

H. W. MERRITT & H. D. POMEROY.
TYPE WRITING MACHINE.

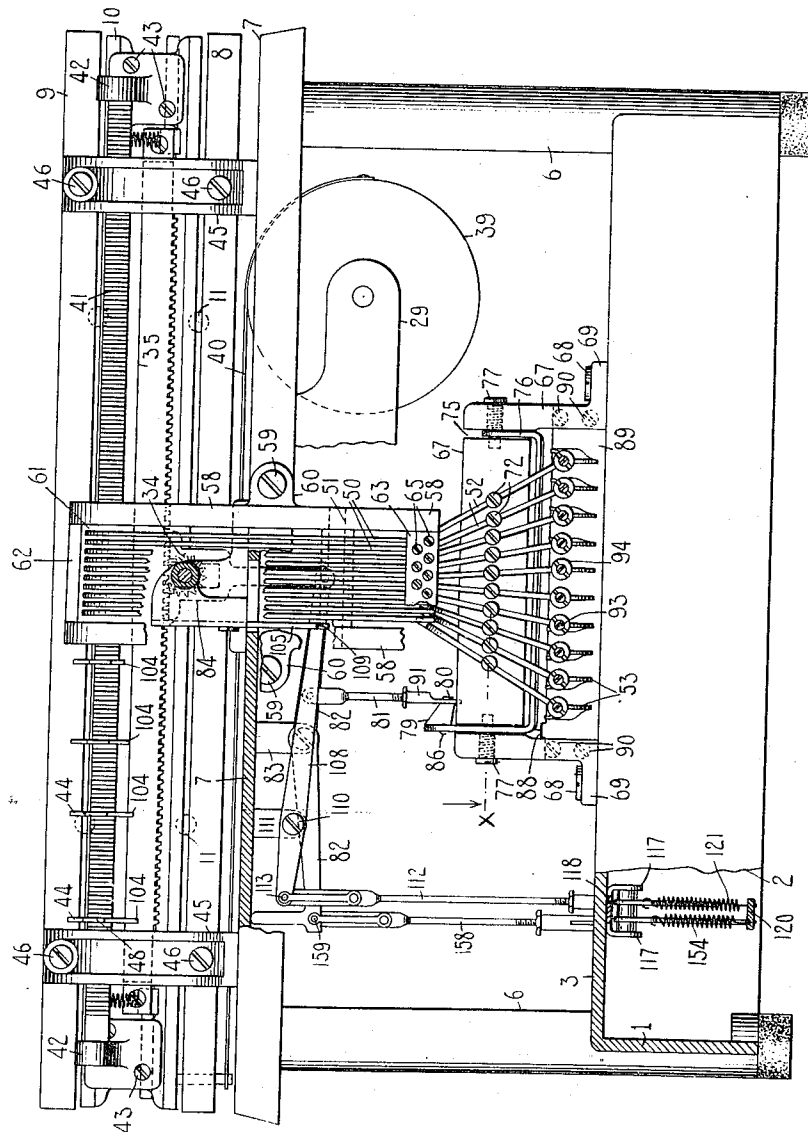
APPLICATION FILED JUNE 30, 1905.

Patented Mar. 22, 1910.

4 SHEETS—SHEET 1.

952,749.

FIG. 1.



WITNESSES.

