No. 614,330. Patented Nov. 15, 1898.

W. L. MORRIS.

APPARATUS FOR PUNCHING OUT GUN WADS.

(Application filed Apr. 27, 1898.)

(No Model.)

FIG. I.

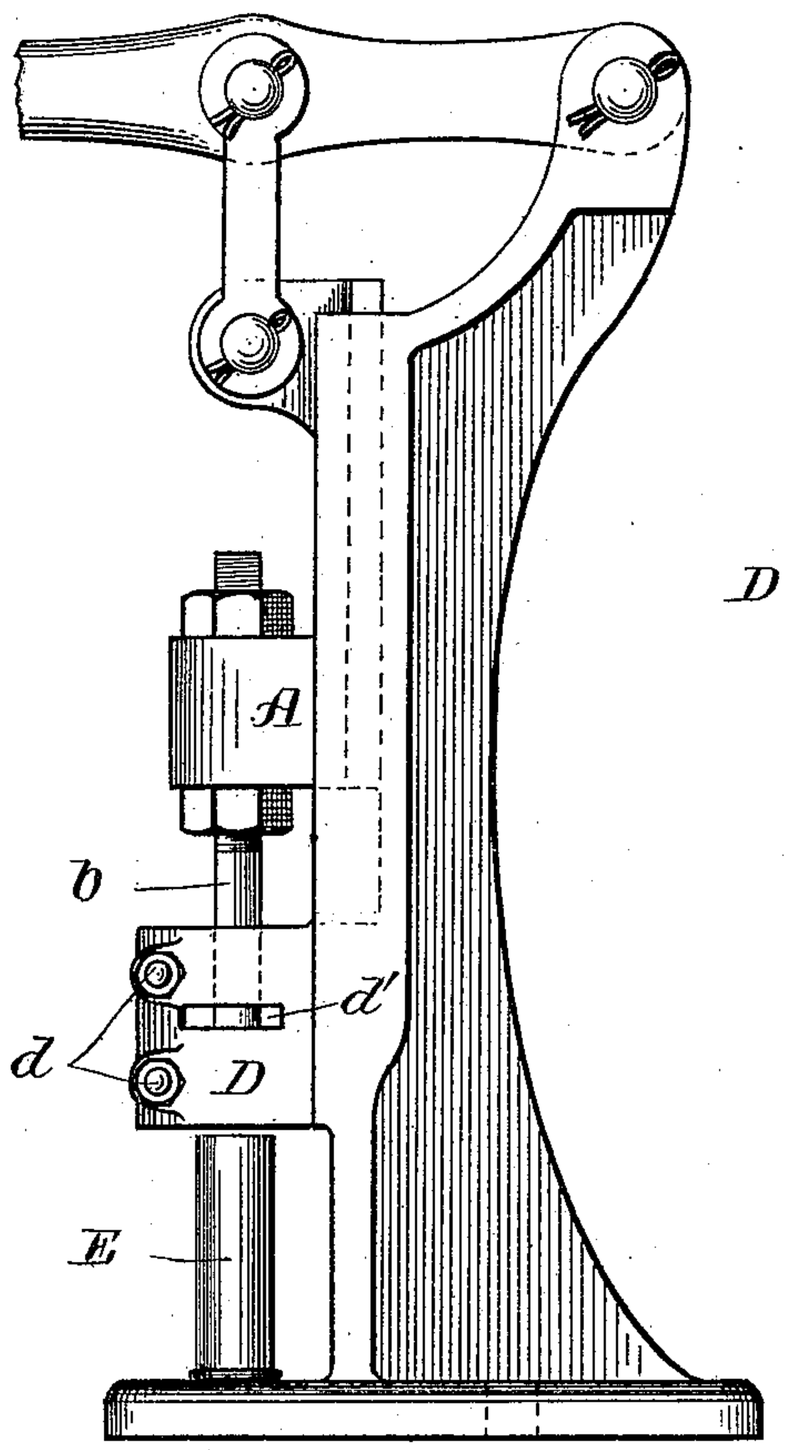


FIG. II.

