No. 693,082. Patented Feb. 11, 1902.

F. W. TOBEY.

PERFORATOR.

(Application filed Nov. 10, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

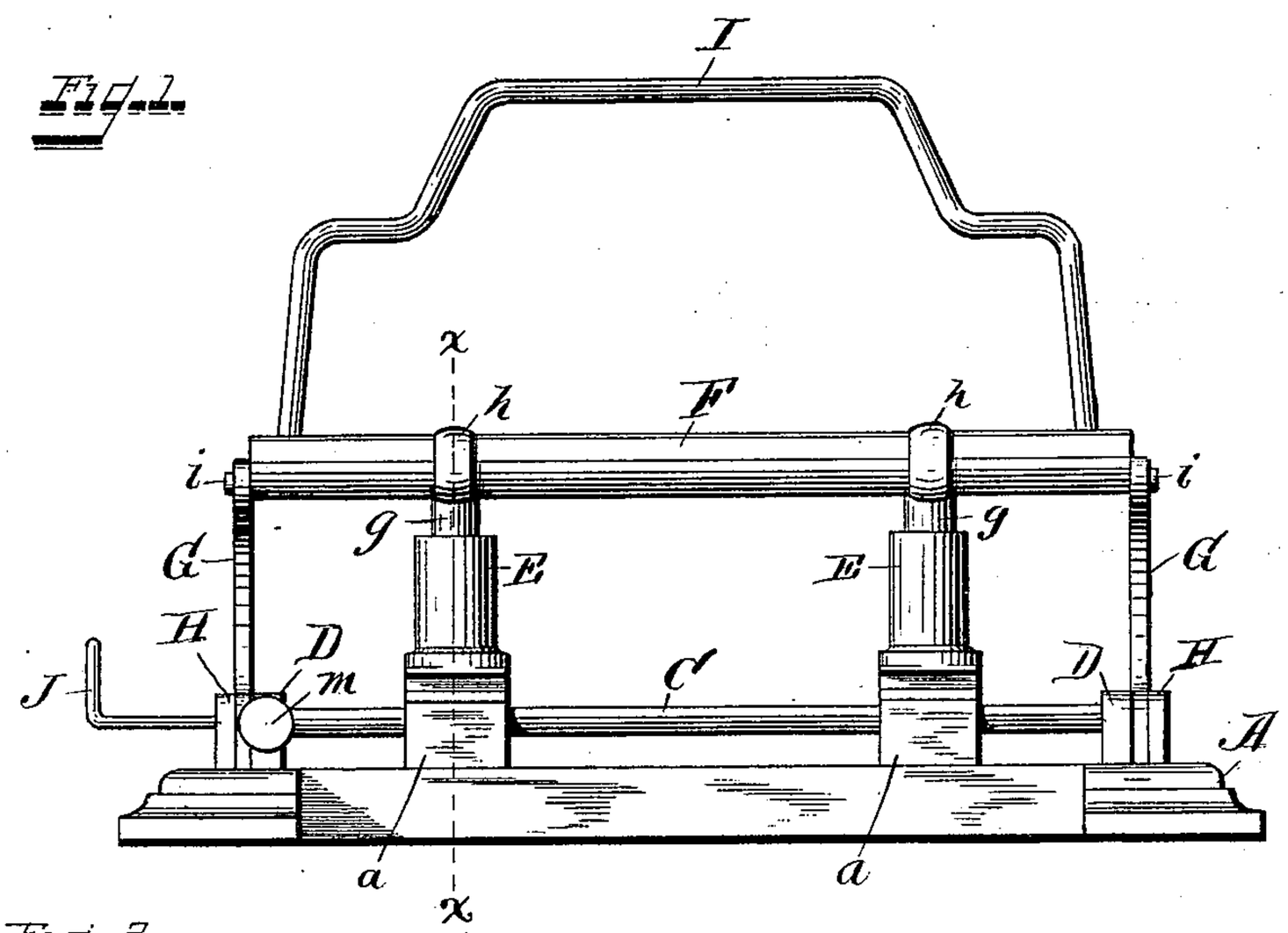
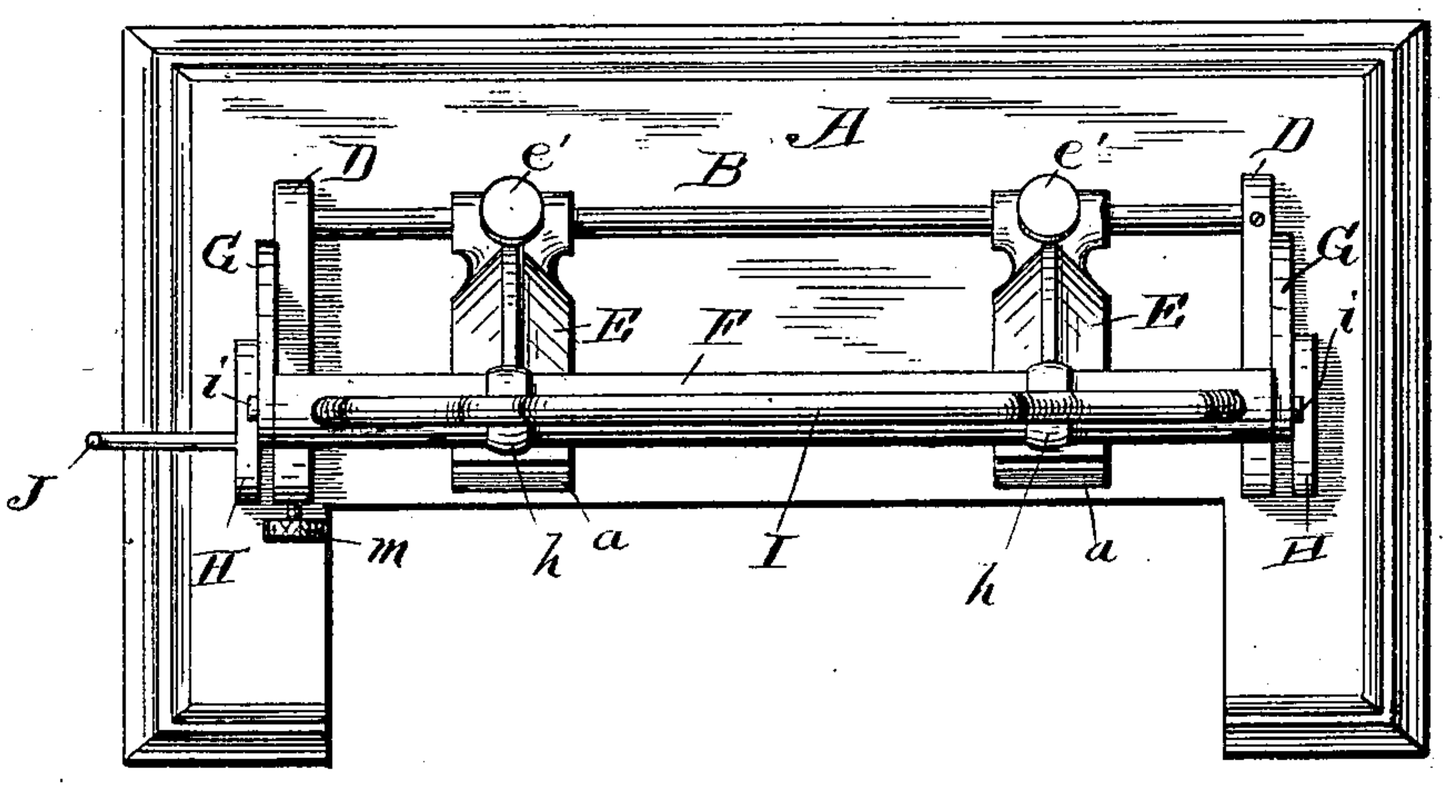