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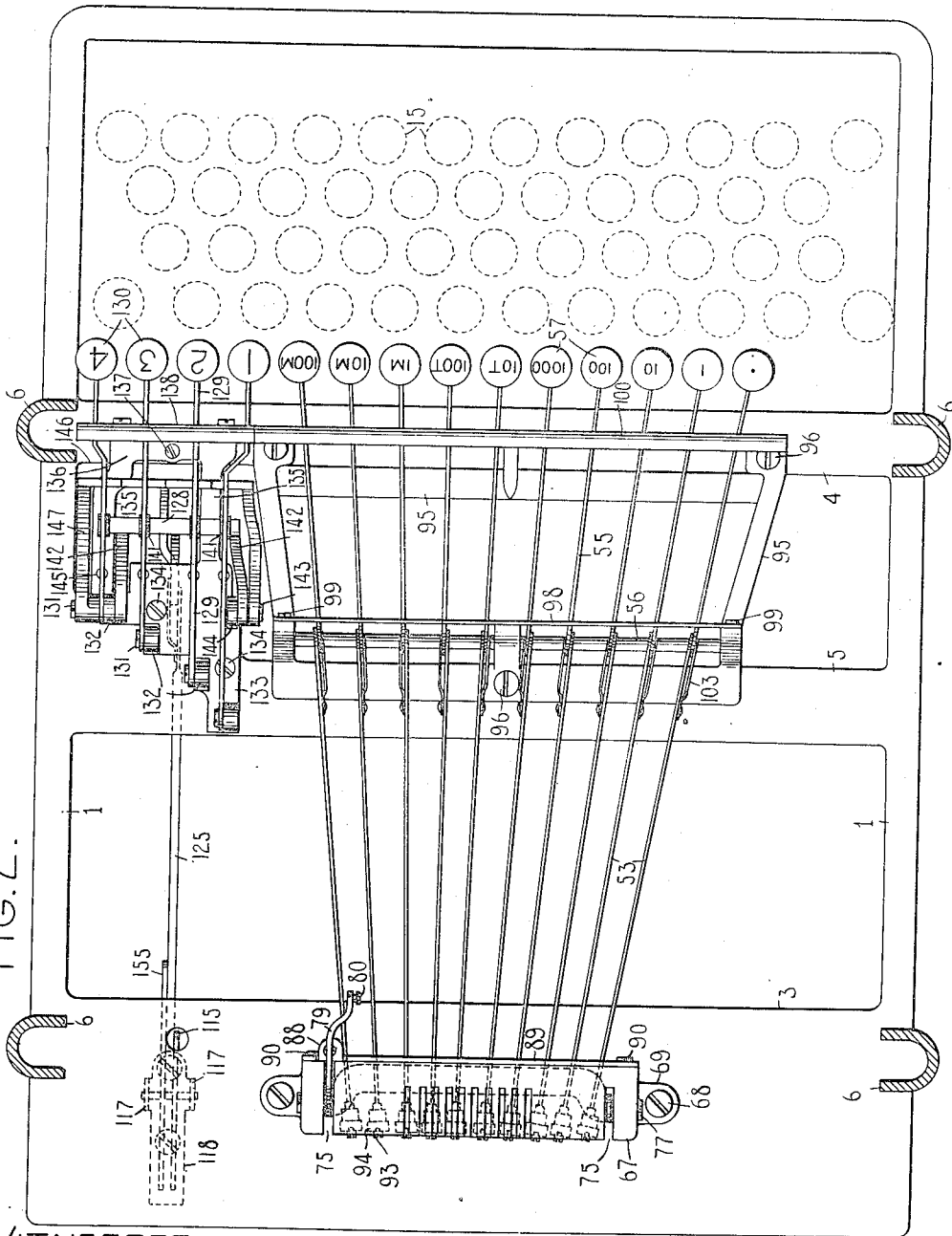
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4 SHEETS—SHEET 2.

952,749.

FIG. 2.



WITNESSES:

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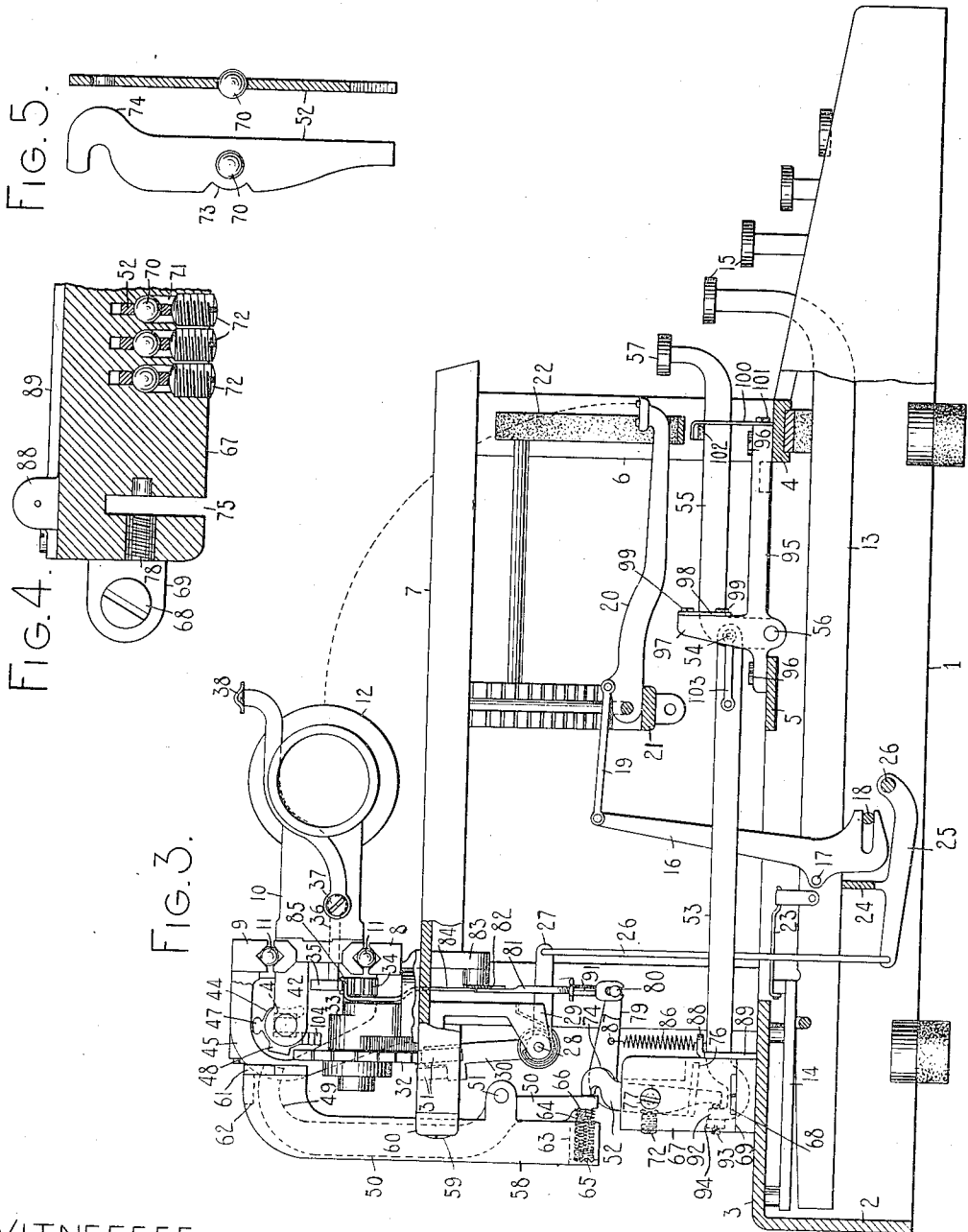
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4 SHEETS—SHEET 3.

