

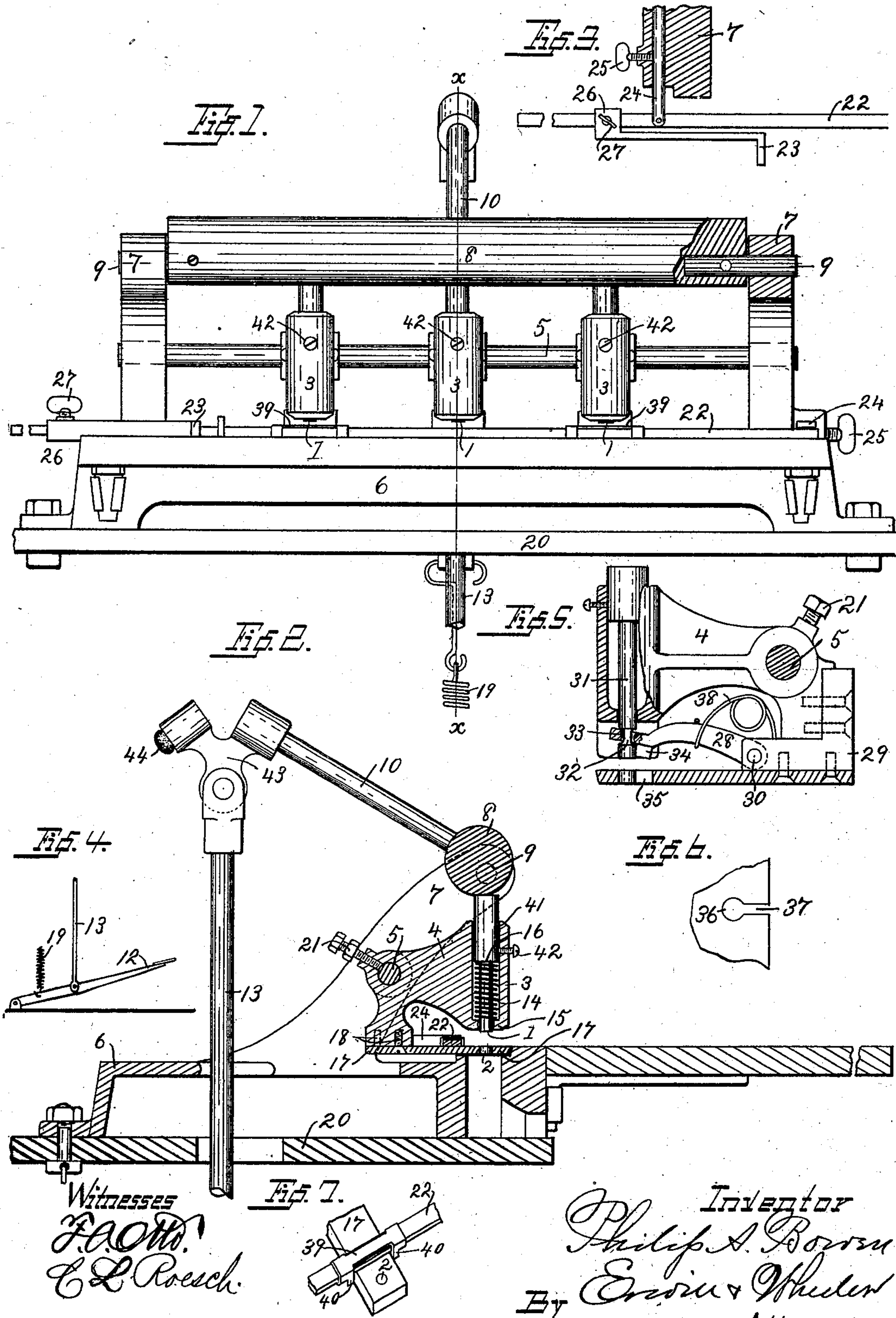
No. 702,698.

Patented June 17, 1902.

P. A. BOWEN.
BOOKBINDER'S PRESS PUNCH.

(Application filed Jan. 17, 1902.)

(No Model.)



UNITED STATES PATENT OFFICE.

PHILIP A. BOWEN, OF MILWAUKEE, WISCONSIN.

BOOKBINDER'S PRESS-PUNCH.

SPECIFICATION forming part of Letters Patent No. 702,698, dated June 17, 1902.

Application filed January 17, 1902. Serial No. 90,113. (No model.)

To all whom it may concern:

Be it known that I, PHILIP A. BOWEN, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Bookbinders' Press-Punches, of which the following is a specification.

My invention relates to improvements in bookbinders' press-punches.

10 The object of my invention is to provide a device for use by bookbinders or printers by which a person may punch either one hole at a time or a series of two or more holes simultaneously through several sheets of paper; 15 and it pertains more especially to the peculiar construction and arrangement of the parts by which the punch and die, comprising a set, are retained in the same relative position to each other regardless of the relative position of said sets to each other, whereby the liability of getting the punch and die out of alinement when changing the adjustments of the several sets to each other is avoided and the employment of skilled labor for such purpose becomes unnecessary.

