May 12, 1925. 1,537,148

J. SMITH

TYPEWRITER

Filed April 13, 1922 7 Sheets-Sheet 1

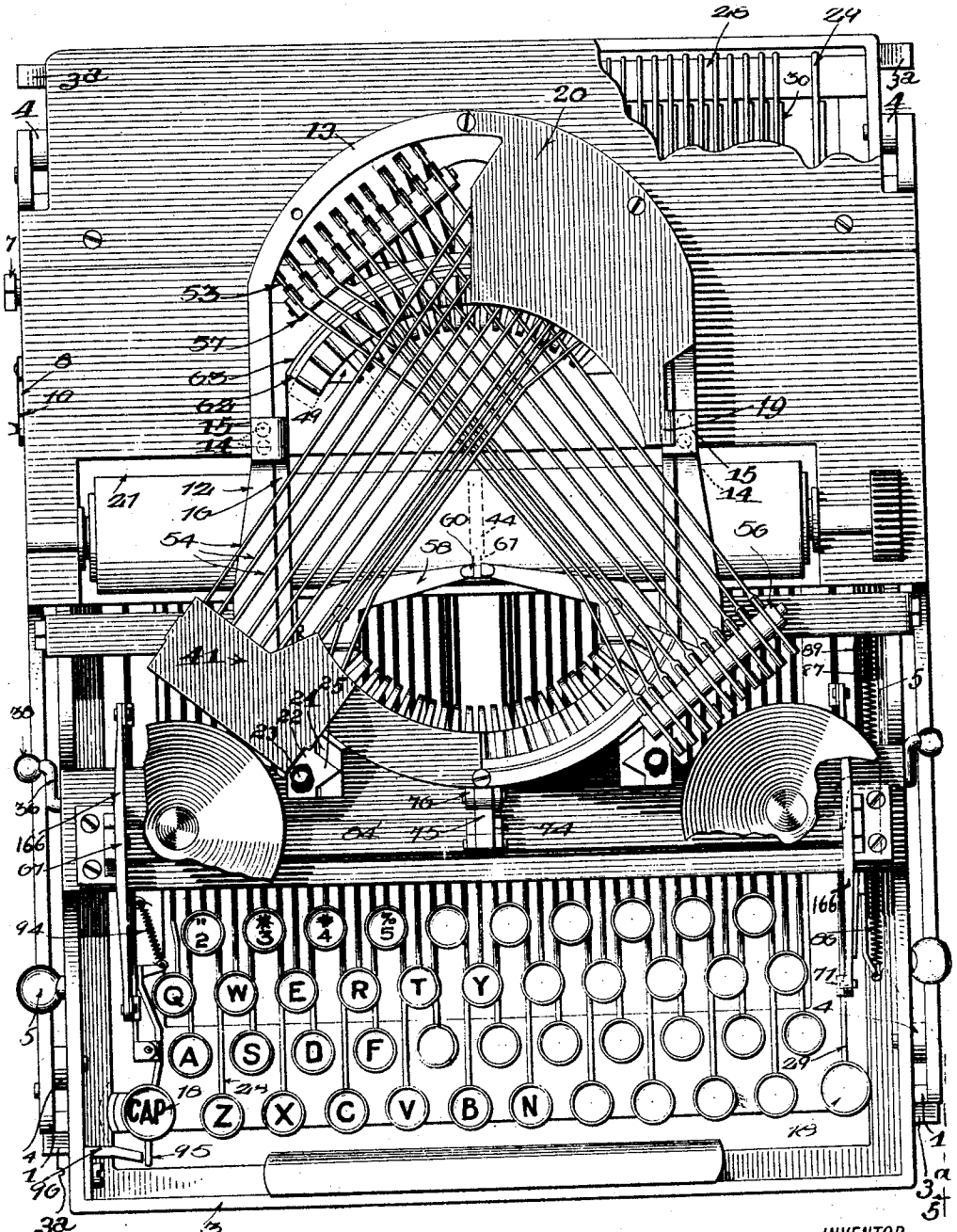


Fig. 1.

WITNESSES

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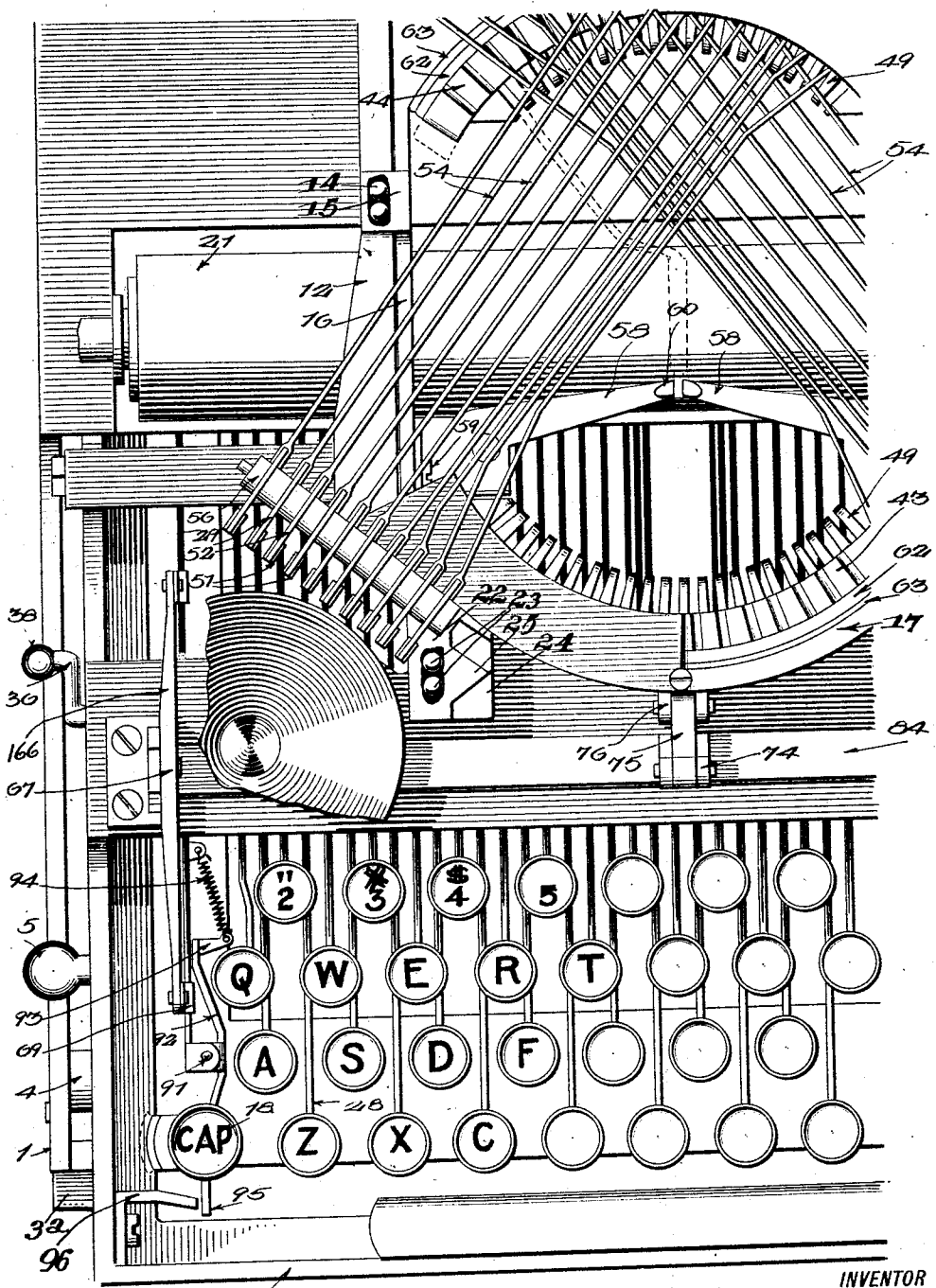
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Fig. 2.

