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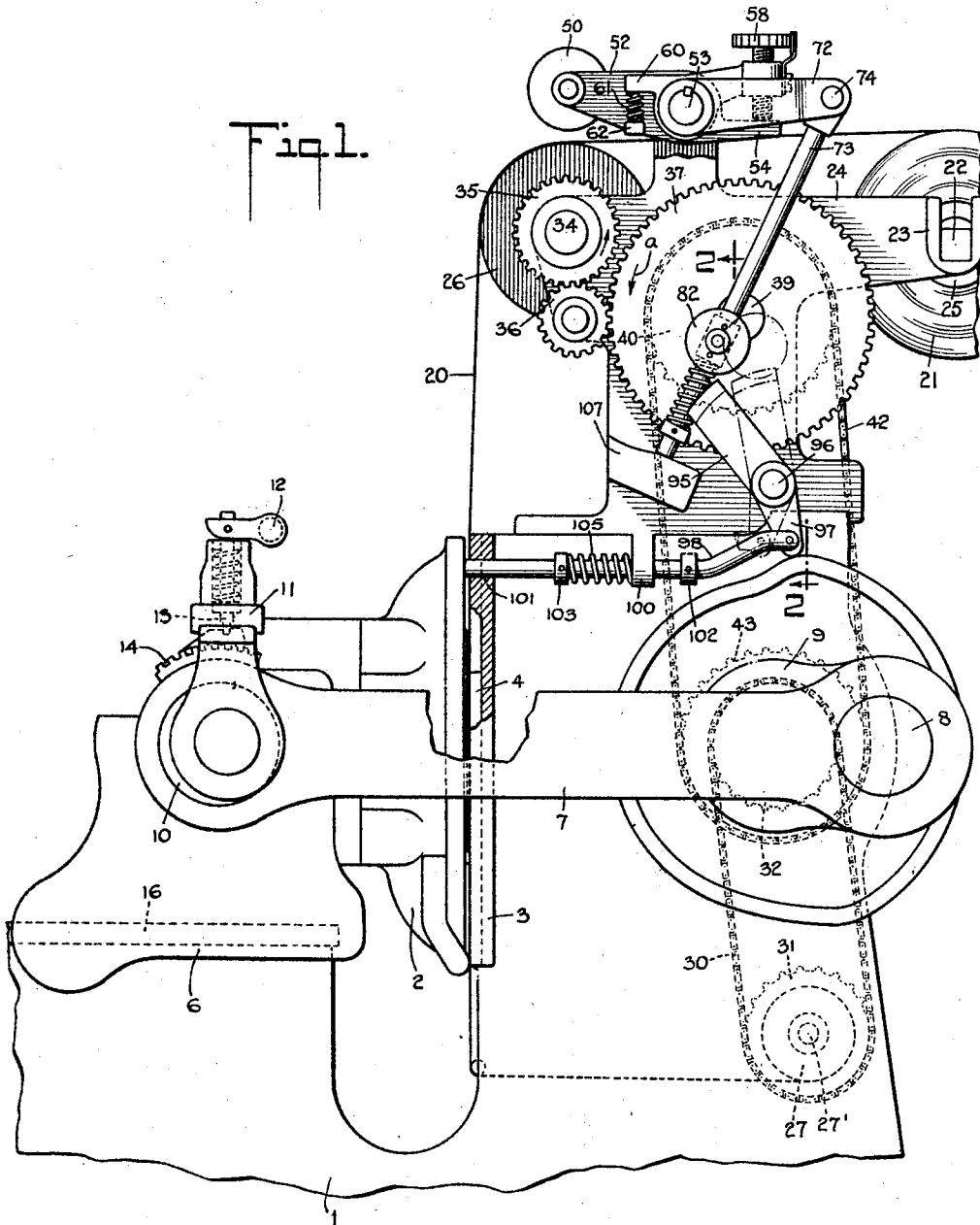
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RIBBON FEED MECHANISM

