Nov. 22, 1927.

1,650,119

F. M. FURBER

CUTTING MACHINE

Original Filed July 26, 1920 2 Sheets-Sheet 1

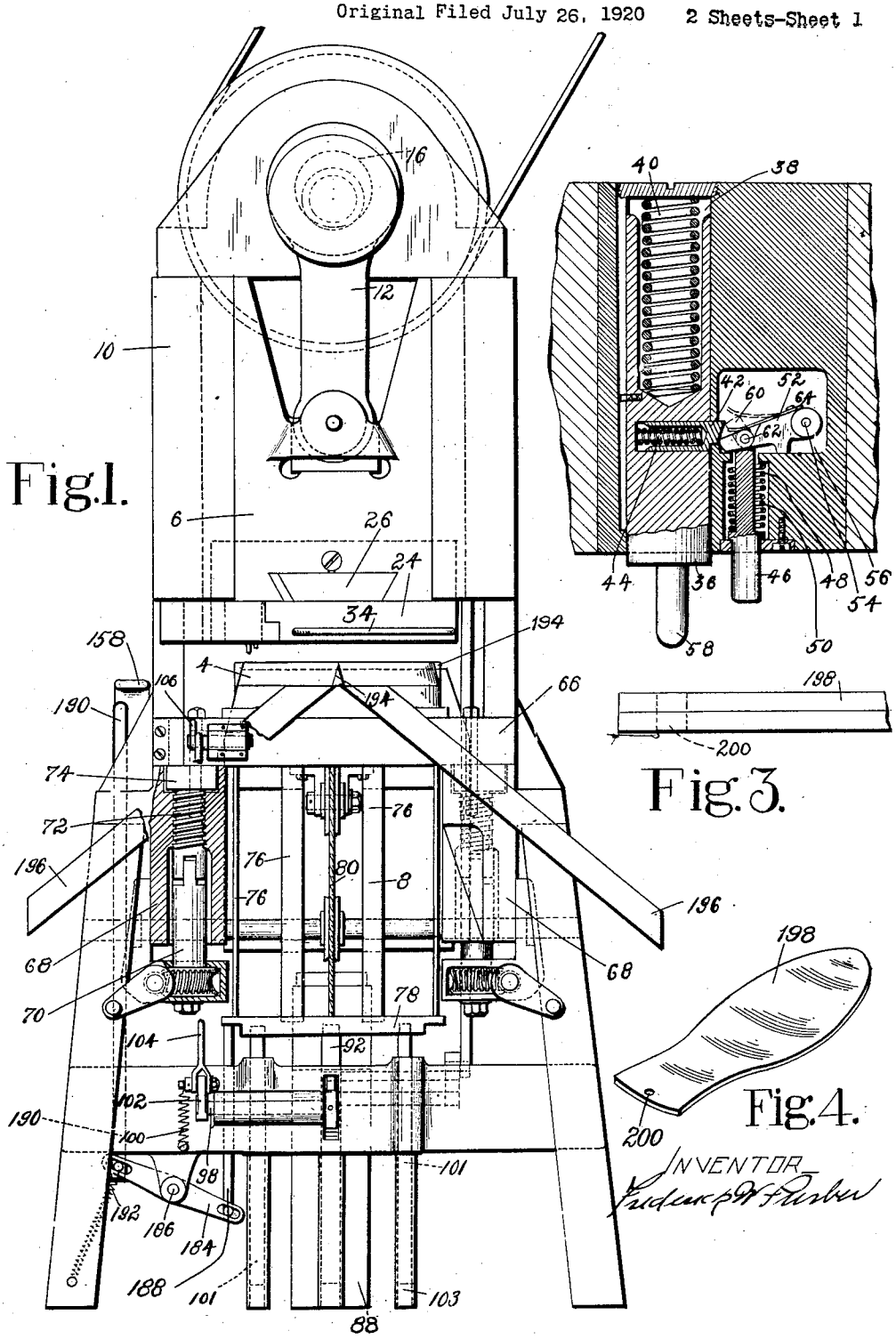


Fig.1.

Fig.3.

Fig.4.

