(No Model.)

A. C. CAREY.

APPARATUS FOR PRODUCING MANUSCRIPT MATTER IN MULTIPLE.

No. 304,613. Patented Sept. 2, 1884.

Fig's

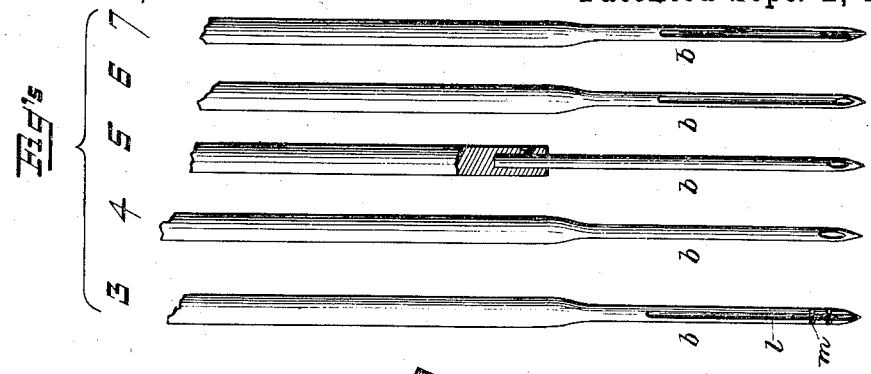


Fig 2.

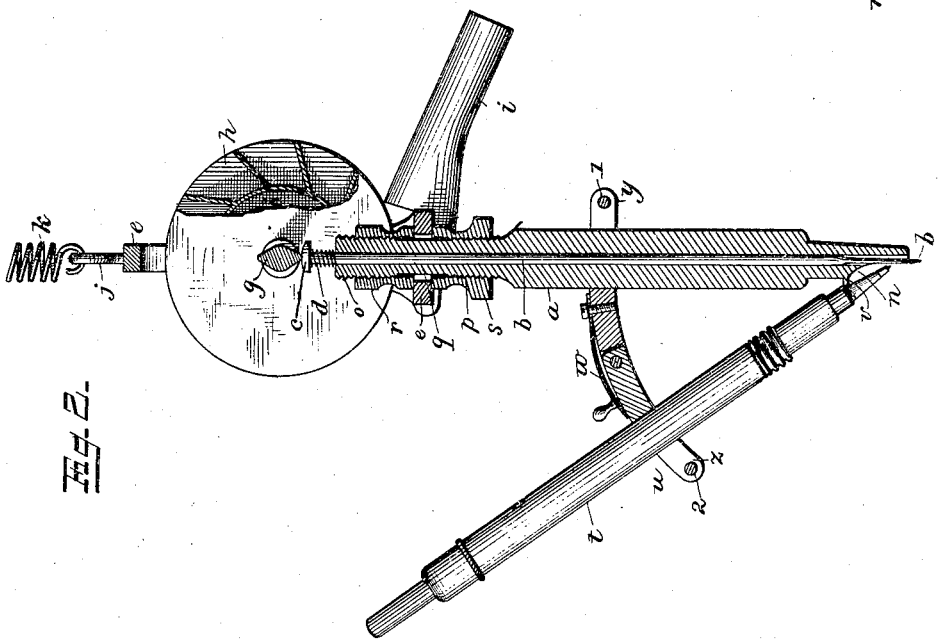
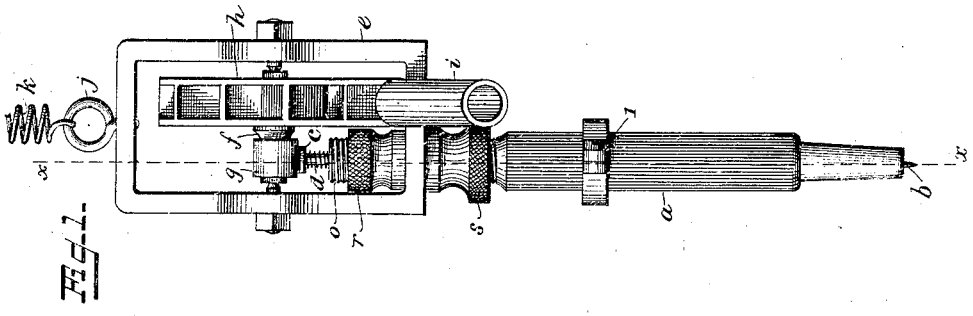


Fig 1.



