L. GOEHR.

PUNCHING JIG.

APPLICATION FILED AUG. 10, 1920.

1,420,252. Patented June 20, 1922.

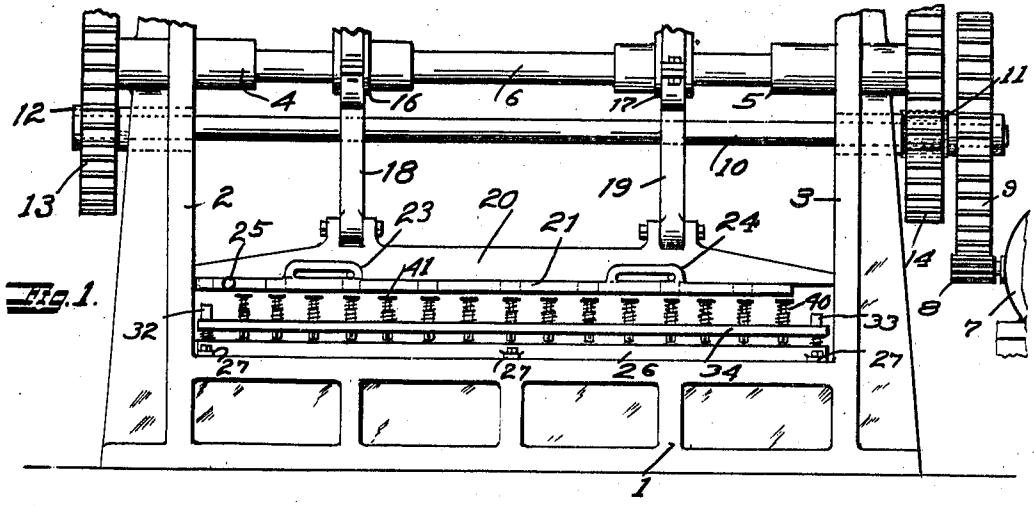


Fig. 1.

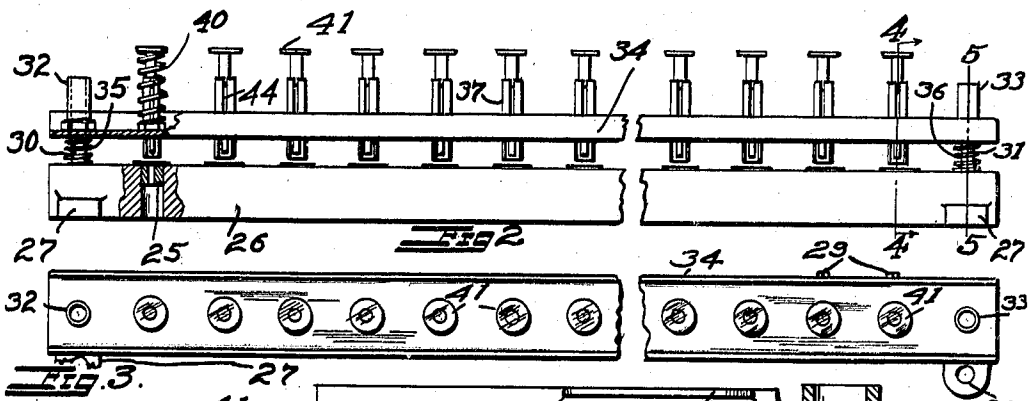


Fig. 2

Fig. 3.

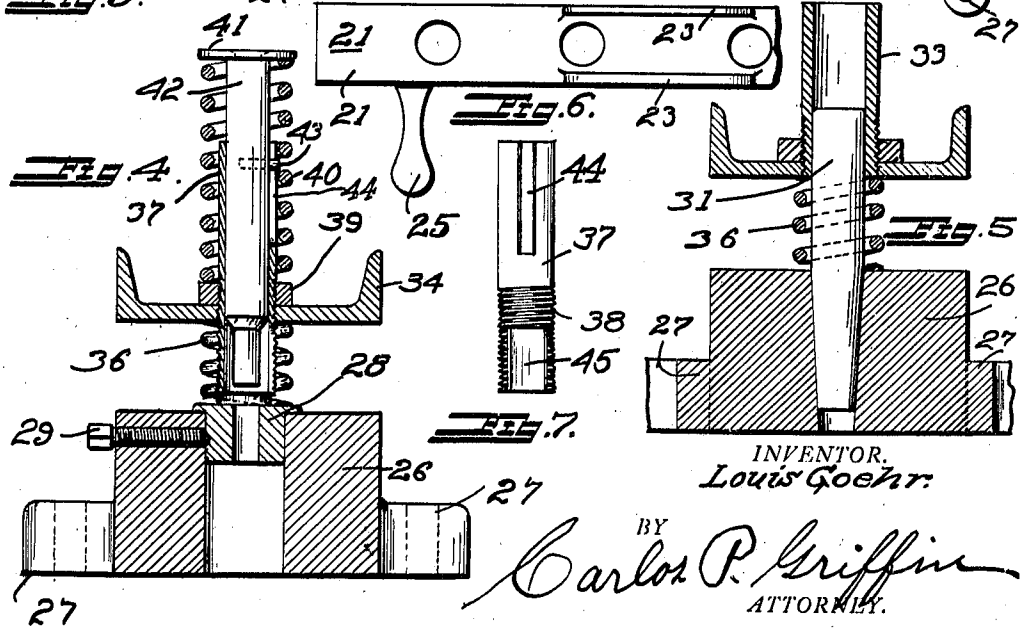


Fig. 4.

Fig. 6.

Fig. 7.

Fig. 5.

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PUNCHING JIG.

1,420,252. Specification of Letters Patent. Patented June 20, 1922.

