

Feb. 7, 1961

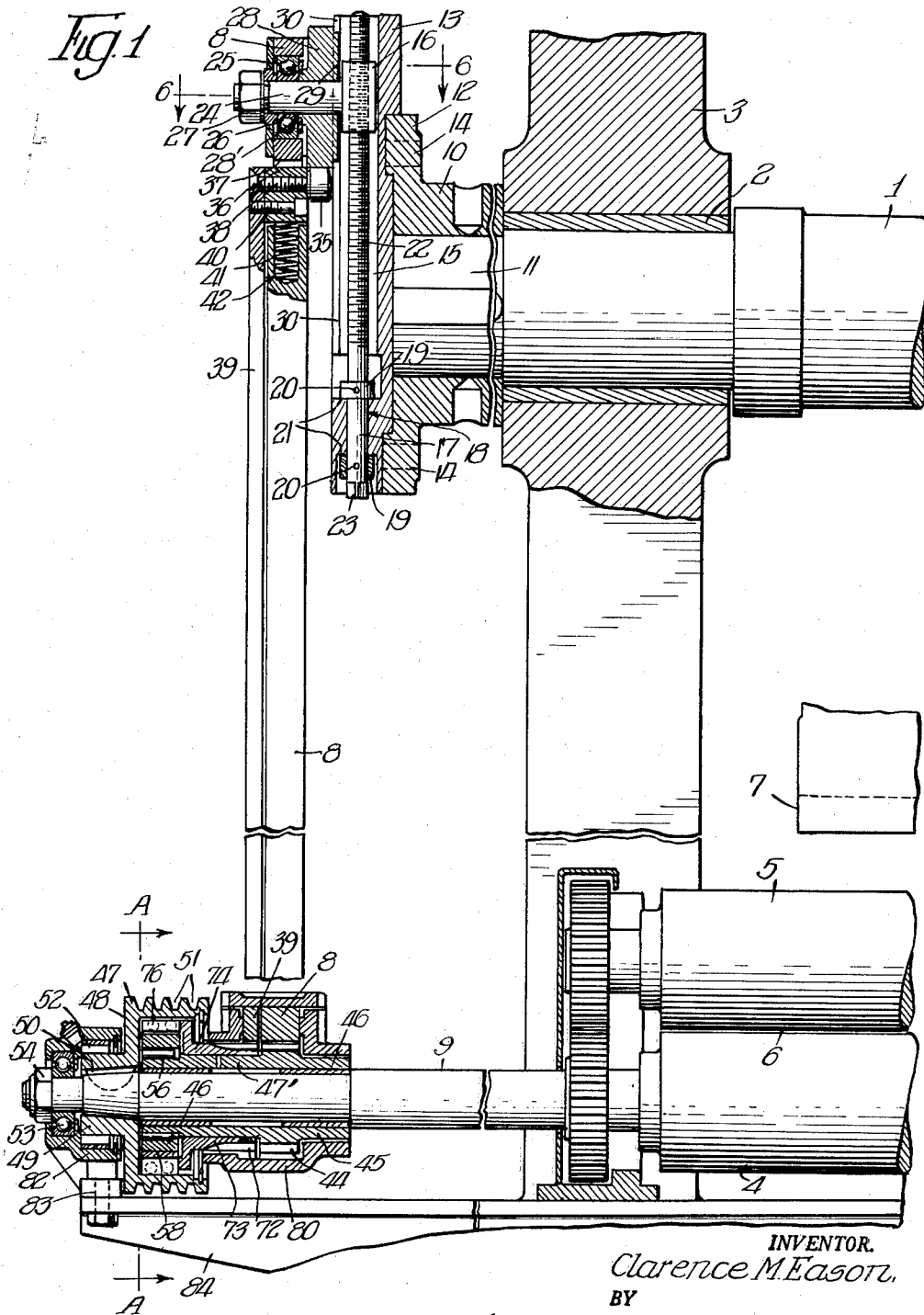
C. M. EASON

2,970,489

ROLL FEED MECHANISM

Filed Aug. 26, 1959

3 Sheets-Sheet 1



Feb. 7, 1961

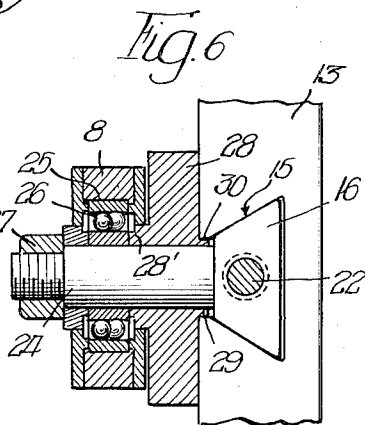
