

No. 637,334.

Patented Nov. 21, 1899.

E. B. HESS & O. TYBERG.
TYPE WRITING MACHINE.

(Application filed Aug. 19, 1898.)

(No Model.)

2 Sheets—Sheet 1.

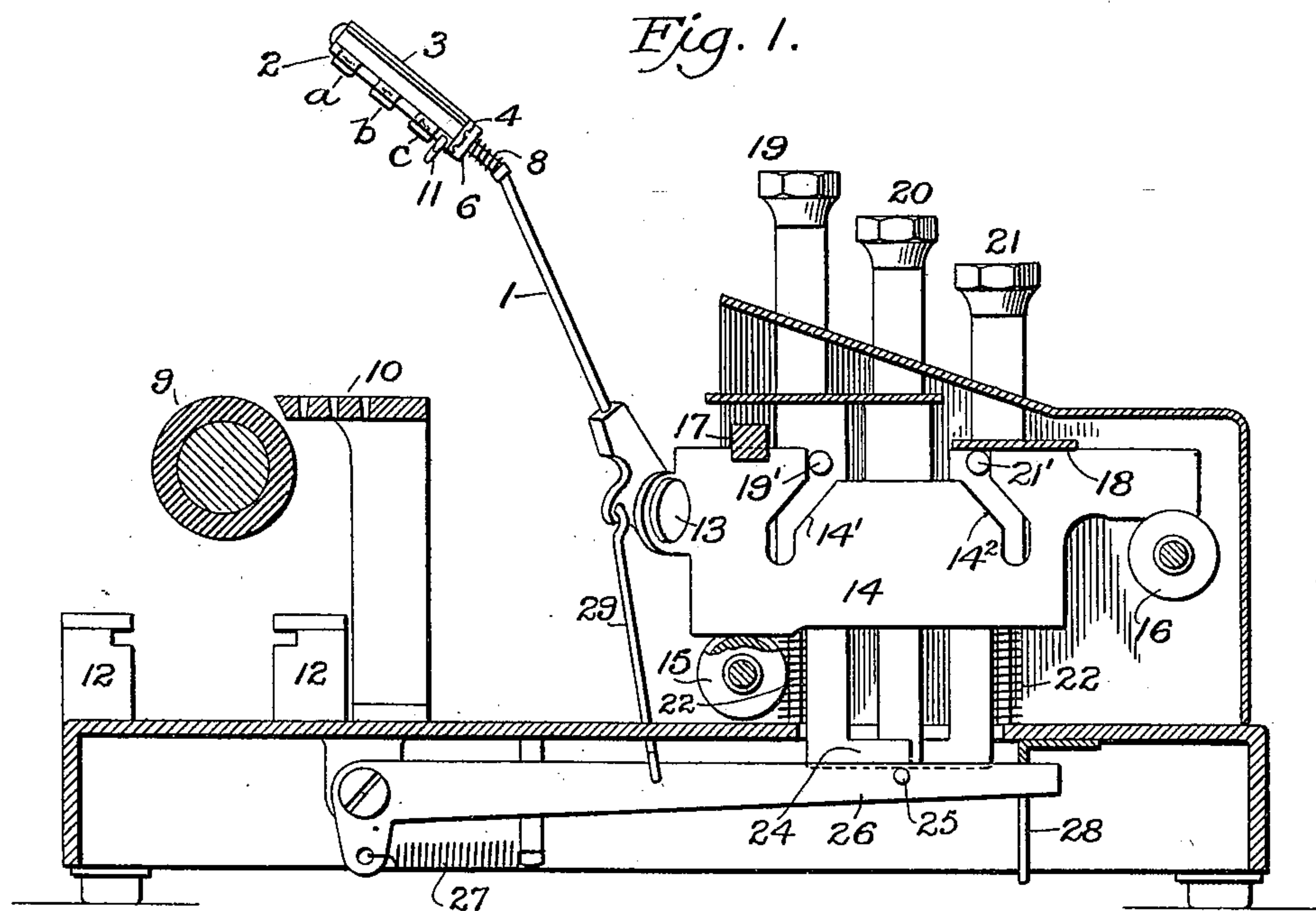


Fig. 2.

