

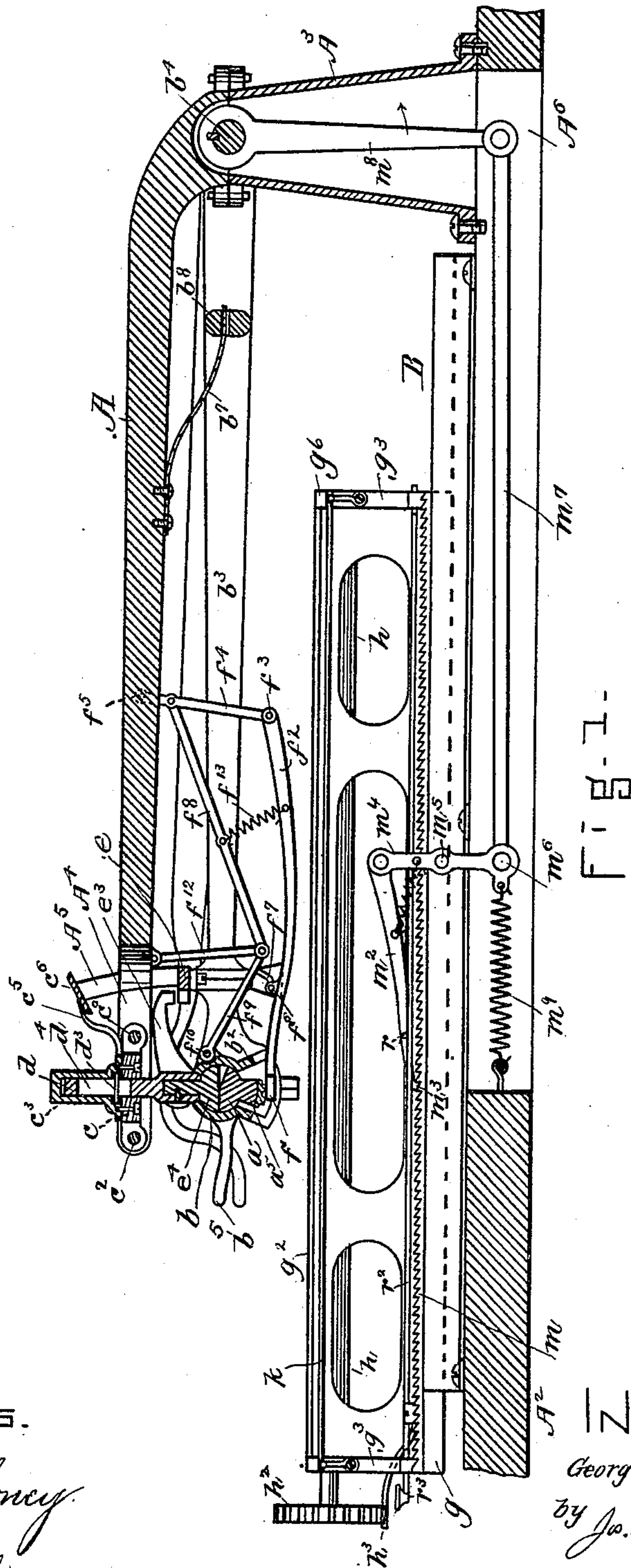
(No Model.)

3 Sheets—Sheet 1.

G. C. TOWLE.  
TYPE WRITING MACHINE.

No. 466,200.

Patented Dec. 29, 1891.



WITNESSES.

*Jas. J. Maloney*  
*W. E. Hill*

INVENTOR.

*George C. Towle,*  
*by J. B. Livermore*  
*Att'y.*

(No Model.)

