

No. 606,657.

Patented July 5, 1898.

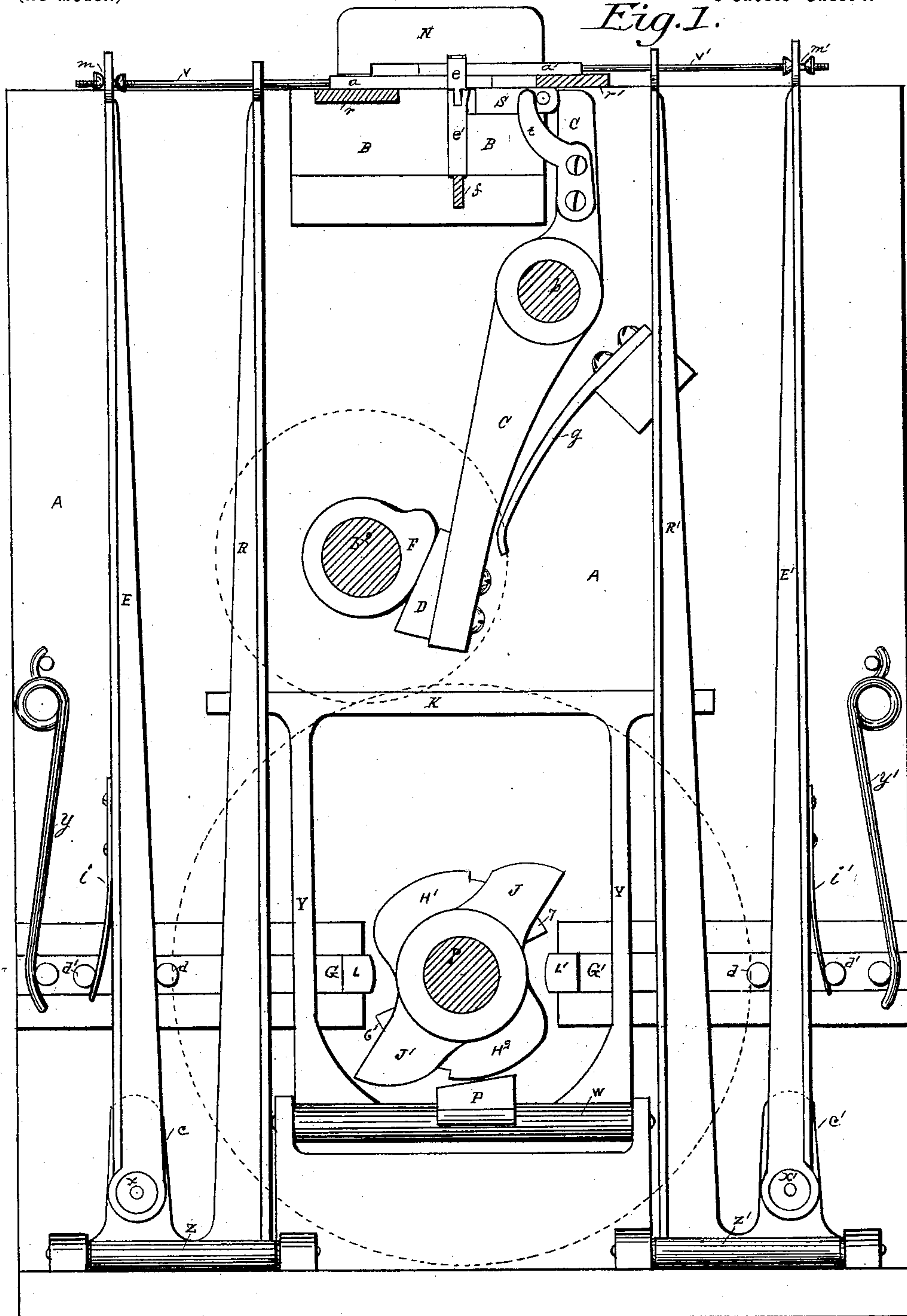
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SWAGED TYPE BAR AND APPARATUS FOR CONSTRUCTING SAME.

(Application filed Mar. 20, 1897.)

(No Model.)

