Nov. 3, 1942. E. P. BOUTIETTE 2,301,010

DIE FOR CUTTING AND IMPRINTING SHEET MATERIAL

Filed May 16, 1940

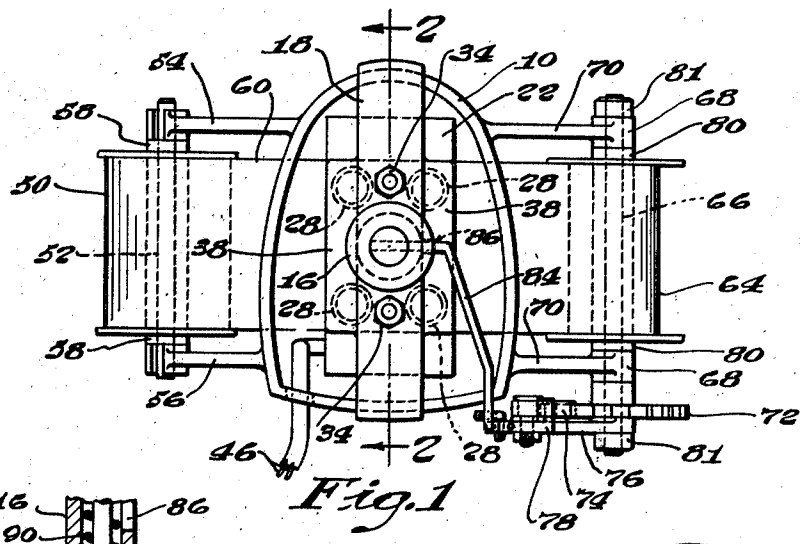

Fig. 1

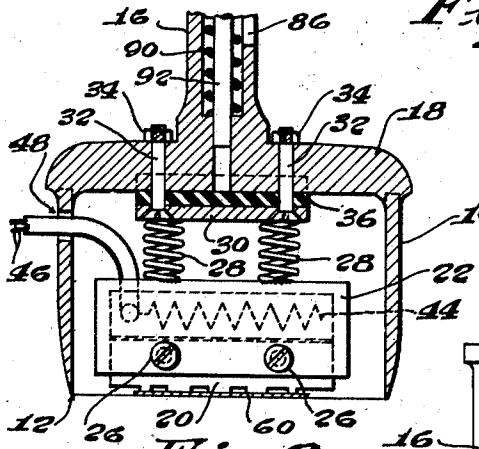

Fig. 2

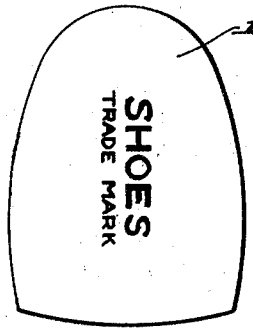

Fig. 4

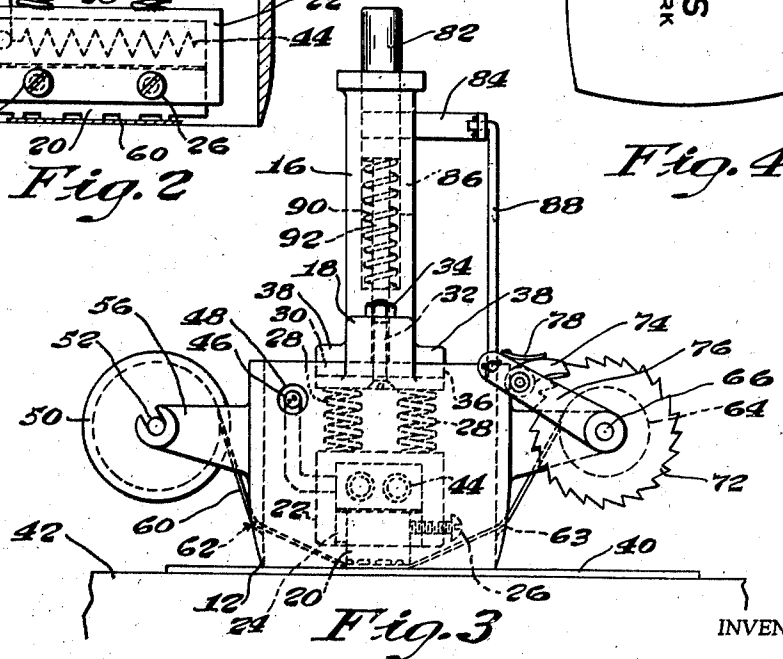

Fig. 3

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2,301,010

DIE FOR CUTTING AND IMPRINTING SHEET MATERIAL

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Application May 16, 1940, Serial No. 335,536

8 Claims. (Cl. 101—332)

This invention relates to a die for cutting and imprinting sheet material.

