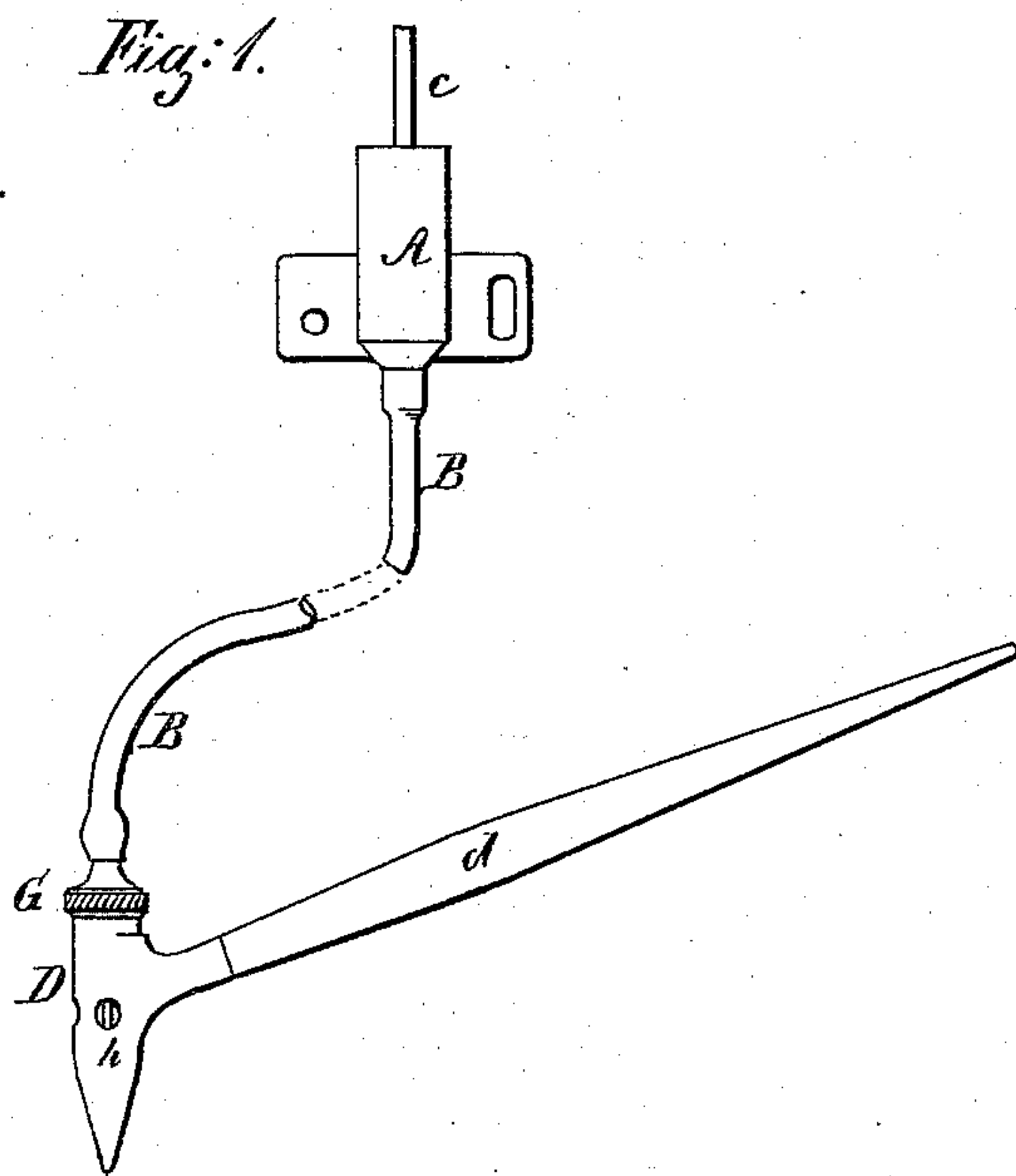


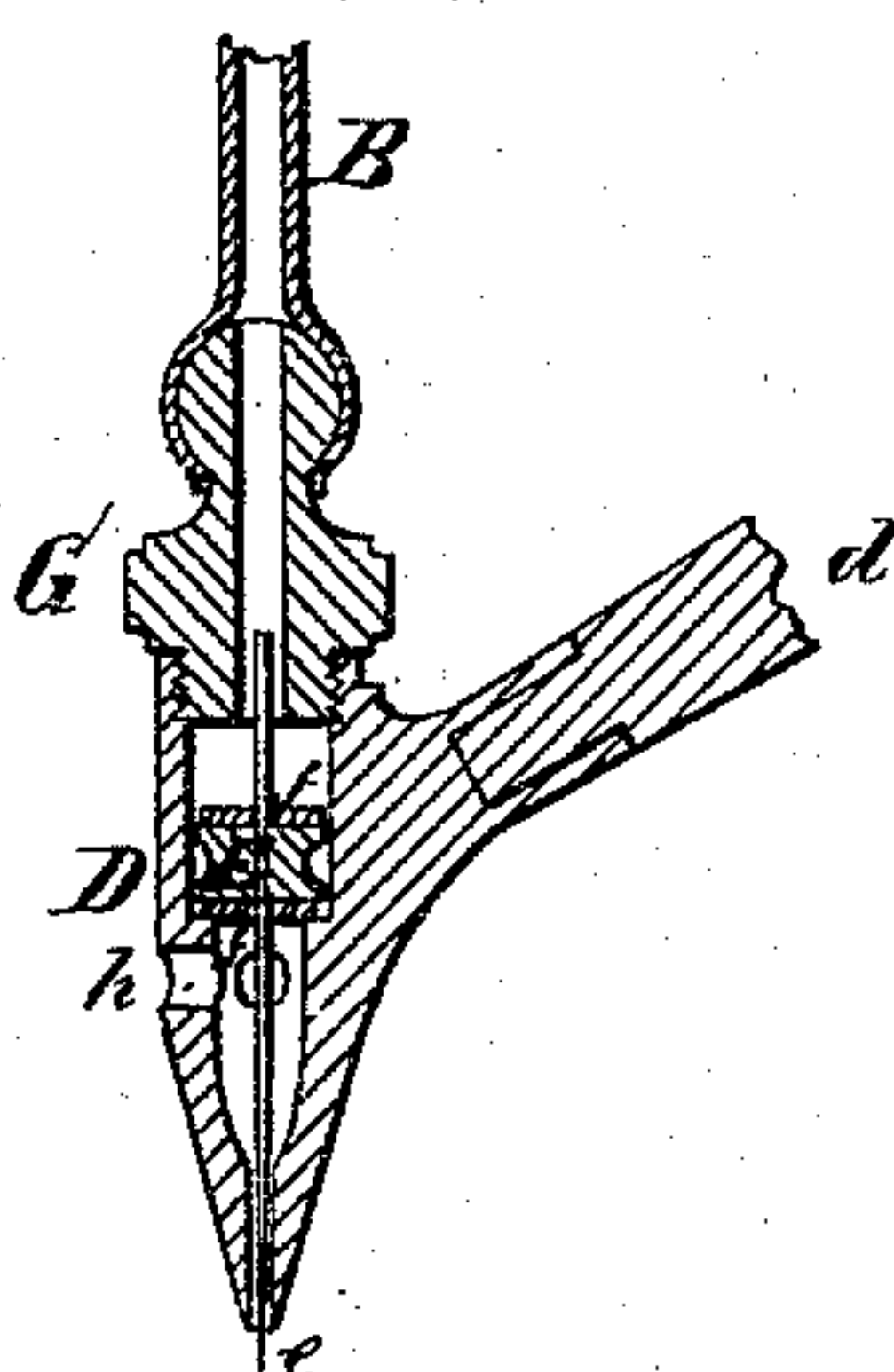
J. C. FIELD & W. B. FARRAR.  
