Dec. 26, 1939. A. F. RANDALL 2,185,094

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Fig. 1.

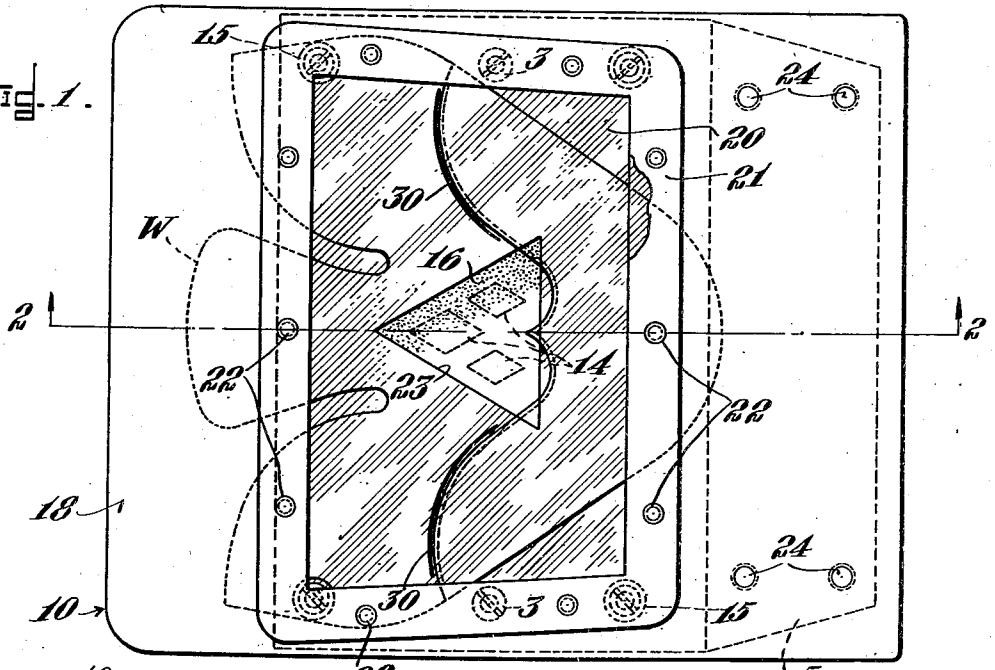


Fig. 2.

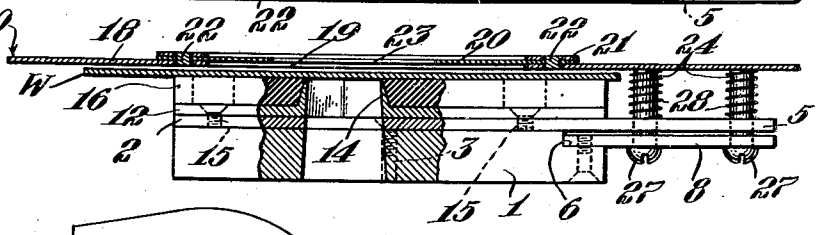
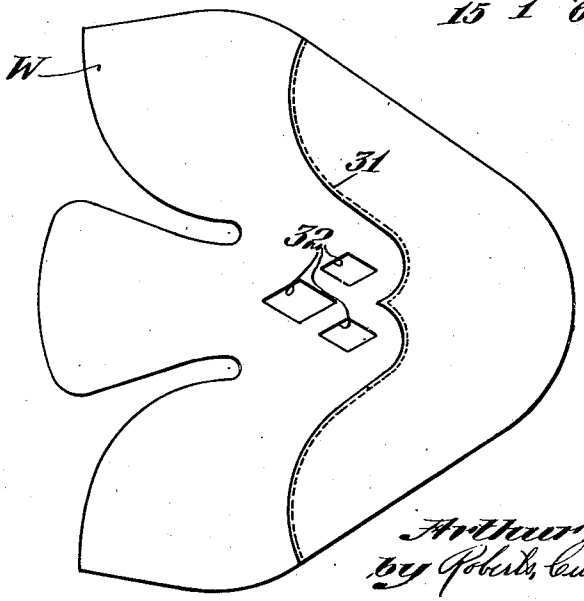


Fig. 3.



