

T. ROCHE.
 APPARATUS FOR CUTTING OUT BLANKS FROM SHEET MATERIAL.
 APPLICATION FILED JAN. 15, 1912.

1,051,265.

Patented Jan. 21, 1913.

2 SHEETS—SHEET 1.

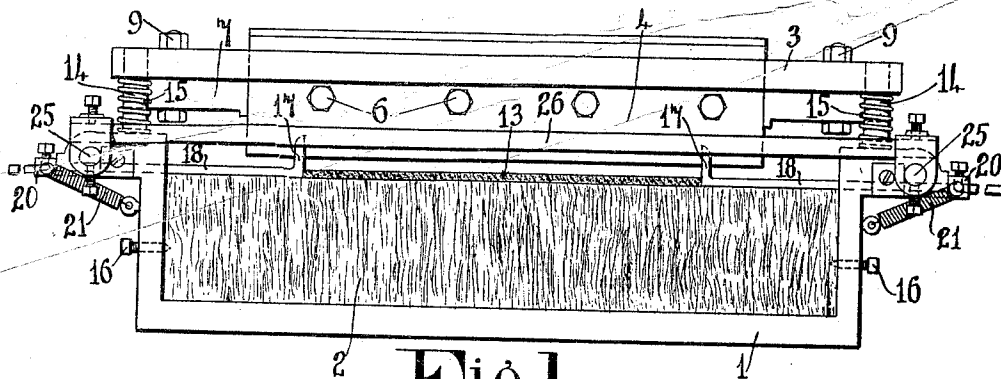


Fig. 1.

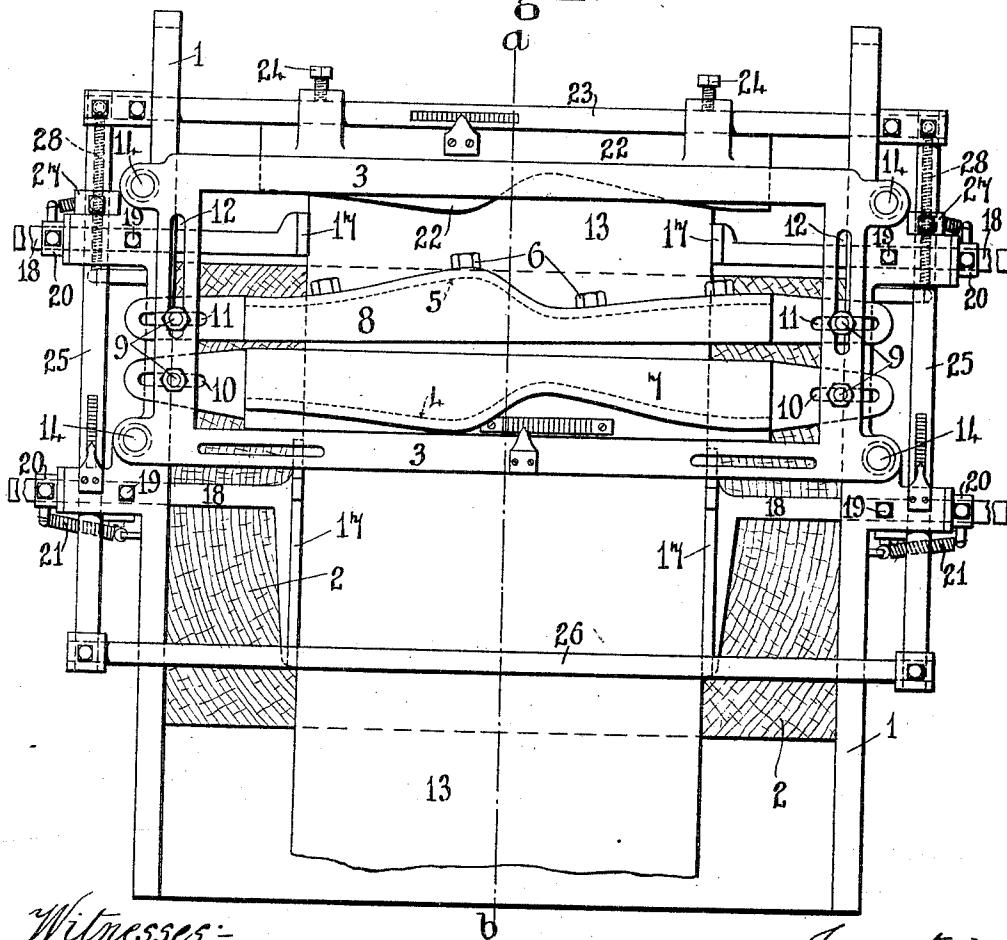


Fig. 2.