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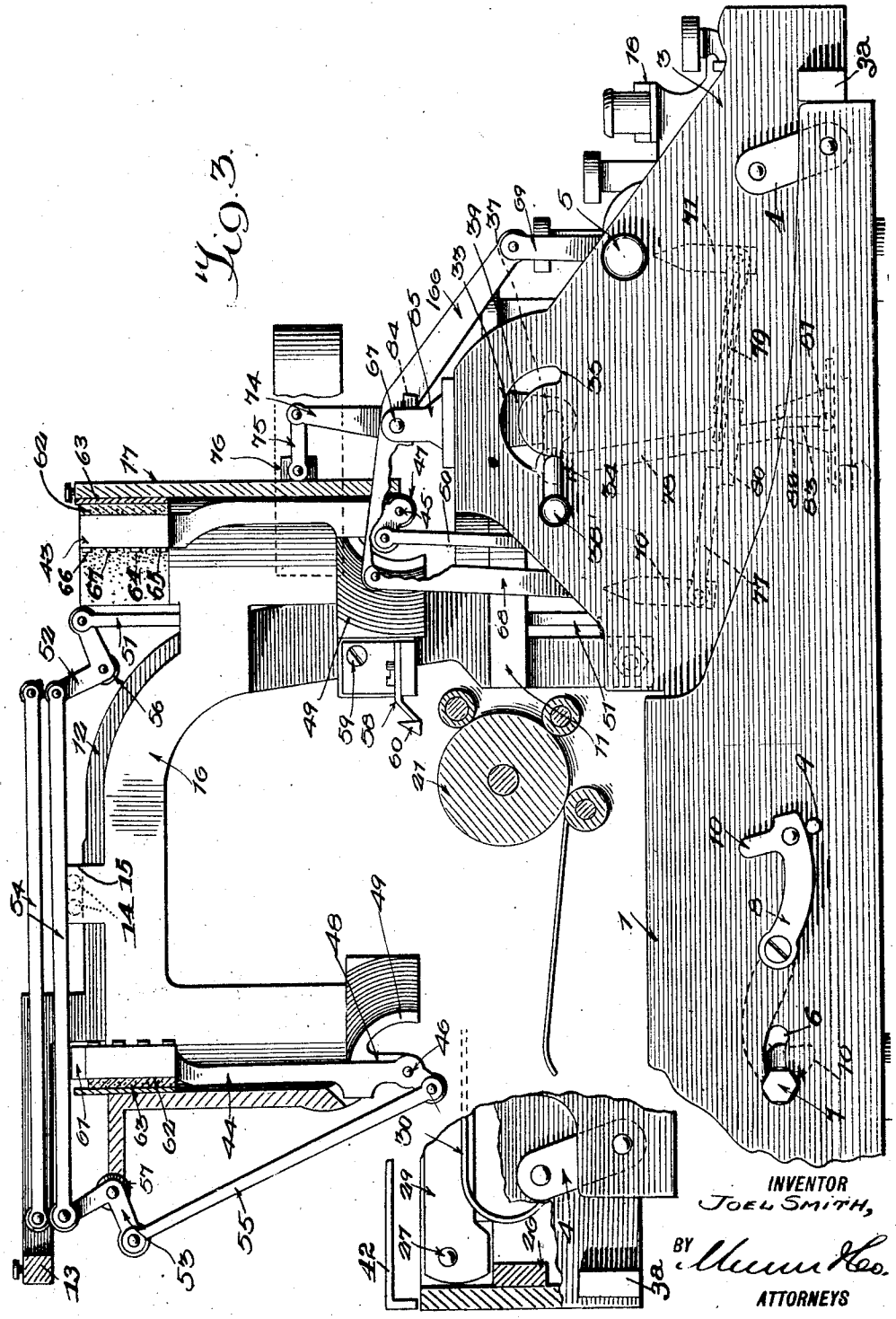


Fig. 3.

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TYPEWRITER

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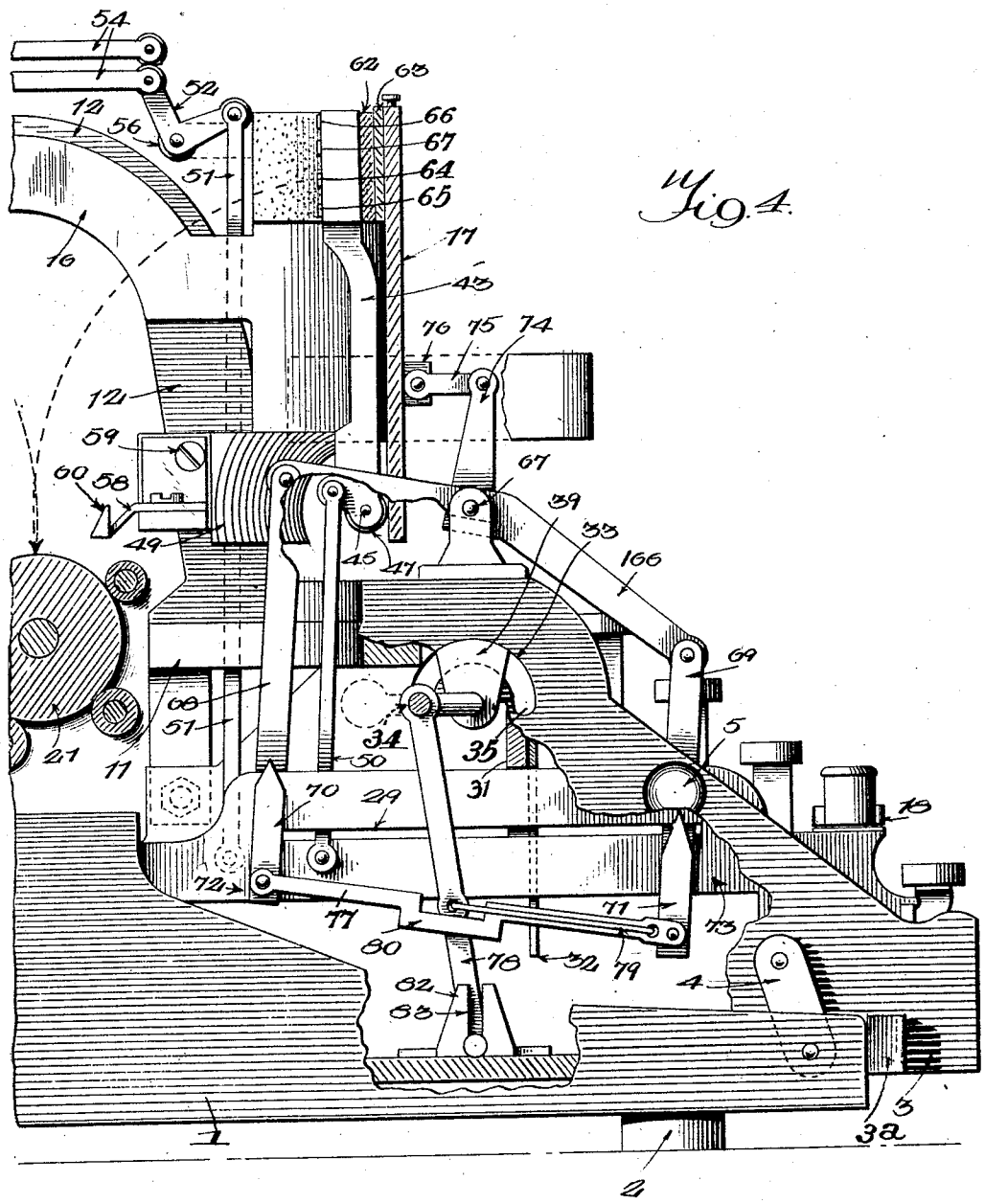


Fig. 4.