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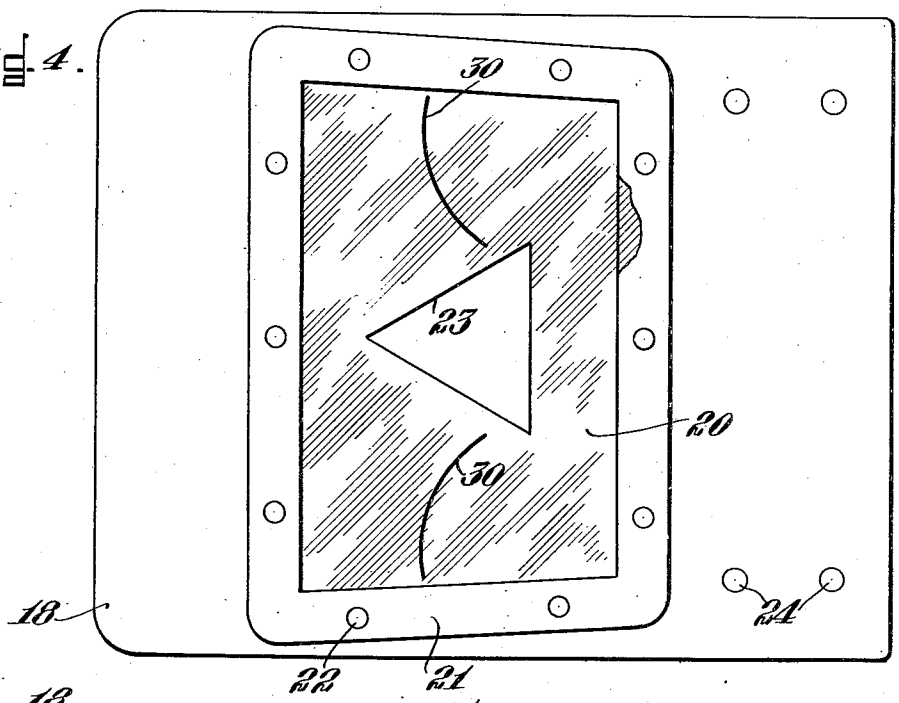
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Fig. 4.



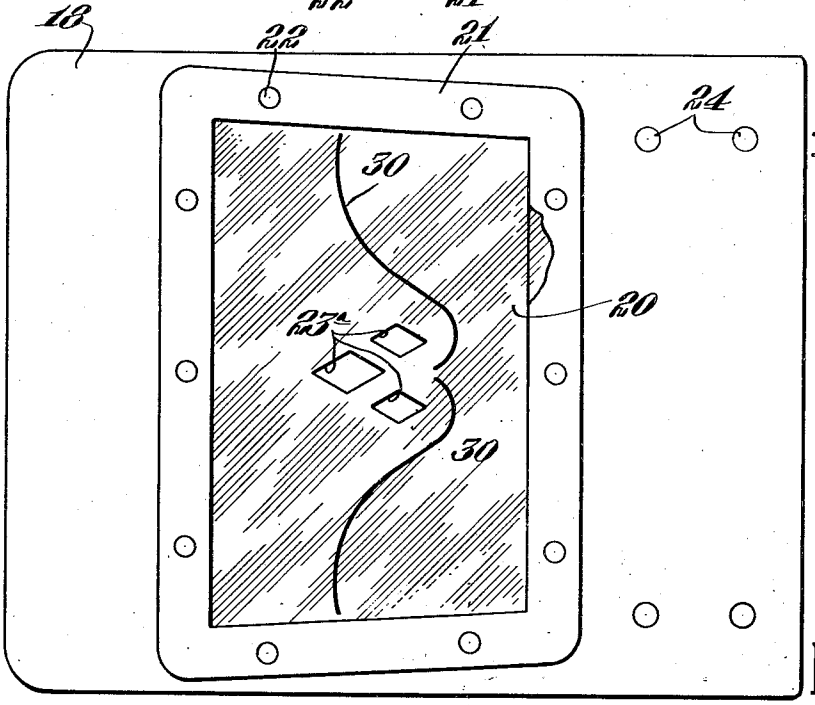


Fig. 5.

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Fig. 6.

