

H. E. MERRILL.

Machines for Molding Clay Smoking-Pipes.

No. 141,230.

Patented July 29, 1873.

Fig. 1.

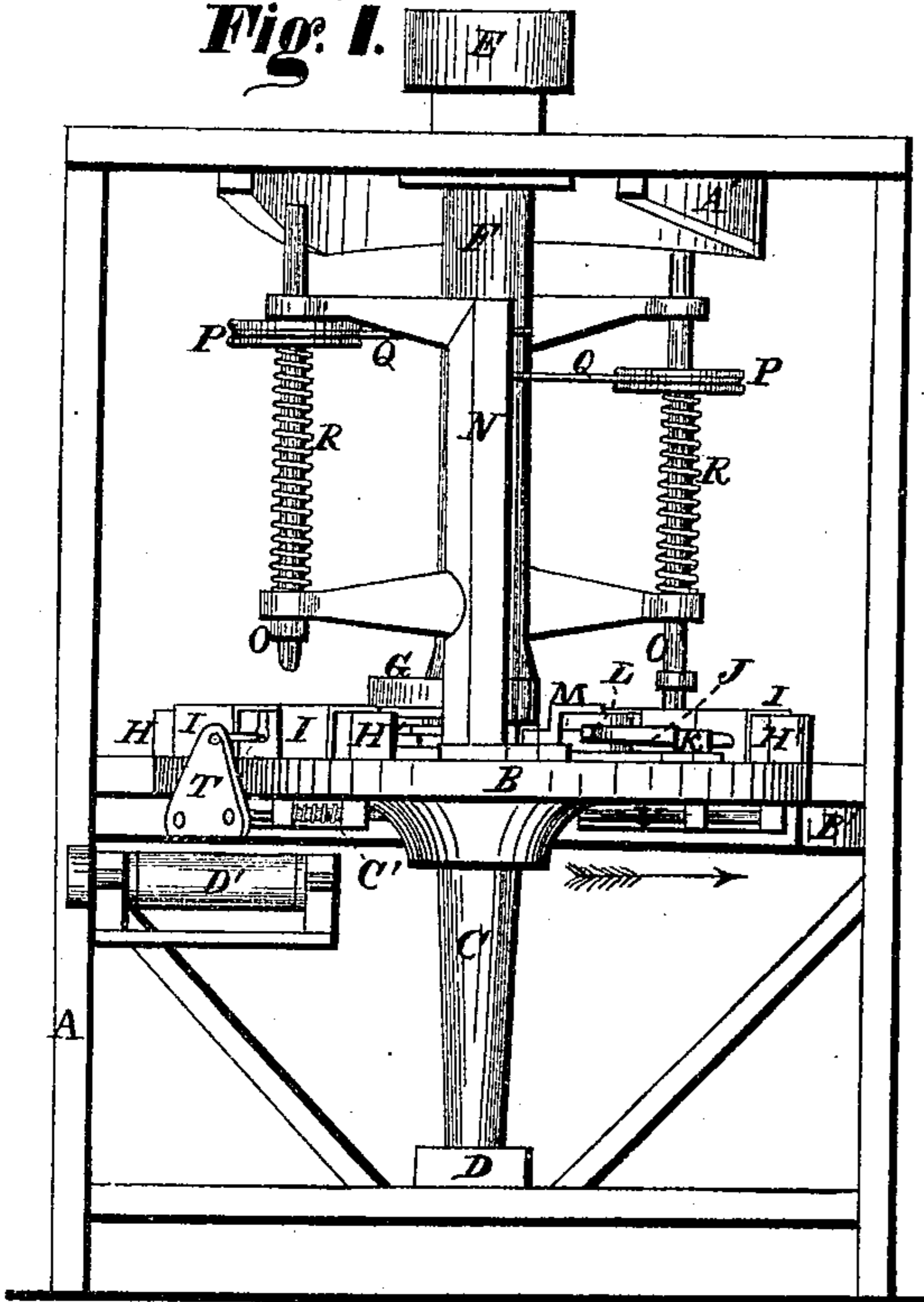


Fig. 2.

