L. DUBOIS.

PUNCHING MACHINE.

APPLICATION FILED JULY 22, 1919.

1,360,905.

Patented Nov. 30, 1920.

3 SHEETS—SHEET 1.

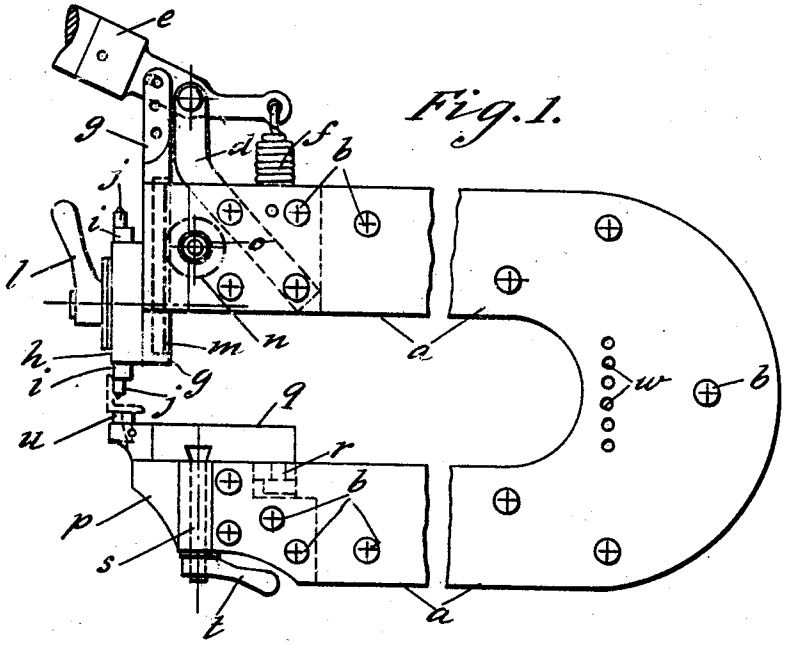


Fig. 1.

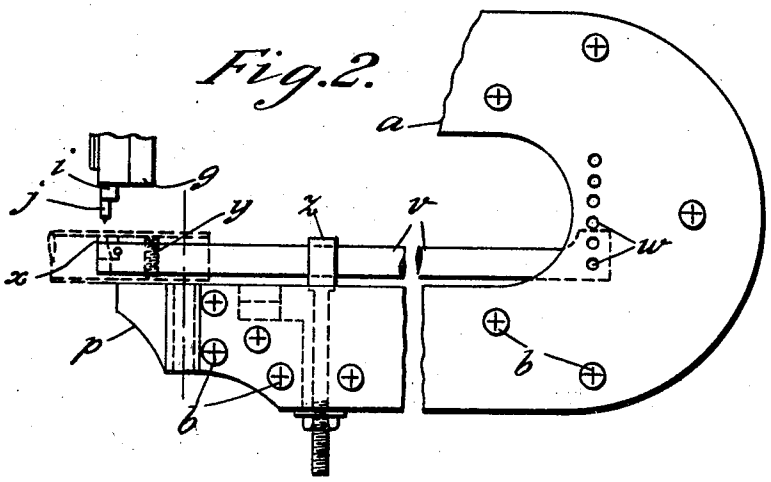


Fig. 2.

Witnesses;

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3 SHEETS—SHEET 2.

Fig. 3.