3 Sheets—Sheet 1.



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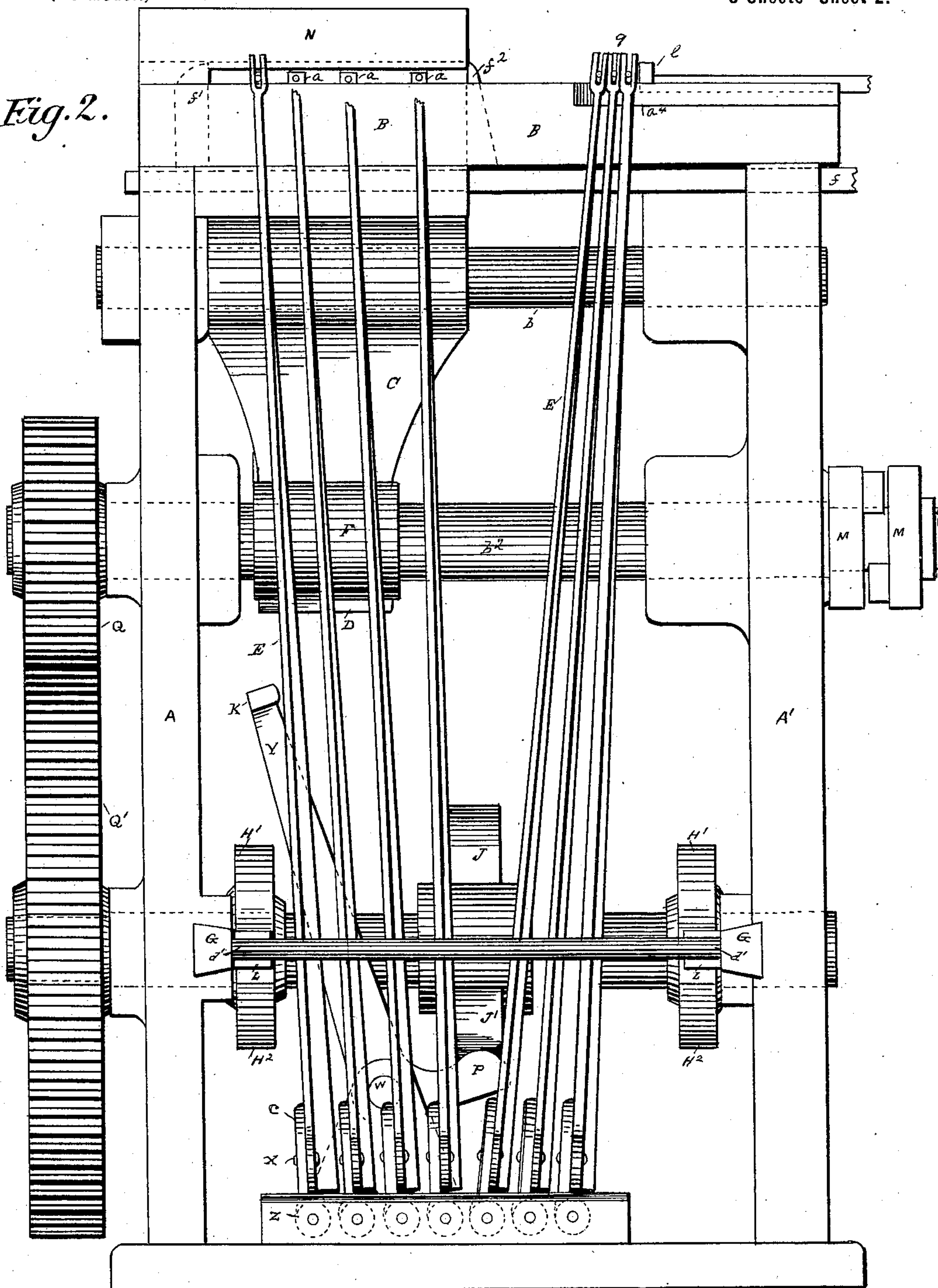
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Fig. 2.



