W. C. BAXTER.

CUTTING MACHINE.

APPLICATION FILED JUNE 7, 1917.

1,344,975.

Patented June 29, 1920.

8 SHEETS—SHEET 1.

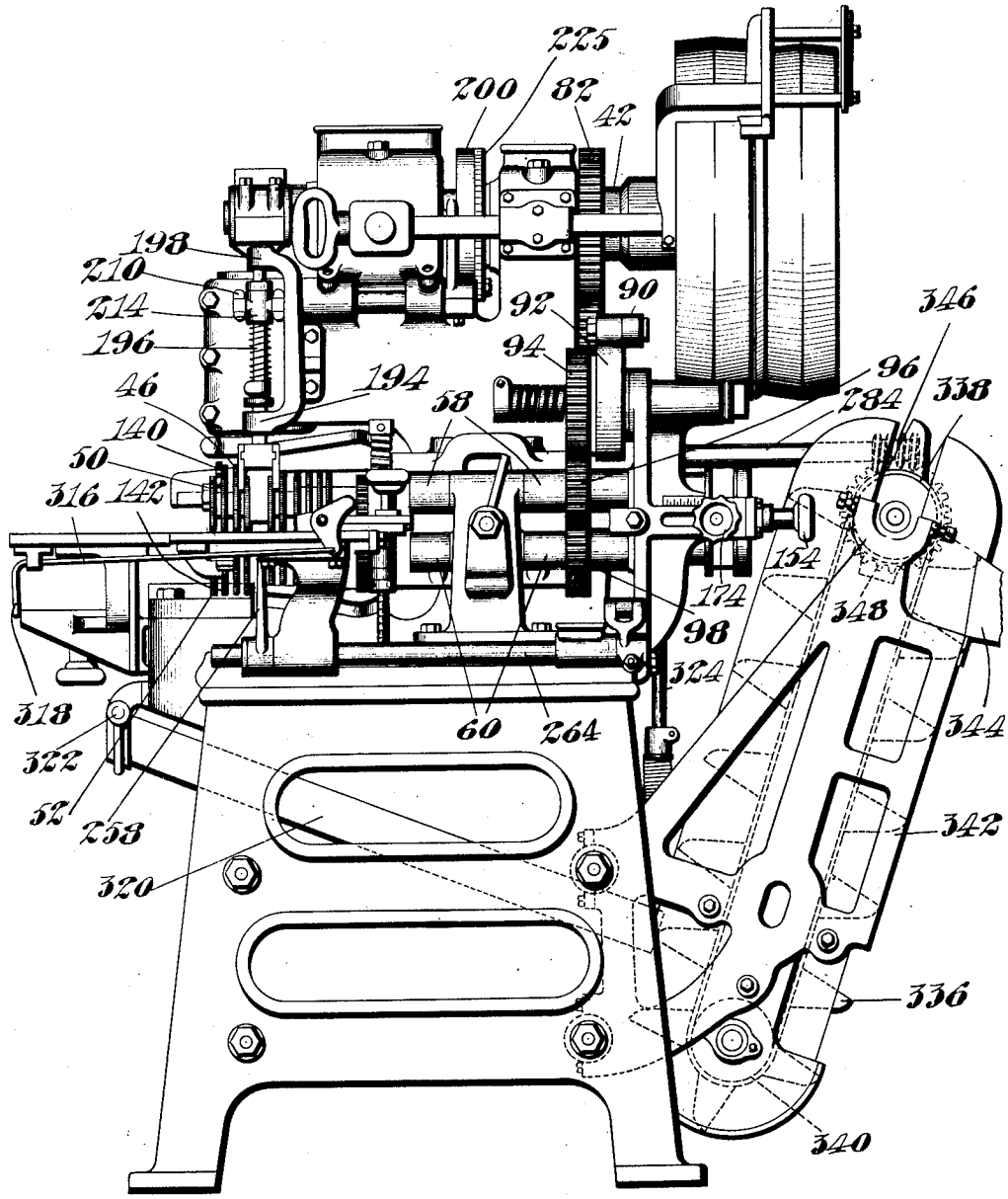


Fig. 1.

INVENTOR.

William C. Baxter

By his Attorney

Nelson W. Howard

W. C. BAXTER.

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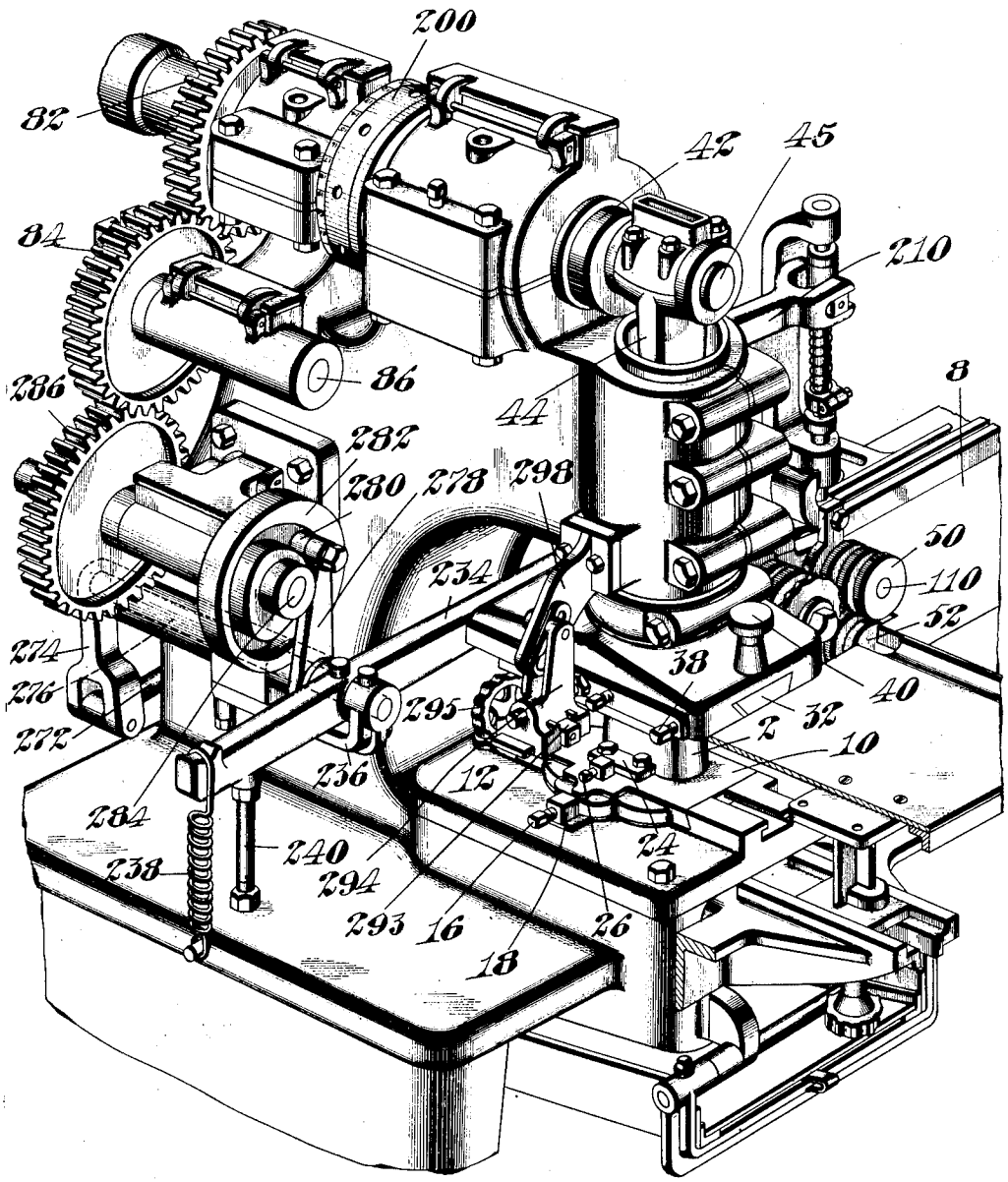


Fig.2.

INVENTOR.

William C. Baxter

By his Attorney

Nelson K. Howard

W. C. BAXTER.

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8 SHEETS—SHEET 3.

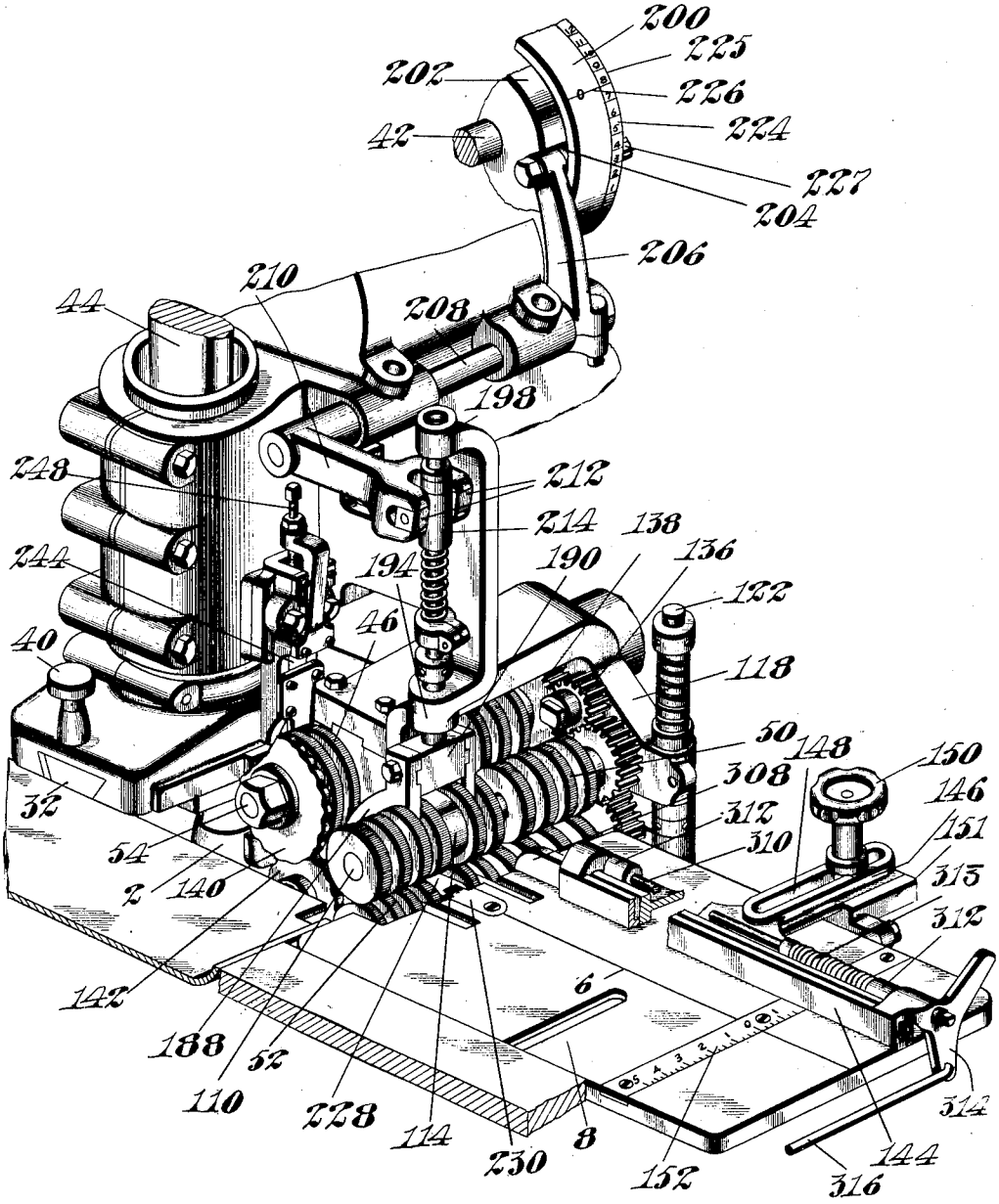


Fig:3.

INVENTOR.

William C. Baxter

By his Attorney

Robert Hammond

W. C. BAXTER.

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8 SHEETS—SHEET 4.