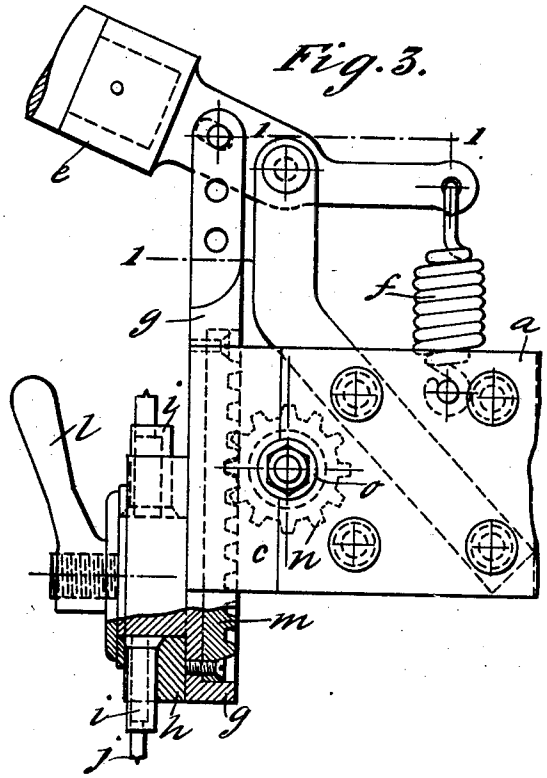
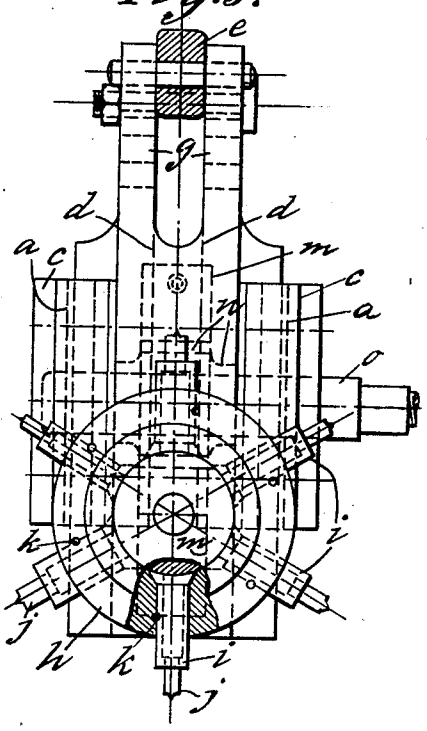


Fig. 5.



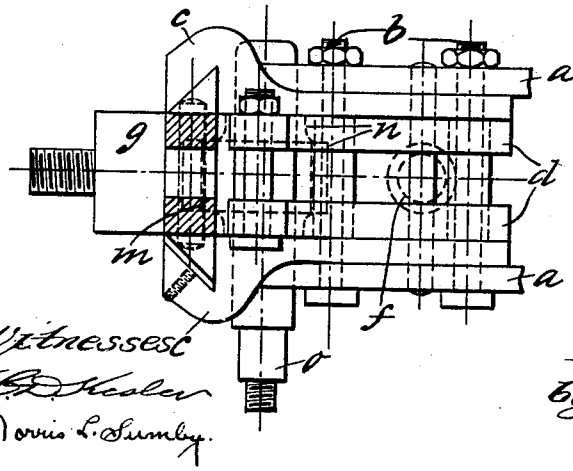


Fig. 4.

Witnesses:

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3 SHEETS—SHEET 3.

Fig. 6.

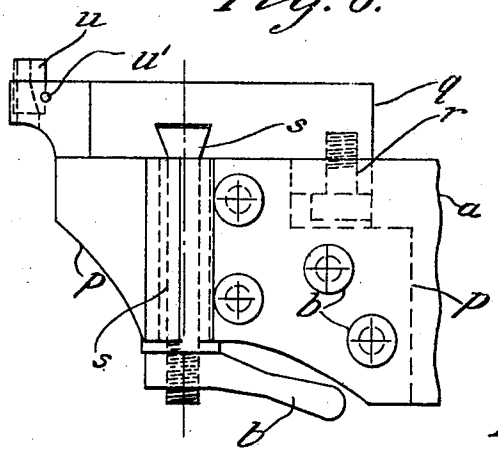


Fig. 10.

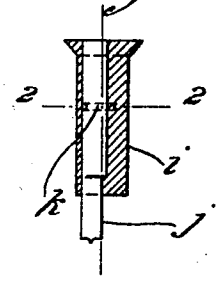


Fig. 11.