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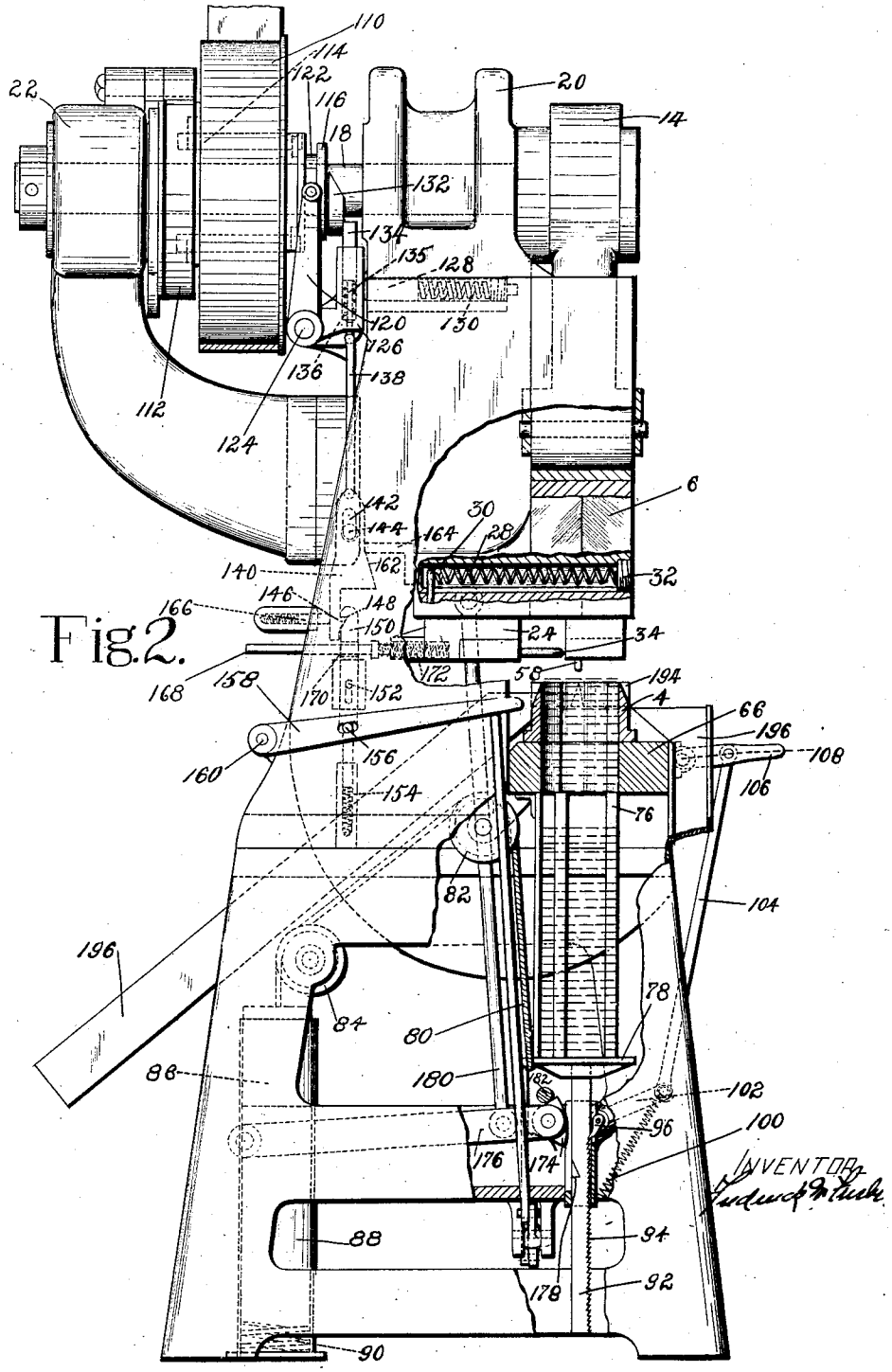


Fig. 2.

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UNITED STATES PATENT OFFICE.

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CUTTING MACHINE.

Application filed July 26, 1920, Serial No. 398,969. Renewed September 14, 1923.

This invention relates to machines for cutting blanks from sheet material and more particularly to machines of the type for dieing-out shoe part blanks from leather or other like material.

Dieing-out machines as heretofore constructed have been regarded always as among the most dangerous of machines to operate and many operators have lost fingers and other parts of the hands through accidents due in some measure to carelessness on the part of the individual concerned but in greater degree to deficiencies and defects in the construction of this type of machine.

It is an object of the invention to provide a dieing-out machine which will furnish such safeguards for the operator that it may be regarded as practically fool-proof.

In one aspect the invention comprises a die and a co-operating presser member which are normally out of operative relation with respect to each other while the work is being introduced and which must be relatively shifted into operative position preliminary to an operation of the machine and held in such position by one hand of the operator while the other hand is employed in actuating the starting lever.

In another aspect the invention comprises a presser member which is normally out of operative position with respect to the die and which must be returned and held in operative position by one hand of the operator in order that the starting means which is controlled by the movable presser member may be operated by the other hand of the operator.

In still another aspect the invention resides in a dieing-out machine having a relatively movable presser member and die member so constructed and arranged that the starting means of the machine is controlled directly from one of said members in such manner that a second operation of the machine cannot take place until the starting lever has been released and allowed to return to operative position.

An important feature of the invention resides in a magazine which is arranged fixedly in alinement with the die to receive blanks therefrom and in means operating in such a manner as to space the blanks in the magazine from those in the die so that the blanks may be easily removed by the operator while maintained in stacked relation.

Another feature of importance is comprised in an expansible magazine which controls the starting means of the machine in such manner that the starting means is locked against operation when the magazine has been extended to full capacity.

The invention comprises also a gage or jig pin of improved construction for locating the work with respect to the die, the arrangement being preferably such that the gage or pin projects into the plane of the cutting edge of the die from the presser member upon which it is mounted. In the illustrative construction, the gage is part of a presser foot member which presses upon and holds the work in position on the die.

Other features of the invention and other combinations of parts will be described in the specification and pointed out in the appended claims.

In the drawings:—

Fig. 1 is a front view of the illustrative machine;

Fig. 2 is a view in side elevation and partly in section of the machine shown in Fig. 1;

Fig. 3 is a detailed sectional view showing the gage mechanism; and

Fig. 4 is a view in perspective of a molded sole.

