W. L. IMLAY.

Stenciling-Pen.

No. 218,273. Patented Aug. 5, 1879.

FIG. 1.

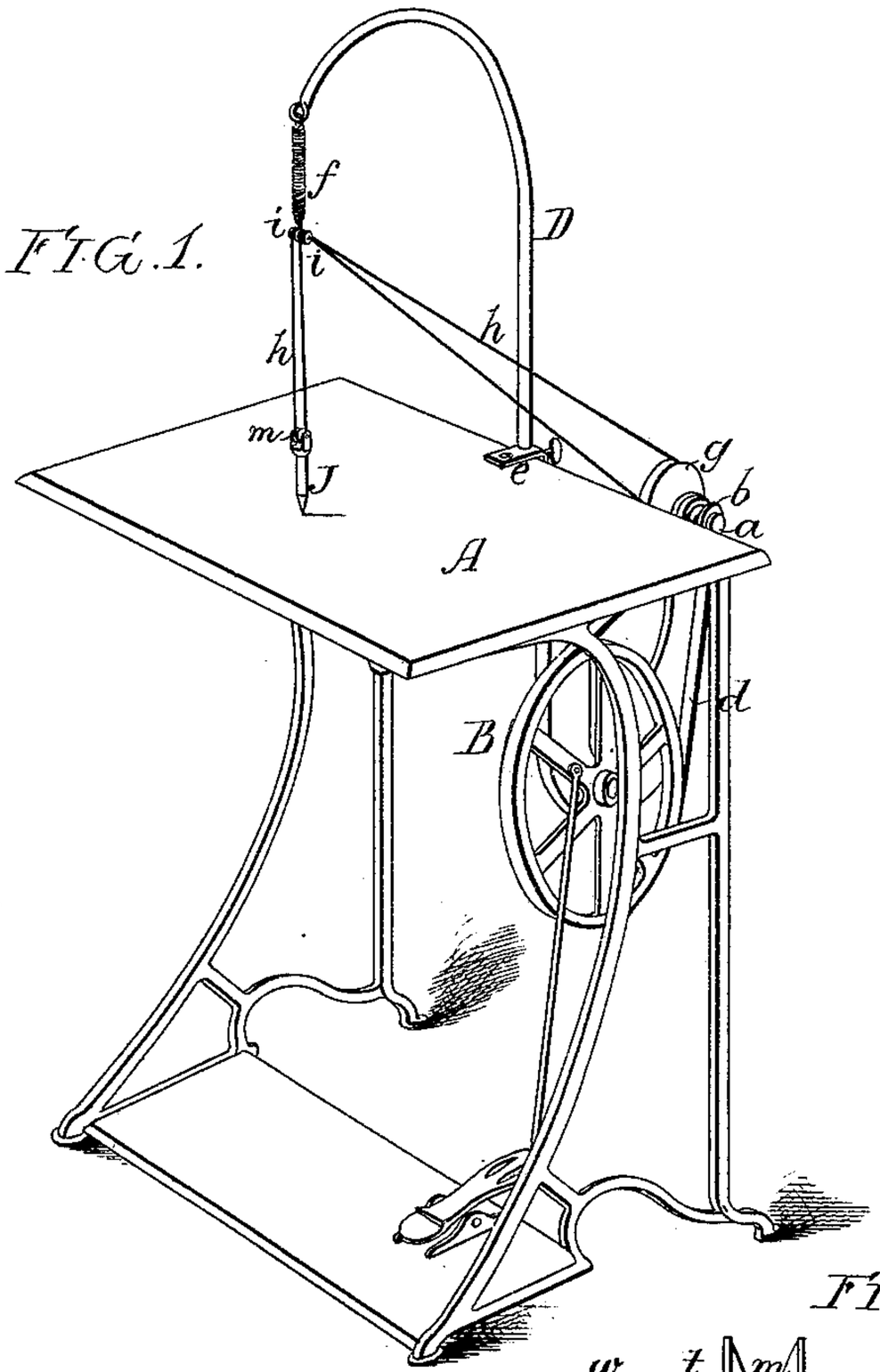


FIG. 2.

