Aug. 1, 1933. C. E. HARDENBROOK, JR 1,920,258

PERFORATING DIE

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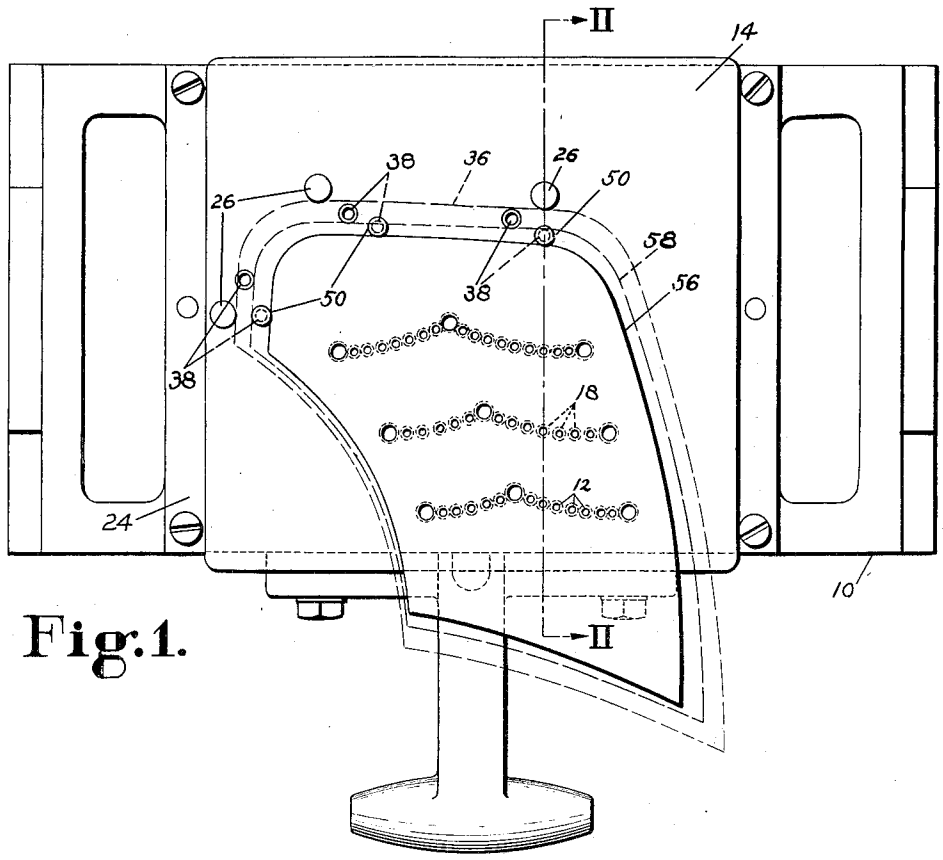

Fig. 1.

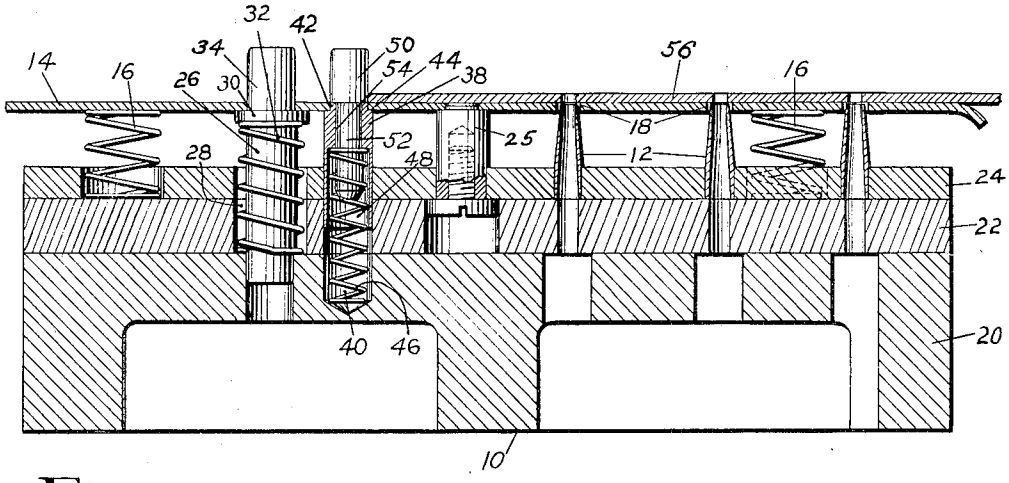

Fig. 2.