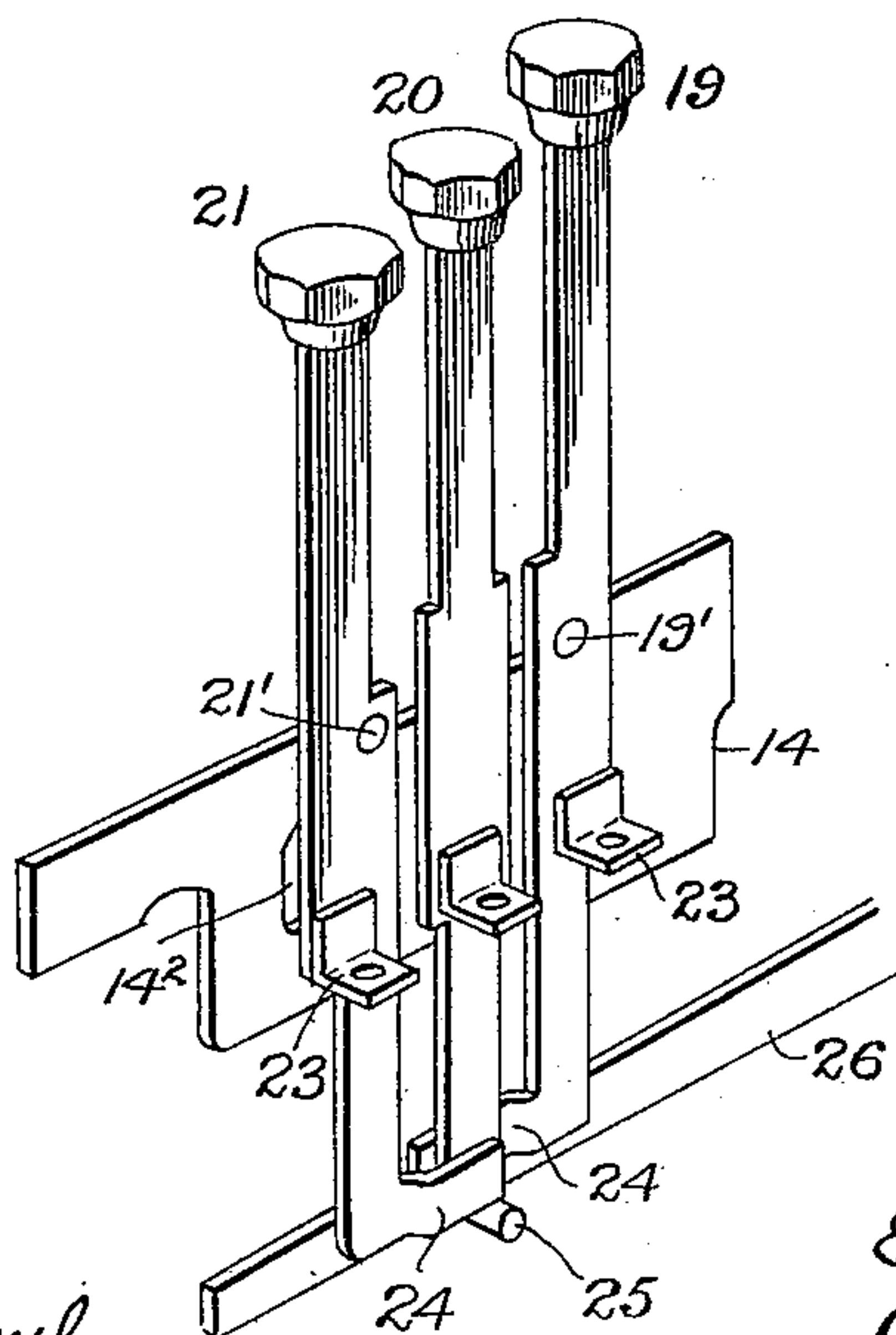
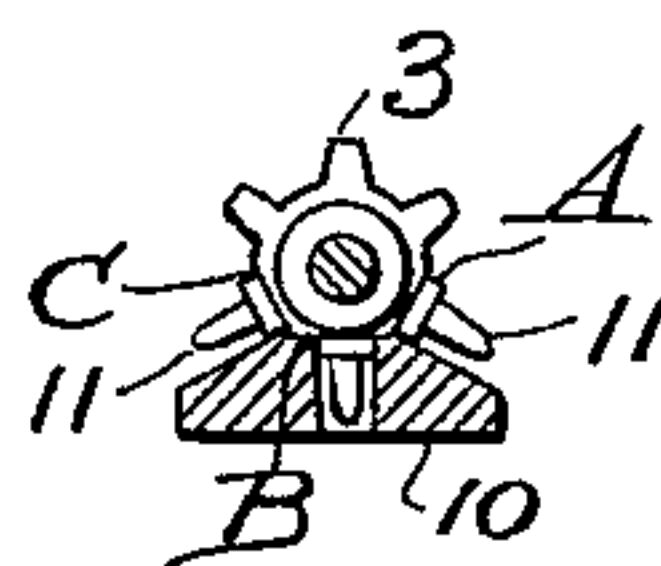


