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3 SHEETS—SHEET 1.

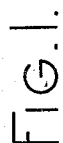


FIG. 8.

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TYPE WRITING MACHINE.
APPLICATION FILED OCT. 5, 1908.

Patented Feb. 14, 1911.

3 SHEETS—SHEET 2.

983,941.

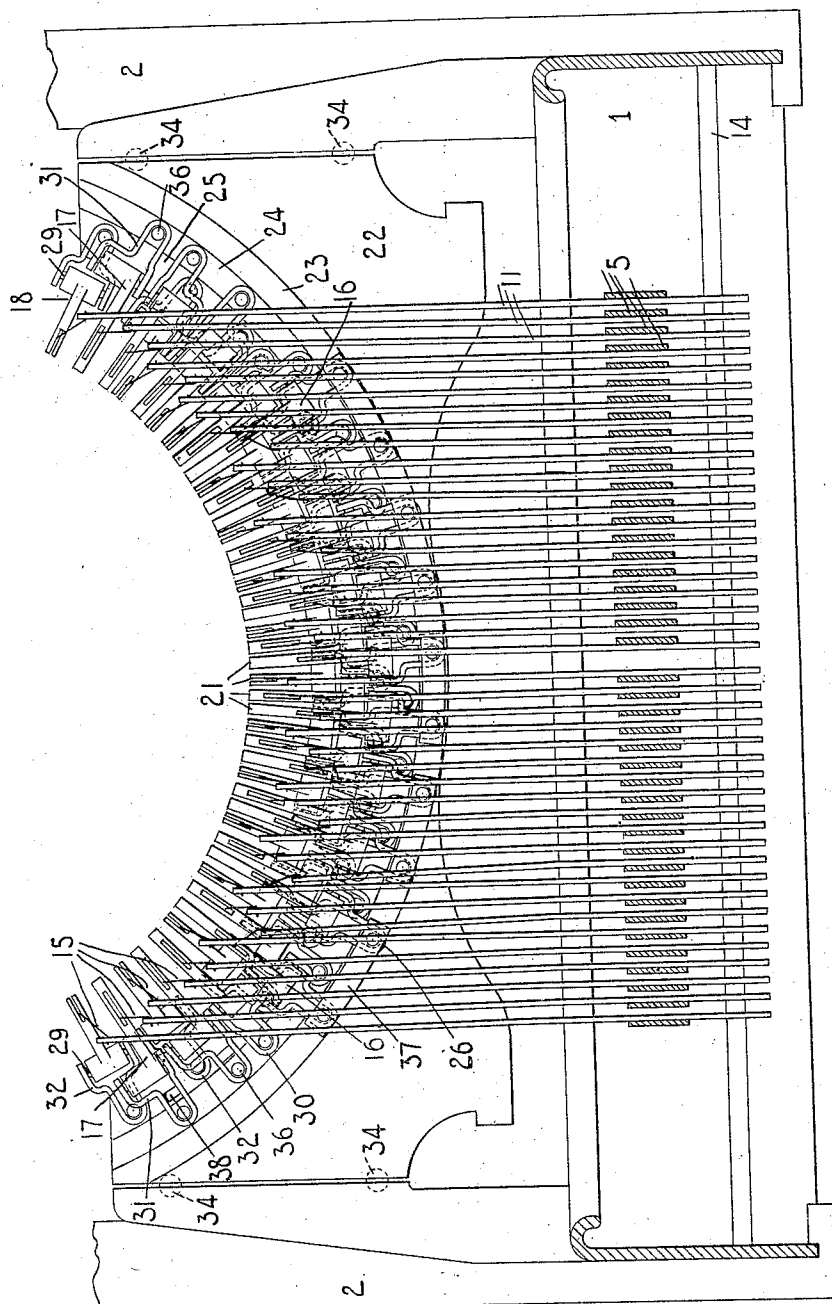


FIG. 2.

WITNESSES.

