

Feb. 27, 1934.

A. A. LAWSON

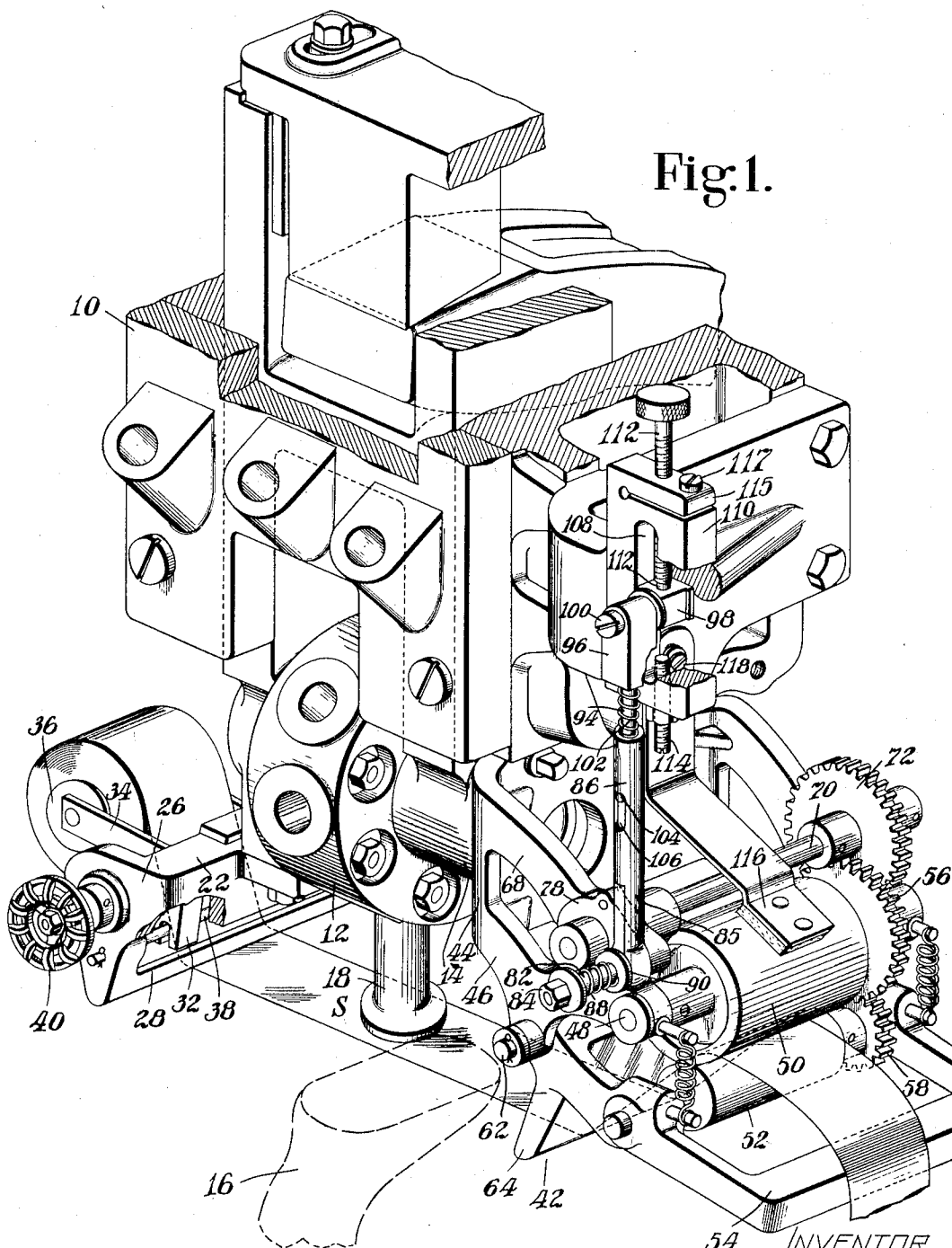
1,948,525

MARKING MACHINE

Filed March 4, 1931

3 Sheets-Sheet 1

Fig.1.