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Fig. 5.

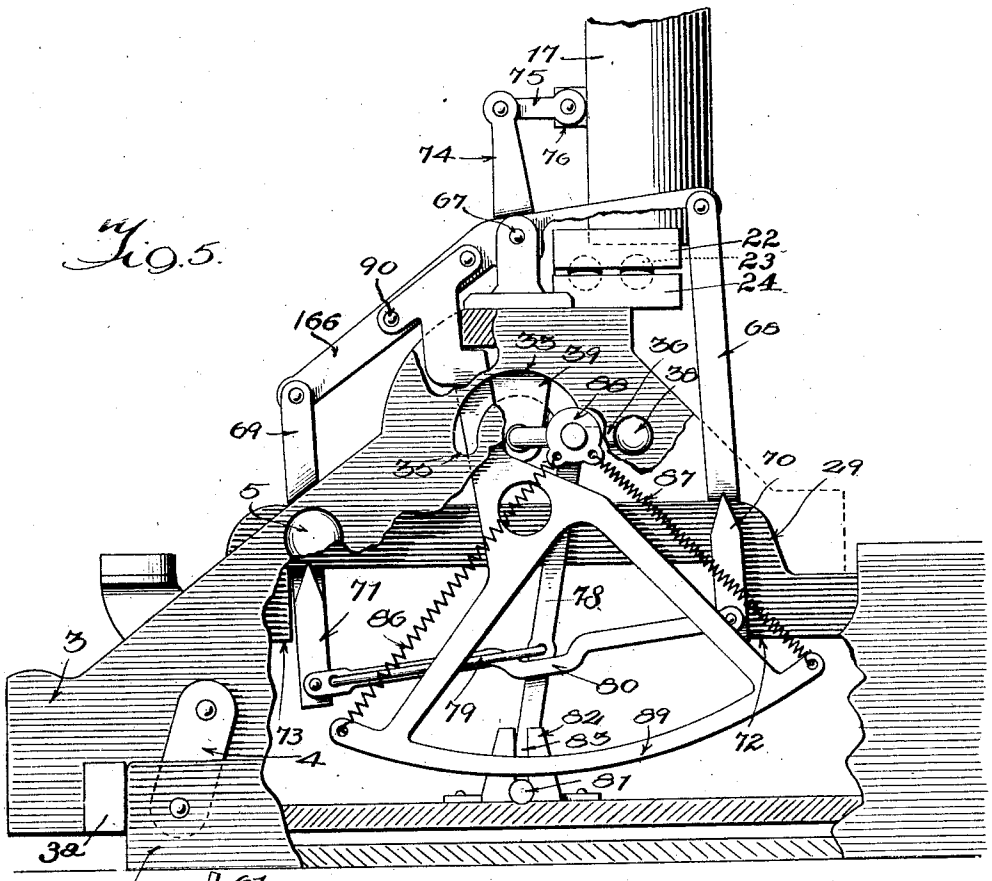


Fig. 6.

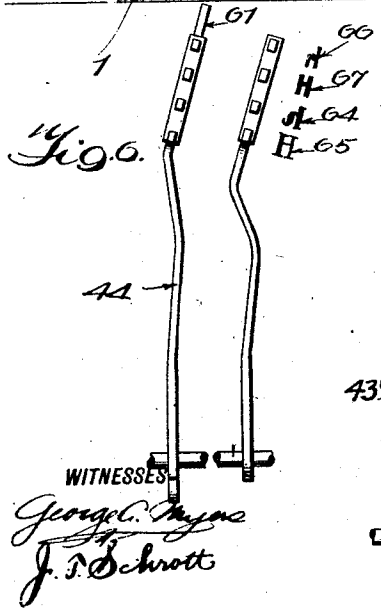


Fig. 7.

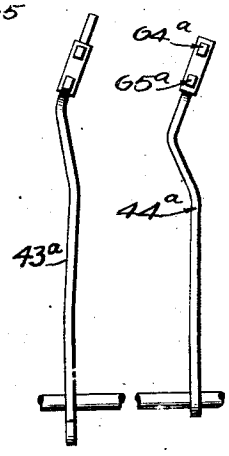
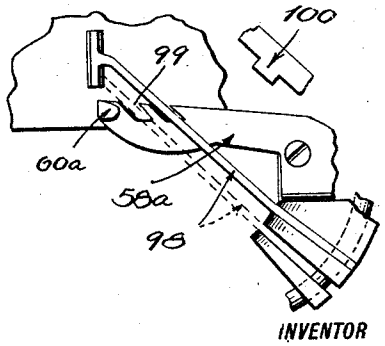


Fig. 8.



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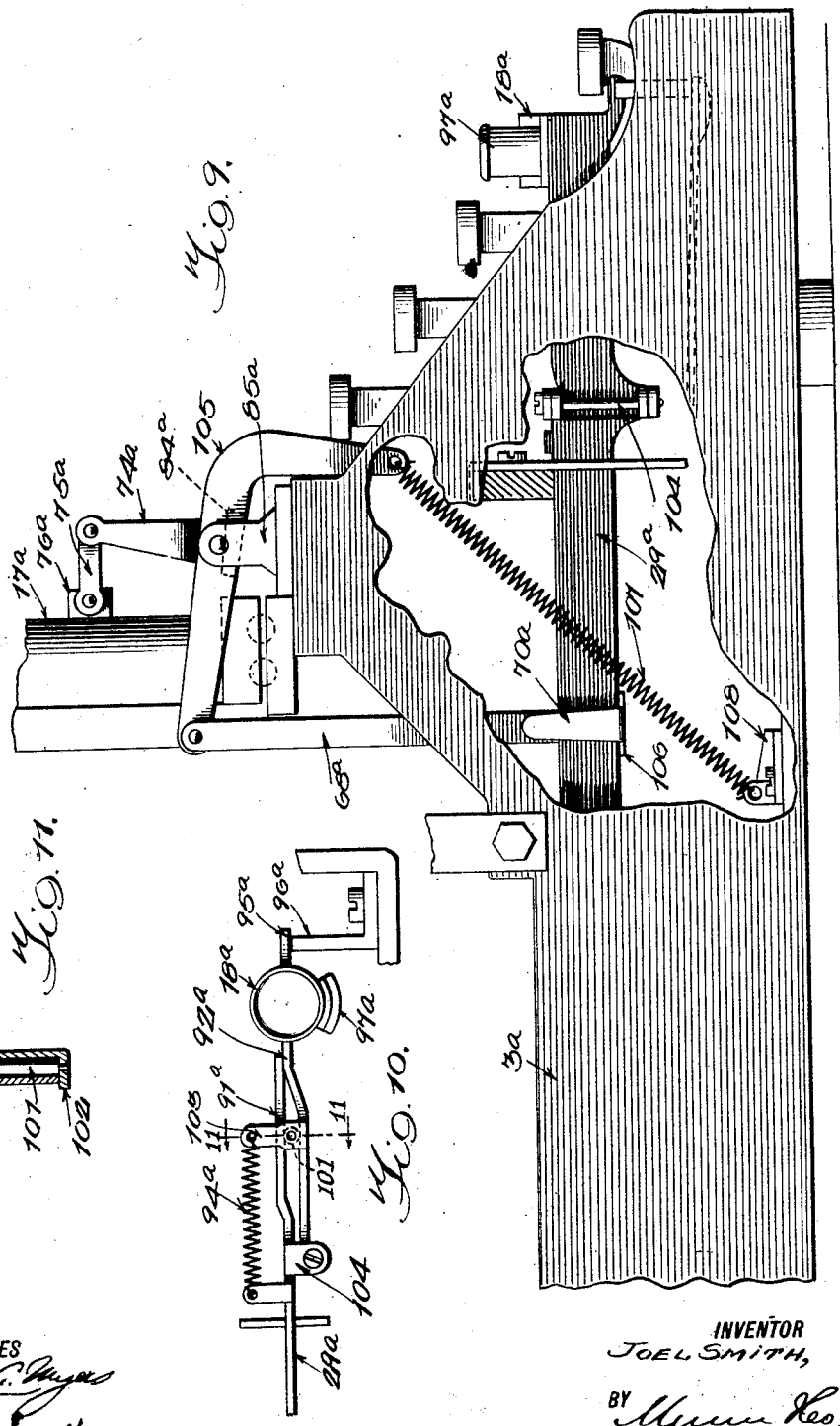
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May 12, 1925. 1,537,148