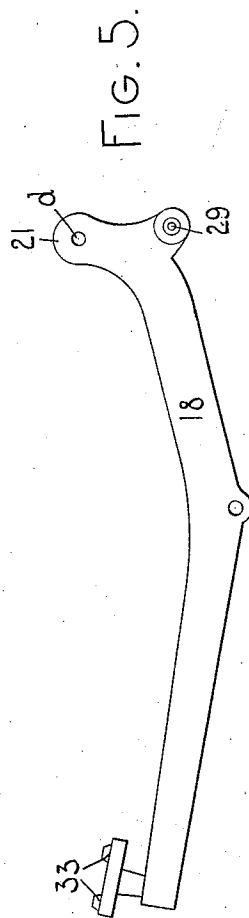
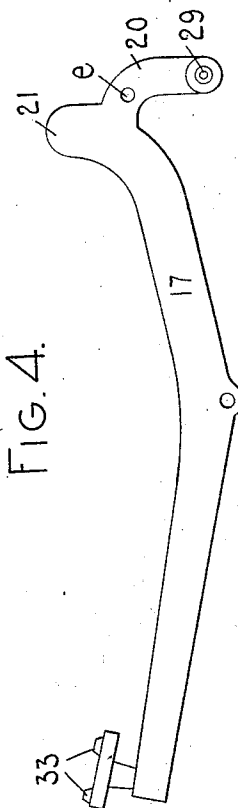
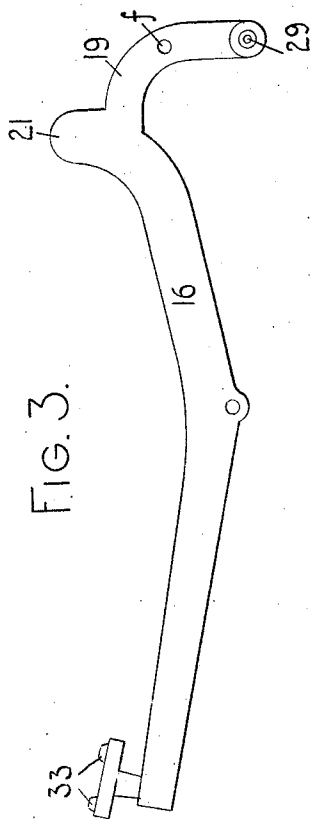
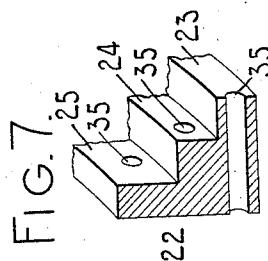
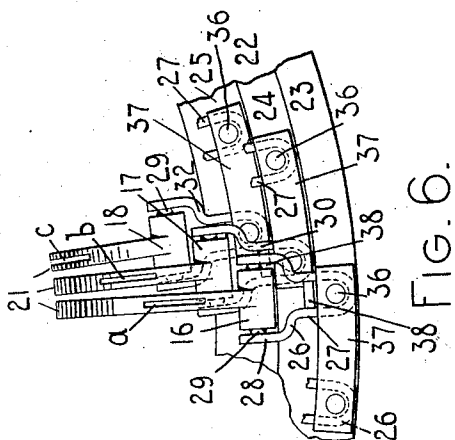
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

ZALMON G. SHOLES, OF NEW YORK, N. Y., ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

983,941.

Specification of Letters Patent.

Patented Feb. 14, 1911.

Application filed October 5, 1908. Serial No. 456,228.

To all whom it may concern:

Be it known that I, ZALMON G. SHOLES, citizen of the United States, and resident of the borough of Manhattan, city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to the type actions of such machines.

The main object of my invention is to provide wide and efficient pivot bearings for the type bars and yet employ a large number of type bars mounted on individual hangers in a comparatively small space, as is ordinarily required in a front-strike typewriting machine.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, arrangements of parts and combinations of devices to be hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a vertical front to rear central sectional view of a front-strike typewriting machine embodying my invention, only so much of said machine being shown as is necessary to illustrate the invention in its embodiment therein. Fig. 2 is a fragmentary vertical transverse sectional view of the same taken on a line *xx-xx* of Fig. 1 and looking in the direction of the arrow at said line. Fig. 3 is an enlarged detail side elevation of one of the type bars of the set which is pivoted nearest the back of the machine. Fig. 4 is an enlarged detail side view of one of the type bars of the intermediate set. Fig. 5 is an enlarged detail side view of one of the type bars of the foremost set. Fig. 6 is an enlarged detail fragmentary rear view showing a group of three bars of the three different sets. Fig. 7 is an enlarged detail fragmentary perspective view of a portion of the type bar segment. Fig. 8 is a fragmentary diagrammatic plan view of the type basket, parts being shown skeletonized.