Fig. 3.



WITNESSES

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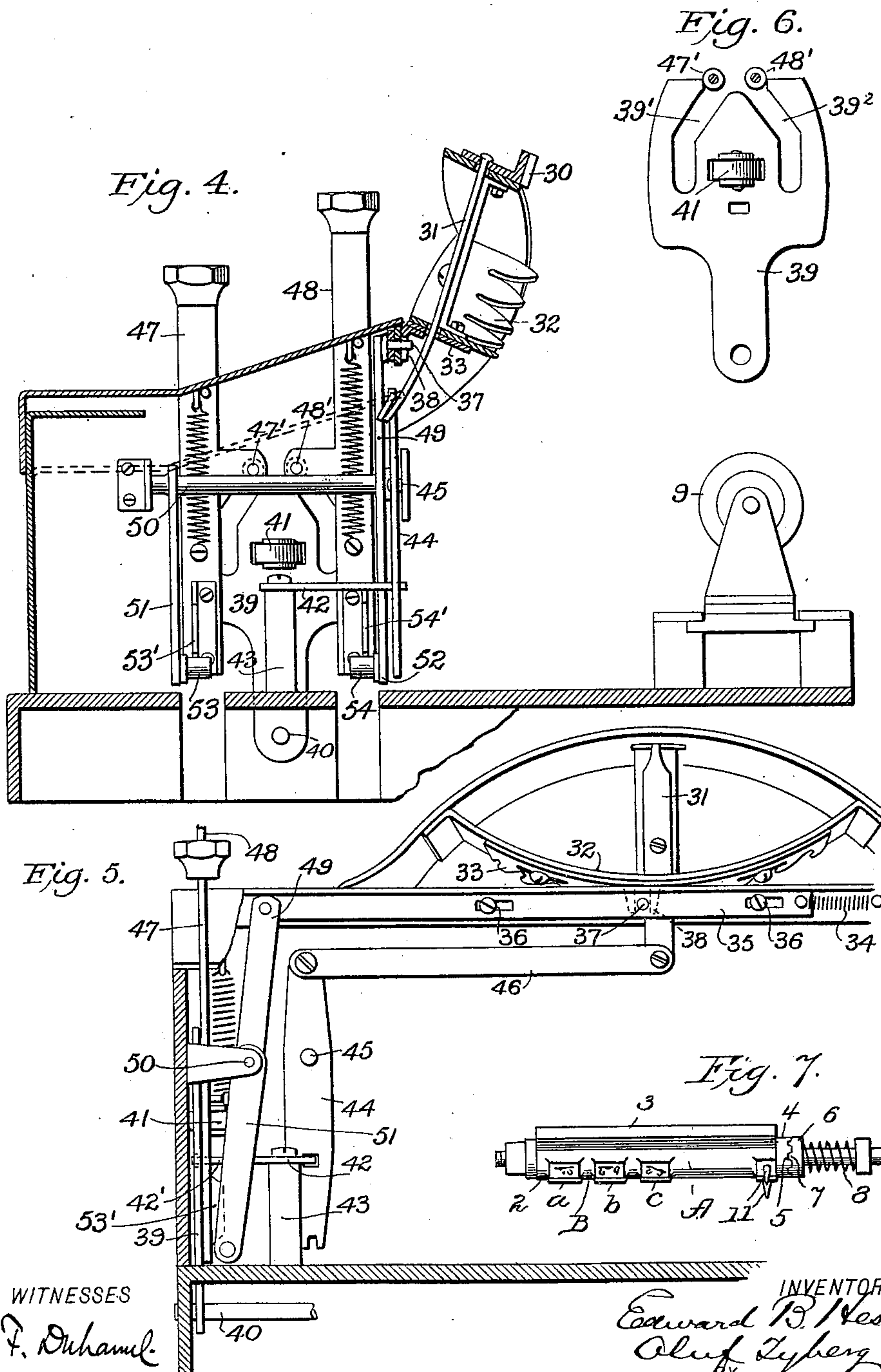
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WITNESSES
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UNITED STATES PATENT OFFICE.