Filed April 15, 1930

2 Sheets-Sheet 1



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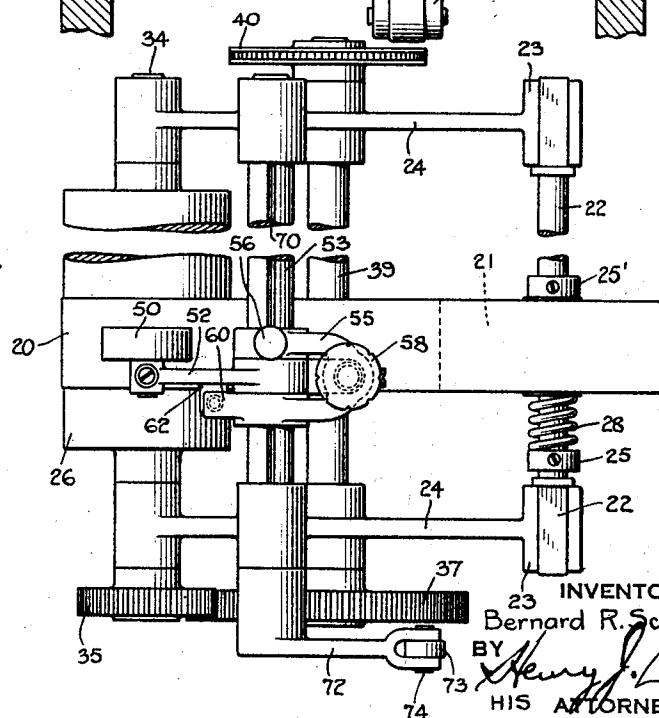
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UNITED STATES PATENT OFFICE

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RIBBON FEED MECHANISM

Application filed April 15, 1930. Serial No. 444,397.

This invention relates to an attachment for printing presses or similar devices for feeding a strip or strips of impression paper of the class known as "roll leaf" to the dies in a manner to most efficiently and economically utilize the "roll leaf".

The general object is to provide a relatively simple mechanism for positively feeding one or any reasonable number of strips of the impression material and for easily regulating the length of each strip which is fed a predetermined distance at each cycle of operation of the press.

It is a further object to produce a device which will automatically cause a discontinuance of the feed of the impression material whenever the operator of the press regulates the co-relation between the cooperating impression members, such as the platen and the bed plate, so that they do not fully engage each other to produce an impression. The means for preventing complete impression contact between these parts is standard equipment on presses of the character used in this work, and this particular adjustment is utilized by the operators to compensate for variation in thickness of the work and when they wish to rearrange the dies or the inking surfaces. With the device described, in this application, the impression paper is automatically arrested in its feeding movement whenever the platen and bed plate do not make a full and complete contact.

The mechanism is adapted or adaptable for application to or incorporation in almost any type of press, such as will be readily understood by persons skilled in the art, after considering the following description.

Fig. 1 is a partial side elevation of a press equipped with this applicant's automatic feeding device.

Fig. 2 is a section through 2—2 of Fig. 1.

Fig. 3 is a similar section taken through 2—2, but illustrating the movable parts shown therein in a different relative position to each other.

Fig. 4 is a top view of a portion of the press and feeding mechanism.

Looking at Fig. 1, 1 indicates the main frame of the press, and 2 indicates the platen

