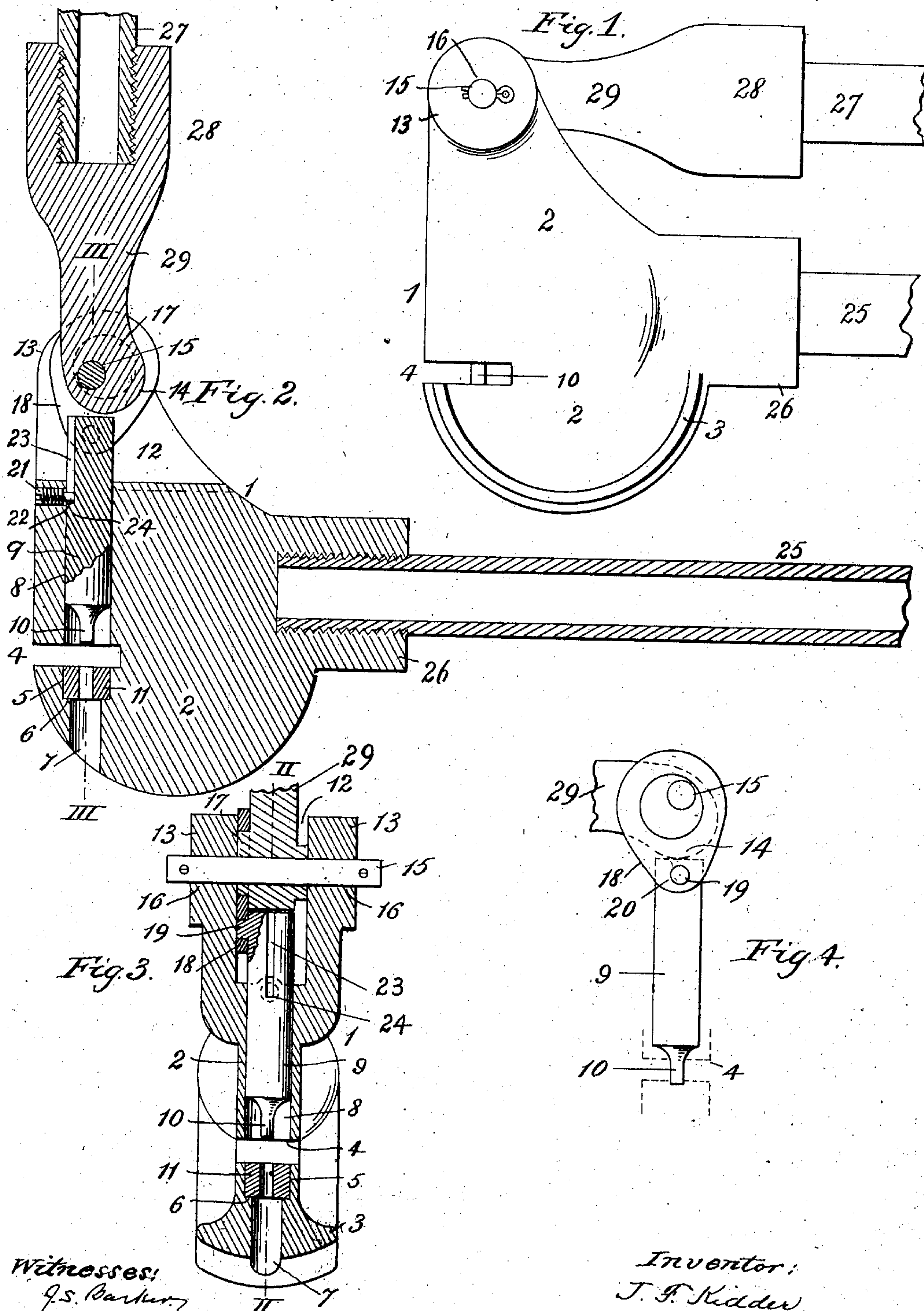


No. 834,139.

PATENTED OCT. 23, 1906.

J. F. KIDDER.
BLACKSMITH'S PUNCH.
APPLICATION FILED JUNE 15, 1905.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN FRANK KIDDER, OF BURLINGTON, VERMONT, ASSIGNOR TO J. F. KIDDER MANUFACTURING COMPANY, OF BURLINGTON, VERMONT.

BLACKSMITH'S PUNCH.

No. 834,139.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed June 15, 1905. Serial No. 265,377.

To all whom it may concern:

Be it known that I, JOHN FRANK KIDDER, a citizen of the United States, residing at Burlington, in the county of Chittenden and State of Vermont, have invented certain new and useful Improvements in Blacksmith's Punches, of which the following is a specification.

My invention relates to blacksmith-punches for use on metal-work to produce holes in plates or bars, and is of a type especially adapted for embodiment in hand-punches, although it is to be understood that various features of my improvements may be embodied in power-operated punches or punching-machines.

My improvements have for their object to simplify and cheapen the construction of the tool or machine, to increase its durability, and render its operation powerful and efficient; and it consists in the parts and combinations thereof hereinafter set forth and claimed.

In order to make the invention more clearly understood, I have shown in the accompanying drawings means for carrying the same into practical effect, without limiting my improvements in their useful applications to the particular construction which for the purpose of example I have illustrated.

