

No. 818,783.

PATENTED APR. 24, 1906.

T. F. PHILIPPI.
HAND PUNCH.

APPLICATION FILED DEC. 23, 1905.

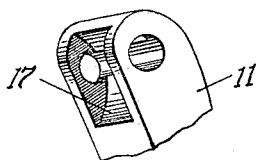


Fig. 6.

Fig. 1.

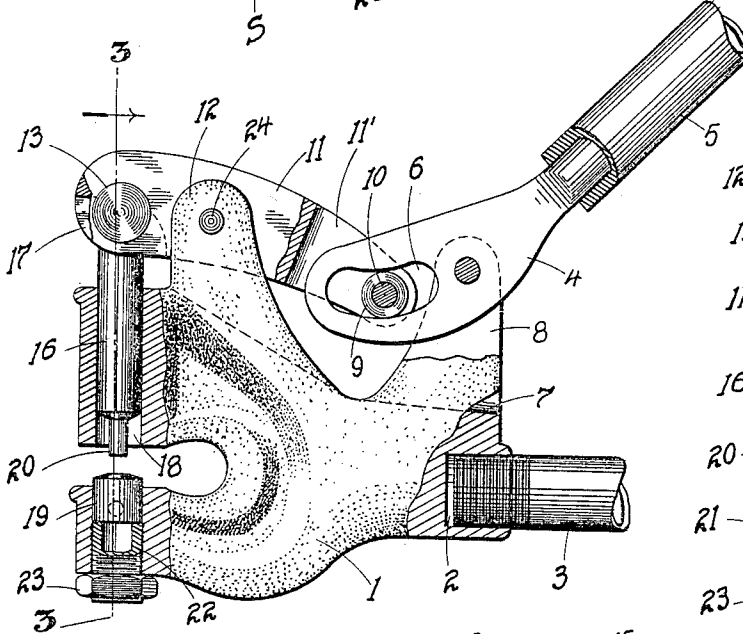
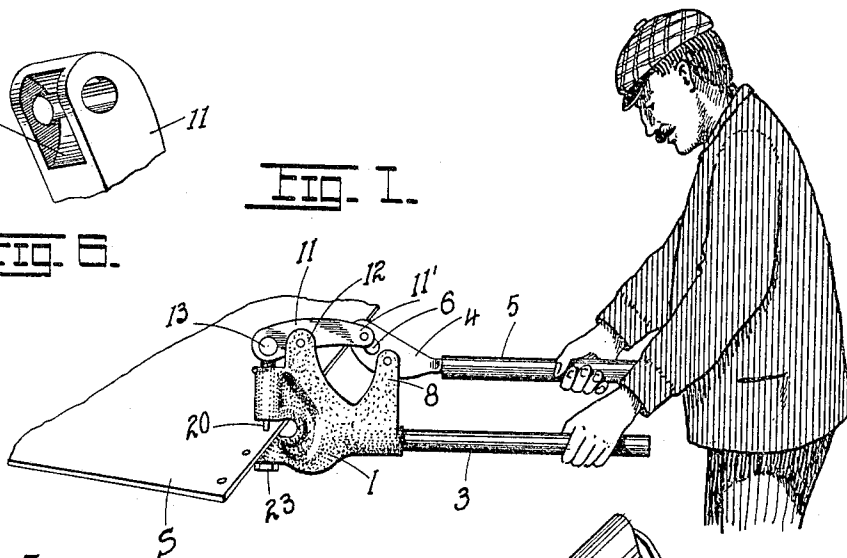


Fig. 2.

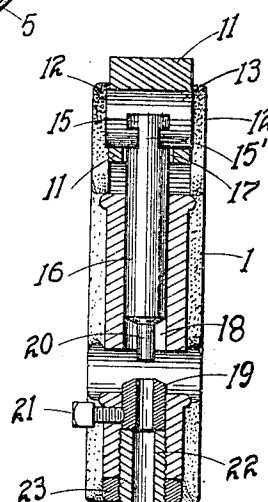


Fig. 3.

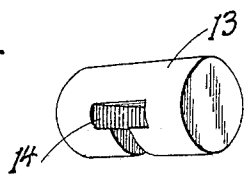


Fig. 4.

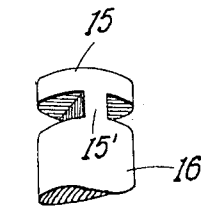


Fig. 5.

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THEODORE F. PHILIPPI, OF EAST ST. LOUIS, ILLINOIS.

HAND-PUNCH.

No. 818,783.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THEODORE F. PHILIPPI, a citizen of the United States, residing at East St. Louis, in the county of St. Clair and State of Illinois, have invented certain new and useful Improvements in Hand-Punches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in hand-punches; and it consists in the novel construction of punch more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the tool, showing its application to a sheet of metal. Fig. 2 is a combined side elevation and section of the same on an enlarged scale. Fig. 3 is a transverse vertical section on line 3 3 of Fig. 2. Fig. 4 is a perspective of the cylindrical block carried by the lever 11, coupled to the plunger, and in which the head of the plunger operates. Fig. 5 is a perspective of the upper end of the plunger, and Fig. 6 is a perspective of the outer end of the lever 11.