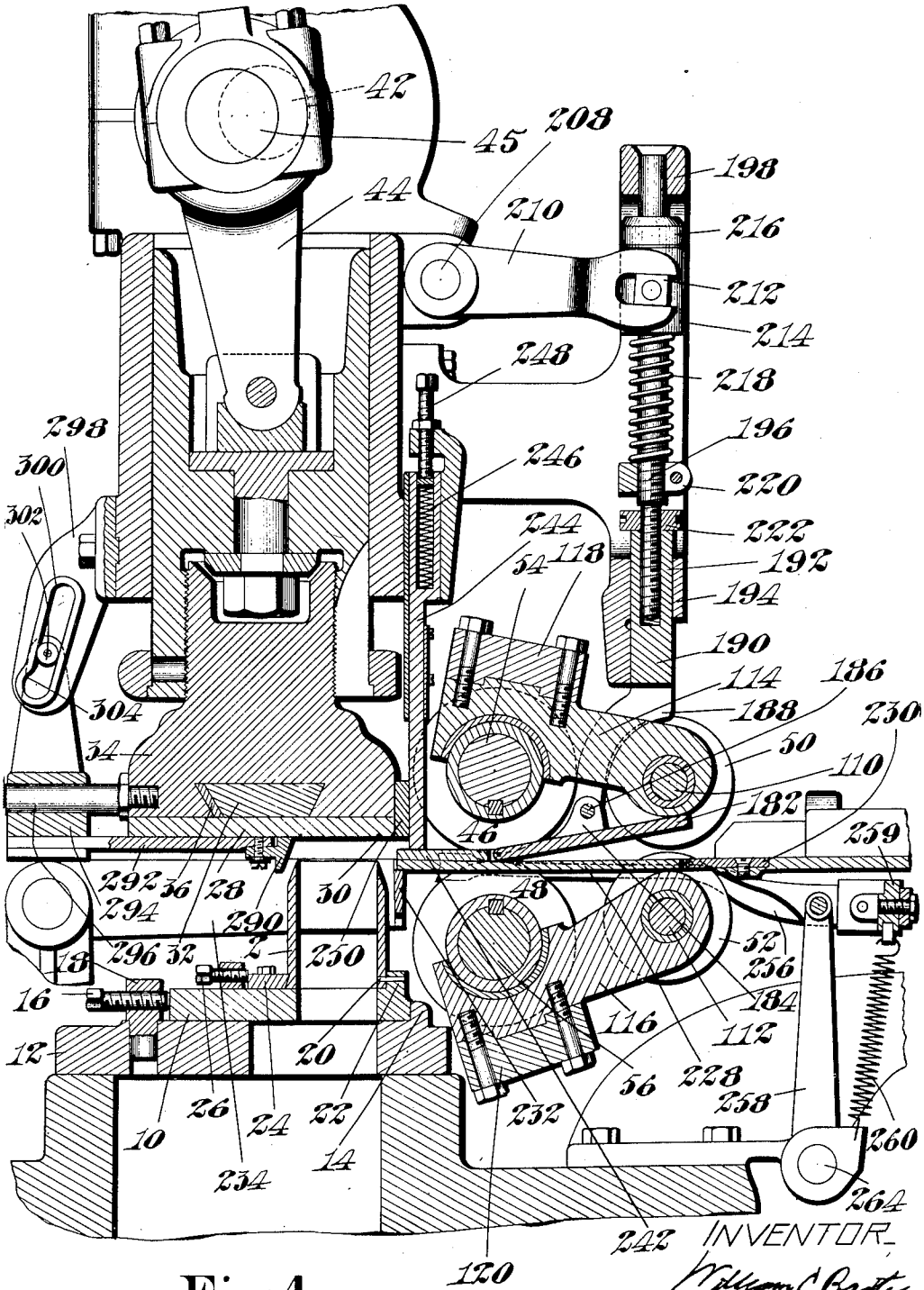


Fig. 4.

INVENTOR.

William C. Baxter

By his Attorney

Nelson A. Howard

W. C. BAXTER.

CUTTING MACHINE.

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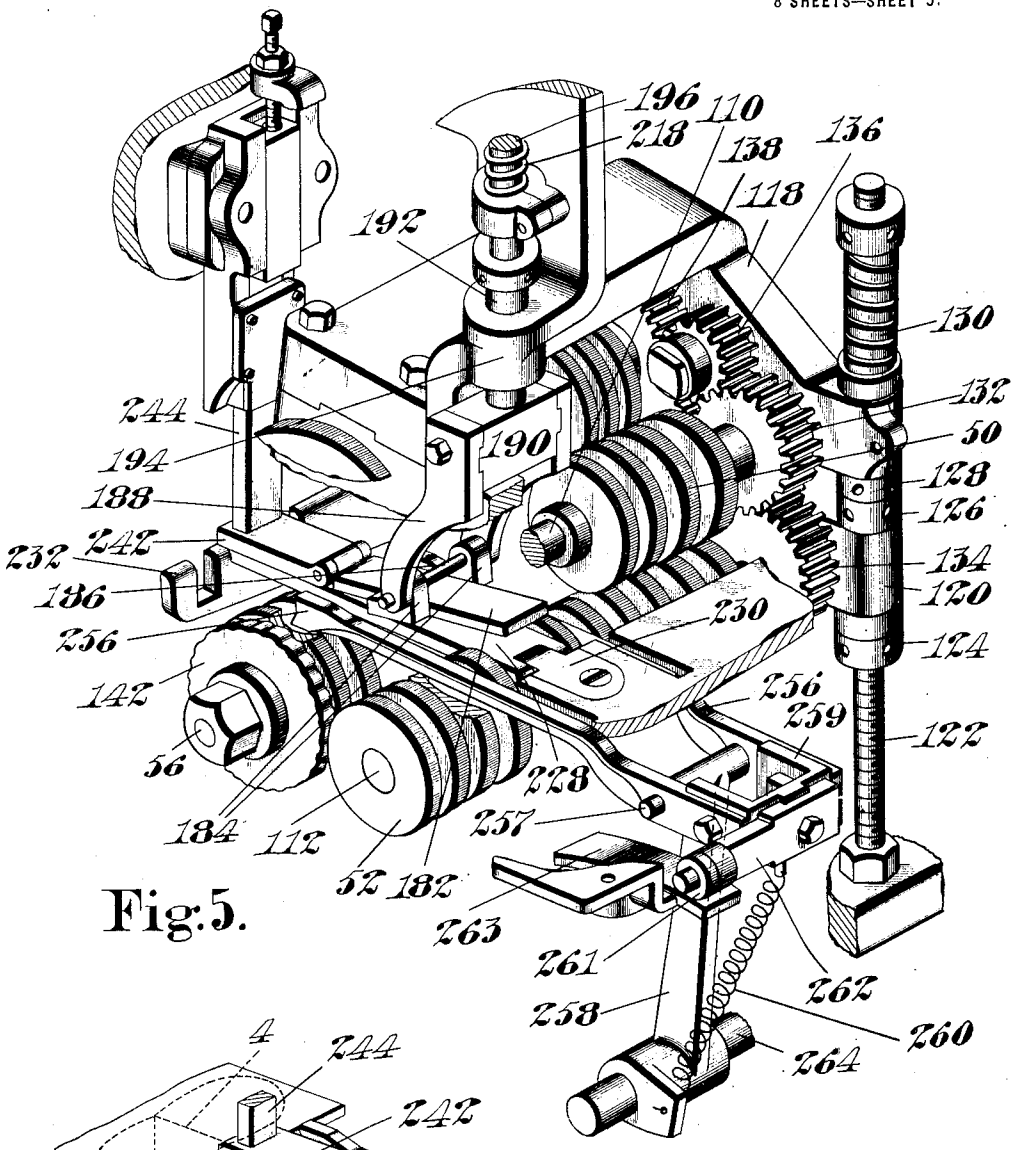


Fig. 5.

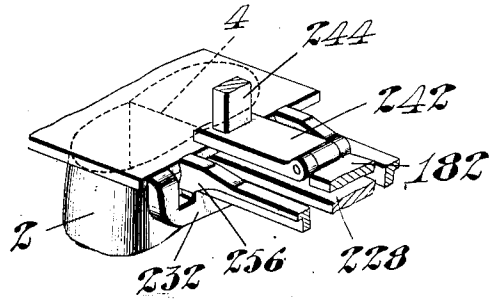


Fig. 6.

INVENTOR.

William C. Baxter

By his Attorney,

Nelson M. Howard

W. C. BAXTER.

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8 SHEETS—SHEET 6.

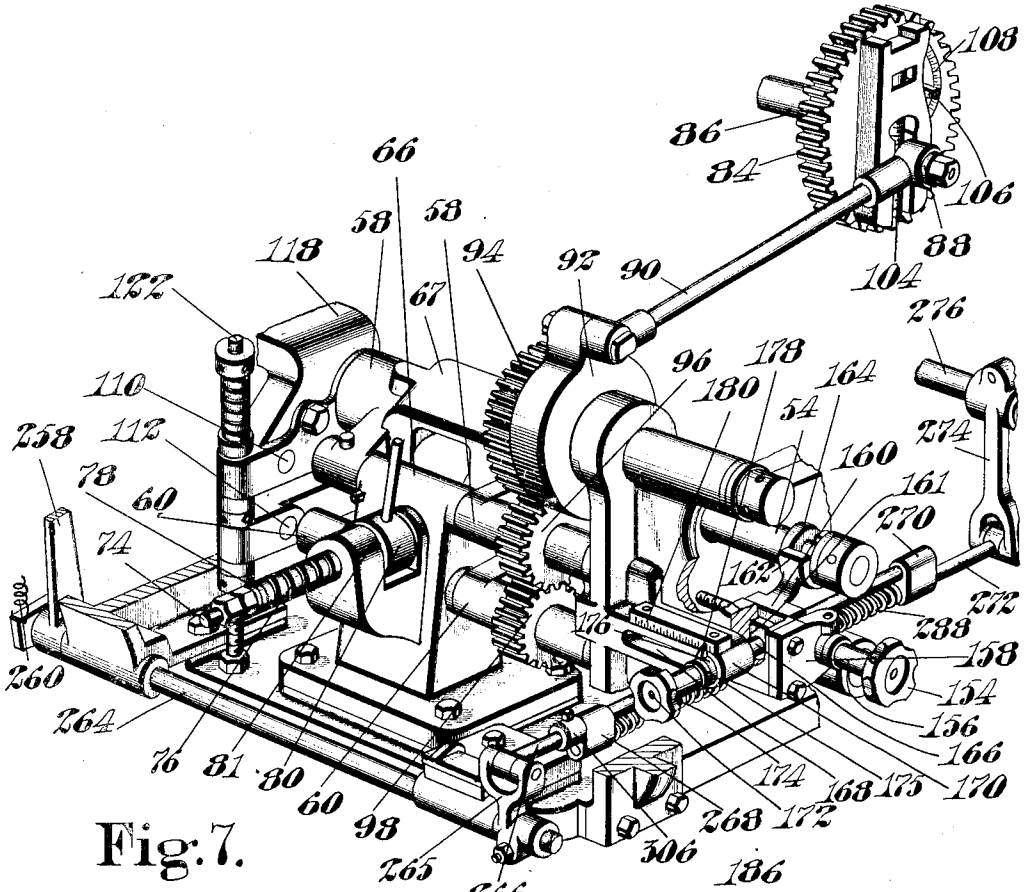


Fig. 7.

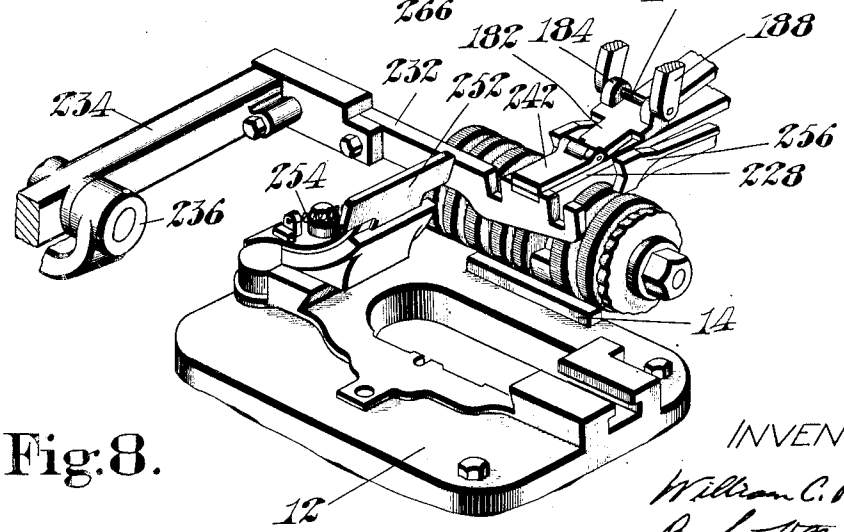


Fig. 8.

INVENTOR.

William C. Baxter

By his Attorney

Nelson M. Stranahan

W. C. BAXTER.

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8 SHEETS—SHEET 7.

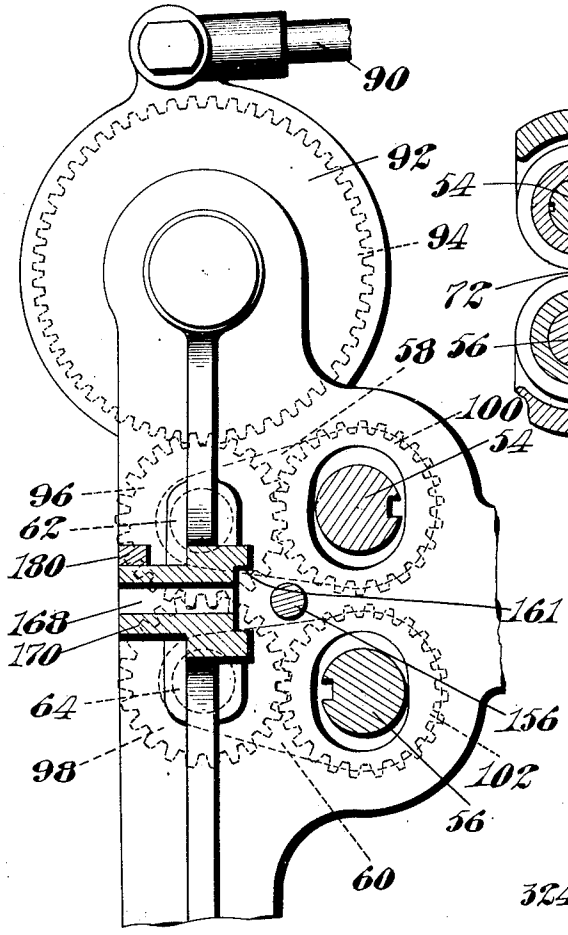


Fig.9.

