

M. E. BAIRD & J. W. MACY
Perforating-Pen.

No. 220,783.

Patented Oct. 21, 1879.

Fig. 1

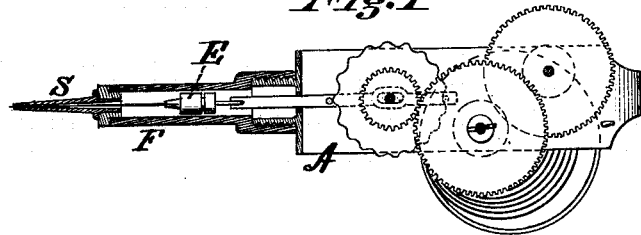


Fig. 2

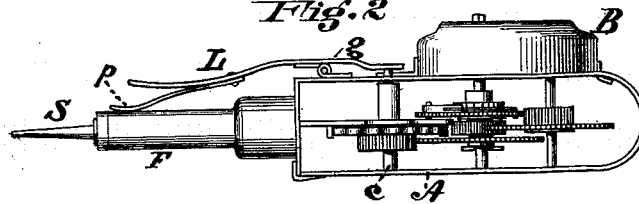


Fig. 3

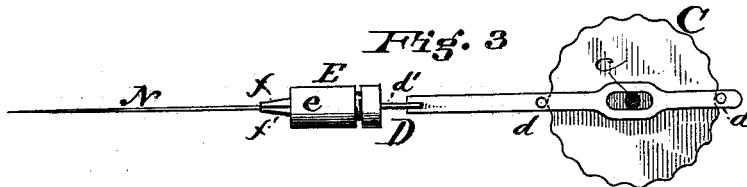
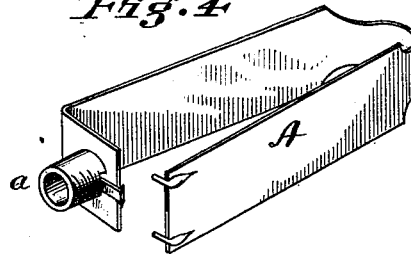


Fig. 4



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IMPROVEMENT IN PERFORATING-PENS.

Specification forming part of Letters Patent No. **220,783**, dated October 21, 1879; application filed May 31, 1879.

To all whom it may concern:

Be it known that we, MAURICE E. BAIRD and J. WARREN MACY, both of Troy, Miami county, Ohio, have jointly invented certain new and useful Improvements in Mechanical Pens, of which the following is a specification.

The improvements consist of a novel construction and combination of parts whereby the needle can be readily removed from the needle-bar.

In the drawings herewith, Figure 1 is a side elevation of the apparatus with part of the inclosing-frame removed, and with the lower part in section, showing the connections of the needle-bar. Fig. 2 is an edge view of the apparatus complete. Fig. 3 is an enlarged detached plan view of the needle-bar and its immediate connections. Fig. 4 is a detached perspective view of the inclosing-frame.

In the drawings, A represents the inclosing-frame; B, the case in which the operating-spring is coiled; C, the corrugated wheel by which the movement of the needle-bar is produced; D, the needle-bar; E, the head containing the needle-clamp; F, the needle-case, and S the shield through which the needle operates.

The mechanism by which the driving force is communicated to the wheel C and the needle-bar D may be of any of the usual kinds used for such purposes, and requires no detailed description. It consists in the present case of a train of cog-wheels mounted upon suitable axles secured between the parallel sides of the frame, all so connected and proportioned as to give the required increase of speed to the corrugated wheel C.

The needle-bar D has a longitudinal slot, as shown in Fig. 3, through which its shaft passes, and by means of which it is guided upon the shaft in its movement. Two pins, *d* and *d'*, which may be provided with friction-wheels, project laterally from the needle-bar at opposite edges of the corrugated wheel C, so distanced apart that when one of said pins occupies a depression of the wheel-face the other will rest upon a corresponding elevation upon the opposite side. By this means a positive movement is given to the needle-bar in both directions by the rotation of the corrugated wheel, and a spring is unnecessary.

The needle-bar carries at its outer extremity a head, E, composed of two spring-clamps, *f* and *f'*, arranged to be held together by a screw-cap, *e*, with the needle between. By loosening the screw-cap *e* the needle N may be removed, when the clamps spring apart.

Any form of clamp which will retain the needle and permit its removal will answer the purpose of the device shown; but that described has this advantage, that the cylindrical form of the head serves the purpose of a guide to the outer end of the needle-bar working as a piston in the cylindrical case F.

The brake mechanism consists of a brake-lever, L, pivoted at *g* to the frame A, and resting at one end upon the projecting end of the shaft C. The other end of the brake-lever is held outward by a spring, *p*, resting against the needle-case F. The brake by this arrangement is constantly operative, except when relieved by the pressure of the operator's finger upon the outer end of the brake-lever, thus giving entire control of the movements of the driving mechanism.

The frame A consists of a flat band, preferably of spring-brass, bent into rectangular shape, between the parallel sides of which the arbors of the cog-wheel mechanism are secured. Through a collar, *a*, attached to one end of the frame the needle-bar operates. When the fastenings are removed the frame springs apart, as shown in Fig. 4, and the operating mechanism can be easily removed and replaced.

The advantages of a frame thus constructed of a single piece of metal over a frame composed of several pieces held together by screws are obvious.

The shield S is a hollow tube screwed into the end of the needle-case F, and through which the needle N operates. By means of its screw-connection with the needle-case it may be adjusted vertically to govern the depth of penetration of the needle, which is very desirable in stencil-pens, and thus gives a means of regulating the character of the stencil at will.

We find it preferable to form the head E independently of the needle-bar, and attach the same thereto by a short link, *d'*, which permits a slight lateral freedom of movement, and

obviates any tendency to undue friction in its movement in the needle-case.

Having described our invention, we claim—

1. In a mechanical perforating-pen, the combination of a reciprocating needle-bar, D, a needle, *n*, a head, E, provided with a needle-clamp, and a hooked flexible connection between the needle-bar and head, whereby said head can be readily attached to and detached from the needle-bar, as and for the purpose described.

2. The frame A, for receiving and retaining the operating mechanism, consisting of a single piece or band of flat spring-brass or simi-

lar material bent into rectangular form, and separated at one corner for the insertion of the operating devices, and provided at one end with a collar, through which the needle-bar operates, and with fastening devices for securing the divided portion of the case, substantially as shown and described.

In testimony whereof we have hereunto set our hands this 19th day of May, 1879.

MAURICE E. BAIRD.

J. W. MACY.

Witnesses:

L. J. NIEAIA,

A. C. MACY.