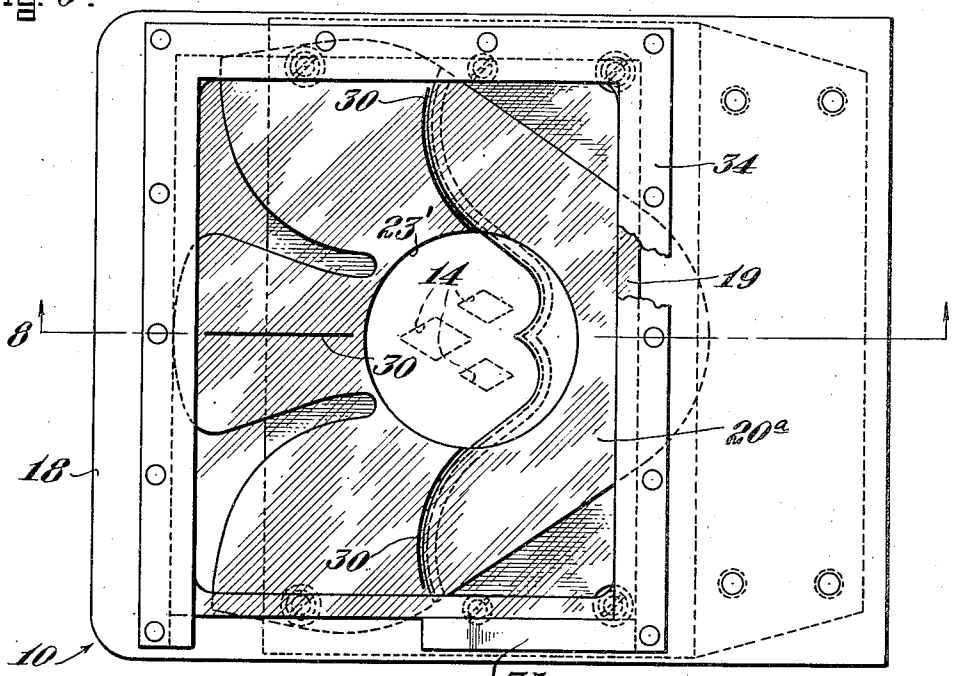


Fig. 7

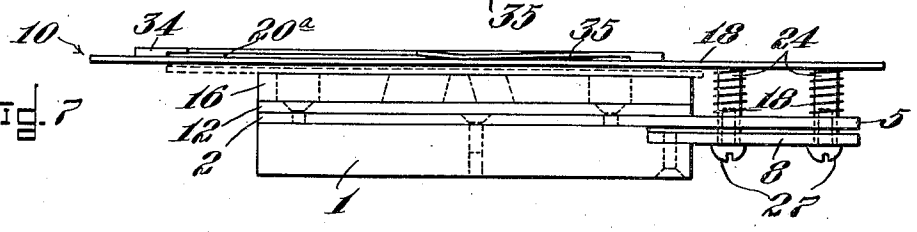


Fig. 8.

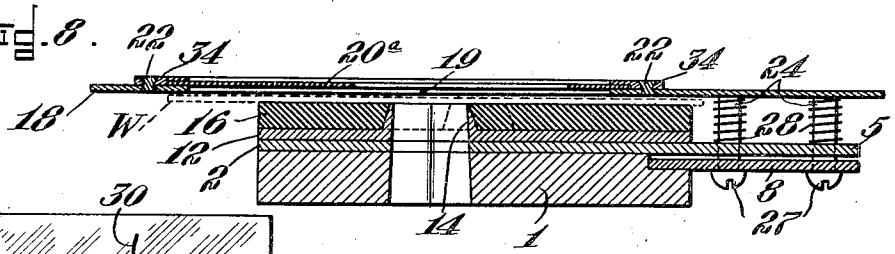
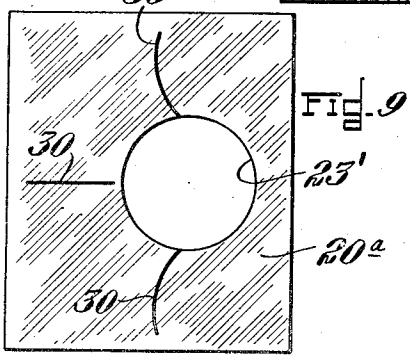


Fig. 9.



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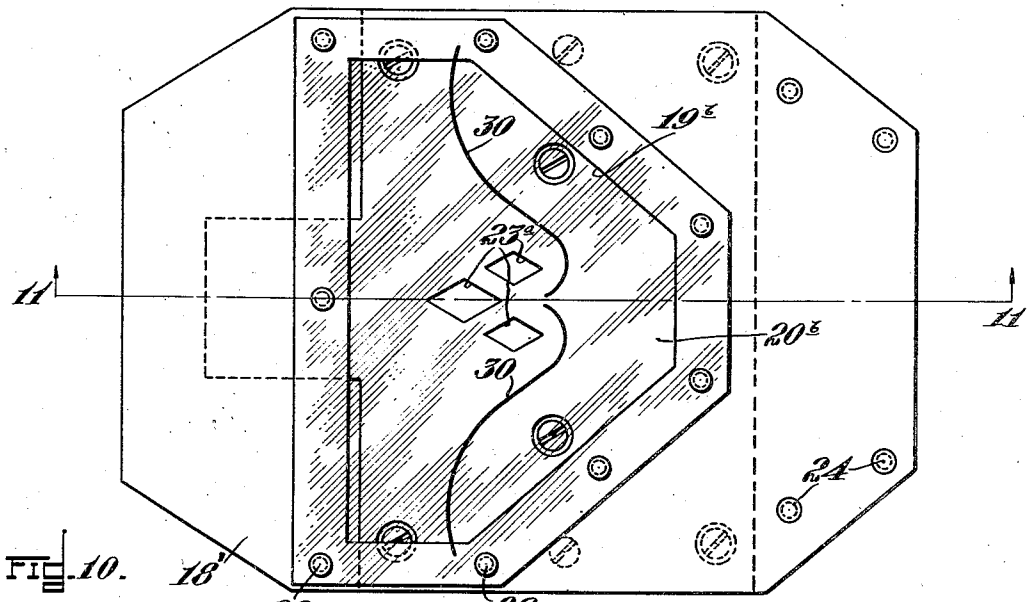


FIG. 10.