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TYPEWRITER

Filed April 13, 1922 7 Sheets-Sheet 6



WITNESSES

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May 12, 1925. 1,537,148

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TYPEWRITER

Filed April 13, 1922 7 Sheets-Sheet 7

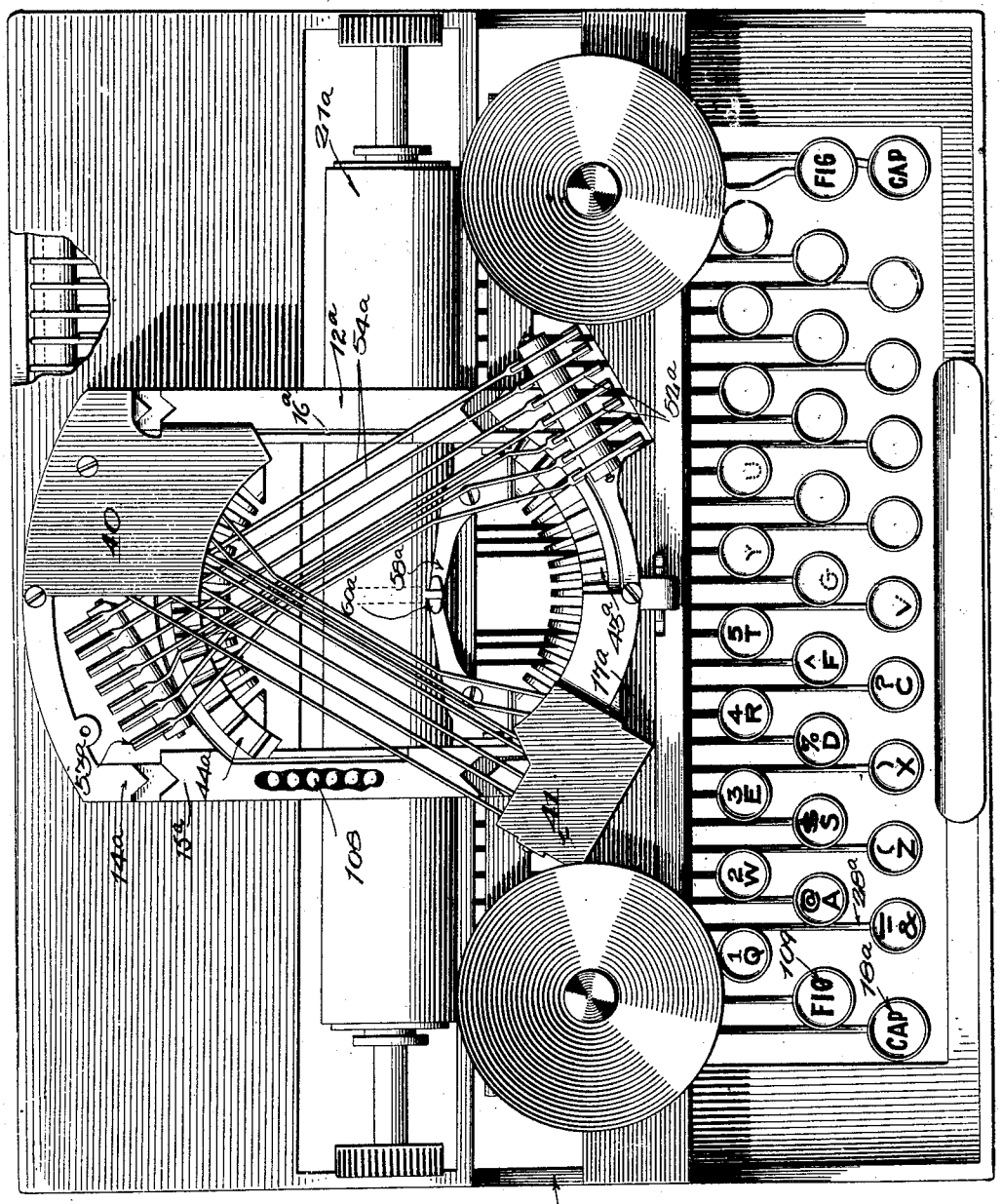


Fig. 11.

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Patented May 12, 1925. 1,537,148

UNITED STATES PATENT OFFICE.

JOEL SMITH, OF MORAN, MICHIGAN.

TYPEWRITER.

Application filed April 13, 1922. Serial No. 552,116.

To all whom it may concern:

Be it known that I, JOEL SMITH, a citizen of the United States, and a resident of Moran, in the county of Mackinac and State of Michigan, have invented certain new and useful Improvements in Typewriters, of which the following is a specification.

My invention relates to improvements in typewriters, and it consists in the constructions, combinations and mode of operation herein described and claimed.

An object of the invention is to provide a typewriter carrying a plurality of styles of type made integral with the type bars, the type bars being considerably shorter than they are in usual constructions, the purpose being to obtain a shortened type bar travel to the printing point.

A further object of the invention is to enable the production of a strong typewriter and at the same time one which will work easier than the ordinary machine, the former element (as well as the latter) being obtainable by making the type bars shorter than usual.

A further object of the invention is to divide the whole body of type bars so that the bars in one part strike the platen from the front and the bars in the other part strike the platen from the rear, the rear bars being actuated by links which cross the top of the platen.

Another object of the invention is to provide a typewriter which is bodily shiftable in respect to a shoe on which it is swung when it is desired to shift from one type style to another.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawings, in which:—

Fig. 1 is a plan view showing the general arrangement of the improved typewriter,

Fig. 2 is a detail plan view of the left side of the structure shown in Fig. 1, certain parts (covers, etc.) being omitted,

Fig. 3 is a detail longitudinal section of the typewriter, parts of the frame and shoe being shown in elevation,

Fig. 4 is a detail longitudinal section of the right part of the structure in Fig. 3,

Fig. 5 is a detail section taken substantially on the line 5—5 of Fig. 1, clearly showing the mechanism for reversing from upper to lower case type and vice versa,

Fig. 6 is a detail elevation illustrating the styles of type bars shown in Figs. 3 and 4,

Fig. 7 is an elevation of the styles of type bars used in the modification in Fig. 9,

Fig. 8 is a detail plan view of a modification in the construction of certain outside type bars, to be used in connection with the stylus of type bars shown in Figs. 3 and 4, as well as the modification in Fig. 9,

Fig. 9 is a longitudinal section of a modified form of the typewriter wherein the stationary shoe in Fig. 3 is omitted and which also discloses a modification of the shift mechanism,

Fig. 10 is a detail plan view of the lock-down mechanism which is used in connection with the case shift lever,

Fig. 11 is a detail section on the line 11—11 of Fig. 10, and

Fig. 12 is a plan view of a further modification wherein the construction of the typewriter is simplified sufficiently to make the machine portable.