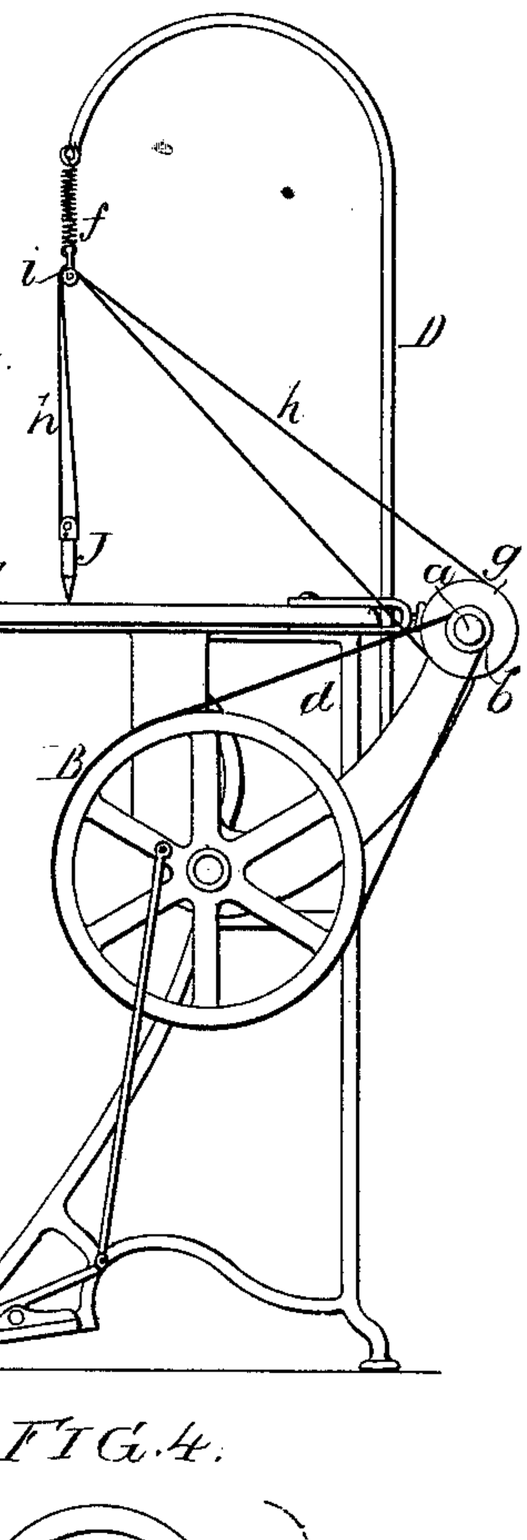


FIG. 3.