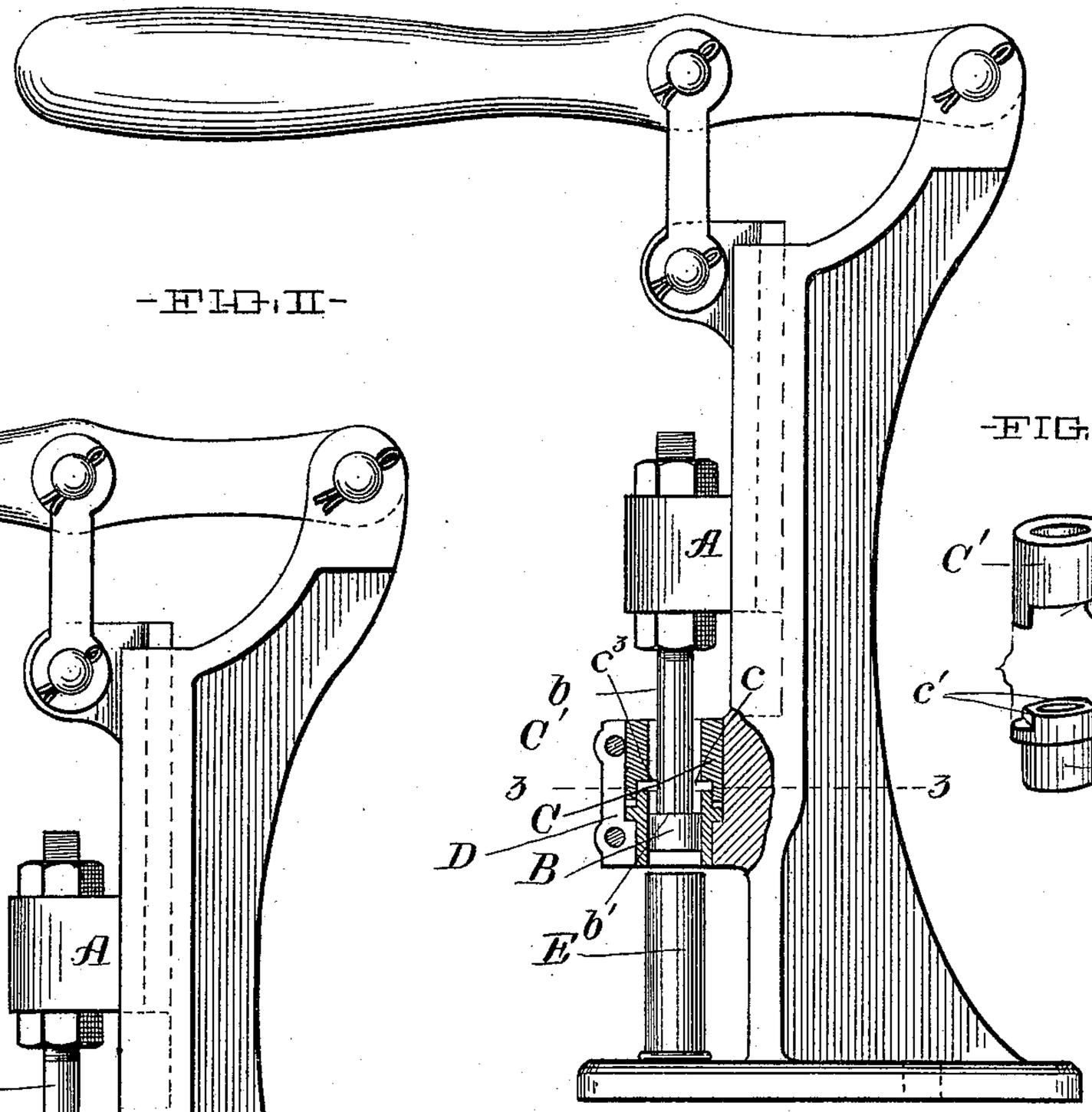
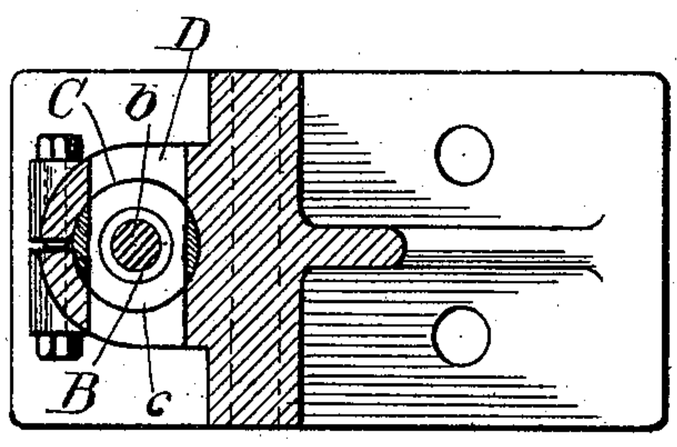


FIG. IV.

FIG. III.



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APPARATUS FOR PUNCHING OUT GUN-WADS.