The invention has for an object to provide a novel and improved die of the character described in which provision is made for cutting out a blank, such as a part for a shoe, from a piece of sheet material such as leather, and for simultaneously imprinting the maker's name, trade-mark or other indicia upon the blank.

Another object of the invention is to provide a novel and superior die of the character described having an imprinting or stamping unit in which provision is made for producing the mark in color by transference of the coloring matter from a strip of material provided with a coating thereof, and, in which provision is also made for automatically feeding a strip of such material under the imprinting unit to present a fresh surface thereof each time the die is operated.

With these general objects in view, and such others as may hereinafter appear, the invention consists in the die for cutting and imprinting sheet material, and in the various structures, arrangements and combinations of parts, hereinafter described and particularly defined in the claims at the end of this specification.

In the drawing, which illustrates the preferred embodiment of the invention, Fig. 1 is a plan view of a die embodying the present invention, Fig. 2 is a cross-sectional view on the line 2—2 of Fig. 1, Fig. 3 is a side elevation of the die shown in Fig. 1, and, Fig. 4 is a blank produced by the die and showing a mark produced thereon simultaneously with the cutting operation.

In general, the present invention contemplates a unitary device arranged to cut out a blank from a sheet of relatively thin material, such as leather, and to simultaneously imprint upon the surface of the blank an impression of the maker's name, trade-mark or other ornament or design. In the illustrated embodiment of the invention the die is shaped to cut out a heel piece or insert adapted to be placed inside the shoe at the heel as a covering or finishing piece. In practice, such inserts are provided with the maker's name or trade-mark or other suitable identifying indicia imprinted thereon. Prior to the present invention, it has been the practice to perform these operations separately, first cutting out the parts to the desired shape and thereafter using an embossing or similar tool to perform the imprinting operation. In accordance with the present invention, both objects are accomplished simultaneously, thereby effecting a saving in time and substantially reducing the cost of production. Provision is also made for imprinting the mark in color and in the illustrated embodiment of the invention the colored markings are produced by providing a strip of paper or other suitable material having a coating of the coloring matter or a pigment coating thereon, face down upon the blank, in position to be engaged by the type when the cutting and imprinting operation is performed. The pigment coating is preferably of a thermoplastic nature and provision is made for heating the type so that in operation when the die is struck to cut out a blank the engagement of the heated type with the strip will effect a transfer of the coloring matter from the strip onto the imprinted mark. Different colors may be used for different shades of leather, but, in some instances, such as with light colored leather, the strip of coloring matter may be dispensed with and the heated type used alone to produce a burnished effect to the imprint.

Provision is also made in the preferred embodiment of the invention for mounting a roll of the pigment coated paper on the die and for automatically feeding a strip of the transferring material along the face of the type to present a new surface of the pigment against the face of the blank to be cut each time the die is operated, as will be described.

Referring now to the drawing, for purposes of illustration, the present invention is herein illustrated as embodied in a die for cutting heel inserts upon which the name or trade-mark of the manufacturer is imprinted at the same time. In the illustrated embodiment of the invention 10 represents the body portion of the die having a marginal cutting edge 12 conforming to the shape of the heel insert 14 to be cut, as shown in Fig. 4. The upper portion of the die is provided with an elongated handle 16 disposed substantially centrally with respect to the marginal edges of the die and the base portion 18 of the handle is extended laterally across the top of the die. As herein shown, the ends of the base portion 18 may be connected to the forward and rear edges of the die by welding or otherwise securing the handle to form an integral unit with the die.

