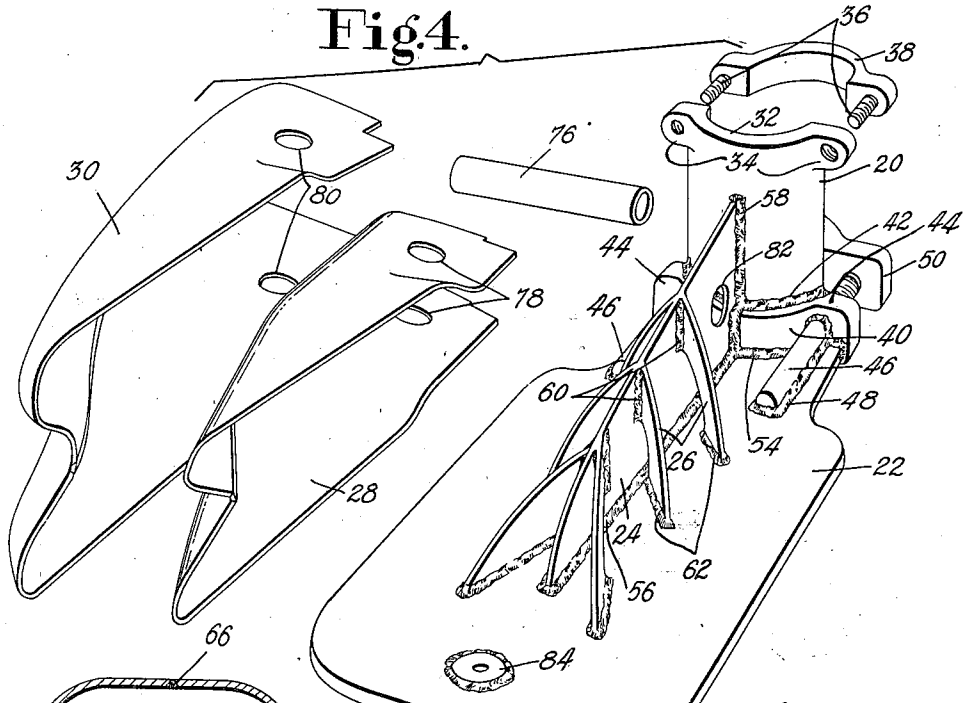
Dec. 22, 1942. T. D. PARSONS ET AL 2,306,319

PRESS

Filed June 17, 1942

Fig.4.