Fig. 2.



Witnesses.
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Geo. Hampson

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(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

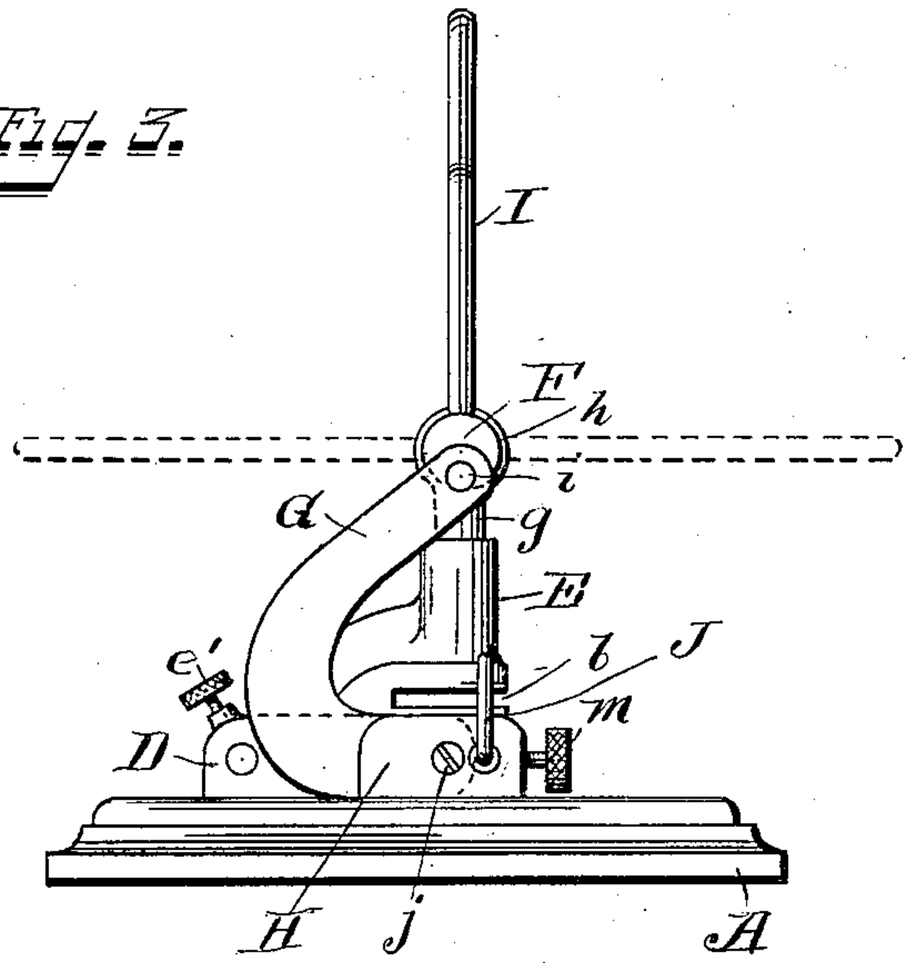

Fig. 5.

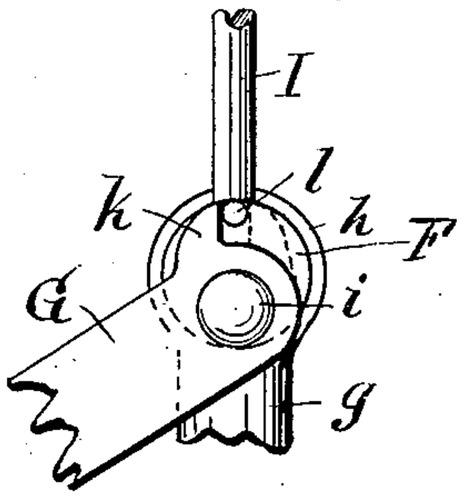

Fig. 4.

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UNITED STATES PATENT OFFICE.

FRED W. TOBEY, OF CINCINNATI, OHIO, ASSIGNOR TO THE GLOBE-WERNICKE COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

PERFORATOR.

SPECIFICATION forming part of Letters Patent No. 693,082, dated February 11, 1902.

Application filed November 10, 1900. Serial No. 36,110. (No model.)

To all whom it may concern:

Be it known that I, FRED W. TOBEY, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Perforators, of which the following is a full, clear, and exact description, reference being had to the drawings accompanying this specification.

My invention relates to that class of perforators now well known to the trade for punching holes in the margins of letters or other papers required to be filed upon temporary or permanent binders and which generally have two punches relatively adjustable to each other to increase or lessen the distance between the perforations, and provided with an adjustable gage for the paper and a single operating-handle for actuating the punches simultaneously; and it has for its object in this class of perforators the provision of simplified means for sustaining and actuating the punches, whereby their punching power is greatly increased and whereby they can be actuated to effect the punching by either a forward or a backward movement of the operating-handle.

The novelty of my invention will be hereinafter more fully set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1, Sheet 1, is a front elevation of a perforator embodying my invention. Fig. 2, Sheet 1, is a plan view of the same. Fig. 3, Sheet 2, is an end elevation of the perforator. Fig. 4, Sheet 2, is a detail sectional view, enlarged, on the dotted line *x x* of Fig. 1. Fig. 5, Sheet 2, is an enlarged detail end elevation representing a modification in the cam-actuating mechanism.

The same letters of reference are used to indicate identical parts in all the figures.

Upon a suitable base A are mounted two parallel rods B C, which are likewise parallel to the top of the base and have their ends secured in bearings or brackets D, projecting up from and secured to or preferably integral with the base. These rods serve as bearings and guides for the two sliding and adjustable punch-frames E, which have at their forward sides feet *a*, resting upon the base A, slots or openings *b* for the introduction of the papers to be punched, upwardly-extending sockets *c* for the play and guidance of the punches, and perforations *d e* for the passage of the punches through the slots or openings *b*, all as seen in Fig. 4. There are perforations through the frames E for the passage of the rods B C, and there are thumb set-screws *e'*, through lugs on the frames bearing upon the rod B, to lock the frames in any of their adjusted positions.

