Oct. 26, 1937. A. AZER 2,096,778

PUNCH

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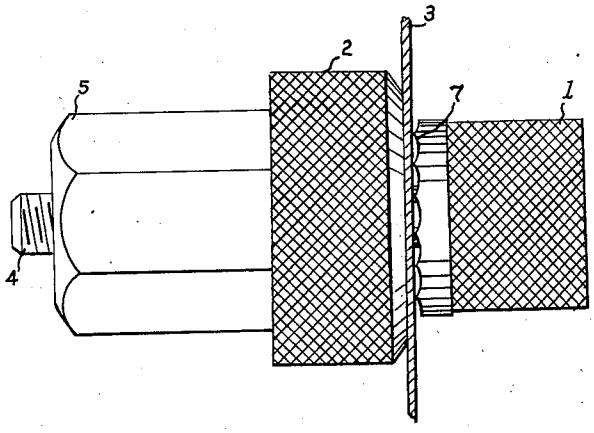


Fig. 1

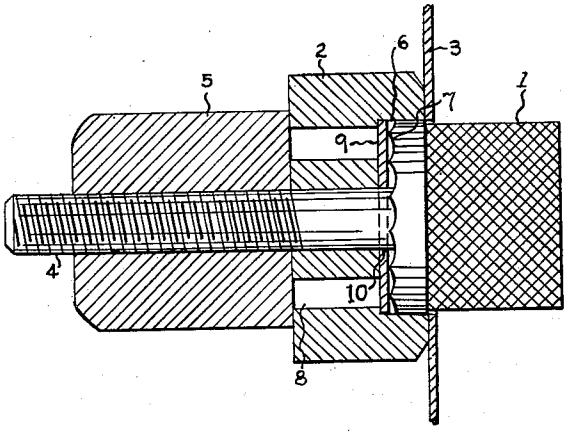


Fig. 2

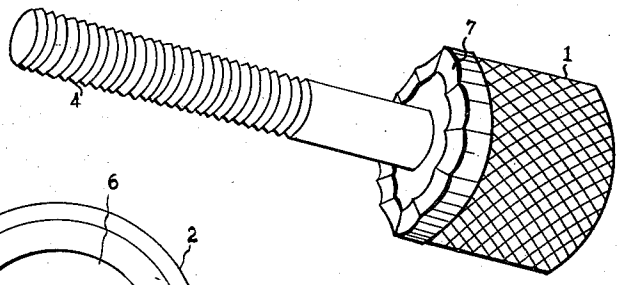


Fig. 3

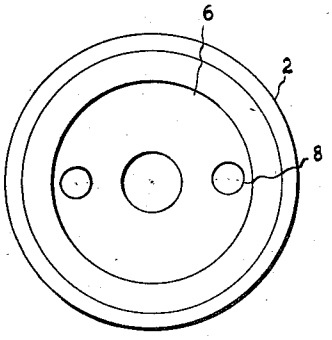


Fig. 4

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PUNCH

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1 Claim. (Cl. 164—101)

This invention relates to punches and particularly to punches for perforating sheet metal.

It is often required to perforate sheet material so incorporated in an assembled structure that a punch press operation is out of the question. An example of such a job is the perforating of a motor vehicle dash board preliminary to installing a hot water heater or other accessory. On such jobs, the required perforations are often too large to be formed by hand drilling.

An object of the invention is to provide a simple, compact, and inexpensive punch, which will quickly produce a required perforation having a sharp clean-cut edge.

A further object is to adapt a punch to be operated by an ordinary wrench.

A further object is to provide a punch suited to form openings larger than may be produced by a common hand drill, yet sufficiently compact to be carried in a coat pocket.

These and various other objects are attained by the construction hereinafter described and illustrated in the accompanying drawing, wherein:

Fig. 1 is a view of the improved punch in side elevation, showing its initial shearing position with respect to a sheet of metal.

Fig. 2 is an elevational view of the same in partial section, showing the dies as positioned on completion of a punching operation.

Fig. 3 is a perspective view of the male die of the punch, showing a feed screw carried thereby.

Fig. 4 is a front view of the female die.

In these views the reference characters 1 and 2 designate coacting male and female dies for punching a circular hole in sheet material such as a sheet metal dash board 3. A feed screw 4 projects rigidly from the male die, along the extended axis thereof, and the female die has a slip fit on such screw, being actuable toward the male die by a nut 5 threaded on the screw. The front face of the female die is centrally counterbored, as indicated at 6, for shearing coaction with the male die, and the work-engaging face of the male die is serrated in its marginal portion, as indicated at 7, to resist rotation of such die, in use. The threads of the feed screw terminate at a distance from the male die sufficient to provide a continuous or unbroken supporting surface for the female die, while functioning. One or more openings 8 extend from the counterbore 6 to the rear face of the female die, parallel to its axis, permitting ready ejection of the punching 9.

In using the punch, an opening 10 freely accommodating the screw, is first drilled in the dash board or other work. After removal of the nut 5 and female die from the screw 4, the latter is inserted in the opening 10, so as to abut the male die against one face of the work. The female die is then applied to the screw with its front face engaging the opposite face of the work. Finally, the nut 5 is threaded on the screw, and by means of a suitable wrench (not shown), is employed to draw the feed screw rearwardly forcing the male die through the work. Thus there is sheared in the work a sharp-edges and perfectly circular perforation to serve any desired purpose. During such shearing, the serrations 7 bite into the work, prohibiting rotation of the male die and feed screw.

The described tool is exceedingly simple and compact and may be constructed in any size to suit the diameter of the desired perforation. While the tool can be adapted to punch large or small openings, it will, of course, be understood that it is most useful in the production of openings too large or too inconveniently located for hand drilling.

It is to be noted that the female die, in the described construction, is longitudinally floating on the feed screw, radically distinguishing in this respect, from present general practice as regards both hand punches and punch presses.

While the illustrated tool is designed for punching a circular opening, it is apparent that the contour of the shearing edges could be modified to form an opening of any other desired shape.

The invention is presented as including all such modifications and changes as come within the scope of the following claim.

What I claim is:

A punch comprising a feed screw, a female die slidable on the screw, a male die fixed on the screw and scalloped upon its work-engaging face to form serrations inwardly extending from its shearing edge, and acting to restrain the male die and screw from rotation, during a punching operation, and a nut threaded on the screw to actuate the dies toward each other.

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