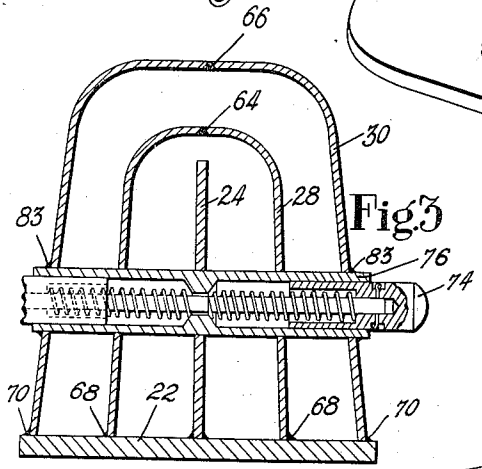


Fig.3

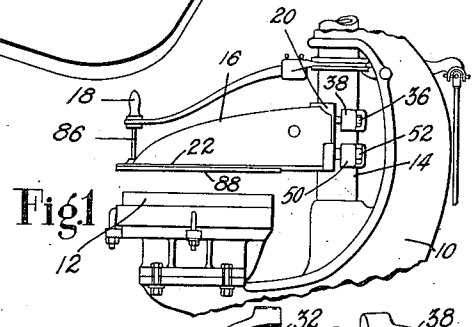


Fig.1

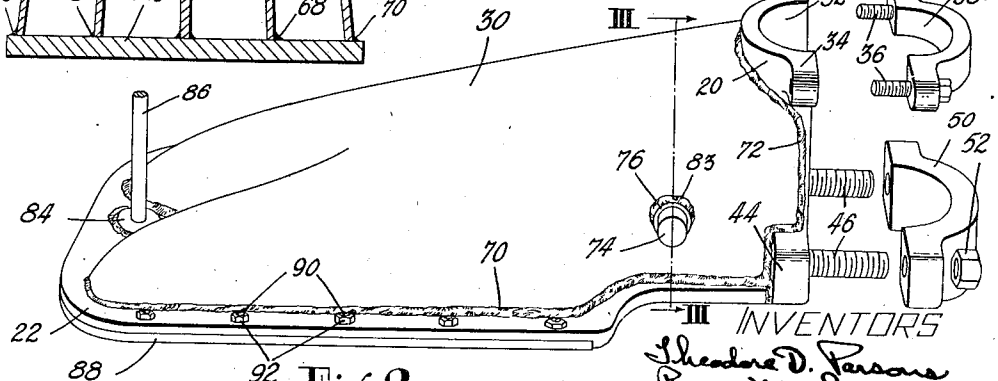


Fig.2

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PRESS

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Application June 17, 1942, Serial No. 447,474
In Great Britain October 30, 1941

10 Claims. (Cl. 164—23)

This invention relates to presses and is herein illustrated as embodied in a press of the type disclosed in United States Letters Patent No. 921,503, granted May 11, 1909, upon application of Arthur Bates, and which is particularly adapted to produce blanks from sheet material by the means of cutting dies.

Presses of the type referred to are commonly used in the shoe industry for cutting shoe part blanks from leather or fabric, and usually comprise a cutting bed for supporting sheet material to be operated upon, a vertical post, a presser member or beam carried by the post and movable laterally over the cutting bed about the axis of the post into operative position relatively to a freely movable die located on the material, the presser member being movable toward the cutting bed during a reciprocation of the post to effect a pressure-applying operation upon the die to cause it to produce a blank. The procedure followed by the operator of such a machine in producing each blank consists in locating the die upon the material on the bed, swinging the presser member into position over the die, actuating means for initiating a power operation of the member to force the die through the material, and swinging the member away from over the die so that the blank formed can be removed. The operator, during the course of a day, moves the presser member back and forth across the cutting bed hundreds or thousands of times. Consequently, in order to relieve the operator from as much physical effort as possible, it is desirable to make the presser member as light as is possible consistent with rigidity and strength. This has been accomplished in existing machines by forming the presser members or beams of an aluminum alloy, as disclosed in United States Letters Patent No. 1,629,870, granted May 24, 1927, upon application of Patrick J. Horgan. Clicking machines equipped with aluminum alloy beams have been highly satisfactory, but in view of the recent shortage of aluminum, it has been found necessary or desirable to obtain a suitable substitute. Some experimentation has been made in connection with fabricated steel beams, that is, beams formed of steel plates welded together, but heretofore, as far as known, such constructions have not proved to be satisfactory in use.

In view of the foregoing, it is an object of the present invention to provide, for use in machines of the type referred to, a beam which is comparatively light in weight, yet sufficiently strong and rigid to withstand the stresses to which it is subjected during operation of the machine. To this end, and as illustrated, we have provided a beam for presses comprising a base plate, and a plurality of nested, hollow shells extending along the base plate and constituting reinforcing members for the same, the parts being welded together to form a rigid structure. Preferably and as shown, there are also reinforcing plates extending longitudinally of the base plate and welded thereto, the plates being arranged to convey the stresses of the applied load to a supporting bracket to which the base plate and shells are welded. The reinforcing plates and the shells are spaced over the base plate in such a manner that they constitute a rigid structure backing up the base plate, thereby to resist forces tending to deflect the plate, thus contributing to the stiffness or rigidity of the beam.

These and other features of the invention are disclosed in the following specification and in the accompanying drawing, and are pointed out in the claims.

In the drawing,

Fig. 1 is a view in vertical side elevation of a portion of a clicking machine embodying the invention;

Fig. 2 is a perspective view of a finished beam;

Fig. 3 is a cross sectional view, taken along the line III—III of Fig. 2; and

Fig. 4 is an exploded view showing, in perspective, various parts of the beam.

