

(No Model.)

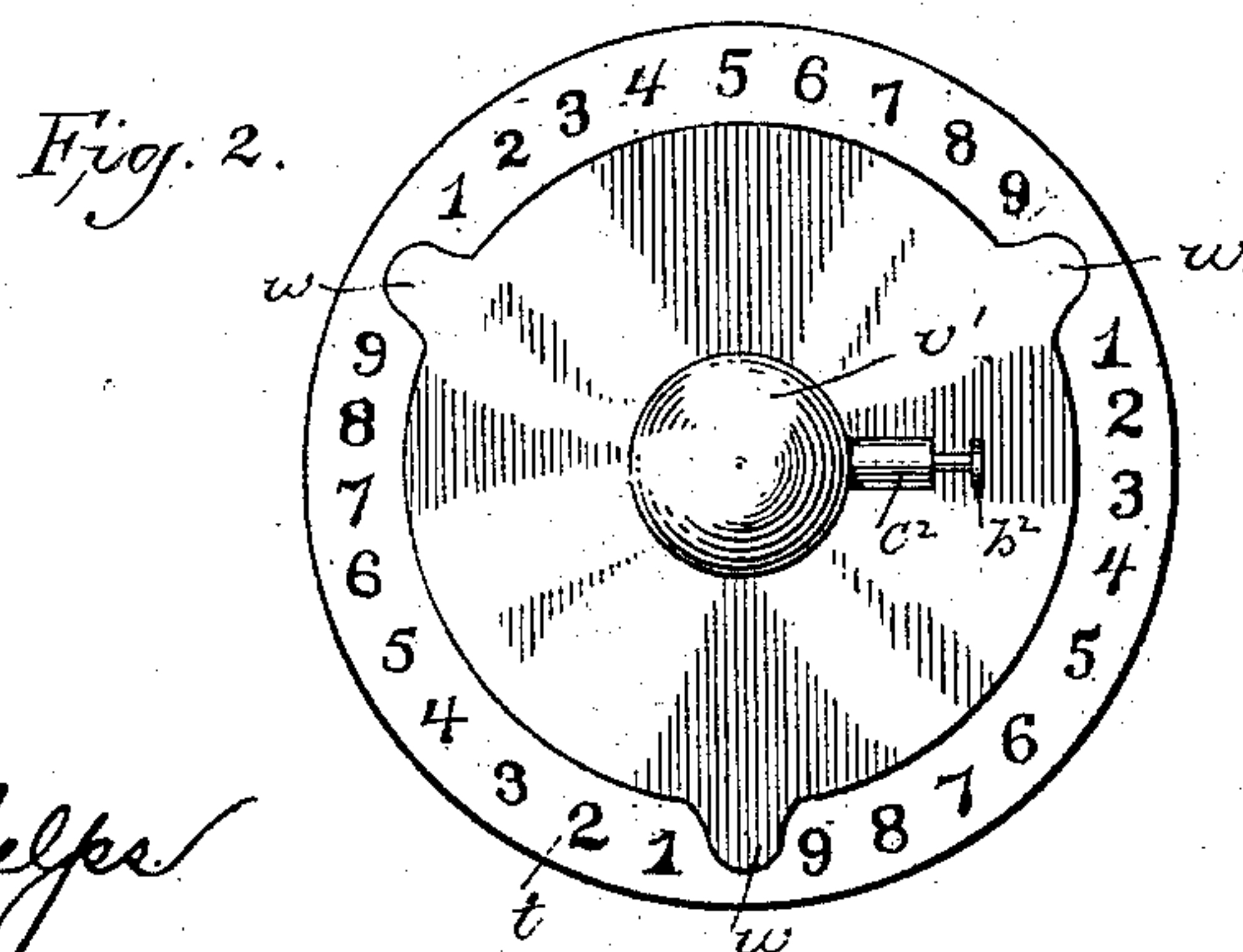
