J. M. GRIEST.

Puncturing-Pen.

No. 208,905. Patented Oct. 15, 1878.

Fig. 1

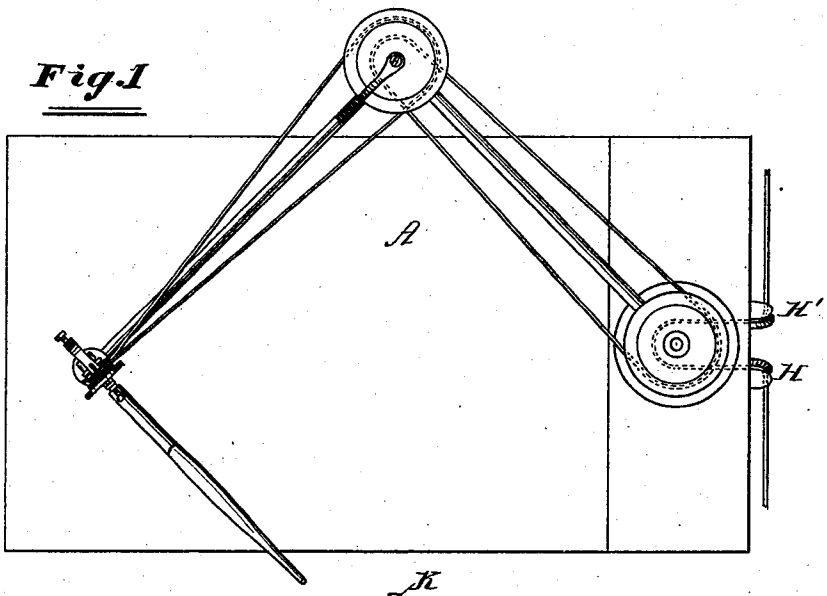

Fig. 2

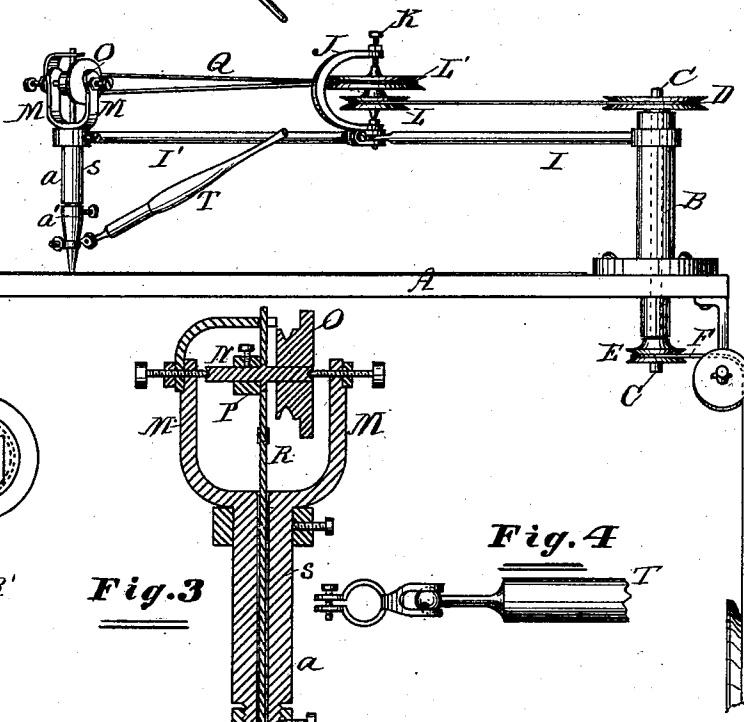

Fig. 5

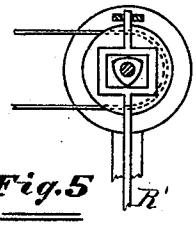

Fig. 3

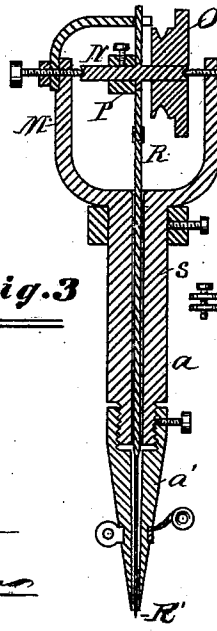

Fig. 4

Attest:

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UNITED STATES PATENT OFFICE.

JOHN M. GRIEST, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN PUNCTURING-PENS.

Specification forming part of Letters Patent No. **208,905**, dated October 15, 1878; application filed March 9, 1878.

To all whom it may concern:

Be it known that I, JOHN M. GRIEST, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mechanism for Driving and Controlling the Movement of Puncturing-Needles, of which the following, in connection with the accompanying drawing, to which reference is herein made, is a full, clear, and exact description.

Figure 1 is a top view of the parts embodying my invention; Fig. 2, a front or perspective view; Fig. 3, a vertical central section of the shield and the parts arranged above, within, and upon the same; Fig. 4, a top view of the joint connecting the guide or handle to the shield, and Fig. 5 a cross-section of the cam-carrying shaft.

My invention has for its object to produce the reciprocating movement referred to by means wholly mechanical, to enable the operator to guide the needle as he would guide a pen or pencil in writing, and to give him complete control of the mechanism employed.