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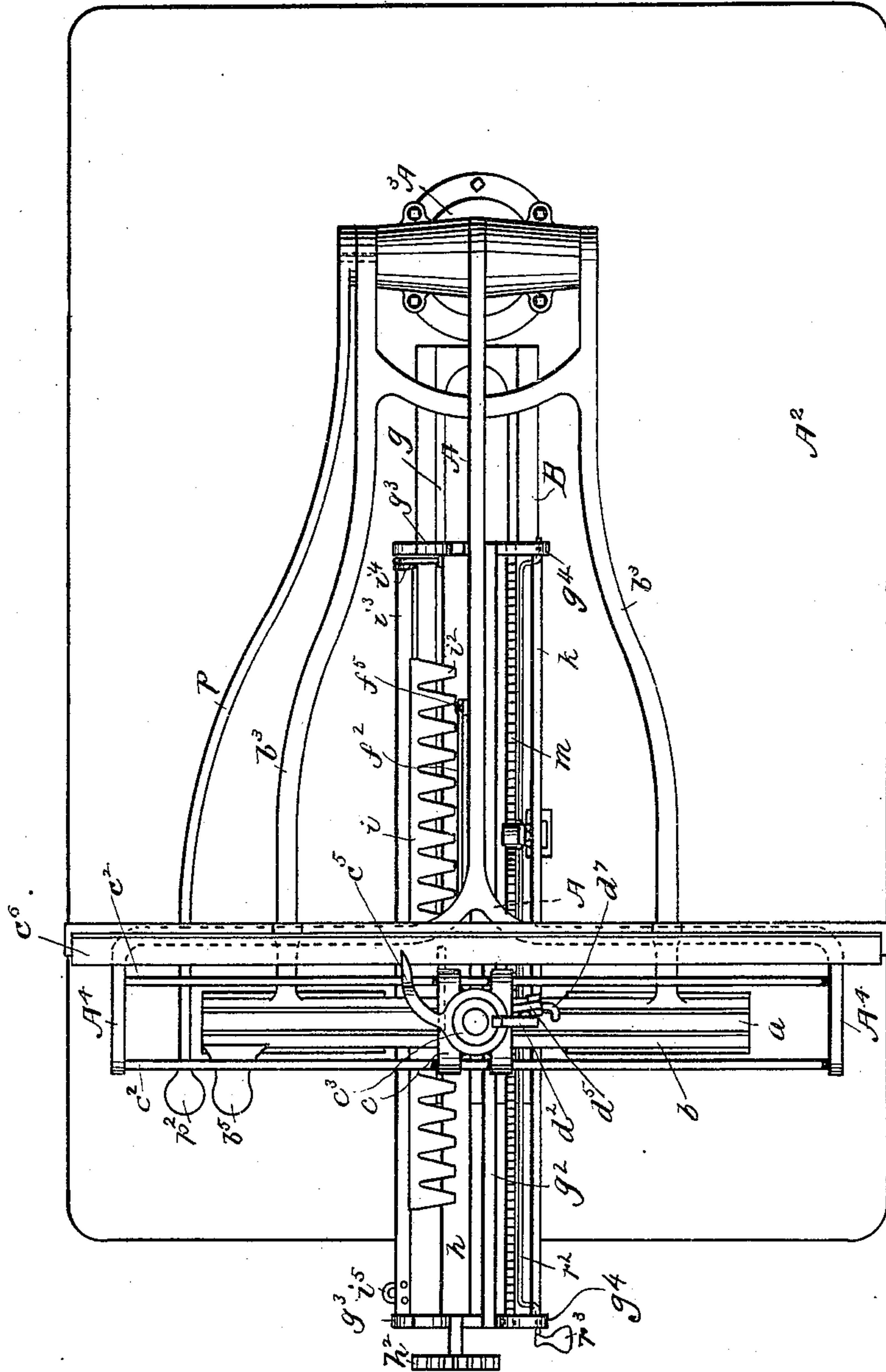


FIG. 2-

WITNESSES.  
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*M. E. Hill.*

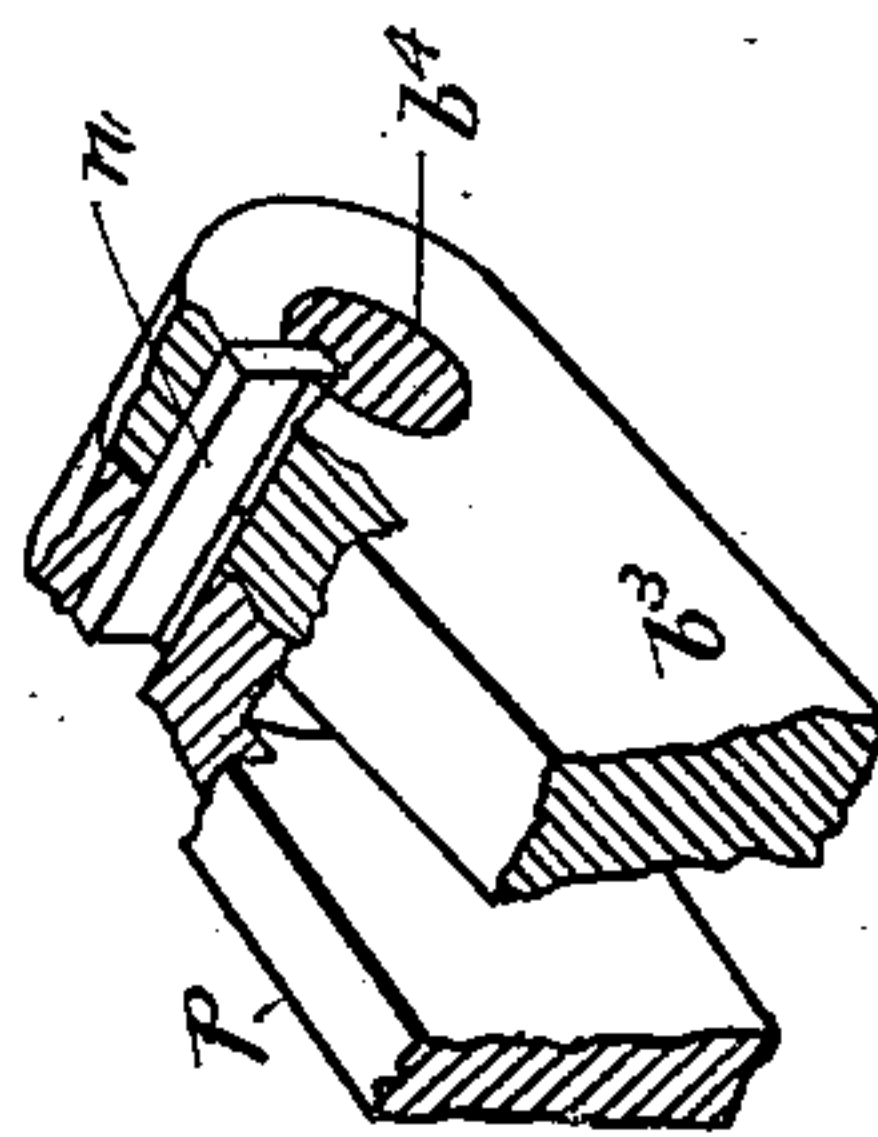


FIG. 7-

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*George C. Towle*  
by *Jos. P. Livemore*  
*Atty.*



