MACHINE FOR PERFORATING SHOE PARTS

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This invention relates to punching machines and is herein illustrated as embodied in a machine for perforating shoe parts for purpose of ornamentation.

In the preparation of various shoe parts prior to assembling them to form a complete upper, it is common practice to perforate stock by feeding it between a punch plate and a reciprocating punch. This operation may be carried out by machines of the type illustrated in United States Letters Patent No. 1,689,132, granted April 13, 1928, upon an application filed in my name. An object of the present invention is to provide an improved machine which, without sacrificing the characteristic advantages of machines of the type referred to as heretofore constructed, will facilitate accurate gaging of the work for operation of the punch along marginal portions thereof by gaging means which can be rendered inoperative when it is desired to perform punching operations upon the central portions of the work.

To this end, as illustrated, the invention provides a machine having novel mechanism comprising an anvil and a gage arranged for movement from inoperative position into operative position upon the anvil for guiding the work thereon. Preferably the gage is pivotally mounted upon a slide which is normally forced in a direction to move the gage into operative position, there being means provided for moving the gage heightwise of the anvil in locating it in position to engage the work. Preferably too, the gage carries a holddown operative to engage the face of the work along marginal portions thereof to press the work against the anvil during the punching operations.

The construction above set forth, which is herein illustrated, is advantageous in that the gage and holddown are normally arranged for operation in guiding shoe parts for punching operations to be performed upon the marginal portions but at the same time can readily be moved out of the way so that punching operations can be performed upon central parts of the work.

Other objects and features of the invention will be apparent from the following detailed description when taken in connection with the accompanying drawings and will be pointed out in the claims.

In the drawings,

Fig. 1 is a perspective view partly in section of a perforating machine illustrating one embodiment of the invention;

Fig. 2 is a vertical cross section through a portion of the machine illustrating the gaging mechanism in operative position;

Fig. 3 is a view similar to Fig. 2 illustrating the gage in retracted position; and

Fig. 4 is a plan view of the upper portion of the machine showing the gage and holddown in operative relation to the work.

As illustrated in Fig. 1 the machine comprises a frame 10 which supports a circular work table 12 in the central portion of which is located an anvil 14 indicated generally by reference character 12 and including a punch plate 14 over which is adapted to be advanced a brass strip 16 carried by reels 18 and 20, the strip being guided over and held in position upon the punch plate by means of a clamping plate 22 which forms part of the anvil structure. Mounted for reciprocation relatively to the anvil is a plunger 24 on the lower end of which is carried a punch 26 secured to the plunger by a clamp 28. The arrangement is such that work positioned upon the table over the anvil is operated upon by the punch which serves also to feed the work between punching operations. For further details of the construction and operation of the parts thus far described, reference may be had to the aforementioned Letters Patent.

In order to guide the work as it is fed by the punch during operations performed by the punch upon the marginal portions of the work there is provided a gage 30 which comprises a body portion 32 having a lateral extension 34 terminating in a rounded work engaging face 36 which in operative position extends substantially at right angles to the punch plate 14 with the lower portion of the extension positioned in a notch 37 in the clamping plate 22. To provide for retraction of a gage the latter is pivotally mounted upon a U-shaped member 38 carried by a pin 40 secured to a plunger or slide 42 mounted in an opening 43 in a bracket 44 secured to the underside of the table 12 by screws 46. The slide 42 and consequently the gage 30 are normally forced in the direction of the anvil 14 and punch by a spring 48 engaging the forward surface of the slide and resting against the inner wall of a recessed block 50. The block 50 is secured to the bracket 44 by screws 52 by which the block can be adjusted to control a tension of the spring 48. The bracket 44 is provided with a slot 54 extending longitudinally thereof for receiving the pin 40. The gage 30 at its inner end is provided with a projection 56 to which is secured one end of a spring 58, the other end of which is attached to a pin 60 secured to the slide 42 and likewise mounted for
movement in the slot 54. The purpose of the spring 58 is to cause the gage to move in a counterclockwise direction about its pivotal axis to maintain the gage in contact with the bottom of the notch 37 when the gage is in operative position.

Manually operated means is provided for moving the gage from operative to inoperative position and vice versa. To effect this end there is mounted upon a pivot 62 carried by a lateral extension 64 of the bracket 44 a lever 66 having a forked end 68 adapted to engage the pin 6. Movement of the lever 66 on the pivot in a clockwise direction as shown in Fig. 1 will result in retraction of the gage 30, inward movement of the lever being limited by a stop pin 70. In order to hold the gage in inoperative position against the pressure of the spring upon the slide 42 the outer end of the lever is provided with a latch 72 adapted to enter into a notch 74 in the bracket extension 64, the latch being slidable upon the lever being held therein by means of pins 76 which extend through a lug 78 integral with the latch and positioned in a recess 80 in the lever.

In order to place the gage in operative position relatively to the anvil it is only necessary to rotate the lever 66 so that means of a lug 82 against tension of a spring 84 which serves to hold the latch in the notch 74. The spring 82 will then be effective to force the slide 42 and the gage 30 inward. Inward movement of the gage is limited by means of an adjustable stop screw 86 carried by bracket extension 64 and arranged to engage the side of the lever 66.