25 The construction of my invention is further explained by reference to the accompanying drawings, in which—

30 Figure 1 represents a front view, part in section. Fig. 2 is a vertical section drawn on line *xx* of Fig. 1. Fig. 3 is a detail showing an adjustable gage. Fig. 4 is a detail showing the treadle for operating the machine by foot-power. Fig. 5 represents a side view, 35 part in section, showing a modified form of punch. Fig. 6 shows the form of hole made by the modified form shown in Fig. 5, and Fig. 7 is a perspective view of one of the gages.

40 Like parts are identified by the same reference-numerals throughout the several views.

The punches 1 are connected with the dies 2 through the punch guides or bearings 3, supporting-brackets 4, and brackets supporting shaft 5. The shaft 5 is supported at its 45 respective ends from the base or body 6 of the machine by the vertical arms or standards 7. A vertical movement is given to the several punches 1 simultaneously by the eccentric shaft 8. The shaft 8 is preferably 50 cylindrical in form, but is supported at its respective ends from the arms 7 7 eccentrically to its longitudinal axis by the bolts or

trunnions 9 9. The eccentric shaft 8 is actuated by the lever 10, which may be provided with a handle and operated directly by the 55 hand of the user, or said lever 10 may be connected with a treadle 12 by a connecting-rod 13, in which latter case the punches are actuated by foot-power. When the lever 10 is in its raised position, as shown in Fig. 2, the 60 punches are thrown up by the recoil of spiral springs 14, each punch in the series being provided with a similar spring. The springs 14 are interposed between the shoulder 15 of the punch-guide and the shoulder 16 of the 65 punch, whereby as the several punches are relieved from pressure of the eccentric shaft 8 they are thrown up by the recoil of said springs, whereby as said lever 10 is turned 70 downwardly said spiral springs 14 are compressed and said punches are forced through the material to be punched into the die 2. The several dies 2 are formed in the plates 17, and said plates are connected with the bracket 4 by the bolts 18. When relieved 75 from pressure of the foot, the treadle 12 is drawn upwardly by the recoil of the spiral spring 19, which spring 19 is connected at its lower end to said treadle and at its upper end with the supporting-table 20. It will now be 80 obvious that in view of the fact that the dies and die-plates are permanently connected with the punches, as stated, through the brackets 4 and stationary supporting-shaft 5 said dies and punches will be retained in the 85 same relative position to each other regardless of their horizontal adjustment upon said supporting-shaft 5. The brackets 4 are locked at any desired position in relation to each other upon the shaft 5 by the set-screw 21. 90

While I have shown a combination of three sets of punches and dies connected with the shaft 5, it is obvious that the number may be increased or diminished, as circumstances 95 may require.

To facilitate in holding the material to be punched in the desired relative position to the punches, I have provided my device with two separate gage-bars 22 and 23. 22 is the 100 gage-bar by which the position of the paper is adjusted or gaged nearer to or farther from the front of the device, and the gage-bar 23 regulates the longitudinal adjustment of the paper toward the right or left. The bar 22

is supported at its respective ends from the standards 7 by the horizontal connecting-bar 24, which bar 24 is adjustably supported in said standards 7 by the set-screws 25, where-
 5 by by releasing said set-screws said gage 22 may be adjusted either forwardly or rearwardly, as stated. The gage-bar 23 is slidably supported from the bar 22 by the collar 26 and is locked at any desired point of ad-
 10 justment on said bar 22 by the set-screw 27.

It will of course be understood that any form of hole may be punched, according to the shape of the punch or die employed. If, however, it is desired to cut a slot in the pa-
 15 per from the hole to the rear edge of the paper, this end is accomplished by the device shown in Fig. 5, by means of which a swinging lever 28 is employed to cut the slot from the hole to the margin of the paper. The
 20 rear end of the lever 28 is pivotally supported from the bracket 29 by the bolt or shaft 30, while the front end of said lever 28 is pivotally connected with the punch 31 in a recess 32, which recess engages in an aperture 33,
 25 formed in the front end of said lever 28, whereby said lever is moved upwardly and downwardly with said punch 31 as the same is operated. To the lower side of the lever 28 is attached an elongated punch 34, which
 30 operates in the die 35, whereby as said punch 31 is forced through the paper to form the hole 36 (shown in Fig. 6) the punch 34 forms the slot 37. (Shown in the last-named figure.)
 35 When said punch 31 is raised, said lever 28 is drawn upwardly by the recoil of the spring 38, which spring is rigidly supported at one end from the bracket 29 and is connected at its other end with said lever 28.

To prevent the lower sheets of a bunch of
 40 paper from passing between the gage-bar 22 and the die-plates 17, I have provided a sliding bracket 39, which is adjustably supported upon said gage-bar 22 and is provided with downwardly-projecting lugs or arms 40 40,
 45 the lower ends of which arms extend past the junction of said bar 22 with the die-plates 17, thus precluding the possibility of any of the sheets of paper getting between said gage-bar 22 and the die-plates 17.