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 by Connally Bros. Attys

Witnesses:-
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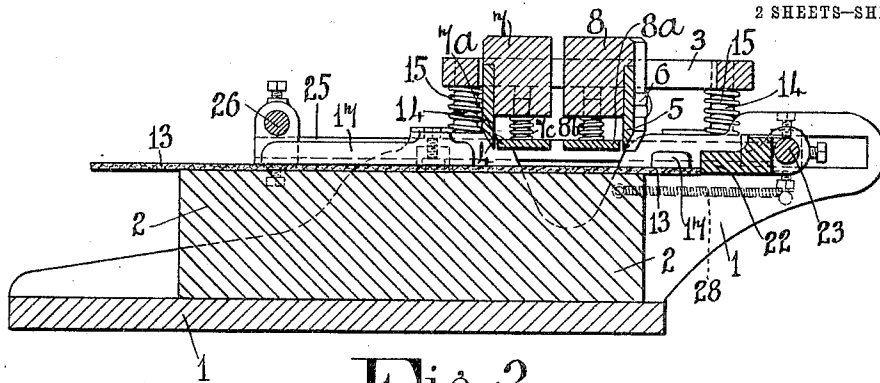


Fig. 3.

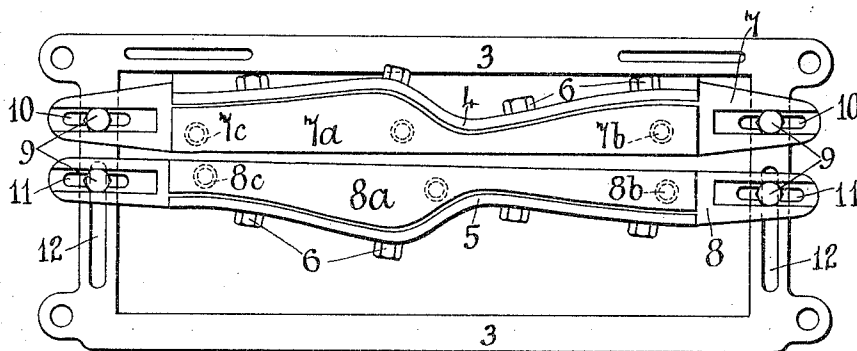


Fig. 4.

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UNITED STATES PATENT OFFICE.

THOMAS ROCHE, OF LEICESTER, ENGLAND.

APPARATUS FOR CUTTING OUT BLANKS FROM SHEET MATERIAL.

1,051,265.

Specification of Letters Patent.

Patented Jan. 21, 1913.

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To all whom it may concern:

Be it known that I, THOMAS ROCHE, subject of the King of Great Britain, residing at Leicester, in the county of Leicester, England, have invented certain new and useful Improvements in Apparatus for Cutting Out Blanks from Sheet Material, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a new or improved apparatus for cutting out blanks from sheet material, such for example as for cutting soles, or what are known as "casters," from sheet leather for boots and shoes.

The apparatus of this invention is designed more particularly for the purpose of cutting out sole casters and will be herein-after described as being applied to this use, but it is to be understood that it may be employed for cutting out other blanks or shapes.

The object of the invention is to produce an apparatus which may be adapted for use to cut out any size and shape of sole caster required and which apparatus will also cut out at least a pair of blanks at a time.

One of the principal advantages of the apparatus of the present invention is that it obviates the necessity of separate knives or cutters for each different shape and size of sole required as one of the characteristic features of the invention is that the same knife may be adjusted to cut a sole caster of any size and shape within a range of shapes. Further, the cutting operation is not only facilitated but is expedited seeing that no arranging or setting of the knife upon the material is required as the latter only requires to be fed through the apparatus.

The apparatus cuts out one or more pairs of sole casters at a time without requiring the leather or material to be turned over or around and the said blanks are cut with a minimum amount of waste.

The apparatus of this invention may comprise generally an adjustable knife carried by a frame over a cutting block or bed said frame being capable of a movement toward and from the cutting block so that the knife may be pressed down to cut out the material on said block. Combined with the frame of the apparatus may be adjustable guides adapted to be set at the required distance

apart to guide the material over the block and position it under the knife. The apparatus may also have combined therewith an adjustable and movable stop up to which the forward edge of the material is fed beyond the knife said stop being movable to allow of the removal of the cut blanks from the block. The cutting block may be removable from the apparatus for renewal purposes and the complete apparatus is intended to be used with an ordinary cutting press of the revolution or other type.