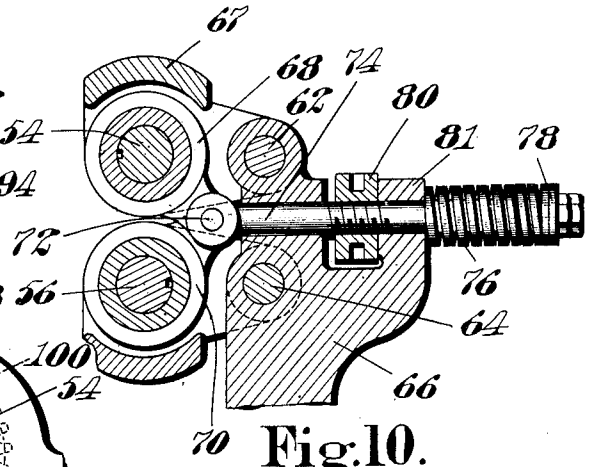


Fig.10.

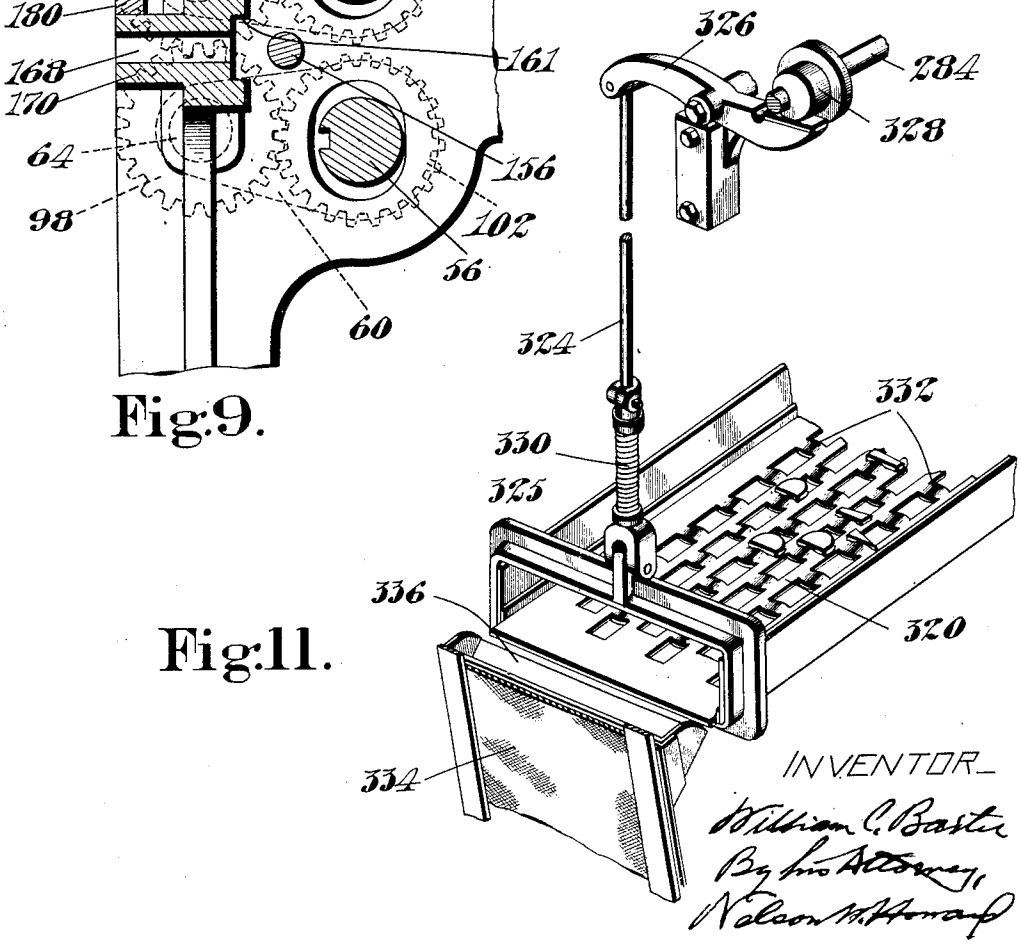


Fig.11.

INVENTOR—

William C. Baxter

By his Attorneys,

Nelson W. Howard

W. C. BAXTER.
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APPLICATION FILED JUNE 7, 1917.

1,344,975.

Patented June 29, 1920.
8 SHEETS—SHEET 8.

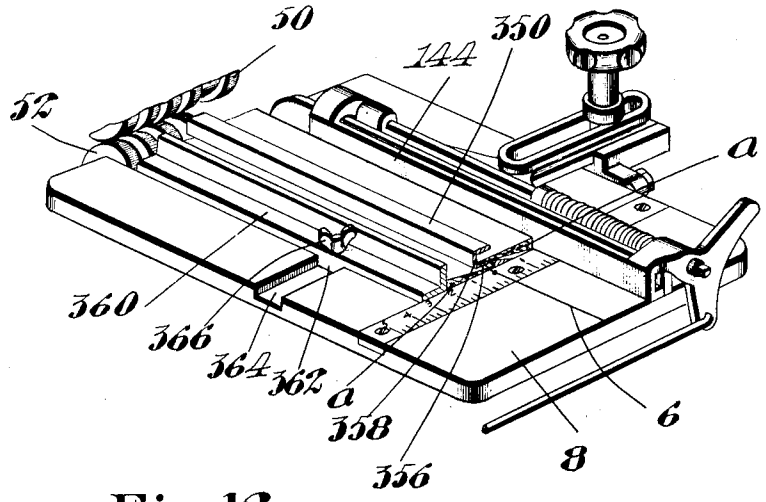


Fig. 12.

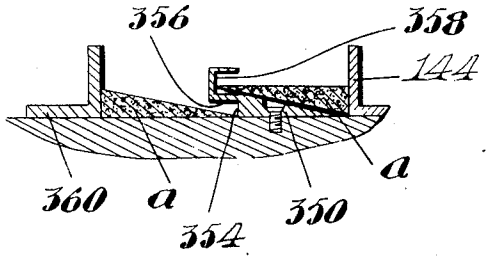


Fig. 13.

INVENTOR.
William C. Baxter
By his Attorney
Nelson M. Howard

UNITED STATES PATENT OFFICE.

WILLIAM C. BAXTER, OF BEVERLY, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CUTTING-MACHINE.

1,344,975. Specification of Letters Patent. Patented June 29, 1920.

Application filed June 7, 1917. Serial No. 173,314.

To all whom it may concern:

Be it known that I, WILLIAM C. BAXTER, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Cutting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates, in general, to cutting machines, and in its more particular aspects to machines for cutting blanks from sheet material. The invention is herein illustrated in its application to machines for dieing out heel lifts for use in the manufacture of boots and shoes, but it will be understood that as to many of its novel features the invention is not limited in respect to the particular character or purpose of the product of the machine.

An important object of the invention is to provide a machine so constructed and organized as to operate upon the stock material in a rapid and effective manner with as little waste of the material as possible. The machine herein shown is broadly similar in type to the machine shown in my earlier application for Letters Patent of the United States, Serial No. 13,673, filed March 11, 1915, and one object of the invention is to improve the general organization and construction of machines of the type shown in said earlier application.

An important feature of the invention resides in novel means for insuring the correct location of a piece of material with reference to means such as a die for cutting a blank from the piece, this feature, in its illustrative embodiment, comprising means for operating upon an end portion of the material in the space between the cutting means and the normal feeding means after the material has left the feeding means in order to position such material correctly with reference to the cutting means. The invention provides means for advancing the piece of material into position for a blank to be cut therefrom and means for engaging the material to limit its advancing movement and determine its correct relation to the cutting means. The illustrative construction, including a cutting block which is movable toward and from a die to cut the blank, provides a stop movable with the cutting block for engaging the front edge of the material to limit its movement, and a pair of feed fingers for engaging the rear edge of the piece of material and pushing it over the die into engagement with the stop, the operating connections for the feed fingers being constructed to give the fingers a normal movement into close proximity to the edge of the die while permitting them to stop before they reach their normal limit of movement in case the dimension of the piece in the direction of feed is materially greater than the corresponding dimension of the die.

The illustrative machine is particularly adapted for cutting blanks in successive series from a sheet of material such as leatherboard as the sheet is passed a plurality of times through the machine, and has means for slitting the material in such passage through the machine in parallel relation to the direction of feed at a distance from its edge corresponding substantially to that dimension of the die which is perpendicular to the direction of feed; and a further feature of the invention consists in improved means for feeding the material to cause it to be operated upon by the slitting means and correctly positioned with reference to the blank cutting means. The invention provides feeding means for the material arranged to engage it in front of the slitting means, the machine shown having two pairs of feed rolls spaced apart in the direction of the feed, with rotary slitting cutters mounted to turn with the second pair of rolls. An important advantage of such an arrangement is that effective engagement of the feeding means initially with the sheet of material is not opposed by the slitting means, and where, as in the illustrative construction, feed rolls and rotary cutters are used in combination, the cutters may have as great a diameter as may be desired relatively to the rolls without interfering with the feed of the material.

Other features of the invention, relating likewise to means for feeding and slitting the material, consist in a novel construction and arrangement of feed rolls including provision for adjustment of the rolls; in a novel arrangement comprising a plurality

of rolls in series with means for controlling the admission of the material to the first roll; and in a novel construction affording provision for adjustment of the slitting means for slitting the material at different distances from its edge.

Still another feature of the invention comprises novel means for controlling the movement of the material into operative relation to the blank cutting means, including provision for avoiding displacement of the material in its passage between the feeding means and the cutting means. The construction shown, embodying this feature, comprises the combination of a stop arranged for operation to control the admission of the material to the feeding means in a manner similar to the stop shown in my earlier application, and a presser foot between the stop and the cutting means, the arrangement permitting the stop to close behind the material in order to prevent the premature admission of more material to the feeding means while the movement of the remainder of the material toward the cutting means continues to be controlled irrespective of the return of the stop to its operative position.

Machines of the illustrative type are provided with a guide for the edge of the sheet to direct it with its edge in close relation to the cutting edge on one end of the die, in order to cut the blanks as close to the edge of the sheet as possible. The edge of a sheet of material such as leather-board, however, is frequently rough and uneven, and in the first passage of such a sheet through the machine a cut too close to the edge is likely to result in imperfect blanks. The invention accordingly provides, as a further feature, means for permitting a relatively wide margin of the sheet to project beyond the end of the die in the first passage of the sheet through the machine. This feature is shown as embodied in a construction comprising two edge guides, one of which is positioned in front of the other and serves normally to guide the sheet with its edge in close relation to the die and is movable out of its operative position to permit the other guide to be used, when the operator so desires, to cause the sheet to be positioned for cutting the blanks farther from the edge.

The invention also provides a novel construction and method for use in cutting wedge shaped heel lifts or like articles from strips of material. The shape of lifts of this character requires that the stock be split to provide strips wedge shaped in transverse section and each of a width substantially the same as, or slightly greater than, the dimension of the required lift from the breast edge to the rear end, the lifts being cut from such a strip with their breast edges at the thinner side of the strip and parallel to the thinner edge. It has been the practice heretofore to feed each wedge shaped strip singly to a die, thereby causing the lifts to be cut therefrom one at a time.

This invention provides a method and means whereby two wedge lifts may be cut simultaneously from two strips, the strips being positioned with their edges in parallel relation and with their thinner edge portions in proximity to each other to permit the use of a double die for cutting both lifts. In accordance with the illustrative procedure, the two strips are positioned with their thinner edge portions in overlapping relation to permit the breast edges of both lifts to be formed by a single incision through the overlapping portions of the strips. An even breast edge on each lift is thus insured, and by the use of a double die the breast edges of the two lifts may be formed by a transverse cutting edge on the die. The invention provides means for guiding the two strips to insure the correct relation of their thinner edge portions to each other the guiding means, in the illustrative construction, comprising outside edge guides spaced apart a distance less than the combined widths of two strips and means between said guides for guiding the thinner edge portions of the strips in overlapping relation.

Still other features of the invention reside in novel means for stripping the material from the die, novel means for separating the perfect blanks from the scrap after the cutting operation, novel means for conveying the blanks to a suitable point for delivery into a receptacle, and in various details of construction and combinations of parts, all of which will now be described with reference to the accompanying drawings and pointed out in the claims.

In the drawings,—

Figure 1 is a side elevation of a machine in which the invention is embodied as viewed in the direction of feed of the material;

Fig. 2 is a diagonal perspective view showing portions of the machine at the front and on the opposite side from Fig. 1;

Fig. 3 is a diagonal perspective view showing the feed rolls and the means for guiding the material and controlling its admission to the rolls;

Fig. 4 is a vertical section in a plane parallel to the direction of the feed of the material;

Fig. 5 shows in greater detail a portion of the mechanism shown in Fig. 3, together with the means for controlling the passage of the material from the feed rolls to the die;

Fig. 6 is a detail view illustrating the manner of feeding the end portion of the material to the die;

Fig. 7 is a perspective view showing the driving connections for the feed rolls and the stripping cutters and the means for adjusting the rolls and the cutters;

Fig. 8 shows in detail the die positioning means and the means for stripping the material from the die;

Fig. 9 is a vertical section through the driving means for the feed rolls and stripping cutters in a plane parallel to the direction of feed of the material;

Fig. 10 is a vertical section illustrating the means for adjusting one pair of the feed rolls;

Fig. 11 shows in detail the means for separating the blanks from the scrap and a portion of the means for receiving the blanks and conveying them away from the separating means;

Fig. 12 shows in perspective guiding means for use in directing wedge shaped strips over the die for cutting wedge lifts, and

Fig. 13 is a vertical section on a larger scale of a portion of the guiding means shown in Fig. 12.