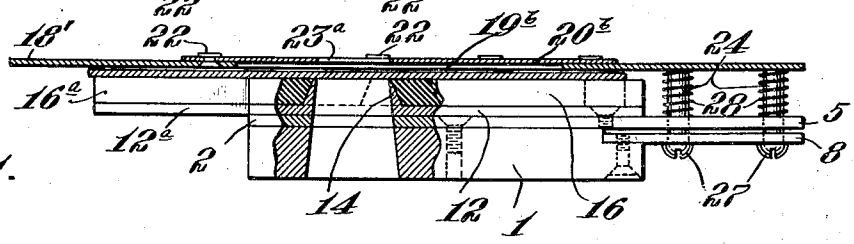


FIG. 11.

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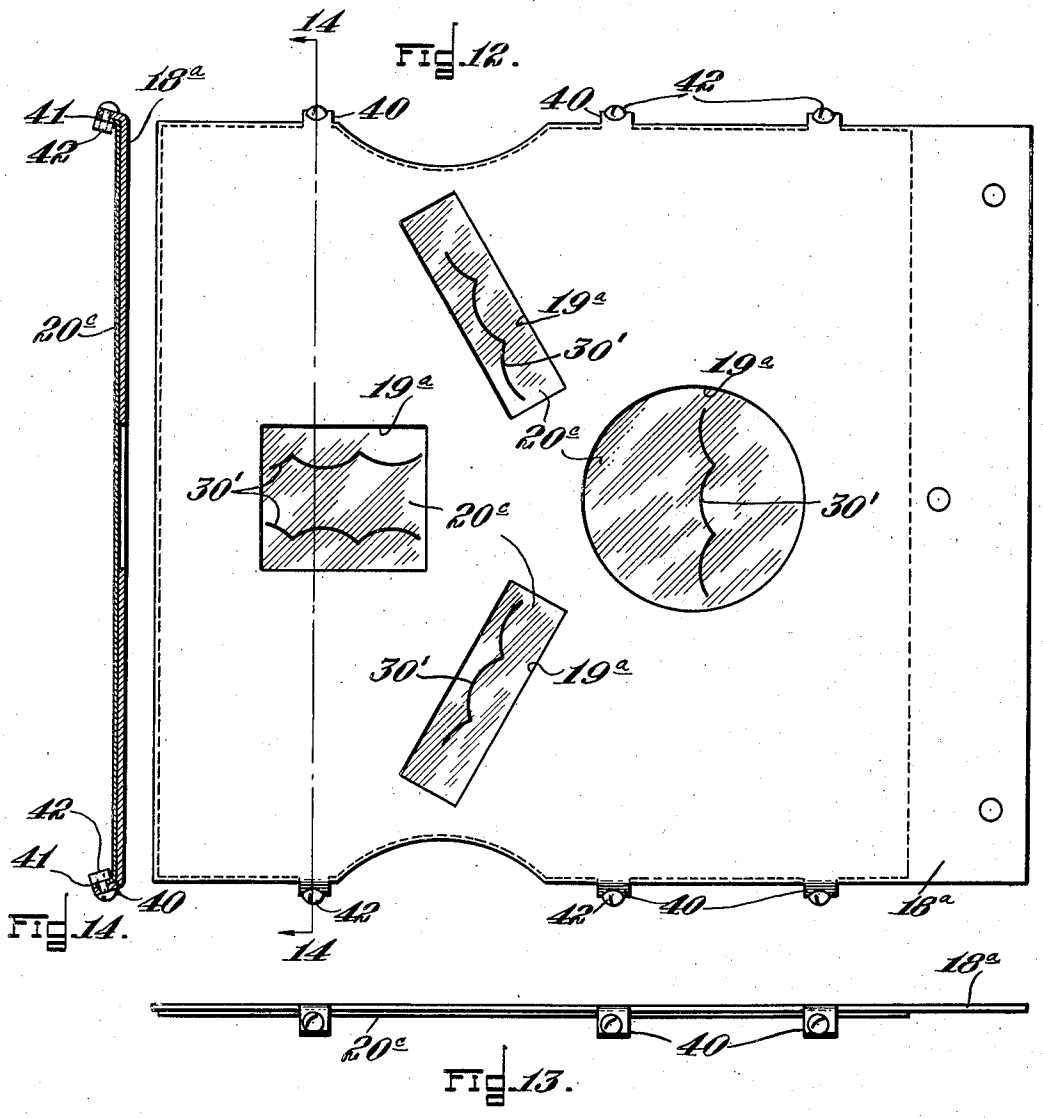


Fig. 12.

Fig. 14.

Fig. 13.