In said drawings, Figure 1 is a side view of a punch embodying the invention in the form adapted for a hand-tool. Fig. 2 is a vertical longitudinal section of the same on line II II, Fig. 3. Fig. 3 is a sectional view on line III III, Fig. 2. Fig. 4 is a side view showing the plunger and operating devices therefor.

Referring to the drawings, 1 is a frame of metal, preferably in the form of a strong casting, having a web portion 2 and a strengthening-flange 3. At 4 is formed a throat of such width as will admit the thickness of the bars or articles to be punched. 5 is a die-seat formed at one side of the said throat and terminating at a shoulder 6, against which the die rests when under pressure during the punching operation. 7 is an aperture through the frame, formed as a continuation of the die-seat, but of smaller diameter, through which an instrument may be introduced to force out the die when the latter is to be interchanged for another. At

the other side of the throat 4 is formed a bearing, preferably of cylindrical form, which extends substantially at right angles to said throat. This bearing is indicated at 8 and is for the reception of the reciprocating punch-plunger 9. The latter has formed therewith or attached thereto a punch of suitable shape to cooperate with the die for the punching of holes, as above described. The punch is indicated at 10, and the die is shown at 11, mounted in the said seat 5. The frame 1 is further formed with a space 12 to receive and confine the punch-operating devices. Such space is conveniently formed by ears 13, cast with or attached to the frame and extending away from the main portion of the frame in substantial line with the bearing 8.

14 is the punch-cam, situated in the space 12 and mounted on a shaft or pintle 15. The latter is mounted in bearings 16, formed in the ears 13. This cam is arranged to force inward the punch-plunger when the cam is properly turned on its axis, and such movement of the plunger causes the punch to perform the desired perforating-work on any bar or article that has been introduced into the throat 4.

At the side of the cam and preferably cast therewith is an eccentric 17, and mounted on said eccentric and confined between the side of the cam and one of the ears 13 is an eccentric rod, strap, or bar 18. The inner end of the eccentric-bar is connected with the outer end of the plunger, the relations of the parts being such and the cam and eccentric being so relatively shaped that the rear end of the plunger is maintained close to the surface of the cam, there being sufficient looseness or play in the connections to permit the cam on its operative movement to press directly upon the plunger without any strain being brought upon the eccentric-rod or its connections, and on that movement of the cam which releases the plunger the eccentric 17 becomes operative to withdraw the plunger and retract the punch from the die 11 and throat 4. Preferably the connection between the eccentric-rod and the plunger is by a pin and hole, the plunger being provided with a lateral pin 19 and the inner end of the eccentric-rod with a hole 20 fitting over said pin. It will be understood that such connection might be inverted, the hole being formed in

the plunger and the pin being fixed on the eccentric-rod. The said connection between the eccentric-rod and the plunger is maintained by the confinement of the eccentric-rod within the space 12 between the ear 13 and the working parts above described. The plunger is kept from rotation and guided by a screw-pin 21, screwed through the end of the frame 1 and engaging by its inner end 22 a groove 23, formed in the plunger. The end of said groove terminates in a shoulder 24, by engagement of which with the pin end 22 the outward movement of the plunger and the corresponding movement of the operating parts may be stopped.

In the construction illustrated the punch as a whole is manipulated and held by handle 25, preferably a metal pipe or tube which is screwed into a socket 26, formed therefor on the frame 1. This handle, by preference, extends in a direction substantially parallel with that of the throat 4. The cam is operated by handle 27, which is or may be similar to handle 25 and is fixed in a socket 28, formed on the end of an arm 29, said arm being a part of or attached to the cam 14.

The tool above described is very durable and powerful, can be readily manipulated, and is capable of considerable variety in the work which it will perform, the plunger and die being readily interchangeable for others of different diameters and shapes. Such interchanges are effected by removing the pintle 15 and unscrewing the pin 21 a little ways, whereupon the parts 14, 17, and 9 can be removed and the die can be driven out of its seat, so as to pass out through the bearing-aperture 8 if the die be too thick to pass laterally through the throat 4. The described connection between the plunger and eccentric-rod is made more efficient by the guiding-point 22, which keeps the pin at right angles

to the eccentric-rod, the latter being kept at right angles to the pin 19 by its confinement between the wall of the space 12 and the side of the cam, such confinement limiting the movement of said rod to a longitudinal oscillation.

What is claimed is—

1. In a punch, the combination of a frame or casting having ears 13 and a throat, a die situated at one side of such throat, a punch bearing in the frame at the other side of the throat, a punch-plunger mounted to reciprocate in the said bearing, an arm pivotally mounted between the ears and having a cam thereon arranged to bear on the end of the plunger, an eccentric on the side of the arm, an eccentric-rod encircling the said eccentric, and a pivotal connection between the other end of the eccentric-rod and the plunger, substantially as and for the purposes set forth.

2. In a punch, the combination of a frame or casting having ears 13 and a throat, a die situated at one side of such throat, a punch bearing in the frame at the other side of the throat, a punch-plunger mounted to reciprocate in the bearing, an arm situated between the ears and having a cam thereon arranged to bear on the end of the plunger, an eccentric in the form of a projecting boss on the side of the arm, an eccentric-rod encircling the eccentric and pivotally connected with the plunger, and a pivot passing through the said ears and arm within the eccentric and the eccentric-rod, substantially as and for the purposes described.

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

JOHN FRANK KIDDER.

Witnesses:

HENRY A. BAILEY,
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