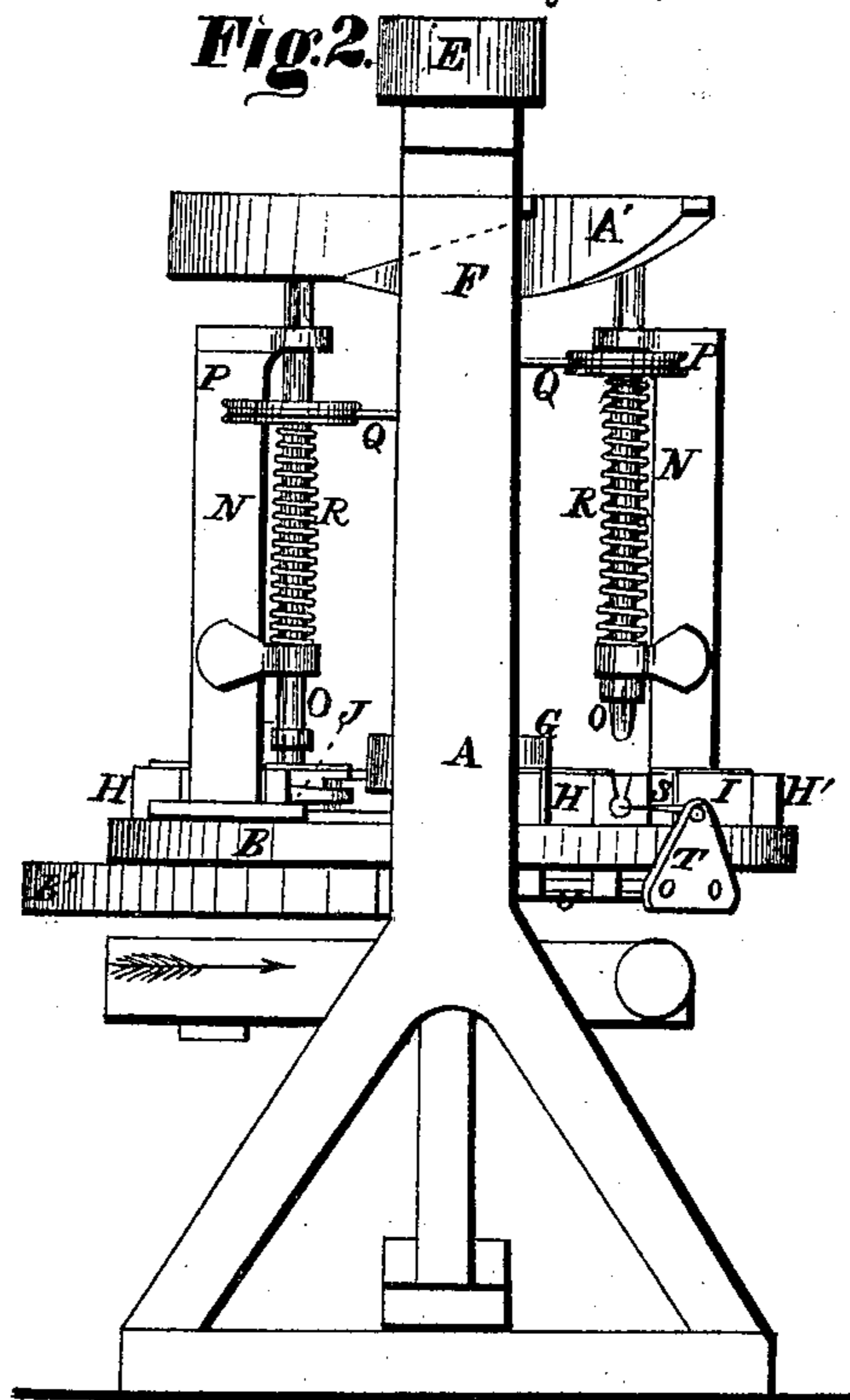


Fig. 3.

