April 7, 1942. T. J. BUCKEY 2,279,131

DIE

Filed April 14, 1941

FIG.1.

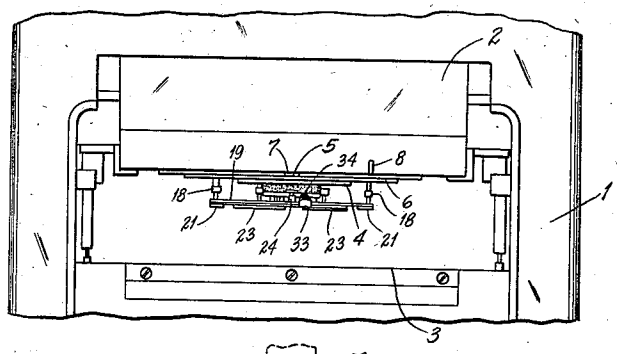


FIG.2.

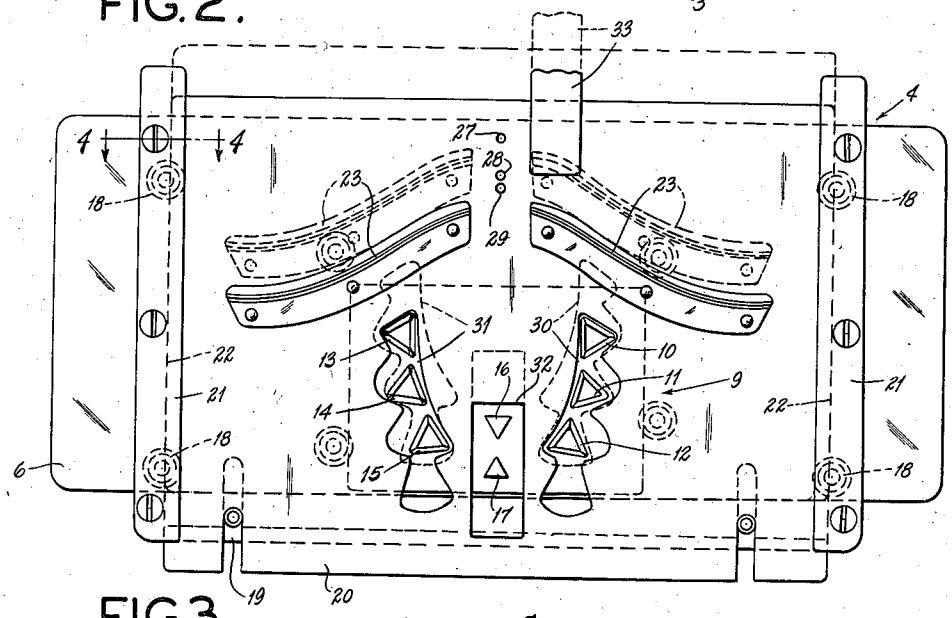


FIG.3.

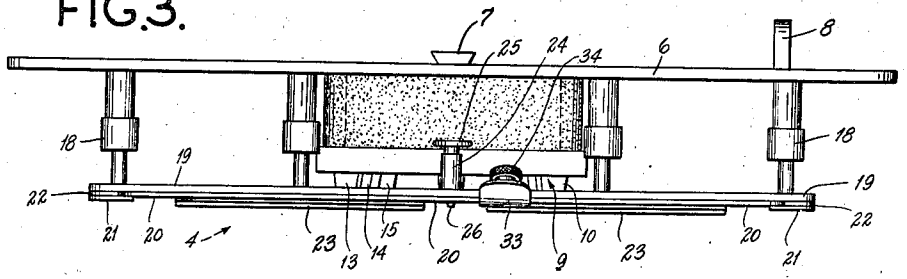
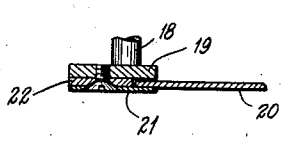


FIG.4.



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12 Claims. (Cl. 101—30)

This invention relates generally to the cut out and marking machines and dies therefor, such as those which are commonly employed in the manufacture of ornamented footwear.

