

No. 606,656.

Patented July 5, 1898.

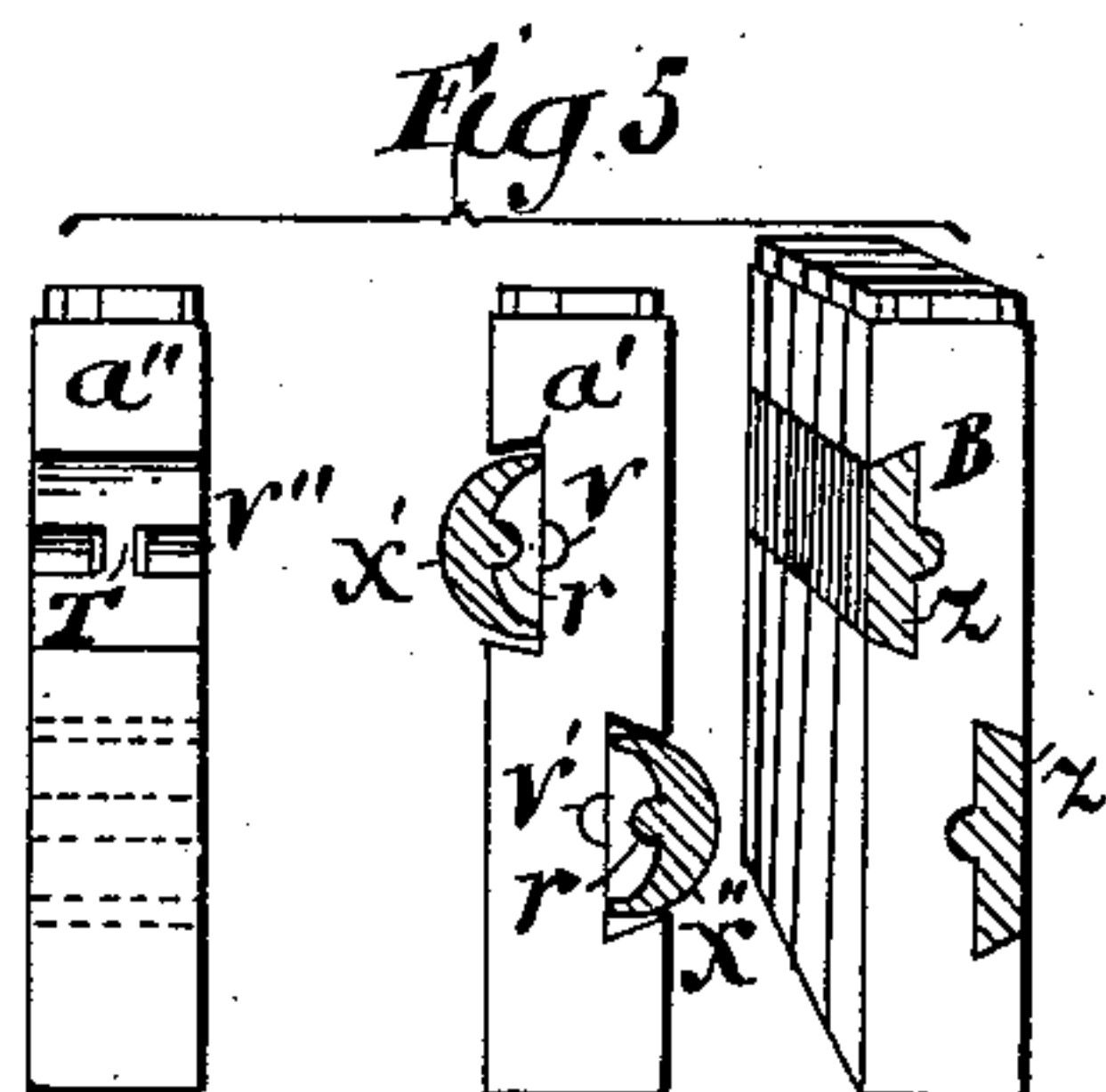
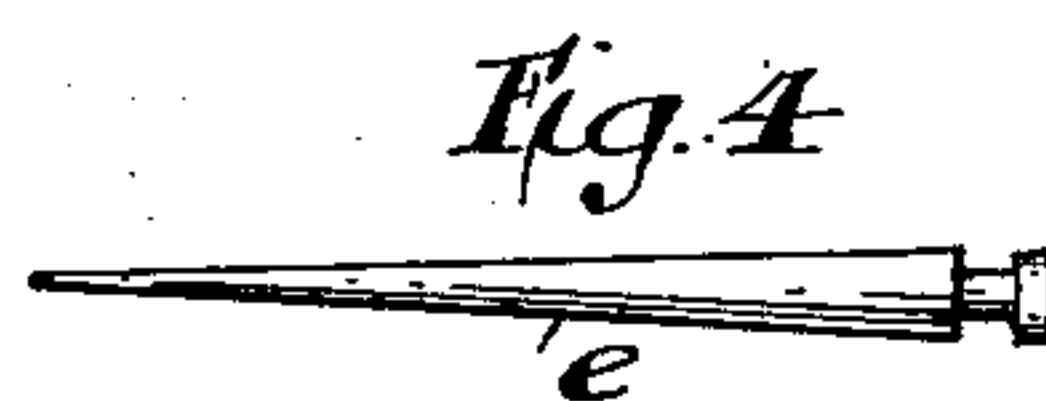