In its general features the illustrative machine comprises means for supporting a die with its cutting edge directed upwardly, a cutting block movable toward and from the die to cut the blanks, feed rolls operated intermittently to advance the material into operative relation to the die and the block, and means for slitting the sheet of material during the feed movement in parallel relation to the direction of feed at a distance from the edge of the sheet corresponding approximately to that dimension of the die which is perpendicular to the direction of feed. In its general aspects the machine is thus constructed to operate upon the material in the same manner as the machine shown in the earlier application hereinbefore referred to.

The machine herein shown, however is particularly constructed with a view to the use of a double die 2 whereby two blanks may be cut at each cutting operation, the illustrative die, as shown in Fig. 6, being constructed to cut two heel lifts with their breast edges in opposed relation and having a transverse cutting edge 4 intermediate between its opposite ends and extending in the direction of feed of the material to form the breast edges of both the lifts. The die is positioned in the machine with its edge 4 in alinement with a mark 6 which extends lengthwise of the cutting table 8 upon which the material is supported, the die being thus positioned centrally with reference to the mark 6 irrespective of its size or shape. In order to insure the correct location of the die, each of the dies provided for use in the machine is mounted upon a supporting plate 10 which is arranged to slide into or out of position in a dove-tailed guideway in a base plate 12 which forms a portion of the frame of the machine. Convenient removal of a die and the substitution of a die of a different size or shape is thus facilitated. The plate 10, when in operative position, abuts against a lug 14 on the plate 12, as shown in Fig. 4, and is held fast in the machine by means of a set screw 16 threaded in a detachable block 18 and arranged to bear against the opposite side of the plate 10 from the lug 14. In order to permit the removal of the plate 10 and the die, the operator loosens the screw 16 and slips the block 18 from its socket. The correct endwise location of the die with reference to the plate 10 in order to aline the transverse edge with the mark 6 on the table, is insured by means of a pin 20 which extends through a hole in the die and a registering hole in a lug 22 of the plate 10 against which the die abuts; and on the opposite side from the lug 22 a clamping plate 24 is operated upon by a set screw 26 to clamp the die against the lug. On the side next to the plate 24 the die has an angular groove to receive the correspondingly shaped edge of the plate, as shown in Fig. 4, this construction serving to prevent this side of the die from being lifted from the supporting plate 10. Preferably each die is provided with its own plate 10 to which it is permanently secured in the correct relation, and the substitution of different dies in the machine is thus rendered a comparatively simple matter without the necessity for adjusting each die in order to aline it properly with the mark 6 on the table.

Coöperating with the die to cut the blanks is a cutting block which, in the construction shown, comprises a plate 28 formed of a metal which is softer than the material of the die and has a permanent groove 30 therein corresponding to the outline of the cutting edge of the die and in which the cutting edge is received to produce a shearing cut. For more detailed information as to the manner in which this groove may be formed and the mode of operation of a block of this construction, reference may be made to my earlier application. A separate plate 28 is provided for each different die, each plate being secured to a dovetailed slide 32 which is received in a corresponding guideway in the block carrier 34, a gib 36 being held against one side of the slide 32 by means of set screws 38. The correct location of the slide 32 is insured by means of a spring held pin 40 which is arranged to enter a socket in the slide, the details of this construction being illustrated more fully in my earlier application. Vertical reciprocatory movement is imparted to the block carrier 34 from a belt driven shaft 42 through connections comprising a pitman

44 operated by a crank or eccentric 45 on the shaft. Since the operating means for the cutting block and the means whereby the block may be adjusted relatively to the die are substantially the same in the construction herein shown as in the machine shown and described in my earlier application, the construction of these parts will not be described herein in greater detail.

The means for feeding the material to the die comprises two pairs of feed rolls, one pair consisting of rolls 46 and 48 positioned respectively above and below the plane of the material and as close as practicable to the die 2, and the other pair comprising rolls 50 and 52 similarly positioned in relation to the plane of the material in front of the first mentioned pair of rolls. Each roll is conveniently made up of a plurality of sections spaced apart to provide peripheral grooves or recesses in the roll, each section being provided with a corrugated edge for effective engagement with the material. The rolls 46 and 48 are mounted respectively on shafts 54 and 56 which are supported respectively in arms 58 and 60 mounted to swing about the axes of rods 62 and 64 which are supported in a bracket 66 on the frame of the machine. There are two arms 58 and also two arms 60 mounted respectively on apposite sides of the bracket 66. The two arms 58 are rigidly connected by a yoke 67, and it will be understood that the arms 60 are similarly connected together by means not seen in the drawings. Mounted respectively on the shafts 54 and 56 are toggle arms 68 and 70 (Fig. 10) which are connected by a pin 72 to a rod 74 which is mounted in the bracket 66 and carries a spring 76 tensioned between the bracket and a stop collar 78 on the rod for moving the rod in a direction to cause the toggle arms to swing the shafts 54 and 56 toward each other for bringing the feed rolls 46 and 48 nearer together. A stop 80 threaded on the rod 74 and engaging a lug 81 on the bracket 66 serves to limit adjustably the approach of the rolls to each other. It will be evident that with this construction the two rolls are held yieldingly in engagement with the material by the spring 76 and are permitted to separate against the tension of the spring to accommodate differences in the thickness of the material.

Intermittent turning movements of predetermined extent are imparted to the rolls 46 and 48 from the main shaft 42 through connections comprising a gear 82 on the shaft 42 in mesh with a gear 84 on a counter shaft 86, the gear 84 having a crank pin 88 connected by a pitman 90 to a driving element 92 of a clutch mechanism, the construction of which is described in detail in my earlier application. A gear 94 connected to the driven element of the clutch is in mesh with a pinion 96 mounted loosely on the rod 62, this pinion having driving connection with a pinion 98 similarly mounted on the rod 64, these pinions engaging respectively pinions 100 and 102 which are keyed respectively to the roll shafts 54 and 56. It will be evident that with this construction the driving connections to the feed rolls 46 and 48 are not affected by adjustment of the rolls since the pinions 100 and 102 swing in adjustment about the axes of their driving pinions 96 and 98. In order to vary the extent of the feeding movement of the rolls for the dies of different sizes, the crank pin 88 is adjustable toward or from the axis of its driving gear 84 through the provision of a screw 104, a pointer 106 which coöperates with a scale 108 on the side of the gear serving to indicate the correct adjustment for the particular die in use.

The front feed rolls 50 and 52 are mounted respectively on shafts 110 and 112 which are supported substantially midway of their length in brackets 114 and 116 and near their ends in other brackets 118 and 120, the brackets 118 and 120 being secured to the brackets 114 and 116, as shown in Fig. 4, and both pairs of brackets being mounted loosely upon the respective roll shafts 54 and 56. The front rolls 50 and 52 are thus mounted to swing in adjustment about the respective axes of the other rolls 46 and 48. In order to determine the relative positions of the front rolls the machine is provided with a rod 122 arranged substantially at right angles to the toggle rod 74 and secured at its lower end to the frame of the machine, this rod having adjusting nuts 124 and 126 threaded thereon for determining the position of the support 120 and consequently of the lower roll 52. Another nut 128 on the rod engages the support 118 to determine the adjustment of the upper roll 50 relatively to the lower roll, and a spring 130 acting upon the support 118 tends to hold the upper roll yieldingly at its limit of movement toward the lower roll determined by the nut 128. The front roll shafts 110 and 112 carry respectively pinions 132 and 134, and the pinion 132 engages an idle pinion 136 mounted on the support 118, the pinion 136 being driven by a gear 138 carried by the shaft 54 which drives the uppermost of the rear pair of rolls. It will be understood that the pinion 134 is driven in a similar manner from a gear on the lower shaft 56, the several gears and pinions being so proportioned that the rolls are all driven at the same peripheral speed. It will be evident that with this construction relative adjustment of the rolls 50 and 52 may be effected without disturbing their operative relation to the driving means.

Secured to the ends of the roll shafts 54 and 56 are rotary cutters 140 and 142 which

are arranged in laterally overlapping relation to produce during the feeding movement a shearing cut in the sheet of stock in parallel relation to the direction of the feed. As the sheet of stock is fed through the machine its edge is positioned in engagement with a guide 144, and the cutters 140, 142 are preferably positioned to slit the stock at a distance from its edge corresponding to, or but slightly greater than, that dimension of the die which is perpendicular to the direction of the feed. As previously stated, dies of different sizes are positioned in the machine each with its transverse cutting edge 4, which is midway between the opposite ends of the die, in line with the mark 6 on the table 8, and the machine is provided with means whereby both the edge guide 144 and the slitting cutters 140, 142 may be adjusted transversely of the direction of feed to accommodate their positions to the size of the die. The edge guide is carried by a bracket 146 which has a slot 148 to permit adjustment of the guide transversely of the table, the bracket being held in adjusted position by means of a clamping screw 150 threaded in a lug 151 attached to the rear of the table. A scale 152 on the table is graduated to indicate the correct location of the guide for each particular size of die. The cutters 140, 142 are adjustable transversely of the direction of feed through provision for sliding endwise movement of the shafts 54 and 56 relatively to the feed rolls and pinions which are mounted on these shafts, the rolls and pinions being keyed to the shafts in such manner as to permit this relative movement without disturbing the operative relation of the rolls to their driving mechanism. The shafts 54 and 56 are adjusted endwise in unison by means of a hand wheel 154 (Fig. 7), this wheel being secured to a rod 156 which is swiveled in a bracket 158 and threaded in a slide 160. The slide is movable in a guideway 161 in the frame which extends in parallel relation to the shafts 54 and 56, the slide having arms 162 which engage thrust collars 164 on the respective shafts, whereby the shafts are moved endwise through sliding movement of the member 160. In order to hold the shafts in adjusted position the slide 160 is provided with an extension 166 projecting through a slot 168 in a bracket 170, this extension having a threaded end portion 172, upon which is screwed a hand wheel 174, this wheel having a hub 175 arranged to engage a collar 176 which bears against the side of the bracket 170. By means of the hand wheel the slide 160 may thus be clamped tightly against its support to hold it against movement along the guideway. The collar 176, which is held from turning about its supporting member 166, carries a pointer 178 arranged to coöperate with a scale 180 to indicate the correct adjusted position of the stripping cutters with reference to the mark 6 on the table 8, the marking of the scale 180 corresponding to that of the scale 152 on the table 8.

An important advantage of the arrangement of feed rolls and stripping cutters above described is that the cutters can oppose no obstruction to the admission of the material to the rolls, since they are positioned at the rear of those rolls which first engage the material, and positive feed movements of the material of the required extent are thus insured at all times whatever may be the diameter of the cutters relatively to the diameter of the rolls. As a further means of insuring that the stripping cutters shall not slip upon the material or oppose its feed in any way, the cutters are corrugated upon their peripheral edges.

It will be seen by reference to Fig. 4 that the distance between the die and the point at which the front feed rolls 50 and 52 engage the material is such as to require a plurality of feed movements of the material before it arrives at the proper location for the first pair of lifts to be cut by the die. It will be evident also that in order to cut the material without undue waste it is essential that the material be fed in such manner as to insure that a pair of complete blanks shall be cut by the die in the first instance with the material projecting only slightly, if at all, beyond the farther edge of the die. In order that the material may be thus correctly positioned with reference to the die in the first instance, the machine is provided with means for controlling the admission of the sheet of material to the front feed rolls 50, 52, this means comprising a stop 182 positioned between sections of the roll 50 and movable vertically into or out of position to cause its front edge to engage the advancing edge of the sheet of material and prevent the material from entering the rolls. The stop 182 comprises a plate extending in the direction of the feed of the material and provided with lugs 184 which support a rod 186 whereby the stop is pivotally connected to the lower ends of two arms 188 secured to a holder 190 having an upward extension 192 mounted for sliding movement vertically in a bearing 194. Threaded in said extension is the lower end of a rod 196 which slides at its upper end in a bearing 198. Movement is imparted to this rod to lift the stop 182 and permit the material to enter the feed rolls at a predetermined time with reference to the feed movement of the rolls, thereby causing the rolls to impart such proportional part of a normal feed movement to the material in the first instance as to insure the correct relation of the material to the die at the end of a subsequent feed movement. To

this end the shaft 42 carries a cam 200 provided with a groove 202 in which is mounted a roll 204 carried by an arm 206 which is mounted on one end of a rock shaft 208. On the other end of the shaft 208 is a second crank arm 210 the outer end of which is forked to receive trunnion blocks 212 pivoted on a sleeve 214 which is slidable vertically on the rod 196. The sleeve 214 engages at its upper end a collar 216 which is fast on the rod 196, and bearing upon the lower end of the sleeve is a spring 218 which is mounted on the rod with its lower end in engagement with a collar 220 fast on the rod. The cam 200 thus causes the arm 210 to raise the rod 196 and its connected stop 182 at a definite predetermined time through the engagement of the sleeve 214 with the collar 216. After the material has passed the front edge of the stop 182 the stop will ride upon the surface of the material, or be raised but slightly thereabove by the operation of the cam, until after the rear edge of the material has been fed beyond the front portion of the stop, when the normal closing movement of the stop will be again permitted to prevent another sheet of material from entering the feed rolls prematurely. During the time that the complete downward movement of the stop is prevented by the presence of the material beneath it, the sleeve 214 will slide downwardly upon the rod 196 against the tension of the spring 218 in each downward swinging movement of the arm 210. The threaded connection between the rod 196 and the extension 192 of the holder 190 affords provision for adjustment of the limit of downward movement of the stop, a nut 222 being provided to lock the rod and the extension in adjusted relation. It will be understood that the time of withdrawal of the stop 182 and consequently the proportion of the normal feed movement of the rolls 50, 52 which will be imparted to the material in the first instance depends upon the size of the die and the corresponding extent of the normal feed movement of the material. As hereinbefore explained, the extent of movement of the feed rolls is adjustable, the proper adjustment for the die in use being determined by the pointer 106 and the scale 108 (Fig. 7). The cam 200 which operates the stop 182 also is adjustable about the axis of its driving shaft, and a scale 224 (Fig. 3) is provided on a circular member 225 adjacent to the cam to coöperate with a zero line 226 on the cam to indicate the proper adjustment of the cam corresponding to the adjustment of the crank pin 88 for the size of die in use, the cam being secured in adjusted position by bolts 227 which clamp the cam to the member 225. In this manner the movement of the stop is so timed relatively to the length of the feed movement of the material as to cause the material to be so positioned in relation to the die as to insure the cutting of a pair of complete lifts in the first instance without unnecessary waste. Preferably the advance of the material is so timed that in the feed movement immediately preceding the final feed movement to the first dieing-out position, the edge of the material is projected slightly over the front edge of the die to cause the die to trim the edge of the material in case the edge is rough or uneven.