This invention is an improvement on the typewriter disclosed in my co-pending application for Letters Patent on typewriter, filed Dec. 18, 1920, Serial No. 431,698. The description below of the invention is divided into a number of subjects covering the major features of the typewriter.

The frame comprises a shoe 1 which has the usual pads 2 upon which the typewriter rests when set upon a table. The shoe 1 is fixed in relationship to the rest of the machine, the typewriter frame 3 being movable back and forth on hangers 4 to change from one style of type to another (for example, from pica to gothic), when the knobs 5 on the sides of the frame 3 are pushed forwardly or backwardly. This motion of the frame 3 is limited by the ends of slots 6 in the shoe 1, into which studs 7 from the frame extends, and by lugs 3^a (Fig. 3 for example) which are intended to strike adjacent ends of the shoe 1. These lugs are carried by the frame and are intended to relieve the impact on the studs 7 when shifted from one end of the slot 6 to the other. A latch 8 (Fig. 3) is intended to engage the stud 7 on one side and lock the frame 3 in either shifted position.

The latch 8 (just referred to) normally rests against a stop 9 on the side of the shoe 1. It has a tongue 10 which is adapted to assume a position midway of the slot 6 when moved into the dotted line position

in Fig. 3, so that one or the other rounded portions at the base of the tongue may engage the adjacent stud and so lock the frame into position as described. The frame 3 has a bridge 11 secured thereto (Fig. 4), which bridge includes the rearwardly extending arms 12.

These rearwardly extending arms are joined by a curved back piece 13 which makes the arms an integral structure. The arms 12 form bearing surfaces on which the balls 14, which occupy positions in lugs 15, run. These lugs are on the arms 16 of a so-called type basket 17, and they slide on the arms 12 when changing from small to large type upon depression of the case shift key 18. The lugs 15 are held down by downward extensions 19 from adjacent covers 20 as shown in one instance at the right of Fig. 1.

So far as described, the reader will understand that the frame 3 with all of its carried parts is bodily shiftable in respect to the shoe 1 and also the platen 21 when it is desired to change the typewriter from one style of type to another. This is done in the present instance (Fig. 3) by pulling forwardly on the knobs 5. It is also understood that the type basket 17 and all of its associated parts is independently shiftable in respect to the frame 3 and the platen 21 to change the written line from small to large type. This is done by depressing the shift key 18.

Bars 22 on the type basket 17 rest on ball bearings 23 which in turn rest on extensions 24 of the frame 3. The bar 22 on each side has a triangular lug 25 which is adapted to engage corresponding stops on the extension 24 for the purpose of limiting the forward and rearward movements of the type basket 17.

The type basket moves on the various ball bearings when shifted in respect to the frame 3. The frame 3 carries a pivot bar 26 at the rear, which in turn has a rod 27 on which the key levers 28 (Fig. 1) are pivoted. The key levers 29 of the case shift keys 18 are also pivoted on this rod, it being observed that there are two of these shift keys, one on each side of the machine as is usually the custom. There is a spring 30 for each of the key levers, for the purpose of moving them up against a stop bar 31 (Fig. 3) across the frame 3. A slotted guide plate 32 depends from the stop bar, and the slots guide the key levers.

An opening 33 at each side of the frame 3 terminates in recesses 34 and 35 for the purpose of receiving the crank ends 36 of a shaft 37 which extends across the machine (Fig. 1). The cranks have knobs 38 by which the shaft 37 is more easily turned. The shaft is mounted in bearings 39 which depend from a part of the frame 3. The shaft 37 is used in connection with the changing from small letters to capital letters, and its function is further explained under the description of the case shift.

Covers 20 and 41 (Fig. 1) conceal parts of the mechanism and more particularly, protect certain pivotal connections against the entrance of dirt. A light cover 42 is affixed to the rear of the shoe 1 and extends back so as to shield the open part of the frame 3 as shown in Fig. 3.

The type basket 17, includes semi-circular parts which form walls around the front and rear sections of type bars 43 and 44. As generally explained in the objects of the invention, the whole body of type bars is divided into two sections, the type bars of each striking the platen 21 from the front and rear respectively as indicated by the dotted lines in Fig. 3. The characters on the type bars 43 are placed in the upright position, but the characters on the type bars 44 must be placed in inverted positions.

The type bars of the front and rear sections are mounted on pivots 45 and 46 respectively in guide segments 47 and 48. These segments are divided into a plurality of fingers 49 which define spaces in which the type bars move on the downward strokes.

Links 50 connect the type bars 43 of the front section with certain ones of the key levers 28, while links 51 connect the remaining key levers to bell cranks 52 which in turn are joined to bell cranks 53 through top connecting links 54. The bell cranks 53 are connected to the type bars 44 of the rear section through links 55.

The bell cranks 52 are divided into two sets of ten to each set, occupying positions at the sides of the center of the machine. Bearings 56 support the front bell cranks and similar bearings 57 support the rear bell cranks. The rear bell cranks 53 are also divided into two sets of ten to each set, and the top connecting links 54 join the bell cranks of diametrically opposite sets (Fig. 1). By this arrangement, when any one of ten key levers 28, counting in from the ends of the keyboard, are depressed, a type bar 44 on the side opposite to the operated lever is moved on its supporting segment 48, and the type face made to strike the printing point on the platen 21.

A type bar guide (Figs. 1 and 4) is provided to aid in the alinement of the type on the platen and to decrease the vibration of the type bars. It is composed of two metal arms 58 which are secured at 59 to adjacent parts of the type basket 17, whence they extend inwardly and terminate in shoulders 60 which define a V-shaped notch or passage. The stems or shanks of the type bars 43 of the front section pass through this V-shaped passage. The type bars 44 of the rear sec-

tion have extensions 61 which also are adapted to enter the V-shaped passage, and so the passage in both cases serves to move a type bar into the position it ought to assume in respect to the platen, should it so happen that the type bar is slightly bent or otherwise out of alinement.

Backing pads 62 stop the type bars on their backward movements. These backing pads are disposed in the semi-circular part of the type basket 17. They are mounted on removable plates 63 which are directly secured to the type basket.

The case shift is made by depressing the shift key 18 on either side of the machine. By "case shift" is meant, shifting from the printing of small letters to capital letters. Either shift key 18 does this upon being depressed, whether the typewriter is adjusted to operate in one style of type (pica) or another style (gothic). Fig. 6 shows one of the type bars 43 in elevation. The charters 64 and 65 are small and capital letters in pica respectively, and 66 and 67 are small and capital letters respectively in gothic.

By following the dotted line at the left of Fig. 4, the reader will observe that the small character 64 in pica will reach the printing point on the platen 21 when the corresponding key lever is depressed. By shifting the type basket 17 rearwardly in respect to the frame 3 until the lug 15 engages the back edge of the arm 12 (Fig. 3) the type sections will be moved backwardly far enough to bring the capital letter 65 into registration with the printing point when the same key lever is depressed.

The shifting of the type basket 17 (to change from small to capital letters) is accomplished by a rocker 166 (Fig. 4) which is mounted on a bearing 67 on top of the frame 3. There is a corresponding rocker 166 and associated parts on each side of the machine, but the description of one will suffice for both. Links 68 and 69 hang from the respective ends of the rocker 166 and terminate in hooks 70 and 71, to be engaged by one or the other of a pair of shoulders 72 and 73 on the case shift lever 29.

