

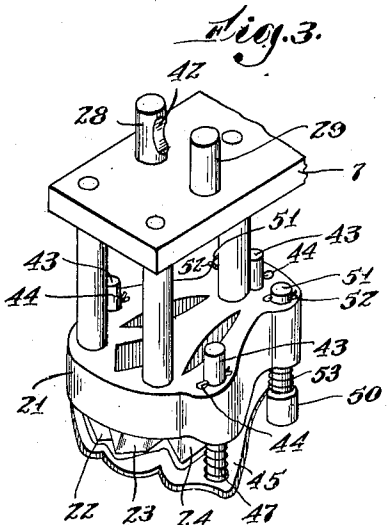
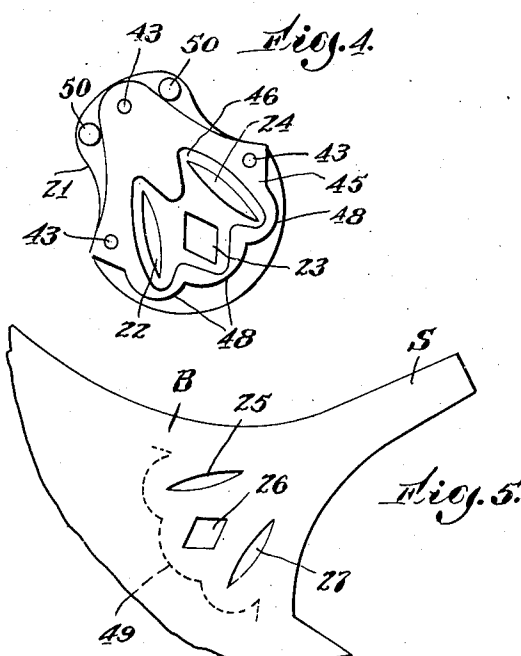
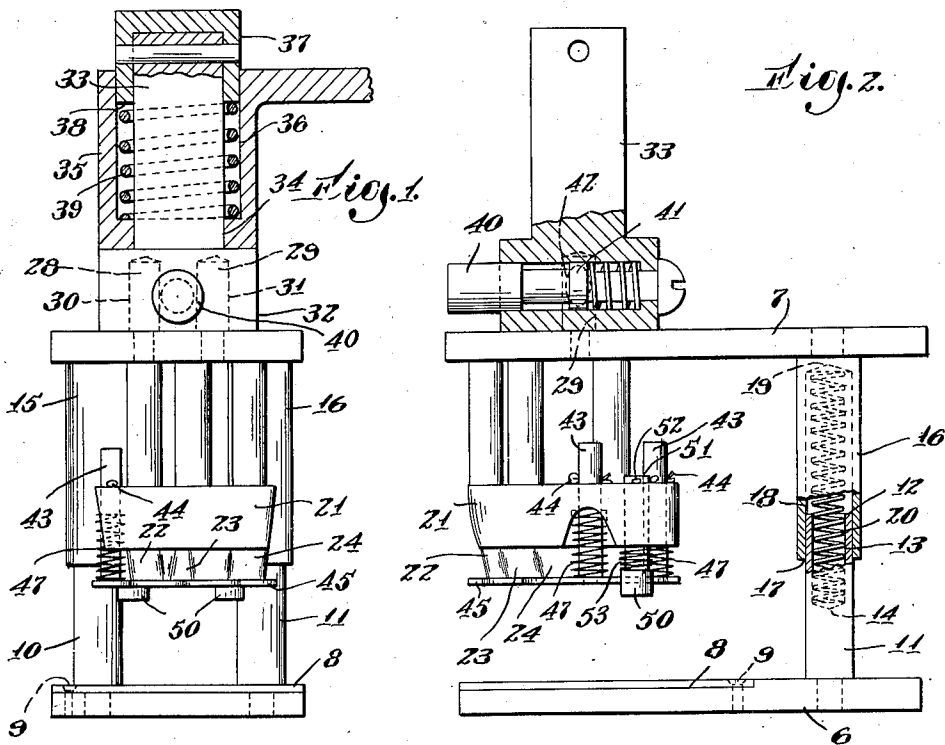
Dec. 4, 1934.