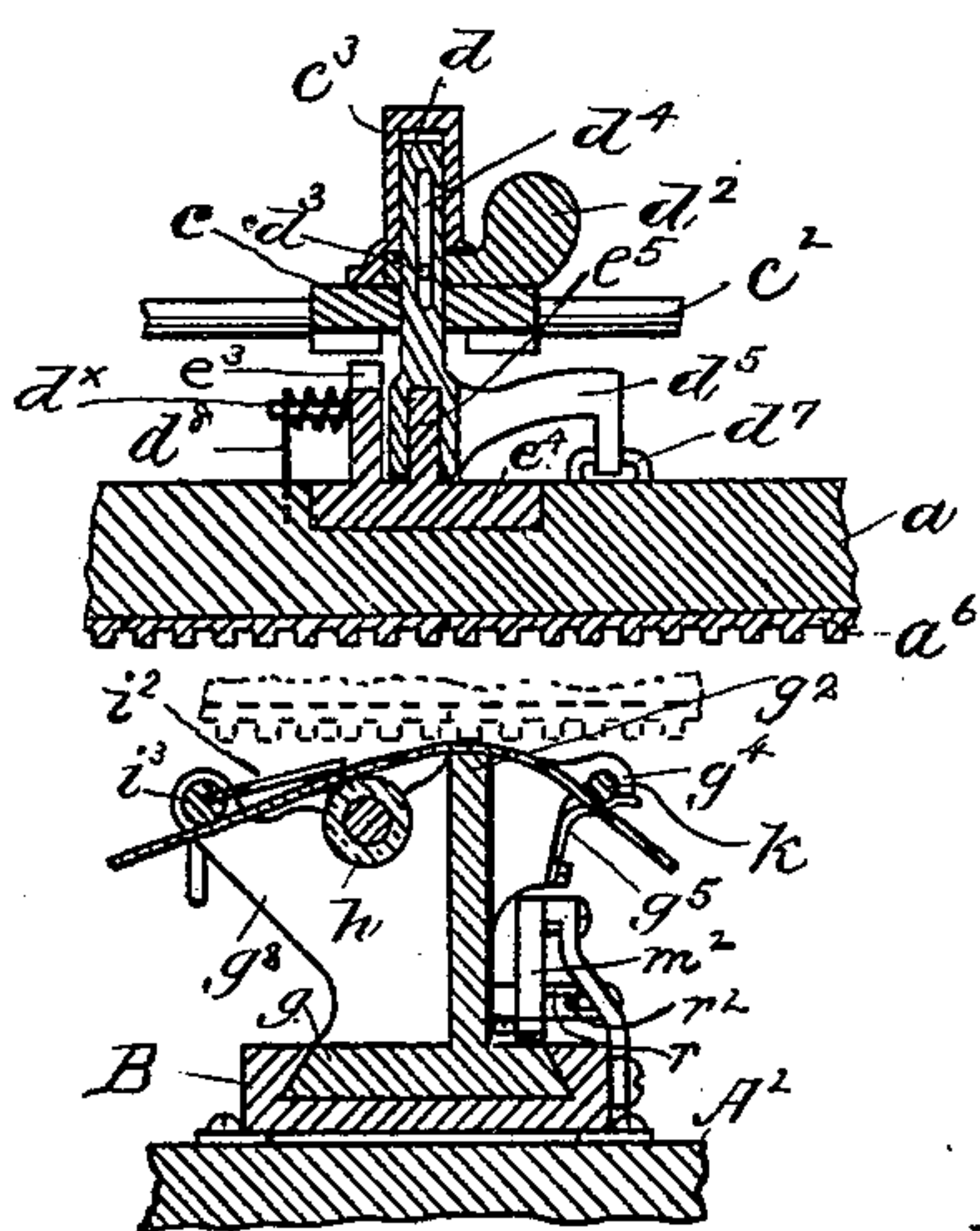
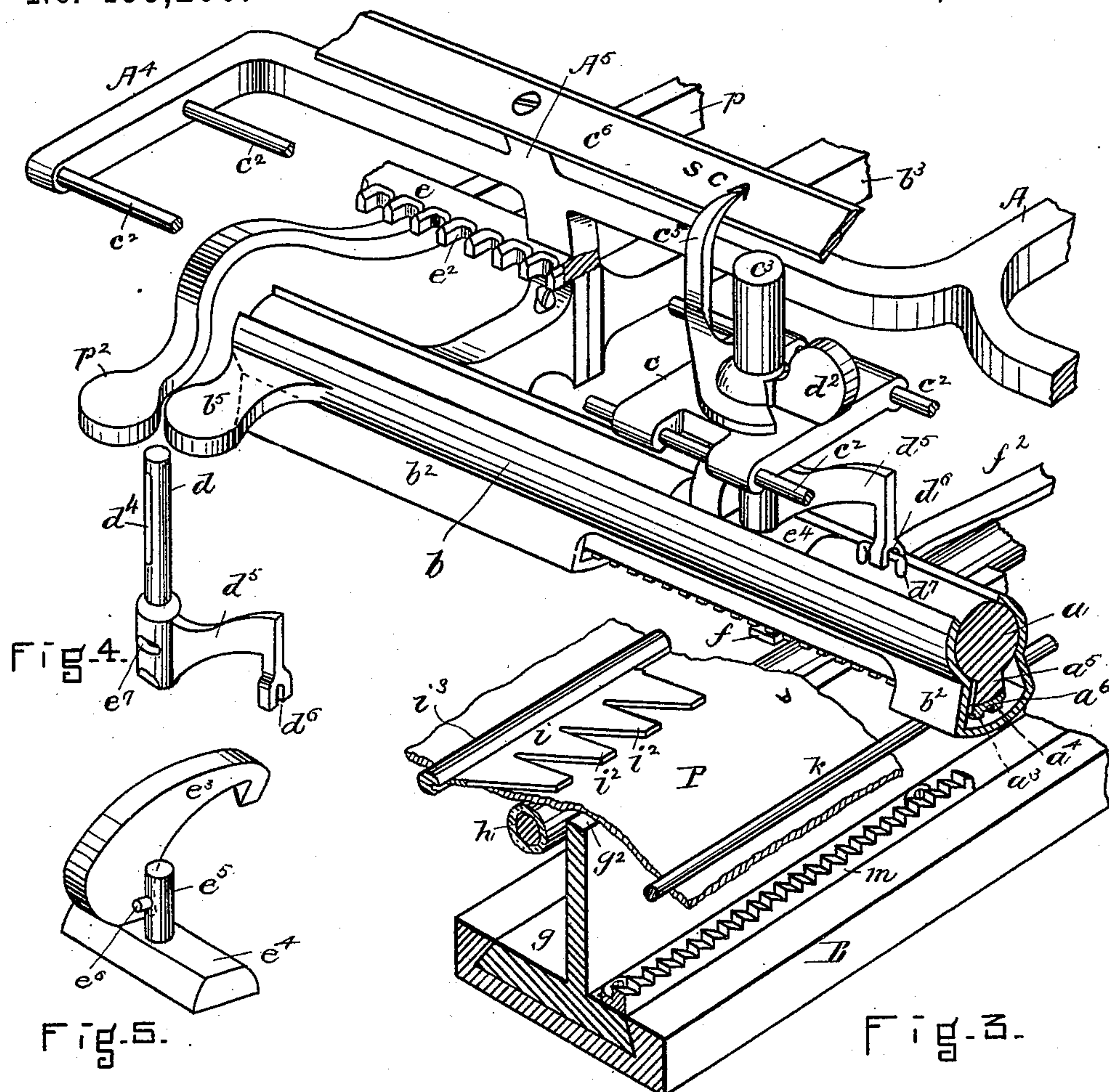
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TYPE WRITING MACHINE.

