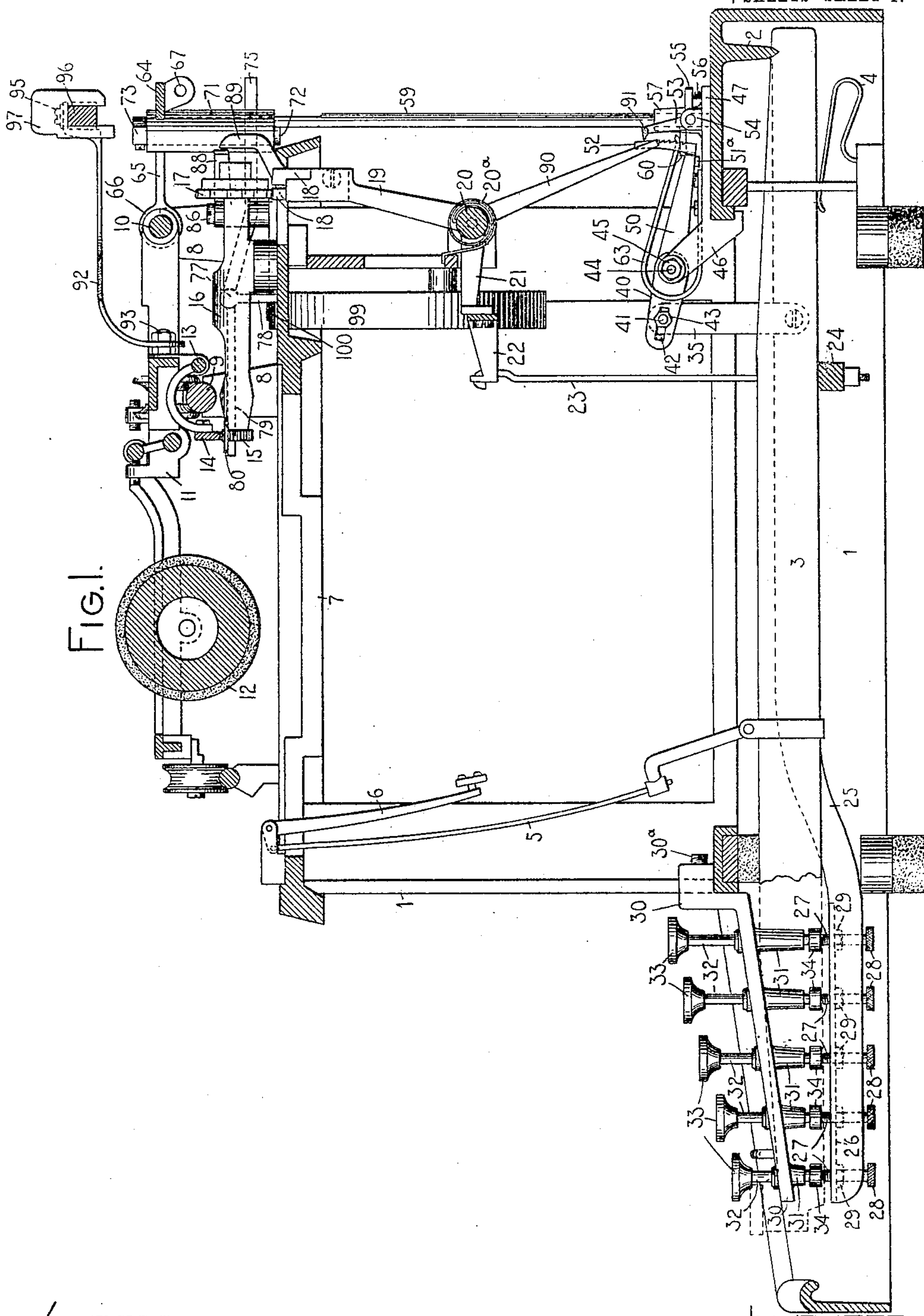


L. SCHLESINGER.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 5, 1903.

7 SHEETS—SHEET 1.



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L. SCHLESINGER.
TYPE WRITING MACHINE.
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7 SHEETS—SHEET 2.

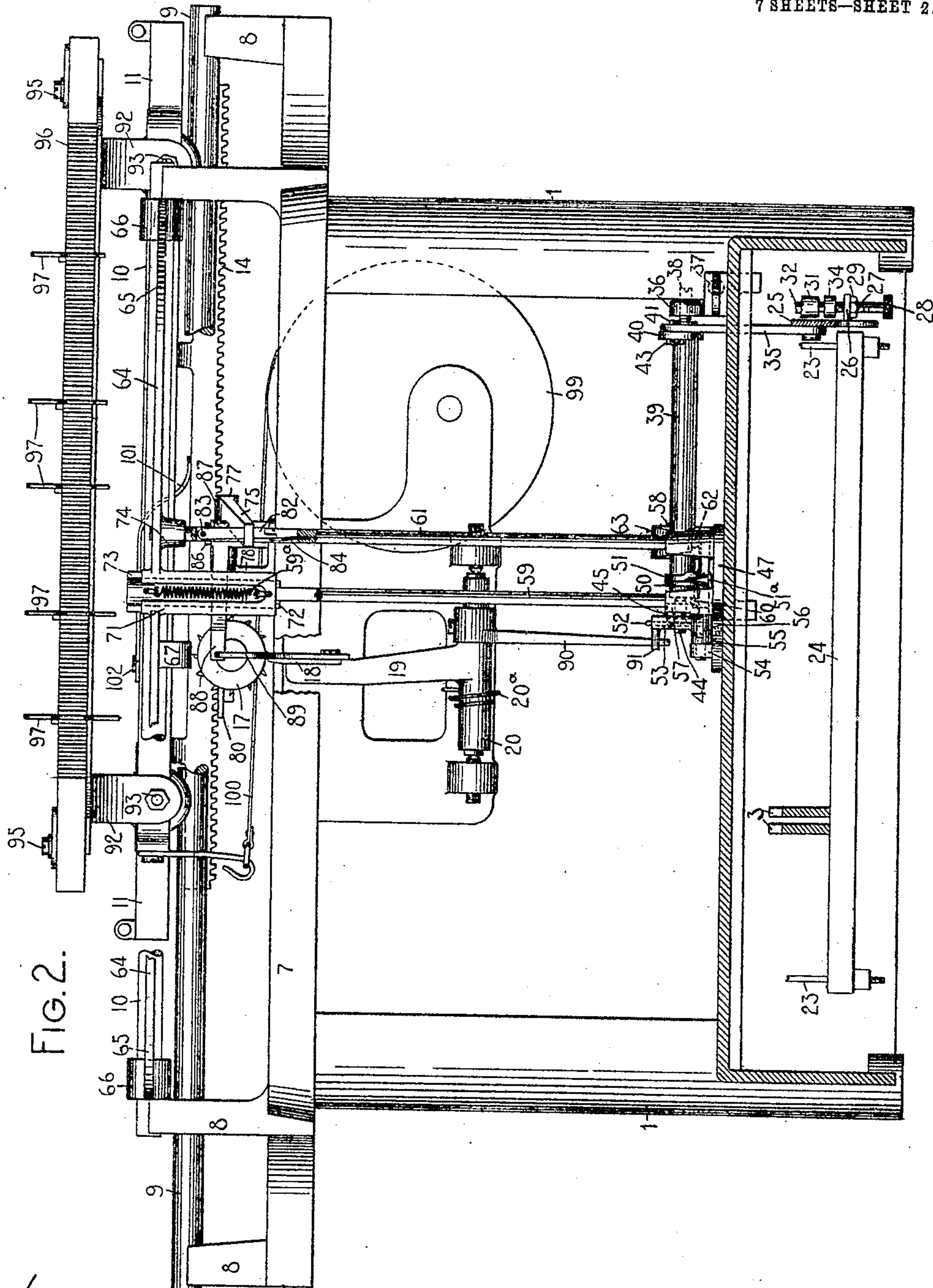


FIG. 2.