WITNESSES

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APPARATUS FOR PRODUCING MANUSCRIPT MATTER IN MULTIPLE.

SPECIFICATION forming part of Letters Patent No. 304,613, dated September 2, 1884.

Application filed January 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS C. CAREY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Apparatus for Producing Manuscript Matter in Multiple, of which the following is a full, clear, and exact description.

My invention relates to an apparatus for obtaining autographically a multiplicity of copies of a writing simultaneously with the production of the original.

The invention consists in a needle-pen supplied with ink, combined with means for carrying and imparting a rapid reciprocatory movement to the pen, whereby it is driven through one or a number of sheets of paper, carries the ink with it, and deposits the ink in holes made in the paper, said holes being arranged by the proper guidance of the pen to form letters, figures, or other characters or designs, substantially as hereinafter specified and claimed.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a rear elevation of my improved writing-instrument. Fig. 2 is a vertical longitudinal section in the plane of line *x x*, Fig. 1. Figs. 3, 4, 5, 6, and 7 are front elevations of various forms of needle-pens.

For convenience of illustration only, I have selected to exemplify my invention a somewhat common form of an instrument sometimes termed an "autographic printing device," consisting in this instance of a tube, *a*, containing a needle, *b*, which needle is provided with a head, *c*, between which and the upper end of the tube is interposed a spring, *d*, to hold said needle normally up. The tube is adjustably secured in a yoke, *e*, and this yoke contains a shaft, *f*, bearing a cam, *g*, to act upon and with the spring to reciprocate the needle, and a power or motor device, *h*, here shown as a wind-wheel, which may be operated by a blast of air delivered through a nozzle, *i*; but, instead of the wind-wheel or air-motor, I may employ an electric, water, or spring motor, or otherwise drive the needle. To the yoke I attach a ring or eye, *j*, by which the instrument may be suspended from the ceiling or other elevation with an intermediate spring, *k*. The active end of the needle may have a longitudinal groove, *l*, running out at its point, with transverse nicks *m*, as shown in Fig. 3, or it may be simply an eye-pointed needle, as in Fig. 4, or an eye-pointed needle removably arranged in a needle-bar by a set-screw, as in sewing-machines, (see Fig. 5;) or it may be an eye-pointed and longitudinally-grooved needle, as in Fig. 6; or it may be a longitudinally-grooved needle, the bottom of the groove in which is nicked, crimped, or corrugated, as in Fig. 7. The essential features of the needle are its penetrating-point and capacity to hold and convey ink, and the several forms just described embody many illustrations of these essentials. The shape of the needle in cross-section may be varied and the number and arrangement of the ink-ducts also varied. The needle is permitted to project beyond the lower end of the tube *a* more or less, in accordance with the number or thickness of sheets of paper to be written upon at a single operation, and this adjustment of the needle is effected by raising or lowering the tube. Inasmuch, however, as the tube is in this instance cut away at *n* to permit access of the ink-fountain to the pen, the said tube cannot, as heretofore, be rotated to secure this adjustment; hence I screw-thread the said tube at *o* and *p* above and below the bottom piece of the yoke *e*, and leave a clear portion, *q*, between such threaded portions, which clear portion is adapted to move freely in a clear hole in the yoke *e* under the adjustments effected by the nuts *r* and *s*, engaging, respectively, the threaded portions *o* and *p*; or the tube may be threaded continuously from the bottom of threaded portion *p* up to the upper end, and still work in a clear hole in the yoke. The nuts *r s* bear against the upper and lower faces of the lower member of the yoke, and so serve to steady—in fact, rigidly hold—the tube in its adjusted positions. As is obvious, rotarily moving the nut *s* about the tube toward the yoke and the nut *r* from the yoke will cause the tube to move from the yoke and hence decrease the amount of projection of the needle from the tube; and, on the other hand, moving the nut *r* toward and the nut *s* from the yoke will increase the projection of the needle from the tube by raising the tube up into the yoke.

