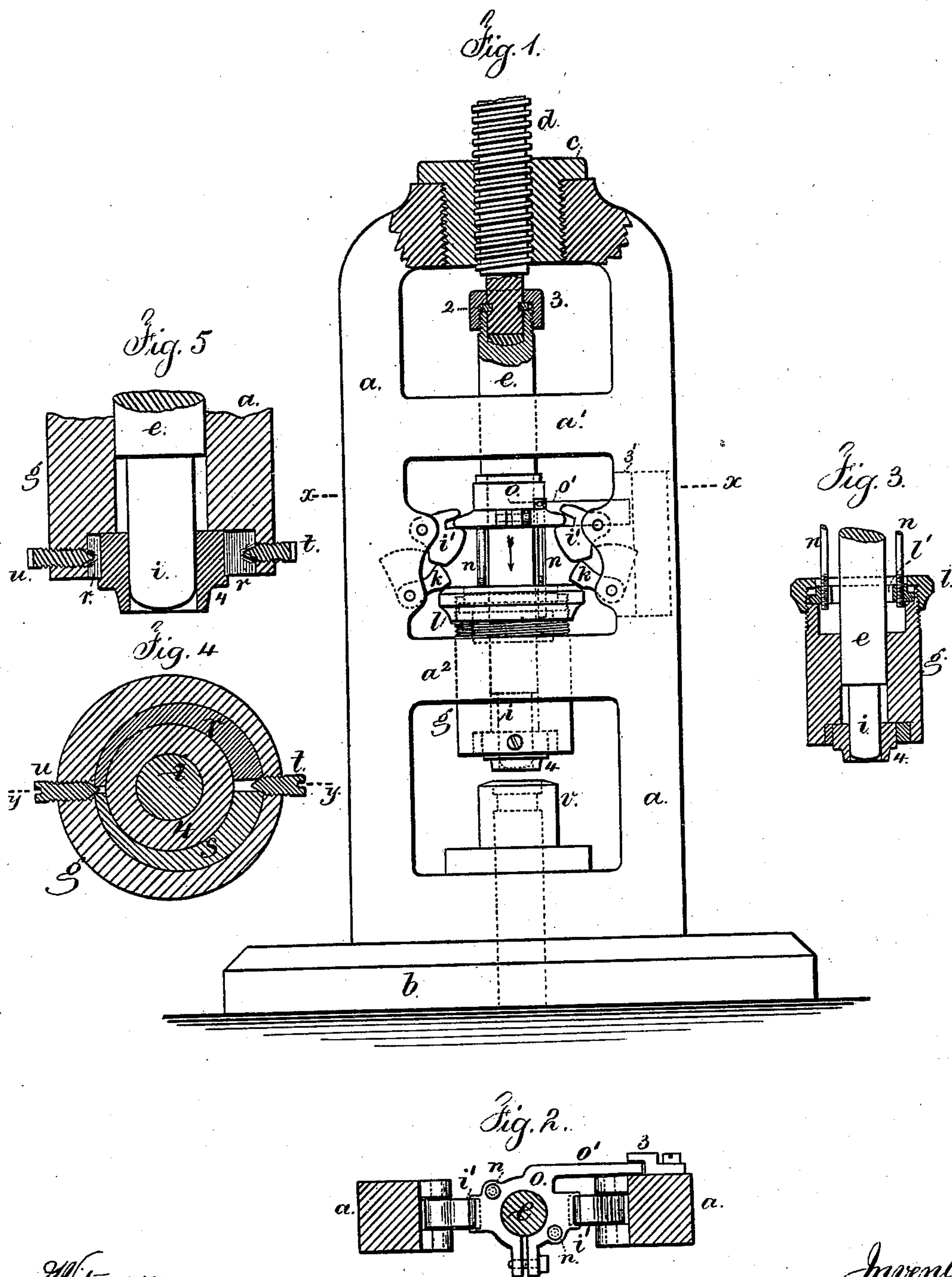


F. ECAUBERT.
Punching-Press.

No. 213,326.

Patented Mar. 18, 1879.



Witnesses

Chas. H. Smith
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Inventor

Frederic Ecaubert
per Lemuel W. Serrell
att'y

UNITED STATES PATENT OFFICE.

FRÉDÉRIC ECAUBERT, OF NEW YORK, N. Y.

IMPROVEMENT IN PUNCHING-PRESSES.

Specification forming part of Letters Patent No. **213,326**, dated March 18, 1879; application filed December 23, 1878.

To all whom it may concern:

Be it known that I, FRÉDÉRIC ECAUBERT, of the city and State of New York, have invented an Improvement in Punching-Presses, of which the following is a specification:

This invention relates to a means of centering dies, cutters, punches, mandrels, and similar parts of machinery, so as to compensate for wear, and clamping the same, if required, or liberating such parts when necessary.

This improvement is especially available in connection with my punching-press, wherein blanks can be cut out and struck up at the same operation.

My press is adapted to watch-case makers' and jewelers' use, on account of its great accuracy, but the same may be applied for any purpose.

In the drawings, Figure 1 is an elevation, partially in section, of my improved press. Fig. 2 is a sectional plan at the line *xx* of Fig. 1. Fig. 3 is a section of the cutting-punch and its carrier. Fig. 4 is a sectional plan of the half-circle wedges; and Fig. 5 is a section of the same at the line *yy* of Fig. 4.

The press is preferably made with an arch-frame, *a*, rising above the bed *b*, as the same is not as liable to spring as the overhanging or single-frame press.

d is the press-screw passing through the nut *c*. I make the nut with a screw-thread on the outside and screw it from above into the arch of the press. By applying a wrench to this nut it may be taken out, and the other parts connected with the screw can be drawn endwise through the opening in the arch.