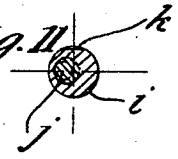


Fig. 7.

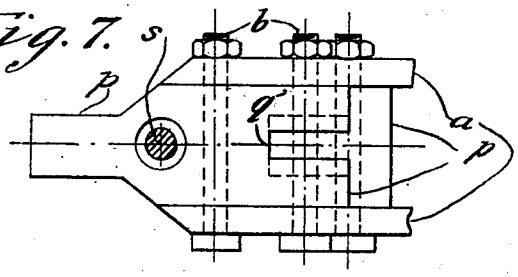


Fig. 12.

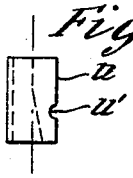


Fig. 8.

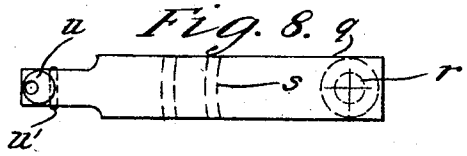


Fig. 13.

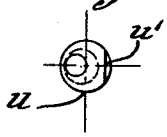
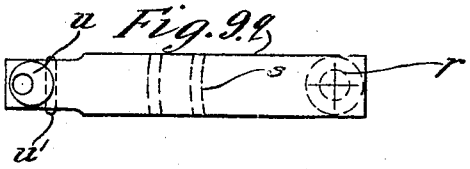


Fig. 9.



Witnesses.

Norris L. Dumby.

Inventor

Léon Dubois

by James L. Norris

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UNITED STATES PATENT OFFICE.

LÉON DUBOIS, OF ST. ETIENNE, FRANCE.

PUNCHING-MACHINE.

1,360,905. Specification of Letters Patent. Patented Nov. 30, 1920.

Application filed July 22, 1919. Serial No. 312,622.

To all whom it may concern:

Be it known that I, LÉON DUBOIS, a citizen of the French Republic, residing in St. Etienne, France, have invented a certain new and useful Improved Punching-Machine, of which the following is a specification.

This invention has for its object a punching machine operated by hand, which is adapted for punching sheet metals, profiled iron and tubes. It is of the kind having a carriage sliding in a guideway for effecting the punching, punches of different sizes being mounted in a ring somewhat resembling the turret of a lathe and carried by the carriage.

For the purpose of allowing the punching of angle iron and the like close to the flange, the punches are mounted eccentrically in sockets, which are embedded radially in the said ring close to one face thereof, and the matrix holder receives matrices corresponding with the diameter of the punches and correspondingly eccentric.

The guide-way is carried by the upper jaw of a U-shaped frame horizontally arranged; the lower jaw is adapted to carry different matrix holders accordingly as flat articles or tubes are to be punched.

There is thus obtained a light hand operated tool capable of being used for the several purposes named.

Figure 1 shows the punching machine drawn to a reduced scale, the lower jaw being arranged for punching sheet metal or angle iron, or iron bars of other section.

Fig. 2 shows the same machine having the lower jaw arranged for punching tubes.

The remaining figures show, drawn to a larger scale, the chief parts of the punching machine, that is to say—

Fig. 3 shows the end of the upper jaw carrying a punch holder which may be actuated by a lever or by a pinion.

Fig. 4 is a plan on the line 1—1 of Fig. 3, the lever having been removed.

Fig. 5 is a front view of the upper jaw.

Fig. 6 is a side view of the end of the lower jaw.

Fig. 7 is a plan of Fig. 6, the matrix holder having been removed.

Figs. 8 and 9 are plans of two matrix holders by means of which holes of different diameters may be punched.

Fig. 10 is a longitudinal section drawn to a still larger scale of a socket for carrying a punch.

Fig. 11 is a transverse section on line 2—2 of Fig. 10.

Fig. 12, also drawn to an enlarged scale, is an elevation of a matrix, and

Fig. 13 is an underside plan thereof.