In order to control the movement of the material in its passage through the feed rolls and to the die, the machine is provided further with a plate or bar 228 which extends between sections of the lower feed rolls 48 and 52 below the plane of the material and is pivoted at its front end on a lug 230 which is secured to the table. The rear end of the plate or guide member 228 rests in a slot in a stripper member 232 which is positioned close to the die between the die and the feed rolls and is supported on an arm 234 pivoted at the rear of the die on a bracket 236, a spring 238 connected to the rear end of this arm serving to maintain the stripper at its upper limit of movement which is determined by engagement of the rear end of the arm 234 with an adjustable stop 240 on the frame. In its normal position the stripper 232 is thus above the plane of the cutting edge of the die, as shown in Fig. 4, and the position of the rear end of the guide plate 228 is determined by the stripper 232 upon which the plate rests. It will be evident that an important function of the plate 228 is to guide the material in its movement between the pair of feed rolls 46, 48 and the die in order to direct it over the cutting edge of the die as it is fed, this function of the guide being particularly important in the case of that portion of the material which remains between the feed rolls and the die after the material has left the feed rolls. In order further to insure the proper movement of the material in its passage from the rolls to the die the machine is provided with a presser foot member 242 which is positioned above the rear end portion of the guide member 228 and is pressed downwardly by means of a vertically sliding bar 244 which presses upon it, this bar being mounted to slide in guideways on the frame and normally forced downwardly by means of a spring 246 which engages at its lower end in a socket in the bar and at its upper end bears against an adjustable set screw 248. The presser foot 242 is thus held constantly in yielding engagement with the material, or against the member 228 when there is no material in the machine. At its front end the member 242 is hinged to the rear end of the stop member 182, thereby causing the front end of the presser foot to be raised by the wedging engagement of the

material with the rear end portion of the member 182 to permit the front edge of the material to slide under the presser foot. The hinge connection between the presser foot and the stop member, moreover, permits the stop to be swung upwardly by its operating means to admit the sheet of material at the proper time without affecting the action of the presser foot upon any material which may still remain between the feed rolls and the die, and also permits the front end of the stop to be swung downwardly behind the rear edge of the material to prevent the premature admission of a new sheet while the remainder of the first sheet still remains beneath the rear portion of the stop member and the presser foot 242.

It will be evident that the downward movement of the presser foot 242 under the action of the spring 246 is limited by the guide member 228, the position of which is determined, as hereinbefore explained, by the stripper 232, the strength of the spring 238 being greater than that of the spring 246. When the cutting block is moved downwardly to cause the blanks to be cut, a lug 250 on the block holder 34, engages the rear end of the presser foot 242 and depresses this member and also the guide 228 and the stripper 232, thus carrying downwardly that portion of the material which is between the die and the feed rolls and preventing an abrupt bend of the material close to the die. As the cutting block rises, the stripper 232 is forced upwardly by the action of the spring 238, thereby raising also the rear end of the plate 228 and the presser foot 242, the limit of upward movement of these members being determined by the stop 240 in engagement with the rear end of the arm 234. At one end of the die is also a gage 252 (Fig. 8), which is normally held above the plane of the cutting edge by means of springs 254 and is moved downwardly in a curved path corresponding approximately to the bevel of the die through the action of the cutting block. The construction of this gage is more fully shown and described in my earlier application.

The machine is also provided with auxiliary feeding means for advancing that portion of the material which remains between the rolls 46, 48 and the die after the material has passed beyond the point for effective engagement of the rolls therewith. This means comprises a pair of feed fingers 256 which are arranged to slide between sections of the feed rolls in parallel relation to the direction of feed and are pivoted near their rear ends at 257 upon the upper end of a crank arm 258. These fingers are connected together at their rear ends by a member 259, and a spring 260 connected to the member 259 tends to swing the front ends of the fingers upwardly into the plane of feeding movement of the material, while permitting the fingers to be depressed below such plane by the engagement of the material therewith during its passage through the rolls. A roll 261 carried by an arm 262 on the member 259 is arranged to engage a fixed guide 263 to limit the upward movement of the front ends of the fingers. The arm 258 is secured to a rock shaft 264 mounted in bearings in the frame, this rock shaft having at its opposite end from the arm 258 another crank arm 265. Pivotally connected to the arm 265 is a rod 266 which extends loosely through a block 268 and is secured at its outer end to a block 270. Secured to the block 268 is a second rod 272 which extends loosely through the block 270 and is pivotally connected to a crank arm 274 fast on a rock shaft 276. Secured also to the shaft 276 is a crank arm 278 provided with a roll 280 which is mounted in a groove in the face of a cam 282, this cam being mounted on a shaft 284 which is driven by a gear 286 in engagement with the gear 84 hereinbefore referred to. On the rod 272 between the two blocks 268 and 270 is a spring 288. Reciprocating movement is thus imparted to the auxiliary feed fingers 256 from the cam 282 through the connections described, to move the fingers back and forth between points located respectively close to the front edge of the die and substantially at the point where the rolls 46, 48 bite the material. The guide 263, as will be seen by reference to Fig. 5, presents a convexly curved surface for engagement with the roll 261, and the guide is so arranged relatively to the path of movement of the pivot 257 as to cause a substantially rectilinear feed movement to be imparted to the front ends of the fingers 256.

In order further to insure the correct relation of the end portion of the material to the die, a stop 290 is provided, this stop being mounted on a plate 292 which is secured to a block 294 mounted to slide in parallel relation to the direction of feed of the material upon a pin 296 which projects from the rear of the cutting block carrier 34. The stop 290 is thus positioned to engage the front edge of the piece of material as the latter is advanced by the action of the feed fingers to insure the correct relation of the material to the die without permitting it to project to any substantial extent beyond the rear edge of the die. In order that the material engaging face of the stop 290 may be maintained as close as possible to the cutting edge of the die at the rear side of the latter, this face is inclined in substantially parallel relation to the bevel on the die, and movement across the face of the cutting block is imparted to the stop during the downward movement of the block to cause the stop to engage the material close to the die without

permitting the stop to hit the die. In order to slide the stop in this manner the machine is provided with a bracket 298 having an inclined groove 300 in which is positioned a roll 302 mounted on an upward extension of the block 294 to which the plate 292 is secured. As the cutting block is moved downwardly the stop 290 will thus be retracted to prevent it from engaging the die while positioned as close as practicable to the cutting edge. The lower portion of the groove 300 is enlarged at its rear side, as shown at 304, in order to afford a slight clearance, thus permitting the stop to yield backwardly during the continued downward movement of the cutting block after the cutting action of the die begins. To position the stop correctly for dies of different sizes the plate 292 is adjustable in the block 294 and is clamped in adjusted position by means of a block 293 operated by a hand wheel 295.

It will be evident that when a piece of material is moved by the feed fingers into engagement with the stop 290 further forward movement of the fingers will be prevented in case the dimension of the piece of material in the direction of the feed is substantially greater than the corresponding dimension of the die. In order to meet this condition the spring 288, hereinbefore referred to, is provided in the operating connections between the feed fingers and the operating cam 282. In case the movement of the fingers is stopped prematurely the rod 272 will slide through the block 270 against the tension of the spring 288, the block 268 sliding freely upon the rod 266 during this relative yielding movement of the parts. A stop collar 306 on the rod 266, serves, by engagement with the block 268, to determine the normal relative positions of the two rods 266 and 272.

As hereinbefore explained, the edge guide 144 is provided at the back of the table 8 to guide the edge of the material in close relation to one end of the die and cause the blanks to be cut as closely as possible to the edge of the sheet. Sheets of material such as leatherboard, however, are, as stated, frequently somewhat rough and uneven on the edge, and with the edge guide positioned as above explained, there is danger that some of the blanks produced in the first passage of the sheet through the machine may be imperfect. The machine shown is accordingly provided with means for guiding the sheet in its first passage through the machine in such manner as to cause a wider margin of the material to project beyond the end of the die. This means comprises a supplementary edge guide 308 at the back of the guide 144, the supplementary guide being integral with the bracket 146. In order to permit the use of the supplementary guide, the guide 144 is pivotally mounted on the supporting bracket 146 by means of a rod 310 which is pivoted in bearings 312 on the bracket. A spring 313 mounted on the rod tends to turn the rod in such manner as to maintain the guide 144 in its operative position while permitting it to be swung upward away from the table 8 to permit the supplementary guide to be used. In order to enable the operator conveniently to swing the guide 144 out of the way when desired, the guide is provided with a lug 314 to which is connected a rod 316 which terminates in a handle 318 positioned in a convenient location for manipulation by the operator.

As the blanks are cut they drop through the die in the usual manner, and in order to separate the perfect blanks from the scrap the machine is provided with a sifter or separator 320 beneath the die in position to catch the material as it falls. The separator is pivoted at 322 and is inclined downwardly as shown. Oscillatory vertical movements are imparted to the separator, to cause it to sift the material and deliver the perfect lifts at its lower end, through connections comprising an upright rod 324 and a lever 326 to which the rod is pivoted at its upper end, the lever being operated by means of an eccentric 328 on the shaft 284 hereinbefore referred to. A spring 330 affords a yielding connection between the rod 324 and a yoke 325 to which the lower end of the separator is connected, in order to eliminate undue shock in the reversal of movement of the separator.

The bottom of the separator, in the novel construction shown, comprises a plate of sheet metal having openings cut therein which are smaller than the perfect blanks. These openings are rectangular in shape and are separated by transverse pieces of the metal, as shown at 332. In order to retard the movement of the material down the incline of the separator, and thereby render it effective to sift out the scrap, the transverse sections 332 of the metal plate are twisted about axes extending transversely of the incline of the separator to cause their upper edges to arch above the plate, as shown in Fig. 11. The sections 332 thus serve to retard the movement of the material down the incline long enough to insure the elimination of the scrap.

It is desirable in machines of this character, in order to avoid unnecessary handling of the product of the machine, that the blanks be delivered by the machine into a receptacle. In order to provide for such delivery it has been necessary heretofore, in machines in which means is provided for separating the blanks from the scrap, to elevate the machine from the floor in such manner as to permit a receptacle to be positioned under the delivery end of the sepa-

rator. Such an elevation of the machine, however, makes it inconvenient for the operator to manipulate the material in feeding it to the machine. In order to avoid this condition, and permit the parts of the machine to remain low enough for convenience, the machine shown is provided with means for receiving the blanks from the separating means and elevating them to a convenient point for delivery into a receptacle. This means comprises a conveyer consisting of an endless belt 334 upon which buckets 336 are mounted, the belt running over pulleys 338 and 340 at the upper and lower ends, respectively, of a supporting frame 342, this frame being inclined in an upward direction from the point of delivery of the separator 320, and having near its upper end a chute 344 to direct the blanks into the receptacle. The conveyer is driven by an extension of the shaft 284 which carries a worm 346 in engagement with a worm gear 348 mounted on the shaft which carries the pulley 338.

It will be seen by reference to Figs. 1 and 2 that the front feed rolls 50 and 52 are longer than the rear pair of rolls 46 and 48 and project at their outer ends beyond the plane of action of the slitting cutters 140 and 142. This not only insures that the front rolls shall extend across the full width of that portion of the material between the edge guide and the slitting cutters, whatever may be the position of adjustment of these cutters, but also that the front rolls shall engage the material on opposite sides of the line of the slit produced in the sheet by the cutters, thus causing the material to be fed in a straight line without any tendency to deviate from its correct path of movement by reason of resistance encountered through engagement with the cutters.

In order that the slitting cutters 140, 142 shall be effective to cut the stock during its feed movement it is necessary that one or both of these cutters be larger in diameter than the coaxial roll or rolls to cause the two cutters to overlap each other. In the construction shown the upper cutter 140 only is thus enlarged. This arrangement permits the die, which is on the same side of the plane of the material as the lower roll, to be positioned close to the rolls without interference with the slitting cutters.