WITNESSES:

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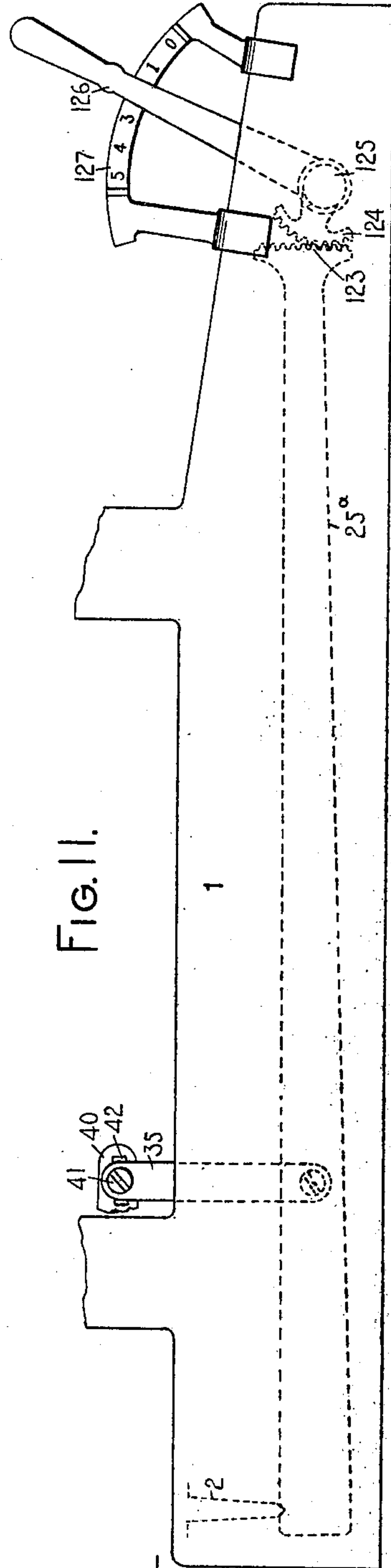
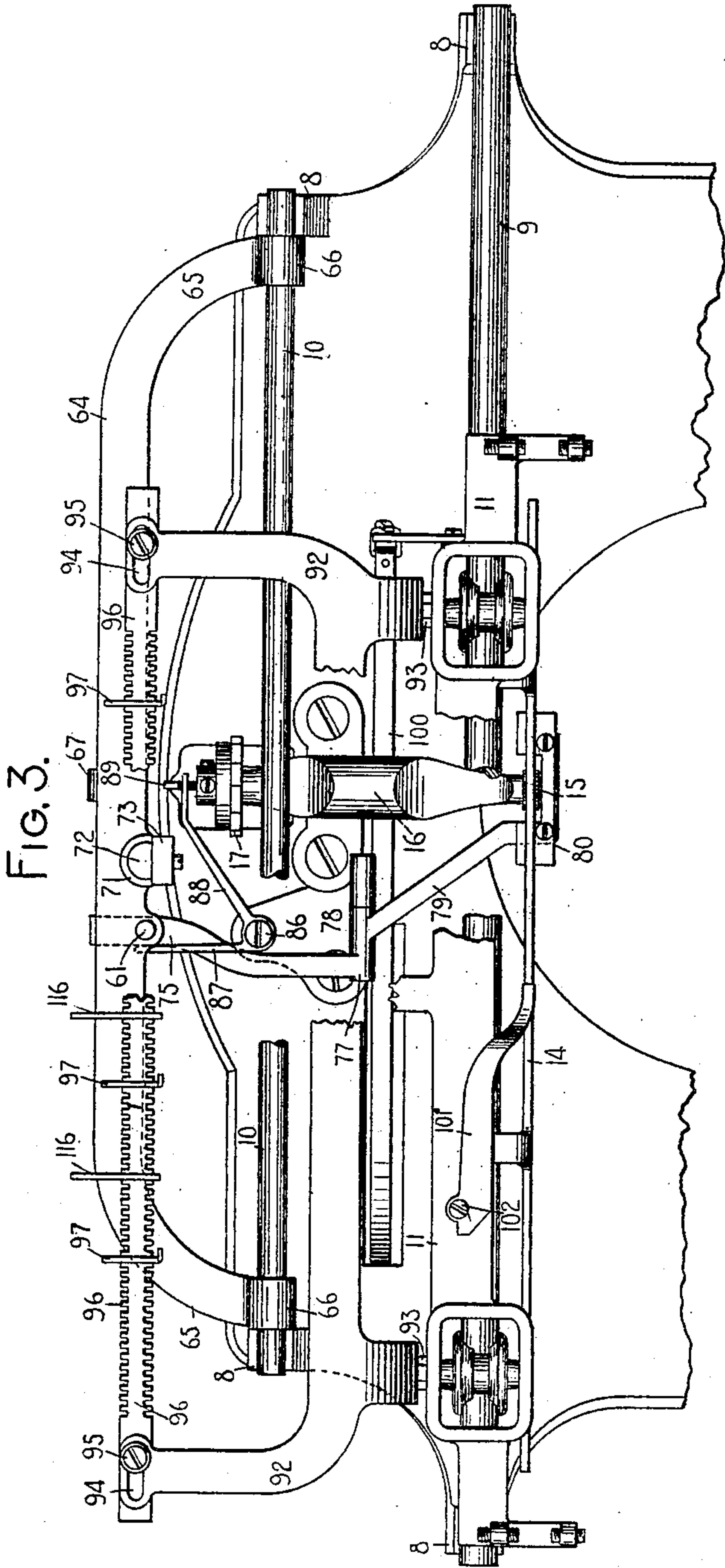
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TYPE WRITING MACHINE.
APPLICATION FILED MAR. 5, 1903.

7 SHEETS—SHEET 3.



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No. 795,454.

PATENTED JULY 25, 1905.