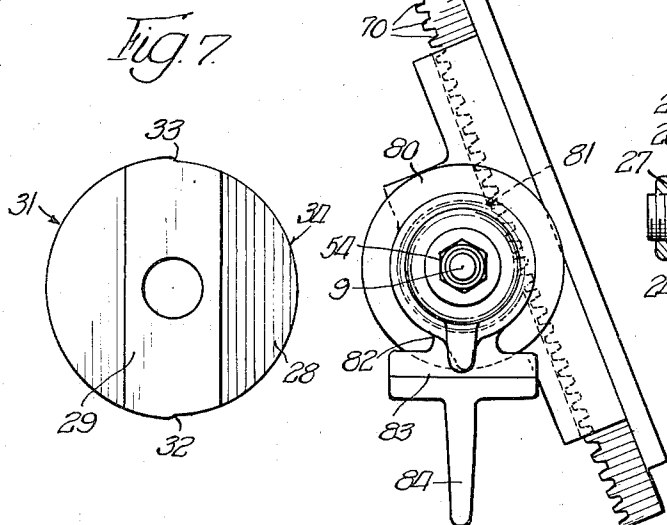
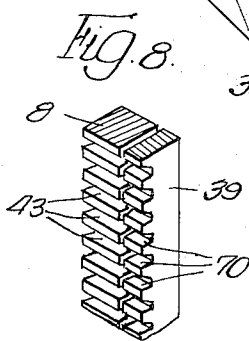
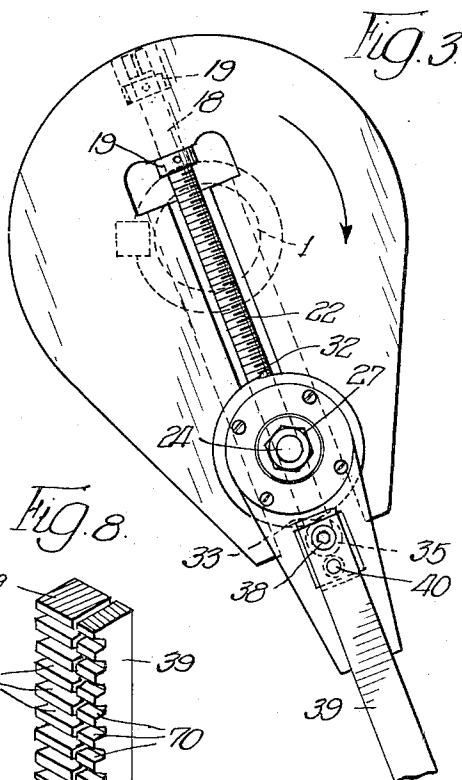
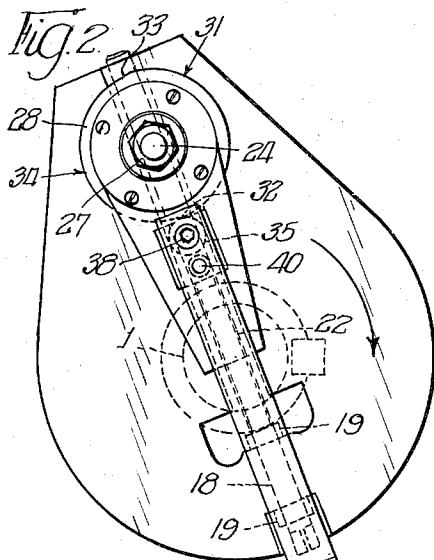
C. M. EASON