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1,982,943

DEVICE FOR FORMING CUT-OUTS

Original Filed June 9, 1930



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UNITED STATES PATENT OFFICE

1,982,943

DEVICE FOR FORMING CUT-OUTS

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Application June 9, 1930, Serial No. 460,083

Renewed April 25, 1934

10 Claims. (Cl. 164—29)

The present invention relates to the art of forming perforations such, for instance, as ornamental cut-outs in shoe upper blanks, which term includes within its scope, vamps, quarters, tips and straps.

In certain types of machines for forming ornamental cut-outs in shoe upper blanks the location of the cutting-out tool, such as a punch or a die, relatively to the shoe upper blank is determined by a gage mounted independently of the cutting-out tool. In some cases the gage is a mask, in others a pin or pins, in others a plate, and in still others gage blocks mounted on a plate. With a gage which is mounted independently of the cutting-out tool there is the constant danger that the gage and the tool will shift relatively during the cutting-out operation and thus locate the cut-outs improperly on the shoe upper blank.

The principal object of the present invention is to produce a device for forming cut-outs in shoe upper blanks in which the die and gage are incapable of shifting laterally relatively during the cutting-out operation.

To the accomplishment of this object a feature of the invention contemplates the provision in a device for forming cut-outs in shoe upper blanks having a die and a gage surrounding the die and secured thereto and provided with an external edge adapted to engage a contour on one face of the blank and locate the die properly for the cutting-out operation, of means for holding the gage from movement laterally in contact with the work.

Broadly considered, one face of the contour on the blank engaged by the gage may be an inked line, an impression mark, a previously formed perforation or cut-out, the blind row, or any other line of stitching having ornamental or utilitarian functions.

In the broader aspects of the invention the device for forming cut-outs in shoe upper blanks may have a gage adapted to engage a contour such as the edge face of the blank and a gage adapted to engage a contour on the surface of the blank.

Other features of the present invention reside in certain devices, combinations and arrangements of parts hereinafter described and then set forth broadly and in detail in the appended claims which possess advantages readily apparent to those skilled in the art.

The various features of the present invention will be readily understood from an inspection of the accompanying drawing, illustrating the best form of the invention at present known to the inventor, in which,

Figure 1 is a view in front elevation showing the assembly of the die and the gage secured thereto together with the die striking plate secured to the die holder of a machine for forming ornamental cut-outs in shoe upper blanks;

Fig. 2 is a view in side elevation, the die holder of the machine being separated from its carrier;

Fig. 3 is a detail view in perspective of the die;

Fig. 4 is a view in underside plan of the die, and

Fig. 5 is a detail view of a shoe upper blank having a strap and provided with a blind row and an ornamental cut-out design.

In the illustrated embodiment of the invention the assembly of the cooperating interchangeable elements such, for instance, as a die, gage and die striking plate for a machine for forming ornamental cut-outs in shoe upper blanks comprises two flat plates 6 and 7 (Figs. 1 and 2). The die striking plate 8 is secured removably to the plate 6 by two screws 9, the front one being shown in Fig. 1 and the rear one being shown in Fig. 2. Rising vertically from and secured to the plate 6 are posts 10 and 11 (Figs. 1 and 2).

Each of the free ends of the posts 10 and 11 is provided with a blind orifice 12 to form a chamber 13 having a solid bottom 14. Depending from and secured to the plate 7 are two posts 15 and 16 (Figs. 1 and 2) which fit over and slide telescopically on the posts 10 and 11, respectively. Each of the free ends of the posts 15 and 16 is provided with a blind orifice 17 to form a chamber 18 having a solid bottom 19. Interposed between the bottoms 14 and 19 of the chambers 13 and 18 is a coiled spring 20.