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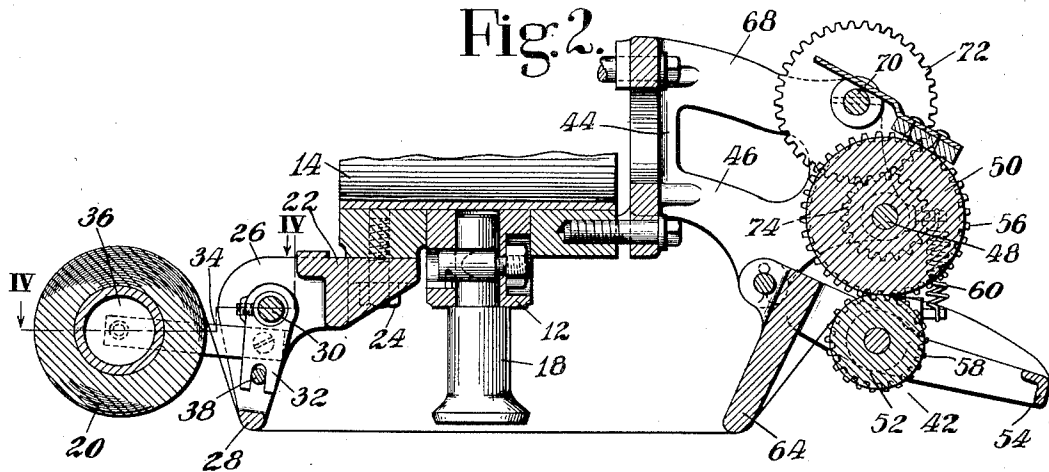
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Fig. 3.

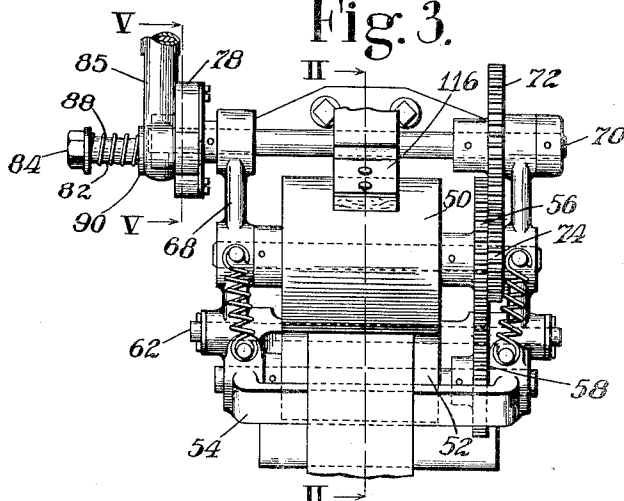


Fig.4.

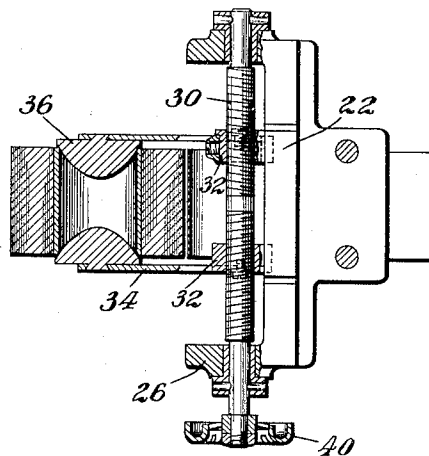
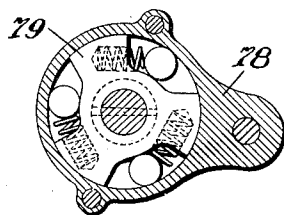


Fig. 5.



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UNITED STATES PATENT OFFICE

1,948,525

MARKING MACHINE

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Application March 4, 1931. Serial No. 520,052

14 Claims. (Cl. 41—7)

This invention relates to marking machines and is herein illustrated as embodied in a machine for making color imprints upon the parts of boots and shoes.