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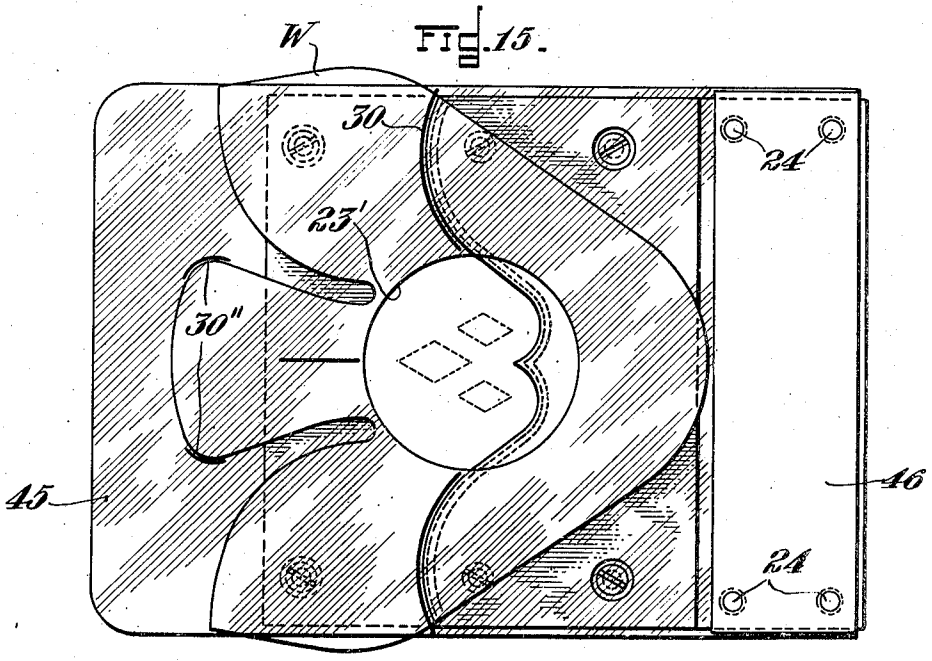


Fig. 15.

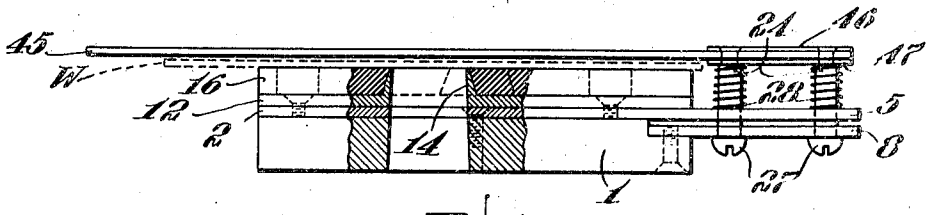


Fig. 16.

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Patented Dec. 26, 1939

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UNITED STATES PATENT OFFICE

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Arthur F. Randall, Boston, Mass., assignor of one-half to North American Holding Corporation, Syracuse, N. Y., a corporation of New York, and one-half to Parshad Holding Corporation, Syracuse, N. Y., a corporation of New York

Application July 26, 1938, Serial No. 221,306

9 Claims. (Cl. 164—93)

This invention relates to dies for cutting, perforating or otherwise marking sheet material, and more particularly to a die for ornamenting cut-out shoe upper sections.

In the manufacture of shoes, particularly women's shoes, it is customary to apply ornamental designs to the shoe uppers, such designs being usually applied to the cut-out sections of the uppers before they are lasted. Where such designs comprise perforations, indentations and/or cut outs, it is necessary not only accurately to locate the perforations or cut outs, but also to support the shoe upper sections so that the perforating, indenting or cutting instrumentalities operate uniformly and efficiently, producing clear-cut openings or markings without distorting or injuring the shoe upper sections.

The principal object of the present invention is to provide a die which satisfies the aforementioned requirements and which is of simple design and construction, having a minimum number of parts, and which is reliable and efficient in operation.

Another object of the invention is to provide a die having interchangeable gauging means, each providing a clamping member or mask for the shoe upper section which may be readily replaced, thereby permitting different sizes and types of shoe upper sections to be operated upon by the ornamenting instrumentalities without the necessity of making extensive adjustments.

Further objects will be apparent from a consideration of the following description and the accompanying drawings, wherein:

Fig. 1 is a top plan view of a die constructed in accordance with the present invention;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a plan view of a shoe upper vamp ornamented by a die constructed in accordance with the present invention;

Fig. 4 is a top plan view of the gauge plate of the die shown in Figs. 1 and 2;

Fig. 5 is a top plan view of another form of gauge plate adapted for use in conjunction with the die shown in Figs. 1 and 2;

Fig. 6 is a top plan view of another form of die constructed in accordance with the present invention;

Fig. 7 is a side elevation of the die shown in Fig. 6;

Fig. 8 is a section on the line 8—8 of Fig. 6;

Fig. 9 is a top plan view, on a reduced scale, of the transparent gauge plate or panel constituting a part of the die shown in Figs. 6 to 8;

Fig. 10 is a top plan view of a die embodying a third form of the invention;

Fig. 11 is a section on the line 11—11 of Fig. 10;

Fig. 12 is a top plan view of a die embodying another form of gauge plate;

Fig. 13 is a side or edge view of the gauge plate shown in Fig. 12;

Fig. 14 is a section on the line 14—14 of Fig. 12;

Fig. 15 is a top plan view illustrating another embodiment of the invention; and

Fig. 16 is a side elevation, with parts broken away and shown in section, of the die shown in Fig. 15.