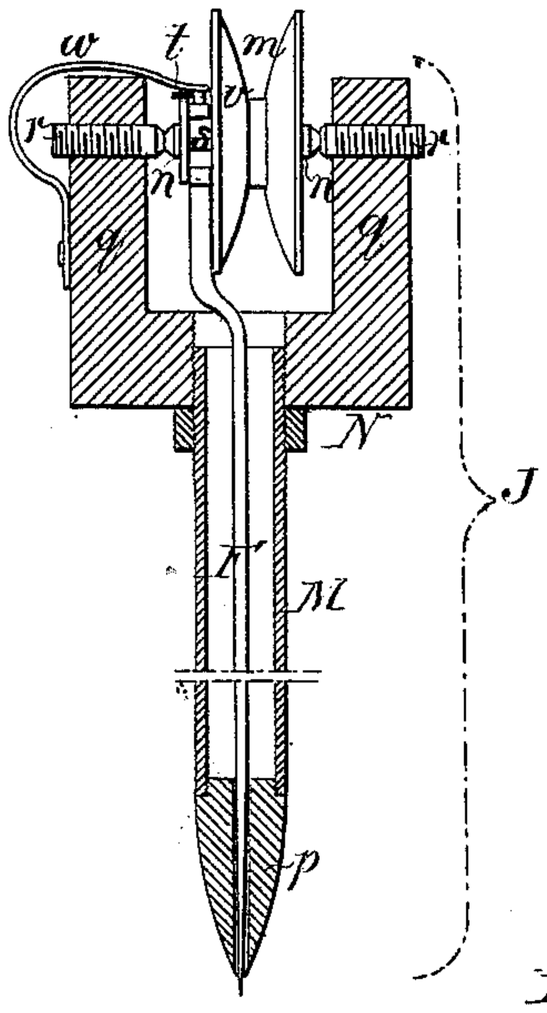
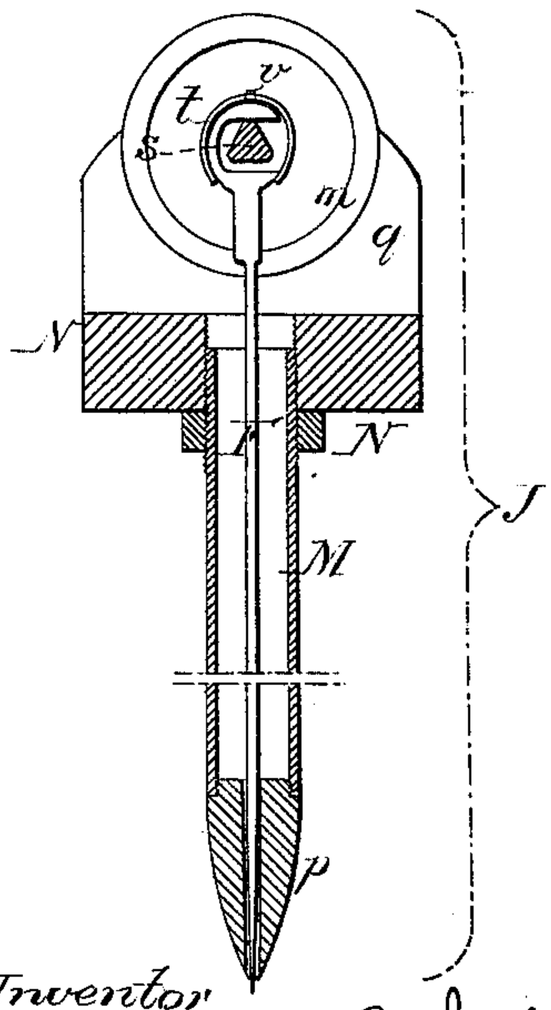


FIG. 4.



Witnesses
Harry A. Crawford
Harry Smith

Inventor
William L. Imlay
by his Attorneys
Howson and Howson

UNITED STATES PATENT OFFICE.

WILLIAM L. IMLAY, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN STENCILING-PENS.

Specification forming part of Letters Patent No. **218,273,** dated August 5, 1879; application filed May 20, 1878.

To all whom it may concern:

Be it known that I, WILLIAM L. IMLAY, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Instruments for Producing Letters or other Designs by Puncturing, of which the following is a specification.

My invention relates to certain improvements in that class of instruments which are used to puncture a sheet or sheets of paper or other material so as to form letters or designs of any character, the punctured sheet or sheets being afterward used in somewhat the same manner as the engraved plates in steel or copper plate printing, for producing any desired number of printed copies of the punctured designs.

The improvements relate especially to such instruments of this class as are driven by power separate from the hand-piece—for instance, by hand or foot power; and the main object of the improvements is to so construct the instrument as to permit free movement of the hand-piece which carries the puncturing-needle, a further object being simplicity in the construction of parts.

These objects I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved perforating instrument; Fig. 2, an end view of the same; Fig. 3, a transverse vertical section of the hand-piece and parts carried thereby; Fig. 4, a longitudinal vertical section of the same.

In Figs. 1 and 2, A represents a table mounted upon a suitable frame-work. Beneath this table is a bearing for the shaft of a wheel, B, driven, in the present instance, by a treadle and pitman, as shown; and at the rear of the table is a bearing for a shaft, *a*, round a pulley, *b*, on which and round the wheel B passes a belt, *d*.

To openings in a plate, *e*, projecting from the rear of the table A, is adapted the stem of a standard, D, which can be adjusted vertically, and secured in position after adjustment by means of a set-screw.

The upper end of the standard D is bent forward and downward, and to said bent end is secured the upper end of a coiled spring, *f*, the lower end of which carries two pulleys, *i i*, arranged side by side.

