June 20, 1933. E. A. BAUMBACH 1,915,080

DIE SHOE

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Fig. 1.

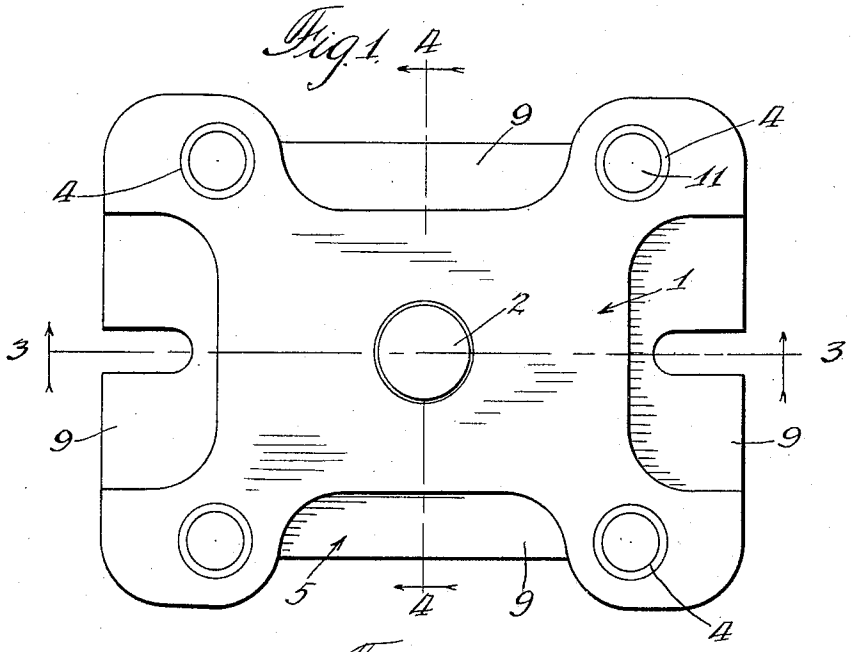

Fig 2.

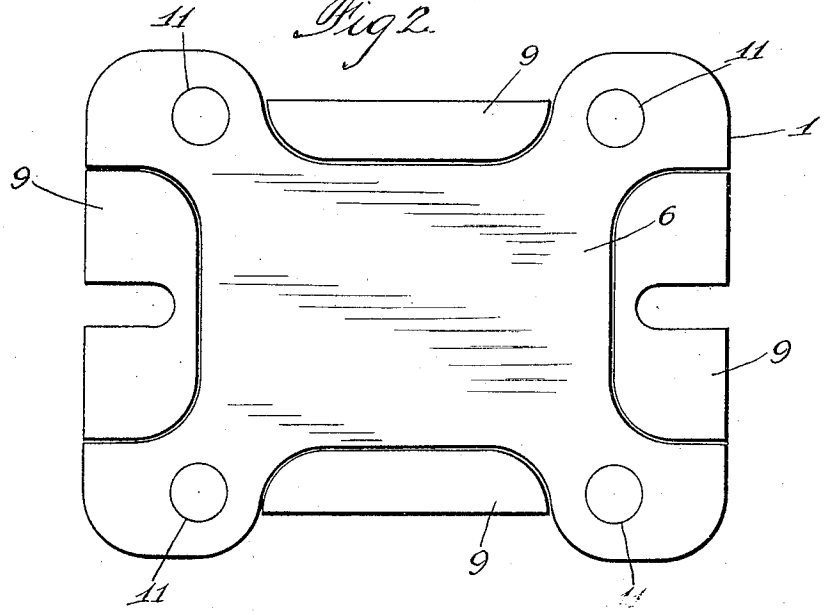

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Fig. 3.

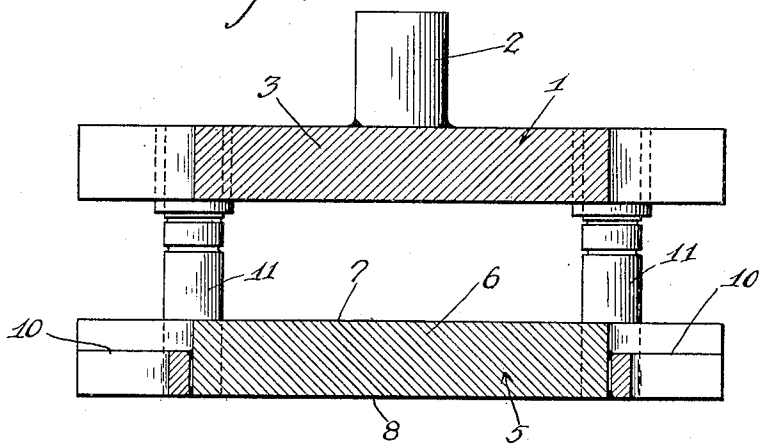


Fig. 4.

