R. HEMINGRAY.

Paper Perforating Machine.

No. 160,016. Patented Feb. 23, 1875.

Fig. 1.

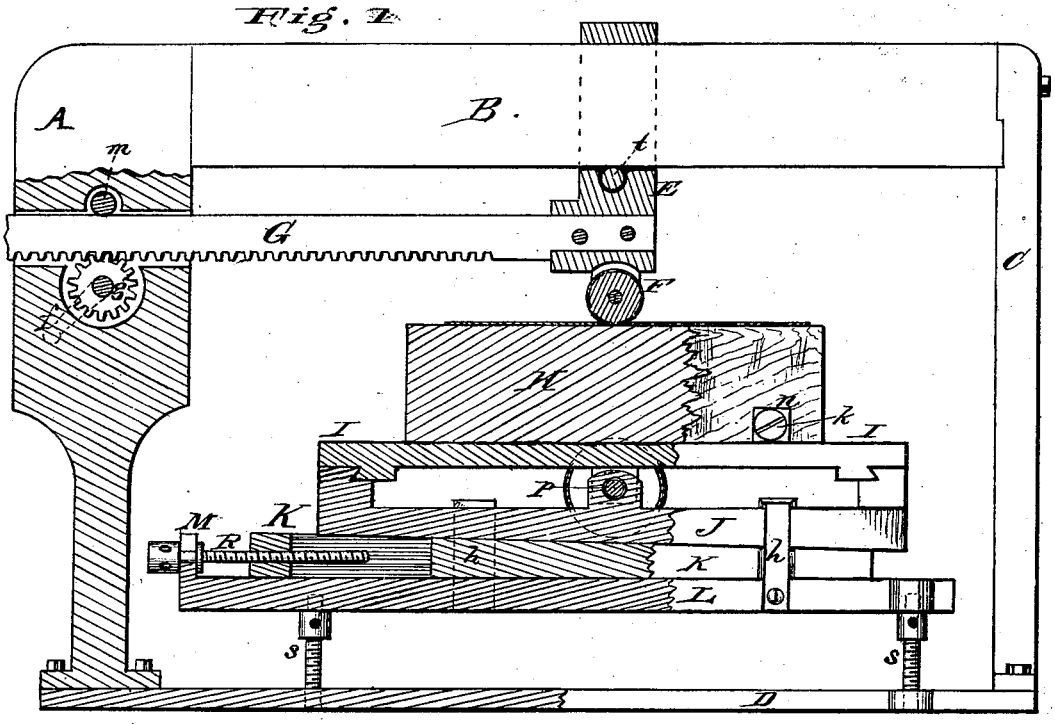
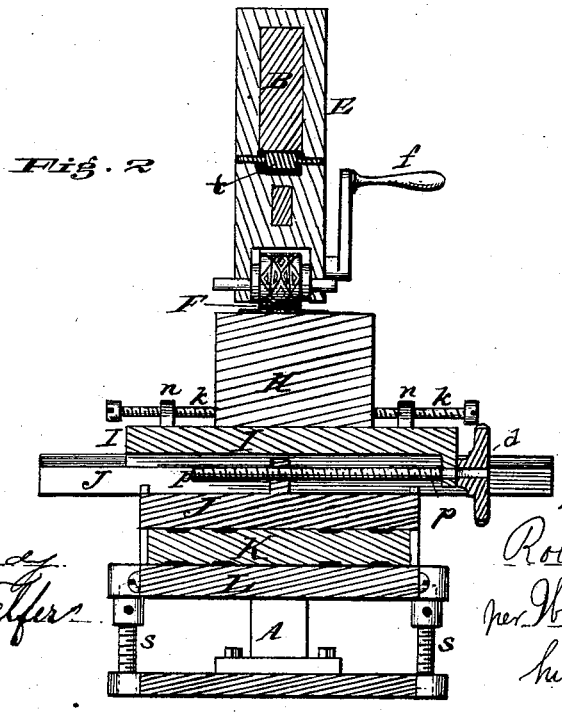


Fig. 2.



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UNITED STATES PATENT OFFICE.

ROBERT HEMINGRAY, OF COVINGTON, KENTUCKY.

IMPROVEMENT IN PAPER-PERFORATING MACHINES.

Specification forming part of Letters Patent No. **160,016**, dated February 23, 1875; application filed August 28, 1874.

To all whom it may concern:

Be it known that I, ROBERT HEMINGRAY, of the city of Covington, county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Machinery for Cutting Designs out of sheets of paper or other material, of which the following is a specification:

It is well-known to those acquainted with the manufacture of ground glassware, such as globes for lamps, &c., that the method now employed to retain a portion of the glass transparent, and of a desired figure, while the rest is rendered opaque by grinding, consists in pasting on the surface of the glass paper of the pattern which that part of the surface of the glass to be left transparent is to assume, and then exposing the glass to the action of a sand-blast. The sand-blast will grind all the parts not covered by the pattern.

Heretofore these patterns have been cut out of the paper by a hand-stamp struck by a mallet. But that mode of cutting is very slow, and somewhat inaccurate. But a small piece of the pattern could be cut at each blow of the mallet, and the stamp had to be moved to a new part of the paper after every blow, and the portions of the pattern cut by successive blows would not always be in position or in line with each other, for the reason that each placing of the stamp depended for its correctness of position upon the eye and nerve of the operator.