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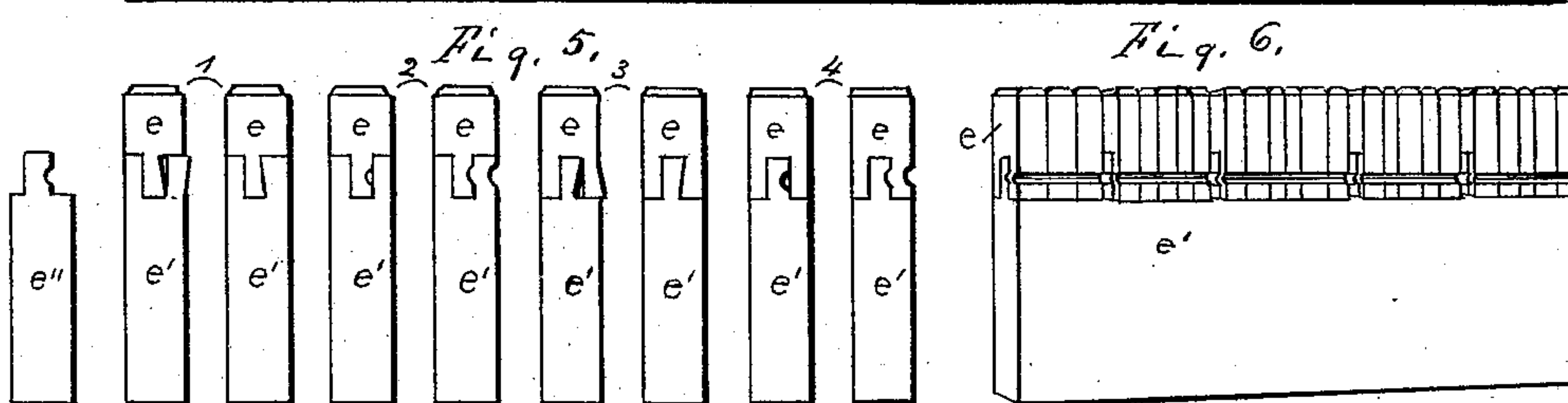
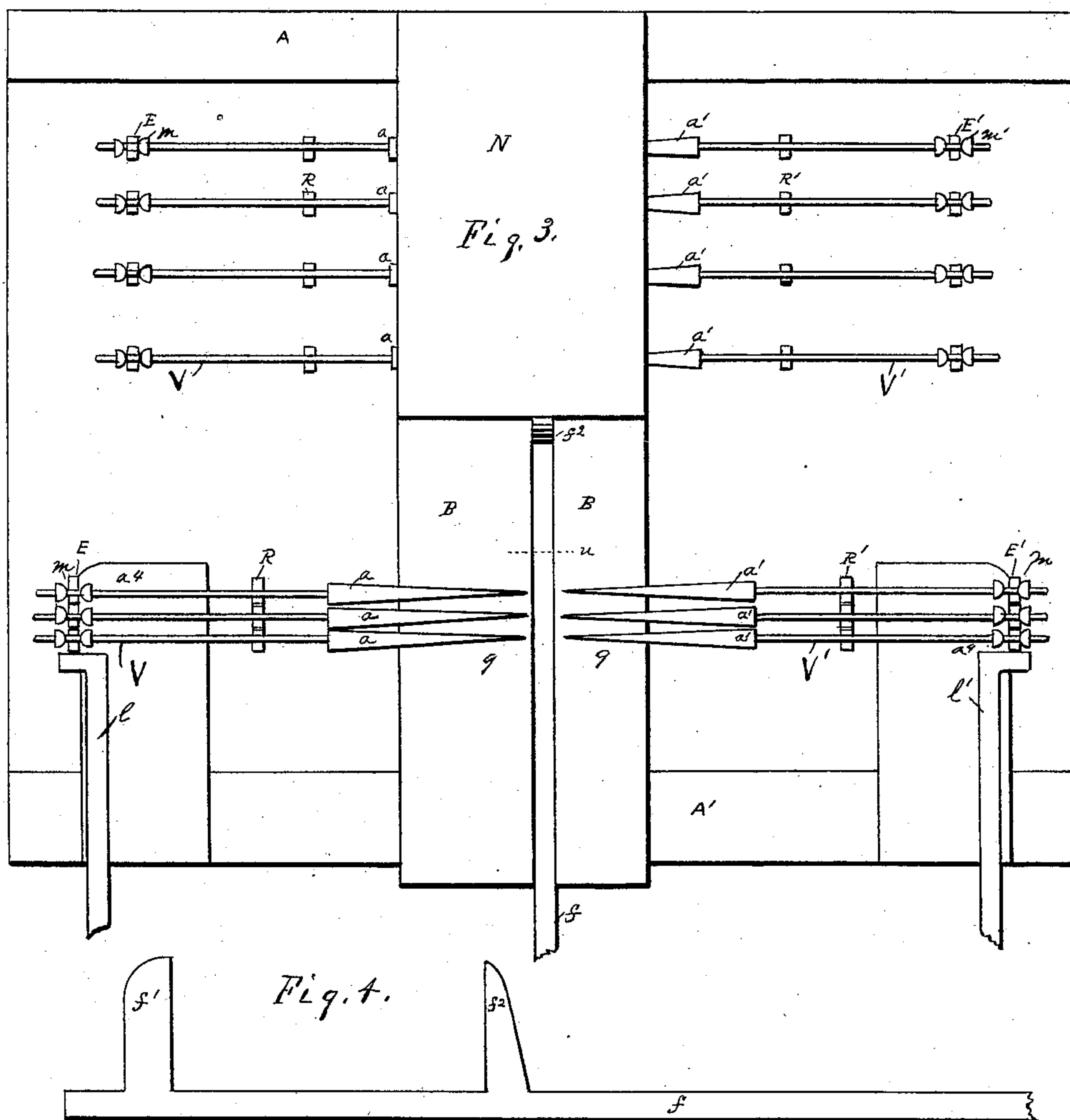
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