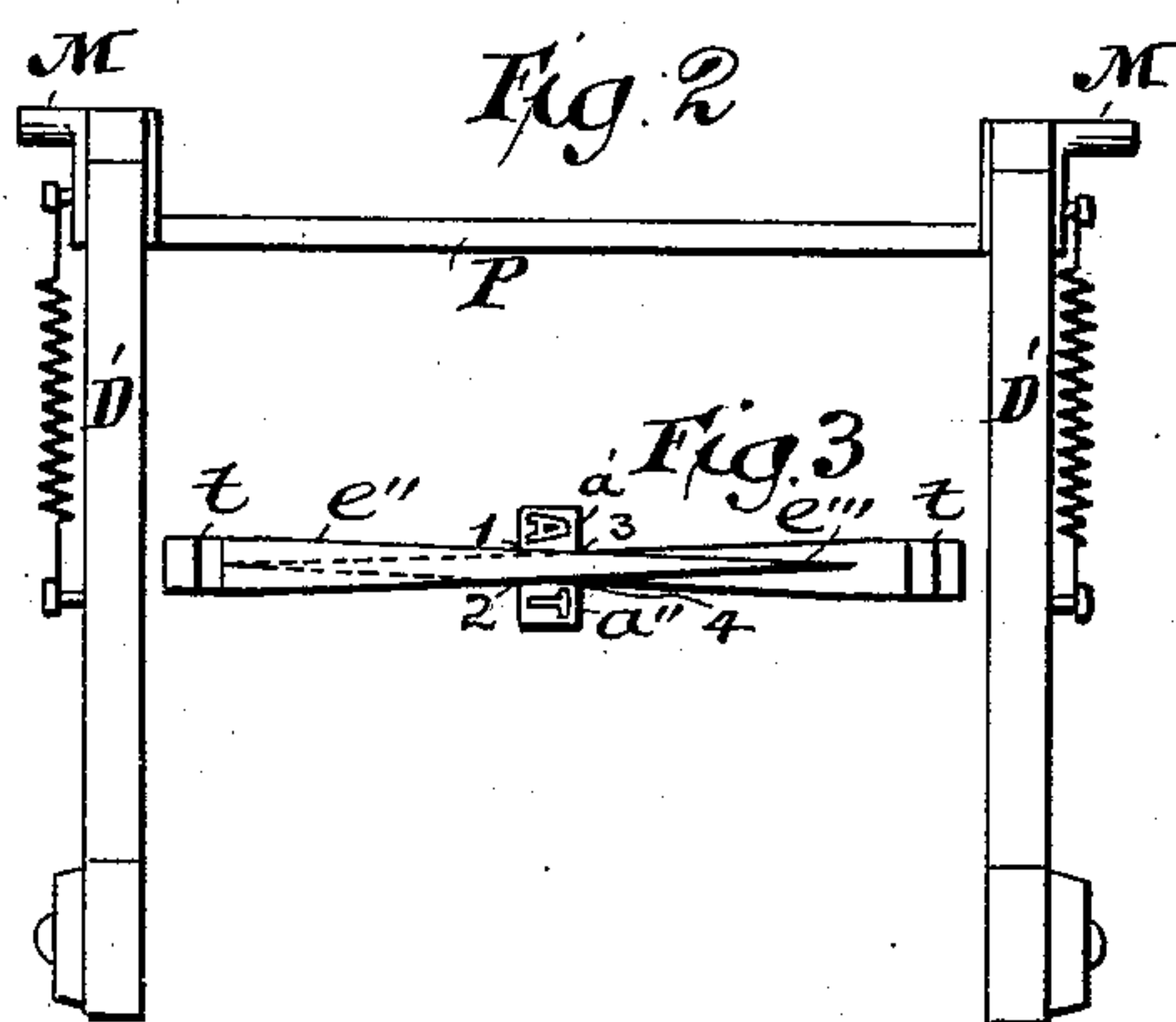
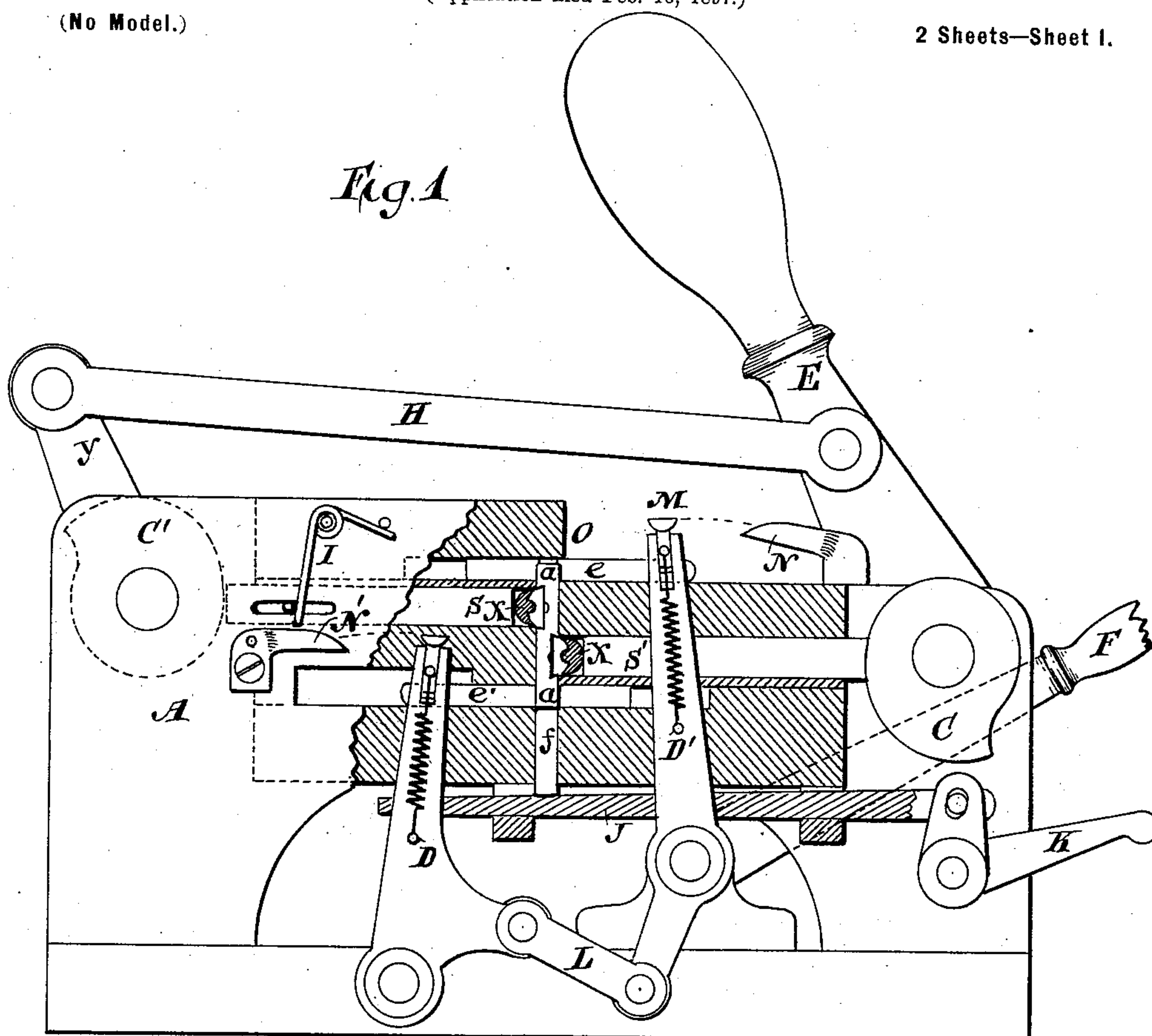
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MACHINE FOR MAKING SWAGE LOCKED TYPE BARS AND PRODUCT PRODUCED BY SUCH MACHINE.

