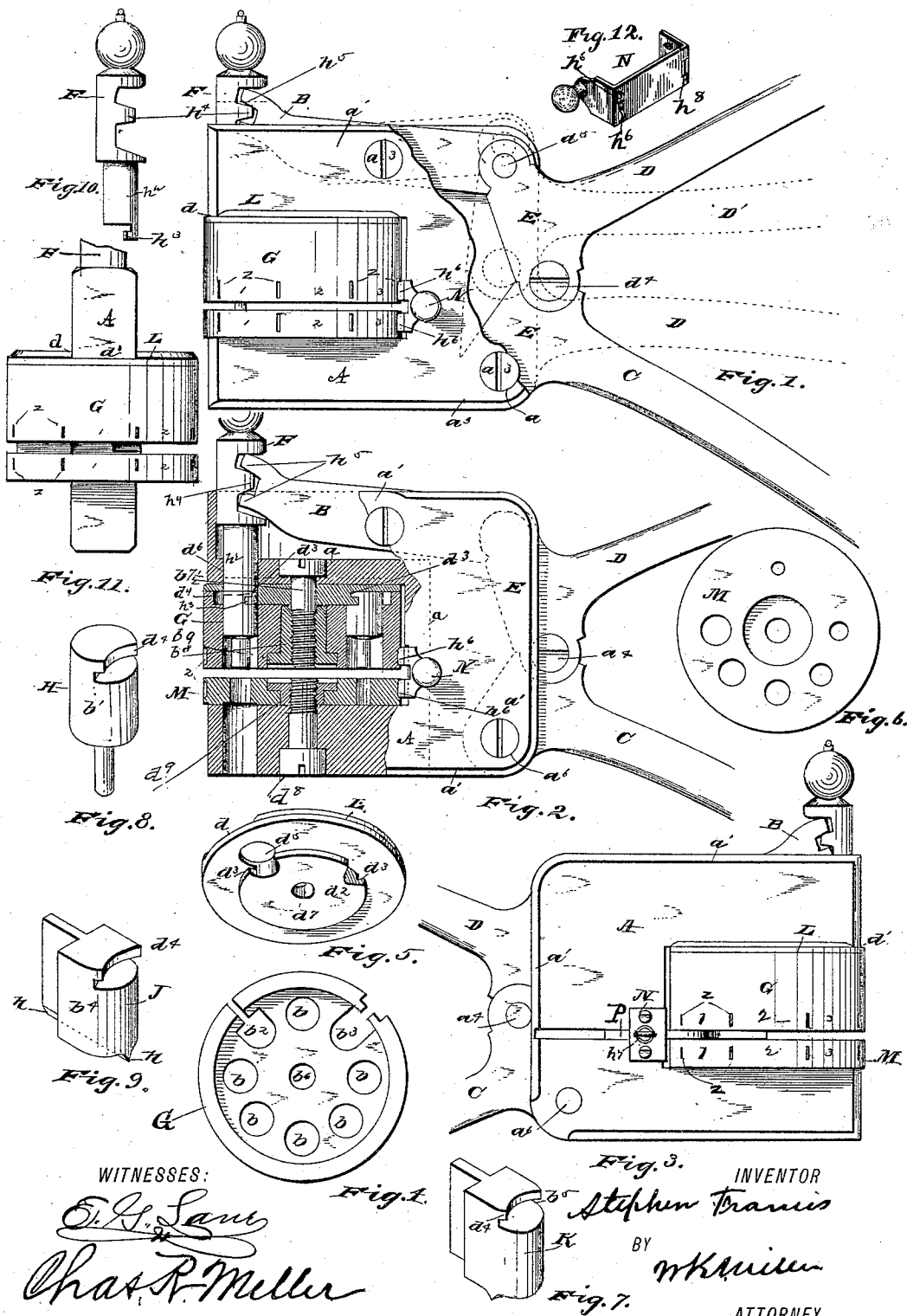


(No Model.)

S. FRANCIS.
HAND PUNCH.

No. 415,836.

Patented Nov. 26, 1889.



WITNESSES:

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HAND-PUNCH.

SPECIFICATION forming part of Letters Patent No. 415,836, dated November 26, 1889.

Application filed August 5, 1889. Serial No. 319,822. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN FRANCIS, a citizen of the United States, and a resident of Canton, county of Stark, State of Ohio, have invented a new and useful Improvement in Hand-Punches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to improvements in hand punches and cutters which are designed for all work within the range of hand punching and cutting; and it consists of certain features of construction and combination of parts, as will be hereinafter described, and set forth in the claims.

Figure 1 is a side elevation of a punch and cutter, illustrating my invention, with a portion of the frame removed, showing the manner of connecting the handles to the frame. Fig. 2 is a similar view having a portion of the frame removed, showing the details of construction. Fig. 3 is a similar view of the reverse side, showing a gage. Fig. 4 is a view of the upper end of the revolving punch and cutter guiding cylinder. Fig. 5 is a perspective of the fixed punch and cutter holder from below. Fig. 6 is a plan view of the revolving die. Fig. 7 is a perspective of transverse cutter. Fig. 8 is a similar view of a punch. Fig. 9 is a similar view of a longitudinal cutter; Fig. 10, the punch and cutter driver. Fig. 11 is an end elevation, and Fig. 12 is a detail view.

Similar letters of reference will indicate corresponding parts in all of the figures of the drawings.