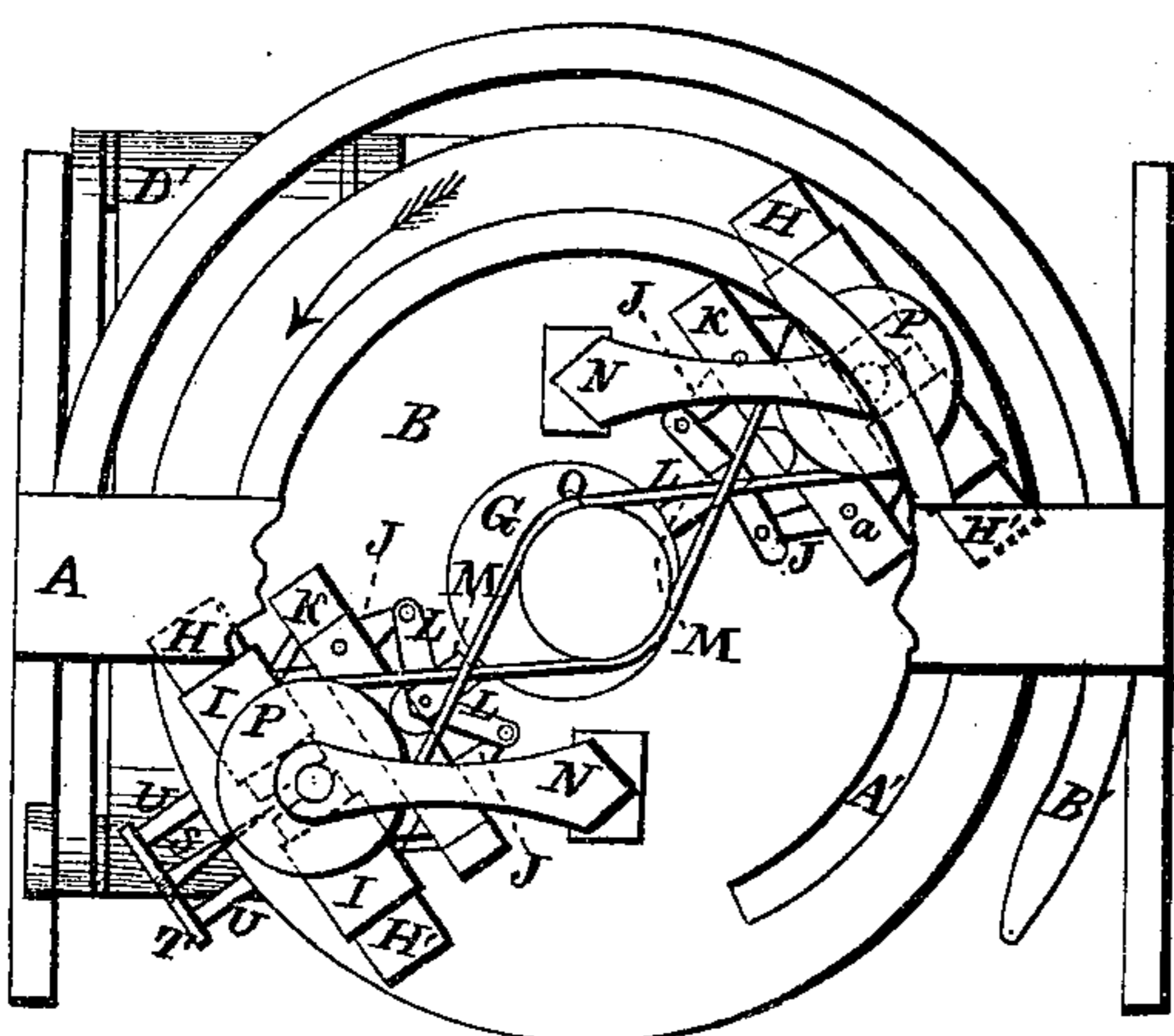