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SWAGED TYPE-BAR AND APPARATUS FOR CONSTRUCTING SAME.

SPECIFICATION forming part of Letters Patent No. 606,657, dated July 5, 1898.

Application filed March 20, 1897. Serial No. 628,525. (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 Type-Bars and Apparatus for Constructing the Same; 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 an improved machine for making swaged type-bars and the product produced by such machine.

In the accompanying drawings, Figure 1 is a side view of the machine, having the outer framework removed to show the operating parts. Fig. 2 is an end view of the machine, showing the operating parts between the sides of the framework. Fig. 3 is a plan of the upper face of the machine, showing the positions of the spacing and justifying devices. Fig. 4 is a side view of the gage or composing-stick. Fig. 5 is an end view of the body-slug and end views of four pairs of type-bars, one of each pair showing the bar before swaging and the other the bar completed; and Fig. 6 is a perspective of a completed type-bar.

In a previous case I described a machine for making swage-locked type-bars and its product, the specific illustration of the product being a line of types and a strip or strips of metal swaged into the line of type to form a type-bar.

In the present case I show an improved machine for constructing swaged type-bars and specifically show as its product a bar composed of a slug as the body of the bar, the remainder of the bar being made up of an arranged line of short-bodied type having only length of body sufficient to secure arrangement and proper spacing and justification, as shown before swaging in Fig. 1, *e e'*, and as completed in Fig. 6.

The machine, as shown in the accompanying drawings, may be used to justify and construct bars from matter already arranged or may be used in connection with a "setting-machine" operating together therewith to produce line after line as the matter is composed.

In Figs. 1, 2, and 3 the receiver B N con-

tains the channel or chamber into which the body-slug *e'* and the line of short-bodied types *e* arranged thereon and the gage or composing-stick *f f' f²* are received.

E E' are justifying-levers carrying the rods V V' and the justifying-wedges *a a'*.

S is the swaging bar or hammer, and C its lever.

F is the cam for operating the lever C.

R R', Figs. 1 and 3, are steady-arms, which follow the lateral reciprocating movements of the justifying-levers E E' and hold the rods V V', which are rigidly attached to the justifying-wedges, in proper position in line at right angles to the line of the type-bar.

H' H² are cams for giving motion through the slides G G' to the levers E E' for withdrawing the justifying-wedges after justification of the line.