Depending from and secured to the plate 7 is a die 21 provided with the cutting knives 22, 23 and 24 shaped, respectively, to form the ornamental cut-outs 25, 26 and 27 (Fig. 5) in a shoe upper blank B provided with a strap S.

Rising vertically from and secured to the plate 7 are two pins 28 and 29 (Fig. 3). These pins may be inserted, respectively, into vertical sockets 30 and 31 (Fig. 1) formed in a holder 32 provided with a polygonal shank 33 mounted to engage a polygonal opening 34 formed in the carrier 35 of a well known type of machine for forming ornamental cut-outs in shoe upper blanks. The shank 33 passes into a chamber 36 formed in the carrier 35. The upper end of the shank 33 is pinned to a cap 37 provided with a depending skirt 38 engaged slidably with the walls of the chamber 36. The holder 32 is maintained normally engaged with the carrier 35 by a spring 39 coiled around the shank 33 and interposed be-

tween the bottom of the chamber 36 and the skirt 38.

Cooperating with the pins 28 and 29 is a spring-pressed plunger 40 (Figs. 1 and 2) having a central head 41 arranged to engage notches 42 (Fig. 3) formed in the pins 28 and 29 in the manner disclosed in my pending application Serial No. 336,122. When it is desired to remove the unitary die assembly from the holder 32 the protruding end of the plunger 40 is pushed in against the tension of its spring to withdraw the head 41 from engagement with the notches 42 in the pins 28 and 29. When it is desired to insert the unitary die assembly into the holder 32 the protruding end of the plunger 40 is pushed in, the pins 28 and 29 are inserted in the sockets 30 and 31, respectively, and the plunger 40 is released whereupon the plunger spring moves the head 41 into engagement with the notches 42 in the pins 28 and 29.

In the illustrated embodiment of the invention the plates 6 and 7, the striking plate 8, the posts 10, 11, 15 and 16, the springs 20 and the pins 28 and 29 are standardized. With this construction the only element in one die assembly which differs from any other die assembly is the die 21.

In making up an assembly the striking plate 8 and the posts 10 and 11 are secured to the plate 6. Then the springs 20 are inserted into the chambers 13 of the posts 10 and 11. The posts 15 and 16, the die 21 and the pins 28 and 29 are secured to the plate 7. Then the posts 15 and 16 are fitted over the springs 20 and the posts 10 and 11. The posts 15 and 16 have a tight sliding fit with the posts 10 and 11 so that after being assembled thereon a depression of the plate 7 towards the plate 6 causes air to be expelled out of the chambers 13 and 18, thus creating a condition of unbalanced pressure therein sufficient for atmospheric air to hold the posts 10 and 11 from dropping out of the posts 15 and 16 when the springs 20 return the plates 6 and 7 to their normal spaced positions. This construction permits the assembly, comprising the plates 6 and 7 and the parts carried thereby, to be handled as a unit both in inserting it into the cut-out forming machine and removing it therefrom for storage. The cooperating elements in the unit assembly are held in their proper operating relation both in use and in disuse. When a die becomes broken or obsolete the die may be removed and replaced by a new die.

Heretofore it has been considered essential in order to obtain a clean cut-out in the shoe upper blank to employ a die striking plate of soft material, such as fibre, lead or brass and/or to interpose between the striking plate and the shoe upper blank a piece of paper, which is moved after each stroke of the die to present a fresh surface thereto. This paper is expensive and its use adds materially to the cost of operation of cut-out machines.

In the illustrated embodiment of the present invention the die striking plate 8 is made of steel and no paper is interposed between it and the shoe upper blank. Experience has demonstrated that the life of the die is much longer when used with a steel striking plate than when it is used with a striking plate made of fibre or metal other than steel and/or with a paper backing. Of course the steel striking plate wears out eventually, but in the illustrated embodiment of the present invention the life of the steel striking plate is prolonged by mounting it on the plate 6 for reversal when one surface thereof becomes worn out. When reversed the die striking plate

8 may be used for a long time before being replaced by another plate 8. These steel striking plates 8, being standardized, may be made very cheaply.