(Application filed Feb. 16, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
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2 Sheets—Sheet 2.

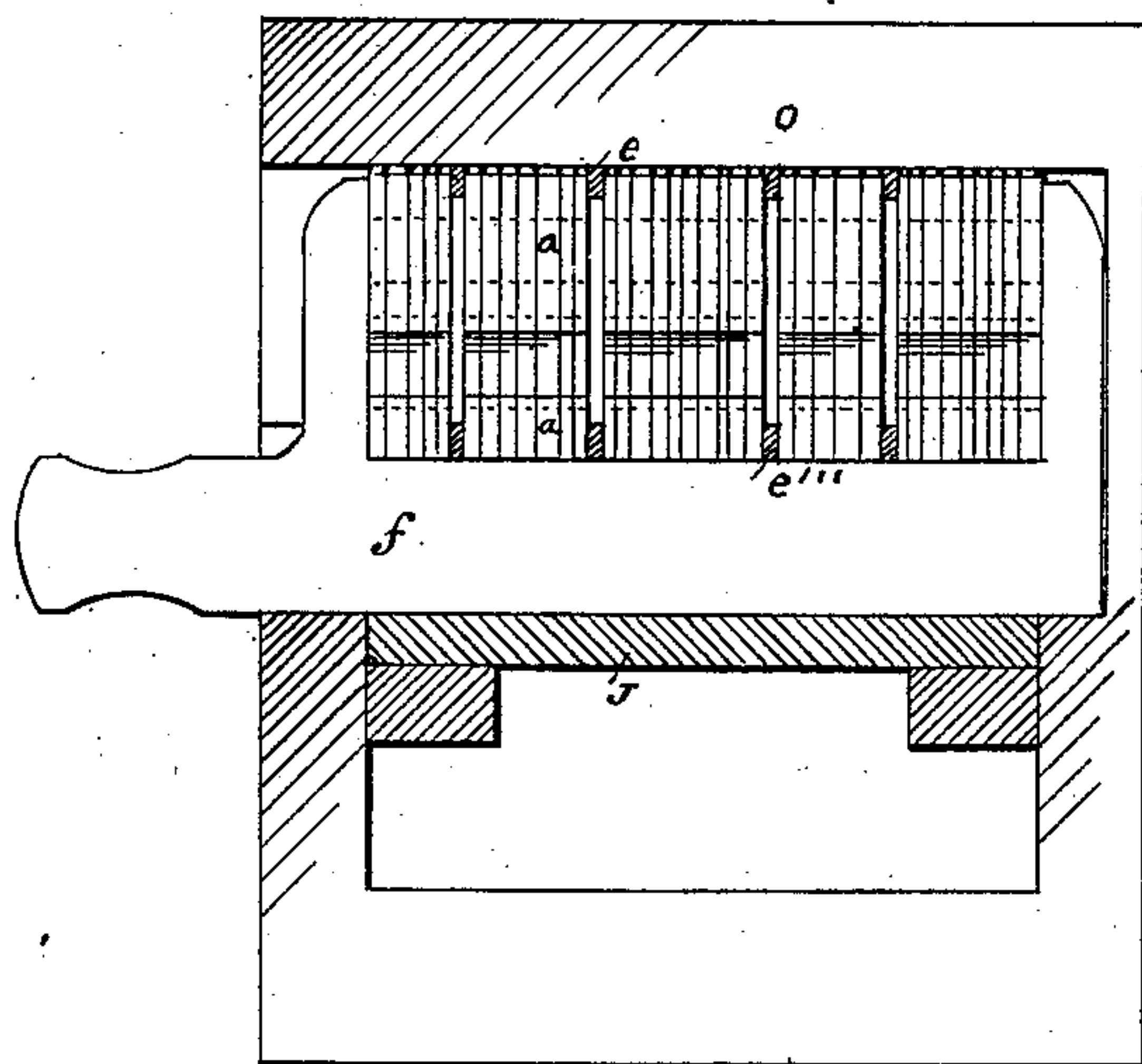


Fig. 6.