A represents the frame, which is formed of a single piece of suitable metal, preferably of steel, the central portion of the inner and upper edges removed, as shown by the lines a , having outwardly-projected side flanges a' , between and to which the punch-actuating lever B and the handles C are pivotally secured by the pivot-screws a^3 , the inner ends of said handles having a T portion E provided thereon, the inner ends of the said portions pivotally connected, as shown at a^4 , and the upper end of the T portion on handle D is pivotally secured to the inner end of the lever B, as shown at a^5 , and the lower end of said portion on handle C is pivotally secured to the

flanges a' , as shown at a^6 , thus forming a toggle, by which, when the handles C and D are drawn together, as shown by the dotted lines, (see Fig. 1,) the toggle and lever B will be moved to position shown by the dotted lines, which operation of the handles will move the outer or front end of the lever B, engaging the punch-driver F, down with great force.

A cylinder, as G, is provided, having a series of annular apertures b of similar size, adapted to receive the heads b' of the punches H, and perforations b^2 and b^3 , adapted to remove the heads b^4 and b^5 of the cutters J and K, and a central perforation b^6 , through which the screw $b^{7\frac{1}{2}}$ is passed into the nut b^8 , by which arrangement the cylinder G is pivotally secured in the frame A, substantially as shown in Fig. 2. Said cylinder is also provided with a recess or counterbore b^9 .

The annular plate L (shown in Fig. 5) is provided on its upper face with a transverse groove d , adapted to receive the lower edge portion d' of the frame A, by which it is secured from rotation. The said plate is further provided with a downwardly-projected central portion d^2 , having about its outer edge portion an annular groove d^3 , adapted to receive the projected lip d^4 , formed at the head portion of the several punch and cutter heads H, J, and K. There is also provided a perforation d^5 , corresponding with perforation d^6 in the frame portion, adapted to receive the punch-driver F; also, a central perforation d^7 , through which the screw-bolt $b^{7\frac{1}{2}}$ is passed to the nut b^8 in the cylinder G.

The rotary die-plate M is pivotally secured to the lower portion of the frame A in the manner shown in Fig. 2 by the nut d^8 and the screw-bolt d^9 , and is provided with perforations, as shown in Fig. 6, said perforations to correspond in number and size with the several punches, which are of the form shown in Fig. 8, varying only in the size of the punch.

The cutters J and K are formed as shown in Figs. 7 and 9—cutter J adapted to the perforation b^2 in the cylinder and cutter K to perforation b^3 . The cutting-edge h of the cutter J stands longitudinally with the frame A when in use, and the cutting-edge of cutter K stands transverse to said frame.

The punch-driver F is constructed as shown in Figs. 2 and 10, having the lower end por-

tion h^2 adapted to pass through the perforations d^6 in the frame A and the plate L into the several perforations in the cylinder G. Said end portion is provided with an inwardly-projected lip portion h^3 , adapted to engage the lip d^4 on the punch and cutter heads, the upper end portion having a tooth h^4 to engage similar teeth h^5 at the front end of the lever B.

To place the punches and cutters in the revolving cylinder, the lever B is removed and the punches dropped through the perforation d^6 in the frame and into the plate L and cylinder G, the lips d^4 turned inwardly, and when so dropped in the cylinder is turned a distance, carrying the lip d^4 into the groove d^3 , and so on to the last one, which is coupled onto the driver F and so passed into the cylinder, the lip h^3 on the driver serving to complete the groove d^3 about the downwardly-projected portion d^2 of the plate L, as well as to engage the punch-head for the purpose of reciprocating the punch.

About the cylinder G and the die M there is provided small pits, as z , into which the toe h^6 of the spring N is placed, by which the cylinder and die are held against rotation. The heel of said spring is secured to the reverse side of the frame, as shown in Fig. 3.

A gage, as P, is provided, as shown in Fig. 3, against which articles to be punched may rest for the purpose of gaging the work to be done. A thumb-screw, as h^7 , is provided to secure the gage in desired adjustment. The gage passes through an opening h^8 in the spring shown in Fig. 12 and projects between the parts G and M, as clearly shown in Fig. 3.

A large number of punches may be provided having dies to correspond, so as to cover a large range of work.

In operation the numerals on the cylinder and the die are set to register and the desired punch or cutter turned to the front or end of the frame, and the handles operated to drive the punches into and out of the dies.

Having thus fully described the nature and object of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the frame A, of the punch-operating handles D and C and lever B, the plate L, having an annular groove d^3 , a revolving punch-holder G, having a series of perforations b , punches, as H, adapted to said perforations, a driver F, engaging the lever B and the punch H, and a revolving die M, substantially as described, and for the purpose set forth.

2. The combination, with the frame A, of the handles C D and lever B, pivotally secured thereto, the plate L, revolving cylinder G, cutters J and K, and a driver, as F, engaging the said cutters and lever, substantially as described, and for the purpose set forth.

3. The combination, with the frame A, of the revolving cylinder G, die M, and springs N, by which the cylinder and die are held against rotation.

4. The combination, with the cylinder G, punch H, and die M, of the gage P, substantially as described, and for the purpose set forth.

5. The combination, with the frame A, of the handles D and C, pivotally secured thereto, the lever B, having teeth h^3 , driver F, having at its upper end portion a tooth h^4 to engage the teeth h^5 of the lever B, and at its lower end portion an inwardly-projected lip portion h^3 , adapted to engage a similar lip portion d^4 on the upper end portion of the punch H, substantially as described.

In testimony whereof I have hereunto set my hand this 24th day of July, A. D. 1889.

STEPHEN FRANCIS.

Witnesses:

W. K. MILLER,
CHAS. R. MILLER.