In the illustrative machine there is shown a die 4 having its cutting edge facing upwardly toward a cutting block or presser member 6, means being provided for causing relative movement of the die and presser member for forcing sheet material upon the cutting edge of the die, whereby blanks are cut and forced into the die. Preferably the die is stationary and has a magazine 8 arranged in alinement therewith while the presser member is reciprocable toward and from the die. Upon reference to the drawings it will be seen that the presser member 6 is guided for sliding movement in guideways in the head 10 of the machine and is operated through a pitman 12 having a strap portion 14 surrounding an eccentric 16 on the shaft 18 mounted in bearings 20 and 22 in the frame of the machine. In the preferred

form of the invention the presser member comprises a slide 24 held firmly against the lower end of the presser member 6 for sliding movement therealong by means of a dovetailed extension 26 closely fitted in a correspondingly shaped guideway in the lower end of the presser member. In the illustrative construction the slide 24 is of such dimensions as to co-operate with the greater part of the die 4, the slide being normally held in a rearward or inoperative position, thus uncovering the greater part of the die so that the work may be readily introduced into position for cutting operations. Means is provided for retaining the block in inoperative position, the said means in the construction shown comprising a spring 28 interposed between a stud 30 at the rear end of the slide 24 and an abutment or shoulder provided adjacent the front surface of the presser member, the said abutment being preferably a screw threaded plug 32 which can be removed to permit of the removal and replacement of the spring 28. For moving the slide 24 forwardly into operative position there is provided a handle 34 fixedly attached or integral with the slide. It will be clear that the operator must hold the slide in operative position against the tension of the spring 28 and that upon release of the handle 34, the slide will be at once returned to rearward or inoperative position. From an inspection of Figure 1 it will be clear that a portion of the presser member 6 has its lower surface in the same plane with the work contacting surface of the slide 24 and that this integral portion of the presser member 6 co-operates with the said surface on the slide to provide a pressure applying surface completely covering the die 4 and co-operating therewith to cut blanks from the sheet material. Mounted in the described pressure applying portion of the presser member 6 is a gage device which, it will be clear, is always in a position directly over one end of the die so that the work may be accurately positioned with respect to the die preliminary to each cutting operation.

The gaging means referred to in the foregoing description comprises in the illustrative machine a plunger 36 mounted for vertical reciprocation in a socket 38 in the lower portion of the presser member and backed by a spring 40 for projecting the plunger toward the die, means being provided for locking the plunger in retracted position from which it may be released at the will of the operator. Mounted in the body of the plunger is a latch 42 which is projected by a spring 44 so that the end of the latch normally engages in a notch in the side of the socket 38 whereby the plunger is locked in retracted position within its socket. For releasing the latch to permit the plunger 36 to be projected there is provided a tripping member in the form of a plunger 46 mounted in a socket 48 and pressed upon by a spring 50 which yields upon slight pressure upon the plunger 46 so that the latter may be moved inwardly to operate the cam member 52 pivoted at 54 in a pocket 56 located above the socket 48. As the end of the cam member 52 is moved along the slanting end surface of the latch 42 the latter is moved out of the notch thus unlatching the plunger 36 which is at once projected by its spring 40 in such a manner that the gage or jig pin 58 carried by the plunger is moved down into the die, that is with the lower end of the pin projecting into the die below the plane of the cutting edge of the die. In order that the cam member 52 may return to its initial position below the projecting end of the latch 42, the end 60 of the cam member 52 is made separate from the body thereof and is pivoted to said body portion at 62 and is held normally in extended relation to the body portion by means of a leaf spring 64. The work is prepared for the operation of this machine by having perforations or jig holes made therein adjacent one end of each piece of work and in positioning the work with respect to the die it is first brought into engagement with the gage or jig pin by being threaded over the gage or jig pin 58 and then moved upwardly on the gage or jig pin until the tripping plunger 46 is operated to move the latch 42 out of its holding notch so that the plunger 36 may be projected toward the die. By means of the gage or jig pin 58 one end of the piece of work is accurately positioned with respect to the die and this assists the operator in completing the positioning of the work with respect to the remainder of the die and the plunger 36 operates as a presser foot to hold the piece of work in its adjusted position. During the operation of the machine and upon descent of the presser member 6 the plunger 36 is forced back into its holding socket and the latch 42 retains it there while the presser member rises and moves to its upper position of rest. As the presser member rises the tripping plunger 46 also moves back to its normal position under the pressure of the spring 50 and the movable end 60 of the cam member 52 returns to the full line position shown in Figure 3, since the said end is so mounted as to wipe by the end of the latch as above described. Hence, at the end of a pressure applying operation the gage or jig pin and its plunger are locked in their upward or retracted position.

In the illustrative construction the die 4 is mounted upon a supporting bed 66 which rests at its ends upon portions 68 of the machine frame. Mounted in the portions 68 are rotatable members 70 having screw threaded