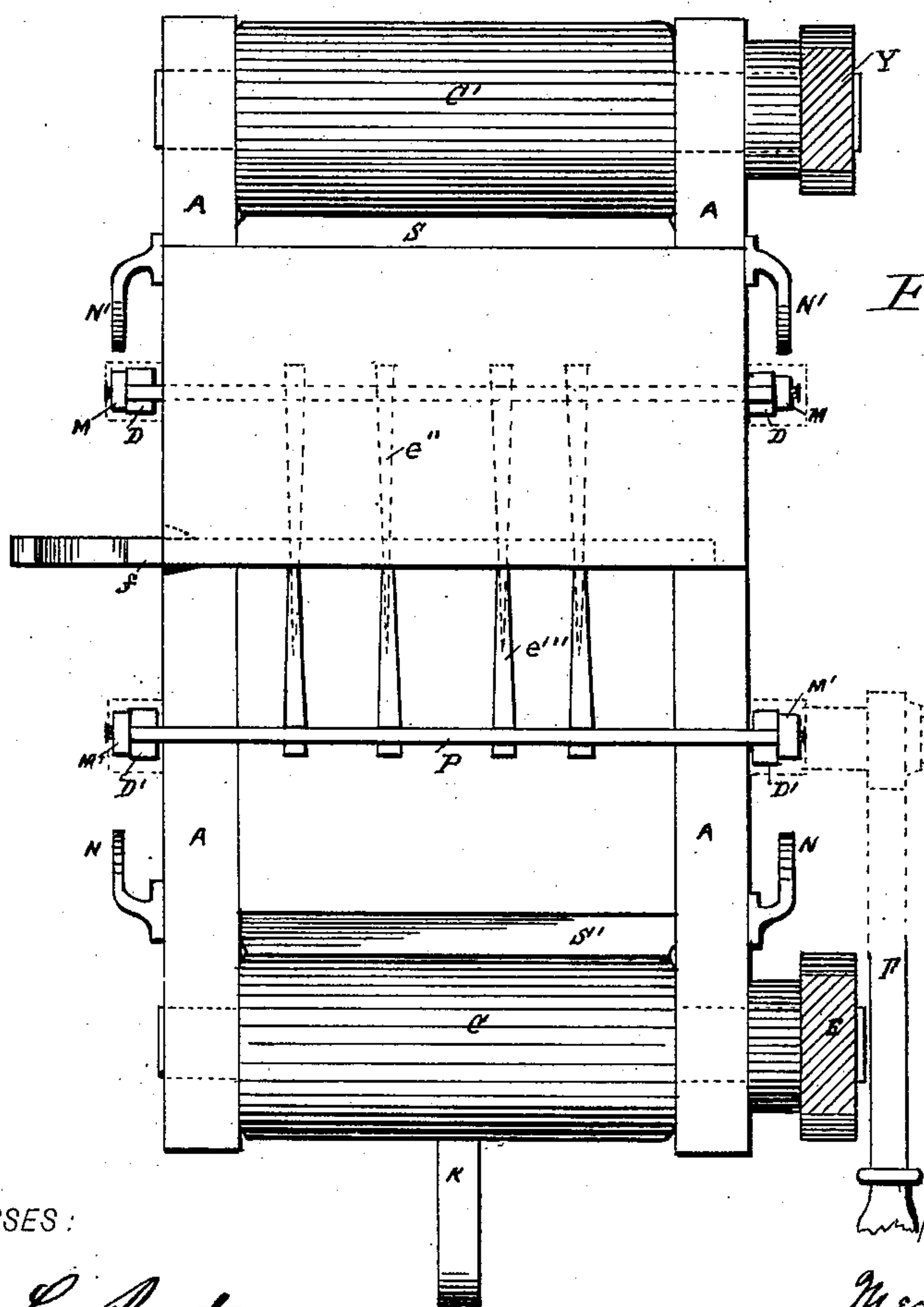


Fig. 7.