To prevent the punches 1 from turning in their guides and to limit their vertical move-
 50 ment therein, they are respectively provided with a longitudinal recess 41, while the punch-guides are provided with a set-screw 42, the
 55 inner ends of which register with and extend into said longitudinal slot or recess, whereby the vertical movement of said punches is limited to the length of said slot or recess.

To prevent the concussion or noise that
 60 might otherwise occur as the lever 10 is drawn down by the action of the treadle, I have provided a connecting-link 43 between said lever 10 and the connecting-rod 13 with an elastic cushion 44, which as said rod 13 is drawn
 65 down is brought in contact with the base or body 6 of the machine.

I am aware of the fact that in a somewhat-

analogous machine a series of punch sets have been supported from a solid base-plate of a machine by dovetail-shaped flanges and
 70 grooves located directly beneath the eccentric shaft, in which case it becomes necessary to form the contiguous surfaces of the tongues and grooves of the punch sets, as well as the base-plate, with the greatest skill and care
 75 that the same be properly supported in position for work, while by my improvement the several punch sets rest upon the plain upper surface of the base-plate above a longitudinal channel formed for the reception of the ref-
 80 use matter punched from the paper, and I am enabled thereby to form the die in a separable or detachable plate 17, which is afterward secured to the punch set by screws 18 and may, if worn or broken, be readily replaced
 85 with another, and said several punch sets are adjustably supported beneath the eccentric shaft 8 by the stationary shaft 5. For this form of construction a piece of ordinary cylindrical shafting is used for the shaft 5, and
 90 an aperture is formed by drilling through the supporting-bracket 4 of the punch sets for the reception of said shaft, whereby the construction is greatly simplified and the side strain produced by the turning of the eccen-
 95 tric shaft against the upper end of the punch, which has a tendency to throw said punch out of the vertical and incline the same in the direction of movement of the eccentric against
 100 said punch as the punch is being forced with great pressure through the paper, is much more effectually resisted by supporting the bracket at or near its upper end than it is possible to support the same at its base alone,
 105 as shown in said prior patent, and said die-sets are more rigidly held in place.

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

1. In a press-punch of the class described,
 110 the combination of a supporting-base, provided with a longitudinal channel; a plurality of punch sets, each set comprising a punch and a die registering with each other and with said longitudinal channel; a punch-guide; a
 115 stationary shaft for adjustably connecting all of said punch sets together, located above said base; means for locking said sets at any desired point of adjustment in relation to each other, on said stationary shaft; a separate ec-
 120 centric shaft adapted to bear against the upper ends and simultaneously operate all of said punches, and permit of any desired adjustment of said punch sets in relation to each other; and means for turning said eccentric
 125 shaft on its supporting-axis, and simultaneously operating all of said punch sets, as set forth.

2. In a press-punch of the class described, the combination of a supporting-base, pro-
 130 vided with a longitudinal channel; a plurality of punch sets, each set comprising a punch and detachable die-plate, provided with a die, said punch and die registering with each other

and with said longitudinal channel; a punch-guide; a stationary shaft adjustably connecting all of said sets together; means for locking said sets at any desired point of adjustment in relation to each other on said stationary shaft; an eccentric shaft adapted to bear against the upper ends and simultaneously operate all of said punches, and permit of any desired adjustment of said punch sets in relation to each other; and an operating-lever attached to said eccentric shaft, as set forth.

3. In a press-punch, of the class described, the combination of a supporting-base; a plurality of punch sets, each comprising a punch, a die registering with said punch and a punch-guide, the parts of each set being permanently connected together; a single stationary shaft connecting all of said sets together; means for locking said sets in any desired relative position to each other on said stationary connecting-shaft; a single eccentric shaft adapted to bear against and simultaneously operate all of said punches and permit of any desired adjustment of said punch sets in relation to each other; a longitudinal adjustable gage-bar for limiting the rearward movement of the paper to be punched; and a transverse gage-bar adjustably secured to said longitudinal bar; a spring for raising the punches of said several sets when

relieved from the downward pressure of said eccentric shaft; an operating-lever connected with said eccentric shaft; a treadle adapted to be operated by foot-power; means for communicating motion from said treadle to the operating-lever of said eccentric shaft, as downward pressure is applied to said treadle; and means for raising said treadle and reversing the movement of said operating-lever when said treadle is relieved from downward pressure, as set forth.

4. In a press-punch of the class described, the device herein described for cutting an elongated recess in connection with a hole, consisting in the combination with the punch proper; of a vibratory lever pivotally connected at one end with the supporting-base, and connected at its opposite end with said punch; a secondary punch secured to said vibratory lever in close proximity to said first-mentioned punch; dies registering with said punches; and means for simultaneously raising both of said punches when relieved from pressure, substantially as and for the purpose specified.

In testimony whereof I affix my signature in the presence of two witnesses.

PHILIP A. BOWEN.

Witnesses:

JAS. B. ERWIN,
C. L. ROESCH.