To all whom it may concern:

Be it known that I, ALEXANDER J. NEUHENGEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cutting and Punching Machines, of which the following is a specification.

This invention relates in general to metal working machines, and has more particular reference to a machine for cutting and punching strips of metal, the invention being illustrated in the present instance in a machine for cutting a strip of metal into predetermined lengths and punching holes near the end thereof adapted to receive rivets by which the ends of a length may be secured together, to thereby form a barrel hoop.

In the manufacture of barrel hoops, it has herebefore been the customary practice to provide one edge of a long metal strip with a bead, then cut this strip into the requisite lengths for the hoops, and then take these lengths one at a time, insert one end into a punching machine to punch the rivet holes therein, after which the length of metal was reversed to punch similar holes in the other end. This practice necessarily involved considerable manual labor in handling the lengths of metal in order to provide them with the rivet holes.

One of the purposes of my present invention is to eliminate the manual labor involved in the manufacture of barrel hoops in the customary manner; by feeding a previously beaded strip of metal directly into my novel machine, which automatically cuts the strip into predetermined lengths and punches the rivet holes in the proper position near each end of each length and delivers the cut lengths already equipped with the rivet holes, without any manual labor or handling of the lengths.

Another object of my invention is to provide a machine which will not only be entirely automatic in its operation, but one which will be extremely speedy as well as accurate so that it will turn out large quantities of hoop lengths accurately cut to length and properly punched.

Another object is to provide a machine which can be readily adjusted to produce hoops of various lengths, one which will be simple in construction, not liable to get out of order, one which can be economically manufactured, and which will be efficient and reliable in operation.

A machine embodying my invention possesses a number of desirable and advantageous features, among which may be mentioned the novel mechanism by which the hoop stock is accurately cut into predetermined lengths, the mechanism by which the cutting and punching tools are operated and controlled, the arrangement and mounting of the cutting and punching tools which permit ready and accurate adjustment of the tools, and replacement of the same when required, and the general construction and arrangement of the various parts so as to contribute to the compactness, durability, efficiency and reliability of the machine.

Other objects and advantages of my invention will be readily appreciated as the same becomes better understood by reference to the following description, when considered in connection with the accompanying drawings.

Referring to the drawings:

Fig. 1 is a side elevation of a cutting and punching machine embodying my invention;

Fig. 2 is a plan view of a portion of the machine;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is an enlarged fragmentary view looking at the head of the machine shown in Fig. 1, the face plate and certain parts being removed to more clearly show the underlying mechanism.

Fig. 5 is a fragmentary sectional view on the line 5—5 of Fig. 3;

Fig. 6 is an enlarged sectional view on the line 6—6 of Fig. 4;

Fig. 7 is a similar view on the line 7—7 of Fig. 4;

Fig. 8 is a plan view of the stripper plate over the punch dies;

Fig. 9 is a sectional view on the line 9—9 of Fig. 1;

Fig. 10 is a longitudinal sectional view of the controlling finger and its mounting;

Fig. 11 is a sectional view on the line 105—11 of Fig. 10; and

Fig. 12 is a sectional view on the line 12—12 of Fig. 10.

Referring to the drawings more in detail, it will be observed from Fig. 1 that the
mechanism of the feed end of the machine, that is, the right end viewing Fig. 1, is carried on a suitable base or frame 15, the delivery end of the machine being supported upon suitable legs or standards 16. Directly upon the base 15, there is mounted a pedestal 17 carrying the operating mechanisms at the feed end of the machine, and this pedestal and the standard 16 are connected by a long, narrow table consisting of the bottom plate 18 (Figs. 1 and 9 to 12 inclusive) and the upper plates 19 and 21, which are undercut to provide a guideway through which the beaded stock 22 travels.

The stock which has previously been beaded at one edge, as shown in Fig. 9, is fed into the right hand end of the machine, viewing Fig. 1, either directly from a beading machine or from another source of supply, and this stock travels through the guideway to the delivery end of the machine, being positively advanced by a plurality of sets of feed rolls, each comprising an upper roll 23 and a lower roll 24 driven in a manner which will be later explained. These various sets of feed rolls are substantially alike in structure and operation and they have therefore been designated by the same reference character, and one set, the delivery set which is shown in Fig. 9, will be described more in detail, the description being considered as sufficient for the other two sets.