thereof, and 3, the cooperating bed plate which is attached to the main frame 1, and is adapted to cooperate with the platen to form the cooperating impression members, and with the aid of suitable dies, shown at 4, accomplish the desired impression or embossing work. The platen is illustrated as that type which is mounted upon a reciprocating carriage 6, adapted to be moved back and forth by pitman 7, which is connected to crank-pin 8 mounted upon crank arm 9. A similar crank-pin and pitman is utilized on the opposite side of the press. The other end of the pitman is connected through an adjustable eccentric 10 with the carriage 6. The eccentric is adapted to be manually operated by a lever 11 which is equipped with a handle 12, which, in turn, operates a spring-pressed pin 13, which is adapted to engage in suitable notches 14 so that the lever 11 may be definitely positioned to give the desired adjustment of eccentric 10. By means of this manually operable lever 11, the eccentric 10 may be turned to cause the pitman 7 to force the platen 2 into impression-making contact with the bed plate 3, or it may be adjusted to bring the platen 2 up close to the bed plate 3, but yet spaced therefrom at the extreme end of the stroke of the platen by a sufficient distance to allow for the manipulation and arrangement of the dies and impression paper or to accommodate different thicknesses of work. In other words, the adjustment of the eccentric 10 produces a change in the extreme end of the stroke of platen 2, in relation to the bed plate 3, so that the platen may be forced into printing or embossing contact with the bed plate or may be caused to change the position of the end of its stroke so as to be spaced from the bed plate 3. This adjustment of the relative position of the impression members is accomplished by operation of lever 11. The platen 2 and the carriage 6 which is adapted to carry it is of the type wherein the carriage reciprocates in horizontal tracks, shown in dotted lines at 16, and the platen in turn is adapted to oscillate about a pivot point on the carriage so that the plane thereof is angularly disposed to the bed plate 3, except at the time immediately before

contact of the platen with the bed plate, when, of course, the surfaces of the two cooperating parts assume a parallel relationship with each other.

5 The construction described above does not form any part of the present invention, but is typical of the construction embodied in the design of a large number of commercially successful presses.

10 The impression paper or "roll leaf", as illustrated in strip form at 20 is marketed in circular rolls, such as that illustrated at 21. Such a roll or rolls may be readily placed on shaft 22, which is equipped with square ends adapted to rest in retaining members 23 of auxiliary frame 24. Shaft 22 is also equipped with adjustable collars 25 and 25' (Fig. 4), which may be adjustably secured thereto by suitable set screws. A coil spring 28 is adapted to be interposed between one of the fixed collars, such as collar 25, and the side of the roll 21 to produce a slight amount of friction between the roll and the shaft so that a slight tension on the strip 20 is necessary to rotate roll 21 and unwind the strip therefrom.

Auxiliary frame 24 is adapted to rest upon the main frame 1 and may be secured thereto, and is designed to support various elements making up the automatic feeding device which forms the subject of this invention in the proper relation to each other, so that they may function to produce the desired results. The "roll leaf" is adapted to pass over the feed roll 26 and downwardly over the dies installed in the bed plate 3, and finally over a suitable strip take-up mechanism. With this construction, it is possible to position the roll at any point along the shaft 22, and it is possible to vary the friction by adjusting the force exerted by spring 28. Rewind roll 27 is placed on revolving shaft 27', and frictionally driven therefrom in any known or suitable way, slippage of the core on the shaft compensating for the varying diameter of the rolls and the alternate commencement and cessation of the feed of the strip 20.

A chain 30 is adapted to connect sprocket 31 and sprocket 32. The former is keyed to shaft 27' upon which rewind roll 27 is mounted and the latter is keyed to the main driving shaft of the press which also serves to transmit power to the driving pitman. In this manner, the roll 27 is driven so as to roll up the strip material as it is allowed to come down through the die plates.

The driving roll 26 is mounted upon a shaft 34 journaled in suitable bearings in the auxiliary frame 24, and it is adapted to be driven by a train of gears 35, 36 and 37. Gear 37 is mounted upon and keyed to shaft 39, shown in Figs. 1 and 4. This shaft also carries a sprocket 40, which is connected by a suitable chain 42 to sprocket 43, which is keyed to and mounted upon the main drive shaft of the press in the same manner that

sprocket 32 is mounted thereon. By means of the flexible chain, sprockets and gear trains just described, a driving roll 26 is positively driven from the main power shaft of the press and the winding roll 27 is, in like manner, driven therefrom except that winding roll 27 has necessarily a frictional engagement with the shaft 27', as described above.