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PERFORATING DIE

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9 Claims. (Cl. 164—59.)

This invention relates to dies and is herein illustrated as embodied in a perforating die adapted for use in ornamenting shoe part blanks.

In the ornamentation of shoe part blanks such as vamps, tips and quarters, it is common practice to make use of perforating dies to produce designs in the blanks. In order that the designs will be properly located in the finished shoe it is desirable to locate the designs accurately with respect to the margins of the blanks. Accordingly, it is an object of the invention to provide a perforating die which, without sacrificing any of the advantages of such dies as heretofore constructed, will have improved means for locating shoe parts relatively to the punching tools whereby the die is particularly adapted for operation upon shoe parts of different sizes.

To this end, as exemplified on the illustrated embodiment of the invention, there is provided a perforating die comprising a base and punch members carried by the base, together with sleeves resiliently mounted for movement heightwise of the base and removable gage members carried by the sleeves. The illustrated gage members are operable selectively to locate shoe parts of different sizes with their edge portions in predetermined position relatively to the punch members. Preferably and as shown, the die also comprises a stripper plate which is mounted for movement heightwise of the base and which is engaged by the sleeves, the illustrated gage members being constructed and arranged to project from the operative surface of the stripper plate in position to locate shoe parts upon the plate.

A die constructed as above outlined is advantageous, in that it can be utilized for perforating shoe part blanks of different sizes to produce perforations located accurately relatively to edge portions of the blanks.

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

In the drawing,

Fig. 1 illustrates a plan view of a die constructed in accordance with one embodiment of the invention; and

Fig. 2 is a cross-sectional view taken along lines II—II of Fig. 1.

The die, as illustrated in the drawing, is a die for ornamenting quarters although it is to be understood that the invention is applicable to dies adapted for other uses. The die comprises a base 10 carrying punch tubes 12, arranged in the form of an ornamental design, and a stripper plate 14 supported, by springs 16 on the die base, slightly above the punch tubes 12, the stripper plate having holes 18 through which the tubes 12 can pass to engage work supported upon stripper plate upon depression of the plate by a presser member in a press such as is commonly employed in perforating operations. The die base 10, for purposes of convenience in assembly, preferably comprises a bed plate 20, an intermediate plate 22, and a punch plate 24 within which the punches 12 are positioned. For the guiding of the stripper plate 14 in its movements relatively to the die base and for maintaining the holes 18 in alinement with the punches 12, there are provided one or more studs 25 riveted to the lower portion of the stripper plate and slidably positioned in openings in plates 22 and 24.

Blanks of the largest size to be operated upon are located relatively to the punch tubes by pins 26, the lower portions of which are positioned in openings 28 in the plate 20 and the upper portions of which each have a shoulder 30 which is normally forced against the under side of the stripper plate by a spring 32. The extreme end portion 34 of each pin passes through an opening in the stripper plate and projects above it forming a gage member. As shown in Fig. 1, there are three of such gage members 26 arranged in position to locate a blank of the largest size to be operated upon relatively to the punch tubes 12. The outline of such a blank is indicated by dotted lines 36.

Mechanism is provided for locating blanks of other sizes relatively to the punch tubes. To this end, the die is provided with auxiliary gage members which comprise sleeves or sockets 38 slidably mounted in recess 40 in the die base and having each at its upper end a reduced portion 42 which passes through an opening in the stripper plate 14 and a shoulder 44 which is maintained in engagement with the under side of the stripper plate by means of a spring 46 located within a recess 48 in the lower portion of the sleeve. The upper portion of each sleeve 38 is flush with the upper surface of the stripper plate 14 with the result that the sleeve will not interfere with the positioning of blanks upon the stripper plate. Each of the sleeves 38 is adapted to receive a gage pin 50 in the upper portion thereof, the gage pin having a reduced portion 52, adapted to enter an opening 54 of the sleeve 38, and an enlarged head which extends above the stripper plate in position to engage edge portions of shoe part blanks carried by the plate. It will be

observed that there are three gage pins 50 shown in Fig. 1 in position to locate a blank such as a quarter 56 with its edge portions properly positioned from the punch tubes 12. Other sleeves 38 are adapted to receive gage members in position to locate a blank of intermediate size such as that shown in dotted lines indicated by reference character 58. Thus it will be apparent that the gage pins 50 can be used selectively in connection with two or more series of sleeves 38 to locate blanks of different sizes, the largest size only being located by gage pins 26.