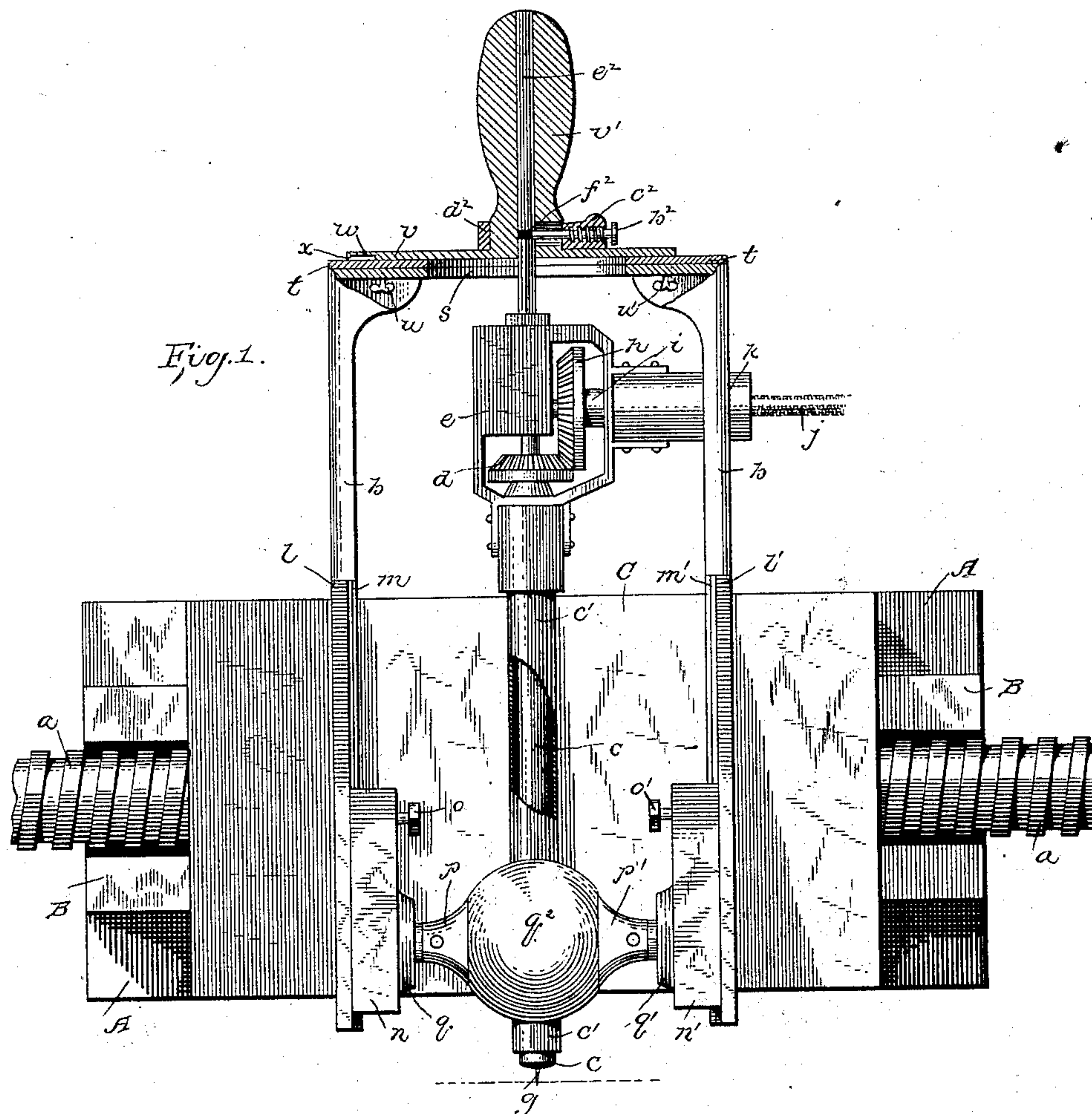
2 Sheets—Sheet 1.