In accordance with the present invention, a die having the usual ornamenting instrumentalities and stripping means is provided with a clamping plate or mask consisting of or comprising a transparent member supported so as to be movable toward and away from the stripping means and ornamenting instrumentalities. The transparent member may consist of any suitable type of sheet material, such as Celluloid, any of the various cellulose derivatives, a synthetic resin, a heavy fibrous sheet impregnated or otherwise treated to impart a substantial degree of transparency, or the like, and one or both faces of the transparent member may be provided with gauge lines or marks by means of which a shoe upper section or the like sheet material to be operated upon may be accurately positioned relative to the ornamenting instrumentalities.

Where the transparent member possesses sufficient rigidity and strength to be self-supporting and capable of withstanding the shocks to which it is to be subjected, it may be used alone, although, if desired, a frame member or the like support having an opening for the reception of such transparent member may be provided, but in either case the construction and arrangement is preferably such that the transparent member is permitted at least a slight movement toward and away from the ornamenting instrumentalities. To this end any suitable supporting means may be provided so long as such means permit the shoe upper section or the like sheet material to be positioned between the transparent member and ornamenting instrumentalities so that the sheet material and transparent member may be brought into operative relation with the ornamenting instrumentalities. If desired, the transparent member may be formed with one or more openings, shaped and arranged to accommodate the individual ornamenting instrumentalities or the entire group, depending

upon the size, shape and location of the latter, and in addition to the foregoing, means may be provided for holding a positioned shoe upper section or the like securely in place until after completion of the ornamenting operation.

Referring to Figs. 1 to 5, the embodiment shown therein comprises a base which consists of a substantially rectangular metal block 1 (Fig. 2) having a flat plate 2 secured to its upper surface by screws 3, the plate 2 being formed with an extension member 5 which projects outwardly beyond the rear edge of the block 1, as shown in Fig. 2. The block 1 is formed at its rear edge with a recess 6 (Fig. 2) in which is secured the front edge of a plate 8 which provides a bracket adapted to cooperate with the extension member 5 in supporting a gauge mask or clamping plate 10 in operative relation to the ornamenting instrumentality presently to be described.

The ornamenting instrumentality comprises a die plate 12 (Fig. 2) mounted on the base and formed with a group of upstanding tubular cutting members 14, the die plate being rigidly secured to the base by screws 15 or the like fastening elements. A stripping member, consisting of a layer or pad of sponge rubber 16, is disposed on the die plate 12 and may be secured thereto in any suitable manner, the stripping member being formed with openings through which the cutting members 14 project. The thickness of the stripping pad is such that its top surface is normally substantially flush with the cutting edges of the members 14, thus providing a depressible work support for a shoe upper section or the like material W, as shown in Figs. 1 and 2.

The gauge mask or clamping plate 10 comprises a rectangular piece of sheet metal 18 formed with a substantially rectangular opening 19 (Fig. 2), and a substantially rectangular panel of Celluloid or other transparent, preferably non-frangible, sheet material 20 fits against the marginal portions of the opening 19, being held in position by a sheet metal frame 21 which is rigidly fastened to the panel 20 and the plate 18 by rivets 22. Since, as here shown, the ornamenting instrumentality consists of a group of three cutting members 14 which are arranged to define a triangle, the transparent panel 20 is preferably formed with a triangular shaped opening or cut-out 23 similar to but somewhat larger than the triangle defined by the cutting members 14. The opening 23 is arranged so that its edges surround the cutting members 14 when the work W is brought into operative engagement therewith, but if desired the opening 23 may be dispensed with, in which case the cutting members 14 will form their own cut-outs or openings 23a (Fig. 5) the first time the assembled die is used.

The clamping plate is yieldingly supported in close proximity to the stripping pad 16 so that it cannot be displaced laterally relative to the base by an arrangement comprising a plurality of depending stems 24 (Figs. 1 and 2) which are rigidly secured at their upper ends to the rear end of the plate 18, their lower portions being slidably mounted within apertures formed in the extension member 5 and bracket 8. At their lower ends the stems 24 are provided with enlarged heads 27 (Fig. 2) which are yieldingly held against the underside of the bracket 8 by coil springs 28 superposed about the stems between the extension member 5 and the plate 18, the springs 28 being normally effective yieldingly to hold the entire gauge plate at the proper level above the stripping pad and cutting members, and the heads 27 on the lower ends of the stems providing stops to limit the upward movement of the plate 18 under the influence of the springs 28.

