

No. 609,682.

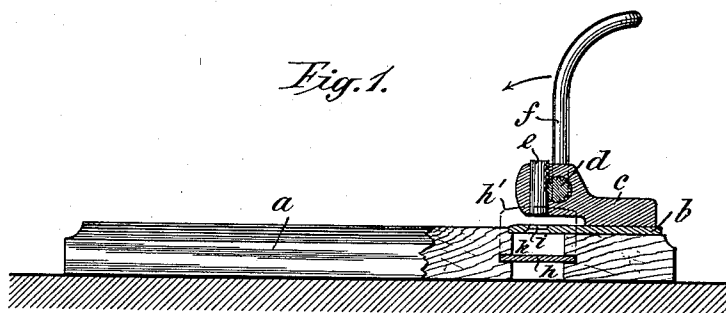
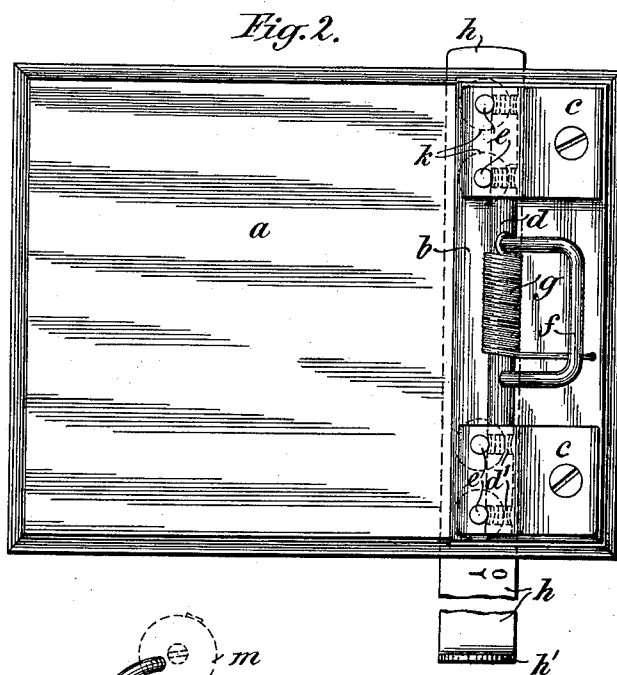
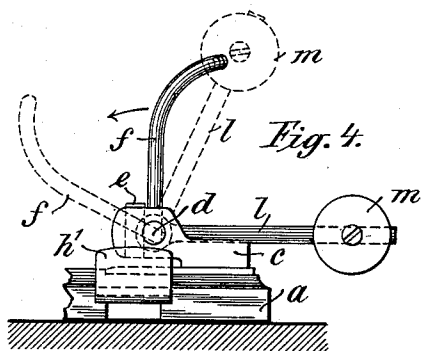
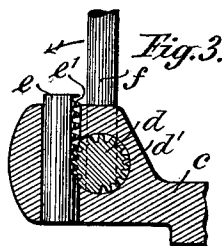
Patented Aug. 23, 1898.

A. KRAH.

MACHINE FOR PERFORATING PAPER, &c.

(Application filed Feb. 16, 1897.)

(No Model.)



Witnesses

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ARMIN KRAH, OF BERLIN, GERMANY.

MACHINE FOR PERFORATING PAPER, &c.

SPECIFICATION forming part of Letters Patent No. 609,682, dated August 23, 1898.

Application filed February 16, 1897. Serial No. 623,646. (No model.)

To all whom it may concern:

Be it known that I, ARMIN KRAH, a citizen of the German Empire, residing at Berlin, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Machines for Perforating Paper and the Like; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a device for perforating sheets of paper and similar material which may afterward be collected in portfolios, letter-files, or the like, its characteristic feature being a rack-and-pinion arrangement by which the pins or punches effecting the perforations are operated.

This invention is illustrated in the accompanying drawings, in which—

Figure 1 represents a cross-sectional view thereof. Fig. 2 is a plan of the same. Fig. 3 is a cross-sectional view of a portion of Fig. 1, drawn to an enlarged scale. Fig. 4 is a side elevation of a perforating device in which no spring is used.