In the illustrated and preferred embodiment of the invention, the marking or imprinting unit comprises a set of metal printing characters 20 which are supported in an inverted box-shaped holder 22 and the type may be positioned therein by inserting filling pieces or slugs 24 and by tightening the screws 26 provided therein. The

holder 22 is yieldingly mounted within the die, and, as herein shown a plurality of relatively stiff coil springs 28 are provided which, in addition to serving as yielding members, also serve as connecting members between the box and a plate 30 forming the upper portion of the unit.

In practice, the ends of the coil springs 28 are welded or otherwise attached to the top of the holder 22 and to the underside of the plate 30, and, the latter may and preferably will be secured to the base portion 18 of the handle by screws 32 and nuts 34, as illustrated. A piece of non-conducting material 36, such as hard fibre may be inserted between the plate 30 and the base portion 18 in order to reduce to a minimum the transmission of heat from the holder 22 to the handle, as will be described. The base portion 18 is preferably provided with laterally extended flanges 38 against which the plate 30 and fibre insert 36 may bear. In order to vertically adjust the imprinting unit with relation to the cutting edges of the die to the most efficient position for marking, the fibre insert 36 may be replaceable with other pieces of different thickness as required.

Thus, the stamping or imprinting unit is detachably and interchangeably connected to the die so that the unit may be interchangeable from one cutting die to another of a different size or shape.

From the description thus far, it will be observed that, in the manual operation of the unit, the handle 16 is grasped in one hand and the die is placed in position on a piece of sheet leather 40 which rests upon a suitable block 42, usually of wood, and that by striking a blow with a hammer or mallet upon the top of the handle the die operates to cut out a blank and at the same time the type is yieldingly forced into contact with the leather to imprint the latter with the marking selected.

In order to heat the type 20, an electric heating element 44 of any usual or preferred form may be provided within the holder 22 which may be connected by lead wires 46 to any convenient source of electric power. An opening 48 is provided in the die through which the wires may extend. The heated type, when used alone, will produce a burnished effect to the imprinted mark, and, when used in connection with the coloring strip the heated type will render the thermoplastic pigment fluid upon contact therewith to effect the transfer of the coloring matter from the strip to the leather blank, as will now be described.

As herein shown, a supply roll 50 of the thermoplastic pigment coated paper is supported upon one side of the die on a rod 52 mounted between arms 54, 56 extending from and secured to the body of the die, as shown in Figs. 1 and 3. Suitable friction washers 58 may be provided between the roll and the supporting arms to prevent the material from being unwound too fast or more than required. As herein illustrated, a strip 60 of the coloring paper withdrawn from the supply roller 50 is threaded through a slotted opening 62 in one side of the die, then under the type block 20 and through a second slotted opening 63 in the opposite side of the die whereupon the end of the strip is affixed to a second roller 64 supported upon the opposite side of the die. The second roller 64 is mounted fast upon a shaft 66 which is journaled in bearings 68 provided in similar arms 70 extending from the body portion of the die and which may be welded or otherwise secured thereto.

As herein illustrated, provision is made for rotating the shaft 66 in order to wind the strip 60 around the roller 64 and to unwind a sufficient portion of the strip from the supply roller 50 to present a fresh surface of the coloring paper adjacent the type 20 each time the die is operated. As herein shown, the outer end of the shaft 66 is provided with a ratchet 72 fast thereon which is arranged to be engaged by a pawl 74 carried by a pawl arm 76 loosely mounted upon the shaft 66 adjacent the ratchet 72. A flat spring 78 mounted on the arm 76 is arranged to engage the pawl to hold it in operative engagement with its ratchet. Suitable friction washers 80 may likewise be provided between the roller 64 and its supporting arms 70 in order to prevent undue rotation of the roller upon the operation of the pawl and ratchet. Collars 81 are provided upon either end of the shaft 66, as illustrated.