2,970,489

ROLL FEED MECHANISM

Filed Aug. 26, 1959

3 Sheets-Sheet 2



INVENTOR.
Clarence M. Eason,
BY
Chas. J. Allen, Attorney & Counselor

Feb. 7, 1961

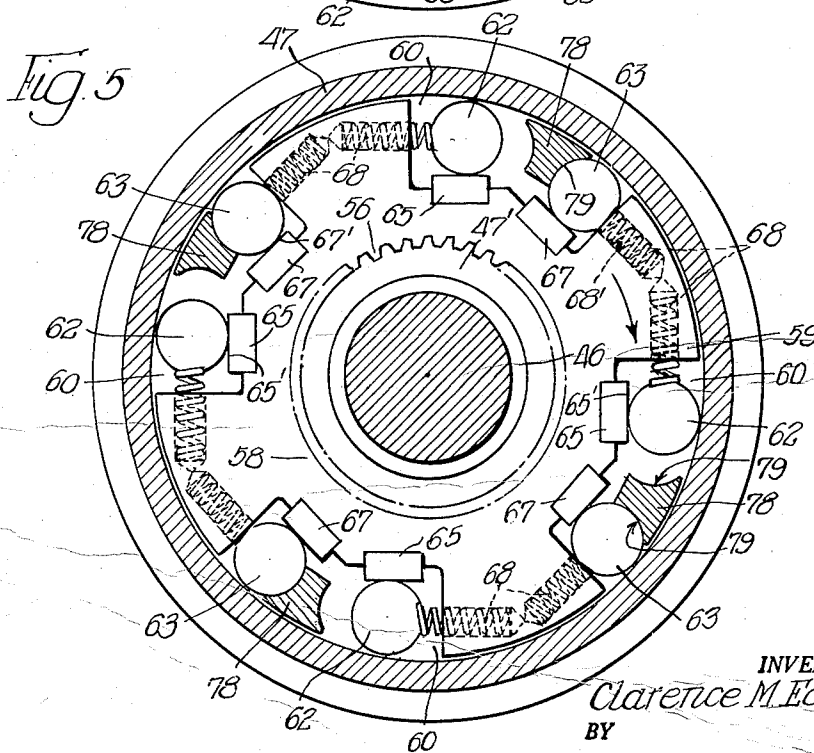
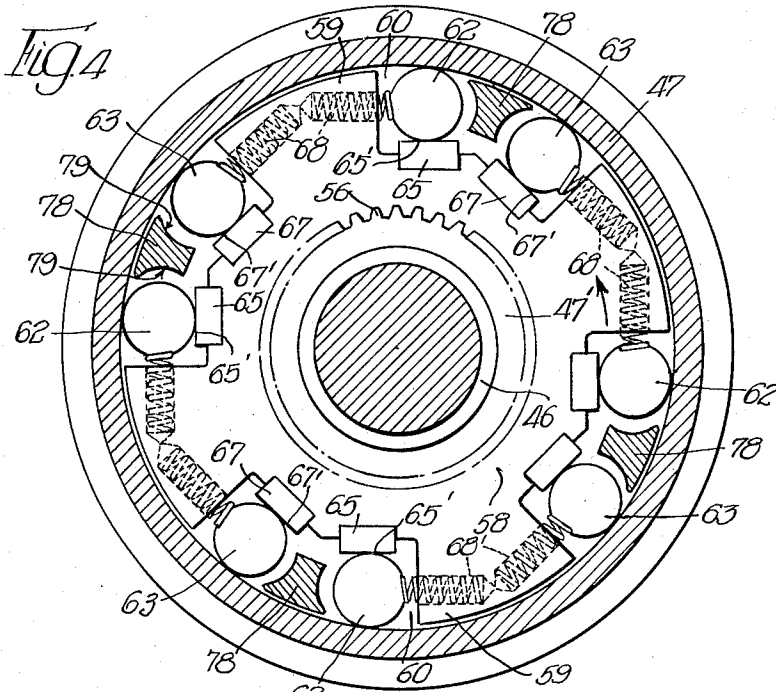
C. M. EASON

2,970,489

ROLL FEED MECHANISM

Filed Aug. 26, 1959

3 Sheets-Sheet 3



INVENTOR.

Clarence M. Eason,

BY

Chas. Jackson, Attorneys

1

2,970,489

ROLL FEED MECHANISM

Clarence M. Eason, Waukesha, Wis., assignor to Industrial Clutch Corporation, Waukesha, Wis., a corporation of Wisconsin

Filed Aug. 26, 1959, Ser. No. 836,095

18 Claims. (Cl. 74—120)

This invention relates, in general, to roll feed mechanism, and has particular relation to means for releasing and engaging a double acting positive roll feed clutch at the ends of the driving and the return strokes of a roll feed rack; also to an improved form of clutch for such use.

In general, roll feed mechanisms are commonly employed in various forms of punch presses. They operate to feed or advance a strip of stock, such as metal stock, to one or more stages of operation on the strip of stock.

Heretofore, it has been the practice to employ a clutch with one set of rollers which drive, for example, the feed roll shaft positively in one direction, but which let go or are released in the opposite direction. As a result, a brake has been required in endeavoring to control the total amount of movement imparted to the strip of stock by each of the driving strokes of the roll feed rack. This has been necessary, since the amount of movement imparted to the strip of stock by each of the driving strokes of the roll feed rack must be exactly that which is required.

The employment of a brake in an effort to control the total amount of movement imparted to the strip of stock by each of the driving strokes of the roller feed rack has objections and limitations. The kinetic energy absorbed in a brake is lost, and the matter of dissipating the heat thus developed has presented a problem. The speed at which punch presses may be operated has been limited to the amount of torque that may be provided and to the amount of heat that may be dissipated.

Die steels are now available which will permit operations thereon in a punch press as the rate of 1,000 strokes per minute. However, brakes capable of actually stopping the movement of the stock and at the same time capable of dissipating the heat at such high speeds are not available. As a result, the speed of operation has been limited, usually for example, to about 500 strokes per minute or less. Brakes cannot be made large enough accurately to stop the movement of the stock in the available time interval at 1,000 strokes per minute.

In present practice, the amount of lost energy is great, but this is not so important at relatively low speeds of operation.

The broad concept of the present invention resides in mounting an actuating cam on the slide block pin which actuates the roll feed rack to effect release and application of the clutch for the feed roll means at the ends of the driving or power stroke and the return stroke of the roll feed rack. More particularly, the action of said cam is transmitted to the clutch by means of an auxiliary rack independently movable with respect to the driving rack for operating the feed rolls.

