(No Model.)

H. G. MILLER.

PERFORATOR.

No. 545,711. Patented Sept. 3, 1895.

Fig. 4.

Fig. 5.

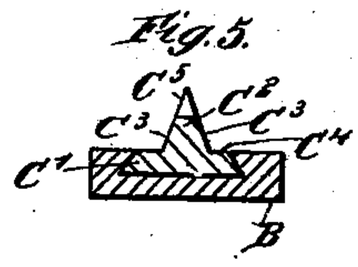


Fig. 1.

Fig. 2.

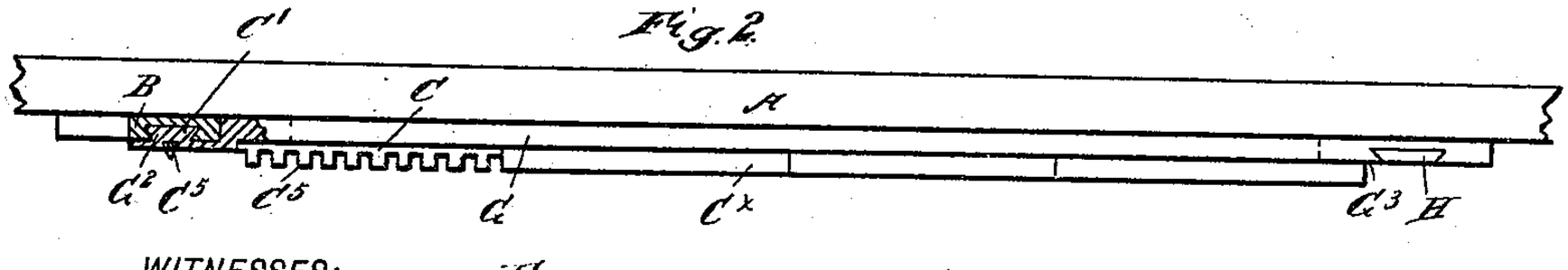
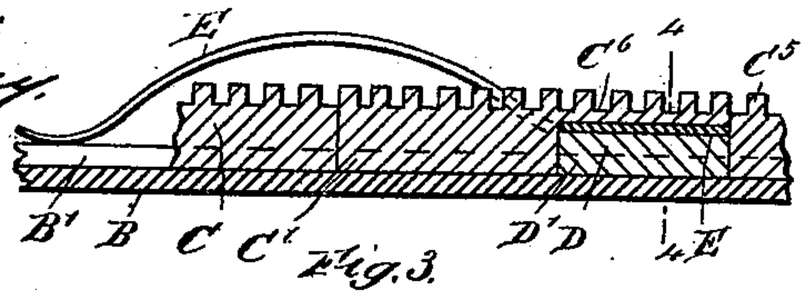


Fig. 3.



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HORACE G. MILLER, OF PUNXATAWNEY, PENNSYLVANIA.

PERFORATOR.

SPECIFICATION forming part of Letters Patent No. 545,711, dated September 3, 1895.

Application filed April 23, 1895. Serial No. 546,933. (No model.)

To all whom it may concern:

Be it known that I, HORACE G. MILLER, of Punxatawney, in the county of Jefferson and State of Pennsylvania, have invented certain new and useful Improvements in Perforators, of which the following is a full, clear, and exact description.

My invention relates to a perforator adapted for attachment to the gripper-bar of a printing-press, so as to be operated simultaneously with the gripper.

The object of my invention is to provide a device of the above-indicated class which will be simple and durable in construction, which in operation will be comparatively rigid and so arranged as not to interfere with the clearness of the impression, and which will be readily adjustable to perforate the paper at the exact place desired.

To these ends my invention consists of certain features of construction and combinations of parts, that will be fully described hereinafter, and pointed out in the claims.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a front elevation of the improved perforator in position on the gripper-bar, the ends of the latter being broken away. Fig. 2 is a plan thereof, with part in section, on the line 2 2 of Fig. 1. Fig. 3 is an enlarged broken sectional view on line 3 3 of Fig. 1. Fig. 4 is a cross-section taken on line 4 4 of Fig. 3. Fig. 5 is a cross-section on line 5 5 of Fig. 1.

Like letters of reference denote like parts in all the views.

A is the gripper-bar of the printing-press, and it may be supported and operated in the usual manner. To the said gripper-bar is secured so as to move in unison therewith an upright B, which, as shown, is formed with a longitudinal slideway B′, preferably of dovetail formation. This slideway is adapted to receive a series of perforator sections or knives C. Each of these sections comprises a base or projection C′, of a shape corresponding to that of the slideway B′ and adapted to enter the same, (see Figs. 4 and 5,) and a blade C^2, which has tapering sides C^3, diverging toward the base C′ and terminating short of the outer edge of the said base, so as to leave on the base, at each side of the blade, a shoulder C^4, which is parallel, or approximately so, to the plane of the paper. The blade C^2 has a serrated edge C^5 to produce the perforations in the paper.

Sundry of the knife-sections are provided with reduced ends, as shown at C^6 in Fig. 3. The purpose of this construction is to allow the central base portion D′ of slides D to enter the slideway B′ by passing under the said reduced end C^6.