No. 466,200.

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WITNESSES.

*Jas. J. Maloney.*  
*W. E. Hall.*

INVENTOR—  
George C. Towle,  
by *J. P. Livermore*  
Att'y.



# UNITED STATES PATENT OFFICE.

GEORGE C. TOWLE, OF HYDE PARK, MASSACHUSETTS, ASSIGNOR TO THE  
POPE MANUFACTURING COMPANY, OF PORTLAND, MAINE.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 466,200, dated December 29, 1891.

Application filed June 13, 1889. Serial No. 314,110. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE C. TOWLE, of Hyde Park, county of Norfolk, and State of Massachusetts, have invented an Improvement in Type-Writing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My present improvements relate more particularly to that class of type-writing machines in which the type are carried on a bar which is moved longitudinally by the hand of the operator in connection with an index-plate and adjusting-bar to bring the proper type character to position and is moved vertically downward to produce an impression of the chosen character upon the paper below; but my improvements are applicable also in other varieties or styles of type-writing machines, and while I show and describe them in combination in a machine of this class I do not mean to limit myself thereto.

In my present improved type-writing machine I have devised a type-bar with two rows of type on its under side, either of which may be brought into use instantly, an improved carrier for this type-bar, and improved devices for operating and partially rotating it in the carrier; also, improved devices for producing the impression or vertical action of the type-bar, distributing the work of writing to the two hands of the operator, and also an improved paper-carriage containing a fixed platen and carrying the paper or envelope substantially in a flat horizontal position instead of a coiled one, and an improved inking apparatus and spacing devices and other improvements in devices and combinations which will be apparent from the following description, taken in connection with the drawings, parts, improvements, or combinations which constitute my invention being particularly pointed out in the herein-contained claims.

Figure 1 shows my improved type-writing machine in vertical longitudinal section transversely of the type-bar, the paper-carriage being shown in elevation. Fig. 2 shows the same in top plan view; Fig. 3, a perspec-

tive view showing the relative positions of the main operative parts; Figs. 4 and 5, perspective views of some of the parts detached, which will be hereinafter referred to; Fig. 6, a detail showing the type-bar and some of the connected parts in longitudinal section, and also showing the paper-carriage in proper relation thereto in transverse section; and Fig. 7, a detail showing a portion of the feeding and spacing mechanism in perspective.

The general arrangement of the operative parts of the machine herein illustrated is as follows:

The means for bringing the desired character of the set of type to the proper point for making the imprint are supported on a stationary arm A, overhanging a bed or base plate A<sup>2</sup>, upon which the paper-carriage travels, the line of movement of said paper-carriage, which determines the line of the printing, being transverse to the line of movement of the rows of type by which any desired character thereof is brought over the printing-point. The said arm A is supported over the base A<sup>2</sup> upon a hollow pillar or upright A<sup>3</sup>, properly located to accommodate movement of the paper-carriage and paper beneath the said overhanging arm. The set of type are shown in this instance as arranged in straight lines or rows on a type support or bar a, itself longitudinally movable in a type-bar guide b, which itself has an up-and-down movement with relation to the paper-carriage below for the purpose of making the impression upon the paper after the type-bar has been moved in said guide to the proper position to bring the required type or character to the printing-point.

