G. J. BLUM.

PUNCH.

APPLICATION FILED OCT. 18, 1907.

902,643. Patented Nov. 3, 1908.

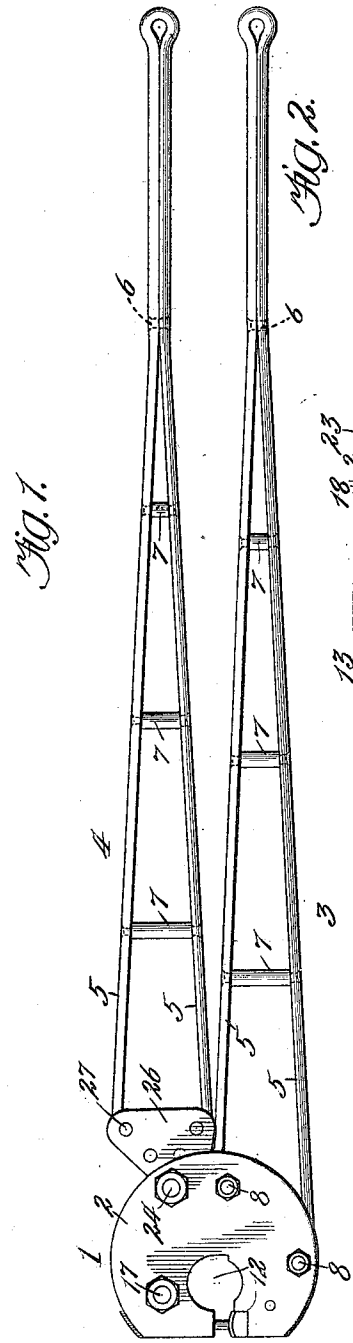


Fig. 1.

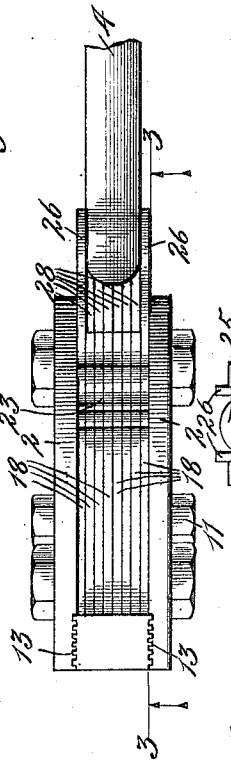


Fig. 2.

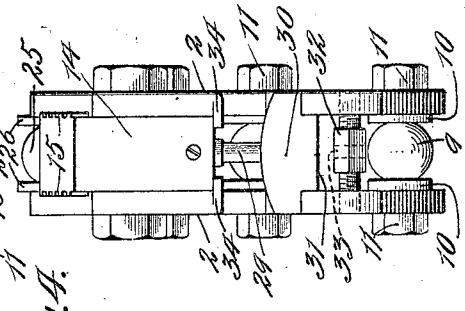


Fig. 4.

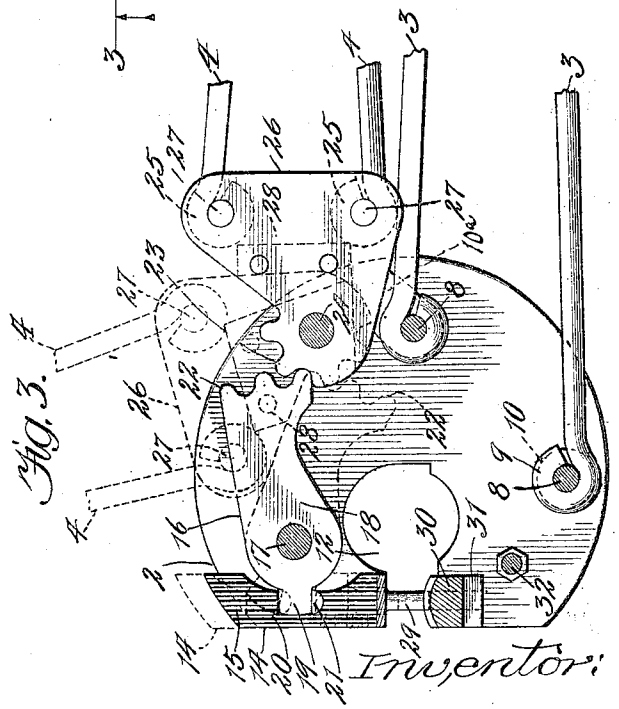


Fig. 3.

Witnesses:

Ira D. Perry

Robert H. Weir

Inventor:

George J. Blum

By Luther L. Miller Atty

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE J. BLUM, OF CHICAGO, ILLINOIS, ASSIGNOR TO ARMSTRONG-BLUM MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PUNCH.

No. 902,643. Specification of Letters Patent. Patented Nov. 3, 1908.

Application filed October 18, 1907. Serial No. 397,988.

To all whom it may concern:

Be it known that I, GEORGE J. BLUM, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Punches, of which the following is a specification.

This invention relates to tools for punching holes in metal sheets or bars, and one of its objects is to provide a very powerful tool of this class intended especially for manual actuation.

Another object is to provide improved means for securing a die in place.

A further object of the invention is to provide a stripper of strong, cheap construction.

The invention also refers to the other improvements in punches hereinafter set forth.

In the accompanying drawings, Figure 1 is a side elevation of a punch embodying the features of my invention. Fig. 2 is a top plan view of the device, the handles being broken away. Fig. 3 is a sectional view taken on the plane of dotted line 3 3 of Fig. 2. Fig. 4 is a front end elevation.