WITNESSES:

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MACHINE FOR MAKING SWAGE-LOCKED TYPE-BARS AND PRODUCT PRODUCED BY SUCH MACHINE.

SPECIFICATION forming part of Letters Patent No. 606,656, dated July 5, 1898.

Application filed February 16, 1897. Serial No. 623,748. (No model.)

To all whom it may concern:

Be it known that I, MERRITT GALLY, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Making Type-Bars and Products Produced by Such Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to use the same.

My invention consists in a machine for making swage-locked type-bars and the product produced by such machine.

In the accompanying drawings, Figure 1 is a side view of the machine, partly cut away and partly sectional, to show the construction of the several working parts. Fig. 2 shows one pair of the driving-levers and cross-bar for operating the justifying-spaces. Fig. 3 is a plan view of two types and the justifying-spaces between them. Fig. 4 is a modification of the justifying-space. Fig. 5 shows two types, enlarged, with end view of locking-pieces, and a completed type-bar. Fig. 6 is a transverse sectional view of the machine, taken on the line of the arranged line of types; and Fig. 7 is a plan view.

Linotypes or type-bars are usually either cast entirely from molten metal or the type-faces, with a portion of the body, are arranged in line and the bar is completed by casting the remainder of the bar from molten metal. In my invention complete finished types are used, having the advantage of perfect face and base alinement and perfect make-up of line. In each type, as a' , Fig. 5, is a recess in one or both edges for receiving a dovetailed metal locking-piece. The types are arranged in line, and a piece of metal, preferably softer than the type, as X' , Fig. 5, and the length of the line, is swaged into the long recess and completed, as z , in the bar B . In the inner face of the recess of each type are one or more depressions, as V , and a portion of the face not cut away, as T . At the center line of the concave face of the locking-strip X' is a projecting tongue r , which when the locking-strip is swaged into the recess is divided by the partitions T and forced into the subrecess v'' each side of the partition. The swaged locking-strip holds the bar in line as to its

face and base, and the divided tongue r holds the types firmly as to endwise position of types and spaces. In the finished type-bar B , Fig. 5, there are two swaged locking-strips z and z' , one on each side. Either one or both may be used, preferably the two to secure solidity.

In the machine, Fig. 1, two sets of justifying-spaces are shown, e and e' , one set above the other. Both sets enter the same space-divisions, but in opposite directions. These spaces and the manner of using them differ entirely from opposed wedges which operate face to face. They act independently of each other and are much better than if placed face to face, as the space between the types can be made, when desired, equal only to the thinnest part of either one. They also act, when separated from each other, as shown, favorably in acting upon the entire or a large portion of the height of the type and are still small and easily handled in the machine. The action of the spacers will be understood by referring to Fig. 3, a plan view of two types $a' a''$ being separated by means of the wedge-shaped justifying-spaces e'' and e''' . It will be seen that the widest part of the wedge e'' , which lies between the types, bears at the corners of the types at 1 2, and the wedge e''' bears equally at the corners 3 4, holding the types squarely in line.

It will be seen in Fig. 3 that near the end of each justifying-wedge is a cross groove or recess t . When the wedges $e'' e'''$ are placed in the machine with the arranged line of types, the thin ends of the wedges lie between the types and the thick ends are situated under the spurs $N N'$. Upon the highest part of these spurs rest the cams M , which, acting in connection with the spurs, have in their previous backward movement raised the bar P , Fig. 2, above the line of the plane of the wedges e . The bar P is fitted into slideways in the upper end of levers $D' D'$, Fig. 2, and has a movement up and down, being drawn downward by means of springs, as shown, and is lifted upward by means of the spurs N , Figs. 1 and 6, acting in connection with cams M at the ends of the bar. As the bar P moves forward from the spurs N , Fig. 1, toward the line of type the cams M slip off from the spurs N and the driving-bar P , shown as driven by the levers $D' D'$, Fig. 2, drops into connection with

the grooves of the wedges, and by means of the handle F of the machine the wedges are forced to their position to justify the line of types before the swaging operation.