The frame of the machine, forming two jaws, is made of two cheeks of sheet metal *a* separated by distance pieces and clamped together by bolts *b*. The upper jaw carries fastened to the cheeks a guide-way *c* and two arms *d* forming a support for the operating lever *e*, the end of which is connected by a helical spring *f* with a transverse bar carried by the cheeks. In the guideway slides a carriage *g* which constitutes the punch holder, the upper part of which is formed as a fork embracing the operating lever *e* and connected therewith by a pin. The perforations which accommodate this pin are repeated in the fork so that the point of suspension of the carriage from the lever may be varied to modify the stroke of the carriage.

At the lower part of the carriage is a nave on which is mounted a ring *h* carrying sockets *i* to receive the punches *j*, the position of which during the punching operation is accurately preserved, as is more particularly shown at the bottom of Fig. 3. To prevent any rotary movement of the sockets in their bearings, pins *k* are inserted in the ring. When the ring has been turned into the position in which the punch should operate it is locked by a hand nut *l*.

The ring here shown by way of example carries six punches but the number and the size of the punches may be varied.

As shown in Figs. 10 and 11 the punches are mounted eccentrically in the sockets which are embedded radially in the ring *h*. This arrangement is for the purpose of permitting in particular the punching of special iron as is shown for instance in Fig. 1, where angle iron is being punched, as indicated in dotted lines. The eccentric position of the punch allows of one side of the angle being punched very near the other side. To the same end the sockets *h* are mounted in the ring as near as possible to one face thereof.

Independently of the operating lever, the carriage may be operated by a rack *m* embedded in the carriage and engaging with a pinion *n* mounted in the jaw on an axle *o*

extending through the jaw; the end of this axle is adapted to receive a crank handle.

The cheeks a of the lower jaw are also separated by a block p constituting a table for the matrix holder q; the latter has depending from its rear end a bolt r, the head of which engages a slot q' in the upper part of the block p, thus connecting the block with the holder. The position of the matrix holder is further insured by a bolt s which extends through the block p and has a head of the form shown which engages in the holder. By means of a hand nut t on the lower end of this bolt the matrix holder can be fixed to the block. At the end of the matrix holder is fixed the matrix u, the perforation through which is eccentric to correspond with the eccentricity of the punch in its holder. A pin u' prevents rotation of the matrix.

As shown by way of example in Figs. 8 and 9, the body part of the matrix holder is always the same, but the end which receives the matrix is modified according to the diameter of the latter, the form of which is always that indicated in Figs. 12 and 13.

For punching tubes the lower jaw is equipped as shown in Fig. 2, the matrix holder is not required and instead there is provided a cylindrical bar v, one end of which is flattened so as to be adapted to be held in the jaw by a bolt extending through perforations w in the cheeks of the jaw. Several such perforations are provided in order that the bar may be fixed at a variable height to suit the diameter of the tube to be punched. At the other end of the bar is fixed a matrix x, under the same conditions as have been explained with reference to the matrix holder.

For this end the bar has a screw threaded hole which can be adjusted so as to insure a contact of the tube with the block p of the jaw, the length of the screw varying with the diameter of the tube. To hold the bar in position on the jaw a collar z on the bar carries a screw-threaded rod which extends between the cheeks of the jaw. It will be seen that the arrangement described allows the punching of tubes of different diameters and at any points upon their length.

Having thus described the nature of the said invention and the best means I know of carrying the same into practical effect, I claim:—

A punching machine comprising a U-shaped frame horizontally arranged so that the parallel arms of the U-shaped frame form upper and lower jaw members, a guide-way in the upper jaw member, a carriage slidably mounted in said guideway, hand operated means adapted to slide the carriage to effect the punching, a ring carried on the carriage rotatable about a horizontal axis and adapted to be fixed in different angular positions, socket members embedded radially in said ring in proximity to one face thereof, punches mounted eccentrically in the said socket members close to said face, and means carried by the lower jaw adapted to fix different matrix holders thereon.

In testimony whereof I have signed my name to this specification.

LÉON DUBOIS. [L. S.]

Witnesses:
PONCHAUR,
RONZE.