In order to locate the die properly for the formation of the cut-outs in the shoe upper blank B the die 21 loosely receives three vertical rods 43 each of which is held from dropping out of the die by a cotter pin 44 engaged with the upper flat surface of the die. Secured to the bottom of the rods 43 is a flat plate 45 provided with a central opening 46 therein formed to allow the cutting-knives of the die to pass through the opening and just clear the walls thereof during the cutting operation.

The plate 45 is maintained normally in the same horizontal plane as the cutting-edges of the cutting-knives 22, 23 and 24 by a spring 47 coiled around each of the rods 43 and interposed between the lower flat surface on the die and the plate 45. During the cutting-out operation the cutting-knives pass through the work. As the plate 45 remains in engagement with the surface of the blank B during this movement of the cutting-dies the springs 47 are compressed. During the return of the die to its normal position of Fig. 1 the compressed springs operate to return the plate 45 to its normal position flush with the cutting-edges of the cutting-knives. The plate 45 thus acts as a stripper plate.

In the illustrated embodiment of the invention the peripheral edge of the plate 45 is provided with three scallops 48 adapted to register with the blind row 49 on the blank B and locate the die properly for the formation of the cut-outs 25, 26 and 27.

Also, in the illustrated embodiment of the invention, the strap S is embraced by two gage pins 50. These pins are formed or mounted on the lower ends of vertical rods 51 loosely mounted in the die. Each rod 51 is held from dropping out of the die by a cotter pin 52. To allow the gage pins 50 to yield vertically a spring 53 is coiled around each rod 51 and interposed between the pin 50 and the flat bottom surface of the die.

It will be apparent to those skilled in the art that the contour on the plate 45, which acts as a stripper plate, may be shaped to register with any desired contour on the surface of the blank B and locate the die properly for the cutting-out operation. In modern shoe making the blank B is marked with a printed line or with an impression mark for use in the fancy stitching operation in which the ornamental stitches, called the blind row, are inserted through the blank. Obviously, the lines placed on the blank for use as a guide in a subsequent operation may be the contour with which the contour on the plate 45 registers to locate the die properly for the cutting-out operation. The plate 45 may be shaped, however, to register with an edge of the blank or with previously formed perforations made either with a die or a punch.

In the well known type of machine for forming cut-outs in shoe upper blanks, identified herein by the holder 32 and the carrier 35 exemplified in my Patent No. 1,807,952, June 2, 1931, the cap 37 is depressed by a plunger operated from a foot treadle to lower the die and its gaging devices upon the work which may be then manipulated by hand to register the stripper plate and the pins 50, if they are used, with their cooperating contours on the surface and edge face of the blank B, respectively. The die and its gaging devices are held from movement laterally in contact with

the work by the carrier 35 from which they are suspended. As the work engaging face of the stripper plate is mounted substantially in the same horizontal plane with the cutting edge of the die the shoe upper blank may be shifted thereunder without danger that the external edge of the plate will dig into the finished surface of the blank and spoil its appearance. Thereafter a second foot pedal is operated to throw into action power mechanism for depressing the plunger to drive the die through the work. With this construction and mode of operation the accurate formation of the cut-outs in the proper location in the shoe upper blank is insured.

Nothing herein explained is to be interpreted as limiting the invention in the scope of its application to use in connection with the particular apparatus or the particular mode of operation or both selected for purposes of illustration and explanation. While the particulars of construction herein set forth are well suited to one mechanical form of the invention, it is not limited to these details of construction, nor to the conjoint use of all its features, nor is it to be understood that these particulars are essential since they may be modified within the skill of the artisan without departing from the true scope of the actual inventions, characterizing features of which are set forth in the following claims by the intentional use of generic terms and expressions inclusive of various modifications.