Cut out and marking machines of the character represented, for example, by U. S. Patent to Freeman, Number 1,990,598, are commonly employed for concurrently forming cut outs and applying ink marks to footwear uppers. Such machines consist generally of a plunger head in which a die assembly is carried, a work support arranged beneath the plunger head for supporting work upon which the die is to operate, and an ink roller arranged for movement from front to back and return across the operating faces of the marker element. The plunger head and the die assembly are provided with means whereby the entire die assembly may be readily removed from the plunger head and replaced with another die assembly having its cutting and marking parts of similar or entirely different configuration. Frequently a plurality of such die assemblies have been required for performing the operations upon footwear parts of the same design but varying as to size, and in some instances operations on footwear of a given design over a full range of sizes may be carried out with same cutting die elements, but with a plurality of different marker elements, each usable for part only of the range of sizes of the work. In such cases it has heretofore been necessary to remove the entire die assembly from the machine, invert it, and with the use of appropriate tools remove the screws or other semi-permanent devices employed for holding the marker die plate in position before the marker die plate could be replaced.

The object of the present invention, generally stated, is to provide for adjustment and replacement of marker die plates in devices of the character described with greater facility than has heretofore been possible.

Another object of the invention is to provide a die of the character described in which the marker die plate may be readily removed and replaced without removing the entire die assembly, and without subjecting the hands and fingers of the operator to danger from accidental operation of the machine during such removal and replacement.

A further object of the invention is to provide a die of the character described with a marker die plate capable of adjustment to various positions with relation to the cutting elements.

Other objects will become apparent to those skilled in the art when the following description is read, in connection with the accompanying drawing, in which

Figure 1 is a view in a front elevation of a portion of a conventional cut out and marking machine showing the die assembly in position on the head thereof.

Figure 2 is a bottom plan view of a die assembly constructed in accordance with the present invention.

Figure 3 is a view in front elevation of the die assembly shown in Figure 2.

Figure 4 is a detail sectional view taken along line 4—4 of Figure 2.

According to the present invention a cut out and marker die for use with a machine of the character described above is provided with a plate carrying the marking elements and mounted in such manner with respect to the other parts of the die assembly that the plate may be quickly removed and replaced or adjusted without requiring that the entire die assembly be removed from the head of the machine. As is customary with dies of the character described, the cutting elements are mounted upon a base and the marker die plate is carried by yielding studs projecting far enough below the base that the marker die plate may be suspended across and beneath the cutting edges of the cutting element. The marker die plate is provided with apertures through which the cutting edges of the cutting elements may move when the plunger head of the machine has descended beyond the point at which the marker elements have engaged the work. According to the present invention the die plate is mounted in slidable relation to the other parts of the die assembly, so that it may be inserted from the front when the die assembly is in position on the head of the machine and translated rearwardly until the apertures in the marker die plate have aligned themselves with the edges of the cutting elements. According to one aspect of the present invention, the apertures in the marker die plate are arranged for operation in any one of a plurality of different adjusted positions thereby effecting a variation in the displacement between the marker die parts and the cutting die parts. Locking and locating means is provided for facilitating the alignment of the marker die plate with the cutting elements and for locking it in position, and the present invention particularly contemplates that such locating and locking means be provided with manipulative parts in such position that should the machine be accidentally actuated while the operator may have his hand upon the manipulative part, his hand or fingers will not be caught between the die and the work support. Likewise, the marker die plate is provided with an extension for manipulating it, which is so disaligned with the plane of the work support and the plane of the marker die plate, that the operator's fingers cannot be caught and mashed thereby should the machine be accidentally operated.

Referring now to the drawings for an illustra-

tive embodiment of the present invention, a cut out and marking machine of the character shown in U. S. Patent 1,990,598 may comprise a frame 1 in which a plunger head 2 is mounted for vertical reciprocation and suitably driven and clutch controlled in a manner familiar to those skilled in the art. Beneath the plunger head is a work support 3 which is generally provided with suitable gaging devices and adapted to receive the work to be operated upon. The plunger head carries a die 4 consisting of cutting elements and marking elements and arranged to be removable from plunger head 2. Ordinarily the plunger head 2 is provided with a dovetail recess 5 for receiving the corresponding part on the die assembly.

The die 4 consists of a base 6 having a dovetail rail 7 for engagement with the recess 5 and a lug 8 for interlocking with a suitable fastening means on the plunger head 2. Carried by base 6 is a cutting die assembly 9 which may be of any desired configuration and in the embodiment illustrated in the drawings consists of two series of three triangular cutting edges 10, 11, 12, 13, 14 and 15 and one series of two triangular cutting edges 16 and 17. Such cutting elements are ordinarily permanently mounted on base 6. Downwardly depending from base 6 is a plurality of yieldable studs 18 suitably arranged as, for example, telescopically and provided with coiled springs tending to maintain the parts in extended position as shown. Carried by the lower ends of studs 18 is a frame 19 which is arranged, when in normal position, at about the same elevation as the cutting edges of the various cutting elements.