L. SCHLESINGER.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 5, 1903.

7 SHEETS—SHEET 4.

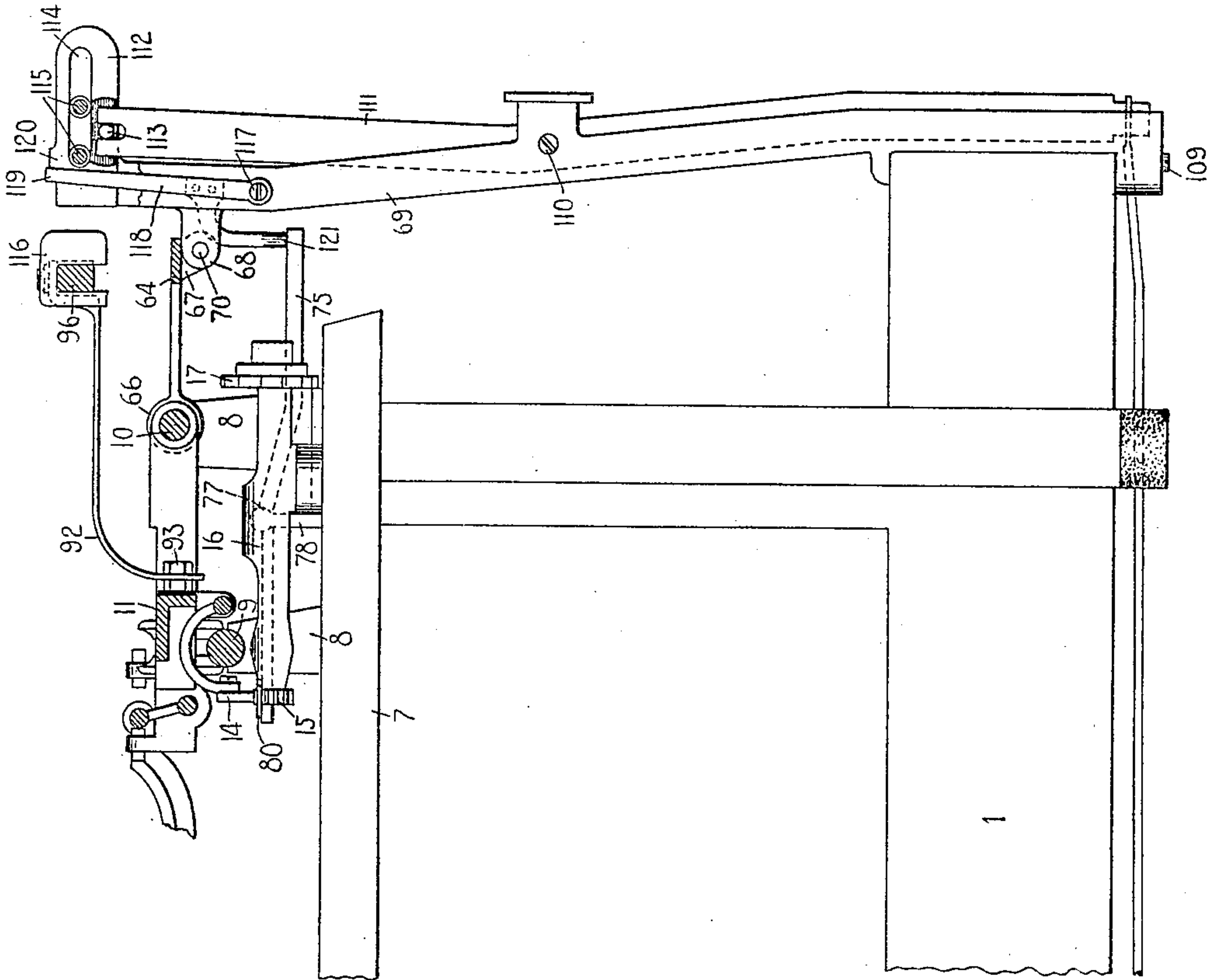


FIG. 4

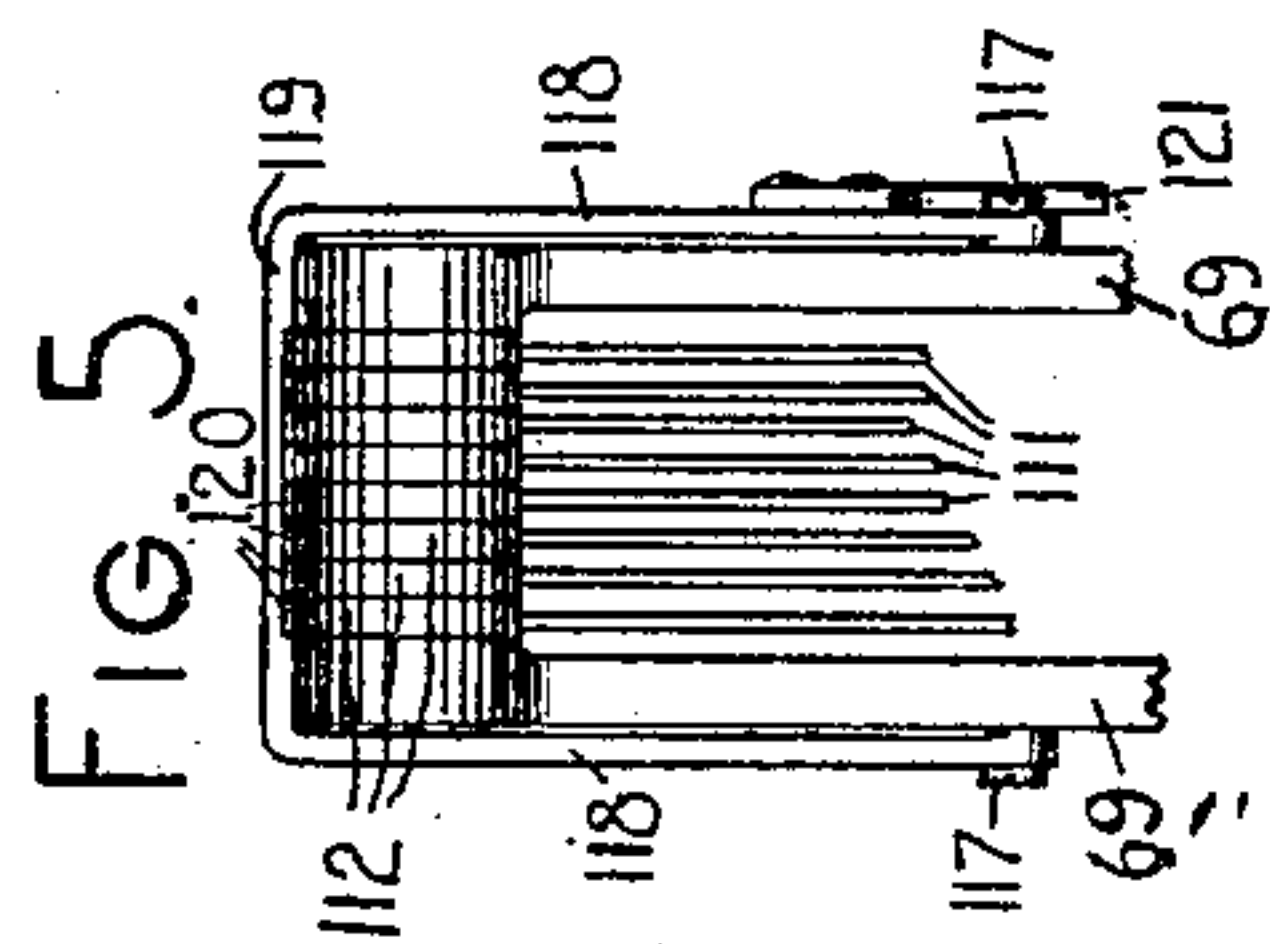
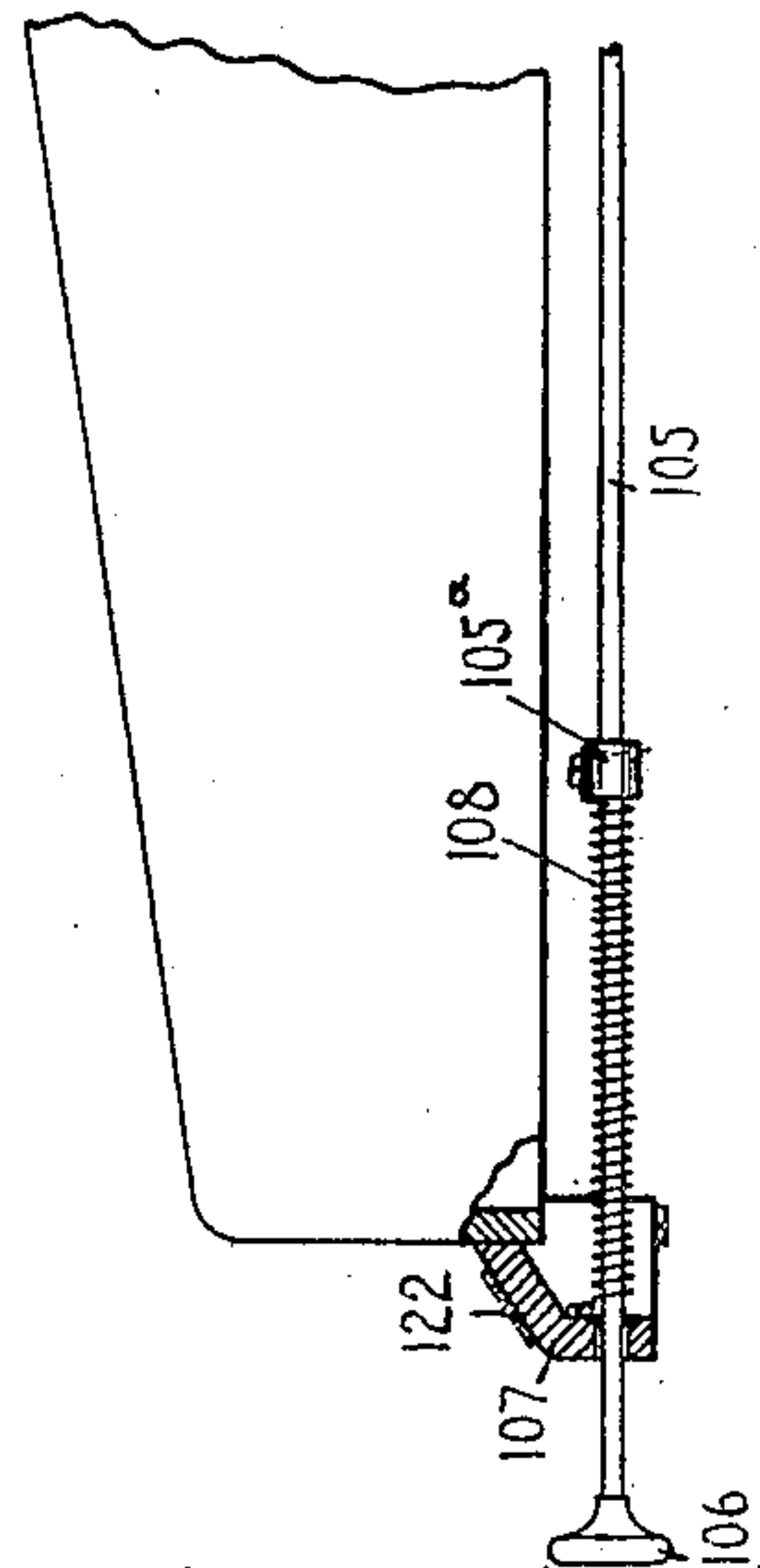