5 Marking machines of the type adapted to make color imprints by transferring a pigment from a paper strip to the work under the pressure of a heated die are known in the trade as embossing machines. The pigment may be gold or silver or bronze and is ordinarily supplied upon long strips of paper backing which are wound into rolls. Ordinarily this paper backing is rather thin and is easily broken by any sudden strain applied thereto. In such machines the work is placed upon a relatively fixed support and the heated die is carried in a vertically reciprocating plunger upon which plunger is mounted mechanism for feeding the paper strip. On one side of the die there is provided a support for the supply roll and upon the other side of the die is provided a pair of feed rolls together with operating mechanism for moving these forward step by step as required. The actuation of the feed rolls through this mechanism is effected by a fixed connection with a fixed portion of the machine so that the movement of the feed roll results from a change in position of the plunger with respect to the frame of the machine. The feeding movement may be as much as three inches and since it is restricted to that portion in the cycle of the machine when the die is not in contact with the strip, it must be fed at a high rate of speed with a consequent rapid starting of the strip from rest and an inherent danger that the thin paper strip may be broken.

An object of the invention is to provide a marking machine embodying an improved strip-feeding mechanism by means of which a strip will be fed forward for the desired distance accurately and with a minimum of strain upon the paper backing. In the illustrated embodiment of the invention the feed roll operating mechanism for moving the feed rolls forward step by step as required is a one-way clutch. The actuation of the feed rolls through this clutch mechanism is effected by a connection with the fixed portion of the machine so that the movement of the feed roll results from a change in position of the plunger with respect to the frame of the machine. Preferably and in accordance with a feature of the invention, this connection is made in the form of an extensible link including a spring which must first be compressed before the link transmits any

movement to the feeding mechanism through slowly accelerating the feed rolls whereby minimum strain is applied to the paper strip. In order still further to control the action of the feeding mechanism and to delay the acceleration of the same, the connection between one end of this link and the frame of the machine is a sliding connection embodying a block movable between adjustable abutment screws. By changing the adjusted position of these screws the connection of the feeding mechanism may readily be controlled.

These and other features of the invention will be best understood from the following description taken in connection with the accompanying drawings.

Fig. 1 is a perspective view of a strip feeding mechanism applied to the head of a stamping machine;

Fig. 2 is a transverse vertical section through this mechanism on the line II—II of Fig. 3;

Fig. 3 is an end elevation of the feed rolls;

Fig. 4 is a horizontal section through the support for the supply roll on the line IV—IV of Fig. 2, and

Fig. 5 is a vertical section through a one-way clutch used to actuate the feed rolls and taken on the line V—V of Fig. 3.

The illustrated machine is of the type disclosed in United States Letters Patent No. 1,028,567, granted June 4, 1912, on the application of William Gordon and Laurence E. Topham, and reference may be had to this patent for a complete description of those parts of the machine not herein fully shown and described.

The head of the machine is provided with a stationary frame 10 which carries a vertical guideway. A die carrier 12 is carried on the lower end of a plunger 14 which is vertically reciprocated in the guideway in the frame 10. The plunger 14 is reciprocated by suitable cam and lever connections (not shown) toward and from a horn or work support 16. The die carrier or turret 12 has a plurality of radially disposed sockets for stamping dies 13. The turret 12 is arranged to turn between the fork of the plunger in order to bring the desired die into stamping position.

The spindle on which the turret 12 is carried is heated by an electric resistance coil so that the dies carried in the sockets in the turret may be heated sufficiently for the stamping or marking operation.

The machine thus far described is of substantially the same type as the machine disclosed

in the above-mentioned U. S. Letters Patent No. 1,028,567 but with the die heating means modified as shown in United States Letters Patent No. 1,439,753, granted December 26, 1922, on application of Frederick W. Phillips, to which reference may be had for a more complete disclosure of the details.

In the illustrated machine, the strip feeding mechanism is carried by the reciprocating head. The strip S on which gold or silver leaf or other marking material is carried is supplied in the form of a roll 20. This supply roll is carried on a bracket 22 secured to the plunger 14 by studs 24. The bracket 22 is provided with two laterally extending arms 26 which are directed downwardly at their free ends to form a guide 28 under which the strip is passed.