EDWARD B. HESS AND OLUF TYBERG, OF NEW YORK, N. Y., ASSIGNORS TO
THE CENTURY MACHINE COMPANY, OF SAME PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 637,334, dated November 21, 1899.

Application filed August 19, 1898. Serial No. 688,957. (No model.)

To all whom it may concern:

Be it known that we, EDWARD B. HESS, residing in the borough of Manhattan, and OLUF TYBERG, residing in the borough of Brooklyn, city of New York, State of New York, citizens of the United States of America, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

10 This invention relates to that class of type-writing machines in which pivoted type-bars are each provided with a plurality of type or characters arranged longitudinally thereon and each bar operated upon through the medium of a plurality of finger-keys, one for each character, and one or more of which impart to the type-bar a motion around its pivot and longitudinally or in the direction of its length to bring the desired character to the point of printing or impact upon the platen. Machines of this general class are shown in the patents to Burridge, Nos. 585,838, 593,563, and 594,777, and in a patent granted to Hess and Stoughton September 6, 1898, No. 610,400. A machine more intimately allied in details of construction to that herein described is also shown in an application of Hess and Stoughton, filed in the United States Patent Office August 19, 1898, Serial No. 688,981, and upon which the invention of the present application is more particularly an improvement.

In the machine herein described, as in that of the above last-named application, each type-bar is equipped with a sleeve having three type-carrying faces, upon each of which a series of type is arranged longitudinally, three type being shown upon each face. Each type-carrying sleeve may be partially rotated at will to bring the type or characters upon either of its three surfaces opposite the platen in proper position to print when the lever is operated. Three keys are shown for each lever, and each key when depressed brings to the printing-point the corresponding character upon that face of the type-carrying sleeve then opposite the platen.

The invention consists, primarily, in two features—first, the organization by which a type-lever is actuated to bring either of three characters then opposite the platen to the printing-point upon the platen, and, second,

the organization relating to the partial rotation of the sleeve or part of the type-bar having thereon the type or characters to be printed.

The organization by which the three keys of each type-lever effect the three phases of movement of that lever is not dependent upon the organization relating to the partial rotation of the type-carrying sleeves or parts, nor is the latter organization dependent upon the former. The key mechanism may be used with a different organization for bringing different series of type or characters opposite the platen, and the latter mechanism may be employed in machines having a different key mechanism from that herein shown.