952,749.



WITNESSES.

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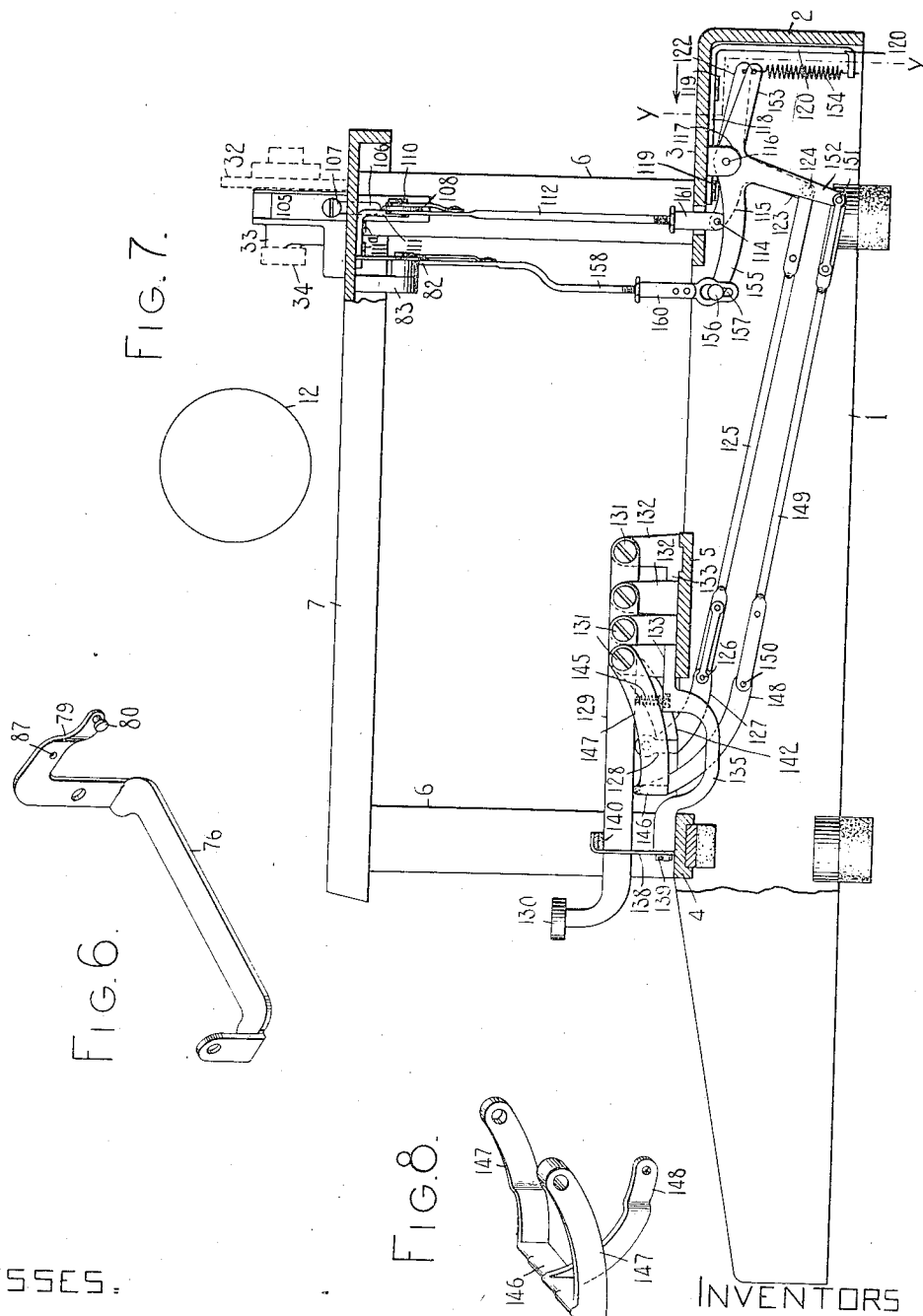
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4 SHEETS—SHEET 4.

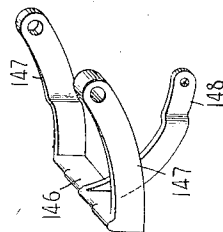
952,749.



WITNESSES.

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FIG. 8.



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UNITED STATES PATENT OFFICE.

HENRY W. MERRITT AND HARRY D. POMEROY, OF SYRACUSE, NEW YORK, ASSIGNORS
TO THE MONARCH TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A COR-
PORATION OF NEW YORK.