In the operation of the machine constructed as thus far described, a die 2 of the desired size and its corresponding cutting block 28 are first secured in position, and suitable adjustments of the slitting cutters 140, 142 and of the edge guide 144 are made to correspond to the size of the die. The crank pin 88 is also adjusted, if necessary, to cause the material to be fed at each operation the correct distance for the size of die in use, and the cam 200 is correspondingly adjusted to cause the stop 182 to be lifted in the correct time relation to the movement of the feed rolls to insure the cutting of a pair of complete blanks in the first instance. If the edge of the sheet of material is rough or uneven, the operator then swings the edge guide 144 out of its operative position by means of the handle 318 and positions the sheet upon the table with its edge in engagement with the supplemental guide 308 and moves it toward the front feed rolls, the admission of the material to the rolls being controlled by the stop 182 in the manner hereinbefore explained. When the material is permitted to pass between the stop and the guide member 228 upon the lifting of the stop, it is fed forwardly and by its wedging action upon the rear portion of the stop member 182 causes the front edge of the presser foot 242 to be lifted sufficiently to permit the material to pass under it. As the material is advanced by the feed rolls it is guided over the front edge of the die by the members 228 and 242 and by the stripper 232, and at the end of one of the feed movements of the rolls is advanced to such a point as to cause its front edge to be trimmed by the front edge of the die. In the next feed movement the material is advanced until its front edge is approximately in line with the farther edge of the die, or projects but slightly beyond it, and in the succeeding downward movement of the cutting block a pair of blanks is then cut from the material. Succeeding feed movements and blank cutting operations are a repetition of those described, the cutters 140 and 142 serving to slit the material intermittently in each feed movement substantially in alinement with that end of the die which is nearest to these cutters and thus to form a straight edge on the sheet for engagement with the edge guide in the next passage of the material through the machine. When the rear edge of the material passes beyond the front end portion of the stop 182 the latter is permitted to swing downwardly behind the material in order to prevent another sheet of material from entering the feed rolls prematurely in case the operator follows the first sheet very closely by another sheet. Notwithstanding the return of the front end portion of the stop to its limiting position, the remainder of the material in the line of feed continues to be pressed downward by the rear portion of the stop member and by the presser foot 242. When the rear edge of the material has arrived substantially in the plane of the axes of the rolls 46 and 48, it is engaged by the feed fingers 256 which are swung upwardly behind it through the action of the spring 260, and these fingers push the remainder of the material forwardly in time relation to the movement

of the cutting block to complete the movement of the material into the correct relation to the die for the next cutting operation. This movement of the feed fingers takes place as the cutting block is moving downwardly and the material is pushed by the fingers against the stop 290 which, as hereinbefore explained, moves downwardly with the block and is simultaneously moved across the face of the block in the direction of the feed of the material to maintain its point of intersection with the plane of the cutting edge of the die at a substantially uniform distance from the cutting edge. In case the material engages the stop before the feed fingers complete their normal movement toward the die, the spring 288 in the operating connections for the fingers yields in the manner hereinbefore explained.

As the cutting block moves downwardly in each cutting operation, the member 250 engages the presser foot 242 and moves the presser foot downwardly together with the guide member 228 and the stripper 232, and when the cutting block rises after the cutting operation, the stripper is moved upwardly by the action of its spring 238 and carries upwardly with it the members 228 and 242, thus raising the front edge of the material above the cutting edge of the die to permit the next feed movement to take place without interference by the die. The stripper 232 also performs its function of clearing the scrap from the end of the die in a manner well understood.

As the blanks and the scrap fall from the die they are received in the separator 320 and the blanks are separated from the scrap by the action of the separator and are then delivered into the buckets 336 of the conveyer by which they are carried upwardly and deposited in a receptacle which is positioned to receive them. After the first row of blanks has been cut from the sheet, the edge guide 144, which may have rested upon the surface of the sheet during the previous series of cutting operations, is returned to its operative position by the spring 314 and in the succeeding movements of the sheet through the machine guides the material in close relation to the end of the die.

It will be understood that the stop 290, while presented at each downward movement of the cutting block in position to cooperate with the auxiliary feed fingers 256 to position the end portion of the material relatively to the die, presents no obstruction to the normal feed movement of the material which is effected by the feed rolls, since its material engaging face is presented at, or slightly beyond, the limit of the normal feed movement of the front edge of the material.

The manner in which the machine is adapted for cutting wedge lifts is illustrated in Figs. 12 and 13. As hereinbefore explained, the material from which such lifts are produced comprises strips previously cut in the width required and split in wedge shape in transverse section. The stripping cutters 140, 142 therefore are not used when the machine is operating to produce these lifts and may turn idly during the feed of the material. The invention provides means whereby two strips are guided with their thinner edge portions in overlapping relation, these portions of the strips also overlapping the mark 6 on the table 8 to cause the strips to be fed to the die in such relation to the transverse cutting edge 4 as to permit the breast edges of two lifts to be formed by a single incision made by said edge. For this purpose a guide member 350 is secured in any suitable way to the table 8 in parallel relation to the direction of feed, this member being found to provide a guiding surface 354 for the thin edge of one of the strips and another surface 358 for guiding the thin edge of the other strip, these surfaces being respectively offset laterally to cause the thin edge portions of the strips to overlap each other. The member 350 is also provided with a horizontal portion 356 arranged to extend between the overlapping portions of the strips. The rear edge guide 144 is positioned at a distance from the guide surface 358 substantially equal to the width of the strip *a*, and another guide member 360 is secured to the table on the opposite side of the member 350 at the same distance from the guide surface 354 as the distance between the guide 144 and the surface 358.

The member 360 is provided with an extension 362 which fits in a transverse groove 364 in the table to insure parallel relation of the guide member 360 to the direction of feed, and a set screw 366 serves to fit the member 360 in adjusted position. It will be evident that with the guide members thus arranged the distance between the two outer guides 144 and 360 is less than the combined widths of the two strips of material by the extent which the strips overlap. The feeding of the two strips and the control of their feed movements will take place in the manner hereinbefore explained. As the two strips are carried through the feed rolls their edges will remain in overlapping relation, and when the die operates upon the strips the transverse edge 4 will cut through both strips slightly inside of their outer thin edges, thus forming the breast edges of two lifts simultaneously while insuring an even and clean cut.

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

1. In a machine of the class described, the

combination with cutting means and means spaced from said cutting means for feeding measured lengths of material into position to be operated upon by said cutting means, of auxiliary means arranged to operate upon said material after it has ceased to be operated upon by the feeding means to move the portion of the material between said feeding means and cutting means into position to be cut, and means for engaging the material to limit the movement imparted thereto by said auxiliary means.

2. In a machine of the class described, the combination with cutting means and means located at one side of said cutting means for feeding material into position to be operated upon by said cutting means, of means for engaging the rear edge of the material as it leaves said feeding means and pushing it toward the cutting means, and means for engaging the front edge of the material to limit its movement and determine its relation to the cutting means.

3. In a machine of the class described, the combination with means for cutting blanks from sheet material and means for feeding material into position for successive operations thereon of said cutting means, of means for engaging the rear end of the material as it leaves said feeding means and completing the movement of the end portion of the material into position for the final operation of said cutting means thereon, and a stop for engaging the material to limit said final feed movement and insure the correct relation of the material to the cutting means.

4. In a machine of the class described, the combination with means for cutting blanks from sheet material and means for feeding a sheet of material intermittently to said cutting means through a plurality of cutting operations, of auxiliary means comprising a reciprocatory feed member arranged to operate upon the material as it leaves said feeding means to complete a movement of the material into position for a blank to be cut therefrom, and a stop for engaging the material to limit the movement imparted thereto by said auxiliary means.

5. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means comprising feed rolls for advancing a sheet of material intermittently to said cutting means, a reciprocatory feed finger arranged to operate upon the material as it leaves said feed rolls to complete a movement of the material into position for a blank to be cut therefrom, and means for engaging the material to limit the movement imparted thereto by said feed finger.

6. In a machine of the class described, the combination with cutting means and means spaced from said cutting means for feeding measured lengths of material into position to be operated upon by said cutting means, of an auxiliary feed member arranged to advance the end portion of the material across the space between said cutting means and feeding means, means for engaging the material to limit the movement imparted thereto by said auxiliary member, and operating means for said auxiliary member constructed to impart a movement of a normal maximum length to the member while permitting the member to be stopped by the resistance of the material at different points short of its normal limit of movement.

7. In a machine of the class described, the combination with cutting means comprising a die, of means for feeding measured lengths of a sheet of material into position to be cut by the die, an auxiliary feed member arranged to operate upon the end portion of the material to advance it across the die, a stop for engaging the front edge of the material to limit the movement imparted thereto by said member, and operating means for said member constructed and arranged to move the member normally substantially as far as the cutting edge of the die while permitting the member to stop before it reaches said normal limit of movement.

8. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means spaced from said cutting means for advancing a sheet of material intermittently to the cutting means, a reciprocatory feed member arranged to operate upon the material as it leaves said feeding means to push it toward the cutting means, a stop for engaging the material to limit the movement imparted thereto by said member, and yielding means for imparting operative movement to said member.

9. In a machine of the class described, the combination with cutting means comprising relatively reciprocable cutting block and die members, of means for feeding a piece of material into the path of relative reciprocation of said members for a cutting operation, and means at the farther side of the die member for engaging the material to limit its feeding movement, the feeding means comprising operating connections parts of which are arranged for relative movement against yielding resistance when the movement of the material is stopped by said limiting means.

10. In a machine of the class described, the combination with cutting means, of means for feeding a piece of material into position to be operated upon by said cutting means comprising a reciprocatory feed member arranged to engage the rear edge of the material and operating connections for said member, and a stop beyond the cutting means against which the front edge of the

material is pushed by the feed member to limit the feeding movement, said operating connections including a spring arranged to yield when the material engages said stop.

11. In a machine of the class described, the combination with cutting means comprising a die, of a reciprocatory feed member at one side of the die for engaging the rear edge of a piece of material and pushing the material across the die, a stop for engaging the front edge of the material at the rear of the die to limit the movement imparted to the material by said member, and operating means for said member arranged to move the member normally substantially as far as the cutting edge of the die on the side of the die which is nearest to said member and including provision for relative movement between said member and its operating means upon engagement with the stop of a piece of material the dimension of which in the direction of feed is greater than the corresponding dimension of the die.

12. In a machine of the class described, the combination with cutting means comprising a die, of feeding means spaced from the front side of the die for advancing a sheet of material intermittently across the die, auxiliary means for moving the end portion of the material across the space between said feeding means and the die, and means at the rear of the die for engaging the advancing edge of said end portion of the material to prevent further movement thereof and thus to position the material in the correct relation to the die for a complete blank to be cut therefrom without waste.

13. In a machine of the class described, the combination with cutting means comprising a die, of feeding means comprising feed rolls for advancing material intermittently across the die, auxiliary means comprising a reciprocatory feed member for pushing the end portion of the material across the die after the material leaves the feed rolls, and a stop at the rear of the die arranged to engage the material to limit the movement imparted thereto by said member.

14. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means spaced from the cutting means for feeding material into position to be cut by said means, auxiliary means for feeding the end portion of the material across the space between said feeding means and cutting means, a stop for engaging the material to limit the movement imparted thereto by said auxiliary means, and means for operating said stop to cause it to be moved into position to coöperate with said auxiliary means and to be withdrawn in time relation to the normal feed movements of the material.

15. In a machine of the class described, the combination with cutting means comprising a die and a cutting block and means for effecting relative movement of said die and block, of means for feeding material between the die and the block, auxiliary means for advancing the end portion of the material into position for a blank to be cut therefrom by the die, and means arranged to be moved by said relative movement of the die and the block into position to engage the front edge of the material and limit the movement imparted thereto by said auxiliary means.

16. In a machine of the class described, the combination with cutting means comprising a die and a cutting block movable toward and from the die, of means spaced from the die for feeding material between the block and the die, auxiliary means for advancing the end portion of the material between the block and the die after the material has left said feeding means, and means movable with the cutting block for engaging said end portion of the material to limit the movement imparted thereto by said auxiliary means.

17. In a machine of the class described, the combination with cutting means comprising a die and a cutting block movable toward and from the die, of means comprising a feed roll at the front of the die for feeding material intermittently between the block and the die, auxiliary means arranged to operate upon the end portion of the material after the material has left the feed roll to complete a movement of the material into position for a blank to be cut therefrom, and a stop movable with the cutting block and arranged to engage the front edge of the material at the rear of the die to limit the movement imparted thereto by said auxiliary means.

18. In a machine of the class described, the combination with cutting means comprising a cutting block, a die beveled on its outer surface to form a cutting edge, and means for moving the cutting block toward and from the die, of means spaced from the die for feeding a sheet of material between the block and the die, means for moving the end portion of the material across the space between said feeding means and the die to advance it into position for a blank to be cut therefrom, a stop movable with the cutting block for engaging the front edge of said end portion of the material to limit its feed movement, said stop having its material engaging surface extending in substantially parallel relation to the bevel of the die, and means for moving the stop in the direction of the feed movement of the material during the movement of the cutting block toward the die to maintain the point of intersection of the stop

with the plane of the cutting edge of the die at a substantially uniform distance from said edge.

19. In a machine of the class described, the combination with cutting means comprising a die and cutting block and means for effecting relative movement of said die and block to cut a blank from a piece of material, of means for feeding material between the die and the block, a stop for engaging the material to limit its feed movement, and means for causing said stop to move in the direction of feed of the material during the relative cutting movement of the die and the block.

20. In a machine of the class described, the combination with cutting means comprising a die and a cutting block movable toward and from the die, of means for moving a piece of material across the die, and a stop movable with the cutting block for engaging the front edge of the piece of material to limit its movement across the die.