Although any suitable means may be provided so that the operator may accurately position the work W between the panel 20 and cutting members 14, a preferred means consists of a set of gauge lines 30 inscribed on the transparent panel 20, the particular size, shape and arrangement of such gauge lines depending upon the size, shape and design of the shoe upper section or character of the ornamentation to be applied. As here shown by way of illustration, the work W (Fig. 3) consists of a shoe vamp having a curved line of stitching 31 and since it is usually the practice to provide an ornamentation or fenestrate design in a fixed relation to the line of stitching 31, the latter may therefore be used as a datum line. Accordingly, the gauge lines 30 may be shaped to conform with at least a portion of the line of stitching 31, and their position relative to the cutting members 14 is such that when the work W is positioned between the stripper pad and masking plate with the gauge lines 30 accurately superposed on the corresponding portions of the line of stitching 31, the cutting members 14 will form a group of cut-outs 32 in the desired location. The gauge lines 30 are preferably made by scoring the panel 20 by means of a stylus or the like instrument and filling in the groove thus produced with a suitable pigment or ink which may be of a color contrasting with that of the work. Although it is only necessary to form gauge lines on one face of the panel 20, if desired such lines may be formed on both sides.

In operating the die the work W is first positioned between the mask plate 10 and stripper pad 16 so that the gauge lines 30 accurately register with the lines of stitching 31, and with the work thus positioned the die may be placed in position between the head and work-bed of a press. When the press is operated its head forces the mask plate 10 downwardly and the underlying shoe upper W is forced into operative engagement with the cutting members 14 which produce the cut-outs 32 (Fig. 3). During the cutting operation the mask plate 10 is effective to hold the work W flat against the stripper pad 16 and due to the relatively large area of contact between the work W and the mask plate 10, the latter not only provides, in effect, a reinforcement for the work W which prevents it from undergoing an appreciable distortion or strain, but also is effective to maintain that portion of the work W corresponding to the opening 23 properly tensioned during the cutting operation. When the pressure on the mask plate is released it moves upwardly under the influence of the springs 28 and the work W is stripped from the cutting members 14 by the resilient pad 16 which, of course, was compressed during the cutting operation. With the parts restored to normal position (Fig. 2) the ornamented work W may be easily removed and a new piece inserted.

The embodiment shown in Figs. 6 to 9 is in some respects similar to that above described. In this embodiment the plate 18 is formed with an opening 19 and a U-shaped rabbeted frame 34 is riveted in position against the marginal portions surrounding the opening 19. The frame

34 provides a pocket into which may be slid a substantially rectangular transparent panel 20a provided with gauge lines 30 and formed with an opening 23' shaped and arranged to accommodate the cutting members 14. The panel 20a is releasably retained in position by a spring finger 35 formed integral with the frame 34, as illustrated in Figs. 6 and 7. The panel 20a may be removed and replaced simply by flexing the finger upwardly and sliding the panel edgewise out of or into the frame 34.

Advantageous features of this construction are that differently marked panels may be interchangeably used, and furthermore if a panel 20a is marked to be used for a "right", the same panel may also be used for a "left" merely by removing the panel, reversing it and then replacing it, it being noted that such change may be easily and quickly made.

The embodiment illustrated in Figs. 10 and 11 is also in some respects similar to the previously described embodiments, except that the transparent panel 20b is fastened directly to the plate 18' by rivets 22, the use of a frame member such as shown in the previously described embodiments being dispensed with. This embodiment further illustrates the use of a plate 18' having an opening 19b and a panel 20b having a shape approximating that of a shoe upper vamp to be operated upon, and also the provision of extensions 12a and 16a at the front of the die plate and stripper pad, these parts serving to support the tongue of a vamp during the ornamenting operation.

In the embodiment shown in Figs. 12 to 14 the sheet metal plate 18a is formed with a plurality of spaced openings 19a which provide passageways for the cutting members 14 or other ornamenting instrumentalities, and a transparent panel 20c is suitably secured to the underside of the plate 18a, the panel 20c being provided with gauge lines 30' arranged to lie within the areas defined by the openings 19a, as shown in Fig. 12. Although any suitable means may be used to secure the plate and panel in assembled relation, the particular arrangement herein shown comprises a plurality of depending apertured lugs 40 formed integral with the sides of the plate 18a and correspondingly located apertured lugs 41 (Fig. 14) formed integral with the margins of the panel 20c, the apertures receiving bolts 42 or the like fastening elements which are effective to hold the parts in properly assembled relation.