At the apices of the angles formed by the laterally and downwardly extending portions of the arms 26 is journaled a threaded shaft 30 having right and left hand threads. The oppositely threaded portions of the shaft 30 carry threaded members 32 to which are secured laterally extending arms 34. The arms 34 carry at their free ends freely rotating conical shaped bearings 36 for the roll 20. The members 32 are each slotted at their lower ends for the reception of a rod 38 which passes through holes in the downwardly projecting portions of the arms 26 and is held in place by cotter pins. The shaft 30 may be rotated by a hand wheel 40 for increasing or decreasing the distance between the bearings 36 depending on the width of the roll which is to be carried thereby.

The strip feeding mechanism which is indicated generally by the reference character 42 is mounted on a bracket 44 which in turn is attached to the plunger 14. As viewed from the front of the machine the bracket 44 is located to the right of the die carrier or turret 12 and has laterally extending arms 46 which carry the feed rolls and the feed actuating mechanism. Journaled in the right hand ends of the arms 46 is a shaft 48 carrying an upper feed roll 50. A lower feed roll 52 is journaled in a frame 54 which is pivoted to downwardly extending projections of the bracket arms 46. The rolls 50 and 52 are provided with meshing gears 56 and 58, respectively. Springs 60 secured to the frame 54 and the arms 46 hold the roll 52 against the roll 50 and also retain the gears 56 and 58 in meshing relation. The lower ends of the downwardly extending brackets are provided with a downwardly extending member 64, the lower surface of which forms a guide beneath which the strip S of marking material is fed.

The mechanism for rotating the feed rolls 50 and 52 will now be described. Located above the laterally extending arms 46 are a pair of arms 68 which are journaled at their outer ends to receive a shaft 70. A gear 72 is fixed to one end of the shaft 70 and meshes with a gear 74 fixed to an end of the shaft 48 carrying the feed roll 50. To the other end of the shaft 70 is secured a clutch 76 of the type known as the "Horton clutch". The clutch 76 is provided with a loose clutch member 78 and a fast clutch member 79 which is keyed to the shaft 70. The parts are so arranged that when the member 78 is moved counterclockwise, it will rotate freely but when the member 78 is moved clockwise, the two members will be locked together thus rotating the shaft 70. In other words, when the plunger 14 is moved downwardly, the shaft is not rotated to impart a feeding movement to the feed rolls

50 and 52 but when the plunger 14 is returned to its upper or inoperative position, the shaft 70 is rotated thus causing the feed rolls 50 and 52 to rotate to feed the strip of marking material past the die so that a new portion of marking material is positioned beneath the die for the next marking operation.

Actuation of the feeding mechanism upon movement of the plunger 14 is effected by reason of the connection between the loose clutch member 78 and the frame 10 of the machine. This connection comprises an extensible link 86 having the lower portion 85 which is pivoted upon a laterally projecting pin 82 in the loose clutch member 78. The pin 82 is provided with a flanged cap screw 84 which retains a spring 88 surrounding the pin and bearing against a fiber washer 90 resting against the side of the link portion 85. The washer 90 pressed against the link by the spring 88 acts as a brake to prevent too free a movement of the clutch member 78 and stops the clutch member from being thrown too far to the left (Fig. 1) at the end of the downward movement of the plunger. The extensible link 86 comprises also an upper portion 94 in the form of a rod slidably fitting a recess at the upper end of the lower portion 85. This rod 94 has a head 96 and is interposed between the lower portion 85 and the head 96 is a spring 102 surrounding the rod and acting to hold the link 86 normally in extended condition. Relative movement of the two parts of the link is limited by a pin 104 in the rod 94 projecting out through a slot 106 in the part 85. Thus, it will be seen that any force which is transmitted by the link 86 depends upon the strength of the spring 102, at least until that spring is compressed and the pin 104 brought up against the lower end of the slot 106.

The connection between the extensible link 86 and the frame may be fixed in position but preferably and as herein illustrated it is a sliding connection the extent of which is limited. To this end the head 96 is pivoted to a slide block 98 by means of a screw 100. This block 98 slides in a groove or guideway 108 in a bracket 110 which is mounted on the machine frame 10. At the upper end of the slot is a stop screw 112 and at the bottom of the slot is a stop screw 114. These screws may be adjustably fixed in position to determine the range of movement of the slide block 98. To this end the upper screw 112 is clamped in position by a split portion 115 which may be sprung into gripping position by a screw 117. The lower screw 114 is provided with a lock nut of ordinary construction. Thus, by adjusting the screws 112 and 114, the amount of turning movement which is imparted to the feed rolls 50 and 52 may result from the whole movement of the plunger 14 or only from a portion of that movement.