Referring now to Fig. 9, it will be observed that the lower roll 24 is mounted upon a transversely extending shaft 25 journaled at each side of the roll in fixed bearings 26 and 27 respectively. This shaft is positioned beneath the table along which the stock moves, while the shaft 25 upon which the upper roll 23 is mounted, is arranged above the table and journaled in bearing boxes 29 and 31, which are vertically movable in stationary bearings 32 and 33 respectively, preferably formed integrally with the bearings for the shaft 25.

The rollers 23 and 24 are therefore disposed in opposed relation and the table plates 18, 19, and 21 are slotted to accommodate these rolls so that their perimeters are adapted to frictionally engage the upper and lower faces of the strip of stock 22 as shown in Fig. 9. In order to maintain the requisite frictional engagement between these rolls and the stock, the bearings 29 and 31 in which the shaft 28 is journaled are yieldedly depressed by coil springs 34 and 35 disposed above the bearings in the bearing members 32 and 33 respectively, the tension of these springs being adjusted by means of adjusting screws 36 and 37. The rolls are thus yieldedly forced together to grip the stock between them, and as the rolls are rotated, they serve by reason of their frictional engagement with the stock, to feed the stock through the machine.

For the purpose of driving the rolls, the shaft 25 is equipped with a bevel gear 38 adapted to mesh with and be driven by a bevel gear 39 fixed upon a longitudinally extending shaft 41. Shafts 25 and 28 are set operatively connected through a set of gears 42 and 43 by which shaft 28 is driven from shaft 25 at the same speed but in the opposite direction. The rolls and operating mechanism just described are the delivery set shown at the left side of Fig. 1.

The intermediate set of rolls is substantially similar in construction and operation, but in this case, the shafts 44 and 45 upon which the rolls 23 and 24 are respectively carried are of greater length, and shaft 45 drives the longitudinal shaft 41 through a pair of bevel gears 46 and 47 (Fig. 2). The shafts 44 and 45 are connected together by a pair of spur gears 48 similar to the gears 42 and 43, and the bearing for the upper shaft 45 adjacent the roll 25 is yieldingly mounted by a construction similar to that shown in Fig. 9 and previously described, the spring tension regulating screw being indicated in this instance by reference character 49.

The shafts upon which the rolls 23 and 24 at the feed or right hand end of the machine, viewing Fig. 1 are mounted, are similar in all respects to the intermediate set just described, and the lower shafts of both the first and intermediate sets of rolls are provided with sprocket wheels 51 and 52 (Fig. 2) by which these shafts are driven through sprocket chains 53 and 54 from the main drive shaft 55 of the machine, which is equipped with sprocket wheels 56 and 57, over which the sprocket chains 53 and 54 are trained. This main drive shaft extends transversely of the head of the machine and is mounted in suitable bearings in the yoke frame 58. At one end, it is equipped with the fast and loose pulleys 59 and 61 through which power is transmitted to the machine from any suitable source. All of the feed rolls are therefore constantly driven to advance the stock through the machine at a rapid pace. The feed-in and intermediate rolls are driven at the same speed but the delivery rolls are driven at a faster speed attained by gearing up the bevel driving gears, in order that the stock will be delivered faster than its normal advance through the machine to thereby ensure a space between the opposed ends of the stock which permits a rise of the stop finger into position in front of the advancing stock, as will be later apparent. The stock is intermittently stopped in its progress through the machine to permit the punching and cutting operations to be performed thereon and during this temporary stoppage, the feed rolls slip on the stock and continue to rotate so that as soon as the stock is released,
the advance of the stock is immediately begun again.