FIG. 5



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TYPE WRITING MACHINE.
APPLICATION FILED MAR. 5, 1903.

7 SHEETS—SHEET 5.

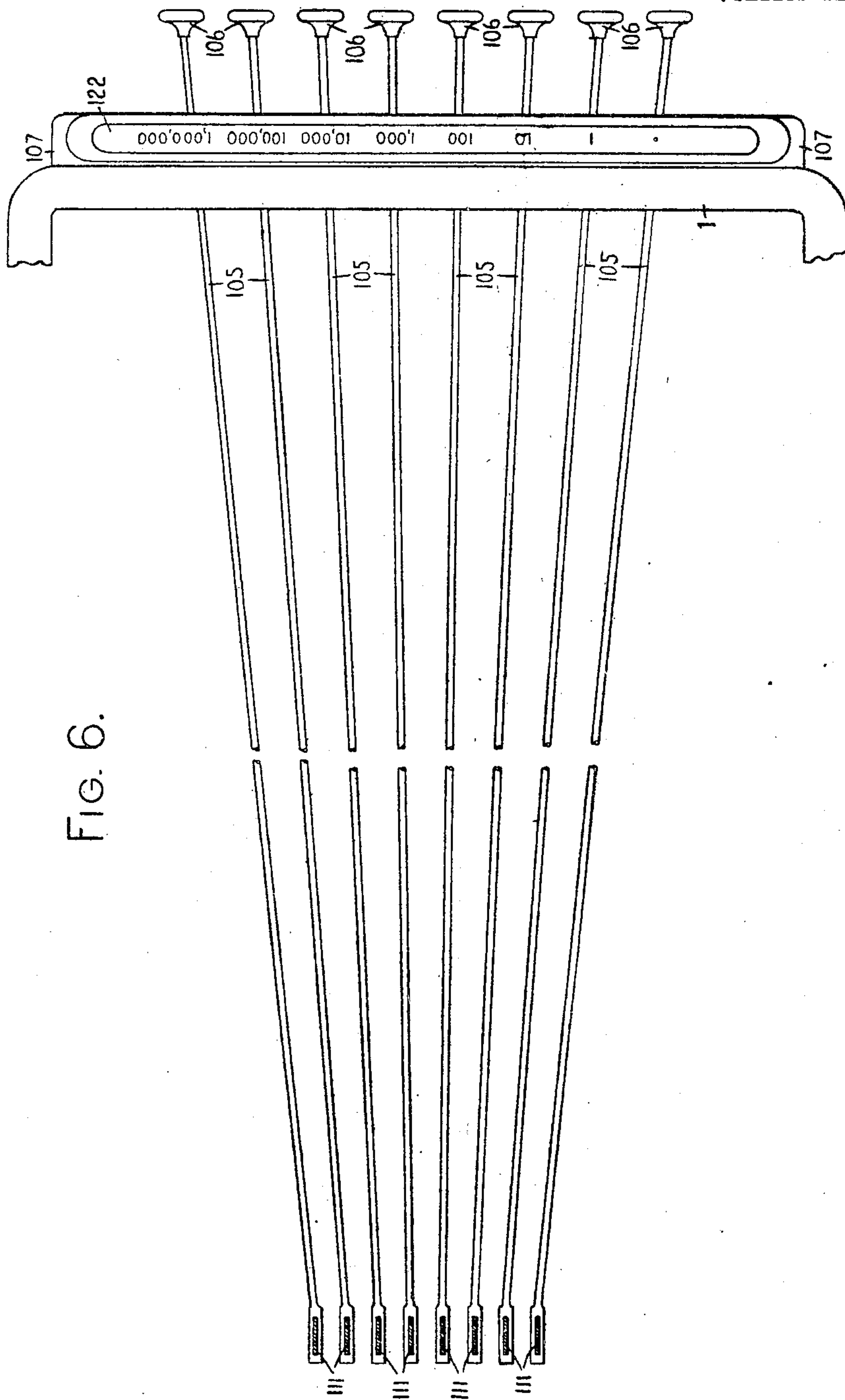


FIG. 6.