The invention will now be more fully described with reference to the accompanying drawings wherein is illustrated an apparatus constituting one embodiment of the present invention.

In the drawings:—Figure 1 is a front elevation of the apparatus. Fig. 2 is a plan of the same. Fig. 3 is a section of the apparatus on the line *a—b* of Fig. 2. Fig. 4 is an underside plan view of the adjustable knife and knife frame removed from the apparatus.

Like parts are designated by the same reference characters throughout the drawings.

In the apparatus of the drawings, 1 is the frame in which is arranged a cutting block 2, 3 is the knife frame on which is carried the knife formed in two parts 4 and 5. The said two parts of the knife consist of curved blades shaped to the curved sides of the sole caster or blank to be cut. The knife blades are attached by screws 6 or in any other suitable manner to carrier bars 7 and 8 respectively these being adjustably mounted upon the frame 3 by bolts 9. The two knife parts are adjustable relatively one to the other so that the size and shape of the sole may be varied both laterally and longitudinally. By preference, one of the knife carrier bars, for example the bar 7, is adjustable on the carrier frame 3 in a longitudinal direction only this adjustment being provided for by the slots 10 (Figs. 2 and 4) in the ends of the said bar. The other knife carrying bar is adjustable on the frame 3 both longitudinally and laterally this adjustment being provided for by slots 11 in the ends of the said bar and slots 12 in the sides of the frame 3. It may however be arranged that both knife parts shall be capable of adjustment in the double direction as just described with reference to the carrier bar 8. The knife blades are

so shaped that not only does the area located within the boundary of the said blades form a sole, but each blade forms the adjacent edge of a sole on each side of the one inclosed between the knife blades. In other words, the cut of the two parts of the knife produces the edges of three adjacent soles. This is brought about in the following manner: The front edge of the material 13, already shaped by the previous cutting of the blade 4, is fed forward underneath the knife for a distance equal to the width of two soles *i. e.* the width of one sole extending beyond the knife part 5, and the width of the other being immediately between the two blades 4 and 5 as shown in Fig. 2. When the knife descends to cut through the material located thereunder, it will cut out two complete sole casters *i. e.* a pair, and at the same time the blade 4 will cut the forward end of the remaining material to the required shape to form the edge of one of the next pair of soles to be cut. The edge of one sole is coincident with the reversed edge of the next sole so that one cut produces the two edges without any waste. It will be obvious that if two or more thicknesses of material are inserted at the same time under the knife two or more pairs of blanks will be correspondingly cut. Each knife blade forms an inside and outside edge in each pair of soles cut and the curvature of both knife blades is the same but one is reversed endwise relatively to the other. Each knife used with the apparatus is composed of a pair of blades so shaped that by adjustment in the manner aforesaid they may produce any size and shape of caster within a range. For instance, the same knife can be adjusted to produce a complete range of women's sole casters, another knife will produce a range of men's, and so on. The knife blades are preferably attached to the carrier bars 7 and 8 in such a manner that they may be removed therefrom when necessary for grinding or renewal purposes or for changing the blades for cutting different ranges. The cutting edge of the knife *i. e.* the lower edges of the two knife blades 4 and 5, projects below the carrying frame 3, as shown in Figs. 1 and 3, so as to cut through the material 13 when the knife is pressed downward as hereinafter described. The upper edges of the knife blades, or, as shown in Fig. 3, the upper faces of the carrier bars 7 and 8 project above the knife frame 3 so that they take the thrust of the cutting press directly thereon. The carrying frame 3 may however be arranged to take the thrust of the cutting press if desired.

The knife parts may be furnished on the inside with a yielding spring pressed ejector block 7^a and 8^a (Figs. 3 and 4) mounted by means of stalks 7^b, 8^b in the carrier bars 7

and 8. When the cutting edges of the knife are pressed through the material to cut out the blanks, the blocks 7^a, 8^a are pressed upward into the knife and when the knife rises after the cutting operation, the said blocks are forced downward by the springs 7^c, 8^c surrounding the stalks and thereby press the cut blank out from between the two blades 4 and 5 of the knife. It is preferable that each knife part shall have a separate ejector block as shown but it may be arranged that one of such devices shall be common to both parts of the knife.