Upon a base or board *a* a steel cutting-plate *b* is fixed, provided with holes *i*, which allow the cutting pins or punches *e* (of which four are shown in the drawings) to pass through. These cutting pins or punches are located in suitable bearing-blocks *c* and are capable of being moved up and down. The said blocks are fastened to the cutting-plate *b* by means of rivets, screws, or the like. The pins or punches *e* are provided with teeth *e'*, so as to form rack-bars. These teeth *e'* engage gears *d'*, housed in and concealed by the opposite bearing-blocks *c* and forming a part of a horizontal rock-shaft *d*, which is journaled at its ends in the bearing-blocks.

A lever-handle *f* is attached centrally to the said shaft *d* between the blocks or bearings, and a spiral spring *g* is so arranged as to constantly press the handle and shaft in a direction opposite to that indicated by the arrows in Figs. 1 and 3.

In order to perforate sheets of paper or the like, the sheets are placed into the narrow space between the under side of the blocks or bearings and the cutting-plate *b*, and subsequently the handle or lever is pressed down

forwardly in the direction indicated by the arrows in Figs. 1 and 3. By this operation the pins *e* are, through the medium of the rack-gear *d' e'*, forced down and caused to traverse the paper and the holes *i* in the steel cutting-plate *b*. After the sheet or sheets of paper has been thus perforated the handle or lever *f* is released and returns, owing to the action of the spring *g*, to its initial position, (shown in Fig. 1,) so that the device is again ready for use.

In order that the places where the sheet or sheets of paper be perforated may be conveniently adjusted, a slide *h*, of sheet metal, is provided, which is bent up vertically at *h'*, thus forming a stop. The sheet or sheets of paper or the like is placed against this stop, so that the holes may be formed as nearly as possible equidistant from the center of the side edge of the sheet or sheets to be perforated and so that the sheet or sheets may be correctly placed in the portfolio, letter-file, or the like. The slide *h* is provided with graduations and appropriate denominations—for example, quarto, octavo, folio, and so on—to correspond with the current shapes of paper used, so that the slide may be readily adjusted, as required.

The pieces of paper separated from the sheets by the perforating operation fall through the hole *i'* in the cutting-plate into a space *k*, arranged beneath the holes *i* in the base or board *a*. This recess is closed by the aforesaid slide *h*, so that the pieces of paper can accumulate in the space *k* and can only be removed therefrom by entirely withdrawing the slide *h*.

The device may be modified in various ways without departing from the spirit of the invention. Thus, for instance, the spiral spring *g* may be replaced by one or more springs of a different kind. Instead of using springs a counterweight *m* may be arranged on a rod *l*, as shown in Fig. 4. Moreover, spring or weight may be entirely dispensed with. Further, the circular rack-bar *d* may be arranged in front instead of being, as represented in the drawings, located behind the cutting pins or punches. The cutting-plate *b* and the blocks *c* may be of cast or wrought iron. The handle or lever and the plate or the whole represented device may have a different external

shape, and so on. An essential feature, however, is that the cutting pins or punches *e* are moved by rack-gear *d'* *e'*.

What I claim is—

- 5 1. A paper-perforator, consisting of a base having a recess, a cutting-plate secured to the base and having holes located above the recess, bearing-blocks fixed to opposite sides of the base and provided with a series of vertically-movable punches registering with the
10 holes of the cutting-plate and having racks thereupon, two or more punches being located in each bearing-block, a rock-shaft journaled at its ends in the said bearing-blocks and
15 having gears housed within and wholly concealed by said bearing-blocks and meshing with the racks of the punches, and a handle for turning the rock-shaft, substantially as described.
- 20 2. A paper-perforator, consisting of a base having a recess, a cutting-plate secured to the base and having holes located above the recess, bearing-blocks fixed to opposite sides of the base and provided with a series of vertically-movable punches registering with the
25 holes of the cutting-plate and having racks

thereupon, two or more punches being located in each bearing-block, a rock-shaft journaled at its ends in the said bearing-blocks and having gears housed in said bearing-blocks and meshing with the racks of the punches, a handle for turning the rock-shaft in one direction, and a spring acting on the shaft to turn it in the opposite direction, substantially as described.

3. In a device for perforating paper, the combination with the base having vertical openings extending therethrough and with the apertured cutting-plate and punching mechanism supported thereon, of an adjustable slide extending transversely through the base in line with the openings therein and having at one end an upward projection to serve as a guide for the paper to be punched, substantially as and for the purpose described.

In witness whereof I have hereunto set my hand, at Berlin, this 4th day of January, 1897.

ARMIN KRAH.

Witnesses:

J. LEMAN,

ALFRED UNGER.