At opposite sides of frame 19 a track-way is provided for the reception of a marker die plate 20. Such a track-way may be formed as shown in detail in Figure 4 by securing a rail 21 in spaced relation to frame 19. The overhanging relation being provided by means of a spacer 22 of sufficiently greater vertical dimension than that of plate 20 to permit easy sliding movement of the plate 20 in the channel thus provided between rail 21 and frame 19.

The die plate 20 may be provided with marking elements 23 of any suitable or desired configuration.

Mounted upon the upper surface of frame 19 is a spring detent 24, having a manipulative part 25 and a tip 26. The tip 26 may engage within a suitably positioned hole such as 27, 28 or 29 in the plate 20 for properly locating the marker die plate with reference to the other elements of the die.

In the embodiment shown in the drawing the marker die plate 20 is provided with apertures 30, 31 and 32 arranged to permit passage of the cutting edges of the die elements. In the embodiment shown in the drawing the apertures 30, 31 and 32 are enlarged so as to accommodate the cutting edges of the die elements in a variety of adjusted positions. In the position shown in full lines in Figure 2 the marker die plate 20 is so arranged that tip 26 of the locating and locking detent 24 is engaged in hole 27, but it will be apparent that when it is desired to use the die assembly upon a lot of work which requires a greater displacement between the edges of marker 23 and the cutting edges of the cutting elements, the marker die plate may be slid forwardly, so that tip 26 engages hole 28 or 29. For example, when the tip 26 is seated in hole 29 the marker die plate is positioned as shown in broken lines in Figure 2.

An extension 33 is provided on the forward edge of marker die plate 20 and bent upwardly at an angle so that when the die is depressed into engagement with the work support 3, the terminus of extension 33 cannot be in engagement with the die plate, and consequently although an operator may have his fingers on extension 33 when the machine was accidentally operated, they could not be caught and mashed between the work support and the die. The extension 33 may also be provided with a knurled part 34 to facilitate gripping and manipulation of the die plate 20.

In operation of the device when it is desired to remove and replace die plate 20 the operator engages the manipulative part 25 of detent 24 and raises it to disengage pin 26 with the corresponding hole in die plate 20. While the detent 24 is thus raised the operator may with his other hand engage extension 33 and extract die plate 20 by drawing it forwardly. Another die plate may then be inserted in its stead by placing the extremities of the die plate in the channels provided between rails 21 and frame 19 at opposite sides of the assembly. The plate is then moved rearwardly until pin 26 engages one of holes 27, 28 or 29 which indicates to the operator that the marker die plate is properly aligned with its apertures located to accommodate passage of the cutting die elements. Suitable indicia may be provided opposite the holes 27, 28 and 29 to apprize the operator as to the range of sizes which may be operated upon in each such position, and accordingly the operator will adjust the position of the plate until the pin 26 engages the appropriate hole.

From the foregoing description, it should be apparent that the invention accomplishes its objects and provides a cut out and marker die having quickly removable and replaceable marker die elements without necessitating the removal of the complete die assembly from the machine, and further that such removal and replacement may be accomplished without necessitating that the operator place his hands or fingers in positions where they may be subject to be mashed through accidental operation of the machine. The arrangement of the present invention lends itself to increased versatility of marker elements by provision for the use thereof in a variety of adjusted positions.

With a full disclosure of one embodiment of the invention has been given, it is readily apparent that those skilled in the art will make a variety of variations and modifications in applying the present invention to various dies and it is, therefore, to be understood that the invention is not limited to the mechanical arrangements shown in the drawing and hereinbefore described, but that other suitable mechanical elements and rearrangement of parts as may be dictated by circumstances of use or convenience are contemplated by and within the scope of the appended claims.

Having thus described the invention, what is claimed is:

1. A cut out and marking die having a base, cutting elements mounted on the base, a track yieldably mounted on said base and extending in substantially parallel relation thereto, and a marker plate mounted for translation along said track below said cutting elements.

2. A cut out and marking die having a base, cutting elements mounted on the base, a frame yieldably mounted on said base and normally maintained at approximately the elevation of said cutting elements, said frame having oppositely disposed channel parts extending in parallel front to rear relation, a marker plate movably mounted in said channel parts, and a latch arranged on said frame for interlocking with said plate, said latch having a manipulative part between said frame and said base.