To provide for the location of the work engaging face of the gage 36 in operative position relatively to the anvil there is provided a cam 90 having an inclined face 92 adapted to engage a projection 92 upon the lower portion of the body 32 of the gage. This inclined surface serves to raise the end of the gage above the anvil as the gage is forced inwardly by the spring 48. Continuous with the surface 90 the cam has a flat surface 94 upon which the projection 92 may ride. As the gage is moved inwardly over the edge of the anvil. Adjacent to the surface 94 the cam has another flat surface 96 which is somewhat lower than the surface 94 which serves to permit the lowering of the gage into contact with the upper portion of the anvil. Thus when the gage is moved inwardly it is raised heightwise of the anvil by the inclined surface 90 and is then lowered into engagement with the face 36 of the gage in position to contact with edge portions of the work such as a quarter 98 (Fig. 4.) thus to locate the edge of the work continuously at a fixed distance from the center line of the punch. The position of the work-engaging portion of the gage can be varied readily by adjustment of the stop screw 86.

In order to assist the operator in positioning the work there is provided a presetter foot 100 located adjacent to the punch for pressing the work down upon the anvil. To prevent the punch from picking up the work when marginal portions thereof are being operated upon there is provided a holddown or stripper member in the form of a spring 102, having a working engaging portion 103 which extends beyond the face 36 of the gage and the other end of which is secured to the gage by a screw 104 extending through a rib 106 upon the lower portion of the gage. In order to adjust the tension of the hold-down 102 there is provided an adjusting screw 108 the upper portion of which extends through the hold-down and has a shoulder 110 engaging the underside thereof for supporting it.

When the machine is to be operated to perforate marginal portions of the work the gage 30 is positioned as shown in Fig. 2 with the work engaging face 36 of the gage at a predetermined distance from the punch 26 so that a row of perforations will be formed along the edge thereof. The operator maintains the edge of the work in engagement with the face 36 of the gage and the work is held firmly against the anvil 13 by the presser foot 109 and the hold-down 102. Upon being reciprocated the punch 26 performs a row of perforations along the edge of the blank and feeds the work past the face of the gage. When, however, it is desirable to operate upon central portions of the blank, that is, as is frequently necessary, to follow a line of stitching at some distance from the margin, the operator throws the lever 68 to the left, in Fig. 1, until the latch 72 is engaged in the notch 74. This results in the withdrawal of the slide 42 and the gage 30, and the spring 48 rotates the gage about its pivot to bring it out of the way below the surface of the table 12. When it is again desired to perform marginal portions of the blank the slide 42 is withdrawn and the spring 48 forces the slide 62 inwardly. The cam 88 being operative to raise the gage over the edge of the anvil and then to permit it to be lowered until the end portion of the gage is in contact with the anvil and the hold-down 102 engages the upper surface of the work.

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

1. A perforating machine comprising a work table, an anvil, a slide mounted upon the table, a gage pivotally mounted upon the slide, means for mounting the slide for movement toward and away from the anvil, means normally operative to force the slide toward the anvil, and means operable upon movement of the slide to engage the anvil and to permit the lowering of the gage into contact with the upper portion of the anvil. . .

2. A perforating machine comprising a work table having associated therewith an anvil, a slide mounted upon the under side of the table, a gage pivotally mounted upon the slide, means for forcing the slide toward the anvil, and a cam for controlling the position of the gage heightwise of the anvil during movement of the slide.

3. A perforating machine comprising an anvil, a work table, a slide mounted upon the under side of the work table, a gage pivotally mounted upon the slide, means for forcing the slide toward the anvil, and a cam for positioning the gage heightwise of the anvil during movement of the slide, and manually operable means for retracting the slide.

4. A perforating machine comprising a work table, an anvil, an edge gage normally positioned with its work engaging portion extending substantially at right angles to the face of the anvil and a pivoted and slideable mounting for the gage for moving the work-engaging portion thereof below the surface of the table, and a holddown member carried by the gage constructed and arranged to engage the face of the work when the gage is in normal position.

5. A perforating machine comprising an anvil, a work table, a gage pivotally and slideably mounted for movement into and out of engagement.
with the anvil, and a work holddown mounted upon the gage.

6. A perforating machine comprising an anvil, a punch mounted for reciprocation relatively to the anvil, a slide mounted for movement transversely of the anvil, an edge gage pivotally mounted upon the slide, and means operable upon movement of the slide toward the anvil for moving the gage heightwise of the anvil into work locating position.

7. A perforating machine comprising an anvil, a punch mounted for reciprocation relatively to the anvil, a slide mounted for movement transversely of the anvil and punch, an edge gage pivotally mounted upon the slide, a spring tending to rotate the gage toward the anvil, and a cam for locating the gage in predetermined position heightwise of the anvil upon movement of the slide toward the punch.

8. A perforating machine comprising an anvil, a slide movable transversely of the anvil, a gage pivotally mounted upon the slide, a cam for controlling the position of the gage heightwise of the anvil, means for forcing the slide toward the anvil, and means for rotating the gage about its pivot for maintaining the gage in engagement with the cam during movements of the slide.

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