Above the main shaft 55 there is journaled in the yoke head 58 a parallel shaft 62 (Figs. 3, 4 and 5). This shaft has fixedly mounted thereon, a cam member 63, and a cam 64, and also carries a clutch member 65 provided with clutch teeth 66, this clutch member being splined by means of a key 67 to the shaft 62 so as to be capable of movement longitudinally of the shaft. Between the clutch member 65 and the cam 64 the shaft has rotatably mounted thereon, a sleeve or collar 68 provided in opposed relation to the clutch teeth 66 with clutch teeth 69, and upon this collar, there is fixedly secured by set screws 71 or otherwise, a gear wheel 72 which meshes with and is driven by a driving pinion 73 fixed on the drive shaft 55. The gear wheel 72 is therefore constantly driven and at periodic intervals, the clutch member 65 is shifted to interengage clutch teeth 66 and 69, thereby connecting shaft 62 with shaft 55 so that shaft 62 is thereby driven, and when the clutch is disengaged, shaft 62 remains stationary.

The right hand end, viewing Fig. 3, of shaft 62, projects beyond the face of the yoke 58 into housing 74 projecting laterally from the yoke, and in this housing, the cam member 63 is fixed on the shaft. Within the housing and around the cam member, is disposed a slide block 75 adapted to reciprocate vertically in the housing between one wall thereof and an adjustable gib 76 which may be adjusted through screws 77 to insure a proper fit of the slide block in its guideway. This block is equipped beneath the cam member 63 with a roller 78 mounted upon a pin 79, which roller serves as a cam follower, and is held in engagement with the periphery of cam member 63 by a plurality of expansion springs 81 surrounding and lifting bolts or rods 82 threaded into the slide block 75, as shown in Fig. 4, and projecting upwardly through the top 83 of the housing. The tension of the springs may be regulated by adjusting nuts 84 on the bolts 82, as will be obvious. A plurality of rises 85 on the perimeter of the cam member are each adapted upon engagement with the roller 78 to depress the slide block against the force of the springs 81 thereby performing the cutting and punching operations by the cutter and punches which are carried by the slide block at its lower end, as will be later explained. The downward movement of the slide block is short and quick, as will be manifest from the shape of the rises 85, and the block is quickly raised after each actuation by the springs. In case, however, that the punches or the cutters should bind and stick so that the force of the spring would be insufficient to withdraw them from the stock, I have provided upon the interior of the slide block 75 an abutment 86, which, when the block is depressed, is disposed in the path of the projection 85, and should the block fail to rise under the influence of the springs 81, it will be positively elevated by the cam projection 85 which will strike the abutment as the shaft 62 rotates in a clockwise direction, viewing Fig. 4.

The punches and the movable cutter blade are carried by the slide block 75, and their manner of mounting is perhaps best illustrated in Figures 6 and 7. From an inspection of these figures, it will be apparent that the lower end of the slide block is undercut at 87, and at its forward edge with a similar groove 94 into which a tongue 95 of a clamping plate 96 extends, the upper end of this plate being provided with a flange 97 having its inner edge chamfered off, as indicated at 98, to fit against the inclined face 99 of the head 88. A plurality of bolts 101 anchored in the head 88 project through openings in the plate 96 and are provided at their outer ends with nuts 102 by which the plate is securely clamped to the head, thus locking the block 92 rigidly but detachably to the head.

The block 92 is equipped with a plurality of (in the present instance four) quills or punch holders 103 arranged in spaced relation longitudinally of the block, and each adapted to receive a punch 104 snugly disposed therein with its lower end projecting in operative relation beneath the quill 103. The head 88 is provided in alignment with each punch with a tapped opening in which is threaded disposed an adjusting screw 105, which serves as an abutment or backing for the punch, the extent of projection of which may be regulated by adjustment of the screw 105. For the purpose of clamping the punches against accidental withdrawal from their respective quills, the block 92 is provided with a forwardly opening tapped aperture disposed in alignment with each punch, and into each of these openings, there is threadedly inserted a set screw 106, the head of which projects beyond the forward face of the block 92. Each quill 103 is provided with an opening 107 adapted to receive the inner reduced end of a set screw 106 so that when the set screws are tightened up, they serve not only to lock the punches in position, but also to retain the holders against displacement from the block.

It will be observed from Figs. 1 and 4 that the punches are in this instance ar-
ranged in pairs at opposite sides of the center of the block 92, and each pair is therefore adapted to punch two holes in the hoop barrel stock, which is at the same time severed between the pairs of punches, thus producing two ends, each of which is provided with a pair of rivet holes spaced a predetermined and requisite distance from the ends of the stock.