In the accompanying drawings, Figure 1 is a section through the machine at right angles to the axis of the cylindrical platen, showing only such parts as are requisite to illustrate the finger-key and type-bar actions; Fig. 2, a detail view showing the three finger-keys that belong to and operate a single type-bar; Fig. 3, a detail view showing the rotatable type-bearing sleeve that is mounted on the type-bar and has three longitudinal type-bearing faces, each with three type longitudinally arranged thereon; Fig. 4, a section similar to Fig. 1, but looking in the opposite direction, showing only such parts as are requisite to illustrate the mechanism relating to the rotation of the multifaced type-bearing sleeves. Fig. 5 is a sectional view at right angles to Fig. 4 looking from the left; Fig. 6, a detail view of the rocking shifting-plate through or by which the rotation of the type-bearing sleeves is effected. Fig. 7 is a detail view showing the manner of mounting the type-bearing sleeve upon the type-bar.

Since each type-bar of a machine of this character has three type-bearing faces with three characters on each face, from either one of which an impression may be taken, it follows that to afford eighty-one characters (a usual and sufficient number) but nine type-bars need be employed.

As a machine of this character is fully described and illustrated in the hereinbefore-mentioned application, Serial No. 688,981, filed August 19, 1898, and as the present invention relates merely to the organization for effect-

ing the motion of the type-bars longitudinally and about their pivots to select for printing the desired one of the three characters on the face of the type-bearing sleeve then opposite the platen and to an organization for shifting or operating the parts shown and described in said application for rotating the type-bearing sleeves and locking the type-bars during such rotation, it has only been deemed necessary to show and describe such mechanisms, as all else is or may be precisely as fully shown in said application.

The base-plate and casing or frame of the machine may be as shown or of any suitable construction.

Each type-bar 1 has thereon a type-bearing sleeve 2, having three longitudinal faces A B C, each of which has longitudinally arranged thereon three type or characters arbitrarily marked *a b c*, while the back or portion of the sleeve facing the operator is formed with ribs or teeth 3, adapted to engage the shifting-rack, as hereinafter described and as fully set forth in the application above mentioned. The sleeve is mounted to rotate upon the type-bar, and at its inner end is provided with a plate or disk 4, having therein notches 5, tapered or formed with walls inclined at a suitable angle. Sliding on the type-bar adjacent to this disk is a locking-plate 6, having correspondingly-shaped lugs or projections 7, adapted to enter the notches. The locking-plate is urged against or toward the disk by a spiral spring 8. With this organization when the strain of the shifting-rack is exerted upon the sleeve the locking-plate 6 yields and permits the lug thereon to pass out of engagement with one of its recesses and into engagement with the adjoining one. The sleeve is thus held stationary and sufficiently firm in either position into which it may be moved.

9 indicates the platen; 10, a block having perforations adapted to be engaged by pins 11 on the type-sleeve, so that the sleeve is held firmly with reference to the printing-point at the time of taking an impression.

12 12 are posts in which the sliding carriage (not shown) carrying the platen is mounted.

The type-bars 1 are properly bent or deflected, and with the exception of the middle one the axes upon which they rock are at a suitable angle to the axis of the platen, all as is well understood. Each type-bar is pivoted at 13 to a vertical plate 14, capable of being moved endwise in suitable guides toward and from the platen. In this case the guides consist of rollers 15 16, in the grooves of which the lower edges of the plate have their bearing, a cross-bar 17, having transverse grooves, one for the upper edge of each plate, and a flat cross-piece 18, arranged above all the plates. Each such plate has a horizontal slot connecting at its ends with two divergent slots 14' 14², which latter slots are, however, vertical throughout their lower portions. Three finger-keys 19 20 21 slide vertically in