All of the foregoing parts are old and well known and may be of the usual or any suitable construction. Each punch *f*, whose shank *g* is guided vertically in its socket *c*, has at its upper end a ring or collar *h*, loosely embracing a cylindrical roller F, whose outer ends are pivoted eccentrically, as at *i*, to the upper ends of arms G, which are curved rearwardly and downwardly and thence forwardly, and have their lower ends pivoted, as at *j*, to the brackets D, or, as in this instance, between the brackets D and outer brackets H, projecting up from the base A, which, together with the brackets D, serve to hold the arms G against endwise movement. The only purpose in curving the arms G, as shown, is to avoid interference with the openings *b* in the introduction of papers to be punched.

Secured to the cylindrical roller F, on the side diametrically opposite to the pivots *i*, is an operating handle or bail I, the parts being so adjusted, as seen in Figs. 3 and 4, that when the bail stands vertical the punches are elevated to their highest position, entirely out of the openings *b*. Now upon drawing the bail forward and downward, or pressing it rearward and downward to the positions indicated by the dotted lines in Fig. 3, the roller F will be rotated and the punches *f* will be forced downward with a very powerful action to perforate the sheet or sheets of paper which have been introduced in the apertures *b*. This action of the punches, which, it will be observed, have no hinge-joints in them and are practically rigid and move in rectilineal lines at all times, is imparted by a rolling or cam action, exerting very little friction and requiring very small power compared with the punches of other

perforators; and it has the further advantage that in operating the punches the bail may be drawn forward or pressed backward just as the operator pleases, which gives to the perforator a capability of action not heretofore possessed. It will also be observed that the upper ends of the punches engage by means of a ring directly with the cam-moving roller without any play backward and forward, which causes wear, as where a cam-pin engages in a horizontal slot.

The feature of the rolling or cam action of the punches is not dependent on this double movement of the operating-bail, (which, however, I consider an advantage,) for the same result would be obtained if the bail were limited in its movement from a vertical to a forward throw or from a vertical to a rearward throw, and this could be provided for in a number of ways, the simplest of which, however, I think is illustrated in Fig. 5, where the arms G, or one of them, is provided with a shoulder *k*, bearing against the pin *l* on the roller F to prevent the bail from being pressed backward, though not preventing its being turned forward and downward to effect the punching, or, if the constructor preferred, the shoulder could be shifted to the other side of the pin, as shown by the dotted lines, in which event the bail could only be pressed backward and downward to effect the punching.

J is the usual gage-rod, with upturned end passed through perforations in the bearings D and locked by a set-screw *m* to regulate the distance from the margin at which the perforations shall be made.

Having thus fully described my invention, I claim—

1. In a perforator, the combination of a rigid rectilineal reciprocating punch, a guide and die for the same, a roller upon which said punch has its actuating-bearing, an eccentric bearing for said roller, and an operating-handle for the roller by which it can be turned to reciprocate the punch, whereby all parts of the punch move in a straight line when actuated, substantially as described.

2. In a perforator, the combination of rigid rectilineal reciprocating punches, guides and dies for the same having relative adjustment toward and from each other, a roller upon which said punches have their actuating-bearings, an eccentric bearing for said roller at each end, and an operating-handle for the roller by which it can be turned to reciprocate the punches, whereby all parts of the punches move in a straight line when actuated, substantially as described.

3. In a perforator, the combination of a rigid rectilineal reciprocating punch, a guide and die for the same, a roller upon which said punch has its actuating-bearing by means of an encompassing ring, an eccentric bearing for said roller, and an operating-handle for the roller arranged opposite to the eccentric bearing and by which it can be turned either forward or backward to effect the punching, substantially as described.

4. In a perforator, the combination of rigid rectilineal reciprocating punches, guides and dies for the same having relative adjustment toward and from each other, a roller upon which said punches have their actuating-bearings, an eccentric bearing for said roller at each end, and an operating-handle for the roller arranged opposite to the eccentric bearing and by which it can be turned either forward or backward to effect the punching, substantially as described.

5. In a perforator of the character described, the combination of the base A, the punch-frames E carried and adjustable on said base, the punches *f* guided in said frames, the roller F passed through rings *h* rigidly connected to said punches, the arms G pivoted to the base and also pivoted eccentrically to the roller F and the operating-handle I connected to the roller, substantially as described.

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