Pneumatic Perforating Pen.

No. 215,339.

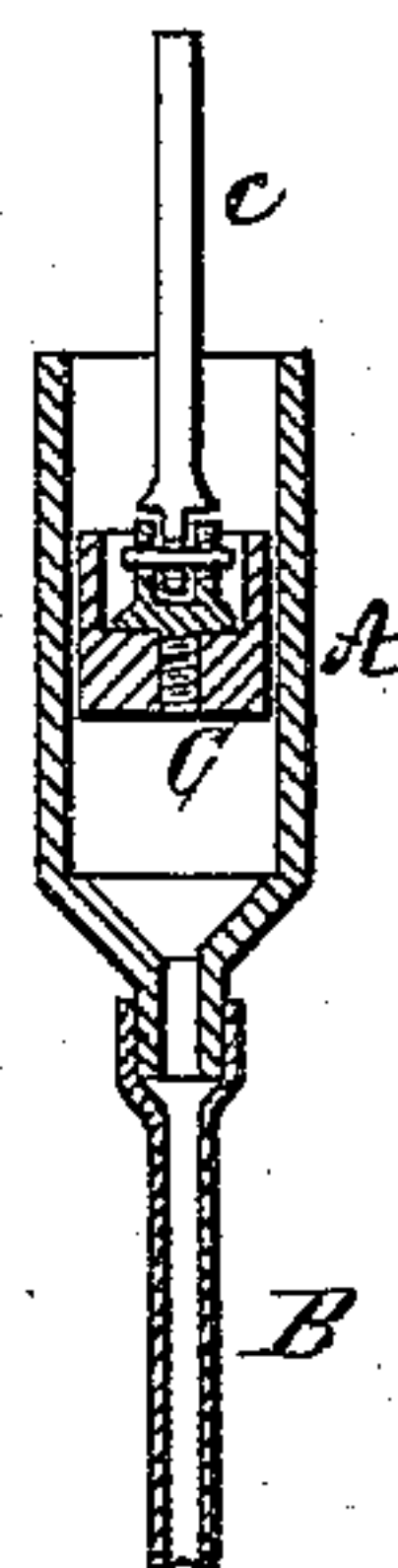
Patented May 13, 1879.