portions 72 at their upper ends which engage blocks 74, the arrangement being such that upon rotation of the members 70 the blocks 74 may be adjusted vertically, thus providing means for supporting the bed 66 adjustably so that any unevenness or uneven wearing in the cutting edge of the die 4 may be compensated for. Secured to the lower surface of the support 66 are slat or frame members 76 comprising part of the magazine 8, the construction and arrangement being such that the cavity of the die, the opening through the bed 66 and the magazine are all in alinement with each other. Preferably the lower portion of the magazine is movable with respect to the remainder thereof so that the capacity of the magazine may be varied according to the quantity of blanks which have been forced through the die at any given time. In the illustrative construction it is the bottom plate 78 which constitutes the movable portion of the magazine, the said bottom plate being slidable upwardly and downwardly within the sides of the magazine formed by the slats or frame members 76. For supporting the bottom or bottom plate 78 there is provided means which, in the construction shown, comprises a cord 80 attached to the bottom plate and passing over pulleys 82 and 84 to a weight or weighted member 86 to which the cord is attached, the said weight being movable in a casing 88 having a spring 90 at its lower end to prevent unnecessary jarring when the weight is dropped upon release of the bottom plate 78 after emptying the magazine. It will be clear that the bottom plate 78 will be held against the under side of the bed 66 when the magazine is empty and that as blanks are cut into the die and forced down into the magazine, the said bottom plate will move downwardly progressively with the insertion of blanks into the magazine. Means is preferably provided for holding the expansible portion of the magazine in the position to which it is moved as each blank is forced into the upper end of the die, thereby moving another blank into the magazine. In the construction shown, the bottom plate 78 carries a rod 92 which is fixedly attached to the bottom plate or form integral therewith, the said rod having on one surface a series of teeth 94 adapted to be engaged by a pawl 96 mounted on a shaft 98, a spring 100 being mounted to operate on an arm 102 extending from the shaft 98 in such manner as to hold the pawl 96 constantly in engagement with the rack teeth 94. It will be clear that the pawl 96 by engagement with the teeth 94 holds the bottom plate 78 against upward movement by the weight 86 and that each downward movement of the bottom plate is retained by means of said pawl. Cooperating with the rod 92 are other rods 101, secured to the plate 78 and movable in guideways 103, for supporting and guiding the plate 78. Extending upwardly from the arm 102 is a rod 104 which is pivoted at its upper end to a hand lever 106 pivotally mounted at 108 on the frame of the machine or on the bed 66. By means of the handle 106 the operator may release the pawl 96 from the rack teeth 94 and thus permit movement of the bottom plate 78 upwardly to initial position as the weight or weighted member 86 descends, such movement of the bottom plate taking place after the magazine has been emptied preliminary to another series of cutting operations.

The starting and stopping means of the machine comprises, the illustrative construction, a clutch mechanism for operatively connecting the power pulley 110 to the shaft 18, the said mechanism consisting of a clutch member 112 fixedly secured to the shaft 18 and pin members 114 mounted in the pulley 110 and movable endwise to engage in pockets in the clutch member 112, movement of the pins in the clutching direction being caused by sliding movement of a sleeve 116 which is slidable axially of the shaft to insert and withdraw the pins from said notches. Engaged with the sleeve 116 is the forked end of a lever 120 which carries rolls engaged with a groove 122 on the sleeve member 116. Preferably the lever 120 which is pivoted to the frame of the machine at 124 has an arm 126 arranged substantially parallel with the adjacent surface of the machine frame wherein there is mounted a plunger 128 pressed upon by a spring 130 in a socket back of the plunger, the tension of the spring being sufficient to actuate the lever 120 whereby the sleeve 116 which is connected to the pins 114 causes engagement of the clutch members or, in other words, the locking of the power pulley 110 to the fixed clutch member 112. When the machine is at rest the lever 120 is held in clutch releasing position by means of a cam member 132 on the shaft 18 engaging with an extension of the arm 126 of lever 120, the said extension comprising a plunger 134 slidably mounted in the arm 126 and held in projected operative position by a spring 136 in a socket in the lever arm 126. The plunger 134 has a rod extension 135 passing through the spring 136 and pivoted at its lower end to a rod 138 pivoted in turn at its lower end to a connecting link 140. This latter link is provided preferably with a slot 142 which receives a stud 144 mounted in the machine frame, the link sliding on the stud and turning about the stud as a center as will be hereinafter more fully described. As shown, the lower end of the connecting link 140 is provided with a hook or shoulder 146 designed to be engaged by a corresponding hook or shoulder 148 on a vertically reciprocable rod 150 which is retained in a socket in the ma-

chine frame by a pin 152 and is pressed upwardly to its upper limit of movement by means of a spring 154. Extending laterally from the rod 150 is a pin 156 received in a slot in a lever 158 pivoted at 160 on the frame of the machine. It will be clear that downward movement of the lever 158 under pressure applied directly by the hand of the operator will result in withdrawing the projection 134 from contact with the cam member 132 on the main shaft whereupon the spring pressed plunger 128 will operate the lever 120 to force the pins 114 into the clutch member 112, thereby connecting the power pulley to the shaft. At the end of the revolution the cam member 132 will again engage the projection 134 which has been returned upwardly by the spring 136 and thus move the lever 120 to the right into the position shown in Figure 2, whereby the pins 114 are withdrawn from the clutch member 112 and hence the power pulley is unclutched from the shaft. For assisting in bringing the shaft to rest a brake band is used and the latter may engage the fixed clutch member 112.

Means is preferably provided for insuring against a repetition of the pressure applying operation upon a single actuation of the starting lever 158 and, in the illustrative machine, this object is secured through a direct control of the starting means by the presser member. As shown, the connecting link 140 has a forwardly projecting cam portion 162 along which there moves a projecting arm 164 of the presser member 6 so that upon downward movement of the latter the connecting link 140 is turned about the stud 144, which at that time is at the upper end of the slot 142, and caused to unlatch the shoulders 146 and 148, whereupon the connecting link 140 and the attached parts above the same are moved upwardly by the action of the spring 136 so that the movable projection 134 is in position to be cammed by the member 132 on the main shaft to withdraw the clutch and free the power pulley from the shaft even though the operator continues to press upon the starting lever 158. When the presser member 6 rises at the end of a pressure applying operation the connecting link 140 is returned to normal position by means of a spring-pressed plunger 166 which contacts constantly with the lower end of the connecting link. Upon release of the starting lever 158 the rod 150 moves upwardly under the action of the spring 154 and the hook end of said rod again engages over the shoulder 146 on the connecting link 140, thus establishing an operative connection between the starting lever and the clutch members.