This construction serves to maintain a slight tension on the strip 20, but will not continue to rotate and tear the strip because slippage will occur. The friction which exists between the strip of "roll leaf" and the driving roll 26 and the tension produced by the winding roll 27 are so adjusted and maintained that the sum of these forces is not sufficient to overcome the retarding force of the spring brake with which the roll 21 is equipped so that ordinarily the rolls 26 and the shaft 27' may be revolved without causing a feeding movement of the strip 20, due to the fact that the roll 26 will slip where it is in contact with the under side of the strip, and because the frictional engagement between the roll 27 and shaft 27' will cause slippage therebetween.

In order to produce a feeding movement of the strip 20, idler feed roll 50 is brought into contact with and presses down upon the strip 20, where it passes over and contacts with the feed roll 26. As the strip is gripped between the feed roll and the idler 50, sufficient friction is maintained between the strip and the feed roll to cause the feed roll 26 to feed the strip 20, but as soon as the idler 50 is lifted again, such feeding motion ceases. It is desirable and is an object of this invention to produce a predetermined length of feed for the strip 20 for each complete cycle of operation of the press. The length of this feeding motion may be adjusted, and this result is obtained by governing the time during which the idler roll 50 is pressed downwardly into contact with the strip 20, as viewed in Fig. 1. It is also an object to provide mechanism whereby such periodic feed is discontinued when the platen fails to make a complete impression contact with the bed plate.

The idler roll 50 is rotatably mounted upon an extended arm 52, which in turn is pivoted upon the shaft 53, and adapted to oscillate freely thereabout. There can be two or more feed units placed on shaft 53 according to the number desired and the width of the press used. The arm 52 has a rearwardly extended portion 54 adapted to project outwardly on the other side of the shaft, as illustrated in Fig. 1. Arm 52 is connected to the shaft 53 by means of a spring pressed connection comprising a compound U-shaped member 55, keyed to the shaft 53 by means of an adjustable screw threaded key 56, and adapted to carry a screw 58 which may be adjusted by hand to cooperate with the rearwardly

extending portion on the compound arm 55 as illustrated at 60, and is adapted to carry a coil spring 61 interposed between extension 60, and a suitable lug 62 attached to the side of arm 52, as illustrated in Figs. 1 and 4, so that the coil spring 61 forms an elastic connection between the idler roll 50 and the actuating parts therefor which are adapted to press this idler roll down onto the strip 20. The screw 58, which is adapted to be adjusted by hand, will enable an operator to adjust the time of contact between the idler roll and the strip, and thus determine the length of strip which is fed during each complete operation of the press. By screwing down on the screw 58, the idler roll 50 is raised so that its time of contact with the strip is shortened and conversely, by unscrewing the adjustable screw 58, the idler roll is lowered and the time of contact is increased, thus increasing the rate of feed. The shaft 53 is equipped with a key-way 70 extending from one bearing to the other and adapted to receive the adjustable key 56 which may comprise a screw so that the arms 52 and 55 may be positioned at any desired point along the shaft 53, so as to contact with and cooperate with strip 20, regardless of its position along the roll 26. The outer end of the shaft 53, as viewed in Fig. 1, is equipped with a bell crank lever 72, which is keyed to the shaft 53 and adapted to rock it back and forth. This bell crank is connected to a connecting rod 73 by a suitable pin 74 (Figs. 2 and 3). Rod 73 is slidable in a cross-head 75, carried by a pin 76 which is eccentrically mounted upon gear 37, so that cross-head 75 will travel in the path of a circle around the shaft 39. The rod 73 is equipped with a slot 74 at the point where pin 76 and rod 73 cross each other within the confines of the cross-head 75. This slot 74 is adapted to furnish a limited vertical movement of the rod 73 through the cross-head 75. Cross-head 75 is equipped with a locking means adapted to position the rod 73 so the slot cut therein to accommodate the pin 76 will be centrally disposed in regard to pin 76 with half of the slot of each side thereof. This locking means comprises two pins 80 and 81 mounted upon a retaining member 82 which in turn is slidable upon the pin 76 under the control of a coil spring 84 interposed between a fixed head 85 attached to the outer end of pin 76 and the retaining member 82 so that the retaining member with its two locking pins is normally urged into contact with the cross-heads 75 and the locking pins are moved through suitable holes in the cross-head so that they intercept the slot and the rod 73 at the upper and lower end thereof respectively, as shown in Fig. 2, and thus hold the rod 72 in a position so that pin 76 is centrally disposed to the slot 74. The lower end of rod 73 is equipped with a fixed collar 90 and

a coil spring 91 is adapted to be interposed between said collar and the cross-head so as to urge the rod 73 downwardly at all times.