The slides D, as shown in Figs. 3 and 4, consist of a central base portion D′, which, as described, engages the slideway B′, and flanges D^2, projecting laterally over the upright B at each side of its slideway. To the outer surface of the slide is secured a plate E, formed with two spring-arms E′, extending longitudinally at each side of the slideway B′ and normally projecting beyond the serrated edge of the perforator-blade C^2. The outer surface of the plate E preferably is arranged flush with the inner ends of the serrations in the blade for a purpose presently to be stated. The spring members E′ are of a curved shape, as will be seen best in Fig. 3. It will be understood that the knife-sections C and the slides D, with the springs E′, are adjustable longitudinally of the upright B, and may be held in position after adjustment by any suitable means, such as a pin F. (See Fig. 1.) It is not necessary that all the sections C should be provided with perforating-blades C^2, and blank slides $C^\times$—that is, slides without perforating-blades—may be used to fill that part of the slideway B′ at which no perforating action is desired. Sections of different lengths may be employed. (See Fig. 1.)

In order to produce a line or lines of perforations in a direction different from that of the upright B, I provide the side arms G, (one or more of them,) arranged at an angle to the said upright and mounted to slide thereon. As illustrated in Fig. 2, the connection between the upright B and the side arms G is similar to that of the upright with the spring-carrying slides D, the side arms being provided with integral projections G^2, adapted to enter the slideway B′ and to pass under a reduced end portion C^6 of a slide C, so that the blade C^2 of the said slide may extend across the side arm. (See Fig. 1.) The side arms are constructed similarly to the upright B

and are provided with longitudinal slideways G′, adapted to receive perforator-sections C, blank sections C×, and spring-carrying slides D.

The peculiar connection between the side arms G and the upright B is a very firm one, so as to prevent the side arms from wabbling and the joints from becoming loose. In some cases, however, it may be desirable to provide an additional support for the free ends of the side arms, and, as illustrated in Fig. 1, such support may be in the nature of an upright H, formed with beveled edges H′ and adapted to be embraced by the ends of the side arms G, the latter being provided for this purpose with dovetail slots G^3. The upright H therefore constitutes a guide on which the side arms are mounted to slide.

The manner in which the perforator is operated and adjusted will be obvious without further explanation. A very clear impression can be obtained when employing my improved perforator, while other devices constructed hitherto for the same purpose very often prevent effective contact of the paper with the form, and thus cause a defective impression. The blade C^2, being located centrally, or approximately so, in relation to the base C′, is very firmly supported, and therefore will not bend laterally during the perforating operation. The paper will not adhere to the perforator, but will readily separate therefrom. This is due, first, to the particular arrangement of the springs E′, which are located at each side of the blade C^2, so that they will lift the paper off the blade in a direction perpendicular to the plane of the paper.

I am aware that it has been proposed to use springs in connection with perforators for the purpose of releasing the paper; but such springs were to be arranged only on one side of the perforator and obviously would produce a lateral strain on the paper and could not be relied upon to disengage the paper from the perforator. Another feature which facilitates the ready removal of the paper from the perforator is the peculiar construction of the knives. As hereinbefore described, the plate E forms a stop for the paper, the outer surface of the said plate, as described, being flush with the inner ends of the notches between the teeth of the perforator. The paper therefore cannot be torn by the blade entering into it to a greater depth than the height of the teeth or serrations. The shoulders C^4 from the top of the base of the perforator-sections are flush with the surface of the standard B. By extending the base portion laterally a wide channel or groove may be made in the part B to receive it, so that the perforator has a wide surface-bearing, which will prevent its rocking relatively to the support.

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

1. A perforator, comprising a supporting bar, a perforating knife extended lengthwise of the bar and mounted to slide thereon, and a paper-releasing spring likewise extended lengthwise of the bar and mounted to slide on the supporting bar, substantially as described.

2. A perforator, comprising a supporting bar provided with a longitudinal slideway, a perforating knife arranged to move upon the said slideway, and provided with an end portion spaced from the said slideway, and a paper-releasing spring provided with a slide fitting into the space between the supporting bar and the said spaced end of the knife, substantially as described.

3. A perforator, comprising a supporting bar provided with a longitudinal groove forming a slideway, a perforating knife provided with a projection arranged to move upon the said slideway, and with a reduced end portion spaced from the slideway, and a paper-releasing spring provided with a slide fitting into the slideway under the reduced end of the knife, substantially as described.

4. A perforator, comprising a supporting bar provided with a longitudinal slideway, a perforating knife arranged to move upon the said slideway, and provided with an end portion spaced from the said slideway, and a side arm adapted to carry perforating knives and provided with a portion fitting into the space between the supporting bar and the said spaced end of the knife, substantially as described.

5. A perforator, comprising a supporting bar provided with a longitudinal groove forming a slideway, a perforating knife provided with a projection arranged to move upon the said slideway, and with a reduced end portion spaced from the slideway, and a side arm adapted to carry perforating knives and provided with a portion fitting into the groove under the reduced end of the knife, substantially as described.

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