Means is also provided for controlling the starting means from the laterally movable portion of the presser member so that as long as the said portion of the presser member is not in completely operative position the starting means cannot be operated to start the machine. In the illustrative construction this means is, therefore, so arranged that one hand of the operator is employed in holding the movable portion of the presser member at its extreme forward position in order to unlock the starting means and then only can the starting means be depressed through pressure exerted by the other hand of the operator. It will be clear that the arrangement described has several advantages, one of which relates to the employment of both hands of the operator in operating the machine, so that the arrangement constitutes a safety device making it impossible for injury to occur to the hands of the operator. Furthermore, the arrangement ensures perfect operation of the machine in the forcing of the material through the die since the presser member which was laterally displaced to permit of accurate positioning of the work over the die must be returned to its extreme forward or operative position before the starting means can be actuated. As shown the movable presser member 24 carries a rod 168 extending rearwardly therefrom so as normally to pass through a slot 170 in the rod 150, thus locking the rod against movement downwardly to trip the clutch. Moreover, the rod 168 is of such a length that the presser member 24 must be moved to its extreme forward position before the rod is withdrawn from the slot. Preferably, the rod 168 is held yieldingly in its extended position by means of a spring 172 so that upon release of the movable presser 24 by the operator and rearward movement of the same due to the operation of the spring 28, the rod 168 will engage yieldingly with the rod 150 should the slot 170 not be in line with rod 168 at the time the movable presser member 24 starts rearwardly. Hence the rod 168 in case it engages with the side of the rod 150 would not press so firmly thereon as to lock it against movement upwardly to its operative position to engage with the connecting link 140.

Another feature of importance disclosed in the illustrative machine relates to the operation of the magazine by which the blanks in the magazine are spaced from those in the die when the magazine has been expanded to full capacity so that the operator may readily remove the blanks, thus preparing the machine for another series of blank cutting and blank magazining operations. As set forth in the foregoing description the magazine is expansible, the expansibility in the illustrative construction being provided for through a movable bottom plate to which is connected a

rod 92 carrying a rack 94 for co-operation with the pawl 96 so that the bottom plate is held against upward movement by the weighted cord 80. When the magazine has been expanded to contain the desired stack of blanks, a pawl 174 mounted on a lever 176 is operated to engage a notch 178 in the rod 92 to move the rod and perforce the bottom plate 78 a considerable step downwardly, where they are held through the operation of the pawl 96, whereby the blanks in the magazine are spaced from those in the die and in the die holder, as shown in Figure 2 of the drawings. As the front part of the magazine is open the operator can readily remove the blanks as will be evident from an inspection of the said Figure 2. As shown, the lever 176 is operated from the presser member 6, connection being made through a link 180, as the presser member moves up and down during pressure applying operations, all of the movements of the lever 176 being idle until the notch 178 is finally moved downwardly far enough to be engaged by the pawl 174, it being evident that when the magazine has been emptied and the bottom plate 78 is resting against the lower surface of the bed 66 that the notch 178 will be far above the pawl 174. Mounted fixedly in the machine frame in a position to engage with the pawl 174 is a bar 182, shown in cross section in Fig. 2, which throws the operative end of the pawl away from the rack bar 92. As soon, however, as the lever 176 moves downwardly the operative end of the pawl 174 is thrown out toward the bar 182 by means of a spring which may be of the well known leaf spring construction.

Means is preferably provided for locking the starting means against operation when the magazine has been filled with the desired or predetermined number of blanks or when the magazine has been expanded as described to permit of the removal of blanks. In the illustrative construction the said means comprises a lever 184 pivoted at 186 on the frame of the machine and connected at one end by a pin and slot connection to an upright rod 188 guided slidably in the machine frame and having its upper end in position to be contacted by the bottom plate 78 of the magazine when the latter is moved down by the lever 176 as above described. To the other end of the lever 184 there is connected by a pin and slot connection a second upright rod 190 which is located directly beneath the end of the starting lever 158. The arrangement is such that when the bottom plate is moved down by the lever 176 the rod 190 is lifted to act as an unyielding stop preventing downward movement of the starting lever. When the blanks have been removed from the magazine and the bottom plate 78 has been permitted to rise into contact with the bottom of the bed 66, the stop 190 is withdrawn through the action of a spring 192 which is connected to the lever 184 at one end and to the frame of the machine at its other end.

Ordinarily the work presented to this machine will consist of pieces of material which approximate closely in size to the size of the blanks to be cut therefrom and hence the waste material which is pressed down upon the outside of the cutting edge of the die should be severed so that it will fall readily away from the die and not act as an obstruction to cutting operations. For this purpose the die is preferably provided with two short wedge shaped blades one on each side of the die, the one at the front of the die being shown in the drawings and indicated by the reference character 194. The scrap severed by the blade falls from the die on to inclined chutes 196 which discharge the scrap clear of the machine on each side, preferably into boxes provided for the purpose of receiving the scrap.