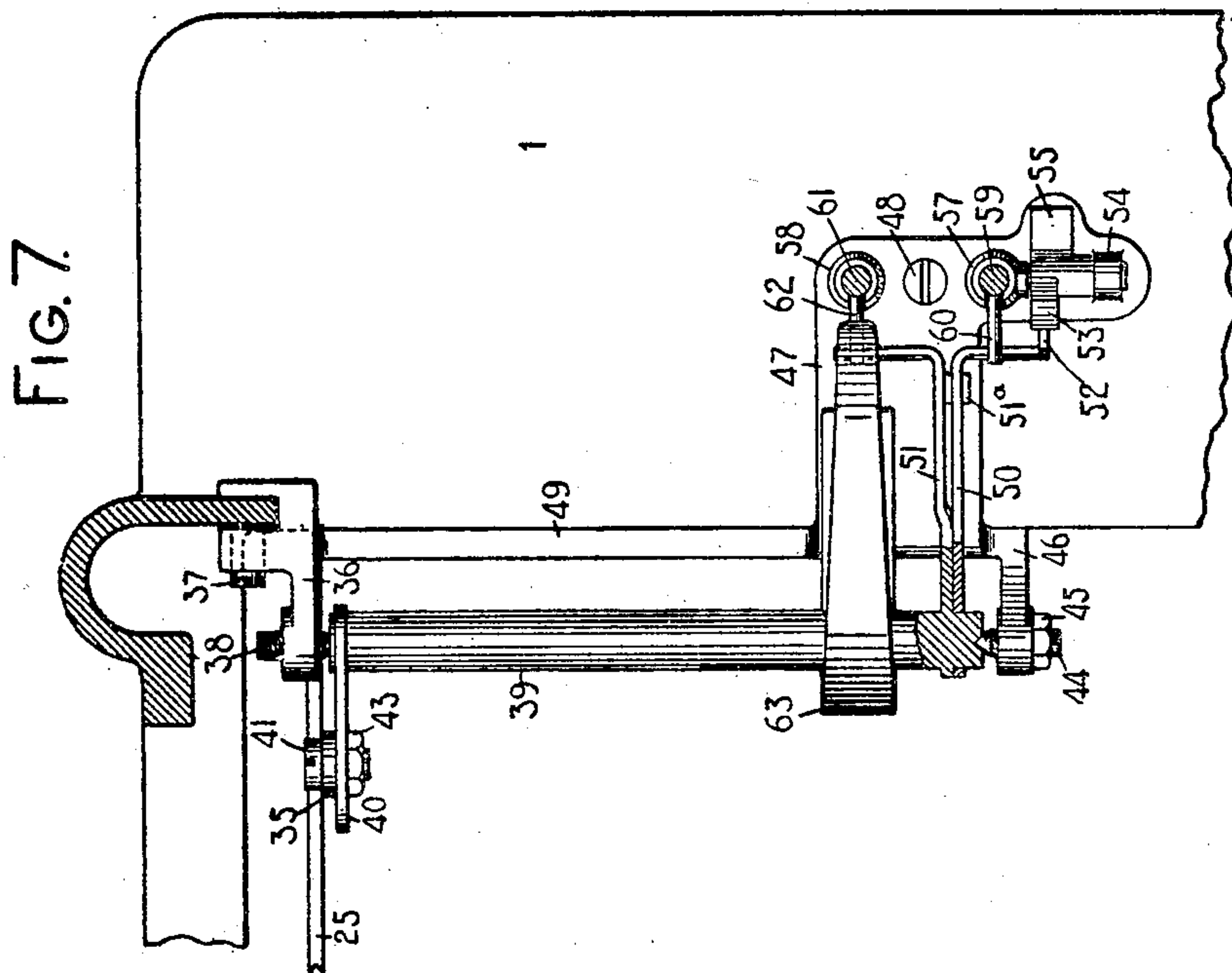
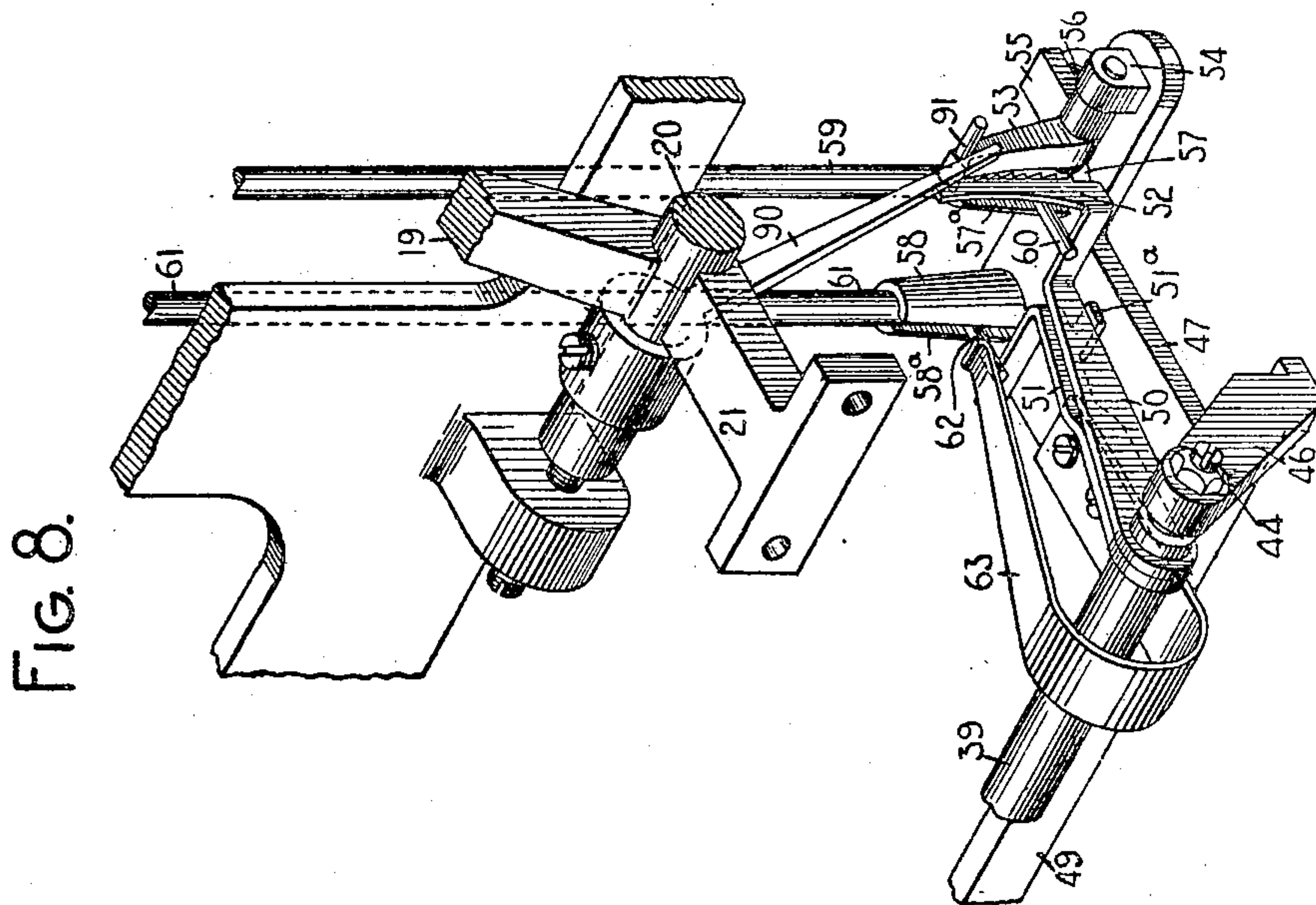
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APPLICATION FILED MAR. 5, 1903.

7 SHEETS—SHEET 6.



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TYPE WRITING MACHINE.
APPLICATION FILED MAR. 5, 1903.