5 In the machine, Fig. 1, the end of a line of types *a a* is shown in position in the swage-block for swage-locking. One end of the locking-strips *x x* is shown, the strips having been thrust into chambers in the machine
10 with the arranged line of types and facing or within the dovetail recesses. The types are backed up by the solid body of the machine, as shown. By means of the hand-lever E the cams C C' drive the sliding swages S S', swag-
15 ing the strips *x x* solidly into the arranged line of types and converting it into a rigid type-bar. A reversed movement of lever E allows the sliding swages S S' to return to their first position, being driven back by springs
20 I, which hold them in contact with their cams. The swaging of the metal hardens and stiffens it, which is of advantage in making the bar rigid. After the swaging of the bar the justifying-wedges are withdrawn from the
25 line with an opposite movement of lever-handle F, and at the extreme of the movement the driving-bar P is lifted free from connection with the wedges by the spurs N N, acting on the cams M M of the bar P. A follower *f*,
30 the length of the arranged line of types and situated underneath it, rests on the inclined plane of the sliding bar J. The bar J rests on supports, as shown, and when thrust forward by means of lever K the follower *f* is
35 driven upward until the faces of the types are alined against the cap o. After the swaging process a reverse movement of lever K loosens the finished type-bar to facilitate its removal from the machine.

40 The levers D D' are duplicated for the other side of the machine and act in pairs. The pairs are tied together by the connection L to cause them to act simultaneously and in opposite directions.

45 A modification of the justifying-spaces is shown in Fig. 4. Instead of the wedges having flat sides, they are made conical, as *e*, Fig. 4. This prevents any liability of their getting off their base. However turned, their
50 base-line is always the same, and for temporary justification, simply while the swaging is being done, are quite as good as the flat wedges.

In making the recess or recesses in the type
55 or in making the locking piece or pieces to be locked therein I do not wish to be limited to the exact forms herein specifically described, as the shape of either may be more or less changed without affecting the result.
60 The gist of my invention lies, broadly, in providing the line of types with a recess and the use therewith of a locking-piece of such relative forms that when the types and locking-piece are compressed together they become
65 firmly locked as a permanently rigid type-bar.

The swaging should be done with a quick

movement, approaching as nearly as possible a hammer-stroke, as the more quickly this movement can be effected the more perfectly
70 the swaged metal will be set and the more rigidly the parts of the type-bar will be held together.

The machine may be easily constructed to operate by power instead of by hand, as there
75 are only a few simple lever movements always following in the same time and order for each complete operation.

The swaging process herein described is practically instantaneous, is positively cer-
80 tain in its action and results, and produces rigid type-bars with great rapidity.

I claim—

1. A linotype or type-bar, constructed from a series of individual types and a locking
85 piece or pieces, swage-locked together.

2. A linotype composed of a series of individual types, each provided with a recess or recesses, and a sub recess or recesses for preventing longitudinal movement of the types
90 on the bar, and a locking-piece for uniting them.

3. In a mechanism for justifying a line of type, dies, or matrices; two justifying-wedges, occupying different planes crosswise of the
95 type and in one and the same word-space, for spacing the line; and adapted and arranged to be thrust through the word-space from opposite sides of the line.

4. In a mechanism for justifying a line of
100 type, dies or matrices; two sets of justifying-wedges, occupying different planes crosswise of the type, and arranged in pairs of one from each set; the wedges of each pair occupying different positions in one and the same word-
105 space for justifying the line.

5. The conical-shaped justifying-space.

6. The recessed justifying-wedges and their driving-bar, provided with cams and lifting-spurs for securing the connection of the bar
110 and wedges at the beginning of the movement of the bar and disconnecting them at the close of the return movement of the bar; substantially as specified.

7. In a mechanism for justifying types, dies
115 or matrices, two sets of justifying-wedges entering the spaces in the line from opposite directions; each set of wedges having a driving mechanism; the two driving mechanisms being positively connected together to secure
120 an equal movement to both sets of wedges; and to prevent any movement of any wedge on either side of the line unequal to that of the counter-wedge on the opposite side of the line.
125

8. In a machine for making linotypes, two sets of swaging mechanism connected together, to secure a similar operation to both swages.

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Witnesses:

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