V. L. OURDAN & C. A. KOLB.

ENGRAVING MACHINE.

No. 374,492.

Patented Dec. 6, 1887.



Witnesses.
C. Preston Phelps
Frank L. Dyer

Inventors.
Vincent L. Ourdan
Charles A. Kolb

By George Dyer.
Att'y.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

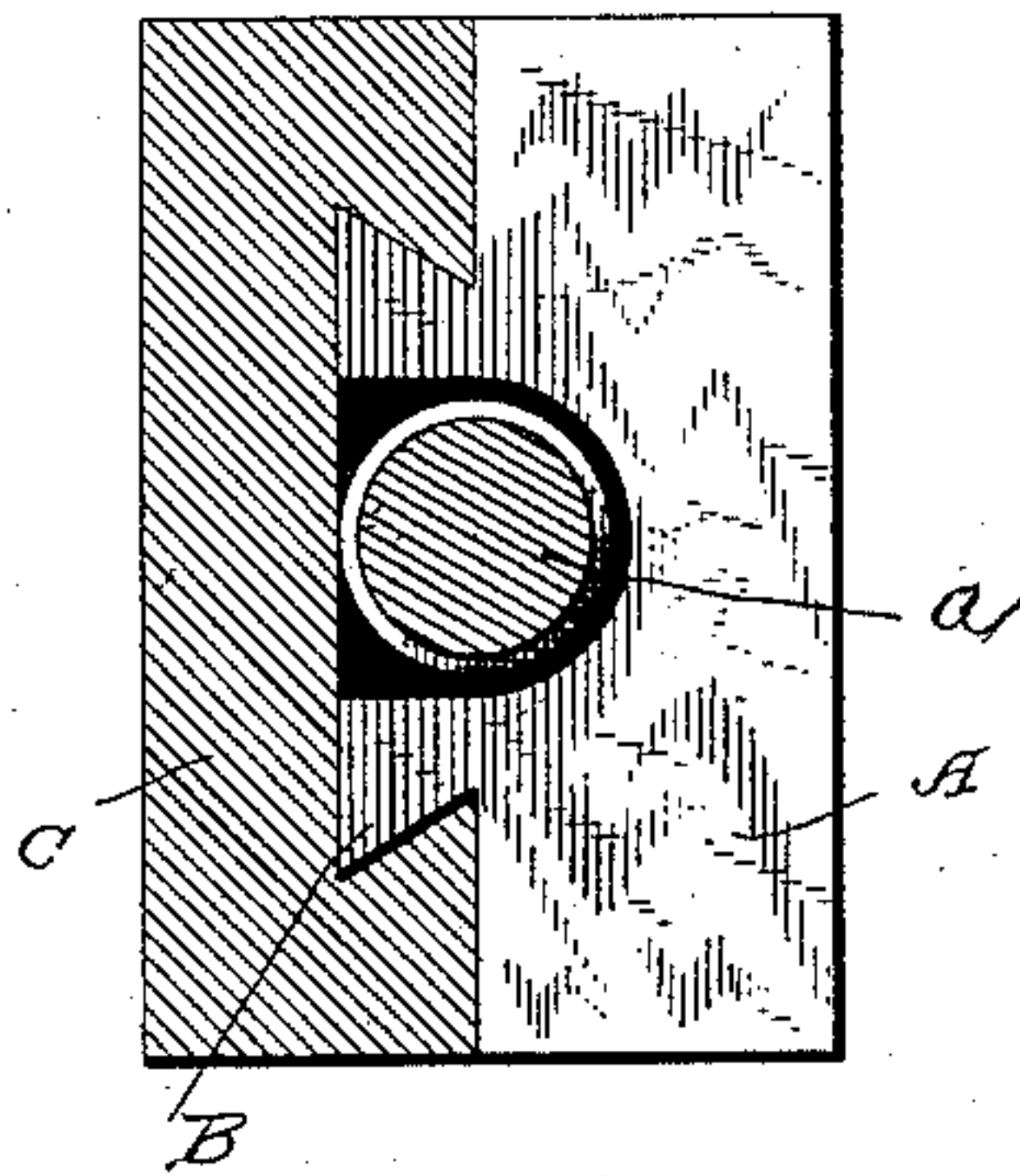


Fig. 4.