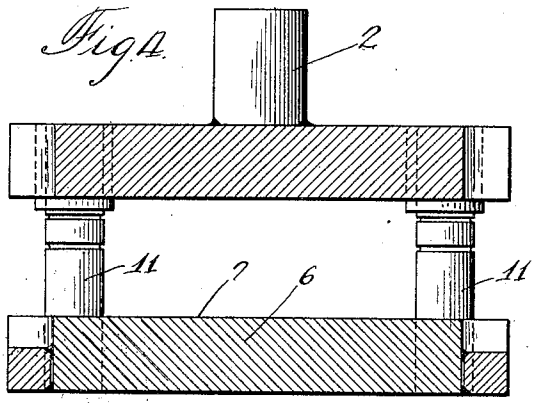


Fig. 5.

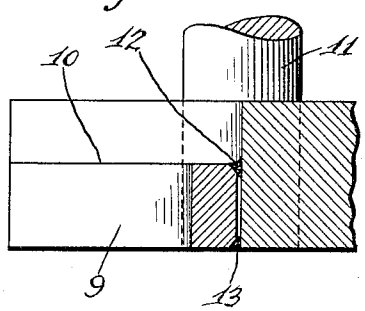
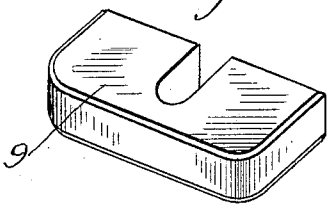


Fig. 6.



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June 20, 1933. E. A. BAUMBACH 1,915,080

DIE SHOE

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Fig. 7

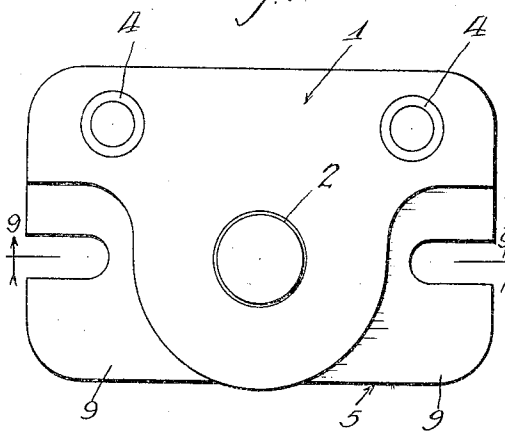


Fig. 10.

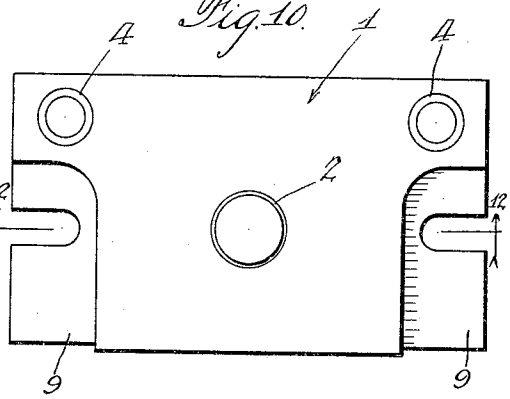


Fig. 8.

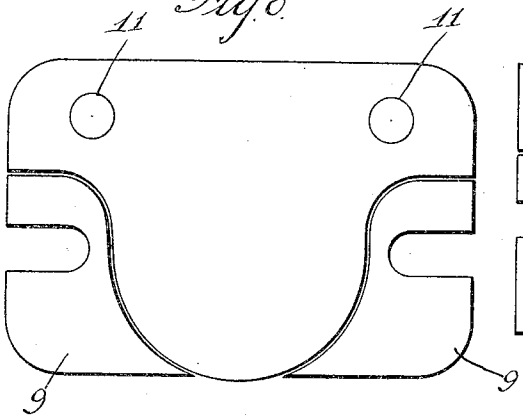


Fig. 11.

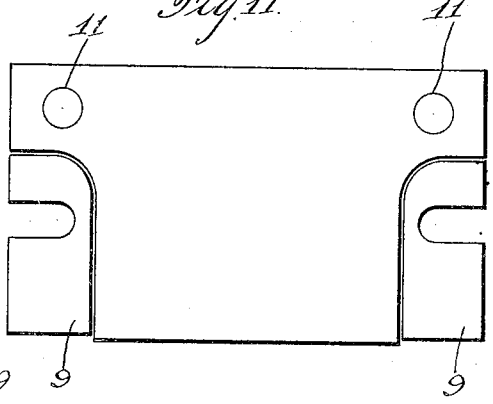


Fig. 9

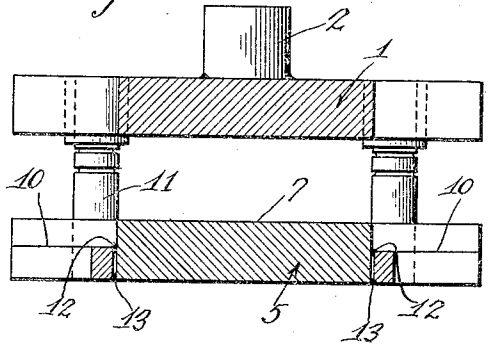
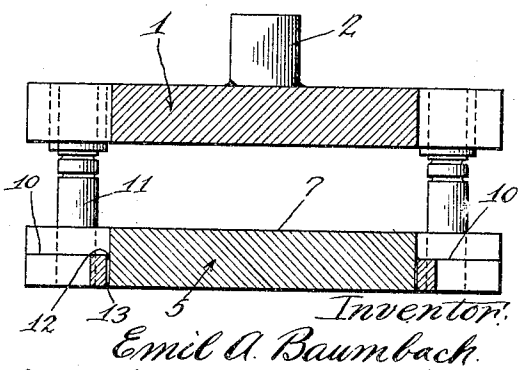


Fig. 12.



