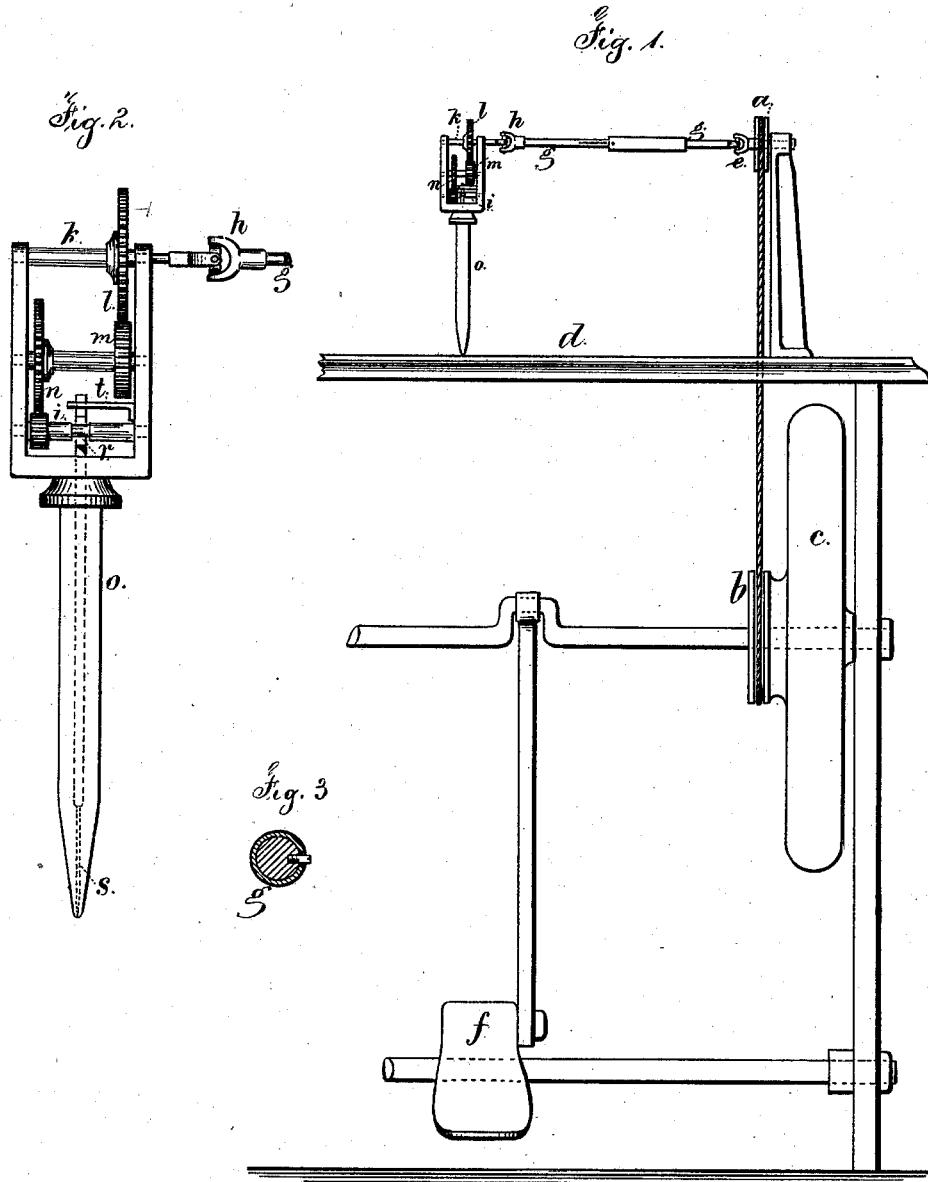


T. A. EDISON.
Perforating-Pen.

No. 203,329.

Patented May 7, 1878.



Witnesses

Chas. H. Smith
Geo. J. Pinckney

Inventor.
Thomas A. Edison
per Lemuel W. Penell
Att'y.

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

IMPROVEMENT IN PERFORATING-PENS.

Specification forming part of Letters Patent No. **203,329**, dated May 7, 1878; application filed April 23, 1877.

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented an Improvement in Perforating-Pens, of which the following is a specification:

This invention is an improvement upon and modification of the device patented to me, No. 180,857, and dated August 8, 1876.

The present invention relates to a means for reciprocating the needle that is used for perforating the paper.

I employ a motor that is revolved by foot or other convenient power, and gives motion to a shaft with universal joints that passes to the pen and revolves the mechanism that reciprocates the pen, and at the same time the universal joints allow the pen to be manipulated in writing or drawing. It is also preferable to employ a tube and sliding rod extending from one universal joint to the other, that allows the distance to be increased or lessened between the universal joints.

In the drawing, Figure 1 is an elevation, illustrating the connection between the motor and the pen. Fig. 2 is a side view of the pen in larger size; and Fig. 3 is a section of the tubular connection in magnified size.

The wheel *a* is revolved by suitable power. It will generally be preferable to connect the same by a belt with a larger wheel, *b*, and fly-wheel *c*, either above or below the table *d*, actuated by a treadle, *f*.

The universal joint *e* is at one end of the shaft *g*, connecting the same to the shaft of the wheel *a*, and this shaft *g* extends to the universal joint *h* of the shaft *k*. It is preferable to have this shaft *g* in two parts, one a tube, and the other a rod sliding within it, there being a groove or feather (see Fig. 3) that allows the one part to be revolved by the other, and at the same time the distance between the

joints *e* and *h* can vary, to adapt the position of the pen to the place where the writing is being performed.

The shaft *i* is revolved with great rapidity by means of the train of gearing *l m n* extending between the shaft *k* and the shaft *i*. The shafts of this train of gearing are supported in the light metallic frame above the tubular pen-holder *o*, within which is the needle *s*, that is reciprocated by a cam or eccentric, *r*, upon the shaft *i*. The guide *t* serves to maintain the upper end of the needle-holder in its proper position. The penetrating needle-point acts, as described in my aforesaid patent, to perforate the paper in drawing or writing, and the subsequent printing from the perforated sheet is to be done in the manner described in said patent.

I claim as my invention—

1. The combination, with an autographic perforating-pen, and the cam or eccentric to operate the same, of the universal joints and shaft *g*, connecting and giving motion from a motor to the mechanism upon the pen, substantially as set forth.

2. The extension-shaft *g*, made in two parts, one sliding within the other, and provided with universal joints at the ends, in combination with a motor and a pen formed of a reciprocating needle, a holder, and mechanism for moving the pen, substantially as set forth.

3. In combination with the autographic perforating-pen, the train of gearing upon the pen to increase the speed of the pen, and a motor connecting with the train of gearing upon the pen, substantially as set forth.

Signed by me this 18th day of April, A. D. 1877.

THOS. A. EDISON.

Witnesses:

GEO. T. PINCKNEY,
CHAS. H. SMITH.