The head or body portion 1 of the device comprises two plates 2 to which are attached the handles 3 and 4. Each of said handles consists of a half-round bar bent over upon itself, the two side members 5 thus formed being riveted together at 6. The free ends of the two side members 5 are spaced apart and secured together by means of the shouldered rivets 7, thus forming a trussed handle or hand lever of light yet exceedingly rigid and strong construction. The handle 3 is secured to the body portion 1, in this instance, by means of studs 8 screw-threaded at their opposite ends, said studs passing through eyes 9 formed upon the ends of the side members of said handle. Washers 10 are placed between the plates 2 and the eyes 9, and nuts 11 are turned upon the screw-threaded ends of said studs to secure the handle 3 and the plates 2 rigidly together.

In the plates 2 are formed openings providing a throatway 12. Above said throatway a plurality of vertical guideways 13 are formed in the inner faces of the plates 2. A slide 14 having guide ribs 15 formed upon two of its opposite sides is slidably mounted upon the guide ways 13.

The slide 14 is reciprocated by means comprising a laminated lever 16 pivotally mounted upon a stud or bolt 17. In order that the lever 16 may be made exceedingly hard and strong, it is constructed of a plurality of thin plates 18 all of the same form, each of which plates is case-hardened. At its forward end the lever 16 comprises a lug 19, the under side of which is flat. The stud 19 projects into a transverse groove 20 in the slide 14, the lower wall of said groove being curved and substantially semi-circular. In the lower portion of said groove is rotatably mounted a bearing piece 21 semi-circular in cross-section, the length of said bearing piece being substantially equal to the thickness of the lever 16 and the lug 19. The bearing piece 21 is hardened to withstand the pressure exerted upon it by the lever 16. The flat lower side of the lug 19 contacts the flat upper side of the bearing piece 21, thus providing at all times during the working stroke a wide flat bearing contact between the lever 16 and the slide 14. The slide 14 is recessed above and below the groove 20 to accommodate the central or pivotal portion of the lever 16.

The rear end of the lever 16 is in the form of a gear sector 22 to mesh with gear teeth 23 formed upon the inner end of the handle 4, said handle being pivotally mounted upon the bolt or stud 24. The side members 5 of said handle are bent to form eyes 25, which are secured between two side plates 26 by means of rivets 27. Between said side plates is a plurality of thin plates 28, the plates 26 and 28 being riveted together, to form the inner end of the handle or hand lever 4. The plates 26 and 28 are all case-hardened before being riveted together in order that the lever formed of said plates shall be exceedingly strong and tough.

The punch 29 is secured in the slide 14 in any suitable manner. The die 30 has a portion 31 adapted to lie between the plates 2, and is secured in place by being clamped between said plates, a stud 32 having right and left-hand screw-threads upon its opposite ends being located between said plates and in screw-thread engagement therewith. 33 is an opening through said stud, to receive an implement for turning the stud. As will be readily seen the plates 2 may be drawn up by means of the stud 32 to clamp the die 30 securely in place.

The stripper 34 is formed in this instance by milling or otherwise cutting out the plates 2 to reduce their thickness just above

the throatway 12, the reduced portions being then bent inwardly as shown in Fig. 4.

It is obvious that in place of a punch and die, a stationary and a movable shearing jaw might be used.

In operation, the punch is opened by raising the lever 4. The punch is then placed upon the work with said work extending into the throatway 12. The punch 29 is then advanced by depressing the lever 4, the lever 16 being thereby tilted to force the slide 14 downward. The lug 19 bears firmly upon the bearing piece 21, which is free to slide in the groove 20 as the relative positions of the slide 14 and the lever 16 are changed. The connection just described between the lever and the slide provides a much larger bearing contact between the parts than is possible in other constructions, and prevents the force exerted upon the parts from crushing or otherwise injuring them. The lever 16 and the inner end of the lever 4 being laminated the sections may be carefully and thoroughly hardened as would not be possible were they of integral construction.

It is obvious that various changes may be made in the embodiment herein shown without departing from the spirit and scope of the invention. I, therefore, do not wish to limit myself to the details herein set forth.

I claim as my invention:

1. A tool having a body portion comprising two plates, openings being formed in said plates to provide a throatway; a stationary die; means for drawing up said plates to clamp said die in place between said plates; a movable die; and means for moving said movable die.

2. A tool having a body portion comprising two plates, openings being formed in said plates to provide a throatway; a die adapted to rest upon said plates and having a portion lying between said plates; and a right-and-left hand screw - threaded member engaging said plates for drawing said plates into clamping engagement with said die.

3. A hand tool having a body portion comprising two plates, guide-ways formed in the inner faces of said plates; a slide having guide-ribs thereon adapted to engage in said guide-ways; two handles attached to said body portion; and an operating connection between one of said handles and said slide.

4. In a tool, in combination, a die-carrying slide having a semi-circular groove therein; a semi-circular bearing piece mounted in said groove, said bearing piece having a flat bearing surface; and a pivoted slide-operating lever having a lug provided with a flat portion adapted to bear upon said flat bearing surface.

5. In a tool, in combination, a die-carrying slide; a pivoted member for moving said slide; and a member interposed between said slide and said first mentioned member, and providing a flat contact between said members and a sliding contact between the second mentioned member and said slide.

6. In a tool, in combination, a die-carrying slide having a groove therein; a bearing piece mounted to slide in said groove; and a pivoted actuating member having a flat contact with said bearing piece.

GEORGE J. BLUM.

Witnesses:

C. PAUL PARKER,

GEORGE L. CHINDAHL.