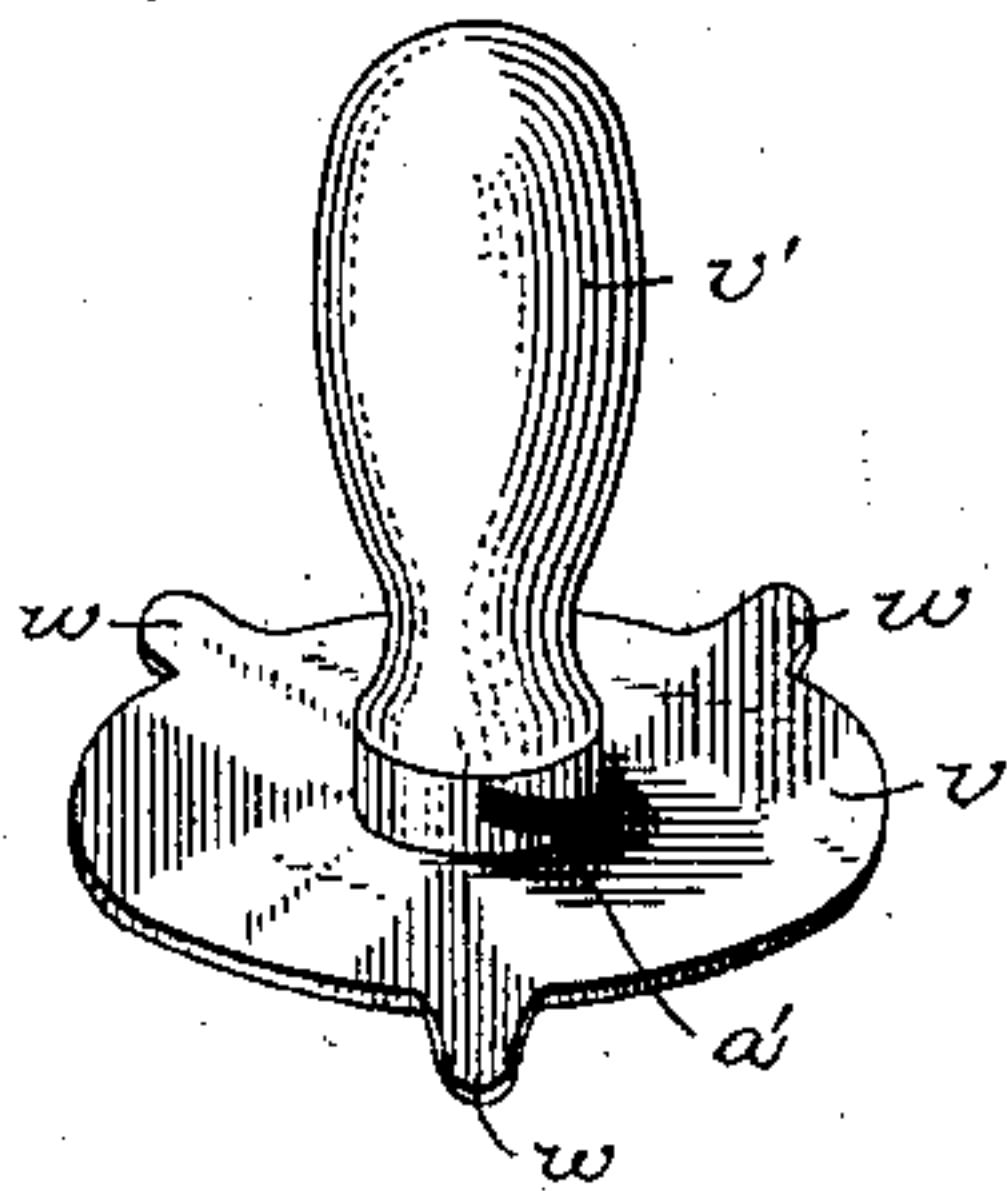


Fig. 5.