Although openings may be preformed in the panel 20c to accommodate the cutting members, it is unnecessary, since the first time the mask plate is used the cutting members will form their own passageways, as previously explained in connection with Fig. 5. A particularly advantageous feature of this construction resides in the fact that the panel 20c may consist of a light sheet or a film of transparent sheet material such as Cellophane, translucent paper or the like, in which case it may be desirable to provide the upper face of such a sheet with a coating of pressure-sensitive adhesive or the like (in addition to or in place of the lugs and fastening elements) in order to hold the panel in position against the underside of the plate 18a.

In Figs. 15 and 16 I have shown a mask plate which comprises a relatively heavy sheet or panel of transparent material 45 corresponding generally in size and shape to the plate 18 of the embodiments shown in Figs. 1, 2 and 6 to 8, the panel 45 being formed with an opening 23' to accommodate the cutting members 14 and also being provided with gauge lines 30 and 30'' corresponding to those of the previously described embodiments. The rear portion of the panel is adequately reinforced by a pair of sheet metal strips 46 and 47 to which the supporting stems 24 are riveted or otherwise suitably secured. A particularly advantageous feature of this construction resides in the fact that an entire shoe upper section W is visible to the operator and hence the arrangement is conducive to a speedier and more accurate positioning of the work.

While I have shown and described different desirable embodiments of the invention, it is to be understood that this disclosure is for the purpose of illustration and that various changes in shape, proportion and arrangement of parts, as well as the substitution of equivalent elements for those herein shown and described, may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

I claim:

1. A die of the class described having operating instrumentalities and clamping means for holding a shoe upper section or the like flatwise in position relative to said operating instrumentalities while being operated upon by the latter, said clamping means including a substantially flat work-engaging piece of transparent material having means defining a gauge for positioning said shoe upper section relative to said operating instrumentalities, and a resilient stripper element for supporting said upper section.

2. A die of the class described having operating instrumentalities and a clamping means including a transparent work-engaging gauge member positioned to cooperate with said operating instrumentalities so as to hold a shoe upper section or the like flatwise in position relative to said operating instrumentalities.

3. A die of the class described having operating instrumentalities, work-supporting and stripping means and a clamping plate comprising a work-engaging piece of transparent sheet material supported for movement on a rectilinear path toward and away from said stripping means and operating instrumentalities, said piece of transparent material having one or more openings shaped and arranged to accommodate said operating instrumentalities when in operative engagement with the shoe upper section or the like.

4. A die of the class described having an ornamenting instrument, work-supporting and stripping means, and a gauge mask comprising a work-engaging piece of transparent sheet material having position-indicating means shaped to correspond with a portion of a shoe upper section or like sheet material to receive ornamentation and arranged so as to indicate the position of the shoe upper section relative to said ornamenting instrument, said piece of transparent material having an opening shaped and arranged to accommodate said ornamenting instrument when in operative engagement with the shoe upper section or the like, and means for yieldingly supporting said mask for movement on a rectilinear path toward and away from said stripping means and ornamenting instrument and for normally maintaining said mask at the limit of its movement away from said parts.

5. A die of the class described having cutting means for ornamenting a shoe upper section or the like, stripping means associated with said cut-

ting means, and clamping means comprising a transparent work-engaging gauge plate cooperating with said stripping means to hold a portion of the shoe upper section flatwise under tension during the ornamenting operation, said plate having an opening shaped and arranged to accommodate said cutting means when in operative engagement with the shoe upper section or the like.

6. A die of the class described having operating instrumentalities and clamping means for holding a shoe upper section or the like flatwise in position relative to said operating instrumentalities, said clamping means including a substantially flat plate having an opening, a transparent apertured work-engaging panel closing said opening, and means for removably securing said panel in position on said plate.

7. A die of the class described having operating instrumentalities, stripping means and clamping means comprising a substantially flat plate having an opening, a transparent apertured work-engaging panel opposite said opening, said panel having thereon indicia serving as a gauge for use in positioning a piece of sheet material relative to said operating instrumentalities, and means slidably and removably securing said panel in position on said plate.

8. A die of the class described having operating instrumentalities, stripping means and clamping means comprising a substantially flat plate having an opening, said plate being mounted to move toward and away from said operating instrumentalities and stripping means on a rectilinear path, a generally U-shaped frame member on said plate disposed about said opening and defining a panel holding pocket, a transparent apertured work-engaging panel opposite said opening with its marginal portions slidably mounted in said pocket, and means for releasably retaining said panel within said pocket.

9. A die of the class described having, in combination, a base, a work-engaging and ornamenting instrument on said base, a resilient work-supporting stripper member mounted on said base and surrounding said instrument, and a work-clamping mask mounted on said base for movement toward and from the same, said mask comprising a piece of transparent sheet material provided with work-positioning means to register with a part of the work so as to locate the latter relatively to said instrument preparatory to operation of the die, said transparent sheet being adapted to engage the portion of the work surrounding said instrument when the die is operated thereby to clamp and hold said surrounding portion against said stripper member.

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