The frame of the machine comprises a base 1, corner posts 2 and a top plate 3. A suitable carriage (not shown) is mounted on the top plate and carries a platen 4 dia-

grammatically shown in Fig. 1. Key levers 5 have curved fulcrum treads 6 which bear against a fulcrum plate 7. Each of the key levers is provided with a finger key 8 and is connected by a strap 9 to a restoring spring 10. A sub-lever 11 is pivoted intermediate its ends at 12 to each key lever and is slotted at 13 to receive a fulcrum bar or rod 14 that extends transversely beneath the system of key levers and is secured at its ends to the frame of the machine. The sub-levers extend upwardly different distances as indicated in Figs. 1 and 2 depending upon the position of the type bars with which they are associated. These sub-levers are connected to the rear ends of pull links 15 arranged above the segment. The forward ends of the links enter slots *a*, *b* and *c* in the type bars 16, 17 and 18, respectively, and are pivoted to said bars in said slots or openings at *d*, *e* and *f*, respectively. These type bars are of different lengths, the type bars 16 being the longest and the type bars 18 being the shortest. The shapes of these different type bars are clearly shown in Figs. 3 to 5 inclusive from which it will be seen that the type bars 16 are each formed with a goose-neck 19 by which it is enabled to clear the hangers of the shorter type bars as shown in Fig. 1. The type bars 17 are each likewise provided with a goose-neck 20 which, however, is shorter than the goose-necks 19 of the type bars 16. The goose-necks 20 of the type bars 17 likewise enable these type bars to clear the hangers of the foremost set of type bars 18. Each of the type bars of the three sets is provided with an upwardly extending projection 21. These projections, together with the goose-necks 19 and 20 on the type bars 16 and 17 enable the pull links 15 to be connected with the type bars at different heights as indicated in Fig. 1 although the distances of the points of connections from the pivots of the different bars is substantially the same.

Where the projections 21 are not required for the purpose of effecting a connection with the links 15, they are employed, nevertheless, to give a uniform appearance of the type bars when at rest in the basket. Thus, from an inspection of Figs. 1, 2 and 8 it will be seen that the various projections 21 are arranged in a single curved line, the forward portions of the type bar bodies being arranged side by side in a curve with the for-

ward ends of the type bars projecting forwardly a substantially uniform distance in the basket and resting side by side on the type bar support *g*, notwithstanding the fact
 5 that the type bars of the three sets are of different lengths. This arrangement is obtained by the pivoting of the type bars at what is generally known as the 45° angle. Thus, it will be seen from an inspection of
 10 Fig. 1 that a plane represented by the dotted line *x* which cuts the pivots of the three adjacent type bars of the center group is at substantially right angles to a line drawn from the printing point *y* to a type *z* of one
 15 of said type bars when at rest in the basket. This arrangement is maintained throughout the system because of the mounting of the type bar hangers in three sets on an upright type-bar-segment 22 which is stepped on its
 20 rear side to provide three upright, segmental stepped securing faces 23, 24 and 25 which are concentric and at progressively higher elevations from the rear to the front of the segment and extend throughout the length
 25 of the segment. The stepped face 23 provides an upright bearing face for a set of radially disposed segmentally arranged hangers 26 which are preferably looped to form securing stems or portions 27 and are
 30 spread outwardly therefrom to form hanger arms 28, perforated to provide bearing openings for the trunnion-like pivots 29 of the type bars. In the present instance I have shown ten hangers secured to the rearmost
 35 stepped face 23 although this number may be changed at will. The second or intermediate step 24 constitutes an upright bearing face for an intermediate set of hangers 30 which may be constructed and arranged like
 40 the hangers 26, although certain of these hangers 30 are preferably provided with off-set hanger arms 31 whereas the companion arm is substantially straight as shown in Fig. 2. This is in order to effect a proper
 45 relative arrangement of the type bars and hangers of the different sets. There are sixteen hangers 30 shown in the present instance, although this number may be varied at will. The third or foremost stepped face
 50 25 constitutes an upright bearing face for the hangers 32 of the foremost set of type bars 18. These hangers may be constructed like the hangers 26 or some of them may be provided with off-set arms 31 as desired; and
 55 there are sixteen of these hangers shown in the present instance, although this number may be varied. The various hangers of the different sets have a staggered arrangement as will be apparent from an inspection of
 60 Fig. 2. The segment itself has openings 35 (Fig. 7) which extends therethrough from the front to the rear of the segment for the passage of headed securing bolts or screws 36 which pass through the segment from the
 65 front of the machine and cooperate at their

rear threaded ends with tapped holes in securing plates 37, each of the securing plates preferably cooperating with two or more hangers although an individual screw or bolt 36 is provided for each hanger and extends through the opening provided in the stem thereof. The securing plates 37 have been omitted in Fig. 2 in order to more clearly illustrate other parts of the structure. By this construction each individual hanger
 70 may receive a radial adjustment and may also receive a swinging adjustment around its screw 36 as a center, to vary the point of impact along the printing line without throwing the type "off its feet." The individual hangers are preferably provided with rivets 38 (see Fig. 6) by which the "spread" of the hanger arms is determined and maintained. The rivets 38 have likewise been
 75 omitted in Fig. 2 in order not to obscure other parts of the structure.