or on suitable guides and may be maintained normally in an elevated position by springs 22, surrounding vertical guide-pins that pass through apertures in brackets 23 on the sides of the keys. The key 19 has a laterally-projecting pin 19', that normally occupies one end of the horizontal slot in the plate 14, and the key 21 has a similar projection 21', normally occupying the opposite end of the slot. Each of the three keys, at or near its lower end, has a foot or projection 24, that bears upon a projection 25 on the side of a horizontal lever 26. This lever is in this instance shown as arranged on the under side of the bed-plate and is normally urged upward by a spring 27, its end being guided in slots in a transverse plate 28, which also limits the upward movement of the lever. A link 29 connects the lever 26 and a projection on the type-bar adjacent to its pivot 13. The plate 14 is held firmly in normal position by the two lugs 19' 21', and when the center key 20 is depressed the bar 26 is rocked upon its pivot and the type-bar drawn down to bring the center type *b* on the face of the sleeve then opposite the platen to the printing-point on the platen. If either key 19 or 21 is depressed, the same operation of the type-bar occurs, accompanied by a movement of the plate 14 and pivot of the type-bar either toward or from the platen to print from type *a* or *c*, as the case may be. This construction is characterized by great simplicity and small number of parts, and is distinguished from the constructions shown in the two applications before mentioned primarily by the facts that the plate 14 moves in a straight line as distinguished from rocking on a pivot and that the type-bar is pivoted directly upon the plate. The several type-bars are each provided with an actuating mechanism such as described. The ordinary universal bar (not shown) may be actuated by the levers 26 in any suitable manner, and any suitable inking or ribbon device and carriage-feed may be employed.

The mechanism for partially rotating the type-bearing sleeves is shown in Figs. 4, 5, and 6. As in the application above mentioned, there is an endwise-movable rack 30, capable of being moved in either direction from a normal central position by a pivoted lever 31, a slotted guide-plate 32, which serves to guide the type-bars to their normal elevated position, with the teeth on the sleeves thereof in proper engagement with the teeth of the rack, and an endwise-movable locking-comb 33, which engages and holds the type-bars during the sleeve-shifting operation and then retires from engagement with the bars to permit their operation, as already described. The locking-comb is normally held in a retracted position by a spring 34 and is operated by a bar 35, sliding on the frame through the medium of slots and set-screws 36 and having thereon a projecting pin 37, that is embraced between two lugs 38 on the locking-comb. The organization as shown

and thus far described is in all respects the same as that shown and described in the application above mentioned. The means for imparting the proper movements to the lever 5 31 and sliding bar 35 form the subject-matter of the present invention. A vertical plate 39 rocks on a pivot 40 at or near its lower end, is arranged close to or parallel with the side plate at the left-hand side of the machine, 10 and has mounted in a slot therein a roll 41, that bears against the side plate. A horizontal bell-crank lever 42 is mounted on a post 43, and one end 42' thereof extends into an aperture or recess in the rocking plate and 15 the other end similarly engages a vertical lever 44, pivoted at 45 and connected by a link 46 with the free end of the rack-operating lever 31. As shown more particularly in Fig. 6, the rocking plate 39 has a horizontal 20 slot or opening at its upper edge, which at its ends opens into two slots 39' 39², which first diverge abruptly and then converge very slightly. Two vertically-sliding shifting-keys 47 48, normally elevated by springs in any 25 suitable manner, have, respectively, pins or projections 47' 48' occupying the ends of this horizontal slot opposite the entrances to the diverging slots.

Obviously if the key 47 be depressed the 30 rocking plate will be moved to the left, as viewed in Fig. 4, during the traverse of pin 47' in the slot 39', and the rack 30 be moved from its normal position in one direction. Similarly if the key 48 be depressed the rack will 35 be moved from its normal position in the opposite direction. Thus the type-bar sleeves of all the type-bars, which in the normal elevated position of the type-bars engage the rack, may be shifted at will in either direc- 40 tion to bring their desired type-bar faces opposite the platen, and while so shifted, the shifting-key being still held down, the type-bars may be operated in the manner already described.