The knife carrying frame 3 is mounted in such a manner as to be capable of a vertical bodily movement above the cutting block 2 so that when the beam or platen of the cutting press (not shown) descends, the knife will be caused to descend to cut out the blanks, and then, when after pressing the cutting edge of the knife through the material, the beam or platen of the machine rises, the knife will also rise from the cutting block to allow for a fresh portion of the material 13 to be fed thereunder preparatory to cutting out more blanks. One manner of providing for this up and down movement of the knife is to mount the carrying frame 3 at each end on or in vertical slides or guides combined with which may be springs to yieldingly hold the frame in a raised position. As an example, and as shown in Figs. 1, 2 and 3, the frame 3 may at each end be arranged to move up and down on two vertical pins 14 the frame resting upon springs 15 which surround the pins. Any other means may however be provided to support the knife frame in the movable manner before described. The knife frame 3 is supported in the manner just described on the base plate or underframe 1 adapted to rest upon or be fixed to the bed or table of the cutting press. If said base plate 1 is to be fixed to the machine bed it may be furnished with lugs, clamps or other suitable means (not shown) for this purpose.

The cutting block 2 is preferably located between the ends of the base plate 1 or between suitable guides (not shown) thereon and may be adjustably movable along the base plate to bring different portions of its surface under the knife so as to equally distribute the wear over said block. The block may be secured in position on the base plate by set screws 16 (Fig. 1) or other convenient means, and said block may be of any suitable character.

At each end of the base plate or underframe 1 there may be provided adjustable guides adapted to guide the leather or material 13 as it is passed through the apparatus. These guides (Figs. 1 and 2) may consist of vertical plates or strips 17 furnished at the back with shanks 18 which are slidable in

and out of the ends of the under frame and which may be secured in their adjusted positions by set screws 19 or the like. The slidable shanks 18 may have adjustable collars 20 thereon combined with which are springs 21 to draw the guide inward, the position of the guide plates 17 being determined by the contact of the collars 20 with the frame 1. Two of such guides may be located at the front of the apparatus where the material is passed under the knife, and a second pair may, if desired, be located at the back to guide and correctly position the forward end of the material when it is pushed beyond the knife. These guides may, if desirable, be of right angular cross section so as to project slightly over the side edges of the material to prevent it lifting from the cutting block. The guides may be fitted with rollers to facilitate the movement of the material in contact therewith. Furthermore the said guides may be independently adjustable as shown in Fig. 2 or the front and back guides at each end of the apparatus may be coupled together by rods or other suitable intermediate mechanism (not shown) whereby they may be moved simultaneously.

The leather or other material to be cut up is fed through the apparatus in the form of a parallel strip 13 the width of which is equal to the length of the sole casters to be cut.

In order that after each cutting operation the material may be pushed or fed forward under and beyond the knife the right distance for the next pair of blanks to be cut therefrom, there is provided a stop 22, adjustably, and also by preference, movably carried by the underframe. This stop 22 may consist of a block or plate preferably shaped or curved on its edge or face to suit the curvature of the forward edge of the material as shown in Fig. 2. The stop is adjustably slidable along a bar 23 or other carrier member in a direction transverse to the line of feed so that it may be brought into alinement with the strip of material and also that its curved edge or face will coincide with the curved front edge of the material when the latter is fed forward between the before mentioned edge guides 17. After adjustment, the stop may be fastened on the carrier bar 23 such for example as by set screws 24 or equivalent means. The carrier bar 23 of the stop 22 is preferably arranged in such a manner that it may move toward and from the knife so that after a pair of sole casters have been cut, the stop 22 may be moved away to allow the cut soles to be pushed off the cutting block 2 when the material 13 is fed forward, after which, the stop 22 is returned to its normal position to correctly locate the material under the knife *i. e.* as far as the longitudinal position of the strip of material is concerned. One man-

ner of carrying this out may consist in mounting the stop carrier bar or member 23 upon slides 25 (Fig. 2) carried by the underframe 1 said slides being actuated from the front of the apparatus by a cross bar 26 or other suitable means conveniently located within reach of the operator's hand. Alternatively the slides 25 may be moved by means of a treadle and suitable connections.

There may be combined with the actuating mechanism of the stop 22 or with the stop or its supporting bar or member, adjustable means (such for example as a stop block or collars 27, Fig. 2, movable to different positions along the slides 25, or screw devices to engage the pivoted lever or levers) adapted to limit the movement of the feed stop 22 toward the knife so that the said stop may always be brought to the correct normal position for the purpose of determining the proper width of the sole which is produced from that portion of the material situated between the knife and the stop. The stop may be moved to the normal position by springs 28 (Fig. 3) suitably combined with the stop or its actuating means.

As before stated, the apparatus is primarily intended to be used with an ordinary cutting out press the material being fed by hand and the feed stop 22 being actuated by hand or foot. According to another arrangement however the herein described apparatus may form part of a complete machine furnished with a reciprocating platen or bed.