Another feature of the invention resides in the provision of a double acting positive roll feed clutch which acts in both directions and does not require a brake for controlling the feed length of the stock, or the amount

2

of movement imparted to the strip of stock by each of the driving strokes of the roll feed rack. The amount of such movement of the stock is thus controlled solely by adjustment of the stroke, or movement of the driving rack for operating the feed rolls, and without a brake.

The elimination of the necessity for a brake, as in prior practice, eliminates the loss of power or kinetic energy in such brake, and it also eliminates the prior difficult problem of dissipating the heat developed in the brake, particularly at high speeds of operation.

Another feature resides in the provision of a mechanism which will feed the stock the exact amount desired upon each of the driving strokes of the roll feed rack, and which will enable accomplishment of this result at high speeds of operation.

Another feature resides in the provision of a double acting roll feed clutch having two sets of rollers and in which both sets of rollers are locked to the driven drum and against relative rotation in either direction during the driving or stock feeding stroke of the driving rack for operating the feed rolls. At this time one set of rollers acts during acceleration to lock the driven drum for rotation with the driving member. Upon accelerating, the other set of rollers come into action and positively prevent any overrunning by the driven drum. At the end of the driving stroke of the driving rack, one set of rollers is released by release means and held released during the return stroke and the other set of rollers slip so that the driven drum will remain stationary during the return stroke.

Further features and numerous advantages and adaptations of the invention will be apparent from the following detailed description taken in connection with the accompanying drawings, it being understood that the invention is limited only within the scope of the appended claims and not to the particular embodiment selected for illustration.

In the drawings:

Figure 1 is a fragmentary view, partially in section and partially in elevation of a portion of a punch press showing the present invention applied thereto;

Figure 2 is an end view showing the cam on the slide block pin; also the auxiliary rack and the driving rack and the related mechanism for effecting release and application of the clutch at the ends of the driving and the return strokes of the roll feed rack;

Figure 3 is a fragmentary end view showing the upper portion of the mechanism shown in Figure 2, with the slide block pin as it is positioned at the end of the return stroke and the beginning of the driving stroke of the driving rack for operating the feed rolls;

Figure 4 is a sectional view taken along the line A—A of Figure 1, and showing the clutch mechanism as positioned for the driving or feed stroke;

Figure 5 is a sectional view similar to Figure 4, showing the clutch mechanism as positioned for the return stroke;

Figure 6 is a fragmentary sectional view taken along the line 6—6 of Figure 1;

Figure 7 is a view of the inner surface of the actuating cam on the slide block pin; and

Figure 8 is a fragmentary perspective view showing portions of the main driving rack and the independently movable auxiliary rack.

Referring now to the drawings, the shaft 1, as shown in Figure 1 is, for example, the crankshaft of a conventional punch press. The shaft 1 rotates in a bearing or bushing 2 in the frame 3 of the press.

Feed rolls 4 and 5 move the stock at right angles, or transversely with regard to the shaft 1 along the feed

3

line 6, as conventional in such presses. A ram, shown fragmentarily at 7, moves up and down in accordance with conventional practice.

A main driving rack 8 is operated by the crankshaft 1, which imparts up and down strokes to the rack 8 in accordance with conventional practice, and as will be presently described. The rack 8 acts during one of the aforementioned strokes, i.e., during the upstroke in the embodiment of the invention selected for illustration, although this may be reversed or otherwise varied, to drive a shaft 9 for the feed roll 4, thus operating the feed rolls to move or advance the stock the desired amount.

For the purpose of moving the rack 8 downwardly from the position shown in Figures 1 and 2 through 180°, rotation of the shaft 1 and upwardly through the other 180° rotation of this shaft, a hub 10 is fixed on the projecting end 11 of the shaft 1 for rotation therewith, and this hub 10 has a driving flange 12. A face plate 13 is bolted at 14, or otherwise affixed to the driving flange 12. The face plate 13 has a diametrically disposed dovetail shaped groove 15 in the outer surface thereof, and a side block 16 of corresponding dovetail form fits slidably in the groove 15.

A shaft or pin 17 rotates at 18 in the face plate 13, and is fixed against axial movement by collars 19 pinned to the shaft at 20, and abutting shoulders 21 on the face plate 13. The upper end of the shaft or pin 17 is threaded at 22, and passes through the slide block 16 and has threaded or screw engagement therewith. The lower end of the shaft or pin 17, as viewed in Figure 1, has a kerf 23 or is of polygonal form, so that by engagement, for example, of a screwdriver or wrench therewith, the shaft or pin 17 may be turned to thread or screw the slide block 16 radially inwardly or outwardly along the groove 15 to adjust the stroke of the driving rack 8 and thereby the amount of movement imparted to the stock by the driving stroke of the rack 8.

The slide block 16 has a crank pin 24 formed integral therewith, or rigidly joined thereto. The pin 24 projects through an opening 25 in the upper end of the rack 8, as viewed in Figure 1, and the adjacent end of the rack 8 turns on a suitable bearing 26 interposed between the pin 24 and the periphery of the opening 25. The bearing 26 and the adjacent end of the rack 8 are held in place by a nut 27 screwed on the outer end of the pin 24.