45 During the depression of the key 47 or 48 and while the projection thereon is traversing the lower part of the slot, which will then stand vertical, no movement of the shifting-rack occurs, and we utilize this latter part of 50 the movement of the key to effect in part the operation of the locking-comb in the following manner:

The bar 35 is connected at one end with a radial arm 49, projecting from a rock-shaft 50, 55 mounted in brackets on the side plate of the machine. From this rock-shaft depend two arms 51 52, having at their ends lateral projections, preferably rollers 53 54. The stress of the spring 34 applied to the end of the bar 60 35 normally holds the parts in such position that these rolls are adjacent to or bear upon the sides of the vertical sliding shifting-keys 47 48, which carry the cam-plates 53' and 54'. The end faces of these cams are very abruptly 65 inclined, and their lower faces are normally in contact with the roll. When either shifting-key 47 or 48 is depressed, a slight move-

ment thereof occurs before the projection 47' or 48' engages the inner wall of the corresponding divergent slot in the plate 39, and 70 during this brief movement the cam on the key, acting upon the roller, rocks the shaft 50 and causes, through the medium of the arm 49 and bar 35, an endwise movement of the locking-comb, by which the curved or 75 hooked teeth thereof embrace the type-bars. This condition is maintained by the rolls running upon the straight face of the cam during the time that the pin 47' or 48' is traversing the abruptly-inclined part of the slot in 80 the plate 39 and until the complete movement of the shifting-rack is effected. On the further depression of the key the roller runs down the upper inclined face or edge of the cam and the locking-comb is retracted, so as 85 to permit the operation of the type-bars during the time that the shifting-key is held depressed.

The slotted plate 39 for actuating the type-sleeve-shifting rack instead of being pivoted 90 might slide in a straight line, the same as the type-bar plate 14. This is of course obvious. The organization shown for shifting the rack and controlling the locking-plate is simple and takes up but little room, being compactly 95 arranged adjacent to the left-hand side plate of the casing.

Of course many details that have been described may be varied without departing from the principle of this invention. It is plain, 100 for instance, that the slots in the plate 14 might diverge throughout their length, the length of the slots and the relation of the pins 19' 21' thereto being such that when the key is entirely depressed the pivot of the type-bar 105 is brought to the proper position and the type just out of contact with the platen. With such an arrangement and with the usual quick impulse given to the finger-key the momentum of the end of the type-bar, to which the 110 bar would naturally yield, would cause the type to strike with a sharp impact against the platen.

There are advantages incident to the use of the endwise-movable plates 14 in the way 115 of simplicity and economy of construction, and although we have shown the type-bars pivoted directly to the plate it is not our intention to limit all our claims to that construction. 120

We claim as our invention—

1. The combination of a platen, a type-bar having two type arranged longitudinally thereon, a support to which the bar is pivoted 125 capable of movement in a right line toward and from the platen, two finger-keys, capable of depression independently of each other means whereby when one of the keys is depressed, said support is moved relatively to the platen, and means whereby when either 130 key is depressed the type-bar is rocked upon its pivot to bring the corresponding character thereon to the printing-point.

2. The combination of a platen, a type-bar

having three characters arranged longitudinally thereon, a support to which the type-bar is pivoted, capable of movement in a right line toward and from the platen, three
 5 finger-keys, capable of depression independently of each other means whereby on the depression of either of two of said keys the type-bar support is moved relatively to the platen, and means whereby upon the depression of
 10 either of the three keys the type-bar is rocked upon its pivot to bring the corresponding character to the printing-point.

3. The combination of a platen, a pivoted type-bar having two type arranged longitudinally thereon, a plate endwise movable in a
 15 right line toward and from the platen, and correspondingly controlling the pivot of the type-bar relatively to the platen, two finger-keys, capable of depression independently of
 20 each other means whereby upon the depression of one key the said plate is moved endwise, and means whereby upon the depression of either key the type-bar is rocked upon its pivot to bring the corresponding character
 25 thereon to the printing-point.

4. The combination of a platen, a pivoted type-bar having three characters arranged longitudinally thereon, a plate, endwise movable toward and from the platen in a right
 30 line and correspondingly determining the position of the type-bar pivot relatively to the platen, three finger-keys, capable of depression independently of each other means whereby on the depression of one of said keys the
 35 plate is moved toward the platen, means whereby on the depression of another of said keys the plate is moved away from the platen and means whereby on the depression of either of the three keys the type-bar is rocked upon
 40 its pivot to bring the corresponding character to the printing-point.