7 SHEETS—SHEET 7.

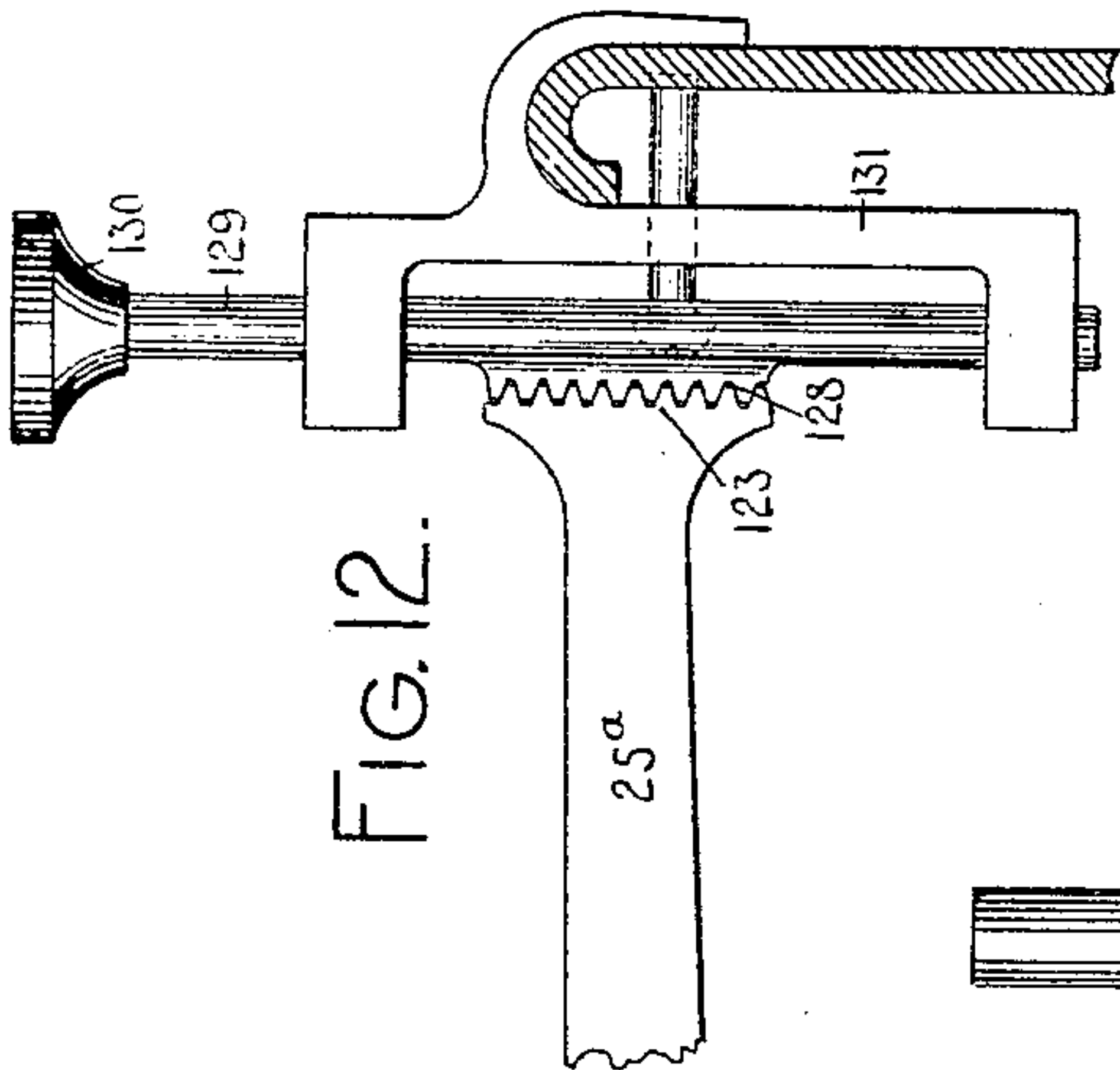


FIG. 12.

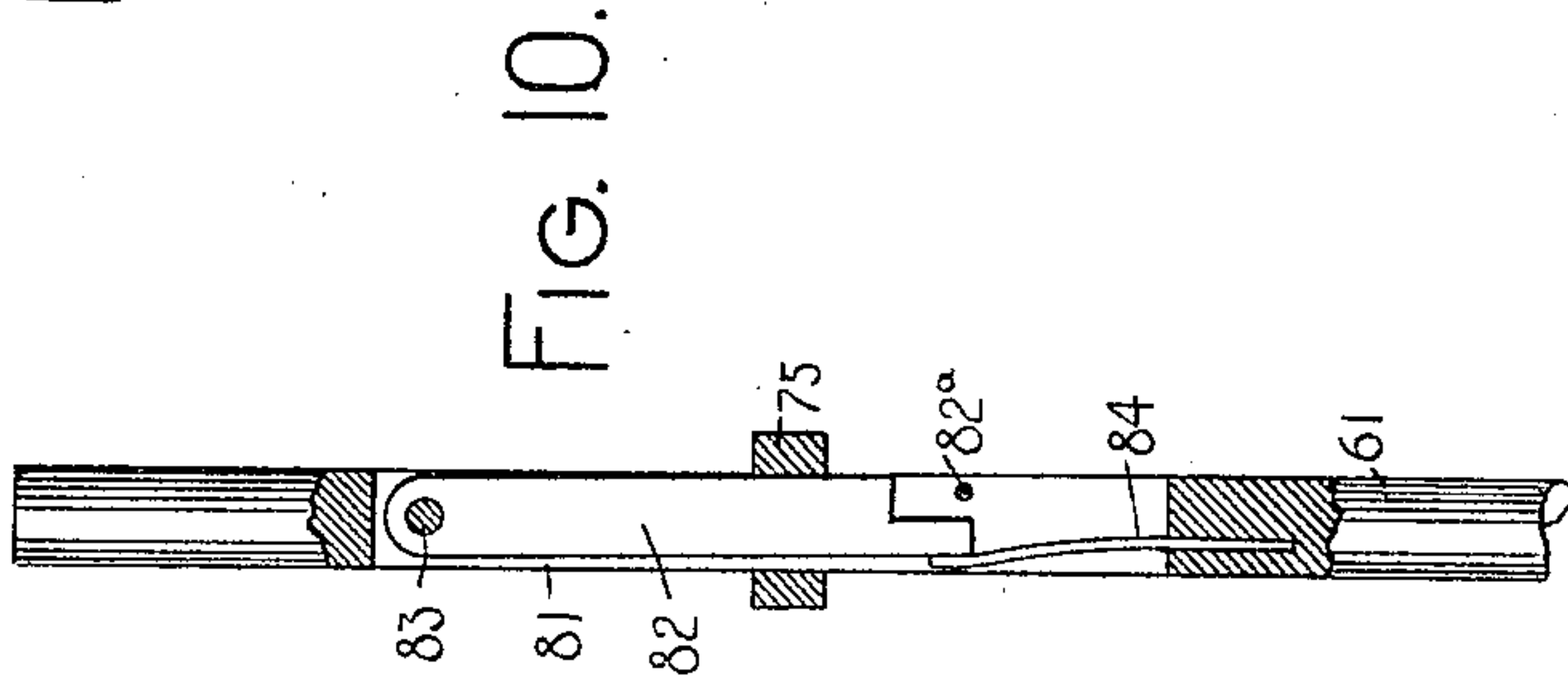


FIG. 10.