In order to bring the type-bar within convenient limits and to increase the capacity of the machine, I arrange the printing characters upon it in a number of rows a<sup>3</sup> and a<sup>4</sup>, Fig. 3, the said rows being arranged on the arc of a cylinder or in different planes, so that when one row is in its lowermost position, or pointing directly downward toward the paper, the other row is slightly above it, so that it cannot touch the paper when the type-bar is depressed, and either row of type is brought to such position by an oscillating



or rolling movement of its supporting-bar, which is shown in this instance as having its main portion cylindrical in shape to readily accommodate its oscillating and sliding movement in the guide *b* and as supporting the rows of type on a downwardly-projecting rib *a*<sup>5</sup>, the type themselves being shown as formed on a separate strip of material *a*<sup>6</sup>, attached to such projection *a*<sup>5</sup>, such being the preferable construction. The guide *b* is mainly tubular in form to guide the main body of the type-bar in both movements and has a longitudinal slot above to accommodate the devices that effect such movements, and preferably has a shield-like extension *b*<sup>2</sup>, that covers for the main part the type, but has a sufficient opening over the printing-point to permit the type at that point to come upon the paper when depressed.

The longitudinal movement of the type-bar is produced by a carrier or slide *c*, having a longitudinal movement on guide-rods *c*<sup>2</sup>, themselves supported on projecting portions *A*<sup>4</sup> at the ends of the overhanging arm *A*, the said rods *c*<sup>2</sup> being sufficiently long to provide for a movement of the type-bar sufficient to bring the type at any point on its length into position over the printing-point, which is in this instance about directly beneath the middle of the outer end of the arm *A*. The said carrier *c* is provided with a vertical socket-piece or guide *c*<sup>3</sup>, which receives within it a guide rod or stem *d*, connected with the type-bar *a* in such manner that longitudinal movement of the carrier *c* on the guide-rods *c*<sup>2</sup> produces an equal longitudinal or sliding movement of the type-bar *a* in its guide *b*. The said guide rod or stem *d* is capable of moving longitudinally in the socket *c*<sup>3</sup> to accommodate the vertical movement of the type-bar by which the impression is made, as will be hereinafter described.

In order to enable the operator to bring the desired type to the printing-point, or, in other words, to select the character to be printed, the type-bar carrier *c* is provided with a pointer *c*<sup>5</sup>, which extends over the stationary index-bar *c*<sup>6</sup>, supported upon projections *A*<sup>5</sup> on the arm *A*, the said index-bar having marked upon it characters corresponding to the characters on the type-bar and in such position that when the pointer *c*<sup>5</sup> is opposite a given character on the index-bar the corresponding character on the type-bar is over the proper point to make its impression when the bar is moved downward. The oscillating movement of the type-bar to bring the desired row of type to the printing position is produced by means of a switch or shifting mechanism operated by a handle or finger-piece *d*<sup>2</sup>, supported on the type-bar carrier *c*, so that it can be easily manipulated by the same hand that grasps the said carrier to produce the longitudinal movement of the bar, such oscillating movement requiring scarcely any appreciable additional effort or expenditure of time over what is required to

position the type-bar longitudinally. The said handle *d*<sup>2</sup> has a rotating movement on the carrier near the base of its guide projection *c*<sup>3</sup> and is connected by a pin *d*<sup>3</sup> with the before-mentioned spindle or stem *d*, which is slotted, as shown at *d*<sup>4</sup>, where the pin engages with said stem, so as to accompany the vertical movement of the type-bar in making the impression. The said spindle *d* is provided below the carrier *c* with a laterally-projecting arm *d*<sup>5</sup>, (see Fig. 4,) notched, as shown at *d*<sup>6</sup>, to engage with a projection *d*<sup>7</sup> on the type-bar *a*, as best shown in Figs. 3 and 6, so that the lateral movement of the handle or finger-piece *d*<sup>2</sup> will, through its connection with the spindle *d*, arm *d*<sup>5</sup>, fork *d*<sup>6</sup>, and projection *d*<sup>7</sup>, produce the rolling or oscillating movement of the type-bar required to bring either desired row of type to the lowest or printing position, as may be desired. It will generally be desirable to bias the position or rolling action of the type-bar, as by means of a spring *d*<sup>8</sup>, (see Fig. 6,) tending to keep the bar with the line of characters most used—for example, the lower-case—in printing position, thus requiring positive effort of the operator only when the less-frequently-used or upper-case type are to be called into action. The spring *d*<sup>8</sup> is by preference coiled about a pin *d*<sup>x</sup> on the arm *c*<sup>3</sup> and made fast thereto by one end, while the other end is fitted in a socket in the type-bar, as clearly shown in Fig. 6. The type-bar need be only approximately positioned by the hand of the operator, who may merely bring the pointer *c*<sup>5</sup> nearer the character on the index-bar that he desires to print than to any other character, when the final accurate positioning will be performed automatically in the act of making the impression, these operations being performed by the following means: The type-bar is depressed to make the imprint by a bodily downward movement of its guide *b*, which is supported and guided in said movement upon the impression-frame *b*<sup>3</sup>, pivoted on a rock-shaft *b*<sup>4</sup>, having its bearings at or near the junction of the overhanging arm *A* with its supporting pillar or upright *A*<sup>3</sup>. The type-bar guide *b* is so far from the rock-shaft *b*<sup>4</sup> that the slight movement of the type-bar required for the imprint does not deviate materially from a rectilinear movement and causes the type to be properly presented to the paper below. The type-bar guide *b* or its supporting-frame *b*<sup>3</sup> is provided with a suitable handle *b*<sup>5</sup>, arranged to be operated by the other hand of the operator than the one that manipulates the carrier *c*, and the operation of the handle *b*<sup>5</sup> requires vertical movements only of the hand. Thus the horizontal or positioning movements of the type-bar are performed by one hand, while the vertical or imprinting movements are performed by the other hand, and by such division of the work far greater speed of operation is attained, and the work is accomplished with less fatigue.