TYPE-WRITING MACHINE.

952,749.

Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed June 30, 1905. Serial No. 267,807.

To all whom it may concern:

Be it known that we, HENRY W. MERRITT and HARRY D. POMEROY, citizens of the United States, and residents of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

Our invention relates to typewriting machines and more especially to tabulating mechanism for such machines. We provide a denominational tabulator whereby the carriage may be brought to any denominational position in a column the position of which is determined by the position given to an adjustable column stop. As it is common to use a plurality of such stops on the machine at one time, we also provide a column jumper, or column selector, by means of which the carriage may be brought at once to any desired one of the columns determined by said column stops. This column jumper is useful in many cases where it is not desired to use a denominational tabulator.

One of the objects of our invention is to provide a column jumper and a denominational tabulator of such sort that a machine may be equipped with either one of these devices alone or with both of them together, as may be desired in individual cases. The column jumper is in the nature of an attachment which may be placed on the machine and used for the ordinary purposes of such a device without the machine being equipped with a denominational tabulator at all. The denominational tabulator is also in the nature of an attachment which may be applied to the machine without the column jumper; but these two attachments are so designed that both may be mounted on the same machine if desired and they will cooperate with the same column stops and the same carriage release. When so mounted the two devices cooperate with each other so that by pressing the appropriate column key the carriage may be caused to skip any intermediate columns and to move at one operation to that column in which it is desired to write, and the carriage may then be brought to the desired denominational position within the selected column by operating the appropriate denomination key.

Our invention is illustrated in the accompanying drawings, in which—

Figure 1 is a rear elevation of a typewriting machine equipped with our improvements, parts being shown in section and parts broken away. Fig. 2 is a top plan view of the lower part of the typewriting machine, the framework being shown in section below the top plate and the type action and all the mechanism in the upper part of the machine being removed. Fig. 3 is a left-hand side elevation of the machine, parts being shown in section. This figure shows the denominational tabulator but not the column jumper. Fig. 4 is a detail view of part of the denominational tabulator in horizontal section on the line *x* in Fig. 1. Fig. 5 is a side view and a longitudinal sectional view of a lever used in the denominational tabulator. Fig. 6 is a detail view of a universal bar used in the denominational tabulator. Fig. 7 is a right-hand side elevation of the machine, partly in section, showing the column jumper, but omitting the denominational tabulator. Fig. 8 is an isometrical view of a detail.

We have shown our invention applied to the Monarch front-strike typewriter. The base portion of the main frame of this machine comprises side plates 1, a back plate 2, a back shelf 3 and cross-bars or frame pieces 4 and 5 connecting the upper parts of said side plates, the former of said cross-bars being situated just back of the keyboard and the latter some distance back of the former. Posts 6 rising from the side plates 1 support top plates 7 on which are mounted a lower rail 8 and an upper rail 9, which rails are formed with ball races which cooperate with corresponding ball races in a carriage 10 in the manner usual in this machine. Anti-friction balls or rollers 11, running in said ball races, support the carriage with freedom to move to the right or left. A platen 12 is mounted in the carriage 10. A series of key levers 13 are pivoted on a fulcrum plate 14 supported beneath the back shelf 3 and said key levers have finger keys 15 mounted on their forward ends. Sub-levers 16 are pivoted at 17 to the key levers and extend below said key levers where they are formed with slots which embrace a stationary rod 18 in such manner that when a

key lever is depressed the upper part of its sub-lever 16 is thrown toward the back of the machine. The sub-levers are connected by links 19 with type bars 20 which are pivotally mounted in a type bar segment 21 and in the free ends rest on a support or cushion 22. The key levers are provided with returning springs 23. A universal bar 24 lies beneath the series of key levers 13. Said universal bar is in the nature of a yoke bar, the arms 25 of which project from a rock shaft 26 which is pivoted at its ends to the side plates 1. One of said arms 25 is connected by a link 26 with the forwardly extending arms 27 of the dog rocker, which is pivoted at 28 in a bracket 29 depending from the top plate 7. Said dog rocker has an upwardly extending arm 30 carrying escapement dogs 31 that coöperate with an escapement wheel 32 that is mounted on the rear end of a shaft journaled in a housing or bracket 33 mounted on the top plate 7. On the forward end of said shaft is fixed a pinion 34 which meshes with a feed rack 35 which is mounted on arms 36 which are pivoted at 37 to the carriage 10. A carriage release lever or key 38 is rigidly mounted on one of the pivots 37. By depressing this release lever the feed rack 35 may be raised out of engagement with its pinion and the carriage is then moved in either direction. The carriage is drawn across the machine by a spring drum 39 which is connected thereto by a strap 40 in the usual manner. A tabulator bar 41 is mounted on arms or brackets 42 projecting toward the rear of the machine from the carriage 10 to which said brackets are secured by screws 43. Said tabulator bar has vertical grooves cut in its front and rear faces a letter space distance apart and column stops 44 are adapted to be mounted on said bar in said grooves. The rails 8 and 9 are supported by two brackets 45 to which they are secured by screws 46 (Fig. 1). In the present instance these brackets are arched back toward the rear of the machine, as shown in Fig. 3, in order to allow the free passage of the tabulator bar and the column stops.