Mounted on the pin 24 is a cam 28 which is positioned between the face plate 13 and the main rack 8. As shown in Figures 1, 6 and 7, the inner surface of the cam 28 has a diametrically disposed key 29 which fits in a diametrically disposed groove 30 in the adjacent surface of the face plate 13. The cam 28 is thus fixed to turn or rotate with the face plate 13, and has radial movement with respect to the face plate with radial adjustment of the slide block 16. The opposite side of the cam 28 has a bearing spacer 28' thereon. As shown in Figures 2, 3 and 7, the periphery of the cam 28 has a high side 31 extending peripherally through 180° from 32 to 33, and a low side 34 extending peripherally through 180° from 33 back to 32.

The periphery of the cam 28 contacts a roller 35 carried by a slide block 36 which has sliding movement longitudinally with respect to the rack 8 in an opening 37 in this rack. The roller 35 may be carried, for example, on a screw 38, which is screwed through the upper end of an auxiliary rack 39 and the slide block 36 and fixes the upper end of the auxiliary rack 39 to the slide block. An additional screw 40 screwed through the slide block 36 from the opposite side and into the adjacent end of the auxiliary rack 39 additionally fixes the upper end of the auxiliary rack 39 to the slide block 36. The upper end of the auxiliary rack is thus fixed against any tendency to turn with respect to the slide block 36.

A coiled spring 41 is disposed in a socket 42 in the main rack 8 and acts endwise between the slide block 36 and the lower end of the socket 42. This spring 41 spring loads the slide block 42 and keeps the roller 35

4

yieldingly in contact with the periphery of the cam 28.

The teeth 43 of the main driving rack 8 mesh with the teeth 44 of a pinion gear 45 which is rotatable on bronze bushings or bearings 46 on the feed roll shaft 9. The tubular hub 47' of the pinion gear 45 projects into the hollow cylindrical or drum portion 47 of a driven member 48. The driven drum 47 has a hub 49 keyed or splined at 50 to the feed roll shaft 9 to drive or turn the same therewith. The driven drum 47 may be grooved peripherally at 51 and a no-back clutch 52 and bearing 53 are held in place by a nut 54 screwed on the outer end of the shaft 9.

The no-back clutch 52 prevents the clutch rollers to be presently described from running backwards on the return stroke of the main driving rack.

Surrounding the hub 47' of the pinion gear 45 within the driven drum 47 and splined, keyed or otherwise fixed to turn with the hub 47, for example, by cooperating teeth 56, is a non-backup roller ratchet or driving member 58. The driving member 58 has a series of circumferentially spaced lugs 59 between which are circumferentially spaced recesses 60. A pair of clutch rollers 62 and 63 is positioned in each recess 60. The rollers 62 constitute one set of rollers, and the rollers 63 constitute a second set of rollers. The rollers 62 act between the inner surface of the drum 47 and a set of wedge members 65 carried by the driving member 58. The rollers 63 act between the inner surface of the drum 47 and a second set of wedge members 67 carried by the driving member 58.

In back of each roller 62 and 63 are two coiled springs 68 which, during the feed or driving stroke of the main driving rack 8 with the clutch positioned as shown in Figure 4, hold the rollers 62 and 63 engaged with the inner surface of the drum 47 and their respective wedge members 65 and 67. Therefore, during the driving stroke of the rack 8, both sets of rollers 62 and 63 are locked to the driven drum 47 and to the driving member 58 and the drum 47 and driving member are locked against relative rotation in either direction.

For the purpose of releasing one set of rollers, namely the rollers 63, at the end of the feed stroke of the main driving rack 8, the auxiliary rack 39 has teeth 70 as shown in Figures 2 and 8, which mesh with teeth 72 on the adjacent end of the hub 73 of a clutch release member 74 rotatable about the hub 47' of the pinion gear 45. As previously indicated, in the embodiment of the invention selected for illustration, the feed or driving stroke is the up stroke of the rack 8 although, as also previously indicated, this may be reversed or otherwise varied.

Within the driven drum 47 the release member 74 has a cage portion 76 provided with a series of release lugs 78. One of these release lugs 78 projects between each pair of rollers 62 and 63 as shown in Figures 4 and 5. The lugs 78 are shown as having curved surfaces 79 of curvatures corresponding to the curvatures of the cylindrical surfaces of the rollers.

The springs 68 are disposed in sockets 68' in the lugs 59 of the driving member 58 and act endwise between the rollers 62 and 63 and the inner ends of the sockets. Since the clutch position in the feed or driving stroke is as shown in Figure 4, with the release lugs 78 between the rollers 62 and 63 and free thereof, the springs 68 need be only relatively light springs.