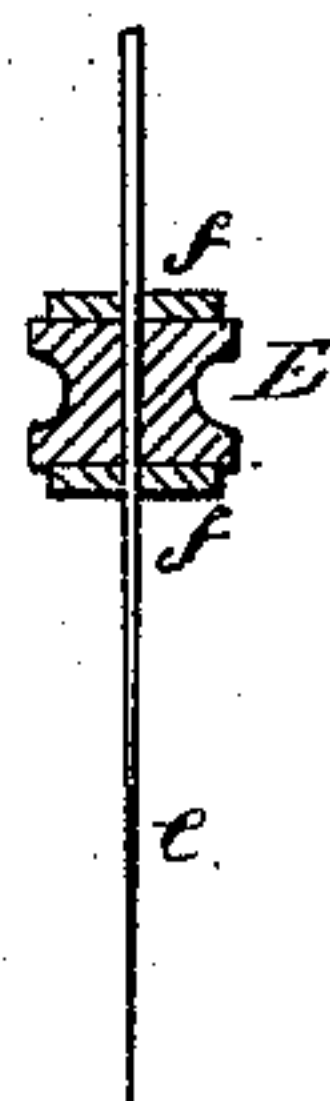
*Fig: 2.*



*Fig: 3.*



*Fig: 4.*



*Witnesses.*  
*E. Johnson.*  
*Emil H. Dronmayer*

*Inventor.*  
*Joseph C. Field and*  
*Ward B Farrar*  
*By Wm H Lotz*  
*their Attorney*

# UNITED STATES PATENT OFFICE.

JOSEPH C. FIELD AND WARD B. FARRAR, OF CHICAGO, ILLINOIS.

## IMPROVEMENT IN PNEUMATIC PERFORATING-PENS.

Specification forming part of Letters Patent No. **215,339**, dated May 13, 1879; application filed August 14, 1878.

*To all whom it may concern:*

Be it known that we, JOSEPH C. FIELD and WARD B. FARRAR, both of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Pneumatic Perforating-Pens, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The nature of our invention relates to autographic pens, adapted for puncturing a sheet of paper with numerous small holes, to be filled with semi-liquid ink, for reproducing and manifolded the autographic characters in a printing-press.

Our invention consists in the combination, construction, and arrangement of the parts composing our device, as fully hereinafter explained.

In the drawings, Figure 1 represents an exterior view of our device, the driving mechanism not being attached. Fig. 2 represents a sectional view of the needle-stock and piston. Fig. 3 is a similar view of the actuating-piston and its cylinder or casing; and Fig. 4 represents an enlarged sectional view of the needle-piston detached.

A is the upper piston-case, which is bored out cylindrically, is open at the top, and has a funnel-shaped bottom, having formed a nipple on its end for connection with the flexible tube B.

C is a cup-shaped piston, made of wood or other suitable material, and pivoted to the end of the oscillating piston-rod *c*, the opposite end of which piston-rod is to be connected with a crank, eccentric, or cam, rotated at a high speed by suitable intermediate mechanical means from a treadle, crank, weight, spring, or any other power.

D is the needle-stock, bored out cylindrically in its upper portion, and tapering toward the bottom, where it is bored out for the needle-point to pass through and be guided therein. One side of this stock is provided with a socket for securing to it in an upward oblique direction a wooden handle, *d*, shaped like a pen-holder, by which said stock is held and moved over the paper for writing, similar to a common pen.

E is the lower piston, which is spool-shaped,

with a small hole through its axis for entering and holding the needle *e*. It also has small rubber or leather washers *f* at its ends for making its concussions noiseless. This piston E is fitted closely into the cylindrical bore of the needle-stock D, its reciprocating motion being limited between a shoulder at the lower end of said bore and a hollow cap-piece, G, screwed into the top end of the needle-stock bore, and being nipple-shaped at its upper extremity for coupling with the lower end of the flexible tube B. At *h* the needle-stock is perforated, for providing a free accession of air to the lower end of the piston E.

As will be noticed, the upper piston, C, is of considerably larger diameter than the lower piston, E, for the purpose of expanding and compressing the air in the tube B sufficiently to make up for the loss by the elasticity of said tube and by leakage of air around the pistons; but such might be regulated as well by providing a longer stroke reciprocating movement to the upper piston than the lower piston is required to have.

In this device the flexible tube, which consists of a piece of very small rubber hose, makes the only connection between the needle-stock and its driving mechanism, the pulsations of the atmospheric air imprisoned therein being the transmitting motor, thus offering less impediments for handling this instrument than in similar devices in which the needle is reciprocated by directly-connected mechanical means, which have to be moved about with the needle-stock while writing therewith.

What we claim as our invention is—

The needle-stock D, having handle *d*, openings *h*, and cap G, and being bored to form the cylindrical case for piston E, carrying needle *e*, and having elastic washers *f*, said piston to be reciprocated by the pulsations of the atmospheric air in a flexible tube, B, substantially as and for the purpose described and shown.

JOSEPH C. FIELD.  
WARD B. FARRAR.

Witnesses:

EMIL H. FROMMANN,  
E. JEBSEN.