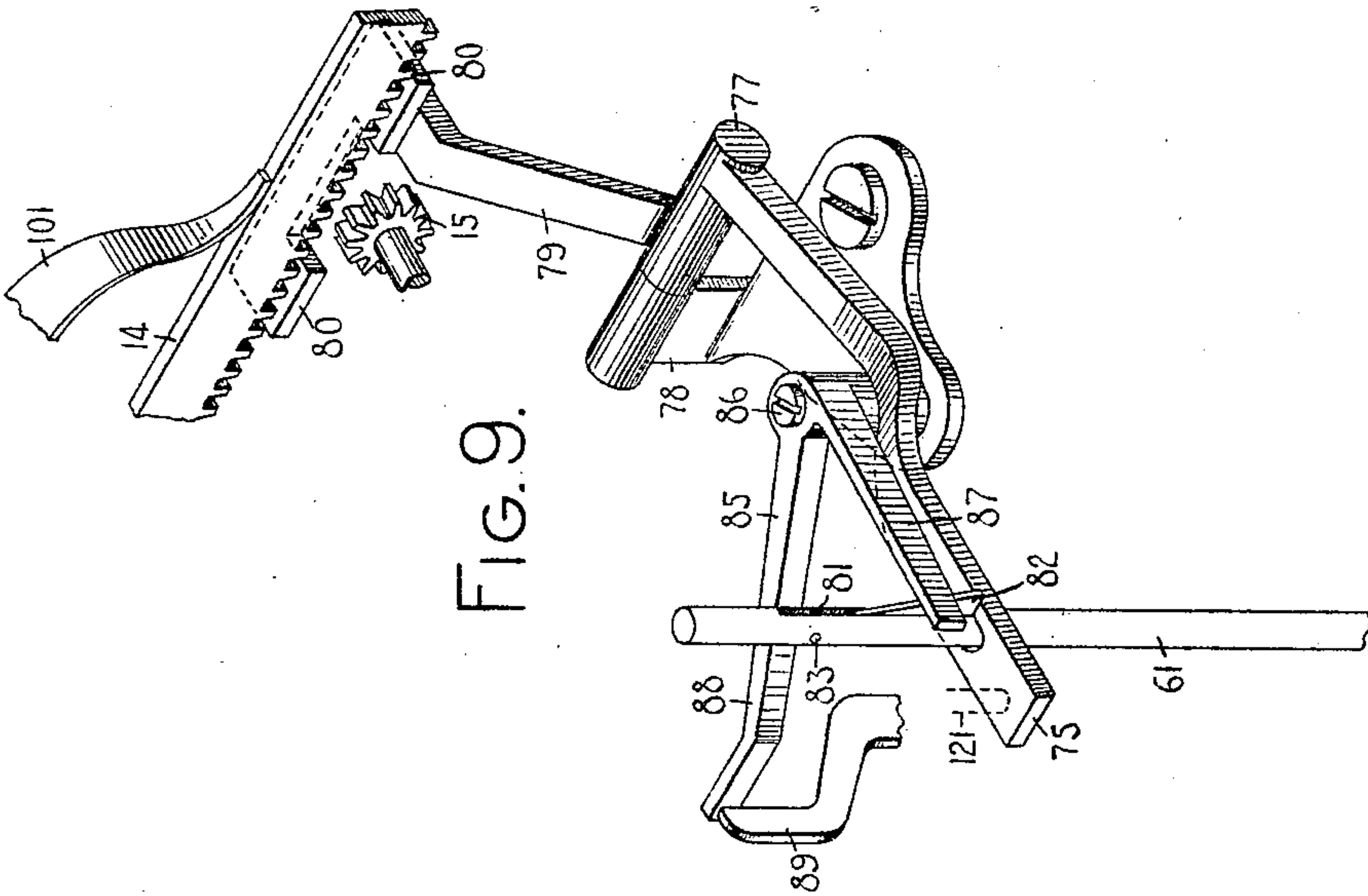


FIG. 9.

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UNITED STATES PATENT OFFICE.

LOUIS SCHLESINGER, OF MILWAUKEE, WISCONSIN.

TYPE-WRITING MACHINE.

No. 795,454

Specification of Letters Patent.

Patented July 25, 1905.

Application filed March 5, 1903. Serial No. 146,306.

To all whom it may concern:

Be it known that I, LOUIS SCHLESINGER, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to improvements in type-writing machines which include tabulating mechanism resembling in some of its functions that patented in Letters Patent of the United States to Schlesinger and Young, No. 714,523, dated November 25, 1902; and the invention consists of a type-writing machine embodying tabulating mechanism comprising column-stop mechanism to arrest the carriage at any desired columnar position without first arresting it elsewhere and comprising further denominational-stop mechanism capable of coacting with the column-stop mechanism in arresting the carriage at any denominational position of any column or capable of independent use, said tabulating mechanism being constructed as hereinafter described and claimed.

In the accompanying drawings, in which like reference-numerals designate like parts in different views and in which the column-stop mechanism and the denominational-stop mechanism are shown separate in certain views for clearness of illustration, Figure 1 is a front to rear vertical section and elevation of the frame and certain parts of the mechanism of a type-writing machine embodying the invention. Fig. 2 is a rear sectional elevation thereof, some of the parts not being fully shown. Fig. 3 is a fragmentary plan of parts of the tabulating mechanism. Fig. 4 is a fragmentary side elevation and vertical section of the denominational-stop mechanism. Fig. 5 is a rear elevation of a fragment of the denominational-stop mechanism. Fig. 6 is a broken plan of the push-keys of the denominational stops. Fig. 7 is a sectional fragment, on an enlarged scale, the section being on a horizontal plane, showing certain details of the tabulating mechanism. Fig. 8 is a perspective view of the same and other details. Fig. 9 is a perspective view of means for raising and lowering the feed-rack. Fig. 10 is a sectional fragment of a rod shown also in Fig. 9. Fig. 11 is a fragmentary side view showing the base of the machine and a modification of the means for elevating the column-stop dog. Fig. 12 is a fragmentary detail side

view showing a modification of the key for operating the column-stop dog.

My improvements are shown applied to a No. 6 Remington type-writing machine and may be embodied in said machine without changing the structural features thereof and without altering the operation of the type-writing machine as such.

In the frame 1 of the machine are fulcrumed on the fulcrum-bar 2 key-levers 3, having restoring-springs 4 and connected by links 5 to type-bars 6. The top plate 7 has on it upwardly-extending lugs 8, that support traverse-rods 9 and 10, upon which the carriage 11 is supported and guided in its movement from side to side of the machine, the carriage supporting a platen 12, that is adapted to revolve therein. Pivoted at 13 to the carriage is a feed-rack 14, which meshes with a feed-pinion 15, secured to a shaft that turns in a bearing 16, secured to the top plate of the machine. The rear end of the shaft is operatively connected to an escapement-wheel 17, with which the feed-dogs 18 cooperate, the dogs being carried by a rocker-arm 19, projecting from a rock-shaft 20, movable to its normal position by a spring 20^a, and to this shaft is likewise connected a forwardly-extending arm 21. This arm carries a transverse bar 22, connected at its ends by links 23 with a universal bar 24, that extends beneath the key-levers. The construction thus far described constitutes part of the well-known No. 6 Remington machine, and further description thereof is unnecessary.

At the left-hand side of the machine is a lever 25, that is fulcrumed on the fulcrum-bar 2 and extends thence to the keyboard of the machine. The front end of this lever 25 is provided with a lateral extension 26, Figs. 1 and 2, containing holes tapped for the reception of the adjusting-screws 27 with knurled heads 28 and check or jam nuts 29. A bracket 30 is removably secured to the frame of the machine near one side of the keyboard by a binding-screw 30^a, and guides 31, carried by the bracket and extending there-through, receive plungers 32, which are stems of the keys 33 and carry at their threaded ends the nuts or heads 34, which not only prevent the withdrawal of the stems from the sleeves and bracket, but serve as bearings for the ends of the screws 27. The key-stems 32 vary in length and are movable downward through different distances, their downward movement being limited by the keys 33 com-

ing into contact with the upper ends of the fixed guides 31. The front key has the least depression, and the depression of the lever 25 by said key is less than that effected by any of the other keys. The length of each succeeding key-stem increases, so that each succeeding key carries the lever farther downward. The lever 25, which is beyond an end of the universal bar 24 and independent thereof in operation, carries near its rear end a link 35, and with each depression of a key 33 this link is actuated. A rear corner-post of the machine-frame has a bracket 36 (see Fig. 7) removably secured to it by a set-screw 37, that is received in a threaded opening in the bracket and bears at its inner end against the post, and journaled on a pivot-screw 38, carried by the bracket, is a rock-shaft 39, having a slotted crank-arm 40, to the outer end of which is adjustably secured the upper end of the link 35. The adjustment between the slotted crank-arm 40 and the link 35 is effected by a headed bolt 41, that passes through a hole in the link and through the slot 42 in the crank-arm and on which is a nut 43. By these means a fore-and-aft adjustment of the upper end of the link in the slotted crank-arm is afforded to change the extent of throw imparted by the lever 25. The other end of the shaft 39 is supported by a screw-pivot 44, provided with a check-nut 45 and adjustable in a bracket 46. This bracket is on a plate 47, which is removably secured to the machine-frame by a headed screw 48, the stem of which is received in a threaded opening in the rear portion of the base of the machine. The brackets 36 and 46 are connected by a bar 49.

The shaft 39 carries near the bracket 46 two arms 50 and 51, the former journaled loosely on the shaft, as indicated in Fig. 7, while the latter is fast on the shaft and has on the side adjacent to the arm 51 a lateral projection 51^a, which extends beneath this arm, so that when the shaft is rocked and the arm 51 raised this arm carries with it the arm 50. The arm 50 has its rear end turned upward to form a substantially vertical rack-bar 52, which is normally engaged by the pawl 53, pivoted to a lug 54, that extends upwardly from the supporting-plate 47 of the bracket 46, the backward movement of said pawl being limited by an arm 55, connected thereto. An expansion-spring 56 is situated between the arm and the bracket-plate 47.