SPECIFICATION forming part of Letters Patent No. 614,330, dated November 15, 1898.

Application filed April 27, 1898. Serial No. 678,957. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. MORRIS, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Punches, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents a side elevation of a punch as especially adapted to punch wads for cartridges embodying my improvements, the die and die-seat being shown in vertical central cross-section. Fig. II represents a side elevation of said punch. Fig. III represents a horizontal cross-sectional view taken upon the line 3 3 in Fig. I, and Fig. IV represents a detail perspective view of the die.

A cross-head A, reciprocable upon suitable guides formed on or secured to the frame, has secured to it the punch-spindle *b*, to the lower end of which is secured the punch B. The punch B snugly fits into and is reciprocable in a die C and in an upper guide member C′. Said die and guide are each formed with a cylindrical bore of equal diameter and have their axes in the same straight line. The lower edge of the punch forms a cutting edge *b*′, the edge of the opening in the upper face of the die likewise forming such a cutting edge. The die is provided with a transverse aperture *c*, intersecting said bore intermediate of the lower die end and the upper guide end for receiving the strip of wad material to be punched. The upper and lower walls of said aperture are formed by the lower and upper surfaces of the guide and die, respectively. The upper end of the die C is milled on opposite sides to form two parallel walls *c*′, as shown in Fig. IV, the lower end of the guide being correspondingly cut with a transverse groove c^2 to receive the upper extremity of said die. A snugly-fitting joint is thus formed between the said two members C and C′, the lateral walls of the groove c^2 forming the lateral walls *c*′ of the aperture *c*, said walls *c*′ overlapping the lateral surface of the die. This construction permits the upper and lower walls to be adjusted within certain limits without destroying the continuity of the lateral walls of the aperture.

The width of aperture *c* is made substantially equal to the width of the wad-strip and slightly greater than the diameter of the bore, so that the entire surface immediately adjacent to the opening in the lower face of the guide member may contact with the surface of the wad-strip immediately adjacent to the hole punched in said strip.

The die and guide are clamped in an expansible die-holder D, provided with bolts and nuts *d*. An aperture *d*′ is formed in and passes through both walls of said holder, registering with aperture *c*. By loosening the bolts the positions of the two members C and C′ relatively to each other may be adjusted to the thickness of the material which it is desired to cut.

In operating my improved punch the wad-strip is passed through the aperture *d*′ and through the aperture *c* and the punch caused to pass downwardly through the die, thus cutting out a wad, which may be further pressed out through the bottom of the die and directly into a cartridge E, which may be placed beneath the die-holder. The bore of the member C being made equal to that of the member C′, the punch passes the cutting edge of the upper face in member C smoothly and without striking, thus making a smooth and clean cut and preserving the cutting edge. On the punch being withdrawn and passing back through the hole it has just cut, the lower face of the guide member C′ acts as a stripper, the entire surface immediately adjacent to the edge of the hole in the wad-strip being contacted and firmly held by such withdrawal of the punch, thus stripping the wad material from the latter.

The guide C′ has formed upon its lower face a cutting edge c^3, and the upper face of

the punch is also formed with such edge b^2. These edges act conjointly on the upward stroke to cut any material which may intervene as a result of the shifting of the wad-strip, thus preventing said material from impeding the passage of the punch by clogging. In this above-described operation the die C acts as the guide and the guide C′ acts as the die. The aperture c^2 is hence bounded at its intersection with the bore by two cutting edges, one above and one below.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means covered by any one of the following claims be employed.

I therefore particularly point out and distinctly claim as my invention—

1. The combination with a die of uniform bore, of a punch fitting and reciprocable in said bore, said die provided with an aperture intersecting said bore having adjustable walls, for the admission of the material to be punched, substantially as set forth.

2. The combination of a die of uniform bore, a punch fitting and reciprocable in said bore, the said die provided with an aperture intersecting said bore, for the admission of the material to be punched, and means for varying the width of said aperture, substantially as set forth.

3. The combination of two members consisting of a die and a guide of equal bore, a punch fitting and reciprocable in said bore, said die and guide forming an aperture for the admission of the material to be punched and adjustable relatively to each other, the lateral faces of said aperture overlapping the lateral surface of one of said members, substantially as set forth.

4. The combination with a die and a guide formed with equal bores having a common axis, said die and guide each provided with a cutting edge, of a punch having two cutting edges, substantially as set forth.

Signed by me this 23d day of April, 1898.

WILLIAM L. MORRIS.

Attest:
D. T. DAVIES,
A. E. MERKEL.