A movable cam 95 is pivotally mounted at 96 on auxiliary frame 24 and is equipped with an oppositely disposed arm 97 to which is attached connecting rod 98 by means of which movable cam 95 may be moved into the position indicated in the dot-dash lines of Fig. 1. Connecting rod 98 is journaled in the main frame at 100 and 101 and is adapted to project through the base plate 4 so as to connect with the platen 2 when the platen is brought into impression-making relationship with the base plate. The connecting rod 98 is equipped with two fixed collars, one at 102 which is adapted to limit its motion to the left, as viewed in Fig. 1, and the other, 103, which is adapted to cooperate with a coil spring 105 to normally urge the connecting rod 98 toward the left. The action of the platen 2, as it moves toward the base plate 3, will overcome the tendency of the spring 105 to move the rod toward the left, and the connecting rod 98 will instead be moved into the position illustrated in full lines in Fig. 1.

The auxiliary frame 24 is equipped with a fixed cam 107 adapted to cooperate with the lower end of rod 73 so as to position it in the position illustrated in Fig. 2 in relation to the cross-head 75 so that the locking pins 80 and 81 may be forced into locking position by the spring 84, as shown in Fig. 2.

In operation, the rolls 26 and 27 will be operated directly from the main drive shaft of the press through the gears and chains which have already been described, and the arm 73 will travel up and down as the cross-head 75 revolves about shaft 4 in the direction of arrow *a*, which is shown upon the gear 37. Each time that the platen is brought into impression-making position in regard to the base plate 3, it will press connecting rod 98 to the right, as viewed in Fig. 1, so that the movable cam 95 is held in a non-operative position in relation to the member 82, as the member 82 is carried around on the cross-head 75 in close proximity thereto or, in other words, movable cam 95 is withdrawn from the path of the member 84 each time that the platen 2 makes an impression contact with the base plate 3. This is the normal operation of the machine with the rod 73 moving up and down as the cross-head 75 rotates about the shaft 4 so that the rod 73 may in turn through the adjustable arms move the idler roller 50 into and out of contact with the strip 20. The idler roll 50 will move into contact with the strip 20, once for each complete cycle of the press, because there is a one to one drive between the main shaft of the press and the shaft 4.

If the operator of the press does not desire the platen to come into complete pressing contact with the bed plate, he moves lever 11 so

that the platen will approach but will not make contact with the bed plate 3, and when this condition exists, the connecting rod 98 will not be pressed all the way to the right, as illustrated in full lines in Fig. 1, but instead will be urged to the left by spring 105 causing the movable cam 95 to assume the position shown in dot-dash lines, so that it moves into the path of travel of the member 82, and as the member 82 moves from the position shown in full lines to the position shown in dot-dash lines, it will contact with the movable cam 95, as illustrated in Fig. 3, and the cooperating incline surfaces of the member 82 will cause the member 82 to move to the left along pin 76 against the action of spring 84, and thus withdraw the locking pins 80 and 81 from the slot 74 into the position shown in Fig. 3 and allow rod 73 to be moved downwardly by the spring 91. The slot 74 is of such length that the rod 73 will move downwardly far enough so that the idler roller 50 will not contact with the strip 20 and thus there will be no feed of the strip 20 during this cycle of operation.

As the cross-head 75 travels around once again and approaches the position shown in full lines in Fig. 1, the rod 73 will be lifted up into the position shown in Fig. 2 by means of the fixed cam 107 and the locking pins 80 and 81 will be urged into locking position by the spring 84. If the platen and base plate have assumed their normal operating relationship, due to the repositioning of the lever 11, the platen will then push the connecting rod 98 to the right and the movable cam 95 will not contact with the member 82, so that the rod 73 will maintain its relationship with cross-head 75 so as to resume the normal feed of strip 20.