For the purpose of cutting or severing the stock between the pairs of punches, the block 92 is equipped with a cutter blade 108 (Figs. 4 and 7), this blade being disposed in a transversely extending slot in the block and clamped in position by a plurality of set screws 109 threaded through the front wall of the block against a gib 111 which is interposed between the set screws and the edge of the blade. The extent of projection of the blade beneath the block may be regulated similarly to the regulation of the punches by means of an adjusting screw 112 threaded through the head 88 in alignment with the blade.

The movable cutter blade 108 cooperates with the stationary blade 113 disposed in an anvil block 114 which is seated on a bracket or shelf 115 formed on the frame of the machine, and is securely clamped thereto by a plurality of lag bolts 116. This block is provided with a slot or socket for the reception of the stationary blade 113, the height of which may be adjusted by a plurality of adjusting screws 110 similar to the adjusting screw 112. For the purpose of clamping the blade against longitudinal displacement, I provide a wedge 117 adapted to be driven in beside the blade, the wedge or the opposed portion of the blade being slightly tapered to insure a wedging action, as will be apparent from Fig. 8, the wedge being inserted through an opening from the front face of the block 114 and its outer end being screw-threaded to accommodate a nut 118 by means of which the wedge may be withdrawn to free the blade when desired. The wedge is simply driven into wedging engagement from the front face of the block and by screwing the nut 118 further onto the threaded portion of the wedge, the wedge can be gradually withdrawn from the hole or sufficiently loosened to permit its manual withdrawal.

A plurality of dies 119, one for each of the punches 104, is also carried by the anvil block 114, and from Figs. 6 and 8, it will be observed that the dies 119 themselves are seated in and held in proper spaced relation by a die block 121 which in turn is clamped in position between an undercut edge 122 of a recess formed in the upper face of the anvil block 114 and a similarly inclined bar 123 engaging the forward inclined face of the die block 121. Preferably, the bar 123 has formed integrally therewith a plate 124 upon which the die block rests. Pressure is exerted upon the bar 123 to clamp the die block in position by means of a plurality of set screws 129 threaded into suitable openings formed in the forward face of the anvil block. It will be observed that the inclined faces of the die block prevent the withdrawal of the block from its seat and that the dies themselves are inserted in this block from the bottom thereof as the parts are assembled and are equipped with circumferential flanges 126 which preclude upward withdrawal of the dies from the block. The anvil block 114 and the shelf 115 are provided with bores 127 through which the punchings from the dies are permitted to drop.

For the purpose of preventing the stock from clamping to the punches on their retractive movement, I have provided a stripper plate 128 adapted to overlie the stock above the dies, this plate being provided with slots 129 extending from the inner edge of the plate in alignment with the die openings and through which the punches and the cutter may pass in their reciprocatory movements. This stripper plate is removable to permit access to the dies, but is normally held in position on the anvil block by a plurality of eye bolts 131 pivoted within the anvil block upon pivot bolts 132 and projecting upwardly through slots 133 in the plate, nuts 134 threaded onto the bolts being employed to clamp the plate in position. Upon loosening these nuts, the bolts may be swung on their pivots to the right, viewing Fig. 6, the block 114 being slotted to permit such movement wherein the stripper plate 128 may be lifted off, as will be apparent.

The feed rollers 23 and 24 being continuously operated, tend to feed the stock continuously through the machine, but since a momentary interruption of its progress during the cutting and punching operations is essential, I have provided mechanism for momentarily interrupting the advance of the stock when a predetermined length has been fed through the machine, which mechanism is also adapted to automatically throw in the clutch which connects the shaft 62 with the continuously revolving gear 72, thereby actuating the slide block 75 to force the movable cutter and the punches through the stock. Referring now to Figs. 1 and 10 to 12, it will be apparent that at some distance from the head of the machine where the cutting and punching operations are performed, I have mounted a stop finger 135. This finger is carried by a slide 136 mounted so as to be capable of longitudinal movement in a guideway 137 formed in an arm 138 adjustably fixed by a spline 139 and a plurality of set screws 141 to a rockshaft.