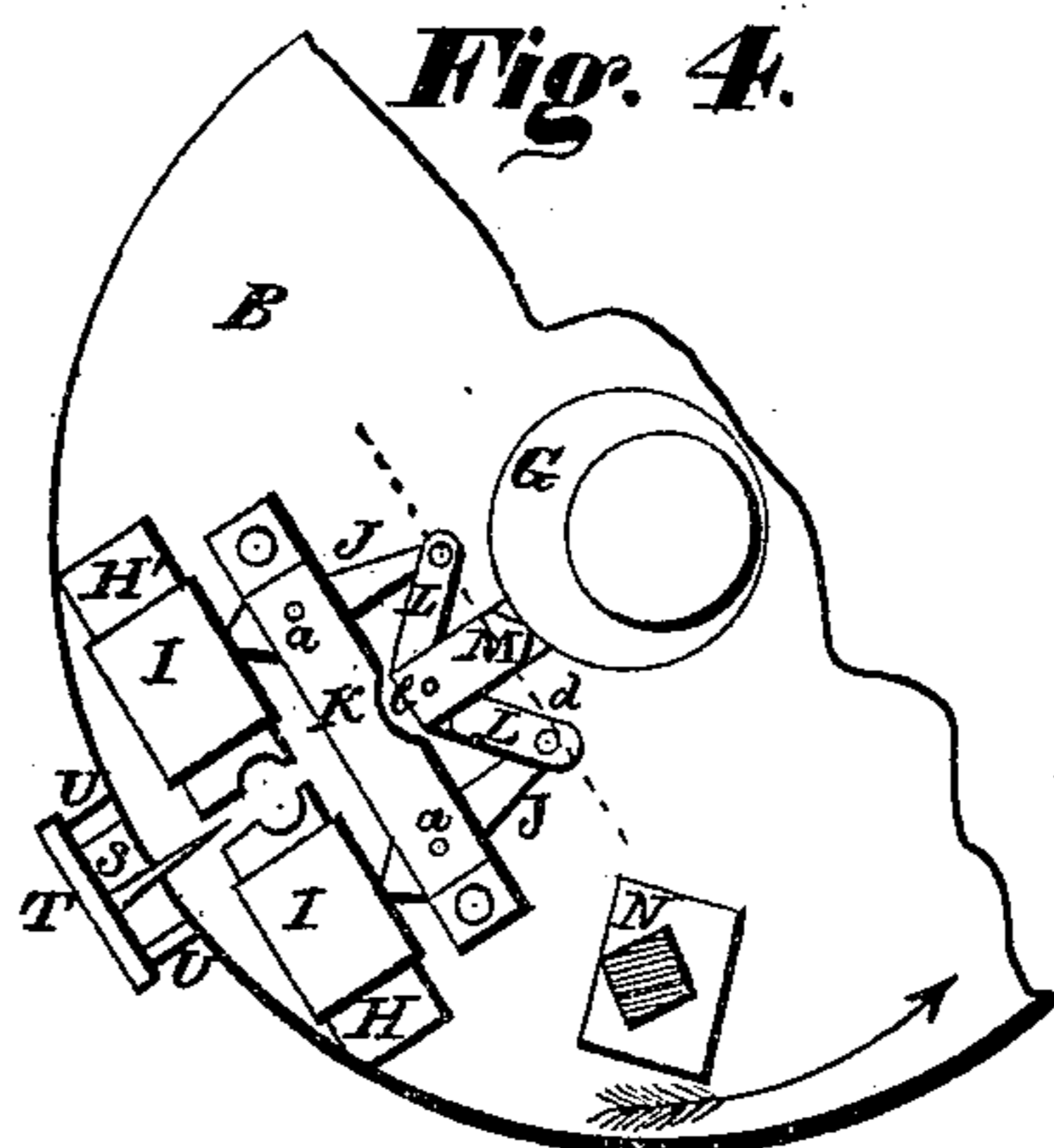