3. A cut out and marking die having a base, cutting elements mounted on the base, a frame yieldably mounted on said base and normally maintained at approximately the elevation of said cutting elements, said frame having oppositely disposed channel parts extending in parallel front to rear relation, a marker plate movably mounted in said channel parts, and a latch arranged on said frame for interlocking with said plate, said latch having a manipulative part between said frame and said base, and said plate having an extended part out of alignment with the plate for gripping.

4. A cut out and marking die having a base, cutting elements mounted on the base, a marker die plate having apertures thereon to permit passage of the cutting edges of said cutting elements therethrough, said apertures being arranged to accommodate said cutting edges in a plurality of adjusted positions, means for mounting said die plate for slidable movement relative to said base, and means for locating said die plate in position such that said apertures are aligned to accommodate said cutting edges.

5. A cut out and marking die having a base, cutting elements mounted on the base, a marker die plate having apertures thereon to permit passage of the cutting edges of said cutting elements therethrough, said apertures being arranged to accommodate said cutting edges in a plurality of adjusted positions, means for mounting said die plate for slidable movement relative to said base, and means for locating said plate relative to said cutting elements, said plate having a plurality of recesses for cooperation with said locating means, each recess corresponding to one adjusted position of the die plate apertures.

6. A cut out and marking die having a base, cutting elements mounted on the base, a marker die plate carried by the base in suspended relatiton across the cutting elements and quick release means for holding said plate in position, said means having its manipulative parts located out of the striking zone of said die.

7. A cut out and marking die having a base, cutting elements mounted on the base, a marker die plate carried by the base in suspended relation slidable from front to rear across the cutting elements, and quick release means for holding said plate in position, said means having its manipulative parts located out of the striking zone of said die.

8. The combination with a cut out and marking machine having a plunger head, a work support and a die carried by the head for movement downwardly against work on the work support, said die having cutting elements and marking elements mounted for relative vertical movement, of means for quick exchange of marking elements, comprising, a plate having marker elements thereon and apertures through which the cutting elements may move and complementary slide parts on said plate and die, said parts being open for reception of the plate at the front of the die and arranged to guide the plate into position where the apertures therein align with the cutting edges of the die.

9. The combination with a cut out and marking machine having a plunger head, a work support and a die carried by the head for movement downwardly against work on the work support, said die having cutting elements and marking elements mounted for relative vertical movement, of means for quick exchange of marking elements, comprising, a plate having marker elements thereon and apertures through which the cutting elements may move, complementary slide parts on said plate and die, said parts being open for reception of the plate at the front of the die and arranged to guide the plate into position where the apertures therein align with the cutting edges of the die and locating and locking means mounted on the die for engagement with the plate when the latter is in said aligned position.

10. The combination with a cut out and marking machine having a plunger head, a work support and a die carried by the head for movement downwardly against work on the work support, said die having cutting elements and marking elements mounted for relative vertical movement, of means for quick exchange of marking elements, comprising, a plate having marker elements thereon and apertures through which the cutting elements may move, complementary slide parts on said plate and die, said parts being open for reception of the plate at the front of the die and arranged to guide the plate into position where the apertures therein align with the cutting edges of the die, and locating and locking means mounted on the die for engagement with the plate when the latter is in said aligned position, said locating and locking means having a manipulative part arranged in a position whereof accidental operation of the head cannot mash fingers grasping the same.

11. The combination with a cut out and marking machine having a plunger head, a work support and a die carried by the head for movement downwardly against work on the work support, said die having cutting elements and marking elements mounted for relative vertical movement, of means for quick exchange of marking elements, comprising, a plate having marker elements thereon and apertures through which the cutting elements may move, complementary slide parts on said plate and die, said parts being open for reception of the plate at the front of the die and arranged to guide the plate into position where the apertures therein align with the cutting edges of the die, and a manipulating extension on said plate arranged in disalignment with the plate and the work support.

12. A cut out and marking die having a base, a cutting element mounted on the base, a track carried by the base in substantially parallel relation thereto, and a marker plate mounted for translation along said track into and out of position beneath said cutting element, said marker plate having an opening to permit passage of the cutting element through the plate upon vertical movement of the cutting element relative to the marker plate, said cutting element and marker plate being mounted for relative vertical movement to an extent such that the edges of the cutting element may extend through the opening in the marker plate.

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