During the driving or upward stroke of the main driving rack 8 the lower side 34 of the cam 28 is in contact with the roller 35 and, as already indicated, the lugs 78 are positioned centrally between the rollers 62 and 63 as shown in Figure 4. At the end of the driving stroke, i.e., at the top of the upward stroke of the rack 8, the high side 31 of the cam 28 comes into action by engaging the roller 35. The auxiliary rack 39 is thus forced downwardly independently of the driving rack 8. The downward movement of the auxiliary rack 39 acts through the meshing teeth 70 and 72 of the auxiliary

5

6

rack 39 and release member 74, and the accompanying turning movement thus imparted to the release member 74 shifts the lugs 78 clockwise from their positions as shown in Figure 4 to their positions as shown in Figure 5.

In the aforementioned movement of the lugs 78, these lugs contact the rollers 63 and move the same out of locking engagement between the wedge members 67 and the inner surface of the drum 47 against the actions of the related springs 68. Thus, the downward movement imparted to the auxiliary rack 39 by the high side 31 of the cam 28 at the top or end of the driving stroke of the main rack 39 releases one set of rollers, i.e., the rollers 63. The other set of rollers 62 are released, as will be clear from Figure 5, by the reverse or clockwise turning movement imparted to the driving member by the main rack 8 during the downward or return stroke of the rack 8.

While the rollers 63 are described as being released by the action of the lugs 78 at the end of the driving stroke, whereas the other set of rollers are described as being released by the reverse turning movement of the member 58, it is to be understood that either set of rollers may be released by the lugs 78 and that the other set will be released by the reversed turning movement of the member 58. As previously indicated, the down stroke of the main driving rack may be the driving stroke, and the up stroke may be the return stroke, and other variations are contemplated within the scope of the present invention.

The pinion gear 45 may have an enclosure 80 open at 81 (Figure 2) along the side where the teeth 43 of the rack 8 mesh with the teeth 44 on the pinion gear 45 and where the teeth 70 of the auxiliary rack 39 mesh with the teeth 72 on the hub 73 of the clutch release member 74. The no-back clutch 52 and bearing 53 may be disposed within a part 82 mounted at 83 on the bolster 84 of the press, as shown in Figure 1.

The surfaces 65' of the members 65 are so disposed as to wedge the rollers 62 between said surfaces and the inner surface of the driven drum 47 upon rotation of the driving member 58 in a counterclockwise direction in the driving stroke of the rack 8 as shown in Figure 4. At the same time, the surfaces 67' of the members 67 are so disposed that the rollers 63 are wedged between these surfaces and the inner surface of the driven drum 47 and lock the driven member against any overrunning of the driving member and the driving and driven members against any relative rotation in the opposite direction.

In the operation of the punch press, with the present invention applied thereto, the rotation of the crankshaft 1 imparts, through the slide block pin 24 up and down movements to the driving rack 8 for operating the feed rolls. The driving stroke and the resulting amount of movement imparted to the stock is accurately adjusted by turning the screw 22 to move the slide block 16 radially inwardly or outwardly to any desired position in the groove 15.

As the rack 8 reaches the end of its downward or return stroke, the low side of the cam 28 comes into contact with the roller 35 and remains in contact with this roller 35 during the driving or up stroke of the rack 8. As the rack 8 commences its driving or up stroke, the lugs 78 are positioned as shown in Figure 4 and the springs 68 lock the rollers 62 and 63 between the inner surface of the drum 47 and their respective wedge members 65 and 67. The wedge or driver members 65 act positively through the rollers 62 to rotate the drum 47 and, therefore, the feed roll shaft 9 in unison with the pinion gear 45 and driving member 58, and thus operate the feed rolls the desired amount, as determined by the adjusted position of the slide block 16.

Upon accelerating, the other rollers 63 come into action and positively prevent any overrunning of the driving

member by the driven drum 47. Therefore, during the driving stroke of the rack 8, both sets of rollers 62 and 63 are locked between the inner surface of the driven drum 47 and the respective members 65 and 67. The drum 47 and driving member 58 are thus driven together and locked against relative rotation in either direction. As a result, the total amount of movement imparted to the strip of stock is accurately controlled without a brake, and without the objections and limitations presented where a brake is employed.

At the end of the driving or up stroke of the rack 8, the high side 31 of the cam 28 comes into action by engaging the roller 35 and forcing the auxiliary rack 39 downwardly. This downward movement of the auxiliary rack 39 shifts the lugs 78 clockwise from their positions as shown in Figure 4 to their positions shown in Figure 5, and thus the rollers 63 are moved out of locking engagement between the wedge member 67 and the inner surface of the drum 47 by the engagement of the lugs 78 therewith and against the action of the related springs 68. The other set of rollers 62 are released by the reverse or clockwise turning movement imparted to the driving member 58 by the main rack 8 during the downward or return stroke of the rack 8.

With the present invention, the kinetic energy, instead of being lost in a brake, is fed back to the system, and as previously set forth, the matter of dissipating the heat developed in a brake and the objections and limitations thereby presented, are all eliminated.