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extending longitudinally of the machine in proximity to the table. The upper end of finger 135 intersects the guide slot through which the stock is advanced, and as will be apparent from Fig. 11, the table 18 is provided with a slot 143 through which the finger 135 projects. The slide 136 is connected by a cable or wire 144 with the lower end of a lever 145 (Fig. 1) journaled through a shaft 146 in a bracket 147 formed on the head of the machine, the opposite end of this shaft being equipped with an arm 148 which is forked at its lower end to straddle the clutch pin 149 to which the arm is connected by stud bolts 151 engaging in a groove 152 in the head of the pin. This pin is mounted for longitudinal movement in a guide bracket 153 fixed by bolts 154 to the head of the machine and its inner end engages in a groove 155 formed on the periphery of the clutch collar 65. This clutch collar is of the type commonly known as a "1 revolution" clutch, and the groove 155 is cam-shaped so that upon revolution of the collar, the pin 149 will move the collar longitudinally to disengage the teeth 66 from the teeth 69, thus disconnecting the shaft from the source of power. When, however, the advancing forward end of the stock engages the finger 145 and forces this finger and the slide 136 to the left (viewing Figs. 1 and 10) this movement acting through the cable 144, the lever 145 and the arm 148 will withdraw the clutch pin from the groove, thereby permitting the clutch collar to be slid longitudinally into operative engagement with the opposed clutch teeth 69 by the expansion springs 156 which are mounted in bores 157 in the bearing 58. These springs, preferably in three, are retained in their bores by plugs 158 threaded into the outer ends disposed in the bores with their outer ends in engagement with the opposed face of the clutch collar 65. This movement of the clutch collar to connect the shaft 62 to the constantly rotating gear wheel 72 will impart a half revolution to the shaft 62 which will actuate the cutter and punches, thus severing the stock and punching holes adjacent the ends of the severed portions, as previously explained. Immediately after the cutting and punching operation, the finger 135 will be withdrawn from the path of the stock to permit further advance of the stock by the constantly operating feed rolls.

The mechanism for retracting the finger 135 from the path of the stock comprises means for rocking the shaft 142 in a counterclockwise direction, viewing Fig. 3, (counterclockwise, viewing Fig. 11) to thus swing the arm 138 downwardly and depress the finger below the path of the stock. This means includes an arm 161 fixed upon the shaft 142 at its inner end, viewing Figs. 1 and 3, this arm being connected through an adjustable link 162 with an arm 163 fixed upon a rock shaft 164 journaled in and extending transversely of the head of the machine, this arm having also fixedly mounted thereon another arm 165 equipped with a cam follower 166 which engages the periphery of the cam 64 fixed on the shaft 62. The follower 166 is urged into engagement with the cam 64 and the finger is normally maintained in the path of the advancing stock by means of a tractive spring 167 connected at one end to the table and at its other to the arm 163. The cam 64 is so shaped that immediately after each cutting and punching operation has been performed upon the stock, the arm 165 will be depressed, thereby through the connections described depressing the finger 135 below the guideway in which the stock travels, and permitting the length of stock which has been severed by the cutter blades to be immediately advanced by the intermediate feed rolls, and as soon as this stock has been advanced to the delivery set of feed rolls, its advance will be continued by these rolls until it is delivered from the machine. The operating rise on the cam 64 will in the meantime have traveled beyond the follower 166 and the cam surface on the clutch collar acting against the clutch pin 149 will throw out the clutch, thus stopping the shaft 62. It might be mentioned at this point that as soon as the finger 135 has been depressed out of engagement with the end of the stock, the finger will be restored to its normal longitudinal position shown in Fig. 10 and clutch pin 149 will be projected into the cam groove 155 of the clutch collar, by means of a tractive spring 168 acting on the lever 145 to swing the same in counterclockwise direction, viewing Fig. 1.