To prevent the binding of the nuts upon the tube tending to rotate it, the tube may be squared in the yoke.

As an ink-fountain I have shown an ordinary stylographic pen, *t*, secured to the tube at an angle of about sixty degrees, by means of a hinged clamp-yoke, *u*, and having its lower or delivery end projecting into the excision *n* and seated there on a rest, *v*. I do not, however, limit my invention to the use of a stylographic pen, but may employ other fountains for supplying the ink to the needle-pen. The reciprocating of the needle-pen will draw the ink from the fountain, although the supply may be otherwise regulated in many obvious ways. The yoke *u* is hinged or jointed to permit the turning of the fountain up and away from the needle-pen, a spring, *w*, holding the joint in one or both positions in any suitable manner. The yoke *u* is split at its ends *y z* to encircle the tube and fountain, respectively, and is held in place and holds the fountain and tube in proper relative positions by binding-screws 1 2 engaging the meeting ends of such split portions.

The operation is as follows: A number of sheets of paper corresponding in number to that of the desired copies are placed and held stationary in a pile, one above another, on a soft or yielding foundation or bed, the needle-tube is adjusted to give the requisite projection to the needle, and motion is imparted to the needle. The instrument is then manipulated after the manner of a pen or pencil in writing, as practiced with this sort of writing device, and the needle taking the ink from the fountain thrusts it along with itself through the several sheets of paper, leaving in each and all the same sort of mark or character in holes filled or surrounded by ink, and thus rendered readily decipherable or legible, and of a permanent character in each and all of the several sheets of the pile. Thus the original and a large number of copies of a writing, and all autographic, are obtained at one and the same writing without resorting to duplicating by printing or copying from the original, differing in this respect from all methods to me known heretofore practiced. The number of copies obtainable at a single operation is limited only by the capacity of the motive power for driving the needle-pen through the paper and the strength of the needle.

As a supplement to or substitute for the fountain attached to the pen, the ink or coloring-matter may be contained in a pad placed beneath the pile of sheets, and in this case the ink or coloring-matter will be drawn up through the paper by the returning needle and be deposited in the holes made by the needle.

The invention is specially applicable for getting many copies of a writing; but it is obviously applicable for making in multiple designs, drawings, and the like.

What I claim is—

1. A machine or instrument for producing multiple autographic writings at one and the same operation, consisting of a pointed needle-pen having an ink-duct, and means, substantially as set forth, to carry and rapidly reciprocate such needle-pen to drive it and its contained ink, under the guidance of the operator, through a number of sheets of paper in a pile, substantially as described.

2. The combination of a pen holder or tube, a needle-pen having an ink-duct therein, means, substantially as set forth, to rapidly reciprocate such pen, and an ink-fountain arranged to deliver ink to the duct of the pen, substantially as described.

3. The combination of a pen holder or tube cut away at its lower end, a needle-pen having an ink-duct, means, substantially as set forth, to reciprocate such pen in its holder, and an ink-fountain connected with and carried by the holder, and having its delivery end entering the holder at its excised portion in line with the ink-duct to the pen, substantially as described.

4. The combination of a pen holder or tube, a needle-pen having an ink-duct, means, substantially as set forth, to reciprocate such pen in its holder, an ink-fountain, and a jointed clamp connecting such holder and fountain and permitting the turning away of the fountain from the pen when desired, substantially as described.

5. The combination, with the needle-pen and means, substantially as set forth, to reciprocate it, of the yoke, a pen holder or tube loosely arranged in the yoke, in which tube said needle reciprocates, and nuts engaging screw-threads on the tube on opposite sides of the yoke, and bearing upon the yoke to effect the amount of projection of the pen from its tube, substantially as described.

6. The autographic needle-pen, having a longitudinal ink-duct and cross notches or depressions, substantially as described.

In testimony whereof I have hereunto set my hand this 24th day of January, A. D. 1884.

AUGUSTUS C. CAREY.

Witnesses:
WM. H. FINCKEL,
E. L. WHITE.