The wedge members 65 and 67 are preferably formed of a hard alloy, such, for example, as a tungsten-carbon or tungsten-carbon-cobalt alloy known as "Carboloy," or other hard or hardened material.

The embodiment of the invention disclosed in the drawings and the specification is for illustrative purposes only, and it is to be expressly understood that said drawings and the specification are not to be construed as a definition of the limits or scope of the invention, reference being had to the appended claims for that purpose.

I claim:

1. In a roll feed mechanism of the class wherein a roll feed rack having driving and return strokes and operated by a crank pin drives feed roll means for advancing a strip of stock, the combination with said mechanism of clutch means through which the drive is transmitted from said roll feed rack to said feed roll means, and an actuating cam on said crank pin for effecting release and application of said clutch means at the ends of the driving and return strokes of said roll feed rack.

2. The combination with roll feed mechanism, according to claim 1, wherein the clutch means through which the drive is transmitted to the feed roll means has driving and driven members and coupling members which act to lock said driving and driven members against relative rotation in either direction during the driving stroke of the roll feed rack.

3. The combination with roll feed mechanism, according to claim 1, wherein the crank pin and the actuating cam for effecting release and application of the clutch means at the ends of the driving and return strokes of the roll feed rack are carried by a slide block arranged for radial adjustment to adjust the stroke of the roll feed rack.

4. The combination with roll feed mechanism, according to claim 1, wherein the clutch means has driving and driven members and two sets of rollers which act to lock said driving and driven members against relative rotation in either direction during the driving stroke of the roll feed rack.

5. In a roll feed mechanism of the class wherein a roll feed rack having driving and return strokes and operated by a crank pin drives feed roll means for advancing a strip of stock, the combination with said mechanism of clutch means for said feed roll means, an

7

actuating cam on said crank pin for effecting release and application of said clutch means at the ends of the driving and return strokes of said roll feed rack, said clutch means having driving and driven members and two sets of rollers which act to lock said driving and driven members against relative rotation in either direction during the driving stroke of the roll feed rack, clutch release lugs, and an auxiliary rack independently movable with respect to said roll feed rack and arranged to transmit the action of said cam to said clutch release lugs for releasing one set of rollers at the end of the driving stroke of the rack.

6. In a roll feed mechanism of the class wherein a roll feed rack having driving and return strokes and operated by a crank pin drives feed roll means for advancing a strip of stock, the combination with said mechanism of clutch means for said feed roll means, an actuating cam on said crank pin for effecting release and application of said clutch means at the ends of the driving and return strokes of said roll feed rack, said clutch means having driving and driven members and two sets of rollers which act to lock said driving and driven members against relative rotation in either direction during the driving stroke of the roll feed rack, clutch release lugs, and an auxiliary rack independently movable with respect to said roll feed rack and arranged to transmit the action of said cam to said clutch release lugs for releasing one set of rollers at the end of the driving stroke of the rack, the other set of rollers being released by reverse turning movement imparted to the driving member by the return stroke of the roll feed rack.

7. In a roll feed mechanism of the class wherein a roll feed rack having driving and return strokes and operated by a crank pin drives feed roll means for advancing a strip of stock, the combination with said mechanism of clutch means for said feed roll means, an actuating cam on said crank pin, and an auxiliary rack independently movable with respect to said roll feed rack and arranged to transmit the action of said cam to said clutch means for effecting release and application of said clutch means at the ends of the driving and return strokes of said roll feed rack.

8. In a roll feed mechanism of the class wherein a roll feed rack having driving and return strokes and operated by a slide block pin radially adjustable to adjust the stroke of the roll feed rack drives feed roll means for advancing a strip of stock, the combination with said mechanism of clutch means for said feed roll means, an actuating cam on said slide block pin, an auxiliary rack independently movable with respect to said feed roll rack, a slide block fixed to said auxiliary rack and having sliding movement with respect to said roll feed rack, and a roller carried by said slide block and contacting the periphery of said cam for transmitting the action of said cam to said clutch means through said auxiliary rack for effecting release and application of said clutch means at the ends of the driving and return strokes of said roll feed rack.

9. The combination with roll feed mechanism, according to claim 8, wherein the cam has a low side extending peripherally through 180° and contacting said roller from the end of the return stroke to the end of the driving stroke of the roll feed rack and a high side contacting said roller from the end of the driving stroke to the end of the return stroke of the roll feed rack.

10. The combination with roll feed mechanism according to claim 8 wherein a coiled spring is positioned between the slide block and the roll feed rack to keep the roller yieldingly in contact with the periphery of the cam.

11. In combination, a crankshaft, a face plate driven by said crankshaft, a slide block pin adjustable radially in said face plate, a roll feed rack cooperating with said slide block pin and having driving and return strokes imparted thereto by said pin, a cam on said slide block

8

pin, a roll feed shaft, a pinion gear on said roll feed shaft meshing with said roll feed rack, a driving member fixed to turn with said pinion gear, a driven drum surrounding said driving member, clutch means between said driving member and said driven drum, a clutch controlling member mounted to turn on a hub of said pinion gear, and an auxiliary rack meshing with teeth on said clutch controlling member and independently movable with respect to the roll feed rack and operated by said cam for effecting release and application of the clutch at the ends of the driving stroke and the return stroke of said roll feed rack.