In order to facilitate the location of the gage pins 50 the stripper plate 14 is preferably marked with lines corresponding to the outlines of the blanks as shown in Fig. 1 whereby the sleeves in which pins should be inserted for a particular size of blank can be readily ascertained.

In the operation of the die gage pins 50 are inserted in sleeves 38 arranged in positions corresponding to the outline of a blank of the particular size to be operated upon and are effective to locate the blank upon the stripper plate in operative position with the edges of the blank properly spaced from the punch tubes 18. The die is then inserted in a press and upon operation of the presser member thereof the blank is forced downwardly upon the punch tubes to produce a perforating operation. During this operation the stripper plate and gage pins are forced toward the die base 10; the gage pins moving downwardly through the openings in the stripper plate into an inoperative position. Thus it should be apparent that the invention provides a die having a single set of punch tubes which can be utilized to perforate shoe part blanks of various sizes, together with means for locating the blanks accurately relatively to such tubes.

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

1. A perforating die comprising a base, punch members carried by the base, a plurality of sleeves resiliently mounted for movement heightwise of the base, and removable gage members positioned in the sleeves for locating work in operative relation with respect to the punch members.

2. A perforating die comprising a base, punch members carried by the base, a plurality of sockets mounted for movement heightwise of the base and positioned along a line corresponding to the outline of a blank to be operated upon, and removable gage members located in the sockets.

3. A perforating die comprising a base, punch members carried by the base, a stripper plate mounted for movement heightwise of the base, a plurality of sleeves slidably mounted upon the base and terminating in reduced portions extending through the stripper plate and flush with the operative face thereof, and removable gage pins positioned in the sleeves.

4. A perforating die comprising a base, punch tubes supported upon the base, a stripper plate mounted for movement relatively to the base, a plurality of sleeves mounted in the base and arranged for movement with the stripper plate, and removable gage pins positioned in the sleeves for locating a blank with its edge portions in predetermined relation to the punch tubes.

5. A perforating die comprising a base, punch tubes mounted upon the base, a stripper plate arranged for movement relatively to the punch tubes, a plurality of sleeves mounted in the base and having reduced portions entering openings in the plate, means for maintaining the sleeves in engagement with the plate, and gage pins insertable in the sleeves, selectively to locate blanks of various sizes with their edge portions in predetermined position relatively to the punch tubes.

6. A perforating die comprising a die base, punch tubes mounted upon the base, a stripper plate resiliently mounted upon the base, a plurality of sleeves slidably mounted in the base and located relatively to the punch tubes along lines corresponding to outlines of blanks to be operated upon, said sleeves having reduced portions passing through the stripper plate and terminating flush with the operative face thereof, and removable gage pins positioned in certain of the sleeves and having portions for locating a blank with its edge portions in predetermined position relatively to the punch tubes.

7. A perforating die comprising a base, punch members carried by the base, a stripper plate, a plurality of sleeves mounted for movement heightwise of the base, and removable gage pins insertable in the sleeves selectively to locate upon the stripper plate blanks of different sizes with their edge portions in predetermined position relatively to the punch members.

8. A perforating die comprising a base, punch members carried by the base, a stripper plate movable heightwise by the base, sleeves resiliently mounted upon the base for movement heightwise thereof, and removable gage pins located in the sleeves with portions of the pins projecting from the operative face of the stripper plate in position to locate shoe parts upon the plate with their edge portions in predetermined position relatively to the punch members.

9. A perforating die comprising a base, punch members carried by the base, a stripper plate mounted for movement heightwise of the base, sleeves resiliently mounted for movement heightwise of the base and adapted to engage the stripper plate, and removable gage members carried by the sleeves for selectively locating shoe parts of different sizes upon the stripper plate with their edge portions in predetermined position relatively to the punch members.

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