In the drawing, A repesents a table or base, to which the parts may be applied. B is a hollow standard arranged vertically, and applied to the base in any suitable manner. C is a shaft within the standard B. On the upper end of the shaft C is the pulley D, and on the lower end is the pulley E, both carried by the shaft C. F is a driving-cord arranged on the pulley E and on the driver G. The direction of the cord may be changed by passing it over the loose disks H H′. The driver G may be rotated by means of a treadle.

I is a horizontal arm turning freely on the standard B. I′ is also a horizontal arm, so jointed to the arm I as to be capable of being swung horizontally and vertically on the joint. The horizontal jointed arm I I′ thus enables the operator to move the needle from any point to any other point within a circle having a radius equal or nearly equal to the length of the said arm, or at least allows the needle to be swung horizontally in any direction over a large or comparatively large sheet, while the arm or section I′, by being capable of being also moved or vibrated vertically on its joint, admits of the needle and its case being raised and lowered while the needle is in action, so that the needle may then be raised out of or above the sheet and moved to it again at some other point with facility, as will hereinafter more fully appear.

J is a yoke carried by the jointed arm I I′, and K is a shaft or arbor having bearings in the yoke or bent arm J. On the shaft K are the pulleys L and L′. On the outer or free end of the arm I′ are the posts M M, in which the shaft N has bearings. O is a pulley on the shaft N, and P is a small eccentric on the same shaft. Q is a driving cord or belt on the pulleys O and L′, and Q′ is a like cord or belt on the pulleys L and O. The pulleys L and L′ should turn on the same center on which the arm I′ swings horizontally.

In the example shown the pulleys are arranged horizontally, excepting the pulley O, which is arranged vertically, its shaft being horizontal; but the arrangement, size, and location of the pulleys and driving-cord are not essential so long as the pulley O may thereby be driven rapidly, the free end of the arm I′ allowed to move in all directions, and the eccentric P or its equivalent has a vertical throw with relation to a horizontal base, A; neither is it essential that the standard B should be hollow, nor that the pulley E and disks H H should be arranged below the base A.

R is a vibrating rod or stem mounted on and carried by the eccentric P, and on the free or lower end of the stem R is the needle R′. S is a shield for the needle and its stem, and this shield is fastened to the arm I′. The shield S may be made in sections *a* and *a′*, and the lower section may be vertically adjustable on the upper one. This vertical movement may be allowed or provided for by screwing one section partly into the other, as indicated in Fig. 3. The whole shield, however, may be adjustably attached or connected to the arm I′, the object of the vertical adjustment being to cause the needle to project more or less through the material to be punctured by extending a greater or less distance through the lower or open end of the shield while being used, and so as to make either a large or small hole, as may be necessary or desirable.

T is a handle, stock, or guide connected to the shield S, preferably by means of a universal joint, consisting, in the example shown, of a ball and socket.

It will now be perceived that the operator, while using this device, accomplishes his work by the aid of mechanical contrivances only; that he can guide or move the needle in any and all directions with facility; that the stock or handle T may be held and moved as he is accustomed to hold and move a pen or pencil while writing, and that he can easily control the speed and duration of action of the needle.

It is to be understood, of course, that the needle, while in action, projects slightly through the lower end of the shield and is moved about upon the sheet to be punctured, the latter being placed for that purpose upon a pad arranged underneath the point of the needle.

In using this device for preparing sheets for making duplicate stencil impressions in imitation of writing, the characteristics of the user's writing may be accurately preserved and copied. The driving-wheel may be driven by means of a treadle, as already suggested, or otherwise, as may be deemed most convenient or practicable, and a reciprocating movement will be communicated to the needle.

I do not here intend to restrict myself to any particular way of setting the parts in motion, nor to the precise construction and arrangement herein shown and described, as it is obvious that certain modifications may be made without exceeding the scope of my invention; and therefore,

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

1. A reciprocating needle combined with a jointed arm consisting of two or more sections jointed to each other, one of the sections being vertically vibratory and the said section being laterally vibratory on or at the joint connecting it to its fellow, with relation to each other and a fixed or stationary joint, all operating in connection with each other and driving-gearing mounted on the said arm, and connecting the needle with a stationary driver, substantially as and for the purposes specified.

2. The combination of the hand-guide, stock, or handle T, for controlling the movement of the needle holder or shield by the hand of the operator, the said handle being adapted to be held and moved for that purpose by hand, in like manner as a pen or pencil may be used, the shield S, having the handle T jointed thereto by means of a universal joint, the jointed arm I I′, and the driving-gearing mounted thereon, and the reciprocating needle R′, substantially as and for the purposes specified.

3. A reciprocating needle combined with a horizontal arm consisting of two or more rigid parts or sections, I and I′, jointed to each other, the outer end of one section carrying the needle-shield and the outer end of the other being pivoted to a fixed support, both of the said sections being horizontally vibratory with relation to each other and the fixed support, and one of the said sections being vertically vibratory on its joint, all in connection with needle-reciprocating mechanism mounted on the said arm and connecting the needle with a stationary driver, substantially as and for the purposes specified.

4. The combination of the needle shield or carrier S, the stock or handle T, and a ball-and-socket joint connecting the said shield and handle, substantially as and for the purposes specified.

JOHN M. GRIEST.

Witnesses:
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W. S. BAKER.