These shoulders are provided by forming the shift lever 29 with an offset part which leaves the shoulders as in Fig. 4. When in the position there shown, a depression of the shift lever 29 will cause the shoulder 72 to pull down on the link 68, move the rocker 166 on its pivot 67, move the crank-piece 74 toward the left (or rear of machine), and correspondingly move the type basket 17 by means of a link 75 which joins the crank-piece to a lug 76 on the basket 17.

A light connecting piece 77 passing across from one pendent link to the other (Fig. 4), holds these links apart the same distance at the bottom as at the top. Crossing this connecting piece is an operating bar 78, this bar being joined to the connecting piece 77 by a link 79. The link 79 lies close to the connecting piece 77 (Fig. 4) and the latter has an offset place 80 where the link bends across to reach the bar.

The operating bar 78 is pivoted at 81 in a bearing block 82 which has a slot 83 to accommodate the pivot and make room for vertical movement when the bar is rocked from one side to the other as when the crank 36 (Fig. 1) is moved from the recess 34 to the recess 35 (Fig. 3). The bar 78 is connected to the crank 36, the reader being reminded that the shifting mechanism described immediately above and shown in Fig. 4, being duplicated on the right side of the machine as shown in Fig. 5.

It should be clearly understood that the shoulder 72 (Fig. 4) of the shift lever 29 functions to move the type basket 17 only when the crank 36 occupies the rearmost recess 34. At this time, the shoulder 73 is out of registration with the hook 71, both by virtue of the fact that the right side (Fig. 4) of the rocker 166 is depressed and also that the lower end of the hook 71 is swung slightly inwardly.

It should be mentioned that the crank-piece 74, which was described in connection with Fig. 4, forms part of a bar 84 which extends across the front of the frame 3 and is journalled in blocks 85. It is this bar which carries the rockers 166 from which the links 68 and 69 depend. The rockers 166 remain in the position shown in Figs. 3 and 4, while the typewriter is arranged to write small letters of either style of type, that is to say, while the frame 3 is adjusted either rearwardly or forwardly in respect to the shoe 1.

It is only when the operator desires to write in capital letters in either style of type for a prolonged period, that the crank 36 is turned over into the front recess 35 (Fig. 3). Reversing the crank 36 as described, changes the tension of springs 86 and 87 (Fig. 5) so that the type basket 17 is compelled to occupy the rearmost position in respect to the arms 12 of the frame 3 instead of the forward position in Figs. 3 and 4. At such time, the lugs 25 rest against the rear stops of the extensions 24 instead of against the front stops.

The springs 86 and 87 are fastened at one end to a spring hanger 88 on the adjacent crank 36. The springs occupy a position on the right side of the machine (Fig. 1) but obviously may be located on either side. The springs diverge in respect to each other and the lowermost ends are joined to the extremities of a bracket 89 which is secured at 90 to the adjacent rocker 166 from which it depends.

Consider the present adjustment of the typewriter (Figs. 4 and 5), under which small letters 64 (Fig. 6) in pica style may

be written. The crank 36 rests in the rearmost recess 34 so that the spring 86 is under tension by virtue of the fact that there is a wider separation between its holdings than there is between the holdings of the spring 87. Consequently the spring 87 is relaxed. The spring 86 being under tension, pulls the type basket 17 forwardly so that the lugs 25 rest against the front lugs of the extensions 24. The reason why this occurs is that the axis of the spring 86 is below the fulcrum 67, so that the pull of the spring 86 tends to move the left end of the rocker 166 (Fig. 5) downwardly.

On shifting the crank 36 into the forward recess 35, a reverse operation occurs. The spring 86 is then relaxed while the spring 87 is put under tension, the pull on the bracket 89 and left end of the rocker 166 being upward. The type basket 17 is moved rearwardly until the lugs 15 rest against the rear walls of the recesses 14, and the typewriter is in condition to write all capital letters 65 of the pica style. Under this adjustment of the typewriter, the operator will depress the key 18 and shift lever 29 to produce small letters instead of capital letters, as is the case in Figs. 3 and 4. It can be readily seen that the position of the rocker 166 (Fig. 4) will be reversed under the aforesaid second adjustment of the typewriter, i. e. when the crank 36 occupies the forward recess 35. This brings the hook 71 into registration with the shoulder 73 of the shift lever 29, so that depression of the shift key 18 will move the rocker 166 downwardly toward the right and pull the type basket 17 forwardly against the influence of the spring 87, which for this illustration is presumed to be under tension.

The shift lock, shown in Figs. 1 and 10, is used when the adjustment of the typewriter to write capital letters, is intended to be less permanent than when the crank 36 is shifted from the recess 34 to the recess 35. The shift lever 29 is jointed at 91 at a point close to the shift key 18. The shift key is carried by a separate shank 92 which ends in a heel 93 which in turn is made to bear against the side of the lever 29 by a spring 94 connected between the two. The shank 92 includes a short forward projection 95 which is adapted to be moved under a fixed rest 96 when it is intended to lock the shift lever 29 down, and the type basket 17 into the position to enable writing capital letters.

A light side piece 97 is provided in connection with the shift key 18 so that the operator may exert a side push in order to move the projection 95 under the rest 96. The tension of the spring 94 is not sufficiently strong to release the projection 95 from the rest 96, the sole function of the spring 94 being to normally keep the shank 92 in the free position in Fig. 10. A light side push (toward the right) on the side piece 97 will release the projection 95 from the rest 96.

The modification of the type bars in Figure 7, consists of omitting the two upper characters in Fig. 6 and using only two characters 64^a, and 65^a, these being small and capital letters respectively. These characters are of a single style of type. The type bar 43^a being shorter than the type bar 43 in Fig. 4 (this by virtue of the omission of the upper two characters) makes it possible to shorten the type basket approximately one-half inch and also reduce the height approximately the same amount. Otherwise, the type basket and its associated parts are identical.

The modification in Figure 8 illustrates a change in the arrangement of the type bar guides 58^a so that the two outside type bars in the front type section are strengthened when performing the printing stroke. These bars 98 are of a form different from that of the bars in Figs. 6 and 7, in that they are nearly straight.

The type bar guide 58^a has notches 99 to receive the respective outside type bars, and for the purpose of forming an interlocking engagement the type bars have lugs 100 as shown by the detail projection at one side of Fig. 8. The type bar guide includes a shoulder 60^a which, with its companion shoulder (not shown) forms a V-shaped passage for the remaining type bars which are intended to be like those shown in Figs. 6 and 7.

The modification in Figure 9 relates in part to a change in the construction of the shift lever lock-down mechanism, further details of which are disclosed in Figs. 10 and 11. So far as the shift lock mechanism is concerned, it comprises the shank 92^a which is connected by a joint 91^a with the shift lever 29^a but at a greater distance from the shift key 18^a than is the joint 91 from the key 18 in Figs. 1 and 2.

The shank 92^a (Fig. 10) is here changed to lie close to the outside of the shift lever instead of being located on the inside as in Fig. 1. The joint 91^a comprises a small tilting pin 101 (Fig. 11). This pin stands at the bottom end in a small hole in a lug 102 which is bent outwardly from the shift lever 29^a, and at its top end is held in a small hole in a lug 103 which is bent inwardly from the shank 92^a. The lug 103 is long enough to extend over the shift lever and provide a mounting for one end of a spring 94^a, the other end of which is secured to a part of the shift lever. The tilting pin has a shoulder bearing against each of the lugs, and thus when the shank 92^a is swung outwardly to engage the end projection 95^a with the rest 96^a into the lock-down operation, the movement is easily and

smoothly accomplished and the strain on the pivot 104 relieved to a considerable degree.