In the operation of the machine pieces of work such as that indicated at 198 in Figs. 3 and 4 of the drawings as having a perforation or jig hole 200 therein at one end are presented to the gage or jig pin 58 and threaded upon said pin and further pressed upwardly against the tripping plunger 46 until the plunger 36 carrying the gage or jig pin is released and projected downwardly whereby the pin is disposed with its end projecting into the die, the body portion of the plunger 36 acting as a presser foot to hold the material in the position to which it is adjusted by the operator. It will be understood that a mere change in the shape and size of the die is all that is necessary to enable the machine to operate on complete or whole soles or other similar articles. Preferably the presser member and die are so related to each other when the presser member is in its lowermost position that there is a slight space between the two. In other words, the surface of the presser member does not contact with the edge of the die. Hence at each operation one sheet or piece of work is pressed upon the cutting edge of the die and the preceding piece is forced fully into the die. At the end of the downward movement of the presser member the gage carrying plunger 36 is forced back into the presser member into its retracted and locked position so that a fresh piece of work may be readily gaged by being slipped over and threaded upon the gage or jig pin 58. When the work is positioned as described the operator pulls the movable presser member 24 forwardly and holds it at its extreme forward position against the tension of the spring 28. With the member 24 in the described position, he is enabled to trip the clutch through depression of the starting

lever 158. When the magazine is filled it is operated as above described to space the blanks in the magazine from those remaining in the die so that the magazine may be easily emptied and the machine conditioned for another set of cutting operations.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent of the United States is:—

1. In a machine of the character described, a die member and a co-operating presser member which are normally out of operative relation with respect to each other while the work is being introduced, means for yieldingly holding one of the members in inoperative position so arranged that the operator must hold the said member in operative position against the tension of the yielding means, in combination with starting means for the machine comprising a lever arranged to be operated by one hand of the operator while the other hand is employed in holding the movable member in operative position.

2. In a machine of the character described, a die, a presser member movable toward and from the die in pressure applying operations and movable laterally away from the die to permit of the introduction of work, means for yieldingly holding the presser member in inoperative position, and a starting means for the machine controlled by the said movable presser member and comprising a hand lever, the construction and arrangement being such that the presser member must be moved to its extreme forward position over the die and held there by one hand while the other hand is employed in actuating the starting lever.

3. In a machine of the character described, a die member and a presser member relatively movable toward and from each other in cutting operations, and a starting and stopping means for the machine arranged to be rendered inoperative by direct action of one of said members after initiation of a cutting operation whereby accidental repetition of the operation is prevented.

4. In a machine of the character described, a die, a presser member movable toward and from the die during cutting operations, a starting means for the machine comprising a clutch mechanism, a manually operable lever and connections between said lever and said clutch mechanism including disconnectable members, and an extension from the presser member for causing disconnection of the lever from the clutch mechanism upon downward movement of said presser member.

5. In a machine of the character described, a die, a magazine in alinement with the die and expansible progressively with the entrance of blanks into the magazine up to a predetermined limit, and a starting means for the machine controlled by the expansible magazine so that the machine cannot be operated after the magazine has been filled.

6. In a machine of the character described, a presser member and a relatively movable die for cutting blanks from sheet material, a magazine located in alinement with the die for receiving the blanks progressively with the cutting operations, said magazine being expansible so that it may increase in capacity as the cutting operations proceed, and means for causing an expansion of the magazine so that there is space between the blanks in the magazine and those in the die thus rendering it easy for the operator to remove the blanks in the magazine.

7. In a machine of the character described, a presser member and a relatively movable die for cutting blanks from sheet material, a magazine located in alinement with the die for receiving the blanks progressively with the cutting operations, said magazine being expansible so that it may increase in capacity as the cutting operations proceed, and means controlled by the relative movement of the presser member and die for causing an expansion of the magazine so that there is a space between the blanks in the magazines and those in the die.

8. In a machine of the character described, a presser member and a relatively movable die for cutting blanks from sheet material, a magazine located in alinement with the die for receiving the blanks progressively with the cutting operations, said magazine being expansible so that it may increase in capacity as the cutting operations proceed, and means operated from the presser member for causing an expansion of the magazine so that a space is formed between the blanks in the magazine and those in the die.

9. In a machine of the character described, a presser member and a die relatively movable to cut blanks from sheet material, a magazine in alinement with the die to receive blanks therefrom, said magazine having a movable part to support the blanks constructed and arranged to move away from the die during the formation of each blank, and means for moving said movable part of the magazine to space the blanks in the magazine from those in the die.

10. In a machine of the character described, a presser member and a die relatively movable to cut blanks from sheet material, a magazine in alinement with the die to receive blanks therefrom, said magazine having a movable bottom constructed and arranged to move away from the die as each blank is formed and forced into the die, means for yieldingly supporting said bottom plate, and means controlled by the presser member for moving the bottom plate so that the blanks in the magazine are spaced from those in the die.

11. In a machine of the character described, a presser member and a die relatively movable to cut blanks from sheet material, a magazine in alinement with the die to receive blanks therefrom, said magazine having a movable part to support the blanks constructed and arranged to move away from the die with the formation of each blank, and means operated during relative movement of the presser member and die for moving the movable magazine part so that the blanks in the magazine are spaced from those in the die.