Fig. 4.



Witnesses.

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Fig. 5.

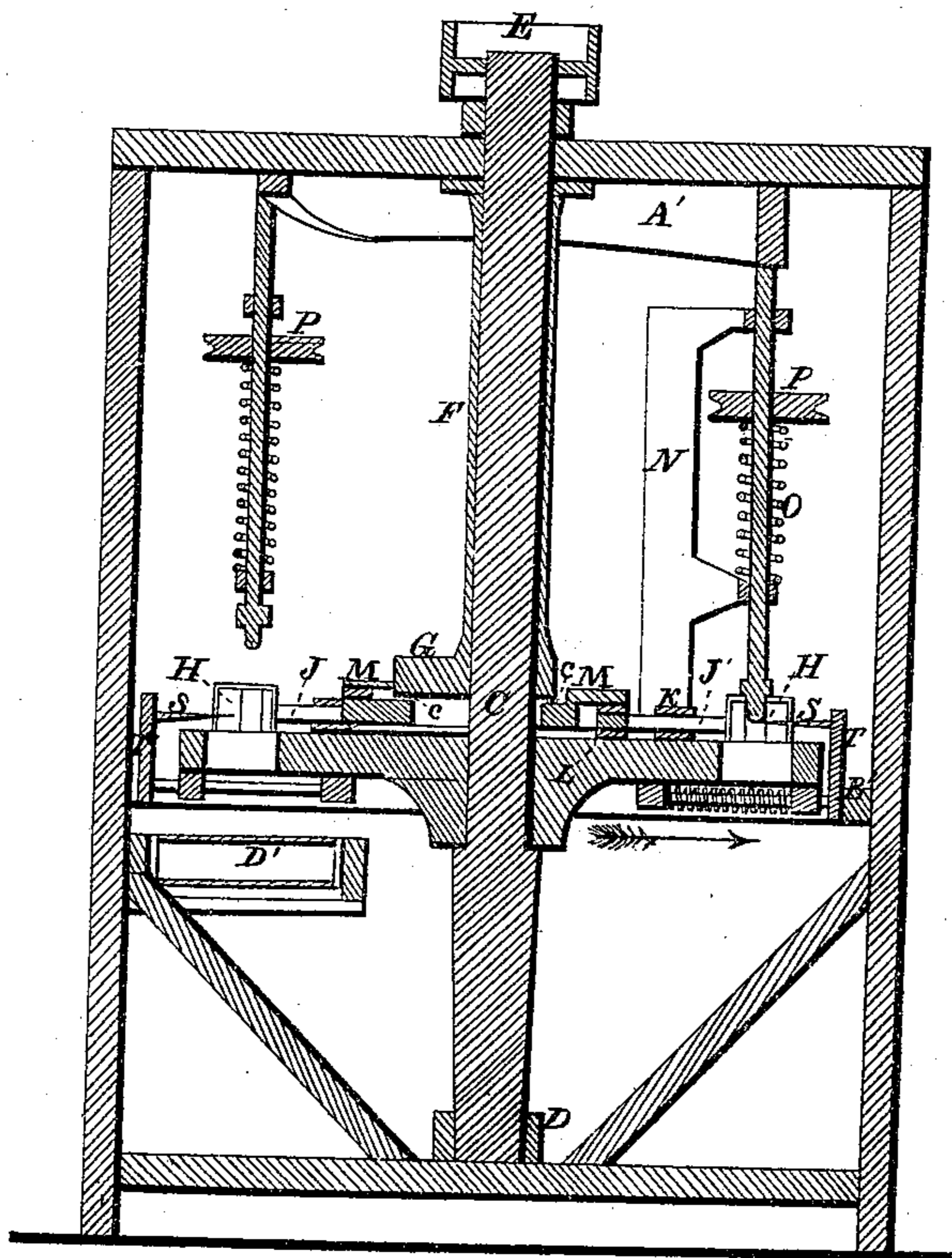
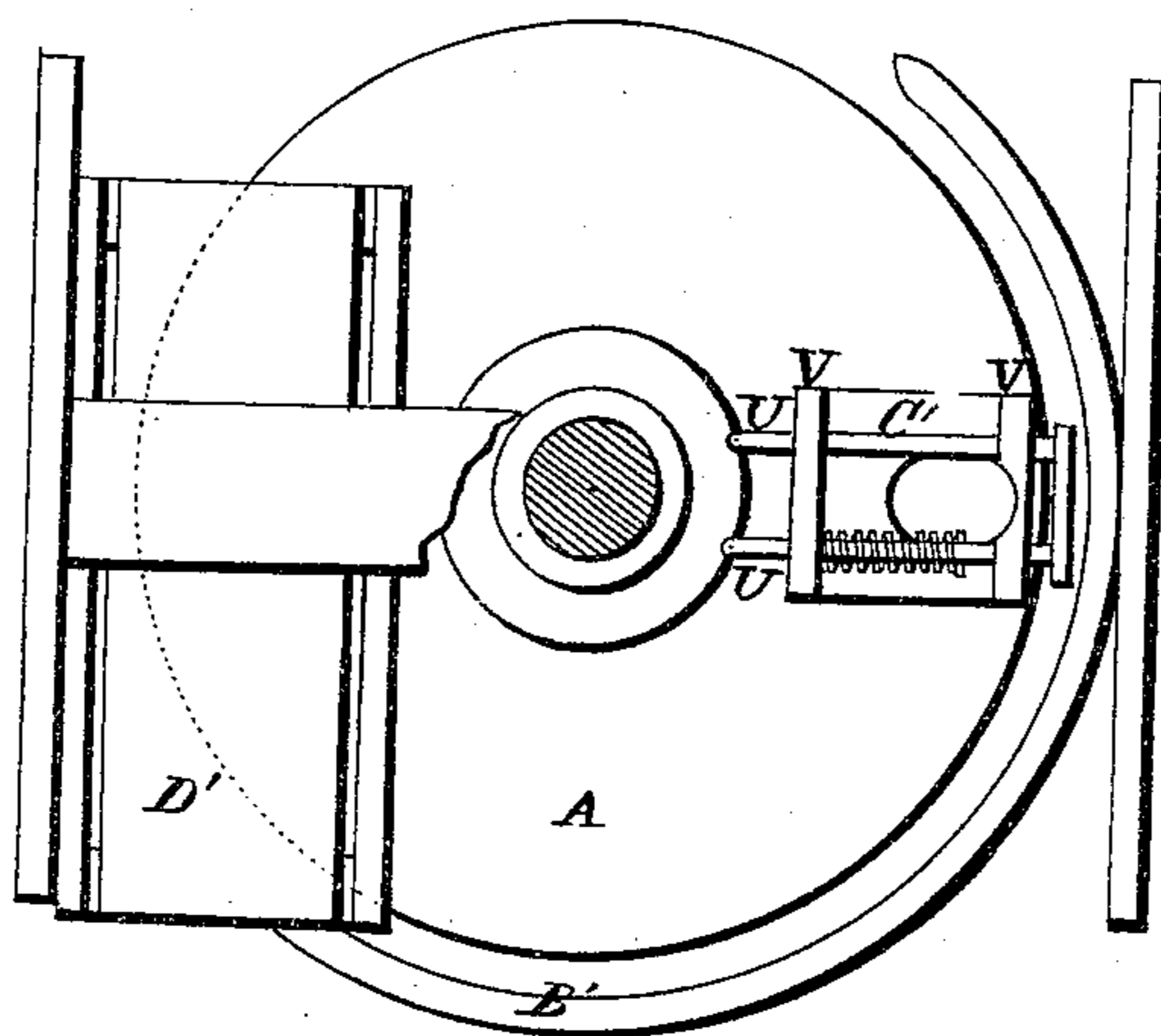


Fig. 6.



Witnesses.