Fig. 9 also shows a machine (in part at least) which is adapted for a single style of type. The shoe 1 in Fig. 3 is dispensed with and the frame 3^a is equipped with rubber feet 2^a which places the frame directly on the table. The main shift bar 84^a has a crank piece 74^a with a link connection 75^a to a lug 76^a on the type basket 17^a, precisely as before, but instead of using a rocker as in Figs. 3 and 4, a bell crank 105 is substituted. There is one bell crank on each end of the shift bar 84^a.

The bell crank 105 is carried by the main shift bar 84^a and is supported in bearings 85^a. The left end of the bell crank 105 has a pendent link 68^a which terminates in a hook 70^a. This hook partly embraces the shift lever 29^a, and includes a pair of lugs 106, the object of which is to guide the hook 70^a in its downward and upward action on the opposite shift lever from the one operated. The right end of the bell crank has a spring 107 attached thereto, the other end of which is secured to a bracket 108 on the bottom of the frame.

It is obvious that the reverse shift (as disclosed in Figs. 3 and 5) may be interchangeable between the modified form in Fig. 9 and that of the said preceding figures. A depression of the shift lever 29^a bears the link 68^a and bell crank 105 down, so that the type basket 17^a is shifted rearwardly and the line of typewriting is changed from small to capital letters. It is unnecessary to describe the remaining mechanism of the modified form in Fig. 9, since it is the same as that shown in Fig. 3, with such necessary exceptions, for example, the hangers 4, etc.

The modification in Figure 12 discloses a portable model of the typewriter which is so-called because of its lightness due to a considerable reduction in the number of parts. The side arms 16^a of the type basket 17^a run on ball bearings 108 which are carried by the rearwardly extending arms 12^a of the main frame 3^a. The rear ends 15^a of the side arms 16^a are adapted to strike the shoulders 14^a which act as stops when the type basket is shifted by either the shift key 18^a or the key 109.

The key levers 28^a have three rows of keys on the key board. The two shift keys just referred to, move the type basket back and forth so as to obtain the shift for numerals and capitals, as well as the other characters indicated. The type basket 17^a is similar to the type basket in Fig. 1 but has only fourteen type bars 43^a and 44^a in the front and rear type sections.

As before, the two type sections describe parts of a circle. The type bars are adapted to pass through the V-shaped passage formed by shoulders 60^a on the type bar guides 58^a. The links 54^a which pass diagonally across the platen 21^a, are connected to bell cranks 52^a and 53^a so as to move the type bars when the type keys are depressed, precisely as in Figs. 3 and 4.

As stated before, the principal difference between the modification in Fig. 12 and the main form in Fig. 1, is the reduction of parts, which reduction is to be observed principally in connection with the type bars, connecting links, bell cranks and type keys. This reduction of parts lightens the machine so that it can readily be carried about. It is also to be observed that only one style of type is to be used in this model, this particular provision obviating the necessity of a reverse shift as described in connection with the main form of the invention.

The operation is here briefly reviewed so that the reader may obtain a general understanding of the typewriter without reading the detailed description above. The typewriter in Figs. 3 and 4 is adjusted so as to write small characters 64 (Fig. 6) in pica style. The shift key 18 is depressed to print capital letters 65 (Fig. 6) in the same style.

Depressing the shift key 18 rocks the shift lever 29 so that the shoulder 72 (Fig. 4) bears down on the link 68 which tilts the rocker 166 toward the left and moves the type basket 17 rearwardly (toward the left) through the medium of the crank-piece 74, link 75 and lug 76. The extensions 24 stop the lugs 25 and so limit the rearward movement of the type basket. The character 65 is shifted rearwardly sufficiently far so as to strike the printing point on the platen. The characters on the type bars 44 in the rear section are arranged in reverse order, as is necessary to insure correspondence with the characters on the type bars 43 in the front section.

A temporary locking of the type basket 17 in the rearmost position so as to print all capital letters, is secured by pushing toward the left against the side piece 97 (Fig. 1) until the projection 95 engages beneath the rest 96 and thus holds the shift lever 29 in the lock-down position. A more permanent locking of the type basket 17 in the rearmost position to write all capital letters is secured by shifting the crank 36 into the front recess 35 (Fig. 3). The first adjustment is maintained when only occasional shiftings of the type basket are desired; the latter adjustment, to write capital letters permanently, as in making out bills, etc. Under the latter adjustment, the shift key 18 is depressed to cause the machine to write small letters and the reason for this will be understood at once from the following explanation.

The spring 86 (Fig. 5) is under tension

when the crank 36 is in the rearmost recess 34 and pulls up on the left end of the bracket 89 so that a downward pull on the left end of the rocker 166 results. The tension of the spring 86 is along a line before the pivot 67 of the rocker with the effect just described, so that the type basket 17 is kept in its forward position under which adjustment the typewriter writes small letters. At this time, the spring 87 (Fig. 5) is relaxed, but shifting the crank 36 into the front recess 35 puts the spring 87 under tension and relaxes the spring 86. The effect on the rocker 166 is now reversed, the left end being lifted and the type basket 17 being moved to its inward position.

It is easy to see that depression of the shift key 18 under the two adjustments have the reverse result of pushing the type basket 17 rearwardly under the first, and pulling it forwardly under the second. This principle of operation obtains whether the typewriter is adjusted for writing one or the other of the two styles of type which it is adapted to write.

To change from one type style to the other (pica to gothic) pull forwardly on the knobs 5 (Fig. 3) so that the studs 7 move into the front ends of the arcuate slots 6. This brings the entire frame 3 forward in relationship to the shoe 1 and the platen 21 so that the character 66 (Fig. 6) is in position to strike the printing point under normal conditions, and the character 67 is in position to strike the printing point when the shift key 18 is depressed to make a capital letter. Depressions of the shift key 18, under the forward adjustment of the frame 3 to write letters in the gothic type style, will result in pushing the type basket 17 rearwardly (as before) so that the capital character 67 (Fig. 6) will reach the printing point. The shoulder 72 operates the rocker 166 and its associated parts as before. It is only when the crank 36 has been turned into the forward recess 35 that the shoulder 72 does not function. It is then that the shoulder 73 functions to pull the type basket 17 forwardly so as to cause the writing of small letters when the machine is adjusted for writing all capital letters under the function of the reverse shift mechanism.

I claim:—

1. A typewriter comprising a frame having type bars with capital and small letters in a plurality of type styles, a shoe having a platen, means to bodily shift the frame in respect to the shoe and platen so as to bring any one of the various type styles into registration with the printing point, and means on the frame to shift the type bars for capital and small letter printing at each shifted position of the frame.

2. A typewriter comprising a platen, a type basket, type bars carried by the basket each with capital and small letters, a key to shift the type basket, a pair of springs in connection with the type basket, and means to put either spring under tension to correspondingly maintain the type bars in a corresponding position to either strike capital or small letters at the printing point in a continuous line of writing, said key functioning to shift the type basket against the spring then under tension.

3. A typewriter having a case shift mechanism including a shift lever with two shoulders, a rocker having pendent links near the shoulders, and means to shift the links to bring one or the other into alinement with a shoulder so that a depression of the shift lever moves the rocker in one direction.

4. A typewriter having case shift mechanism including a shift lever with two shoulders, a rocker having a link pendent from each end, means carried by each link to be engaged by an adjacent shoulder, and means to shift the links simultaneously to bring one or the other into alinement with an adjacent shoulder.

5. A typewriter having case shift mechanism including a shift lever with two shoulders, a rocker having a link pendent from each end, means carried by each link to be engaged by an adjacent shoulder, means to shift the links simultaneously to bring one or the other into alinement with an adjacent shoulder, and a spring device which is put under tension by the shifting of said links to resist the depression of the shift lever.