Each of the column stops 44 is of substantially inverted U-shape, having two depending arms which enter a slot in the front and in the rear sides respectively of the tabulator bar. Each of said stops is formed on its upper part with a small head 47 for convenience in withdrawing it from the tabulator bar. Each of said stops is also formed with a rearwardly projecting stop portion 48 which is adapted to coöperate with any one of a series of denomination stops 49. The denomination stops 49 consist of the forwardly extending upward ends of a series of upright levers 50 which are pivoted intermediate their ends on a rod

51. Said levers are engaged at their lower ends by levers 52 which are operated by links 53 which are pivoted at 54 to key levers 55 which are pivoted on a transverse rod 56 and which carry at their free ends the denomination tabulator keys 57.

The levers 50 are mounted in a frame which consists of two upright side pieces 58 which are secured to the top plate 7 by screws 59 passing through ears 60 of said frame pieces 58 and threaded into the flange of the top plate. The rod 51 on which the levers are pivoted is secured at its ends in these upright frame pieces. Said frame pieces are curved toward the front of the machine at their upper ends and are connected together by a plate 61 which is or may be slotted to guide the denomination stops 49. The upright frame pieces 58 are also connected together at their upper ends by a cross-bar 62. Said frame pieces are connected together at their lower ends by a cross-piece 63 which has a series of holes bored through it for the reception of spiral compression springs 64 which, at their forward ends, press against the lower ends of the levers 50 and at their rear ends against screw plugs 65 which close the rear ends of the holes. Each of the levers 50 is formed with a small lug or stud 66, which is surrounded by its spring 64 and serves to prevent displacement of the spring from the lever. The levers 50 and their supporting guiding frame extend up behind the rear edge of the top plate, as shown in the drawings, and said levers and their framework are attachable to and detachable from the machine as an entirety by means of the screws 59.

The levers 52 are all mounted in a frame piece 67 which is mounted on top of the shelf 3 below the levers 50 and their framework by means of screws 68 passing through holes in brackets 69 projecting from the ends of the frame piece 67, said screws being threaded into the back shelf 3. The frame piece 67 extends horizontally and transversely of the machine and is formed at its ends with posts or brackets which are supported some distance above the shelf 3 as shown in Fig. 1. Each of the levers 52 has its upper end engaging the front face of the lower end of one of the levers 50 and said levers 52 radiate downward fan fashion from said levers 50 as shown in Fig. 1, so that the lower ends of said levers are spaced farther apart than their upper ends. Each of the levers 52 is seated in a slot cut in the rear face of the frame piece 67, said slots being cut at the inclinations appropriate to the setting levers. Said levers are pivoted in said slots by means best shown in Figs. 4 and 5. Each of the levers is formed near its middle with a hole in which is seated a ball 70, the diameter of which is consider-

ably greater than the thickness of the lever. A hole 71 of the size to receive the ball 70 is bored out in each slot and the lever is seated in its slot from behind with the ball in place, said ball entering the hole referred to. Short screws 72 are threaded into the outer ends of said holes and are adapted to prevent accidental displacement of the levers from the pivots. Said levers are formed on their rear edges to the portion 73 (Fig. 5) concentric with the ball 70 so that as the levers rock this concentric portion is next the inner end of the screw 72. The holes 71 are preferably formed at their inner ends in the shape of a sphere so as to fit the ball 70 as indicated in Fig. 4. As the pressure on the levers 52 is always on the front of the machine, the ball 70 always takes this pressure, the screws 72 merely serving to prevent accidental displacement of the parts. Each of the levers 52 is formed at its upper end with a goose necked portion 74, the end of which is the part that engages the lever 50. This construction prevents those levers 52 that stand at a considerable inclination from engaging more than one of the levers 50. The frame piece 67 is formed near each end with a slot 75 in which an arm of a universal bar 76 is pivoted on the reduced inner end of a screw 77. This screw is threaded intermediate its ends and enters a hole 78 (Fig. 4) running lengthwise of the frame piece 67 and extending through the slot 75. That part of the hole which is between the end of the frame piece and slot is threaded and that part of the hole inside the slot is of a reduced diameter as shown in Fig. 4. The universal bar 76 is of the form best shown in Fig. 6 and lies in front of all the levers 52 below the frame piece 67. One of the arms of the universal bar extends upward above said frame piece and has a forwardly extending arm 79 from which a headed pin 80 projects into a slot in the lower end of a link 81 which is pivoted at its upper end to a lever 82 which is pivoted to a bracket 83 depending from the top plate 7. To the free end of the lever 82 there is pivoted an upright lifting bar 84 which passes loosely through an opening in the top plate 7. Said lifting bar 84 is forked at its upper end as shown in Fig. 1 to embrace a part of the housing 33, and the upper ends of the two forks of said bar are bent toward the front of the machine as shown at 85 in Fig. 3, said forwardly bent portions lying beneath the rack bar 35. The construction is such that when any lever 52 has its lower end drawn toward the front of the machine by a link 53, the universal bar 76 will be moved toward the front of the machine, the arms 79 will be moved upward lifting the lever 82 through the link 80, and thus causing the lifting bar 84 to raise the rack bar 35 out

of engagement with the pinion 34 and release the carriage. The universal bar 76 is returned to normal position by a spiral spring 86 which is connected at one end to a hole 87 in the arm 79 and at the other end to an ear 88 bent off from a plate 89 which is secured to the front face of the upright portions of the frame piece 67 by screws 90 (Fig. 1). The lower end of the link 81 comprises a sleeve 91 threaded on to the lower part of said link in such a manner that the length of the link may be adjusted by turning said sleeve. Said sleeve is so adjusted in practice as to leave some lost motion between the normal position of the pin 80 and the upper end of the slot in which said pin plays so that the tabulator stop 49 will be partially operated before the rack bar 35 begins to be lifted out of engagement with the pinion 34.