12. In a machine of the character described, a presser member and a die relatively movable toward and from each other in cutting blanks from sheet material, a magazine in alinement with the die for receiving blanks therefrom and having a part which is movable with the entrance of blanks into the magazine whereby the capacity of the magazine is progressively increased, means for starting and stopping the machine, and means controlled from said movable part of the magazine for locking the starting means against movement.

13. In a machine of the character described, a presser member and a die movable toward and from each other in cutting blanks from sheet material, a magazine in alinement with the die, a bottom plate for the magazine which is yieldingly supported so that it yields away from the die as each blank enters the magazine, means for moving said bottom plate away from the die to space the blanks in the magazine from those in the die, and a starting and stopping means for the machine controlled by said bottom plate.

14. In a machine of the character described, a presser member and a die relatively movable toward and from each other in cutting blanks from sheet material, a magazine in alinement with the die, a bottom plate for the magazine which is yieldingly supported so that it yields away from the die as each blank enters the magazine, means for moving said bottom plate away from the die to space the blanks in the magazine from those in the die, a starting and stopping means for the machine, and means operated from the bottom plate for locking the starting means against operation.

15. In a machine of the character described, a presser member and a die relatively movable toward and from each other in cutting blanks from sheet material, a magazine in alinement with the die, a bottom plate for the magazine which is yieldingly supported so that it yields away from the die as each blank enters the magazine, means for moving said bottom plate away from the die to space the blanks in the magazine from those in the die, means for locking the bottom plate in each new position, starting and stopping means for the machine, and means controlled from the bottom plate for locking said starting and stopping means against operation.

16. In a machine of the class described, blank cutting means comprising a die through which the blanks pass progressively with the cutting operations, a magazine in alinement with the die to receive the blanks therefrom, said magazine having a movable portion which is extensible to enlarge the magazine progressively with the formation of blanks and having a limit to its movement of extension, means for starting the machine, and means controlled by the extensible portion of the magazine for preventing the operation of the starting means when the magazine has reached its limit of extension.

17. In a machine of the character described, a presser member and a die relatively movable to cut blanks from sheet material, a magazine in alinement with the die to receive blanks therefrom, said magazine having a movable bottom constructed and arranged to move away from the die as each blank is formed and forced into the die, a weight and cord for yieldingly supporting said bottom plate, a rack and pawl for holding the bottom plate in each new position, and a lever controlled by the presser member for moving the bottom plate so that the blanks in the magazine are spaced from those in the die.

18. In a machine of the character described, a presser member and a die relatively movable to cut blanks from sheet material, a magazine in alinement with the die to receive blanks therefrom, said magazine having a movable part to support the blanks constructed and arranged to move away from the die with the formation of each blank, and a lever having an operative connection with movable magazine part and operated during relative movement of the presser member and die for moving said magazine part in such a way that the blanks in the magazine are spaced from those in the die.

19. In a machine of the character described, a presser member and a die relatively movable toward and from each other in cutting blanks from sheet material, said presser member having a portion which is movable laterally with respect to the die so that work may be relatively positioned thereover, means for normally holding said portion of the presser member out of operative position, a starting means for the machine comprising a hand operated lever, means connected with the movable portion of the presser member for locking the starting means against operation while said portion of the presser member is in inoperative position whereby both hands of the operator must be used in holding the movable portion

of the presser member in operative position and for operating the starting lever.

20. In a machine of the character described, a presser member and a die relatively movable toward and from each other in cutting blanks from sheet material, starting means for the machine comprising a manually operable lever and a clutch mechanism, detachable connections between the clutch mechanism and lever, and means controlled from the presser member for disconnecting or detaching the starting lever from the clutch mechanism.

21. In a machine of the character described, a presser member and a die relatively movable toward and from each other in cutting blanks from sheet material, starting means for the machine comprising a manually operable lever and a clutch mechanism, detachable connections between the clutch mechanism and lever, and means controlled during relative movement of the presser member and die for causing detachment of the starting lever from the clutch mechanism.

22. In a machine of the character described, a presser member and a die relatively movable toward and from each other in cutting blanks from sheet material, starting means for the machine comprising a manually operable lever and a clutch mechanism, detachable connections between the clutch mechanism and lever, and means operated by the presser member for causing detachment of the starting lever from the clutch mechanism.

23. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser block relatively movable toward and from each other to force blanks through the die, said presser member being movable laterally of the die to uncover the same so that work may be readily positioned for each cutting operation, and means for starting the machine controlled by the movable presser member so that the machine cannot be started while the presser member is displaced laterally with respect to the die.

24. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser member relatively movable toward and from each other during cutting operations, and a gage for the work carried by the presser member and arranged to project into the die to position the work with respect thereto.

25. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser member relatively movable toward and from each other during cutting operations, and a gage carried by the presser member and displaceable into the presser member after it has performed its function of gaging the work.

26. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser member relatively movable toward and from each other during cutting operations, a gage mounted in the presser member for gaging the work with respect to the die, and a lock for retaining the gage in inoperative position, said lock being operable by the work to release said gage.

27. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser member relatively movable toward and from each other during cutting operations, a gage mounted in the presser member and arranged to be projected therefrom for locating the work with respect to the die previous to the descent of the presser member, and means for automatically locking the gage in its retracted position prior to the succeeding operation.

28. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser member relatively movable toward and from each other during cutting operations, a gage mounted in the presser member and arranged to be projected into the plane of the cutting edge of the die to position the work with respect thereto, and a lock for retaining the gage in inoperative position.

29. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser member relatively movable toward and from each other during cutting operations, a gage mounted in the presser member and arranged to be projected so as to position work with respect to the edge of the die, and means for automatically locking the gage in retracted or inoperative position, said lock being operable by the work to release the gage preliminary to a blank forming operation.

30. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser member relatively movable toward and from each other during cutting operations, a gage mounted in the presser member and having a spring arranged to project the gage for locating the work with respect to the die previous to the descent of the presser member, means for automatically locking the gage in its retracted position prior to the succeeding operation, and means for operating the locking means to release the gage at the will of the operator.

31. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser member relatively movable toward and from each other during cutting operations, a gage mounted in the presser member and arranged to be projected into the plane of the cutting edge

of the die to position the work with respect thereto, a lock for retaining the gage in inoperative position, and work-operated means for releasing the lock so that the gage may move to operative position.

32. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser member relatively movable toward and from each other during cutting operations, and a gage for the work carried by the presser member and arranged to project through a perforation in a piece of work and into the die to position the work with respect thereto.

33. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser member relatively movable toward and from each other during cutting operations, and a gage carried by the presser member and displaceable by the work into the presser member after it has performed its function of gaging the work.

34. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser member relatively movable toward and from each other during cutting operations, a gage mounted in the presser member and having a pin member arranged to be projected so as to enter a perforation in the piece of work to position work with respect to the edge of the die, and a latch for automatically locking the gage in retracted or inoperative position, said latch being operable by the work to release the gage preliminarily to a blank forming operation.

35. In a machine of the class described, a die, a presser member movable toward and from the die to force sheet material upon the cutting edge of the die to cut blanks therefrom, a presser foot mounted in the presser member and operative to hold the work which has been positioned for a cutting operation, and a gage mounted on the presser foot for positioning the work preliminarily to the cutting operation.

36. In a machine of the class described, a die, a presser member co-operating with the die to cut blanks from sheet material, a magazine in fixed alinement with the die, and means for operating the magazine in such manner as to space the blanks in the magazine from those in the die.

37. In a machine of the class described, a die, a presser member co-operating with the die to cut blanks from sheet material, a magazine in fixed alinement with the die, and means operating to space the blanks in the magazine from those in the die.

38. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser member relatively movable toward and from each other during cutting operations and a gage pin controlled by the presser member for locating the sheet material prior to the cutting operation.

39. In a machine of the class described, means for cutting blanks from sheet material comprising a die and a presser member relatively movable toward and from each other during cutting operations, and a gage pin movable relatively to the die for locating the sheet material prior to the cutting operation.

40. In a machine for cutting blanks from pieces of sheet material each having a jig-hole therein, means for engaging the jig-hole to position the piece of material being operated on and to hold it against movement of translation in its own plane, and means for trimming the piece of material while it is on the jig pin.

41. In a machine for trimming blanks each having a jig-hole in the heel end thereof, a sole shaped die having a cutting edge for trimming a sole, and a pin arranged to project through the plane of the cutting edge of the die to locate a sole with respect to the cutting edge preliminarily to a cutting operation.

42. In a machine for cutting a shoe part blank from a piece of material provided with a positioning surface within the periphery of the proposed blank, cutting means, and means comprising a jig pin for engaging said positioning surface for locating the piece of material preliminarily to the cutting operation.

43. In a machine for cutting blanks from pieces of material, each having a jig-hole therein, a die having a cutting edge of the shape of the desired blank, and a jig pin for entering the jig hole in a piece of material for locating the latter relatively to the die.

44. In a machine for cutting blanks from pieces of material, each having a jig-hole therein, a die having a cutting edge of the shape of the desired blank, and a jig pin adapted to engage with the jig-hole in the piece of material and to project across the plane of the cutting edge of the die within the periphery thereof to locate the piece of material prior to the cutting operation.

45. A machine of the character described having, in combination, mechanism for operating on a sole to trim peripheral portions thereof, and means for locating said sole with respect to said operating mechanism, said means comprising a member arranged to enter an opening through the sole so placed that the opening will be disposed in a predetermined relation to the trimmed contour of the sole.

46. In a machine of the class described, a die and a presser member relatively movable toward and from each other to force sheet material upon the cutting edge of the die

to cut blanks therefrom, means operative to hold the work which has been positioned for a cutting operation, and a jig pin for positioning the work preliminarily to a cutting operation.

47. A machine of the class described having, in combination, mechanism for operating on a sole, means for locating said sole with respect to said operating mechanism, said means comprising a locating pin constructed and arranged to enter a hole through the sole, and a member for engaging the sole to hold it in the proper angular position with respect to the axis of the pin.

48. In a machine of the class described, a die, means for forcing soles successively into the die to trim the same, and means also movable into the die for locating each sole in succession in proper position for the trimming operation.

49. In a machine of the character described, a presser member and a die relatively movable toward and from each other in cutting blanks from sheet material, a magazine in alinement with the die, a plate for the magazine which is yieldingly supported so that it moves away from the die as each blank is forced into the magazine, and means for locking the plate successively in each new position.

50. In a machine of the character described, an upwardly facing die, a presser member movable toward and from the die for cutting blanks from sheet material placed upon the die, a magazine in alinement with the die, a bottom plate for the magazine movable away from the die as each blank is forced into the magazine, and means for locking the plate against movement toward the die.

In testimony whereof I have signed my name to this specification.

FREDERICK M. FURBER.