The screw *d* and sliding stock *e* are coupled together so as to allow the screw to be revolved. Usually half-ring segments are slipped into the groove around the end of the screw, and these inserted into a socket at the end of the stock and secured by a screw-nut within the socket of the stock. I do not require to reduce the strength of the screw materially. The half-rings *2* are entered into a groove around the end of the screw, and are clamped by the coupling-nut *3*, that screws upon the outside of the sliding stock *e*; hence the stock is lifted as the screw is turned back.

At the end of *e* is the punch *i*, the same be-

ing either a cutting-punch or a shaping-punch, according to the work to be performed, and this punch acts with the die *v* on the bed *b*.

The stock *e* slides through the cross-piece *a'* of the arch-frame, and there is a collar, *o*, around the sliding stock *e*, setting against a shoulder or offset on *e*, and clamped as seen in Fig. 2, and this collar *o* has a guide-arm, *o'*, the end of which is between the frame *a* and a guide-flange, *3'*, so that the arm slides and prevents the stock *e* turning as the same is moved up and down.

For a double-acting press I employ the sleeve *g*, that forms a stock for the cutting-punch *4*, at the lower end. This sleeve passes through and is guided in the cross-piece *a''*, and it has a ring, *l*, screwed upon its upper end, within which is the lifting-ring *l'*, from which the bolts or screw-rods *n* pass up and through the collar *o*, the heads being above the collar. These rods *n* can be adjusted so as to lift the sleeve *g* to the desired point and through it raise the cutting-punch; and as it is important to be able to use the press either as a single or a double acting press, I employ swinging cams *i'* and swinging presser-blocks *k* between the ring *l* and the collar *o*.

There are notches or teeth on the collar *o* and swinging cams *i'*, so that these are moved by the collar as the sliding stock *e* goes up or down.

When the swinging presser-blocks are turned back toward the frames *a a* out of the way, the sleeve *g* remains stationary; but when they are swung down beneath the cams *i'* and rest upon the ring *l*, the said ring and the sleeve *g* are carried down by the cams *i'*, pressing upon the blocks *k* until the portions of the cams that are segments from the center on which the cams swing come into contact with the blocks *k*, after which the sleeve *g* will simply be held in place, but not moved.

It will be understood from the foregoing that the circular cutting-punch *4* will be moved down by the press and cut out a blank of sheet metal, and the same falls into the die *v*, and the ring *l* is adjusted so that the cams move the cutting-punch down to a point where it presses lightly upon the blank in the die *v*, while the shaping-punch *i* continues its move-

ment and cup-shapes the said blank by forcing it into or through the smaller opening in such die.

It is important that there shall not be any looseness in the various parts of the dies, punches, sleeves, or stocks, and that either punch or die can be clamped firmly without being displaced. For this purpose I make use of semicircular wedges *r s*, that are inserted in a circular recess eccentric to the portion that is to be clamped. These wedges are turned off on the outside to fit the interior of the circular recess and on the inside to fit the outside of the die, punch, stock or mandrel to be guided, and the wedges are not quite half circular in length, so that there may be sufficient distance between the ends to allow of a small extent of end motion. The screw *t* has a tapering point or acts against a tapering block to force the larger ends of the wedges apart and tighten them, and the screw *u* acts between the narrower ends of the wedges to loosen them. This adjustment is such that the parts can be set up to prevent looseness and compensate wear, or to clamp the die or punch or other movable part, and in so doing the parts are not displaced, but remain central.

The adjusting or clamping wedges are shown as applied to the punch *i*. They may also be applied to the die *v*, and they may surround the sleeve *g*, or intervene between the sleeve *g* and the sliding stock *e*, or be used under any other circumstances where an adjusting or clamping device of this character is available.

It will be apparent that portions of these improvements are available in punching and striking up presses that are run by power and in which a cam takes the place of the screw to move the parts.

I am aware that semicircular wedges have been used in shaft-couplings to clamp the same, and that a screw has been employed to tight-

en the wedges. These devices alone cannot be used in a press or other machine where only an adjustment is required, because the parts may accidentally become wedged tight and cause injury, and no provision was made for loosening the wedges when required. By combining with the wedges two screws, one to set them up and the other to open or relieve their action, the most accurate adjustment and unvarying pressure are obtained, and the action of the semicircular wedges can be varied from time to time, as required.

I claim as my invention—

1. The collar *o*, clamped upon the sliding stock and provided with the arm *o'*, in combination with the frame *a* and guide-flange *3'*, as set forth.

2. In the double-acting punching-press, the sleeve *g* and stock *e*, in combination with the swinging cams *i'* and swinging presser-blocks *k*, substantially as set forth.

3. The combination, in the punching-press, of the stock *e*, sleeve *g*, adjustable ring *l*, lifting-rods *n*, ring *l'*, cams *i'*, and presser-blocks *k*, substantially as set forth.

4. The combination, with the semicircular wedges *r s* and the recess or socket for the same, of the screws *t* and *u*, for moving such wedges in either direction, substantially as specified.

5. The combination, with the screw *d* and the sliding stock *e*, of the divided ring 2, entering a groove around the end of the screw and resting upon the end of the stock, and the coupling-nut 3, that confines said ring, substantially as set forth.

Signed by me this 16th day of December, A. D. 1878.

FRÉDÉRIC ECAUBERT.

Witnesses:

WILLIAM G. MOTT,
GEO. T. PINCKNEY.