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UNITED STATES PATENT OFFICE

HENRY E. MERRILL, OF AKRON, OHIO.

IMPROVEMENT IN MACHINES FOR MOLDING CLAY SMOKING-PIPES.

Specification forming part of Letters Patent No. **141,230**, dated July 29, 1873; application filed July 3, 1873.

To all whom it may concern:

Be it known that I, HENRY E. MERRILL, of Akron, in the county of Summit and State of Ohio, have invented a certain new and Improved Machine for Making Clay Tobacco-Pipes; and I do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawing making part of the same.

Figures 1 and 2 are side elevations of the machine. Fig. 3 is a plan view. Fig. 4 is a detached section. Fig. 5 is a vertical transverse section. Fig. 6 is a view of the under side.

Like letters of reference refer to like parts in the several views.

The nature of this invention relates to a machine for making tobacco-pipes of clay, and which machine consists of two or more sets of molds, arranged upon a revolving table, said molds being opened and closed by a cam secured to a standard around which the table revolves. The hollow of the bowl of the pipe is formed by a punch, and at the same time the reed-hole in the stem is made in a similar way, the punches being operated by cams and certain devices, all of which are constructed and operated in the manner as follows:

In the several figures, A represents a frame, in which is arranged a table, B, secured to a vertical shaft, C, Fig. 1, having its foot bearing in a step D, whereas the upper end is secured in the beam of the frame, and at which end it is driven by a pulley, E. Surrounding the shaft is a sleeve, F, Fig. 5, the lower end of which terminates in a cam, G, a little above the face of the table, as shown in Figs. 1 and 2, the purpose of which will presently be shown. The molds in which the pipes are cast are two in number, each of which consists of two sections, H H', Figs. 3 and 4, secured to the face of the table by stay-straps I, in which they slide on being opened and closed. The relative position of the dies in respect to each other, and their arrangement upon the table, are as shown in Fig. 3. Each section of the mold is operated by its respective lever, J, Fig. 3, pivoted at the points *a* in stays K, secured to the table. The outer end of each lever engages its respective section of the molds by being loosely inserted in a slot

or hole made therein for its reception, as shown in Fig. 4, whereas the inner ends of the levers are connected to each other by a pair of links, L, Fig. 4, pivoted to the ends of the lever and to each other at the point *b*; also, to the pivotal point *b* is attached one end of a slide, M, Fig. 5, whereas the opposite end extends back to and under the cam G. That the ends of the two slides may extend under the cam, said ends are shouldered down or offset, the shoulder being above the lower edge of the cam, as shown in Fig. 5, and against the outside of which said shoulder impinges and slides for opening the molds, which are again closed by a pin, *c*, projecting upward from the end of the slide into the hollow of the under side of the cam, as will presently be shown. N, Fig. 2, are stays or standards, in the arms of each of which is fitted, so as to slide therein, a punch, O. To each of the punches is secured a pulley, P, whereby they are made to revolve by a belt, Q, extending therefrom to and around the sleeve P. Between said pulley and the lower arm of the stay is coiled around each punch a spring, R, the purpose of which is to draw said punches out from and above the molds. The punches above described are for forming the hollow or bowl of the pipe. The hole for the insertion of the stem or reed is made by the punch S, Figs. 3 and 4, projecting from the head T. Said punch is retained and guided in its operation by guide-rods U secured to the under side of the table by stays V, Fig. 6, in which they slide, for operating the stem-punch.

