

(No Model.)

A. H. RAYNAL.
PUNCH.

No. 376,009.

Patented Jan. 3, 1888.

Fig. 1.

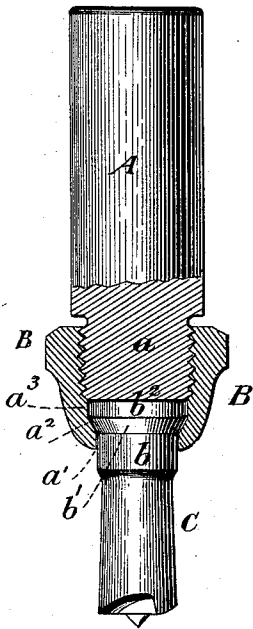


Fig. 2.

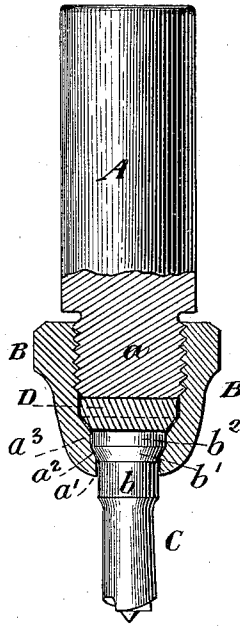


Fig. 3.



Witnesses:
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Att'y

UNITED STATES PATENT OFFICE.

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PUNCH.

SPECIFICATION forming part of Letters Patent No. 376,009, dated January 3, 1888.

Application filed October 8, 1887. Serial No. 251,789. (No model.)

To all whom it may concern:

Be it known that I, ALFRED H. RAYNAL, of Hoboken, in the county of Hudson and State of New Jersey, have invented certain Improvements in Attaching Punches of Different Diameters and Lengths to a Punching-Machine, of which the following is a specification, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to any improved method of and means for attaching the punch to the punching-machine, whereby punches of different lengths and diameters may be readily substituted for each other, and the uniform throw or stroke of the punch, and also uniformity in the strength of the punch regardless of its diameter, preserved, as hereinafter specified.

In the accompanying drawings, Figure 1 is a view, partly in section, showing a punch of the larger size applied to a plunger. Fig. 2 is a similar view showing the same plunger and a punch of smaller size applied thereto. Fig. 3 is a detail.

Similar letters of reference indicate similar parts in the respective figures.

Referring to Fig. 1, A is the plunger of an ordinary punching-machine, having a portion, a , at its lower end made of reduced diameter and threaded, as shown. B is a coupling interiorly threaded, so as to screw upon the portion a of the plunger. The lower portion of the coupling B is provided with a parallel-sided opening, a' , a beveled seat, a^2 , and a straight recess, a^3 .

C is a punch, the point or cutting portion of which may be of any approved or ordinary construction. The upper end or head of the punch is provided with a cylindrical portion, b , a beveled part, b' , and a cylindrical part, b^2 . The cylindrical part b is intended to fit neatly within the parallel-sided opening a of the coupling B, while the beveled part b' rests in the seat a^2 and the cylindrical part b^2 in the straight recess a^3 . It will be seen that when the parts are in the position shown in Fig. 1 the threaded portion a of the plunger is caused by the turning of the coupling to rest upon the head of the punch, and that the punch is firmly confined, clamped, and held by the plunger and coupling as though the whole were solid.

It becomes necessary in the use of metal punches to substitute one punch for another, and in Fig. 2 a smaller punch is shown substituted for the larger punch of Fig. 1. In order to give the punch of Fig. 2 the same strength as that of Fig. 1, it is necessary that the smaller punch of Fig. 2 shall also be shorter, and, as the throw of the plunger is unvarying, means must be provided whereby the smaller and shorter punch shall, when attached to the plunger, have the same length of projection therefrom. To this end the coupling B of Fig. 2 is made of greater length than that of Fig. 1, and with its openings and seats of diameters suited to the diameters of the several parts of the punch; and in order to make up the difference in length between the two punches, a steel block, D, (shown in perspective in Fig. 3,) for the most part cylindrical in shape, is placed between the head of the punch C and the under side of the plunger A. After the insertion of the steel block D the coupling is tightened up, as before, and the punch is ready for use, having the same length of projection with reference to the plunger as in the former case. One or more blocks D may be used. The beveled seat a^2 of the coupling, with the beveled part b' of the punch, serve when pressure is exerted by the coupling to accurately true the punch.

From the foregoing it will be seen that by the use of couplings and blocks adapted to different sizes and lengths of punches a variety of punches can be used with one machine. It must be remembered that an important advantage of this invention is that a punch of small diameter can be made sufficiently short to give it the necessary strength, while at the same time the requisite length of projection from the plunger is provided for, all the punches being thus of equal strength and equally adapted to the unvarying throw of the punching-machine. A great saving in the manufacture of the punches is also effected, as what in the absence of my invention would be unnecessary, wasteful, and weakening material in a small punch is made up by the use of the block or blocks D—a much cheaper expedient, requiring a less expenditure of steel and labor.

Having described my invention, I claim—
As an improvement in punching machinery,

a threaded plunger and a threaded coupling adapted thereto, having a suitable seat, combined with a punch having its upper end or head adapted to the seat of the coupling, and
5 a block or blocks for insertion within the coupling between the lower end of the plunger and the head of the punch, substantially as set forth.

In testimony whereof I have hereunto set my hand and seal.

ALFRED H. RAYNAL. [L. S.]

Witnesses:

JACOB RITTER,
OTTO RUPFER.