The object of my invention is to construct a portable punching (or shearing) tool which may be carried about the shop and applied to the material which is to be operated on, special attention being paid toward producing a tool which is simple, effective, one possessing a maximum amount of leverage for the easy punching of metal sheets of considerable thickness, and one possessing further and other advantages better apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, 1 represents the body portion of the punch, the same being provided with a socket 2 for the insertion of a pipe-bar 3, serving as a handle, there being pivotally mounted immediately over the socket an operating-lever 4, whose outer arm may be extended indefinitely by a pipe-bar 5 to increase the leverage. The short arm of the lever 4 is provided with an elongated curved slot 6, the concavity of the slot being toward the body portion 1. The base of the short arm of the lever 4 is also curved or concaved toward the body 1, said concaved base serving to arrest the outward oscillation of the long arm by coming in contact with the basal wall 7 of the forked arms 8, between which said lever is pivoted.

Operating in the curved slot 6 of the lever

4 is an antifriction-roller 9, mounted on a pin 10 in the forked end of the long arm of the plunger-lever 11, the short arm of lever 4 freely operating between the members 11' of such forked end. The lever 11 oscillates in the plane of oscillation of or parallel to the lever 5, being mounted at the upper end of the fork 12, the outer short arm of the said lever 11 carrying a cylindrical steel block 13, which is provided with a T-shaped slot 14 for the reception of a correspondingly T-shaped head 15 of the reciprocating plunger 16, the body of the plunger passing through the chambered-out portion 17, formed in the lower portion of the outer arm of the lever 11, Fig. 3. The plunger operates in a suitable passage-way 18, formed in what may be considered the upper jaw of the punch, the lower jaw having mounted therein the die 19, which coöperates with the punch 20 at the lower end of the plunger. The die is held in a socket in the lower jaw by a set-screw 21, passed through the walls, being further held in place against strain in one direction by a pipe-plug 22, screwed into the base of the socket, a lock or jam nut 23 being subsequently passed over the projecting portion of the plug 22.

When it is desired to punch a hole in a sheet of metal or other material S, the operator passes the jaws of the tool over the sheet and thereupon oscillates the lever 5 toward the handle 3, when the operation is complete, To withdraw the punch 20, the lever 5 is swung upward, as obvious, Fig. 2. Of course the arms of the lever 11 describe arcs of circles, and since the plunger 16 can move in but one direction with each stroke (that direction being a rectilinear one) it follows that to accommodate itself to the arc through which the short arm of the lever moves the head 15 of said plunger must move through the versed sine of that arc for any oscillation of the lever. The slot 14 in the block 13 accommodates the plunger in such movement, the head 15 playing loosely in said slot. The block 13 is received by a cylindrical opening formed partly in the solid portion of the short arm of the lever 11 and partially in the lateral walls of the chamber 17, the block fitting loosely in said opening. In assembling the parts the block is first inserted into position, then it is properly turned, so that the T-shaped opening 14 therein may receive the head 15 and neck 15' of the plunger, said head and neck being inserted into the open-

ing from the front end of the chamber 17. The plunger thus in place is inserted into the passage-way 18, when the lever 11 is dropped into position between the fork-arms 12 and
 5 the pivotal pin 24 therefor inserted. After this the coupling of the parts 4 and 11 is an easy and obvious matter. Obviously the details here shown need not be restricted in their application to punches. The curved
 10 slot 6 of course has the advantage over a straight one, as it reduces the amount of oscillatory travel of the lever 11 for a given oscillation of the lever 5, the slot conforming in a measure to the curvatures of the arcs de-
 15 scribed by certain portions of the short arm of the part 4. A straight slot would impart too great an oscillation to the part 11, so that a minimum oscillation for the lever 11 necessarily results in a minimum expendi-
 20 ture of time in the operation of the tool.

Having described my invention, what I claim is—

1. In a punching-tool, a suitable body portion, a handle therefor, an operating-lever
 25 pivoted in proximity thereto, the short arm of said lever having an elongated slot, a reciprocating plunger mounted in the body portion a lever interposed between the plunger and operating-lever and movably connected
 30 to the plunger-lever, the movement described by the plunger being along the versed sine of

the arc of oscillation of the plunger-lever, substantially as set forth.

2. In a punching-tool, an oscillating lever pivoted at a point intermediate its length, a
 35 block carried at the end of one arm of the lever and free to rock therein, a T-shaped opening or slot formed in said block, a reciprocating plunger having a correspondingly - T-
 40 shaped head and neck adapted to be received in said opening thereby forming a movable connection between the plunger and lever during the oscillations of the latter, and an operating-lever for actuating the lever, sub-
 45 stantially as set forth.

3. In a punching-tool, an oscillating lever pivoted at a point intermediate its length, a
 block carried at the end of one arm of the lever and free to rock therein, a slot formed in
 50 said block, a reciprocating plunger having one end received in said slot and forming a movable connection between the plunger and lever during the oscillations of the latter, and
 55 an operating-lever for actuating the lever aforesaid, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

THEODORE F. PHILIPPI.

Witnesses:

EMIL STAREK,
 MARY D. WHITCOMB.