The object of my invention is to greatly facilitate the cutting of the patterns, and also to insure accuracy and uniformity in the manufacture thereof. I accomplish this object by laying the paper or other suitable material upon a block or other suitable bed, and causing a roller, whose periphery contains a sharp raised edge, in shape like the pattern to be cut, to pass over the paper, thereby cutting out of the paper the desired figure.

The mechanism for moving the roller over the paper, the devices for adjusting the face of the block to the periphery of the roller, the devices for substituting new rollers or block for those in the machine, and the application of the roller to a yielding bed for the purposes mentioned, are all new and of my invention.

In the accompanying drawing, Figure 1 is a view of my new machine, showing parts thereof in section, and Fig. 2 is another view showing parts of the machinery in end elevation, and parts thereof in end section.

The frame of the machine consists of the uprights A and C, connected by a horizontal top-piece, B, and a bottom, D. A hanger, E, incloses the top-piece, and can be slid along thereupon. A roller, *t*, journaled in hanger E, transversely to the length of piece B, rotates against the under side of the latter, the office of this roller being to steady the hanger E, and hold the top thereof in position firmly against the top-piece B. From the bottom of the sides of the hanger project down ears or flanges, between which rotates the cutting pattern-roller F, whose axes are journaled in said ears. The periphery of this pattern-roller F is cut away and recessed, so as to leave only those lines and edges remaining which are to cut out of the paper the desired pattern. G represents the ratchet-shaft provided with a ratchet on its bottom, and extending parallel to the top B. One end of this ratchet-shaft is connected to and supported by the hanger E, while the balance of this shaft rests upon and is supported by a pinion, *g*, rotating within the upright A, and turned by a crank, *f*, attached to the axis thereof outside of the upright. A roller, *m*, also turning within uprights A, rotates against the back of ratchet-shaft G, and causes the teeth of the latter always to firmly engage the pinion. Underneath the roller F is placed a block, H, preferably several times wider than the roller, so that when one portion of the upper surface of the block has been worn out by frequent contact with the roller, other portions will remain, which, in turn, can be placed underneath the roller. This block is to be of any hard wood, lignum-vitæ being preferred, as better calculated to withstand the abrading action of the roller. The block rests upon a table, I, furnished with ears *n* projecting from its upper surface, and which contain female screws, through which pass the screws *k k* for adjusting the position of the block in re-

lation to roller F, and for holding the block in position when adjusted. The table I slides securely transversely to the length of the machine by means of beveled guide-ridges on its under side. These ridges slide upon beveled guideways in the table J on the beveled edges of the latter, locking over the beveled edges of the guide-ridges, and thus holding table I securely in position. The device whereby table I can be moved upon the guideways of table J consists of a screw, *p*, journaled in a flange projecting downward from the side of table I, and screwing into a stud projecting vertically upward from the center of the top of table J. Screw *p* is turned by a hand-wheel, attached to that part of the former which projects beyond the flanges of table I. The bottom of table J is made slightly inclining from front to rear, and the top of the table K, upon which it rests, is made with a similar inclination from rear to front. Thus, when table J rests upon table K, the top of the former is in a horizontal plane. The table K rests and slides longitudinally upon the lower table L. Links *h h*, fastened to the sides of lower table L and let into the sides of table J, prevent the latter from moving longitudinally, and yet permit it to be elevated or depressed vertically, as adjusted by the advance or retreat of the table or wedge K. The longitudinal movement of the latter is effected by screw R engaging a female screw in the table K, and held in position by turning in a vertical collar, M, projecting upward from the front end of table L, the screw being provided with flange on the inside of the collar, and with a shouldered head on the outside of the collar. This shouldered head is pierced for the reception of a lever, whereby the screw can be turned. The lower table L rests upon four small jack-screws, *s*, one under each corner thereof. These jack-screws engage female screws in the bottom D, and are journaled above their heads in the table L. Their heads are pierced for the insertion of levers, whereby they can be turned.

The mode in which my machine operates is as follows: The block H is placed under the roller F. It is then secured in position by means of the set-screws *k k k*. The face of its top is then made perfectly horizontal by means of the jack-screws *s s*, and is then raised by advancing table K between tables J and L by means of screw R, so as to press with such pressure against the bottom of the roller that when a piece of paper is laid upon the roller the latter shall cut the paper into the desired pattern. The roller is now moved by means of crank *f*, pinion *g*, and rack G to one or the other end of the block H. The paper or material out of which the pattern is to be cut is placed flat upon the block in front of the roller. The latter is then moved over the block, cutting out of the paper the desired pattern. When one part of the surface of the top of the block becomes too worn to be of effective service in operating with the roller, it is to be shifted from right to left across the roller, so as to present a fresh surface for the roller to operate upon by turning hand-wheel *d* and screw *p*.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of roller F, sliding carriage E, roller *t*, bar B, ratchet-shaft G, and pinion *g*, substantially as set forth.

2. The combination of the block H and roller F, sliding carriage E, roller *t*, bar B, ratchet-shaft G, and pinion *g*, substantially as and for the purposes set forth.

3. The device for supporting, holding, and adjusting the block H, consisting of the jack-screws *s*, table L, table K, table J, table I, screws *p*, and set-screws *k*, substantially as set forth.

4. The combination of roller F, sliding carriage E, bar B, ratchet-shaft G, and pinion *g*, substantially as set forth.

R. HEMINGRAY.

In presence of—
D. P. KENNEDY,
R. J. GARRETTE.