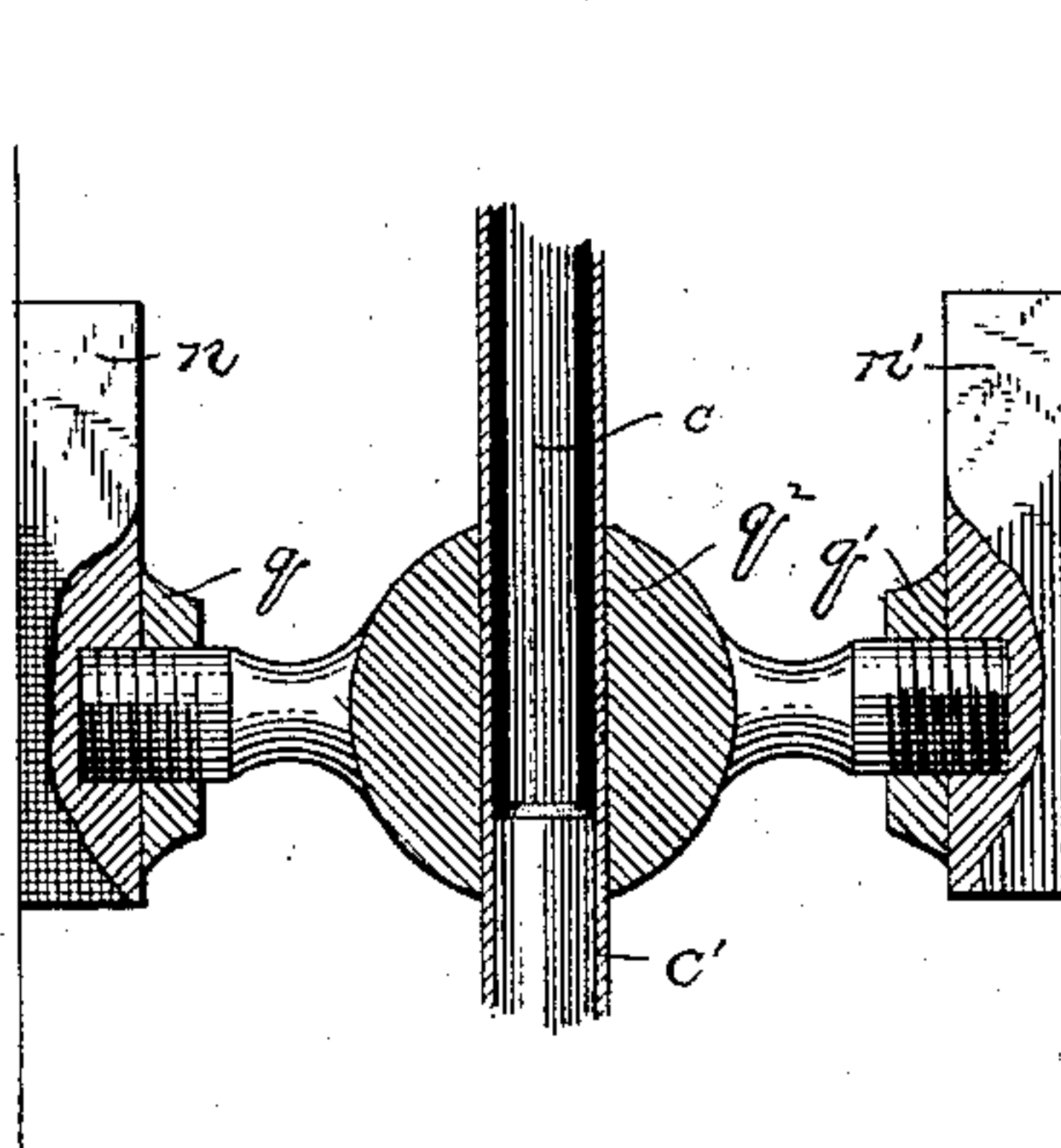
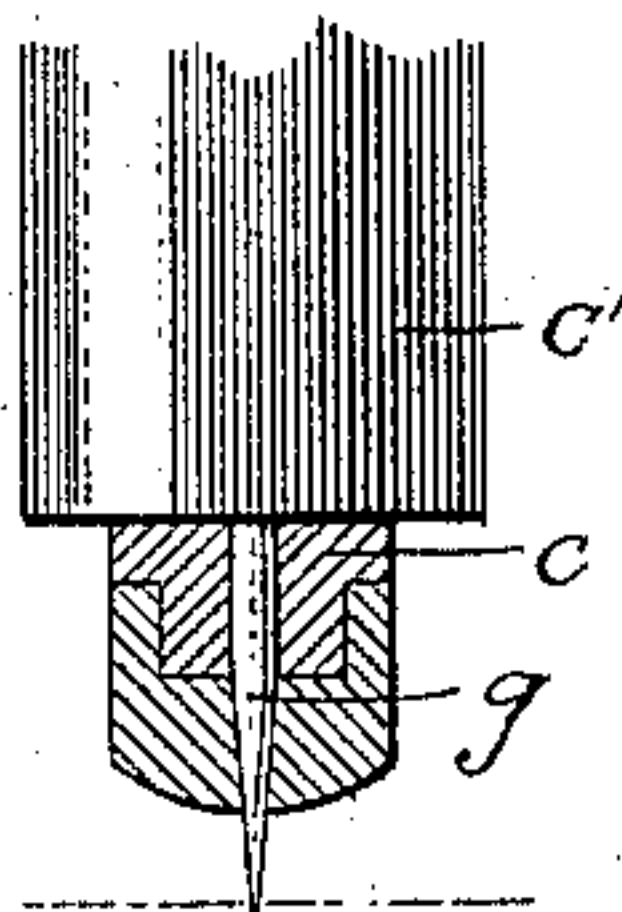


Fig. 6.