In order to prevent overrunning of the feed rolls, a friction brake 116 is provided which bears against the feed roll 50 and which is mounted on the bracket 110 by means of a cap screw 118. This brake does not interfere with the operation of the feeding rolls 50, 52 because it is in contact with the feed roll 50 only at the beginning and end of each cycle of operation of the machine. In other words, the brake 116 is stationary while the feed rolls are movable relatively thereto. It assists materially in de-

termining accurately the length of each step-by-step feeding movement of the feed rolls.

In the operation of the machine, a piece of work is placed upon the support 16 and, upon actuation of the treadle, the plunger 14 is moved downwardly to bring the heated die 18 into contact with the paper strip and then into contact with the work to make an impression thereon. During this downward travel of the plunger 14 the slide block 98 will contact with the lower screw 114 and cause a counterclockwise movement of the loose clutch member 78 which will have no effect upon the feed rolls 50, 52. Upon upward movement of the plunger, however, the normally extended link will rise with the plunger as the die moves away from the work and the strip, and when the slide block 98 has contacted with the upper screw 112 the link will begin to shorten, compressing its spring 102. As soon as the compression of the spring is sufficient to overcome the friction of the parts or when the pin 104 reaches the bottom of the slot 106, then clockwise movement will be imparted to the clutch member 78 which will actuate the feed rolls 50, 52 to draw along the strip and bring a fresh portion thereof under the die 18. It will be noted that the dwell resulting from the movement of the block 98 between the two abutment screws and the softening of the action resulting from the compression of a spring of the extensible link 86 are sufficient to prevent any sudden strain upon the paper strip. As a slow acceleration of the feed rolls is permitted it will also be noted that near the upper end of the stroke of the plunger the brake 116 is brought into contact with the upper feed roll 50, thus preventing any tendency to overrun.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A marking machine having, in combination, relatively movable work-supporting means and marking-tool-carrying means, strip-feeding means carried by said tool carrying means, and yieldable means for actuating the strip-feeding means to feed a strip past the first-mentioned means, said actuating means including mechanism connected at one end to the strip-feeding means and at its other end to the machine frame and constructed and arranged to yield and then expand to accelerate slowly the strip-feeding means whereby minimum strain is applied to the strip whereby breaking of the strip is insured against.

2. A marking machine having, in combination, a movable die carrier, strip-feeding means carried by the die carrier, and means secured at one end to the machine frame and at its other end to the strip-feeding means for actuating the strip-feeding means to feed a strip past the die carrier, said means including a link normally maintained in extended condition and constructed and arranged upon movement of the carrier in one direction to remain in extended condition and upon movement of the carrier in the other direction first to shorten the link and then to return to normal condition to operate the feeding means.

3. In a marking machine, a movable die carrier, strip-feeding means secured to the movable carrier, and an extensible connection between the feeding means and the machine frame, said connection including a pair of links yieldably held in extended position by means of a spring whereby movement of the carrier in one direc-

tion acts first to shorten the connection until the spring is compressed and then the spring acts to rotate the feeding means until the links have been returned to extended position.

4. In a marking machine having, in combination, a die carrier and a work support arranged for relative movement, a plunger for relatively moving the carrier and support, strip-feeding means secured to the plunger, and an extensible link normally maintained in extended position and connecting the feeding means and the machine frame, said link being constructed and arranged upon movement of the carrier in one direction to yield and then expand to accelerate slowly the movement of the feeding means to advance the strip step by step during each cycle of operation of the plunger.

5. A strip-feeding mechanism mounted on a movable member having, in combination, a pair of feed rolls, clutch mechanism connected to the feed rolls, and an extensible link secured at one end to the clutch mechanism and at its other end to a stationary member, said link being constructed and arranged positively to cause idling movement of the clutch in one direction and yieldingly to cause movement of the clutch in the other direction whereby movement of the movable member causes the feed rolls to be rotated to feed the strip past an operating tool.

