hold one movable jaw or the other against the fixed jaw, a spring mounted inside the tubular member and having one end fastened thereto, pulleys mounted inside the tubular member including pulleys near the ends

thereof, and two cables attached to the unfastened end of the spring, one passing over one end pulley and the other over the other end pulley and extending from the tubular member, and means for fastening the cables to the strip material.

19. A leader bar for threading strip material about rollers on a machine by means of parallel belts comprising a tubular member, a flat extension providing a jaw at each end, an arm pivotally mounted near said fixed jaw including two faces constituting a pair of movable jaws, a spring adapted to hold one movable jaw or the other against the fixed jaw, each movable jaw including a belt grasping shoe, a shaft angularly disposed with respect to the fixed jaw slidably supporting the shoe, and a spring tending to thrust the shoe with a predetermined force against a belt lying against the fixed jaw.

20. A leader bar for threading strip material about rollers on a machine by means of parallel belts comprising a tubular member, a flat extension providing a jaw at each end, an arm pivotally mounted near said fixed jaw including two faces constituting a pair of movable jaws, a spring adapted to hold one movable jaw or the other against the fixed jaw, each movable jaw including a belt grasping shoe, a shaft angularly disposed with respect to the fixed jaw slidably supporting the shoe, and a spring tending to thrust the shoe with a predetermined force against a belt lying against the fixed jaw, said spring for holding the movable jaw against the fixed jaw and said shoe spring predetermining the grasping power of the jaws upon a belt, and smooth surfaces for engaging the belts upon the jaws whereby the jaws may slip relative to the belts when the grasping power of the jaws is insufficient to overcome the drag of a strip of material being threaded through a machine.

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