Having described the construction and arrangement of the several parts of the machine, the practical operation thereof is as follows, viz: When the table, on being made to revolve by the pulley E aforesaid in direction of the arrows, brings a mold to the left-hand side of the machine, as seen in Fig. 1, said mold is open, and the two punches referred to are both withdrawn therefrom. At this time a ball of clay of the proper size, and slightly oiled, is placed in the mold by the operator. The two sections of the mold are now brought together by the cam G. Thus the slide M referred to is drawn toward the center of the table by its engagement with the cam, by

means of the pin *c* projecting from the end thereof up under and against the inside rim of the cam; hence, as the table revolves, the pin is drawn upon by the short radiuses of the cam, the result of which will be to draw upon the links *L*, and bring them into a direct line with each other, as indicated by the dotted line *d*, Fig. 4, and shown nearly in such line in Fig. 3. This straightening of the links pushes outward the ends of the levers *J*, to which the links are pivoted, and at the same time causing the inner ends of the levers to approach each other, thereby bringing together the two sections of the mold, closing it. By the time that the mold is closed the upper end of the punch *O* has reached the cam *A'*, Figs. 1 and 2, which, as it passes along under it, the punch is forced down by it into the mold and clay therein, thereby forming the bowl of the pipe. During this operation the hole is made in the stem by means of the punch *S*, which at the same instant is forced forward into the side of the mold by the cam *B'*, against which the head *T* of the punch slides as the table revolves. Thus the bowl of the pipe and the hole in the stem for the insertion of the reed are made simultaneously and immediately on the closing of the mold. The two punches are now withdrawn from the mold at about the same time. The punch *O*, immediately when the upper end thereof passes from the cam *A'*, is partially withdrawn by the reaction of the spring *R*, and which, during its projection into the mold and its withdrawal therefrom, is made to revolve by the bands *Q* to prevent the punch from sticking in the clay, and to make the bowl even and smooth. The punch *S* is also partially withdrawn at this time from the mold by the reaction of the spring *C'*, Figs. 1 and 6, as soon as the head *T* of the punch leaves the front end of the cam *B'*, which is nearer the side of the molds than the part thereof back of it—so much nearer as to force the punch into the mold far enough; whereas the back part of the cam is so far away from the table as to allow the withdrawal of the punch at the proper time. The operation of the punches having been effected, as above described, the molds are now opened for the removal of the pipe, by means of the cam *G* operating the slides *M*, thus: As above-said, the inner ends of the slides project under the edge of the cam, and from which project, upward, pins into the hollow of said cam, and rest against the inner side of the rim thereof. It will be obvious that, by this arrangement, the slides will be made to move in radial lines reciprocally as the table continues to revolve around

the cam by virtue of its eccentricity, the molds being closed by the action of the cam drawing on the slide, thereby operating the links and levers *J L*, as above described, but which are again opened by the shoulder of the slide impinging against the outside of the rim of the cam. The longest radiuses thereof push the slide outward, thereby drawing toward each other the inner ends of the levers by the deflection of the links, the result of which will be to spread out the outer ends of the levers and thereby open the molds, which is done by the time the molds arrive to the position, shown at the left hand in Fig. 1, immediately over the endless apron *D'*, onto which the pipe falls from the open mold. The mold, thus opened and the pipe removed, is again charged with clay, and the operation of closing the molds, punching the bowl and stem is again repeated. The position of the molds, as shown in Fig. 3, represents the one at the right hand open; whereas the one on the left hand is closed; also, the mold shown in Fig. 4 is represented as being open. As above-said, the two punches, immediately after forming the pipe, are but partially withdrawn, and are held thus in place until the molds are wide open; then they are quickly withdrawn by the peculiar shape of the cams. This prevents the pipes from sticking to either half of the molds, and allows it to fall free onto the endless apron.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The herein-described pipe-molds, consisting of the sections *H H'*, levers *J*, links *L*, and slide *M*, as arranged in relation to and in combination with the cam *G*, substantially in the manner as and for the purpose set forth.

2. In combination with the revolving table *A*, the pipe-molds arranged thereon in the relation to and operated by the cam *G*, in the manner as set forth, and for the purpose specified.

3. The punch *O*, spring *R*, and pulley *P*, as arranged in combination with the molds, consisting of the sections *H H'*, and with cam *A'*, in the manner substantially as and for the purpose set forth.

4. The punch *S*, spring *C'*, and cam *B'*, in combination with the molds above described, substantially as set forth, and for the purpose specified.

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Witnesses:

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