The links 53 consist of flat strips and said links are supported and guided at their rear ends by slots in the plate 89. To the rear of said plates each of the links is goose necked downward as shown in Fig. 3, the rear end of said link being bent up as shown at 92 extending up behind the corresponding lever 52. A screw 93 threaded through the upright portion 92 of the link 53 engages the rear side of the lever 52. The relation between the link 53 and the lever 52 may be regulated by adjusting the screw 93. Said screw is provided with a lock nut 94.

The key levers 55 are mounted in a frame 95 which is secured by screws 96 to the cross bars 4 and 5 of the main frame. The frame 95 is of the rectangular form shown in Fig. 2, having two transverse sides lying on or adjacent to the frame bars 4 and 5 and two longitudinal side pieces connecting said transverse side pieces. Said longitudinal side pieces are slightly depressed just in front of the frame bar 5, as shown in Fig. 3, and the pivot rod 56 is secured in these depressed parts of the frame. Said side bars are also formed with upright portions 97 to the front faces of which a slotted plate 98 is secured by screws 99. The slots in the plate 98 serve to guide the rear ends of the levers 55. Said levers are guided at their forward ends by a slotted plate 100 which is secured to the front face of the frame 95 by screws 101. The upper edge of the plate 100 is bent toward the rear of the machine and supports a cushion or pad 102 which is adapted to arrest the keys on their return strokes. The key levers 55 extend toward the back of the machine in a substantially horizontal direction as shown in Fig. 3, and at their rear ends are bent downward and pivoted on a rod 56. The links 53 are provided with pins 54 which extend through suitable openings in the levers 55 some distance above the rod 56 and said links are provided with plate springs 103 to prevent

displacement of the links from the key levers. The construction is such that when the key 57 is depressed the portion of the levers 55 at which the link 53 is pivoted thereto moves toward the front of the machine.

The column jumper device is adapted to arrest the carriage in any one of a plurality of column positions by coöperation with the same column stops 44 that coöperate with the denomination stops 61. As best shown in Figs. 1 and 3 each of said column stops 44 has an arm 104 projecting downward and these arms are of graduated lengths, the arm 104 of that stop 44 which is nearest the right-hand side of the machine being the longest and the left-hand stop the shortest. The arms 104 constitute a graduated series of stops which are adapted to coöperate with an adjustable stop 105 (Fig. 7) which in the present instance consists of a bar or plate mounted to have a vertical sliding motion in the stationary framework of the machine. As shown in the present instance this adjustable stop is mounted on the housing 33 of the escapement wheel shaft, which housing is modified in form for the purpose, as best shown in Figs. 1 and 7. Said housing is formed on its right-hand side with a straight vertical face having therein a shallow groove in which the stop 105 may slide up and down. Said stop is formed with a longitudinal slot 106 (Fig. 7) through which passes a shouldered and headed screw 107 which retains the stop in position in the slotted face of the housing 33 with freedom to slide up and down. The sliding stop bar 105 extends through an opening in the top plate 7 some distance below said top plate, where it is formed with a slot which receives the end of a lever 108 (Fig. 1) which is retained in position in said slot by a pin 109 passing through the sliding stop and through said lever. The lever 108 is pivoted on a shouldered and headed screw 110 which is threaded into a bracket 111 depending from the top plate to which it is secured by screws 111^a (Fig. 7). The lever 108 is actuated to adjust the stop 105 by a vertical link 112 which is pivoted thereto at 113. The link 112 extends downward through an opening in the back shelf 3, beneath which it is pivoted at 114 to an arm 115 of a lever which is pivoted on a rod 116 mounted in two ears 117 bent downward from a bracket or plate 118 which is secured by screws 119 to the under side of the back shelf 3. The bracket or plate 118 extends some distance back of the ears 117 and is formed with a downwardly extending arm 120 to which is secured the lower end of a returning spring 121, the upper end of which is connected with an arm 122 of the lever 115. Said lever has extending downward from the pivot 116 a third arm 123 to

which is pivoted at 124 a forwardly extending link 125, the forward end of which is pivoted at 126 to an arm 127 projecting from a universal bar 128 lying beneath a series of column key levers 129 having column keys 130 mounted on their forward ends.