12. The combination according to claim 11, wherein the clutch means has two sets of rollers which act to lock the driving member and driven drum against relative rotation in either direction during the driving stroke of the roll feed rack.

13. The combination according to claim 11, wherein the clutch means has two sets of rollers which act to lock the driving member and driven drum against relative rotation in either direction during the driving stroke of the roll feed rack, and clutch release lugs on said clutch controlling member and cooperable with one set of rollers to release said set of rollers at the end of the driving stroke of the roll feed rack.

14. The combination according to claim 11 wherein the clutch means has two sets of rollers which act to lock the driving member and driven drum against relative rotation in either direction during the driving stroke of the roll feed rack, and clutch release lugs on said clutch controlling member and cooperable with one set of rollers to release said set of rollers at the end of the driving stroke of the roll feed rack, the other set of rollers being released by reverse turning movement imparted to the driving member by the return stroke of the roll feed rack.

15. In combination, a driving member, a driven drum surrounding said driving member, two sets of wedge members on said driving member, a first set of rollers between the wedge members of one set and the inner surface of said drum, a second set of rollers between the wedge members of the other set and the inner surface of the drum, the first set of wedge members having surfaces disposed to wedge the first set of rollers between said surfaces and the inner surface of the drum upon rotation of the driving member in one direction, the other set of wedge members having surfaces disposed to wedge the second set of rollers between said surfaces and the inner surface of the drum to lock the driven drum against overrunning the driving member and the driving member and driven drum against relative rotation in the opposite direction, a clutch controlling member having clutch release lugs cooperable with one set of rollers to release said rollers, a roll feed rack having driving and return strokes and operated by a crank pin for driving feed roll means for advancing a strip of stock, an actuating cam on said crank pin, and an auxiliary rack independently movable with respect to said feed roll rack, and arranged to transmit the action of said cam to said clutch controlling member for effecting release and application of said second set of rollers at the ends of the driving and return strokes of said roll feed rack.

16. In combination, a driving member, a driven drum surrounding said driving member, two sets of wedge members on said driving member, a first set of rollers between the wedge members of one set and the inner surface of said drum, a second set of rollers between the wedge members of the other set and the inner surface of the drum, the first set of wedge members having surfaces disposed to wedge the first set of rollers between said surfaces and the inner surface of the drum upon rotation of the driving member in one direction, the other set of wedge members having surfaces disposed

to wedge the second set of rollers between said surfaces and the inner surface of the drum to lock the driven drum against overrunning the driving member and the driving member and driven drum against relative rotation in the opposite direction, a clutch controlling member having clutch release lugs cooperable with one set of rollers to release said rollers, the other set of rollers being released by reverse turning movement of the driving member, a roll feed rack having driving and return strokes and operated by a crank pin for driving feed roll means for advancing a strip of stock, an actuating cam on said crank pin, and an auxiliary rack independently movable with respect to said feed roll rack and arranged to transmit the action of said cam to said clutch controlling member for effecting release and application of said second set of rollers at the ends of the driving and return strokes of said feed roll rack.

17. In a roll feed mechanism of the class wherein a roll feed rack having driving and return strokes and operated by a crank pin drives feed roll means for advancing a strip of stock, the combination with said mechanism of clutch means through which the drive is transmitted from said roll feed rack to said feed roll means, and an actuating cam on said crank pin for effecting release and application of said clutch means and the ends of the driving and return strokes of said roll feed rack, said clutch means having driving and driven members and two sets of coupling members which act to lock said driving and driven members against relative rotation in

either direction during the driving stroke of the roll feed rack.

18. In a roll feed mechanism of the class wherein a roll feed rack having driving and return strokes and operated by a crank pin drives feed roll means for advancing a strip of stock, the combination with said mechanism of clutch means through which the drive is transmitted from said roll feed rack to said feed roll means, an actuating cam on said crank pin for effecting release and application of said clutch means at the ends of the driving and return strokes of said roll feed rack, said clutch means having driving and driven members and two sets of coupling members which act to lock said driving and driven members against relative rotation in either direction during the driving stroke of the roll feed rack, clutch release means, and an auxiliary rack independently movable with respect to said roll feed rack and arranged to transmit the action of said cam to said clutch release means for releasing one set of coupling members at the end of the driving stroke of the roll feed rack.

References Cited in the file of this patent

UNITED STATES PATENTS

25	1,909,831	Jensen.....	May 16, 1932
	1,942,197	Blackstock	Jan. 2, 1934

FOREIGN PATENTS

	13,316	Great Britain	June 27, 1899
30	129,019	Sweden	Aug. 8, 1950