As soon as the rise on the cam 64 has passed the follower 166 the spring 167 will tend to restore the finger 135 into its normal position in the stock guideway, and the finger therefore, until the length of stock has traveled past the finger, would frictionally engage the lower face of the stock, thus imposing friction on the stock, which would retard its advance and also cause undue wear upon the finger. For the purpose of obviating these results, the arm 158 is equipped, as shown in Figs. 10 and 12, with an upwardly projecting anti-friction roller 171 mounted at 172 in a forked support 175 which is adjustably mounted in the arm 158 and retained in adjusted position by a set screw 174. The upper extremity of this roller projects, as will be apparent from Fig. 10, above the upper end of finger 135 so
that the roller, instead of the finger, will engage the lower face of the advancing stock, thus holding the finger away from the stock without wear on the finger or frictional retardation to the advance of the stock, and as soon as the severed end of the stock has passed the roller 171, the arm 138 will be swung upwardly by the spring 167, thus restoring the finger 135 in the guide channel and in the path of the advancing end of the stock which has not yet been severed.

The operation of a machine embodying my invention is substantially as follows:

The stock is fed into the machine between the feed rolls at the right hand end, viewing Fig. 1, and is advanced by the rolls into engagement with the finger 135 which travels with the stock for a limited distance until the finger reaches the end of its guide way 137. Further advance of the stock is then precluded by this finger and the feed rolls slip upon the stock while it momentarily remains stationary. During this period while the stock is stationary, the cutting and punching operations are performed, the clutch having been thrown in by the advancing movement of the finger 135. As soon as the cutting and punching operations are completed, the finger will be moved downwardly out of the path of the stock, which will then be quickly delivered from the machine by the delivery rolls. The clutch in the mechanism has been automatically thrown out so that shaft 69 makes only a little revolution, and as the stock is advanced, the roller 171 engaging the underside of the stock holds the finger 135 out of the stock guideway until the severed piece of stock has passed the roller 171, whereupon the finger is elevated by the spring 167 into the path of the advancing end of the next piece of stock which has not yet been cut off. The rapid delivery of the stock by the delivery rolls causes it to pass beyond the roller 171 considerably ahead of the advancing end of the following stock so that ample time is afforded for the finger 135 to resume its position in the path of the advancing end.

It will be apparent from the foregoing that I have provided a machine to which long strips of stock, such as barrel stock, for instance, may be fed from a roll or from a beading machine; that the machine automatically cuts the stock into predetermined lengths and punches a plurality of holes at predetermined distances from the ends, these operations being performed automatically and accurately without manual handling of the stock which is delivered from the machine cut to predetermined lengths and properly punched.

My machine is simple in construction, highly accurate and speedy in operation, and is capable of turning out work in large quantities with a minimum of attention.

The various parts of the machine are so arranged that they are readily accessible for purposes of adjustment or repairs, and while I have shown and described a preferred embodiment of the invention, it should be understood that the details of construction are capable of wide modification and variation without departing from the spirit of the invention as set forth in the following claims.

I claim:

1. In a cutting and punching machine, the combination of cutting and punching mechanism, continuously operating stock feeding means, a finger normally disposed in the path of the advancing stock, driving means for said cutting and punching mechanism controlled by said finger, and means actuated by said driving means for moving said finger into inoperative position.

2. In a cutting and punching machine, the combination of stock feeding means, a reciprocatory head, tools carried thereby, mechanism for operating said head, a finger in the path of the advancing stock, means controlled by a movement of said finger under the influence of said stock for actuating said mechanism, means for intermittently withdrawing said finger from operative position and means controlled by the advancing stock for holding said finger in inoperative position.

3. In a cutting and punching machine, the combination of stock feeding means, a reciprocatory head, tools carried thereby, mechanism for operating said head, a finger adapted to be actuated by the advancing stock, means controlled by said finger for actuating said mechanism, and means operated by said mechanism for intermittently rendering said finger inoperative.

4. In a machine of the class described, the combination of stock feeding means, mechanism for operating upon the stock, a rock shaft, an arm carried thereby, a finger slidably mounted on said arm, means for normally holding said finger in the path of the advancing stock, means controlled by sliding movement of said finger for actuating said operating mechanism, and means for rocking said shaft to withdraw said finger from the path of the stock.