The key levers 129 are of different lengths so as to move the universal bar 128 different distances. Said key levers are pivoted on shouldered and headed screws 131 which are threaded into brackets 132 forming part of a key lever frame. Said frame comprises a base plate 133 lying on the cross bar 5 of the main frame, to which it is secured by screws 134. Two side pieces 135 connect the plate 133 with a cross-bar 136 which lies on the frame bar 4 to which it is secured by a screw 137. The frame bar 136, side bars 135, plate 133 and brackets 132 are preferably integral, being formed of a single casting. The side pieces 135 are depressed in the spaces between the frame bars 4 and 5, as shown in Fig. 7, in order to permit of downward motion of the universal bar 128 and of a second universal bar to be hereinafter described. A slotted plate 138 is secured to the front face of the cross-bar 136 by screws 139. The key levers 129 pass through vertical slots in this plate and their downward motion is limited by the lower ends of the slots and their upward motion is limited by a pad 140 secured to a rearwardly bent flange of the plate 138. The plates 100 and 138, when both the denominational tabulator and the column jumper are in place on the machine, stand end to end so as to present the appearance of a single slotted plate extending across the machine; but as will be perceived from the description of the mechanism, the parts are independent so that either one of them may be removed from the machine without disturbing the other. The brackets 132 are different distances from the plate 138 and the universal bar 128 is therefore at different distances from the pivots of the several key levers so that said universal bar will be depressed different distances by the different key levers. Said universal bar may be provided with rollers 141 lying beneath the key levers 129. The universal bar 128 is mounted on two arms 142, one of which is pivoted on the reduced end of one of the screws 131 and the other of which is pivoted on a shouldered and headed screw 143 (Fig. 2) which is threaded into a bracket 144 rising from the frame plate 133. Each of the key levers 129 is provided with a coiled returning spring 145 which is seated at its lower end in a depression in the frame plate 133 and at its upper end surrounds a lug projecting from the key lever.

In order that any one of the column jumper keys may effect the release of the

carriage, a second universal bar 146 is provided. This universal bar stands in front of the universal bar 128 and is mounted on arms 147 which are pivoted on the same screws as the arms 142 of the universal bar 128. The construction of the key lever system is such that the universal bar 146 would be depressed different distances by the different keys if some provision were not made to prevent such an operation. To this end the upper face of said universal bar is stepped, as best shown in Figs. 7 and 8, so as to provide lost motion between said universal bar and those of the key levers that would otherwise depress said universal bar too far. The universal bar 146 is provided with an arm 148 to which a rearwardly extending link 149 is pivoted at 150. Both the arm 148 of the universal bar 146 and the arm 127 of the universal bar 128 are connected directly with the said universal bars and extend downwardly and toward the rear of the machine, as shown in Fig. 7, so that the pivot points 126 and 150 shall bear the proper relation to the pivot points of the universal bars, but so that the arms 127 and 148 shall not interfere with the frame bar 5. The link 149 is pivoted at its rear end at 151 to an arm 152 of a three-armed lever which is pivoted on the pin 116 by the side of the lever 115, 122. Said three-armed lever has a rearwardly extending arm 153 to which is connected one end of a returning spring 154, the other end of which is connected to the lower end of the bracket 120. The third arm 155 of said lever extends toward the front of the machine and is provided with a headed pin 156 which stands in a slot 157 in the lower end of the link 158, the upper end of which is pivoted at 159 to the free end of the lever 82 which operates the rack lifter 84. The construction is such that when any column key is depressed the link 158 is drawn downward, rocking the lever 82 and lifting the rack bar 35 out of engagement with the pinion 34 and thus releasing the carriage. The pin 156 does not normally stand at the bottom of the slot 157, but stands a short distance above the bottom of said slot so as to afford some lost motion between the key and the carriage release to prevent the carriage from being released before the stop 105 is in position to arrest it. The amount of such lost motion may be regulated by turning a threaded sleeve 160 which forms the lower end of the link 158 and which is threaded on to the upper end of said link. The link 112 has its lower end consisting of a similar threaded sleeve 161 by adjusting which the proper relation between the stop 105 and the universal bar 128 may be established.

In case it is not desired to use the column jumper, it will be obvious from the description of the mechanism that it may be re-

moved entirely from the machine without in any way disturbing the denominational tabulator. It will also be perceived that in case it is desired to use the column jumper without said denominational tabulator the latter may be removed from the machine without in any way disturbing the former. Furthermore, both mechanisms may be used on the same machine without either of them interfering in any way with the presence or the operation of the other.

In using this combination of column jumper and denominational tabulator, if it is desired to write in a particular denominational position in a particular column, the appropriate column key will first be depressed, bringing the carriage to the position where the selected column stop is arrested by the adjustable stop 105. This position is to the right of all of the denominational stops, so that if the appropriate denominational key be then depressed the carriage will again be released and will move to the selected denominational position within the selected column. In the present instance we have shown ten denominational stops spaced a letter space distance apart and the column jumper stop 105 is one letter space distance to the right of the denomination stop of highest denomination.

So far as we are aware it is broadly new to equip a typewriting machine with a denominational tabulator and column jumper capable of coöperation in the manner which has been described and of such construction that either of these devices may be removed from the machine independently of the other, so that the purchaser of a typewriter may have his machine equipped with either one of these devices separately or with both of them together at pleasure, and so that if a machine is provided with one of these devices it may be equipped with the other at any time.