What is claimed as new, is:

1. In a device for forming cut-outs in shoe upper blanks the combination with a die and a gage surrounding the die and secured thereto and provided with an external edge at least a portion of which is adapted to register with a contour on one face of the blank and locate the die properly for the cutting-out operation, of means for holding the die and the gage from movement laterally in contact with the work.

2. In a device for forming cut-outs in shoe upper blanks the combination with a die and independent gages secured thereto for locating the die properly for the cutting-out operation, at least a portion of the peripheral edge of one of said gages being adapted to register with a contour on one face of the blank and the other one of said gages being adapted to engage a contour on an edge face of the blank, of means for holding the die and the gages from movement laterally in contact with the work.

3. In a device for forming cut-outs in shoe upper blanks provided with a blind row, the combination with a die the cutting edges of which bear no relationship to the form of the blind row, of means secured to said die having an external edge thereon at least a portion of which is adapted for registration with the blind row on the blank to locate the die properly for the cutting-out operation.

4. In a device for forming cut-outs in shoe upper blanks provided with blind rows and straps, the combination with a die, of independent means secured thereto for embracing the edge faces of the strap and for registration with the blind row on the blank, respectively, to locate the die properly for the cutting-out operation.

5. In a device for forming cut-outs in shoe upper blanks provided with a blind row, the combination with a die the cutting edges of which bear

no relationship to the form of the blind row, of a stripper plate adapted to engage the surface of the blank and provided with an external edge contour at least a portion of which is adapted to register with the blind row on the blank and locate the die properly for the cutting-out operation.

6. In a device for forming cut-outs in shoe upper blanks provided with a guide mark, the combination with a die and a stripper plate adapted to engage the surface of the shoe upper blank, at least a portion of the peripheral edge of said plate being adapted to register with said mark, and means holding the die and the plate from movement laterally in contact with the work, of means interposed between the die and the stripper plate for maintaining normally the surface engaging face thereof substantially in the same horizontal plane with the cutting edge of the die.

7. In a device for forming cut-outs in shoe upper blanks provided with a guide mark, the combination with a die and a combined stripper plate and gage adapted to engage the surface of the shoe upper blank, at least a portion of the peripheral edge of said combined stripper plate and gage being adapted to register with said mark, and means holding the die and the plate from movement laterally in contact with the work, of means interposed between the die and the plate for maintaining normally the surface engaging face thereof substantially in the same horizontal plane with the cutting edge of the die.

8. In a device for forming cut-outs in shoe upper blanks provided with a guide line, the combination with a work support and an overhanging die, of a combined gage and stripper plate resiliently mounted on the die, said die, gage and stripper plate being adapted to be depressed into close proximity to the work as a unit for gaging it preliminary to the application of a cutting force to said die, at least a portion of the periphery of said plate being adapted to register with the guide line on the shoe upper blank.

9. In a device for forming cut-outs in shoe upper blanks provided with a guide line, the combination with a work support and an overhanging die, of a combined gage and stripper plate resiliently mounted on the die, said gage and stripper plate being adapted to be depressed into close proximity to the work for gaging it preliminary to the application of a cutting force to said die, at least a portion of the periphery of said gage being adapted to register with the guide line on the shoe upper blank, of means interposed between the die and the combined gage and stripper plate for maintaining normally the work engaging face thereof substantially in the same horizontal plane with the cutting edge of the die.

10. In a device for forming cut-outs in shoe upper blanks provided with a guide line, the combination with a work support, an overhanging die, said die being resiliently mounted and adapted to be depressed into engagement with the work for clamping it preliminary to the application of a cutting force to said die, and a combined gage and stripper plate surrounding the die and yieldably secured thereto, at least a portion of the periphery of said gage being adapted to register with the guide line on the shoe upper blank, of means for holding the gage from movement laterally in contact with the work.

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