Witnesses.

C. Preston Phelps,
Frank L. Ryan

Inventors.

Vincent L. Ourdan,
Charles A. Kolb

By George W. Dyer
Att'y.

UNITED STATES PATENT OFFICE.

VINCENT L. OURDAN AND CHARLES A. KOLB, OF WASHINGTON, DISTRICT OF COLUMBIA.

ENGRAVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 374,492, dated December 6, 1887.

Application filed September 14, 1887. Serial No. 249,623. (No model.)

To all whom it may concern:

Be it known that we, VINCENT L. OURDAN and CHARLES A. KOLB, citizens of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Engraving-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to new and useful improvements in engraving-machines for engraving on copper-plate, so that when all of its parts are properly combined and arranged and in operation beautiful, uniform, and absolutely perfect work can be obtained equally as well by an amateur as by a skilled workman, and in an incredibly short time and with but little labor expended, in comparison to the lengthy and laborious operation of engraving by hand, as is now almost universally practiced.

We are aware that numerous engraving-machines have been patented and tested, but have been found to be inadequate for the purpose required of them, either being too expensive or complicated or being unable to withstand the rapid rotation of the bit, sometimes exceeding three thousand revolutions per minute.

By the use of our invention we are enabled to make a very strong and cheap and at the same time compact and simple machine, and one in which the size of the letters or figures to be engraved can be adjusted almost instantly.

The principal novelty of construction consists in a rapidly-rotating shaft provided with a removable bit at one end and with a semi-independent handle at the other and passing through an adjustable universal joint, as well as in other details of construction, all as will be more fully hereinafter described and claimed.

For a more thorough understanding of these parts in detail attention is invited to the accompanying drawings, wherein like letters of reference denote corresponding parts in the several views, and in which—

Figure 1 is an elevation, partly in section, of the whole apparatus; Fig. 2, an elevation of the pattern-plate and guiding-handle; Fig. 3, a section taken on the line $x x$ of Fig. 1; Fig. 4, a perspective view of the guide-handle and stylus-plate; Fig. 5, a sectional view of the universal joint and joint-carriage; Fig. 6, an elevation showing the manner of holding the bit in place.

Before beginning the description of our invention, it should be understood that all the parts thereof should be of metal of more or less hardness, according to the wear thereon, and that the drawings illustrate the device about full size.

The main frame or support A of our invention is provided with a dovetail tenon, B, and should be rigidly fastened above and across the center of the engraving-table or ordinary ruling-machine upon which the copper-plate to be engraved is fastened. A sliding carriage, C, termed the "main" carriage, is provided with a suitable mortise, into which the dovetail tenon B is inserted, and adapted to be moved horizontally back and forth over said tenon by means of a screw-shaft, a , rotated by means of a crank, hand-wheel, or a ratchet movement (not shown) fastened rigidly on one of its free ends.

The main or principal part of our invention is adapted to be held over this main carriage by means of two legs or supports, $b b$, and consists of—

First. A rapidly-revolving shaft carrying a bit and means for revolving the same. This shaft c is inclosed for protection in a casing, c' , and is provided near its upper end with a beveled cog-wheel, d , its extreme upper end bearing in a hardened block, e . To prevent this shaft from dropping too low, it should be provided with a shoulder resting, when in operation, against a bearing-block, f . The bearing-blocks e and f and the casing c' are all connected together, and practically integral with each other. The extreme lower end of the revolving shaft c is slightly convex in form and provided with a chuck for tightly grasping the bit g , which should be roughened, so as to have a biting end surface. A beveled

cog-wheel, *h*, engaging with the cog-wheel *d*, is rigidly attached to the axle *i*. This axle, adapted to be rotated by the flexible shaft or coupling *j*, has bearings in the block *e* and the box *k*.

Second. A universal joint and means for adjusting the same. Attached to the front of the main carriage are two vertical guides, *l l'*, each provided with a dovetail tenon, *m m'*, over which the two blocks *n n'* are adapted to slide. These blocks can be held stationary at any point on these guides by means of the set-screws *o o'*. Protruding from these blocks *n n'* and screwed inside of the same are the two cups or sockets *p p'*, and to give these sockets additional strength we surround them with the internal screw-threaded collar *q q'*, screwed or fastened in any convenient manner on said block. Suspended between these cups or sockets, but capable of universal movement, is the ball or sphere *q'*, having an annular chamber therein, through which the jacket *c'* extends. Should the ball by long and continued use become loose in its socket, this wear can be quickly and easily compensated by screwing these cups slightly in toward the ball.