21. In a machine of the class described, the combination with cutting means comprising a cutting block, a die beveled on its outer surface to form a cutting edge, and means for effecting relative movement of the die and the block to cut a blank from a piece of material, of means for feeding a piece of material into position for a blank to be cut therefrom, a stop for engaging the front edge of the material to limit its feed movement, and means for imparting to said stop a movement in substantially parallel relation to the bevel of the die during the relative movement of the die and the block to cause the stop to engage the material close to the edge of the die without engaging the die.

22. In a machine of the class described, the combination with cutting means comprising a cutting block, a die beveled on its outer surface to form a cutting edge, and means for moving the cutting block relatively to the die to cut a blank from a piece of material, of means for feeding a piece of material across the die, a stop carried by the cutting block and having a surface substantially parallel to the bevel of the die for engaging the material to limit its feed movement, and means for moving the stop transversely of the cutting block during the movement of the block toward the die to cause the stop to travel in a path substantially parallel to the bevel of the die.

23. In a machine of the class described, the combination with cutting means comprising a cutting block, a die, and means for moving the block toward the die to cut a blank from a piece of material, of means for feeding a piece of material into position to be cut by the die, a stop movable with the cutting block for engaging the material to limit its feed movement, and means for imparting to said stop a movement transversely of the block during the movement of the block toward the die.

24. In a machine of the class described, the combination with cutting means comprising a die beveled on its outer surface to form a cutting edge, a cutting block, and means for effecting relative movement of the die and the block, of means for feeding a piece of material into position for a blank to be cut therefrom by the die, and a stop for engaging the front edge of the material to limit its feed movement, said stop having a material engaging surface extending in substantially parallel relation to the bevel of the die, and means for causing the stop to move in a direction oblique to the plane of the cutting edge of the die during the relative cutting movement of the cutting block and the die to maintain said material engaging surface at a substantially uniform distance from the cutting edge of the die.

25. In a machine of the class described, the combination with means for cutting blanks from sheet material, of feeding means comprising a feed roll for advancing a sheet of material intermittently to and through said cutting means, and means between said feed roll and the cutting means for slitting the material in parallel relation to the direction of its feed as the material is advanced to the cutting means.

26. In a machine of the class described, the combination with means for cutting blanks from sheet material, of a feed roll for advancing a sheet of material into position to be cut by said means, and means between said feed roll and the cutting means for making a slit in the material at a distance from its edge substantially equal to one of the dimensions of the blank produced by the cutting means.

27. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for slitting the material at a predetermined distance from its edge as the material is fed to the cutting means, and means in front of said slitting means for feeding the material past the slitting means and to and through the cutting means.

28. In a machine of the class described, the combination with means for cutting blanks from sheet material, of a rotary cutter for slitting the material at a predetermined distance from its edge as the material is fed to the cutting means, and feeding means comprising a feed roll in front of said rotary cutter for feeding the material past said cutter and for advancing it into position to be cut by the blank cutting means.

29. In a machine of the class described, the combination with means for cutting blanks from sheet material, of feeding means

comprising a pair of feed rolls for advancing the material into position to be cut by said cutting means, and means between said pair of feed rolls and the blank cutting means for making a slit in the sheet of material in parallel relation to the direction of feed movement of the material.

30. In a machine of the class described, the combination with means for cutting blanks from sheet material, of feeding means comprising a pair of feed rolls for advancing the material into position to be cut by said cutting means, and a pair of rotary disk cutters arranged between said cutting means and feed rolls for slitting the material as it is advanced to the blank cutting means.

31. In a machine of the class described, the combination with means for cutting blanks from sheet material, of feeding means comprising a pair of feed rolls for advancing the material into position to be cut by said cutting means, a pair of rotary disk cutters arranged between said cutting means and feed rolls for slitting the material as it is advanced to the blank cutting means, and means for imparting intermittent movements in unison to said cutters and feed rolls.

32. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means comprising a pair of feed rolls in front of said cutting means for feeding the material into position to be operated upon by said cutting means, and coöperating cutters mounted to turn with said rolls for slitting the material in parallel relation to the direction of feed, the feeding means comprising also another pair of rolls for engaging the material in front of said first named pair.

33. In a machine of the class described, the combination with means for cutting blanks from sheet material, of a pair of rolls for feeding the material into position to be cut by said means, cutters mounted coaxially with said rolls for slitting the material in parallel relation to the direction of feed, and means in front of said rolls coöperating therewith to feed the material past said cutters and to the blank cutting means.

34. In a machine of the class described, the combination with means for cutting blanks from sheet material, of feeding means comprising two pairs of rolls at different distances from the cutting means and means for operating said rolls intermittently to advance the material into position to be cut by the cutting means, and a pair of cutters mounted coaxially with the pair of rolls which is the nearer to the cutting means for slitting the material as it approaches the cutting means.

35. In a machine of the class described, the combination with means for cutting blanks from sheet material, of a feed roll for feeding the material into position to be cut by said cutting means, a substantially circular cutter coaxial with said roll and of greater diameter than the roll for slitting the material in parallel relation to the direction of feed, and means in front of said roll and coöperating therewith to feed the material past said cutter and to the blank cutting means.

36. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for feeding material to said cutting means comprising a feed roll, and a rotary cutter coaxial with said roll for slitting the material in parallel relation to the direction of feed, the feeding means including also another feed roll positioned in front of said first named roll and extending on opposite sides of the plane of said rotary cutter.

37. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for feeding the material to the blank cutting means comprising feed rolls positioned in different locations along the path of feed movement of the material and means for imparting intermittent feeding movements to said rolls, and means for controlling the admission of the material to the foremost feed roll to cause the material to be advanced by one of the feeding movements of the rolls to the proper point in relation to the cutting means for a complete blank to be cut therefrom in the first instance without substantial waste.

38. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for feeding the material to the blank cutting means comprising feed rolls positioned in different locations along the path of feed movement of the material and means for imparting intermittent feeding movements in unison to said rolls, a stop normally positioned with reference to the foremost feed roll to prevent the advance of a sheet of material by said roll, and means for operating said stop in time relation to a movement of the rolls to permit the material to be advanced.

39. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for feeding the material to the blank cutting means comprising a feed roll and means for operating said roll to advance the material in a series of steps, means between said roll and the blank cutting means for slitting the material in parallel relation to the direction of its feed movement, a stop normally positioned with reference to said roll to engage the front edge of a sheet of material and prevent it from being advanced by said roll,

and means for operating said stop in time relation to a movement of the roll to permit the material to be advanced to the slitting and blank cutting means.

40. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for feeding the material to the blank cutting means comprising two pairs of feed rolls positioned respectively in different locations along the path of feed movement of the material and means for operating said rolls in unison to advance the material in a series of steps, a stop normally positioned with reference to the foremost pair of rolls to engage the front edge of a sheet of material close to the bite of the rolls to prevent the sheet from entering the rolls, means for operating said stop in time relation to a movement of the rolls to permit the material to enter the rolls, and a pair of cooperating cutters arranged to rotate in coaxial relation to the other pair of rolls for slitting the material during its feed movement.

41. In a machine of the class described, feeding means comprising feed rolls positioned in different locations along the path of feed movement of the material, and yielding means for holding said rolls in engagement with the material, one of the rolls being movable under control of said yielding means about the axis of turning movement of another one of the rolls.

42. In a machine of the class described, feeding means comprising feed rolls, positioned in different locations along the path of feed movement of the material, and a support for one of said rolls mounted for adjusting movement about the axis of another one of the rolls.

43. In a machine of the class described, feeding means comprising feed rolls positioned in different locations along the path of feed movement of the material, and means for adjusting one of the rolls for different thicknesses of material, another one of the rolls being adjustable about the axis of said first named roll.

44. In a machine of the class described, feeding means comprising two pairs of feed rolls, the two rolls of one pair being adjustable about the axes of the respective rolls of the other pair.

45. In a machine of the class described, feeding means comprising two pairs of feed rolls, the rolls of one pair being mounted for adjustment to vary the distance between them, and supports for the rolls of the other pair mounted for adjustment about the axes of the respective rolls of the first pair.

46. In a machine of the class described, feeding means comprising two pairs of feed rolls, means for adjusting the rolls of one pair to vary the distance between them, supports for the rolls of the other pair mounted for adjusting movement about the axes of the respective rolls of the first named pair, and means for adjusting said supports independently of the adjustment of said first named pair of rolls.

47. In a machine of the class described, feeding means comprising two pairs of feed rolls, means for determining the relative positions of the rolls of one pair comprising a toggle and a rod connected to the toggle, and means for determining the relative positions of the rolls of the other pair including a rod extending substantially at right angles to said first named rod and having adjusting means thereon.

48. In a machine of the class described, feeding means comprising two pairs of feed rolls, means for determining the relative positions of the rolls of one pair comprising a toggle and a rod connected to the toggle, supports for the rolls of the other pair mounted to swing about the axes of said first named rolls, a rod arranged at substantially right angles to said toggle connected rod, and means on said last named rod for adjusting said supports relatively to vary the distance between the rolls of the second pair.

49. In a machine of the class described, the combination with means for feeding sheet material, of die positioning means constructed to position a die with its opposite ends equi-distant from a fixed line parallel to the direction of feed of the material irrespective of the size of the die, an edge guide for the material adjustable substantially into alinement with the cutting edge at one end of the die, and a cutter for slitting the material in parallel relation to the direction of feed, said cutter being adjustable to position its cutting edge at the same distance from said fixed line as the edge guide.

50. In a machine of the class described, the combination with means for feeding sheet material, of die positioning means constructed to position a die with its opposite ends equidistant from a fixed line parallel to the direction of feed of the material irrespective of the size of the die, an edge guide for the material adjustable substantially into alinement with the cutting edge at one end of the die, and a cutter for slitting the material in parallel relation to the direction of feed, said cutter being adjustable transversely of the path of movement of the material, the machine having scales by which to determine the correct relative positions of said edge guide and cutter.

51. In a machine of the class described, the combination with means for feeding sheet material comprising a feed roll, of die positioning means constructed to position a die with its opposite ends equidistant from

a fixed line parallel to the direction of feed of the material, a guide for the edge of the material adjustable transversely of the path of movement of the material, and a rotary cutter mounted coaxially with said feed roll for slitting the material in parallel relation to said edge guide, said cutter being axially adjustable relatively to the feed roll.

52. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for feeding material to said cutting means comprising a feed roll, and a rotary cutter coaxial with said roll for slitting the material in parallel relation to the direction of feed, said cutter being adjustable in the line of the axis of said roll, and the feeding means including also another feed roll positioned in front of said first named roll and so disposed as to extend on opposite sides of the plane of said rotary cutter in different positions of adjustment of said cutter.

53. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for feeding material to said cutting means comprising a pair of feed rolls, and rotary cutters mounted to turn with said rolls and cooperating to slit the material in parallel relation to the direction of feed, said cutters being axially adjustable, and the feeding means including also a second pair of rolls positioned in front of said first named pair and so disposed as to extend on opposite sides of the plane of said rotary cutters in different positions of adjustment of said cutters.

54. In a machine of the class described, means for feeding sheet material comprising a feed roll, a rotary cutter mounted at one end of said roll and rotatable therewith to slit the material in parallel relation to the direction of feed, and means for effecting axial adjustment of said cutter relatively to the roll.

55. In a machine of the class described, means for feeding sheet material comprising a feed roll and a shaft on which said roll is mounted with capacity for relative endwise movement of the shaft and the roll, a rotary cutter fast on the shaft for slitting the material in parallel relation to the direction of feed, and means for adjusting the shaft endwise to position the cutter in different relations to the roll.

56. In a machine of the class described, means for feeding sheet material comprising a feed roll and a shaft on which said roll is mounted, an edge guide for the material, and a rotary cutter fast on said shaft at one end of the roll for slitting the material in parallel relation to said edge guide, the shaft being adjustable endwise relatively to the roll to position the cutter at different distances from said edge guide.

57. In a machine of the class described, means for feeding sheet material comprising a pair of feed rolls, rotary cutters mounted coaxially with said rolls and coöperating to slit the material in parallel relation to the direction of feed, and means for adjusting said cutters axially in relation to the rolls.

58. In a machine of the class described, means for feeding sheet material comprising a pair of feed rolls and shafts upon which said rolls are mounted with capacity for relative endwise movement of the shafts and the rolls, cutters mounted fast on said shafts and coöperating to slit the material in parallel relation to the direction of feed, and means for moving the shafts endwise in unison to adjust the cutters relatively to the rolls.

59. In a machine of the class described, means for feeding sheet material comprising a pair of feed rolls and shafts upon which said rolls are mounted with capacity for relative endwise movement of the shafts and the rolls, an edge guide for the material, cutters mounted fast on said shafts and coöperating to slit the material in parallel relation to said edge guide, means for adjusting the shafts to position the cutters at different distances from said guide, and means to fix the shafts against endwise movement.

60. In a machine of the class described, the combination with means for cutting blanks from sheet material, of feeding means for the material, a pair of rotary cutters for slitting the material in parallel relation to the direction of feed, a gage for the work, and means for adjusting said cutters transversely of the path of feed movement of the material and toward or from said gage.

61. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for feeding the material to the cutting means, a stop arranged to engage the front edge of a sheet of material to control the admission of the sheet to the feeding means and to engage the surface of the sheet during its feed movement, and a presser foot between said stop and the cutting means arranged to engage the surface of the material to control its movement to the cutting means, said stop and presser foot being relatively movable transversely of the sheet to permit the stop to be interposed behind the sheet before the sheet has been entirely fed to the cutting means.

62. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for feeding the material to the cutting means, a stop arranged to engage the front edge of a sheet of material to control the admission of the sheet to the feeding means and to engage the surface of the sheet during its feed move-

ment, a presser foot between said stop and the cutting means arranged to engage the surface of the material, and means for retracting said stop to permit a sheet of material to pass without retracting said presser foot.

63. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for feeding the material to the cutting means, a stop arranged to engage the front edge of a sheet of material to determine the beginning of its feed movement, means for retracting the stop to permit the material to pass, a spring tending to return the stop to its operative position, a presser foot between the stop and the cutting means arranged to engage the surface of the material, and means independent of the stop for holding said presser foot in engagement with the material.

64. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for feeding the material to the cutting means, a presser foot arranged to engage the surface of the material to control its feed movement, a stop in front of said presser foot for controlling the beginning of the feed movement of a sheet of material, and means for swinging said stop upwardly to permit the material to pass, the stop and presser foot being connected together to cause the presser foot to be raised by the wedging action of the material upon the stop.

65. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for feeding the material to the cutting means, and means for controlling the feed movement of the material comprising two members arranged one behind the other in the direction of the feed and hinged together, and spring means arranged to act upon each of said members independently of the other to press it against the surface of the material.

66. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for feeding the material to the cutting means, and means for controlling the feed movement of the material comprising two members arranged one behind the other in the direction of the feed and hinged together at their adjacent ends, means tending to hold the rear member in engagement with the surface of the material, and means for swinging the front member about its connection with the rear member in time relation to the movement of the feeding means to cause it to control the time of admission of a sheet of material to said feeding means.

67. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means comprising feed rolls arranged one in front of the other for feeding the material to the cutting means, said feed rolls having grooves in their peripheries, and means for controlling the passage of the material through and beyond the feed rolls comprising two members movable transversely of the sheet of material in said grooves and arranged end to end in the direction of the feed, said members being hinged together, and means arranged to operate upon each of said members independently of the other to hold it yieldingly in engagement with the surface of the material.

68. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means comprising two pairs of feed rolls arranged with one pair in front of the other for feeding the material to the cutting means, said feed rolls having grooves in their peripheries, a bar extending through the grooves in the rolls which are on one side of the sheet of material for guiding the material through and beyond the rolls, and two guide members opposed to said bar on the other side of the sheet and arranged end to end in the direction of feed, said members being hinged together.

69. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means comprising two pairs of feed rolls arranged with one pair in front of the other for feeding the material to the cutting means, said feed rolls having grooves in their peripheries, a bar extending through the grooves in the rolls which are on one side of the sheet of material for guiding the material through and beyond the rolls, and two guide members opposed to said bar on the other side of the sheet and arranged end to end in the direction of feed, said members being hinged together, spring means arranged to operate upon each of said members independently of the other to press it toward the material, and positive means for swinging the front member about its connection with the other member in time relation to the movement of the feeding means to cause it to control the admission of a sheet of material to the feeding means.

70. In a machine of the class described, the combination with a die and means for feeding measured lengths of material into position to be cut by the die, of a stripper adjacent to the die, an arm on which said stripper is supported, said arm being pivoted to swing about an axis parallel to the plane of the cutting edge of the die, and spring means connected to said arm for positioning the stripper normally above the plane of said cutting edge.

71. In a machine of the class described,

the combination with a die, a cutting block, and means for feeding measured lengths of material into position to be cut by the die and block, of a stripper for the die, said stripper being pivoted to swing about an axis at one side of the die and arranged to be actuated in one direction by said cutting block.

72. In a machine of the class described, the combination with a die and means for feeding measured lengths of material into position to be cut by the die, of a stripper between the feeding means and the die, an arm on which said stripper is supported, said arm extending rearwardly of the die and pivoted to swing about an axis parallel to the plane of the cutting edge of the die, and a spring connected to the arm for positioning the stripper normally above the plane of the cutting edge of the die.

73. In a machine of the class described, the combination with means for cutting blanks from a sheet of material in successive series as the sheet is passed a plurality of times through the machine, of means for engaging an edge of the sheet to guide it in its passage through the machine, said guiding means being constructed and arranged to determine locations for the edge of the sheet different respectively for the first series of cuts and for the remaining series of cuts.

74. In a machine of the class described, the combination with means comprising a die for cutting blanks from a sheet of material in successive series as the sheet is passed a plurality of times through the machine, of means for engaging an edge of the sheet to guide it as it moves in its passage through the machine, said guiding means being constructed and arranged to enable the operator to cause a wider margin of the sheet to project beyond the die in the first passage of the sheet through the machine than in succeeding passages of the sheet through the machine, the construction and arrangement being such that the guiding means automatically adjusts itself after the first passage of the sheet through the machine.

75. In a machine of the class described, the combination with means for cutting blanks from a sheet of material in successive series as the sheet is passed a plurality of times through the machine, of a pair of edge guides constructed and arranged to be used alternatively for guiding the sheet as it moves in its passage through the machine, one of said guides being movable out of guiding position to permit the other guide to be used and automatically returnable to guiding position.

76. In a machine of the class described, the combination with means comprising a die for cutting blanks from a sheet of material in successive series as the sheet is passed a plurality of times through the machine, of a pair of edge guides constructed and arranged to engage the edge of the sheet as it moves toward the die and to aline respectively with points at different distances from the edge of the die, one of said guides being movable out of guiding position to permit the other guide to be used, and means for automatically returning said movable guide to guiding position.

77. In a machine of the class described, the combination with means for cutting blanks from a sheet of material in successive series as the sheet is passed a plurality of times through the machine, of a pair of edge guides for the sheet arranged to be used alternatively to determine different projections of the margin of the sheet relatively to the cutting means, the construction and arrangement being such that one of the guides engages one face of the sheet to be held in inoperative position thereby while the other guide operates to position the sheet with respect to the die.

78. In a machine of the class described, the combination with means for cutting blanks from a sheet of material, of an edge guide for the sheet, and a second edge guide at the back of said first named guide, the first named guide being movable into contact with one face of the sheet to be held inoperative thereby and to permit either guide to be used alternatively to engage an edge of the sheet to position the sheet with respect to the die.

79. In a machine of the class described, the combination with means for cutting blanks from a sheet of material, of an edge guide for the sheet, and a second edge guide at the back of said first named guide, the front guide being pivoted for movement into or out of operative position, the construction and arrangement being such that the operator may swing said front guide into contact with the upper face of the sheet to permit the other guide to be used.

80. In a machine of he class described, the combination with means comprising a die for cutting blanks from a sheet of material, of an edge guide for the sheet arranged to guide the edge of the sheet in close relation to the edge of the die, a second edge guide arranged to cause a relatively wide margin of the sheet to project outside of the die, the first named guide being mounted for movement out into contact with one face of the sheet to be held inoperative thereby and to permit the other guide to be used at the will of the operator, and means for returning the first-named guide automatically to operative position.

81. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for

separating the blanks from the scrap comprising an inclined sifter and means for imparting swinging reciprocatory movement to said sifter, the sifter comprising a metal sheet having openings therein to permit the scrap to pass through, portions of the metal extending transversely of the incline of the sifter between said openings being shaped to retard the movement of the material down said incline.

82. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for separating the blanks from the scrap comprising an inclined sifter and means for imparting swinging reciprocatory movement to said sifter, the sifter comprising a metal sheet having openings therein to permit the scrap to pass through, portions of the metal extending transversely of the incline of the sifter between said openings being arched above the plane of the sheet to retard the movement of the material down said incline.

83. In a machine of the class described, the combination with means for cutting blanks from sheet material, of means for separating the blanks from the scrap comprising an inclined sifter and means for imparting swinging reciprocatory movement to said sifter, the sifter comprising a metal sheet having openings therein to permit the scrap to pass through, portions of the metal extending transversely of the incline of the sifter between said openings being twisted to present obstructions to the free passage of the material down said incline.

84. A machine for cutting wedge shaped heel lifts having, in combination, means for positioning two wedge shaped strips of material with their edges in parallel relation and their thinner edge portions in proximity to each other, and means for cutting two lifts simultaneously, one from each of said strips.

85. A machine for cutting wedge shaped heel lifts having, in combination, a double heel lift die, and means for positioning two wedge shaped strips of material with their thinner edge portions opposed to a portion of the cutting edge of the die which is intermediate between the ends of the die.

86. A machine for cutting wedge shaped heel lifts having, in combination, a die constructed to cut two lifts with their breast edges in opposed relation, and means for guiding two wedge shaped strips of material to said die with the thinner edge portion of the strips in proximity to each other.

87. A machine for cutting wedge shaped heel lifts having, in combination, means for positioning two wedge shaped strips of material with their thinner edge portions in overlapping relation, and means for cutting two lifts from said strips with their breast edges opposed to each other in a plane that traverses the overlapping portions of the strips.

88. A machine for cutting wedge shaped heel lifts having, in combination, means for positioning two wedge shaped strips of material with their thinner edge portions in overlapping relation, and means for cutting two lifts from said strips including means for making a single incision through the overlapping portions of the strips to form the breast edges of both lifts.

89. A machine for cutting wedge shaped heel lifts having, in combination, a die shaped to cut two lifts and having a transverse cutting edge to form the breast edges of both lifts, and means for positioning two wedge shaped strips of material with their thinner edge portions overlapping in such relation to the die as to cause said transverse edge to cut through the overlapping portions of the strips.

90. A machine for cutting wedge shaped heel lifts having, in combination, cutting means, and means for directing two wedge shaped strips of material simultaneously to said cutting means comprising a guide arranged to be positioned between the strips for engagement with the thinner edges of both strips.

91. A machine for cutting wedge shaped heel lifts having, in combination, cutting means, and means for directing two wedge shaped strips of material simultaneously to said cutting means comprising two guides spaced apart for the reception of both strips between them and arranged to engage the outer edges of the respective strips and means intermediate between said guides for guiding the thinner edges of the strips in separated relation.

92. A machine for cutting wedge shaped heel lifts having, in combination, cutting means, and means for directing two wedge shaped strips of material simultaneously to said cutting means comprising edge guides spaced apart a distance less than the combined widths of said strips to cause the thinner edges of the strips to overlap.

93. A machine for cutting wedge shaped heel lifts having, in combination, cutting means, and means for directing two wedge shaped strips of material simultaneously to said cutting means comprising edge guides spaced apart a distance less than the combined widths of the strips, and means between said guides for guiding the thinner edge portions of the strips in overlapping relation.

94. A machine for cutting wedge shaped heel lifts having, in combination, cutting means, and means for directing two wedge shaped strips of material simultaneously to said cutting means comprising means for

guiding the opposite edges of both strips, said guiding means being constructed and arranged to cause the thinner edge portions of the strips to overlap.

95. A machine for cutting wedge shaped heel lifts having, in combination, cutting means, and means for directing two wedge shaped strips of material simultaneously to said cutting means with their thinner edge portions in overlapping relation comprising a guide for the thinner edge of each strip and a separating member arranged to extend between the opposed surfaces of the overlapping portions of the strips.

96. A machine for cutting wedge shaped heel lifts having, in combination, a die shaped to cut two lifts and having a transverse cutting edge to form the breast edges of both lifts, and means for directing two wedge shaped strips of material simultaneously to said die with the thinner edge portion of each strip projecting through the plane of said transverse cutting edge of the die.

97. A machine for cutting wedge shaped heel lifts having, in combination, a die shaped to cut two lifts and having a transverse cutting edge to form the breast edges of both lifts, means for feeding two wedge shaped strips of material simultaneously to said die in a direction parallel to said transverse cutting edge, and means for guiding said strips to the feeding means with their thinner edge portions in overlapping relation and each projecting through the plane of said transverse cutting edge.

98. A machine for cutting wedge shaped heel lifts having, in combination, a die shaped to cut two lifts and having a transverse cutting edge to form the breast edges of both lifts, means for feeding two wedge shaped strips of material simultaneously to said die in a direction parallel to said transverse cutting edge, a pair of edge guides in front of said feeding means spaced apart a distance less than the combined widths of said strips, and means between said guides constructed and arranged to guide the thinner edge portions of the strips in overlapping relation and to present a separating member between the opposed surfaces of the overlapping portions of the strips.

99. A machine for cutting two blanks simultaneously from two strips of material having, in combination, a double die with an intermediate transverse cutting edge, and means for presenting two strips of material to said die with their adjacent edge portions in overlapping relation to cause said transverse edge to cut through both strips.

100. A machine for cutting two blanks simultaneously from two strips of material having, in combination, blank cutting means, and means for directing two strips of material simultaneously to said cutting means comprising means for guiding the opposite edges of both strips with the adjacent edge portions of the strips in overlapping relation.

101. The method of making wedge shaped heel lifts which consists in positioning two wedge shaped strips of material with their edges in parallel relation and the thinner edge portions of the strips in proximity to each other, and cutting two lifts simultaneously from said strips by the use of a double heel-lift die.

102. The method of making wedge shaped heel lifts which consists in arranging two wedge shaped strips of material with their thinner edge portions in overlapping relation, and cutting two lifts from said strips in such relation as to permit the breast edges of both lifts to be formed by a single incision through the overlapping portions of the strips.

103. The method of making wedge shaped heel lifts which consists in arranging two wedge shaped strips of material with their inner edge portions in overlapping relation, and making a cut through said strips to form two lifts including an incision through the overlapping portions of the strips to form the breast edges of both lifts.

104. The method of making wedge shaped heel lifts which consists in arranging two wedge shaped strips of material with their thinner edge portions in overlapping relation, and causing a double heel-lift die with an intermediate transverse cutting edge to cut through said strips with said transverse edge in position to traverse the overlapping portions of both strips.

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

WILLIAM C. BAXTER.