Whereas I have described my invention by reference to specific forms thereof, it will be understood that many changes and modifications may be made without departing from the spirit of the invention.

I claim:

1. In a strip feed mechanism for a press, means for feeding a strip intermittently between the cooperating impression members of the press, and means controlled by the relative position of the cooperating impression members for causing said feeding means to stop feeding the strip when said cooperating impression members do not come into complete working operation with each other.

2. In a strip feed mechanism for a press, a feed roll mounted upon a stationary axis, an idler roll mounted upon a movable axis and adapted to cooperate with the feed roll to feed a strip therebetween, means for moving the idler roll into and out of feeding engagement with the strip passing over the periphery of the feed roll, and means for interrupting said engagement when the cooperating impression members of the press

do not come into complete working operation with each other.

3. In a strip feed mechanism for a press, a positively driven constantly operating feed roll adapted to carry the strip on the periphery thereof, a cooperating idler roll mounted upon a movable axis, means for bringing said idler roll into feeding engagement with the strip to cause the strip to be fed by the feed roll, and means for preventing the engagement of said idler roll with the strip to cause a feeding movement of said strip when the cooperating impression members of the press fail to come into complete working operation with each other.

4. In a strip feed mechanism for a press, a positively driven constantly operating feed roll adapted to carry the strip on the periphery thereof, a cooperating idler roll mounted upon a movable axis, means for bringing said idler roll into feeding engagement with the strip to be fed by the feed roll, comprising a reciprocating arm eccentrically mounted on a rotating member driven from the main drive of the press, and means for preventing the engagement of said idler roll with the strip to cause a feeding movement of said strip when the cooperating impression members of the press fail to come into complete working operation with each other.

5. In a strip feed mechanism for a press, a positively driven feed roll adapted to feed a strip when the strip is pressed into contact therewith, a cooperating idler mounted on a movable axis and adapted to clamp the strip between it and the feed roll to cause the feed roll to feed the strip, means for moving said idler roll into and out of feeding relationship with said feed roll in predetermined relation to the operating cycle of the cooperating impression members of the press, and means responsive to the clearance and non-clearance between the cooperating impression members of the press for controlling the non-engagement and engagement of said pressure rolls.

6. In a strip feed mechanism for a press, means for feeding the strip material over the die surface of the press, and means for interrupting said feeding means when the cooperating impression members of the press fail to come into complete working engagement with each other, comprising a movable trip or cam normally urged into a position to prevent feeding of the strip material, and means adapted to be operated by effective cooperation of the impression members of the press to move said trip or cam into a position where it will permit effective operation of the feed mechanism.

7. In a strip feed mechanism for a press, means for feeding the strip material over the die surface of the press, and means for interrupting said feed means when the cooperating impression members of the press

fail to come into complete working engagement with each other, comprising engaging members for the feed mechanism adapted to be positioned to permit normal feeding movement of the strip when said cooperating impression members come into complete working engagement with each other and to prevent such feeding movement when the impression members do not come into complete working engagement with each other.

8. In a strip feed mechanism for a press, means for feeding the strip material over the die surface of the press, and means for interrupting said feed means when the cooperating impression members of the press fail to come into complete working engagement with each other, comprising a movable cam or trip adapted to be controlled by one of the cooperating impression members to intercept said feeding means to prevent normal feeding operation of the strip when the cooperating impression members fail to make complete working engagement with each other and not to interrupt said feeding means when a complete working engagement is made by the cooperating engagement means.