The final accurate positioning of the type-



bar before referred to is effected by a positioning-bar  $e$ , having recesses or notches  $e^2$ , corresponding in position to the different type on the bar and being beveled on their upper surfaces to receive a positioning-arm  $e^3$ , which accompanies the type-bar in its downward or imprinting movements. The said arm  $e^3$  in coming against the beveled upper edges of the recesses in the positioning-bar brings the type-bar to accurate position, and as it passes below said beveled portion engages with the sides of the said recesses sufficiently close to keep the type-bar in accurate position as the type comes against the paper. The positioning-arm  $e^3$  has to accompany the type-bar both in its longitudinal movement in the guide  $b$  and in its downward movement with the guide for making the imprint; but it is not necessary that it should change its position materially for the oscillating movement of the type-bar. These relations are effected by connecting said arm with a foot  $e^4$ , that rests on the type-bar within the type-bar guide and is provided with a cylindrical projection or pintle  $e^5$ , that fits within the lower end of the switch-spindle  $d$ , which is caused to accompany the type-bar in its up-and-down or imprinting movement by means of a pin or projection  $e^6$  (see Fig. 5) from the pintle  $e^5$ , extending into a slot  $e^7$  (see Fig. 4) in the switch-spindle  $d$ , the said slot being extended circumferentially to permit such oscillating movement of the spindle and switch-arm as is needed to shift the type-bar. The portion of the type-bar that rests beneath the feet  $e^4$  is provided with flat seats, as best shown in Fig. 1, which positively limit the oscillating movement of the type-bar and steady the same in its different positions. Thus the entire shifting device, with the exception of its handle  $d^2$ , accompanies the type-bar in its up-and-down or printing movements and at the same time affords the connection between the type-bar and its carrier  $c$  by which the said type-bar is moved longitudinally to bring the desired type to the printing-point. The type-bar is raised from the paper after the impression is had by means of a spring  $b^7$ , (see Fig. 1,) connected with the arm  $A$  and engaging with a cross-piece  $b^8$  in the arm or impression-frame  $b^3$ , that effects the vertical or imprinting operation of the type-bar.

So far as the operations thus far described are concerned the inking of the type or application of the ink to the paper by the type might be effected by any suitable or usual means. As shown in this instance, the ink is applied directly to the type before each impression by means of an inking-pad  $f$ , Fig. 1, which works directly over the printing-point and is supported on an arm  $f^2$ , pivoted at  $f^3$  upon a lever  $f^4$ , pivoted at  $f^5$  on the arm  $A$ . The arm  $f^2$  is provided with a projection  $f^6$ , working in a cam-groove  $f^7$  in the frame  $f^3$  and serving to guide the pad as it is moved transversely to the line of type by the swinging of the lever  $f^4$ , the said guide or cam

groove causing the pad to rise slightly when it is moved laterally away from the face of the type, which is performed in the downward movement of the type, as will be described, so that before the type reaches the paper the pad has been moved laterally from beneath the type and also raised with relation to the face of the type so that it does not come down to the paper. The lateral movement of the inking-pad off and away from the face of the type is produced in the act of making an impression by a toggle-joint arrangement consisting of links  $f^8 f^9$ , the former connected with the lever or hanger  $f^4$  near its fulcrum and the latter connected with the type-bar guide or its frame at  $f^{10}$ , the joint of said links being connected by another link  $f^{12}$  with the stationary arm  $A$ , so that when the joint  $f^{10}$  moves downward with the type-bar in making the imprint it tends to straighten the toggle  $f^8 f^9$ , thus swinging the lever  $f^4$  backward and moving the pad  $f$  laterally off from the line of type and then upward, owing to the guidance of the cam  $f^7$ . In the upward movement of the type-bar after the imprint is made the reverse operation takes place, bringing the pad laterally to the face of the type, and said pad remaining against the face of the type while the type-bar is moved for the purpose of selecting another character. The movements of the pad are positive; but the pad-carrying arm  $f^2$  is also acted upon by a spring  $f^{13}$ , which tends to steady the movement by taking up any lost motion and to press the pad slightly toward the face of the type. So far as the operations of making the imprint thus far described are concerned the paper might be supported and moved and fed in any suitable manner; but in order to secure the best results the improved paper-holding carriage, which will next be described, is adopted. The said carriage comprises a frame-piece  $g$ , upon which the various paper holding and supporting devices are mounted, the said frame working longitudinally in a guide  $B$ , fixed upon the base  $A$  of the machine substantially at right angles to the line of the type-bar. The said carriage  $g$  is provided with a platen  $g^2$ , which supports the paper at the point where the imprint is made, the said point being indicated by the inverted  $A$  (shown in Fig. 3) on the paper, which is marked with reference-letter  $P$ . The said platen preferably has a flat surface to support the paper against the impression, and as the line of type is substantially straight it is necessary that the paper should be bent down or depressed slightly at each side of the platen without, however, producing such a sharp bend as would interfere with the operation of stiff paper or envelopes or would tend to crease the paper. The paper is fed over the platen to bring it in proper position for the successive lines of writing by means of a feed-roll  $h$ , preferably surrounded by rubber to afford a suitable frictional hold on the paper, the said roll being journaled in uprights  $g^3$  at the ends.