Various changes in the details of construction and arrangement may be made without departing from our invention.

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

1. In a typewriting machine, the combination with the main frame, the carriage and printing instrumentalities, of a denominational tabulator comprising a series of denomination stops mounted in a frame detachably secured to the main frame; a series of levers for operating said denomination stops, said series of levers being mounted in a second frame detachably secured to the main frame; and a series of key levers for operating said operating levers, said key levers being mounted on a third frame detachably secured to the main frame.

2. In a typewriting machine, the combination of a carriage; a column stop adjustably mounted on said carriage; a series of

denomination stops; a frame in which said denomination stops are pivotally mounted; a series of levers, each connected at its upper end with one of said denomination stops, the lower ends of said levers diverging so that said lower ends are spaced farther apart than said upper ends; a series of links connected with said levers and extending toward the front of the machine above the key levers; and denomination keys connected with said links.

3. In a typewriting machine, the combination of a carriage; a series of denomination stops for said carriage; a frame in which said stops are mounted; means for detachably securing said frame to the upper part of the framework of the typewriting machine; a second frame detachably secured to the lower part of the framework of the typewriting machine; a series of operating levers for controlling said denomination stops mounted in said second frame; a series of links extending from said levers toward the front of the machine above the character key levers, and denomination keys for operating said links.

4. In a typewriting machine, the combination of a carriage; a frame detachably mounted on the upper part of the framework of the typewriting machine; a series of denominational tabulator stops mounted in said frame; a second frame detachably secured to the lower part of the framework of the typewriting machine; a series of operating levers for said denomination stops mounted in said second frame; a universal bar for said levers also mounted in said second frame; a carriage release device operated by said universal bar; and a series of denomination keys and connections for operating said operating levers.

5. In a typewriting machine, the combination of a carriage; a tabulator stop mounted on said carriage; a series of denomination stops mounted on the main frame; a series of levers for operating said denomination stops; and a frame in which said levers are mounted, said frame having formed therein a series of guide slots for said levers, each of said guide slots having an enlargement and each of said levers having a ball mounted therein, said levers being mounted in said slots and said balls being mounted in said enlargements and constituting pivots for said levers.

6. In a typewriting machine, a tabulating device comprising a series of levers; and a frame in which said levers are mounted, said frame having formed therein a series of slots at different inclinations, each of said slots having an enlargement and each of said levers having a ball mounted therein, said levers being mounted in said slots and said balls being seated in said enlargements and constituting the pivots of the levers.

7. In a typewriting machine, a tabulating device comprising a series of levers; a frame in which said levers are mounted, said frame having formed therein a series of slots at different inclinations, each of said slots having an enlargement and each of said levers having a ball mounted therein, said levers being mounted in said slots and said balls being seated in said enlargements and constituting the pivots of the levers; and means for preventing said levers from becoming displaced from said slots.

8. In a typewriting machine, the combination of a carriage; a series of denomination tabulator stops for said carriage; a series of levers for operating said denomination stops; a frame in which said levers are mounted, said frame having a series of slots in which said levers are mounted, each of said slots having an enlargement; a ball carried by each of said levers and seated in an enlargement and constituting the pivot for the lever; a universal bar pivoted to said frame and adapted to be operated by any of said levers; and a carriage release device operated by said universal bar.

9. In a typewriting machine, the combination with a carriage, of a column jumper mechanism comprising a series of key levers of different lengths, a universal bar lying under said key levers different distances from their pivots, whereby said universal bar is moved different distances by the different keys, a link connected with said universal bar and extending toward the rear of the machine, a bell crank lever pivoted by said link, a second link pivoted to said bell crank lever and extending upward therefrom, a sliding stop piece connected with the last mentioned link, a series of graduated column stops on the carriage adapted to cooperate with said sliding stop piece.

10. In a typewriting machine, the combination with a carriage, of a column jumper mechanism comprising a series of key levers of different lengths, a universal bar lying beneath said series of key levers at different distances from their pivots, whereby the different keys are adapted to move said universal bar different distances, a carriage stop operated by said universal bar, a second universal bar lying beneath said series of key levers and having different extents of lost motion relative to said key levers, whereby said universal bar is moved the same distance by the different levers, and a carriage release device operated by the second mentioned universal bar.

11. In a typewriting machine, the combination with a carriage, of a tabulating mechanism comprising a series of denomination stops, a series of levers for moving said stops to operative position, a series of links for operating said levers, each of said links extending up behind one of the

levers 52 and having an adjustable screw 92 mounted therein to engage said lever, and a series of key levers for operating said links 53.

- 5 12. In a typewriting machine, the combination with a carriage, of one or more column stops, a series of upright levers of the first order having denomination stops at their upper ends, a series of levers of the first order for operating on the lower ends of the first mentioned levers, pull links connected with the lower ends of the second mentioned levers and extending toward the front of the machine, and angled denomination key levers connected with said links,
- 10
- 15

the construction and arrangement being such that when one of said key levers is operated the corresponding denomination stop is moved toward the front of the machine into the path of said column stop or 20 stops.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 23d day of June A. D. 1905.

HENRY W. MERRITT.
HARRY D. POMEROY.

Witnesses:

W. SEARS,
T. W. CRANDALL.