5. The combination of a platen, a type-bar having three characters arranged longitudinally thereon, a vertical plate to which the
 45 type-bar is pivoted sliding in guides in a right line toward and from the platen and having two divergent slots thereon, two finger-keys having projections adapted to run in said slots respectively on the depression of the
 50 keys, whereby the plate is moved toward the platen when one key is depressed and away from the platen when the other key is depressed, a third finger-key, and means whereby when either of the three finger-keys is de-
 55 pressed, the type-bar is rocked upon its pivot to bring the corresponding character thereon to the printing-point.

6. The combination of a platen, a pivoted type-bar having three characters arranged
 60 longitudinally thereon, a vertical plate movable endwise in a right line toward and from the platen, and correspondingly determining the relation of the type-bar pivot to the platen and having three slots therein, a horizontal
 65 slot opening at its ends into two divergent slots, two finger-keys having projections normally occupying the ends of the horizontal

slots and adapted to traverse the divergent slots when depressed to cause the endwise movement of the plate toward or from the
 70 platen, a third finger-key and means whereby on the depression of either of the three keys the type-bar is rocked about its pivot to bring the corresponding character thereon to the printing-point.

7. The combination with the type-sleeve-shifting rack, of a movable plate having slots therein, two shifting-keys, each having pro-
 80 jections adapted to run in said slots respectively when the keys are depressed whereby the plate may be moved in one direction when one of said keys is depressed and in the opposite direction when the other key is de-
 85 pressed, mechanism interposed between the rack and the plate for operating the rack in either direction from a normal position according to the direction of movement of the plate, a type-bar-locking comb, a rock-shaft, operative connections between the rock-shaft
 90 and the locking-comb, two arms projecting from the rock-shaft and cams upon the shifting-keys adapted to operate upon the said arms to first move the locking-comb into en-
 95 gagement with the type-bars and then out of engagement therewith during the depression of either key.

8. The combination of a plate having two inclined slots therein, two shifting-keys having projections respectively working in said
 100 slots whereby on the depression of one key the plate is moved in one direction and on the depression of the other key in the opposite direction, a bell-crank lever, one arm of which engages the slotted plate, the type-
 105 sleeve-shifting rack and lever mechanisms interposed between the rack and the other arm of the bell-crank lever.

9. The combination of the type-bar-locking comb, the rock-shaft, operative connections between the locking-comb and rock-shaft,
 110 arms projecting from the rock-shaft, two shifting-keys each having a cam thereon adapted to operate one of the arms projecting from the rock-shaft, whereby on the depression of either key the cam thereon first actuates the
 115 rock-shaft to throw the locking-comb into engagement with the type-bar and then on the further depression of the key permits the return of the rock-shaft and locking-comb to normal position.

10. The combination of the shifting-keys, cams thereon, arms operated upon by the
 120 cams, a rock-shaft to which the arms are connected, the type-bar-locking comb and operative connections between the locking-comb and rock-shaft, whereby on the depression of either of said keys the rock-bar is first actuated to cause the engagement of the locking-
 125 comb with the type-bars and then after a given extent of depression of the key, the rock-shaft and locking-comb are allowed to return to the normal position, the plate hav-
 130 ing two inclined slots, projections upon the shifting-keys working in said slots whereby

the plate is operated in one direction when one key is depressed and in the other direction when the other key is depressed, the type-sleeve-shifting rack, and operative connections between the shifting-rack and the slotted plate, substantially as and for the purpose set forth.

11. The combination of a type-sleeve mounted to rotate upon the type-bar and having multiple type-bearing faces, means for partially rotating the sleeve upon the type-bar to bring either type-bearing surface thereof into position, the disk carried by the sleeve and having notches, one for each type-bearing

ing surface of the sleeve, the locking-plate, movable axially toward and from said disk, having a projection adapted to engage the notches in said disk and a spring for normally urging the locking-plate into engagement with the disk.

In testimony whereof we have hereunto subscribed our names.

EDWARD B. HESS.
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Witnesses:

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A. E. RULHS.