5. In a machine of the class described, the combination of stock feeding means, mechanism for operating on the stock, a finger normally disposed in the path of the advancing stock, an arm upon which said finger is slidably mounted so as to be capable of limited movement with the stock, means for moving said arm to withdraw said finger from engagement with the stock and means beyond said finger for feeding the stock past the finger.

6. In a machine of the class described,
the combination of stock feeding means, mechanism for operating upon the stock, a clutch controlling the operation of said mechanism, a finger in the path of the advancing stock, means for supporting said finger so as to permit of a limited movement thereof relatively to the supporting means, with the stock, a connection between said finger and said clutch for throwing in the clutch upon movement of the finger by the stock, and means for actuating said supporting means to withdraw said finger from operative relation to the stock.

7. In a machine of the class described, the combination of stock feeding means, mechanism for operating upon the stock, a rock shaft, an arm fixed thereon, a finger slidably mounted on said arm and normally disposed in the path of the advancing stock, means for rocking said shaft to withdraw the finger from the path of said stock, and means for preventing engagement of said finger with the under side of the stock being fed thereover.

8. In a machine of the class described, the combination of stock feeding means, mechanism for operating thereon, a rock shaft, an arm carried thereby, a finger slidably mounted in said arm, means for rocking said shaft to depress said finger, and a roller carried by said arm and adapted to preclude engagement of said finger with the stock traveling thereover.

9. In a machine of the class described, the combination of a stock guiding channel, means for advancing the stock through said channel, a finger normally projecting into said channel, mechanism for operating upon said stock controlled by said finger, means for withdrawing said finger from said channel, and a roller for preventing return of the finger into said channel until the finger receiving portion of the channel is free from stock.

10. In a machine of the class described, the combination of a shaft, a continuously operating wheel loosely mounted thereon, a clutch for connecting said wheel with said shaft, continuously operating stock feeding means, a tool carrying head operated from said shaft, means normally disposed in the path of the advancing stock for causing said clutch to engage, and means controlled by said shaft for moving said finger into inoperative position.

11. In a machine of the class described, the combination of stock feeding means, a reciprocatory tool carrying head, a shaft, a cam on said shaft for depressing said head, yielding means for retracting the head, and means for positively retracting said head in the event of failure of said yielding means to operate.

12. In a machine of the class described, the combination of a reciprocatory tool carrying head, a cam for depressing said head, means for feeding stock beneath said head, springs for withdrawing the head from said stock, and means adapted to be actuated by said cam in the event of failure of said springs for positively retracting said head.

13. In a machine of the class described, the combination of a reciprocatory tool carrying head, means for feeding stock beneath said head, a cam for depressing said head into operative relation with the stock, and an abutment on said head in the path of said cam when said head is depressed whereby said head is positively retracted.

14. In a machine of the class described, the combination of a head provided with a tongue and an inclined surface, a tool carrying block having a groove engaged with said tongue and a groove on the opposite face, a plate having a tongue engaged in said last-mentioned groove and also an inclined flange engaged with the inclined surface of said head, and means for clamping said plate to said head to thereby detachably lock said block in position.

15. In a machine of the class described, the combination of an anvil block, a plurality of dies, a die block in which said dies are disposed, means for clamping said die block in position on said anvil block, a slotted stripper plate, and a plurality of bolts permanently connected to said anvil block and projecting through the slots in said stripper plate whereby said plate is detachably locked in position.

16. In a machine of the class described, the combination of an anvil block, a die block carried thereby, a plurality of dies mounted in said die block, set screws for locking said die block and dies in position, a stripper plate, a plurality of bolts pivotally mounted in said die block and extending through said plate, and nuts on said bolts for clamping said plate in position.

17. In a machine of the class described, the combination of a reciprocatory head, tools carried thereby for transversely cutting the stock and punching holes adjacent the line of cut, continuously operating means for feeding stock beneath said tools, means for intermittently stopping the advance of the stock during the operation of the tools thereon, means for rendering said last-mentioned means inoperative to permit further advance of the stock after each operation of the tools thereon, mechanism controlled by said stopping means for reciprocating said head, and means controlled by the advancing stock for retaining said stopping means in inoperative position until the stock has passed beyond the same.

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