of the paper-carriage frame  $g$ . The paper is held against the roll, so as to be moved frictionally along when the said roll is turned, by means of a presser-plate  $i$ , preferably shaped to make contact-fingers  $i^2$ , which rest in tangential contact with the feed-roll or paper thereon, the said plate being connected with a rod  $i^3$ , also journaled in the uprights  $g^3$  and acted upon by a spring  $i^4$ , which forces the plate or fingers thereof downward toward the feed-roll with a yielding pressure. The said rod  $i^3$  may be provided with a handle  $i^5$ , for the purpose of rotating it slightly, so as to raise the presser-plate from the roll to facilitate the proper positioning of the paper thereon. The paper is held against the surface of the roll by the presser-plate slightly below the level of the platen  $g^2$ , as best shown in Figs. 3 and 6, and in order to produce a similar depression of the paper at the other side of the platen, so that only the part resting directly on the platen will be touched by the descending type, the said paper as it leaves the platen is carried beneath a hold-down rod  $k$ , supported in hook-shaped bearings or lugs  $g^4$  at the ends of the carriage, in which bearings it is held by springs  $g^5$  sufficiently yielding to enable the said bar to be removed, if required, to facilitate the placing of the paper beneath it. By these means only the one type which is immediately over the platen can touch the paper, as will be understood from Fig. 6, in which a portion of the type are represented in dotted lines in the position occupied when the desired one is making its imprint on the paper.

The paper is fed in the direction of the line of printing by the following means: The paper-carriage  $g$  is provided with a toothed bar  $m$ , which is acted upon by a pawl or dog  $m^2$ , having a tooth or shoulder  $m^3$  to engage with the teeth of the bar, said pawl being vibrated longitudinally of the bar by a lever  $m^4$ , pivoted at  $m^5$  on the stationary frame-work or guide B for the paper-carriage. (See Fig. 1.) The said lever is connected at  $m^6$  with a link  $m^7$ , having its other end connected with an arm  $m^8$  from the rock-shaft  $b^4$ , on which the impression-frame  $b^3$  is pivoted. The said link  $m^7$  and a portion of the connected parts work in a slot  $A^6$  in the base A, as shown in Fig. 1, and said link is acted upon by a spring  $m^9$ , tending to move it in the direction to cause the dog  $m^2$  to pull the toothed bar and paper-carriage in the desired direction for the feed, which operation takes place during the rise of the type-bar after an imprint has been made. The dog is moved forward during the act of making the imprint to engage the next tooth of the bar for the next feed movement, or when such feed is desired, with no accompanying impression, as at the end of a word by the following means: The rock-shaft  $b^4$ , connected with the arm  $m^8$ , is provided with a projection or feather  $n$ , (see detail, Fig. 7,) which extends into a recess in the frame  $b^3$ , one side of said recess engaging said feather

and rocking the shaft  $b^4$ , so as to move the arm  $m^8$  in the direction of the arrow, Fig. 1, when said impression-frame is moved to make the imprint. The recess in the impression-frame is cut away enough on the other side of the feather to permit of the rock-shaft making a similar movement, if turned by other means, without producing any movement of the impression-frame, as is required when a space is to be made at the end of a word or a feed movement made without making a corresponding imprint. Such spacing movement of the paper is produced by a space-lever  $p$ , having a handle  $p^2$  adjacent to the handle  $b^5$ , by which the operator makes the imprint, such spacing-arm also engaging with the projection  $n$  on the rock-shaft  $b^4$ , so that when it is depressed it will produce a similar rocking movement of the said shaft to that produced when the impression-frame  $b^3$  is depressed. The spacer-arm  $p$  and its handle may accompany the impression-frame, if desired, at each impression, it being essential only that it can be depressed independently of said impression-frame, and when so operated shall produce a movement of the feed-dog without any movement of the impression-frame, which result is provided for by the recess in the impression-frame before referred to. The handles  $p^2$  and  $b^5$ , by which the spacing and imprinting are effected, are so placed that they can be engaged by two fingers of the same hand of the operator, who can thus depress either one, as desired, in the manipulation of the machine.

When desired to move the paper-carriage independently of the automatic feed, it can be slipped along in the direction of the feed under the dog  $m^2$ , which then ratchets over the teeth of the feed-rack or toothed bar  $m$ ; but when it is necessary to move it in the other direction the dog must be raised, and to perform this operation conveniently the said dog is provided with a projection  $r$ , resting over a rod or bar  $r^2$ , which is hinged in the ends of the paper-carriage and provided with a handle  $r^3$ , the depression of which raises the bar and pawl, so that the carriage may be moved back to any desired point. The paper is fed forward over the platen to present different parts to the platen or line of printing, or, in other words, for the line-to-line feed, by rotating the feed-roll  $h$ , which is provided with a handle or wheel  $h^2$ , having properly-spaced notches engaged by a spring-contact  $h^3$  to divide up its rotary movement into the proper amounts for line-spacing.