9. In a strip feed mechanism for a press, means for feeding the strip material over the die surface of the press, and means for interrupting said feed means when the cooperating impression members of the press fail to come into complete working engagement with each other, comprising a movable cam or trip adapted to cooperate with a locking device on the feed mechanism to prevent a normal movement of the strip when the cooperating impression members of the press fail to make a complete engagement with a rod for controlling said cam or trip positioned to operably engage one of the impression members when the members make complete working contact, and adapted to move said cam or trip out of the path of the locking device on the feed mechanism, and means normally urging said rod into position to place said rod or trip in the path of the locking device.

10. In a strip feeding mechanism for a press, a feed roll mounted upon a stationary axis, an idler roll mounted upon a movable axis and adapted to cooperate with the feed roll to feed a strip therebetween, means for moving the idler roll into and out of feeding engagement with the strip passing over the periphery of the feed roll and means for interrupting said engagement when the cooperating impression members of the press do not come into complete working operation with each other, comprising a member adapted to be moved by the movable members of the cooperating impression members when said impression members are brought into working position.

11. In a strip feed mechanism for a press, a feed roll mounted upon a stationary axis,

an idler roll mounted upon a movable axis and adapted to cooperate with the feed roll to feed a strip therebetween, means for moving the idler roll into and out of feeding engagement with the strip passing over the periphery of the feed roll and means for interrupting said engagement when the cooperating impression members of the press do not come into complete working operation with each other, comprising engaging means for the feed mechanism adapted to be positioned to permit normal feeding movement of the strip when said cooperating impression members come into complete working engagement with each other and to prevent such feeding movement when the impression members do not come into complete working engagement with each other.

12. In a strip feed mechanism for a press, a feed roll mounted upon a stationary axis, an idler roll mounted upon a movable axis and adapted to cooperate with the feed roll to feed a strip therebetween, means for moving the idler roll into and out of feeding engagement with the strip passing over the periphery of the feed roll and means for interrupting said engagement when the cooperating impression members of the press do not come into complete working operation with each other, comprising a movable cam or trip adapted to be operated by one of the cooperating impression members to intercept said feeding means to prevent normal feeding operation of the strip when the cooperating impression members fail to make a complete working engagement with each other and not to interrupt said feeding means when a complete working engagement is made by the cooperating engagement members.

13. In a strip feed mechanism for a press, a positively driven constantly operating feed roll adapted to carry the strip on the periphery thereof, a cooperating idler roll mounted upon a movable axis, means for bringing said idler roll into feeding engagement with the strip to be fed by the feed roll, comprising a reciprocating arm eccentrically mounted on a rotating member driven from the main drive of the press, and means for preventing the engagement of said idler roll with the strip to cause a feeding movement of said strip when the cooperating impression members of the press fail to come into complete working operation with each other, comprising engaging means for the feed mechanism adapted to be positioned to permit normal feeding movement of the strip when said cooperating impression members come into complete working engagement with each other and to prevent such feeding movement when the impression members do not come into complete working engagement with each other.

14. In a strip feed mechanism for a press,

a positively driven constantly operating feed roll adapted to carry the strip on the periphery thereof, a cooperating idler roll mounted upon a movable axis, means for bringing said idler roll into feeding engagement with the strip to be fed by the feed roll, comprising a reciprocating arm eccentrically mounted on a rotating member driven from the main drive of the press, and means for preventing the engagement of said idler roll with the strip to cause a feeding movement of said strip when the cooperating impression members of the press fail to come into complete working operation with each other, comprising a movable cam or trip adapted to cooperate with a locking device on the feed mechanism to prevent a normal feeding movement of the strip when the cooperating impression members of the press fail to make a complete engagement, and a rod for controlling said cam or trip positioned to operably engage one of the impression members when the members make a complete working contact and adapted to move said cam or trip out of the path of the locking device on the feed mechanism, and means normally urging said rod into position to place said cam or trip in the path of the locking device.

15. In a strip feed mechanism for a press, including cooperating impression members, and further including means for receiving a die, comprising means for feeding strip material over the surface of the die, and means responsive to the clearance and non-clearance between the cooperating impression members for controlling the non-operation and operation of said strip material feeding means.

In testimony whereof I have signed this specification this 29th day of March, 1930.

BERNARD R. SCHNEIDER.