The invention is illustrated as embodied in a clicking machine, which, as shown in Fig. 1, comprises a C-shaped frame 10 supporting a cutting bed 12, and a post 14 arranged for vertical reciprocation and to which is secured a laterally extending beam 16 movable about the axis of the post over the bed by means of a handle 18, which, when depressed, initiates a reciprocation of the post, by mechanism not shown in detail, to effect a pressure-applying operation of the beam upon work positioned upon the bed. For a more complete description of the construction and operation of the machine thus far described, reference may be had to the aforementioned Letters Patent to Bates.

The beam 16 comprises an assembly of parts welded together to form a unitary structure. The principal parts include a supporting bracket 20 (Fig. 4) by which the beam is secured to the post, a base plate 22 extending substantially at right angles to the bracket and forming the striking portion of the beam, reinforcing plates 24 and 26, and two hollow reinforcing shells 28 and 30.

The bracket 20 (Fig. 4) is arcuate in shape and has a curved surface 32 adapted closely to fit the surface of the post 14. The upper portion of the bracket is provided with ears 34 arranged to receive bolts 36 which pass through a clamping member 38 for securing the upper end of the bracket to the post. The lower portion of the bracket comprises a curved block 40 welded to the body portion of the bracket at 42. The block is provided with ears 44 arranged to receive attaching bolts 46, the inner ends of which are welded to the base plate 22, as shown at 48, and the outer ends of which pass through a clamping member 50, the parts being secured in position on the post by nuts 52.

The base plate 22 is curved at its inner end to fit the bracket and is welded thereto, as shown at 54. The central portions of the base plate, which are subjected to considerable stresses during operation of the beam, are reinforced by the plates 24 and 26. The plate 24 extends longitudinally of the base plate and heightwise of the bracket, and is welded to the base plate at 56 and to the bracket at 58. The height of the reinforcing plate 24 is greatest at the bracket, where the stresses in the plate when loaded are a maximum, and is tapered outwardly along the base plate in order to eliminate excess weight. The ribs 26 comprise upstanding plates extending at angles of about 30° to the plate 24 and are welded to the same at 60 and to the base plate at 62. The ribs 26 serve as additional reinforcement for the central portions of the base plate and transmit stresses rearwardly to the plate 24. The reinforcing plates 24 and 26 thus constitute means for transmitting applied forces to the supporting bracket, which is rigidly supported by the post, with the result that the beam itself is stiffened against forces tending to deflect it.

The shells 28 and 30 also act as reinforcing members for the base plate and serve to transmit to the supporting bracket 20 forces applied to the base plate along the side and the end portions thereof. Each of the shells 28 and 30 is hollow, conveniently being formed of two pressed steel sections welded together at 64 and 66 (Fig. 3), respectively. The shell 28 is shaped closely to fit over the plates 24 and 26 and is welded to the bracket and to the base plate at 68 (Fig. 3). The outer shell 30 is similar in shape to the shell 28, but is sufficiently larger to nest over it and is welded to the base plate at 70 (Fig. 2) and to the bracket at 72.

The beam is provided with bumpers, in the form of spring pressed plungers 74 (Fig. 3), for cushioning the movement of the beam, if it should be swung against the frame. These plungers are positioned within a tube 76 which extends through openings 78 and 80 in the shells and 82 (Fig. 4) in the main reinforcing plate and is welded to the shell 30 at 83. The forward end of the beam has welded to it a boss 84, upon which is positioned a pin 86 (Fig. 1) which carries the starting handle 18.

In order to prevent the dulling of double-edged cutting dies, the beam is preferably provided with a striking plate 88 (Fig. 2) secured by studs 90 and nuts 92 to the underside of the base plate. This striking plate is preferably of comparatively soft material, such as aluminum, which will not destroy the upwardly disposed edge of a die when the beam is brought down upon the same in forcing the die through material being operated upon.