It will be understood that by passing the securing screws through the segment from the front, where access may be readily had to them from the front of the machine, I am
 80 enabled to readily detach each hanger from the segment, the staggered arrangement of the screws affording a wide separation and enabling easier access thereto. It will thus be seen that by this arrangement I have
 85 provided individual hangers for forty-two type bars each carrying two types 33; and that by shifting the segment 22 by any suitable case shifting mechanism (not shown) on the bearing balls 34 (Fig. 2) I am enabled to provide eighty-four characters in the machine and yet give to each type bar an exceptionally wide pivot bearing as indicated in Figs. 2 and 6. It will likewise be
 90 observed that the width of the system of upright sub-levers corresponds substantially to the system of type bars and to the system of key levers at the points where said key levers are connected to the sub-levers, so that there is a substantially straight line pull on the
 95 type bars without side strain.

Various changes may be made without departing from the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent, is:

1. In a front-strike typewriting machine, the combination of an upright segment having three adjoining, segmental, upright, stepped, bearing faces; three sets of adjustable, individual, segmentally arranged, staggered, overlapping, hangers, one set secured on each upright, stepped, bearing face of the segment; screws which pass into the segment from the front of the machine and secure said hangers in place, a separate screw being employed for each hanger and each hanger being adjustable around the axis of its screw as a center; and type bars pivoted to said hangers.

2. In a front-strike typewriting machine, the combination of an upright segment having three adjoining, segmental, upright, stepped, bearing faces on the rear of the segment; three sets of individual, segmentally arranged, staggered, overlapping, hangers, one set secured on each upright, stepped, bearing face of the segment; screws which pass through the segment from the front of the machine and secure said hangers in place against said rear upright bearing faces, a separate screw being employed for each hanger and each hanger being adjustable around the axis of its screw as a center; and type bars pivoted to said hangers.

3. In a front-strike typewriting machine, the combination of an upright segment having three adjoining, segmental, upright, stepped, bearing faces; three sets of individual, segmentally arranged, overlapping, staggered, hangers, one set secured on each upright stepped bearing face of the segment; screws which pass into the segment from the front of the machine and secure said hangers in place, a separate screw being employed for each hanger, and each hanger being adjustable around the axis of its screw as a center; and three sets of type bars pivoted to said hangers, the type bars of the different sets being of different lengths and the free ends of the type bars being arranged side by side in a single row in their positions of rest.

4. In a front-strike typewriting machine, the combination of an upright segment having three adjoining, concentric, segmental, upright, stepped, bearing faces on the rear of the segment; three sets of individual, segmentally arranged, radially disposed, overlapping, hangers, one set secured on each upright, stepped, bearing face of the segment, the hangers of the different sets being staggered; staggered screws which pass through the segment from the front of the machine and secure said hangers in place, a separate screw being employed for each hanger and each hanger being adjust-

able around the axis of its screw as a center; and three sets of type bars pivoted to said hangers, the type bars of the different sets being of different length and the free ends of the type bars being arranged side by side in the normal positions thereof, the pivots of the forward set of bars being higher than the second set from the front and the pivots of the second set being higher than those of the third set.

5. In a front strike typewriting machine, the combination of an upright segment having three adjoining, concentric segmental, upright, stepped, bearing faces on the rear of the segment, three sets of individual, segmentally arranged, radially disposed, hangers, one set secured on each upright, stepped, bearing face of the segment, the hangers of the different sets being staggered and overlapping; staggered screws which are arranged in three rows and pass through the segment from the front of the machine and secure said hangers in place, a separate screw being employed for each hanger, and each hanger being adjustable around the axis of its screw as a center and also adjustable radially on the segment; three sets of type bars pivoted to said hangers, the type bars of the different sets being of different lengths and the free ends of the type bars being arranged side by side in a single row in their normal positions, the pivots of the forward set of bars being higher than the second set from the front and the pivots of the second set being higher than those of the third set; links extending above the segment and connected with said type bars; and key actuated sub-levers connected with said links.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 2nd day of October A. D. 1908.

ZALMON G. SHOLES.

Witnesses:

CHARLES E. SMITH,
J. B. DEEVES.