The shaft *a* carries a pulley, *g*, round which passes a belt, *h*, this belt passing thence over the pulleys *i i* and round a pulley, *m*, the shaft *n* of which turns in bearings carried by a hand-piece, J, the construction of which is shown in Figs. 3 and 4. This hand-piece consists of a tubular stem, M, and an enlarged head, N, the lower end of the stem being provided with a tapering tubular block, *p*, and its upper end screwing into a threaded opening in the head N.

The head N of the hand-piece has at each end a post, *q*, and to these posts are adapted screw-stems *r*, in the ends of which are conical recesses, which form bearings for the conical ends of the shaft *n*. The latter carries, in the present instance, a three-pointed cam, *s*, which serves to reciprocate the puncturing-needle F, the cam being adapted to a slot formed in the enlarged upper end of the said needle, and the latter being arranged within the tubular stem M of the hand-piece.

The puncturing is effected in the same manner as in other instruments of the class to which my invention relates—that is to say, by the rapid thrusting out of the pointed end of the needle F beyond the end of the block *p* of the stem M, said block *p* resting upon the sheet or sheets to be punctured, and being moved over the same, so as to form the desired letters or designs.

In order to permit the ready introduction or removal of the needle F without the necessity of removing the shaft *n*, the slot in the enlarged end of the needle is made open at one side, and said enlarged end is embraced by a spring-plate, *t*, which closes the end of the slot, and is held in position laterally by a pin, *v*, projecting from the top of the needle F.

Against the pin *v* bears the inner end of a bent spring, *w*, secured to one of the posts *q* of the head N, the tendency of the spring being to depress the needle F and keep the top of the slot in the same always in contact with the cam *s*.

When it is desired to remove the needle F, the spring *w* is turned to one side, the spring

t slipped off of the enlarged end of the needle, and the latter then moved to one side, so as to be clear of the shaft *n*, when the needle is free to be withdrawn in an upward direction.

The essential feature of my invention consists in suspending the hand-piece J by means of the belt *h*, which drives the devices for reciprocating the perforating-needle F of the hand-piece, for by this means perfect freedom of movement of the hand-piece is insured, the belt *h* being so small and light that it presents little or no resistance to this movement.

The spring *f* is also an important feature of the device, as it serves to impart a proper tension to the belt *h* and counterbalance the weight of the hand-piece J and its attachments without interfering with the freedom of movement of said hand-piece.

The head N of the hand-piece J is made very heavy, as shown in Figs. 3 and 4, so as to impart such a degree of stability to the hand-piece as will prevent tremor of the same due to the rapidly-revolving shaft *n* and pulley *m*.

Although I have shown and described a three-pointed cam as the means of reciprocating the needle F, a crank, an eccentric, or a cam of another shape can be substituted for that described, as will be readily understood.

The instrument above described, in addition to its advantages of lightness and ease of operation, is simple in all its parts, and can be constructed at a very cheap rate, but little accurate fitting of parts being necessary.

I wish it to be understood that I do not desire to claim, broadly, a hand-piece carrying a perforating-needle and devices for reciprocating the same, in combination with belts or other gearing whereby the devices are driven from an adjacent source of power, as instruments of this sort have long been known, an instance of such a device being shown in the English Patent No. 2,930 of 1870.

I am aware that the driving-pulley on the hand-piece of a puncturing instrument has been arranged centrally in respect to the stem of the hand-piece, so as to prevent the latter from tipping or turning sidewise when suspended by the driving-belt; and I therefore do not claim any such arrangement of the driving-pulley; but

I claim as my invention—

1. A perforating instrument in which the hand-piece, carrying the perforating-needle and devices for reciprocating the same, is suspended by the belt which drives said reciprocating devices, said belt passing over pulleys carried by a spring which hangs from the end of a standard projecting over the table of the instrument, as set forth.

2. The combination of the shaft *n*, its cam *s*, or equivalent device, as described, the perforating-needle F, having an enlarged and laterally-slotted upper end, and the spring-retaining plate *t*, as specified.

3. The combination of the hand-piece, the perforating needle or stem, a cam for reciprocating the same, and a spring, *w*, acting on the end of the stem and secured to the head of the hand-piece so as to be readily removable, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM L. IMLAY.

Witnesses:

HARRY A. CRAWFORD,

HARRY SMITH.