The machine is most conveniently manipulated as follows: The operator sits facing the end of the paper-carriage and the paper is inserted between the feed-roll and presser-plate and brought to proper position lengthwise of the feed-roll, the presser-plate being raised, if desired, by its handle  $i^5$  to facilitate this operation, and is carried over the top of the platen and beneath the downhold-rod  $k$ , which may be removed from its bearing to facilitate



this operation, if desired. The paper is brought to the proper position for printing by turning the feed-roll and by moving the paper-carriage longitudinally, if required.

5 Then the operator takes the type-bar carrier *c* in the right hand, controlling the shifter-handle *d*<sup>2</sup> by the middle finger, and places two adjacent fingers of the left hand on the impression and spacer handles *b*<sup>5</sup> *p*<sup>2</sup>. Then with  
10 the right hand the proper character is selected by the aid of the pointer *c*<sup>5</sup> and index *c*<sup>6</sup> and the impression then made by the other hand acting on the handle *b*<sup>5</sup>, the positioning-bar *e*, with the co-operating projection *e*<sup>3</sup>,  
15 bringing the type to accurate position and preventing any movement of the type along the surface of the paper or any sliding movement of the type-bar whatever until it has been again lifted from the paper by the  
20 spring *b*<sup>7</sup> upon removal of the pressure on the handle *b*<sup>5</sup>, during which lifting movement of the type-bar the paper-carriage is fed to the proper position for the next imprint. When a space is to be made, the op-  
25 erator depresses the handle *p*<sup>2</sup> without depressing the handle *b*<sup>5</sup>, it being possible to move the type-bar to the position for the next imprint while such spacing operation is taking place. Thus by using both hands the  
30 speed of operation of the machine is greatly increased and the fatigue of operating the machine at the same time lessened.

I claim—

1. In a type-writing machine, the longitudi-  
35 nally-movable type-bar, combined with a carrier movably connected with said type-bar, guide-rods upon which said carrier may be slid longitudinally, a stationary arm upon which the said guide-rods are fixed, a pivoted  
40 frame for supporting the type-bar, and a depressor for said frame, whereby the longitudinal movement of the type-bar may be effected by one hand of the operator and the impression made by operation of the other hand,  
45 substantially as described.

2. In a type-writing machine, a stationary frame, guide-rods thereon, an index-bar *c*<sup>6</sup>, and a positioning-bar *e*, combined with a carrier on said guide-rods, a pointer on said carrier  
50 co-operating with the index-plate, a longitudinally-movable type-bar, connections between the carrier and type-bar to cause them to move together longitudinally, and a positioning-  
55 arm on said type-bar moving with its every movement and co-operating with the positioning-bar, substantially as described.

3. The combination of an impression-frame provided with a recess, a rock-shaft upon which it is pivoted, provided with a feather  
60 extending into said recess to cause the impression-frame and rock-shaft to move together, a type-bar and its guide mounted upon and movable with the impression-frame, a paper-carriage movable transversely to the  
65 axis of the said type-bar, said carriage being

provided with a toothed bar, a dog engaging said toothed bar, a lever to which said dog is secured, a link connecting said lever with an arm of the rock-shaft, whereby said dog is moved as the impression-frame is moved, and  
70 a space-lever also pivoted to the rock-shaft and co-operating with the feather thereon, substantially as described.

4. The combination of a platen and type and type-support movable toward and from  
75 the platen with the inking-pad and its supporting-arm and cam-guide for said arm and a supporting-lever for said arm operated by the movement of the type-support toward the platen, substantially as described. 80

5. The combination of a platen and type and type-support movable toward and from the platen with the inking-pad and its supporting-arm, a cam-guide and a supporting-lever for said arm, and a toggle-lever con-  
85 nected with said supporting-lever and with the type-support and stationary frame-work, as set forth, whereby the movement of the type-support toward the platen causes the printing-pad to be removed laterally from the  
90 face of the type and raised during such movement, substantially as and for the purpose described.

6. The combination of the type-bar guide and type-bar having a longitudinal and oscil-  
95 lating movement therein with a carrier and guides therefor, a spindle connected with the type-bar and having longitudinal and oscillating movement in a portion of said carrier, a handle on said carrier connected to oscil-  
100 late said spindle, and an arm from said spindle connected with the type-bar, as described, whereby the oscillation of said spindle produces a corresponding oscillation of said type-bar, substantially as described. 105

7. The combination of the type-bar guide and type-bar having a longitudinal and oscillating movement therein with a carrier and guides therefor, a spindle having longitudinal and oscillating movement in a portion of  
110 said carrier, and a foot-piece connected with said spindle and engaged with said type-bar, substantially as described.

8. The combination, with the type and type-support, of a paper-carriage having a platen  
115 that supports the paper beneath the imprinting-point, a feed-roll and presser on said carriage engaging the paper at one side of said platen and somewhat below its paper-sup-  
120 porting surface, and a hold-down bar engaging the paper at the other side of said platen and below its supporting-surface, and a hook-shaped bearing on the paper-carriage for said hold-down bar, and a spring for retaining said  
125 bar in said bearing, substantially as described.

9. In a type-writing machine, a type-bar and a guide therefor, said type-bar having a number of parallel rows of type along it, combined with a carrier for imparting longitudinal  
130



movement to the type-bar, and a switch supported by the carrier and connected by an arm with the type-bar to oscillate said type-bar in its guide to bring one or another of  
5 the rows of type in position to print, substantially as described.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

GEORGE C. TOWLE.

Witnesses:

JOS. P. LIVERMORE,  
M. E. HILL.