K Y Y P is a rocking frame with cross-bar for returning, by means of cams J J', the levers E E' to their position of rest at 9, Fig. 1.

y y' are springs for giving the thrust movement to the justifying-wedges when the slides G G' are relieved from the cams H' H² in position shown in Fig. 1.

Q Q' are gears which give motion to the several parts through their shafts *b² p*.

The steady-arms R R' are made fast to pivoted rocking shafts Z Z' and have only one movement, which is reciprocating, for carrying the justifying-wedges to the swaging device with the type-line to be swaged and back to first position after the bar is completed. To supports *c c'* on the rocking shafts Z Z' the justifying-levers E E' are pivoted at X X', having two motions, one accompanying the steady-arms R R' and the other at right angles to the line of this movement, for giving the justifying-thrust and the withdrawal motion to the justifying-wedges. These justifying-levers and also the steady-arms are slotted at the part through which the rods of the wedges pass in order to allow the wedges to slide in proper alinement while the ends of the levers are describing a slight curve. The justifying-wedges, as in my former recent application, do not act in connection side by side, but independently in different portions of the spaces between the types.

The metal of the body-slug *e'* may be con-

constructed in shape to receive the swaging, as in pairs 1 2, Fig. 5, or the short-bodied type may be constructed to receive the swaging, as in pairs 3 and 4, Fig. 5, or both may be constructed to be acted upon by the swage. Preferably I make the slug, as e'' or e' , pairs 3 and 4, Fig. 5, or e' , Fig. 6, of metal so hard as not to be affected by the swaging process, the softer metal of the type only being acted upon. This allows the slugs to be used time after time by simply removing the used type. Any hard metal may be employed; but I use, preferably, aluminium, as I find it advantageous on account not only of its hardness, but its little weight and slight liability to corrosion.

When the machine is in position of rest, all the justifying-levers $E E'$ are collected at 9, Figs. 1 and 2, and the drivers $L L'$ of bars $G G'$ rest against the depressed parts of the cams $H' H^2$ at 6 7. The levers $E E'$ press against the rests $a^1 a^4$, being held under pressure by the springs $i i'$. The arranged line may now be thrust into and along the receiving-channel to position for swaging, or the line may be arranged letter after letter or word after word on the slug e' at u in front of the justifying-spaces and then moved along the channel to the position for swaging. The arranging of the types on the slug may be done either by hand or a type-setting machine may be employed, as desired.

My machine, so far as herein described, is not intended to do the type-setting, but to take the short type as set and, together with a body-slug, convert them into a type-bar. When the types are being arranged, either by a type-setting machine or by hand, in front of the justifying-spaces at the end of each word, the slides $l l'$, Fig. 1, are thrust sufficiently forward to allow one of the justifying-levers on each side to slip by the curved corner of the rests $a^1 a^4$, the springs $i i'$, Fig. 1, driving the points of the wedges across the channel to take their place between the part of the line set and the next coming word. This movement of the wedges is only sufficient to place a small portion of the points of the wedges in the line, as the movement occasioned by the springs $i i'$ is limited by the cams 6 7 against the drivers $L L'$. The arrangement of the line is made between measure-guides, as in type-setting machines, or, as I prefer, in a sliding gage or composing-stick $f f' f^2$, as shown, the slug having been first placed in this stick. When a sufficient number of types have been thus arranged in connection with the slug to make a line, the stick, with its types and slug, is pushed forward to its position, (shown in Fig. 1,) carrying with it the wedges, their small ends being held between the type-words. The driving-clutch $M M'$ is then thrown into connection for a single revolution of its shaft, the gears Q and Q' turning one to one-half. It is to be remembered that normally the lugs $L L'$ rest on the cams at 6 7.

The movements of the machine are in order as follows: First, the lugs $L L'$ are freed from the cams 6 7, and the springs $y y'$ push the slides $G G'$, carrying the levers $E E'$, and thrust the justifying-wedges between the words of the line until the measure of the gage or composing-stick $f f' f^2$ is filled. The cam T then drives the swage-hammer S by means of lever C . The cams $H' H^2$ then withdraw the justifying-wedges. The cam J then strikes the short lever P of the rocking frame $K Y$, carrying all of the justifying-levers $E E'$ back to their position at 9, and the series of operation is complete. The type-bar is finished and ready to be removed from the channel and the operation to be repeated for another bar.