6. A typewriter having a case shift mechanism including a shift lever with two shoulders, a rocker, a link depending from each end of the rocker and terminating in a hook to embrace parts of the lever adjacent to the shoulders, and means to shift the links simultaneously to move one or the other of the hooks into alinement with a shoulder.

7. A typewriter having case shift mechanism including a shift lever with two shoulders, a rocker, a link with a hook pendent from each end of the rocker, means to shift the links simultaneously to move one or the other hook under a shoulder, a pair of springs in connection with the shifting means, and means extending from the rocker to which the springs are attached so as to put one or the other under tension when the shifting occurs so as to resist the depression of the shift lever against the hook then in alinement with a shoulder.

8. A typewriter, having case shifting mechanism including a rocker with depending links having hooks, a shift lever embraced by the hooks, and having shoulders associated with each hook, a crank with connecting means to shift the links simultaneously so as to move one hook under one shoulder, a bracket extending from the rocker, and a spring connected between separated

points on the bracket and the crank so that one or the other of which is put under tension when the crank is moved into one or the other of two positions to resist a depression of the shift lever when one of the hooks is shifted in alinement with a corresponding shoulder.

9. A typewriter having a case shift mechanism including a crank which is shiftable into either of two extreme positions, a rocker with a bracket extension, and springs extending from a part of the crank to separated points on the bracket, so that one or the other is put under tension when the crank is moved into one or the other of its positions.

10. In a typewriter, the combination of a type basket, a rocker by which the basket is shifted, a shift lever with two shoulders, link-hooks depending from the rocker adjacent to the shoulders, means to shift one or the other of the hooks under a shoulder so that a depression of the shift lever may shift the type basket in one direction and vice versa, and a spring device associated with the rocker to resist the movement of the shift lever and type basket under either adjustment of the link-hooks.

11. In a typewriter, the combination of a rocker on a pivot, a bracket extending from the rocker, a pair of springs respectively connected to separated points on the bracket, and means to which the springs are joined which is movable to one or the other side of the pivotal mounting to put one or the other spring under tension and thus draw up or down on the bracket.

12. In a typewriter, a rocker with pendent links each with a hook, a shift lever extending across the links and having a shoulder for each hook, means to shift the links to bring one or the other of the hooks under a shoulder, and a connecting piece joining the free ends of the links so that they move with a parallel motion.

13. In a typewriter, a rocker having a link pendent at each end, each link with a hook; an operating bar with a connection to shift the links, a shifting lever with shoulders in respect to which the hooks are shifted, and means joining the links to cause them to move together when shifted.

14. A typewriter comprising a frame having an opening which includes a pair of recesses, case shift mechanism including a rocker with pendent links, and a crank having a connection to one of the links by which the rocker is shifted into one of two positions, said crank then occupying one of the recesses which corresponds to said position.

15. A typewriter comprising a shoe, a frame having extensions, hangers by which the frame is movably mounted in the shoe, arms extending from the frame, and a movable type basket having bearing means engaging said arms and other bearing means engaging said extensions.

16. A typewriter comprising a shoe, a frame having extensions, hangers by which the frame is movably mounted in the shoe, arms extending from the frame, a movable type basket having bearing means engaging said arms and other bearing means engaging said extensions, and means carried by the frame for shifting the type basket on its bearings.

17. A typewriter including a frame with rearwardly extending arms, extensions on the frame, a movable type basket having bearing means resting on and guided by said extensions, bearing lugs on arms which extend rearwardly from the type basket engaging said frame arms, and a lug on each of said bearing means movable between stops on said frame-extensions to limit the movement of the type basket and assist in its support.

18. In a typewriter, a rear section of type bars, a platen, key levers, and actuating connections between the key levers and type bars, certain of the connections crossing the platen diagonally in one direction, other connections crossing the platen diagonally in the other direction, thereby leaving an open space through which the printing point is visible.

19. A typewriter having a platen, a plurality of type bars arranged in front and rear sections in respect to the platen, and means in fixed relationship to the platen to be engaged by the shanks of the type bars in the front section and by means on the tips of the type bars in the rear section to guide them to the printing point when depressed.

20. A typewriter having a platen, a plurality of type bars divided into front and rear sections in respect to the platen, the type bars of the rear section having tip extensions; and guide means which is relatively fixed in respect to the platen and defines a V-channel to be engaged by the shanks of the type bars in the front section and the extensions of the type bars in the rear section for guidance to the printing point when depressed.

21. A typewriter having a rocker with depending links, an operating bar by which the links and rocker are shifted, a shaft having a crank to which one end of the bar is mounted, a frame having an arcuate opening with separated recesses to be occupied by the crank, and a block having a slot in which the bar is pivoted and which accommodates the vertical movement of the bar when the crank is shifted in said opening from one recess to the other.

22. A typewriter having a platen, a type basket having a pair of bearing projections on each side of the platen, a plurality of

bell cranks mounted on each bearing projection, type bars associated with the bearing projections to the rear of the platen, each having a connection to a bell crank, and connecting links joining diametrically opposite sets of bell cranks but crossing the platen to leave a space through which the printing point can be seen.

23. In combination with a typewriter frame, a rest carried by the frame, a shift lever movable on the frame, a shank pivotally mounted on the lever for lateral motion and including a key by which the lever is depressed and a projection adapted to engage the rest when the shank is moved laterally, and a side piece adjacent to the key by which the projection is disengaged from the rest.

24. In a typewriter, a shift lever having an actuating shank pivoted thereto to enable lateral motion, a spring fastened between the lever and a lug on the shank, and a tilting pin disposed between the lug and a part of the shank to aid in bearing the shank on the lever.

25. A typewriter comprising a frame having a plurality of type bars, a shoe having a platen, means to bodily shift the frame in respect to the shoe and platen, and means on the frame to shift the type bars as a body in respect to both the frame and platen in any position of the shiftable frame.

26. A typewriter having a platen, a plurality of type bars selected in pairs of differently disposed sections at each side of the platen to respectively strike the printing point from the front and rear and from different directions, and links connecting diagonally oppositely disposed pairs of the sections and crossing the platen in such a manner as to leave a vacant space at the printing point.

27. A typewriter having a platen, a type basket having a front wall and a rear wall, arms extending from the front wall to support the rear wall, a plurality of type bars arranged in front and rear sections and pivoted adjacent to the bottom of each wall, key levers having link connections with the type bars in the front sections to move them to the printing point by a downward pull of the links, bell cranks carried by the type basket having connecting links, those of which join the bars in the rear sections being adapted to move said bars to the printing point by an upward pull, certain of the connecting links crossing above the platen but leaving a space to view the printing point; and arcuate fingers situated adjacent to the pivots of each type bar section providing spaces in which the type bars travel and are guided to the printing point.

28. In a typewriter, a type bar guide including inward extensions each having type bar guiding recesses and including shoulders which define a central passage, a plurality of type bar sections, one section having certain bars which are adapted to enter said recesses and other bars which are adapted to enter said central passage at a place below the type block carried thereby, another section having bars provided with lugs adapted to enter said central passage, said lugs being situated beyond said blocks.

29. In a typewriter having a platen and key levers, the combination of a type bar holding segment in the rear of the platen said segment having guiding fingers which define radial slots, type bars adapted to move in the slots of said segment, means to operate the type bars in the said segment including links and bell cranks, said links crossing diagonally over the platen; means at the forward ends of these links to connect them to said key levers, and means at the rear connecting the bell cranks to crank formations outward of and near the bearings of the type bars, causing, upon depression of the key levers, a drawing upward on the cranked ends of said type bars in turn causing the type bars to strike downward upon the platen thereby leaving unobstructed access to the platen from the rear of the typewriter to insert or remove paper.

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