What I claim then is:—

1. In apparatus for cutting out blanks from sheet material, guiding devices and a stop for the material, and a knife or cutter composed of two cutting blades supported and arranged in such relation to the guiding devices and stop that the said knife will be correctly positioned relatively to the material to cut out a pair of blanks at a single stroke.

2. Apparatus for cutting out blanks from sheet material comprising a knife or cutter composed of two cutting blades adjustable for cutting different widths, lengths and shapes of blanks and adapted to cut out a pair of blanks at each operation, means to support said knife, means to support the material, and guiding and stopping means to position the material in relation to the knife the knife having a relative movement toward and from the material supporting means for blank cutting purposes.

3. Apparatus for cutting out blanks from sheet material, comprising a cutting block to support the material, a knife or cutter composed of two cutting blades adjustable for cutting different widths, lengths and shapes of blanks and adapted to cut out a pair of blanks at each operation, guiding

means, and stopping means arranged at a distance from the knife equal to the distance between the cutter blades, and a frame movably supported over said cutting block and adapted to carry the knife said frame being arranged so that the knife is normally raised from the cutting block where-
 5 by the material may be fed under the knife.

4. Apparatus for cutting out blanks from
 10 sheet material, comprising a cutting block to support the material, a knife or cutter composed of two cutting blades adjustable for cutting different widths, lengths and shapes of blanks and adapted to cut out a
 15 pair of blanks at each operation, a frame to support the knife over said cutting block, and yielding devices to support said frame so that it may be pressed downward relatively to the block to cause the knife to cut
 20 out blanks from the material on the block and subsequently to raise the frame to lift the knife clear of the material and a stop located at a distance from one of the knife edges equal to the width of a blank.

5. Apparatus for cutting out blanks from
 25 sheet material, comprising a knife or cutter composed of two cutting blades relatively adjustable laterally and longitudinally, adjustable for cutting different widths, lengths
 30 and shapes of blanks and adapted to cut cut a pair of blanks at each operation, a frame to support said knife, a cutting block to support the material under said knife, adjustable side guides to correctly position
 35 the material under the knife, and an adjustable stop to similarly position the material in the direction of its feed, substantially as described.

6. Apparatus for cutting out blanks from
 40 sheet material, comprising a knife or cutter adjustable for cutting different sizes and shapes of blanks, a frame to support said knife, a cutting block to support the material under said knife, adjustable side guides
 45 to correctly position the material under the knife, an adjustable stop to similarly position the material in the direction of its feed, and means to move said stop to and from its operative position to permit the cut
 50 blanks to be ejected from the apparatus, substantially as described.

7. Apparatus for cutting out blanks from
 55 sheet material, comprising an adjustable knife or cutter, a frame to carry said knife, pins on which said frame is slidable, springs to support said frame on the pins, a cutting block located under the knife to sup-

port the material, adjustable side guides to position the material laterally under the knife, an adjustable end stop to position the material under the knife in the direction of
 60 feed, spring controlled slides to carry said end stop, means to actuate said slide to move the stop toward and from the knife, and means for varying the operative position
 65 of the stop in relation to the knife, substantially as described.

8. For use in apparatus for cutting out blanks from sheet material a knife or cutter comprising two cutting blades mounted so
 70 as to be adjustable relatively one to another in a lateral and longitudinal direction whereby said knife may be adjusted for producing blanks of different sizes and shapes.

9. For use in apparatus for cutting out
 75 blanks from sheet material a knife or cutter comprising two cutting blades mounted so as to be laterally and longitudinally adjustable relatively one to another said blades being so shaped and arranged that they will
 80 cut out a pair of blanks from a single piece of material without any waste.

10. For use in apparatus for cutting out blanks from sheet material, a knife or cutter comprising two cutting blades mounted so
 85 as to be laterally and longitudinally adjustable relatively one to another and provided with means for ejecting the cut blank from between the cutting blades.

11. For use in apparatus for cutting out
 90 blanks from sheet material, a knife or cutter comprising two cutting blades adapted to cut out a pair of blanks at each operation, carrier bars upon which said blades are detachably mounted, a frame, and means to
 95 adjustably attach the carrier bars to said frame, substantially as described.

12. For use in apparatus for cutting out blanks from sheet material, a knife or cutter comprising two cutting blades, carrier bars
 100 upon which said blades are detachably mounted, a frame, means to adjustably attach the carrier bars to said frame, yielding internal plates carried by the carrier bars, and springs combined with said plates to
 105 normally press them outward, substantially as and for the the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS ROCHE.

Witnesses:

R. W. C. TAYLOR,
 GEORGE LESTER.