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Patented June 20, 1933 1,915,080

UNITED STATES PATENT OFFICE

EMIL A. BAUMBACH, OF CHICAGO, ILLINOIS

DIE SHOE

Application filed August 28, 1931. Serial No. 559,886.

My invention relates to die shoes, and particularly, to their manufacture. Hitherto, die shoes have been made of cast metal, such as steel, or the like. However, such shoes have proven unsatisfactory, since they tend to crack under the strain of being bolted to the bed plates of punch presses in which they are used.

It is, therefore, an object of my invention to provide a die shoe of a material less liable to crack under the strain of being bolted to the bed plate.

Another object of the invention is to reduce the cost of manufacture.

Other objects will be apparent from the description and claims.

In the drawings, in which several embodiments of my invention are shown,

Figure 1 is a plan view of a die set;

Fig. 2 is a plan view showing the sections used in making the die shoe shown in Fig. 1;

Fig. 3 is a section on the line 3—3 of Fig. 1;

Fig. 4 is a section on the line 4—4 of Fig. 1;

Fig. 5 is an enlarged sectional view showing the manner in which the sections are secured together;

Fig. 6 is a perspective view of a relatively thin securing member, shown welded in place in Figs. 1, 2, 3 and 4;

Fig. 7 is a plan view of a different form of die set;

Fig. 8 is a plan view showing the sections used in making the die shoe of Fig. 7;

Fig. 9 is a section on the line 9—9 of Fig. 7;

Fig. 10 is a plan view of yet another form of die set;

Fig. 11 is a plan view of the sections used in making the die shoe of Fig. 10; and

Fig. 12 is a section on the line 12—12 of Fig. 10.

First referring to Figs. 1 to 6, inclusive, the die set shown therein comprises a punch holder 1 having a shank portion 2 and a punch holding portion 3 having the usual bushed guide openings 4, a die shoe 5 having a relatively thick die supporting portion 6 provided with a plane smooth upper face 7 on which the die rests, a plane lower face 8 which rests on the bed of the machine, and a number of relatively thin securing flange portions 9 having their upper surfaces 10 substantially below the upper face 7 of the die supporting portion 6 and leader pins 11 secured in the thicker portion 6 of the die shoe for cooperation with the bushed openings of the punch holder.

The construction shown in Figs. 7 to 12 inclusive is substantially the same as that just described except as to the shape of the punch holder and die shoe.

The process of manufacture of the die shoes shown is as follows:

A segment, of the thickness and outline desired for the die supporting portion 6 of the die shoe, is cut, as by a blow torch, from hot rolled plate. Other segments 9, shown separately and in perspective in Fig. 6 are similarly cut to the outline desired for the securing flange portions from somewhat thinner hot rolled plate. These securing flange portions 9 are placed in proper position with respect to the die supporting portion 6 and welded thereto at their upper and lower edges at 12 and 13, as shown in Fig. 5.

In practice, it has been found that die shoes manufactured as described above are much more durable and less apt to crack under the strain of being bolted to the bed plate of punch presses than those heretofore made of cast iron, due to the fact that rolled steel is less brittle than cast iron.

Further modifications will be apparent to those skilled in the art and it is desired, therefore that my invention be limited only by the prior art and the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A built up die shoe of the character described comprising a relatively thick rolled plate die supporting portion having plane, smooth, parallel upper and lower faces, relatively thin rolled plate securing flange members, said die supporting portion and said flange members having conforming edge contours, said contour conforming edges being welded together to form an integral die shoe.

2. A built up die shoe of the character

described comprising a relatively thick rolled plate die supporting portion having plane, smooth, parallel upper and lower faces, relatively thin rolled plate securing flange members, said die supporting portion and said flange members having edge surfaces conforming in surface contour, said thick portion and said thin member being welded together at the edges of said conforming contours to form an integral die shoe.

3. In a built up die shoe of the character described, an integral one piece central member for the die to rest on, relatively thin securing members having edge portions conforming to the contour of said central member, said securing members being welded to said central member at their conforming contours.

4. In a built up die shoe of the character described, an integral one piece central member for the die to rest on and arranged to support leader pins therein and having parallel upper and lower surfaces and an irregular vertical side contour, relatively thin securing members having parallel upper and lower surfaces and vertical side contours corresponding to irregularities in the side contour of the central member, said thin securing members being welded to said central member with the lower surfaces of all of said members in alignment, said welding being accomplished along the edges of said conforming side faces to form an integral die shoe.

In witness whereof, I have hereunto subscribed my name.

EMIL A. BAUMBACH.