Four modifications of suitable form of the part of type or slug to be swaged are shown in Fig. 5. The pair 1 shows the upper face edge of the slug to be swaged holding the type by means of its dovetail projection. Pair 2 shows the upper face edge of the slug swaged into a groove in the projection of the type. Pair 3 shows the type swaged into slug and held by the dovetail projection of the slug, and pair 4 shows the type swaged into a groove in the projection of the slug.

Other modifications may be used as desired, the object being to so shape the body-slug and the short types relatively that when put together they may be readily and firmly attached together as a type-bar by pressure or stroke.

The justifying-wedges and their operating mechanism may be used in the justification of types, dies, or matrices from which impression is to be taken for mold or other purpose when such types, dies, or matrices are not to be embodied in a type-bar.

In Fig. 1 it will be seen that the swaging bar or hammer S is placed loosely in its slide-way between the motor-lever C , which gives the hammer its swaging movement, and the attached draw-piece, which secures its return movement. The swaging bar or hammer is therefore easily removed and interchangeable with others, varying as to the contour of their hammer-face adapted to the various modifications of the parts to be swaged. For example, the form of parts for the bar shown in Fig. 1 and at 3, Fig. 5, requires a flat-faced hammer, and the modification shown at 4, Fig. 5, and in Fig. 6 requires a hammer-face having a ridge upon it corresponding to the groove in the face of the bar, Fig. 6.

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

1. A linotype or type-bar having a series of separate short-bodied type compressed or swaged upon the type-body.

2. A linotype or type-bar composed of a body-slug and an arranged line of individual short-bodied types; the types being justified as to the measure of the slug and compressed or swaged rigidly upon the type-body.

3. A slug or bar and separate short-bodied type rabbeted together; the tongue and groove

of the rabbeted parts having locking-joints which interlock the bar and short-bodied type firmly together.

4. In a machine in which types, dies or
5 matrices are justified to line-measure; the combination with a justifying wedge or space of a justifying-lever, having movement longitudinally as to the line, and a steady-arm moving therewith holding the justifying-
10 wedge practically at right angles to the line.

5. In a machine in which types, dies or
matrices are justified to line-measure; the combination with a justifying wedge or space, of a steady-arm having movement longitudi-
15 nally as to the line, and a justifying-lever moving therewith and having also a transverse movement for producing the justifying action of the wedge.

6. In a machine in which types, dies or
20 matrices are justified to line-measure; the combination with a justifying wedge or space with a guiding-stem, having movement longitudinally as to the direction of the line and two bearings for the wedge-stem in the steady-
25 arm and justifying-lever, for holding the wedge at right angles to the line.

7. In a machine in which types, dies or
matrices are arranged in spaced line; the combination with the justifying wedge or space
30 and its lever, having a movement longitudinally as to the line and a transverse movement at right angles therewith, of a retaining-stop as a^4 and a motor-spring as i , for placing the spacer in the line; substantially
35 as set forth.

8. In a machine in which types, dies or
matrices are spaced and justified to line-measure; the space or justifying-wedge and its lever, having a longitudinal movement as
40 to the line and a restricted transverse movement for placing the wedge or space in the line, a movement with the line to justifying position, and a secondary transverse movement for justification, substantially as set
45 forth.

9. In a machine in which types, dies or
matrices are spaced and justified to line-measure; the justifying-lever and its space or justifying-wedge attached thereto, having
50 a movement longitudinally with the line to position for justification, a transverse justifying movement, a reversed transverse movement for withdrawing the wedge from the justified line, and a reversed longitudinal
55 movement to return the lever and its wedge to first position.

10. The combination with the reciprocating
carrying-lever with justifying-wedge attached thereto, as $E a$; of the driving-bar as
60 G , and motor-spring as y ; substantially as set forth.

11. The combination with the steady-arms
 R, R , and justifying-levers E, E , of the rocking frame with cammed lever P , and the re-
65 volving cams J, J' ; substantially as and for the purpose set forth.

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Witnesses:

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