Application filed August 10, 1920. Serial No. 402,669.

To all whom it may concern:

Be it known that I, LOUIS GOEHR, citizen of the United States, residing at San Francisco, in the county of San Francisco, State of California, have invented a new and useful Punching Jig, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a punching jig and its object is to produce a jig which is capable of being inserted in any pressing machine having a reciprocatory movement and capable of receiving the jig thereby making it possible to carry out a series of punching operations of a given kind in machines not specially adapted for punching purposes.

It will be understood by those skilled in the art that the ordinary punching machine is provided with punching apparatus and dies which are built into the machine or attached thereto in a manner such as to make the machine practical and especially machines for that single apparatus.

In the present invention the jig is produced and carries a series of punches which may accomplish a number of different objects or a series of punches may be used on the jig and the jig itself is a complete piece of apparatus which is merely set into any machine having a suitable reciprocating movement and strong enough to accomplish the desired object.

It is intended that any number of the foregoing jigs may be kept on hand for different punching operations and may be attached to or removed from the pressing apparatus at will whenever a different series of punching operations is to be carried out.

Another object of the invention is to provide means whereby the punching operations may be carried out in two movements of the press if the number of punches used and the material being punched is too heavy for the given press to operate all of the punches at one time.

Another object of the invention is to provide the punches with stripping apparatus so as to make it convenient to apply oil to the punch in order to make the material punched strip easily in the punch.

Other objects of the invention will appear as the description proceeds.

An embodiment of the invention is shown in the accompanying drawings in which the same reference numeral is applied to the same portion throughout, but I am aware that there may be modifications thereof.

Figure 1 is a front elevation of a portion of a pressing machine in which one of these jigs has been assembled.

Fig. 2 is a front elevation of one of the jigs a portion thereof being broken away for purposes of illustration.

Fig. 3 is a plan view of the jig shown in Fig. 2.

Fig. 4 is a vertical sectional view of the jig shown in Fig. 2 on the line 4—4.

Fig. 5 is a vertical section on the line 5—5 of Fig. 2.

Fig. 6 is a plan view of the movable anvil used on the press for enabling one-half of the punches to be operated on each movement of the press.

Fig. 7 is a front elevation of one of the punch carrying tubes.

The numeral 1 indicates the base of the press, said base having side frames 2 and 3 which carry bearings 4 and 5 for the main shaft 6.

In the present instance the press is driven from the motor 7 which has a small gear 8 in mesh with a larger gear 9 on the shaft 10 on the back of the frames 2 and 3. The shaft 10 also carries two small gears 11 and 12 in mesh with large gears 13 and 14 on the main shaft 6, so that the shaft 6 rotates slowly but with very great power. The shaft 6 carries two eccentrics 16 and 17, which eccentrics cause two links 18 and 19 to rise and fall as the shaft 6 rotates.

At the lower end of the links 18 and 19 there is the anvil head 20, this head carries a slidable anvil block 21 which has a number of holes therein placed to correspond with the position of one-half the punches used. This anvil block is held in place by means of slotted lugs 23 and 24 and it is moved manually with the handle 25.

The jig base is indicated at 26 and it has two or more lugs 27 for securing it to the base of the pressing machine. The jig base is provided with a plurality of openings to receive dies 28 of any desired shape of opening which are held in place by means of a plurality of set-screws 29; one for each die. At each end of the base 26 there are pins as shown at 30 and 31 said pins being forced into tapered holes in the base and forming guides for the tubes 32 and 33 carried by the ends of the punch supporting bar 34.

Springs 35 and 36 surrounding the pins 30 and 31 hold the bar 34 raised from the base 26 so that the lower ends of the strippers 37 are out of contact with the base.

The strippers 37 are threaded as indicated at 38 and are each secured in the bar 34 by means of the lock nut 39. Surrounding each stripper is a heavy spiral spring 40 which bears upon the lock nut 39 and bears upon the under side of the flat head 41 of the punch 42. In order to hold the punch 42 in a fixed position with respect to the stripper it is provided with a pin 43 which moves in a slot 44 of the stripper 37.

In order to provide for the convenient oiling of the ends of the punches the stripper tube is cut away as indicated at 45.

In operation the plate of metal is slipped under the punches, the press is then operated to give one complete rotation of the shaft 6 whereupon one-half of the punches in the jig shown will be operated to produce holes in the plate to be punched.

As soon as the shaft 6 has been rotated once the anvil 31 may be moved to the right (note Fig. 1) to the end of its throw whereupon the remaining one-half of the punches will be operated on the next rotation of the shaft 6.

It will be understood by those skilled in the art that while the movable anvil 21 has been shown with holes therein to operate one-half the punches at a time that all may be provided with a different series of holes to operate a less number of punches if that is desired.

What I claim is as follows, but various modifications may be made in the construction shown in the drawings and above particularly described form, within the purview of my invention:

1. A punching jig comprising a base carrying a plurality of dies, a bar above the base, guides for directing the movement of the bar, springs for supporting the bar resiliently in a given position, a plurality of punch guides, stripper tubes carried by the bar, punches movable in the latter guides and stripper tubes and springs for supporting said punches so that the ends of the punches will be normally above the bottom of the stripper tubes.

2. A punching jig comprising a base carrying a plurality of dies, a bar above the base, guides for directing the movement of said bar, springs for supporting the bar, a plurality of guides and stripper tubes carried by the bar, lock nuts on the last named guides for holding them in a fixed adjustment with respect to the bar, punches in said guides and stripper tubes to correspond with the dies and springs for holding the punches with their ends normally above the bottom of the stripper tubes.

In testimony whereof I have hereunto set my hand this 29″ day of July A. D. 1920.

LOUIS GOEHR.