In the preferred embodiment of the invention provision is made for oscillating the pawl arm 76 each time the die is operated through connections from a piston 82 slidably mounted in the handle 16 and which is arranged to be engaged by the hammer or mallet during the cutting operation in order to rock the pawl arm counterclockwise viewing Fig. 3 whereby to retract the pawl whereupon the pawl slides over the adjacent teeth of the ratchet and is engaged in a new position on the ratchet in readiness to rotate the ratchet clockwise when the die is lifted, as will be described. As herein shown, the piston 82 is provided with an arm 84 fixed thereto and which extends through an elongated slot 86 cut in one side of the handle 16. The arm 84 is extended angularly and rearwardly and is connected to the outer end of the pawl arm 76 by a connecting link 88. As illustrated herein, the piston 82 is normally held in an elevated position by a coil spring 90 mounted within the handle 16 and which is coiled about a turned down extension 92 of the piston, the latter being also slidably movable in the lower portion of the handle. The piston 82 is held from turning on its axis by engagement of the arm 84 with the sides of the slot 86 and is limited in its upward movement by engagement with the upper end of the slot 86.

From the above description it will be observed that when the die is struck the pawl is retracted and when the unit is lifted to be placed upon another portion of the leather to be cut, the coil spring 90 elevates the piston and the pawl arm 76 whereby the roller 64 is rotated and the strip 60 is advanced to present a fresh surface of the colored strip between the type and the face of the blank to be cut.

Although the invention has been illustrated as embodied in a die for cutting out and imprinting upon a shoe blank from a sheet of leather it will be apparent that the invention may be adapted for use in cutting out and imprinting upon blanks of other materials and of other shapes and sizes. Also, while the illustrated embodiment of the invention contemplates a manually operated die, it will be apparent that the unit may be constructed and arranged for use in a cutting or clicking press to cut out and imprint upon the various parts of a shoe or other article.

While the preferred embodiment of the invention has been herein illustrated and described it will be understood that the invention may be embodied in other forms within the scope of the following claims.

Having thus described the invention, what is claimed is:

1. A device of the character described comprising a blanking die, a marking die enclosed within the blanking die, and means for supporting a transfer strip in operative relation to said marking die including supply reels mounted externally of the blanking die, said strip passing through apertures provided in said blanking die.

2. A device of the character described comprising a blanking die having upstanding side walls and provided with apertures in said side walls, a marking die enclosed within the blanking die, and a flexible strip carrying a coloring medium extended across the operative face of said marking die, said strip being supported externally of the blanking die and passing through the apertures in said side walls.

3. The combination with a blanking die having a marking die enclosed within the blanking die of means mounted externally of the blanking die for supporting a transfer strip, said strip passing through apertures provided in said blanking die and extending across the face of said marking die.

4. The combination with a blanking die having a marking die enclosed within the blanking die of means mounted externally of the blanking die for supporting a transfer strip provided with a thermoplastic coating, said strip passing through apertures provided in said blanking die and extending across the face of said marking die, said marking die being heated whereby to effect transference of said coating to the blank.

5. A device of the character described comprising a blanking die having upstanding side walls and provided with apertures in said side walls, a marking die enclosed within said blanking die and yielding and detachably mounted therein, and means mounted externally of the blanking die for supporting a transfer strip, said strip passing through said apertures and extending across the face of said marking die.

6. A device of the character described comprising a blanking die having upstanding side walls and provided with apertures in said side walls, a marking die enclosed within said blanking die, means mounted externally of the blanking die for supporting a transfer strip in operative relation to said marking die, said strip passing through said apertures and means for advancing said strip to present a fresh surface thereof to the marking die.

7. A device of the character described comprising a blanking die having upstanding walls and provided with apertures therein, a marking die enclosed within the blanking die, means mounted externally of said blanking die for supporting a transfer strip in operative relation to the face of said marking die including a supply reel and a strip receiving reel, said strip passing through said apertures, an elongated handle upon which a blow may be struck to perform the blanking and marking operation, and means rendered operative upon a blow being struck for rotating said strip receiving reel to advance said strip whereby to present a fresh surface thereof to the marking die, said last named means including a member slidingly and yieldingly mounted in said handle and adapted to be engaged when the die is struck, and connections between said member and said strip receiving reel.

8. A device of the character described comprising a blanking die having upstanding walls provided with apertures therein, a marking die enclosed within the blanking die, means mounted externally of said blanking die for supporting a transfer strip in operative relation to the face of said marking die, said strip passing through said apertures, and means rendered operative upon the application of pressure in the performance of the cutting and marking operation for advancing said strip whereby to present a fresh surface thereof to the marking die.

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