Third. A stylus-plate and means for imparting the correct motion to the revolving shaft. Attached to or made integral with the two vertical legs *b b* is a circular plate, *s*, upon which the pattern of the design to be engraved is fastened. This design is engraved in triplet or in three series on a plate, *t*, made, preferably, circular and of the same size as the plate *s*, and is cut away at its center, as is also the said plate *s*, and can, when desired, be fastened securely on said plate by means of set-screws *u u'*. Another plate, *v*, termed the "stylus-plate," is provided with an integral hollow operating-handle, *v'*, and with the spring-metal arms *w w w*, each provided under its extreme end with a stylus, *x*. Each one of these styluses is fitted in a particular figure in each of the series of the pattern on the plate *t*.

Fourth. Means for raising the bit and accompanying mechanism. This is effected easily and simply as follows: The hollow handle *v'* of the plate *v* is provided with upwardly-inclined groove *a'*, extending partly around this handle and through to the chamber therein. Extending through this upwardly-inclined slot is a spring-actuated bolt, *b'*, of any well-known construction. We prefer to make this bolt as shown in Fig. 1—that is, by inclosing it in a casing, *c'*, having a ring portion, *d'*, extending entirely around this handle *v'* and holding the casing against the same, thus preventing reciprocating but not rotary motion. Extending up through this hollow handle and screwed firmly into the block *e* is an annular rod, *e'*, provided with a slot, *f'*, extending around the same, and into which the end of the bolt *b'* normally rests. Now it

will be seen that by turning the casing around in the direction of the upwardly-inclined slot *a'* the bolt *b'* in riding up this incline will lift the rod *e'* upwardly and the block *e*, casing *c'*, rod *e*, and bit *g* with it.

The mode of operation is as follows, supposing the power to be applied through the flexible shafting *j*, the proper design to be fastened on the plate *s*, each of the styluses inserted in a particular figure, and the copper plate to be engraved under the bit *g*: The handle *v'* is moved, allowing each stylus to follow the outline of the figure to be engraved, the bit *g* making exactly the same movements and boring into the copper as it moves on its course. When it is desired to lift the bit from the plate, the casing *c'* is rotated partly around, and, as before stated, this movement will accomplish the desired result; or the handle can be lifted upward, carrying the stylus-plate, block *e*, casing *c'*, rod *e*, and bit *g* with it.

It will be readily apparent that by moving the joint-carriage upward, and thus changing the pivoting-point of the rod *e*, the figures to be engraved will be enlarged, and vice versa. In order to change the design the bolt should be disengaged from the slot in the rod. The stylus-plate can then be removed and the pattern-plate changed at will.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In an engraving-machine, a rapidly-rotating incased shaft, *c*, passing through the ball *q'*, capable of universal movement between the cups *p p'*, which slide and are adapted to be secured at any point on the standards *m m'*, substantially as described, and for the purposes set forth.

2. In an engraving-machine, the combination, with a circular metallic removable pattern-plate having the characters engraved thereon in series of three or more, of a stylus-plate, *v*, having an integral handle, *v'*, and provided with the styluses *x x x*, corresponding in number with the series of characters on the pattern-plate *t*, substantially as described, and for the purposes herein set forth.

3. In an engraving-machine, a rapidly-revolving incased shaft passing through a ball, *q'*, capable of universal movement between the adjustable cups *p p'*, substantially as described.

4. In an engraving-machine, the combination, with a stylus-plate provided with a hollow guiding-handle, of a spring bolt or latch inclosed in a casing provided with a collar encircling said hollow handle, substantially as described.

5. In an engraving-machine, a stylus-plate provided with a hollow guiding-handle having an inclined slot therein, into which a spring latch or bolt is adapted to slide, substantially as described.

6. In an engraving machine, an inclosed re-
volving shaft passing through an adjustable
ball-and-socket joint and rotated at its upper
end by means of suitable gears and flexible
5 shafting, the whole being adapted to be con-
trolled by a stylus-plate above the same, sub-
stantially as described.

In testimony whereof we have affixed our
signatures in presence of two witnesses.

VINCENT L. OURDAN.
CHARLES A. KOLB.

Witnesses:

PRESTON PHELPS,
FRANK L. DYER.