6. In a marking machine, a vertically reciprocating die carrier, a roll of marking material mounted on the die carrier at one side, a pair of feed rolls mounted on the die carrier at the other side, a one-way clutch mechanism connected to one of said feed rolls, a crank secured to the clutch, and an extensible link secured at one end to the crank and at its other end to the frame, said link being constructed and arranged upon movement of the carrier in one direction first to be shortened and then to return to its normal length to impart a step-by-step feeding movement to the feeding rolls during each cycle of operation of the die carrier.

7. In a marking machine, a movable die carrier, a strip-feeding means secured to the carrier, mechanism connected to the strip-feeding means for operating the feeding means in one direction only, and an extensible link connected to the machine frame and to the mechanism for operating the feeding means, said link being constructed and arranged to operate said mechanism positively in one direction and through a yieldable connection in the other direction.

8. In a marking machine, a reciprocating die carrier, feed rolls mounted on the carrier, and connections between the feed rolls and the machine frame including a clutch and an extensible link, said extensible link being constructed and arranged to be shortened during the return movement of the carrier whereby a spring connecting the two portions of the link is compressed, said spring then acting through the clutch to rotate the strip-feeding means.

9. In a marking machine having a work support and a die carrier movable toward and away from the support, means on said die carrier for supporting and feeding a marking strip, means for operating said strip-feeding means, and an extensible link connecting the frame and said strip-feeding means, said link being constructed and arranged to operate the strip-feeding means positively in one direction and to oper-

ate the feeding means by spring pressure in the other direction whereby movements of the die carrier toward and from the work support cause idle and feeding movements, respectively, of said operating means.

10. In a marking machine having a work support and a die carrier movable toward and away from said support, means on said carrier for feeding a marking strip, said strip-feeding means being operable to cause a step-by-step feeding movement of the strip, and means for utilizing the movement of the die carrier away from the work to cause the strip-feeding means to feed the strip, said last-mentioned means including a clutch, a slidable member mounted on the machine frame and an extensible link connected at one end to the clutch and at its other end to said slidable member whereby movement of the die carrier will cause a step-by-step feeding movement of the feeding means.

11. In a marking machine having a work support and a die carrier movable toward and away from said support, means on said carrier for supporting and feeding a marking strip, means for operating said feeding means, a guideway secured to the machine frame, a member mounted in the guideway, and an extensible link connected at one end to the operating means and at its other end to said member whereby movement of the die carrier away from the support will impart a feeding movement to the feeding means.

12. In a marking machine having a work support and a die carrier movable toward and away from the support, means on said carrier for feeding a marking strip, means for operating said feeding means, a guideway secured to the machine frame, a slidable member mounted in the guideway, adjustable members entering the guideway to limit movement of the sliding member to determine the extent of feeding movement of said feeding means, and an extensible

link connected at one end to the operating means and at its other end to the slidable member whereby movement of the die carrier will impart a feeding movement to the feeding means.

13. In a marking machine having a work support, and a die carrier movable toward and away from said support, means on said carrier for feeding a marking strip and means for operating said feeding means, a bracket mounted on the machine frame, a guideway in said bracket, a sliding block in said guideway, a pair of adjusting screws entering said guideway to form abutments to limit movement of the block, and an extensible link secured at one end to the operating means and at its other end to said sliding block whereby movement of the die carrier away from the support will impart a step-by-step feeding movement to the feeding means.

14. In a marking machine having a work support and a die carrier movable toward and away from said support, a pair of feed rolls mounted on said carrier for feeding a marking strip, a one-way clutch for operating said feeding means, a bracket mounted on the machine frame, a guideway in said bracket, a sliding block in said guideway, a pair of adjusting screws entering said guideway to form abutments to limit movement of the block, a sleeve connected to the clutch, a rod entering the recess in said sleeve and connected to the sliding block, and a spring between the block and the sleeve to hold the sleeve and the rod in extended position whereby movement of the die carrier away from the support will act first to compress the spring and then to impart a feeding movement to the feed rolls whereby the strip is fed a predetermined distance.

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45	120
50	125
55	130
60	135
65	140
70	145
75	150