It is to be noted that the arrangement and spacing of the reinforcing plate 24, the ribs 26 and the shells 28 and 30, are such that the base plate 22 is backed up over its entire upper surface, the various members forming struts or trusses. The distances between the members are less than the length of the smallest die which is likely to be used, with the result that a die will bridge over at least two of the members. Consequently, the applied load is distributed through the various members to the supporting bracket 20 and the post 14. This construction contributes markedly to the strength and stiffness of the beam, and at the same time makes it possible to use parts of a thickness such that the weight of the beam is not materially greater than that of light alloy beams of the same size and comparable strength.

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

1. A beam for presses, comprising a base plate, a reinforcing plate extending centrally and longitudinally of the base plate, a supporting bracket welded to the base plate and to the reinforcing plate, and a plurality of hollow shells enclosing the reinforcing plate and welded to the base plate and to the bracket.

2. A beam for presses, comprising a supporting bracket, a base plate welded to the bracket, and a plurality of nested hollow shells extending longitudinally of the base plate and welded thereto and to the bracket.

3. A beam for presses, comprising a supporting bracket, a base plate welded to the bracket, a reinforcing plate extending from the base plate heightwise of the bracket and welded to the bracket and to the base plate, and a plurality of nested hollow shells enclosing the reinforcing plate and welded to the base plate and to the bracket.

4. A beam for clicking machines, comprising a bracket adapted to be secured to the post of a clicking machine, a base plate welded to the bracket, a reinforcing plate extending heightwise of the bracket and tapered outwardly therefrom along the central portion of the base plate, the reinforcing plate being welded to the bracket and to the base plate, and a plurality of hollow shells enclosing the reinforcing plate and welded to the bracket and to the base plate.

5. A beam for presses, comprising a supporting bracket, a base plate welded to the bracket, a reinforcing plate extending from the base plate heightwise of the bracket and welded to the bracket and to the base plate, and a plurality of nested hollow shells enclosing the reinforcing plate and welded to the base plate at spaced distances outwardly of the reinforcing plate.

6. A beam for clicking machines, comprising a bracket adapted to be secured to the post of a clicking machine, a base plate welded to the bracket, a reinforcing plate extending heightwise of the bracket and tapered outwardly therefrom along the central portion of the base plate, the reinforcing plate being welded to the bracket and to the base plate, a plurality of reinforcing ribs extending outwardly from the reinforcing plate and welded thereto and to the base plate, and a plurality of hollow shells enclosing the reinforcing plate and the ribs and welded to the bracket and to the base plate.

7. A beam for clicking machines, comprising a base plate, a bracket welded to the base plate, a vertical reinforcing plate extending longitudi-

nally of the base plate and welded thereto and to the bracket, and a hollow shell enclosing the reinforcing plate in close juxtaposition thereto and welded to the bracket and to the base plate.

8. A beam for clicking machines, comprising a base plate, a bracket welded to the base plate, a plurality of reinforcing plates extending heightwise of the bracket and welded to the base plate, and a hollow shell enclosing the reinforcing plates in close juxtaposition thereto and welded to the base plate and to the bracket.

9. A beam for presses, comprising a supporting bracket, a base plate welded to the bracket, reinforcing plates extending along central portions of the base plate heightwise of the bracket and welded to the base plate, the reinforcing plates being tapered outwardly of the beam in a direction away from the bracket, and a hollow shell enclosing the reinforcing plates in close juxtaposition thereto and welded to the base plate and to the bracket.

10. A beam for presses, comprising a bracket, a base plate welded to the bracket, a vertical reinforcing plate extending longitudinally of the base plate, the reinforcing plate being tapered outwardly from the bracket and being welded to the bracket and to the base plate, a plurality of reinforcing ribs extending outwardly from the reinforcing plate at angles of about 30° and welded to the reinforcing plate and to the base plate, a hollow shell extending over the reinforcing plate and ribs in close juxtaposition thereto and welded to the bracket and to the base plate, and a second hollow shell enclosing the first-mentioned shell and welded to the bracket and to the base plate.

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