On the supporting-plate 47, near its rear side, are two hollow posts 57 and 58, both slotted longitudinally on the forward sides thereof at 57^a and 58^a, respectively. The post 57 receives the lower end of a vertical rod 59, having a pin 60, which projects through the slot 57^a to prevent the rotation of the rod and which is engaged by the rear end of the arm 50 when the shaft 39 is rocked. The post 58 receives the lower end of a vertical rod 61, provided with a pin 62, which is en-

gaged and actuated by the end of arm 51 when the shaft 39 rocks. A C-spring 63, secured at one end to the plate 47, bears downwardly at its other end upon the pin 62.

The upper ends of rods 59 and 61 pass through bearings in a frame 64, Figs. 2 and 3, which extends from side to side of the machine and comprises the forwardly-projecting curved portions 65, provided with collars 66, that surround the traverse-rod 10 and abut against the lugs 8, which prevent a longitudinal displacement of the frame and with the rod 10 form a support therefor. The frame 64 has a centrally-disposed rearwardly and downwardly extending perforated ear 67, that extends between forwardly-projecting perforated lugs 68 on the frame 69 for the denominational stops, and a bolt 70 passes through the lugs 68 and ear 67 to firmly connect the frame 64 to the frame 69, so that each frame will constitute a support for the other, as will hereinafter more clearly appear. The bearing for the rod 59 is a barrel 71, which carries the head 72 of the rod, which in turn is provided with the column-stop dog or arresting-stop 73, and a contractile spring 59^a is secured at one end to the head 72 and at its other end to the barrel 71, as shown in Fig. 2, in order to restore the rod 59 and the stop-dog 73 to their normal positions.

The construction of the upper end of the rod 61 is best shown in Figs. 9 and 10, where the bearing-sleeve 74 of the frame 64 is omitted, the rod being shown in Fig. 9 passing loosely through an opening in the forward end of a lever-arm 75, projecting from a rock-shaft 77, seated in a bearing in a bracket 78, that is supported by the top plate of the machine. Projecting rearwardly from the rock-shaft 77 is an arm 79, carrying a flat shoe 80, which extends on each side of the pinion 15 under the feed-rack 14. Near the upper end of the rod 61 is a slot 81, in which is a latch 82, pivoted at 83, and a spring 84, Fig. 10, that is secured at one end to the rod and bears against the latch, and when the rod is elevated this latch is forced within the slot 81 by a wall of the opening in the arm 75, through which the rod passes; but after the rod has carried the latch above the lever-arm 75 the lower end of the latch is moved out of its slot and prevents the rod's retraction or downward movement independently of the arm 75, the latch being limited in its outer movement by a pin 82^a, carried by the rod. The supporting-plate of the bracket 78 also carries a bell-crank 85, pivoted at 86, one arm 87 of which moves in proximity to the upper end of rod 61 and the spring-latch 82, whereas the other arm 88 stands in the path of a finger 89, carried by the upper end of the arm 19 of the dog-rocker. The dog-rocker arm 19 also carries a rearwardly-projecting depending arm 90, whose function, as will be seen in Fig. 8, is to engage a stud 91 on the pawl 53 for pur-

poses which will hereinafter more clearly appear.

Extending rearwardly from the carriage are two supporting-arms 92, that are bolted thereto at 93 and have slots 94 in their rear ends, through which the stems of headed screws 95 pass, that take into threaded openings in a rack-bar 96 to secure said rack-bar to the carriage and provide for an adjustment of the rack-bar relatively to the carriage when desired. The said rack-bar is adapted to carry one or more column-stops 97 at whatever point or points it may be desired to set them, it being understood that the teeth of the rack-bar are situated at letter-space distances apart and may correspond in number to the number of letter-space distances the carriage is adapted to travel across the machine. These stops, as will be seen in Fig. 2, where five are shown, are graduated relatively to each other—that is to say, they extend downwardly to different distances from the rack 96 and are arranged progressively, the shortest being the left-hand stop looking from the front of the machine and each succeeding stop being longer than that next to it on the left. The use of the term “column-stop” is employed to designate a stop used to arrest the carriage at the proper columnar position. These stops 97 are set along the rack 96 for as many columns as are to be written and are adapted to arrest the carriage so that the matter to be written may properly appear within the “columnar field” controlled by the particular stop that is brought into play and the carriage may by a single operation be brought to the proper columnar field without interference by the other stops. For instance, if the characters to be written are to appear in the last columnar field the carriage may be arrested by the last columnar stop 97 without interference by the preceding stops 97.

The operation of this column-stop mechanism, as described above, is as follows: One of the keys 33 being depressed until it is arrested by the contact of the key with the top of its guide 31, the forward end of the lever 25 is depressed to a like degree. As the stems 32 depress the lever 25 through different distances, the extent of upward movement of the stop-dog 73 and the columnar position at which the carriage is arrested depend on which key 33 is depressed. Thus the operation of the lever 25 causes the link 35 to rock the shaft 39, thereby imparting an upward movement to the arms 50 and 51 and through them and the pins 60 and 62 to the vertical rods 59 and 61. The vertical rack-bar 52 as the arm 50 ascends is engaged by the pawl 53 and when the movement stops is locked with the arm 50 in the elevated position, holding the stop-dog 73 at a point above its normal position and high enough to engage one of the stops 97, the stop engaged depending on the extent of upward movement given to the stop-

dog 73. If the middle key in Fig. 1 is struck, the dog is elevated sufficiently to engage the middle stop 97 in Fig. 2 to arrest the carriage, but will be maintained out of the path of the two preceding stops 97, those to the right thereof in Fig. 2. The arm 51, having elevated the loosely-disposed arm 50 through the projection 51^a and effected the operation above described, is free to leave its rod and return to its normal position; but the latch 82 by the operation has been moved up with the rod 61 through its opening in the lever 75 and then forced to the position represented in Fig. 9 by its spring 84, so the return of the rod through the opening is prevented by the latch, and the pressure of the spring 63 on the pin 62 causes the rod and the forward end of the lever-arm 75 to be pulled down together, thereby turning the rock-shaft 77 and elevating the shoe 80 on the arm 79 to lift the feed-rack 14 and disengage it from the feed-pinion 15, thus freeing the carriage from its escapement mechanism, and the spring-drum 99, through the connecting-band 100, instantly propels the carriage forward, or from right to left, until it is arrested by the arresting stop or dog 73, which has been interposed and locked in the path of one of the column-stops 97. The carriage having been arrested at the column-field desired, it is now in position to have the characters written within that columnar field. The operation of the key of the first character to be written causes the universal bar 24 to be depressed, and with it the cross-arm 22 and rocking arm 21, turning the shaft 20 and swinging the depending crank-arm 90 rearwardly and causing it to bear against the stud or pin 91 of the pawl 53 and move the pawl against the tension of its spring, thereby releasing the rack 52, which permits the arm 50 and rod 59 to descend and remove the dog 73 from the path of the stops. The arm 19, carrying the escapement-dogs and the finger 89, is rocked forwardly by this movement of the key-lever, and said finger is brought into engagement with the arm 88 of the bell-crank and moves it, causing the arm 87 to press the latch 82 against its spring and push it into the recess or slot in the bar 61, thus releasing the latch from engagement with the lever-arm 75 to permit the arm to move upwardly as a spring 101, which is secured at one end to the carriage at 102 and bears at its free end on the upper side of the feed-rack 14, depresses the feed-rack into engagement with its pinion 15.

From the foregoing description it will be understood that the feed-rack 14 and the stop-dog 73 are automatically locked in the abnormal positions when a column-stop key 33 is actuated—that is to say, the feed-rack is automatically locked out of engagement with its feed-pinion when the rack is moved to the disengaged position, and stop 73 is locked in its projected position in the path of a stop 97,

and neither the stop 73 nor the feed-rack can be moved back to its normal position until a character-key or the space bar or key is depressed—so that it is impossible to arrest the carriage at a wrong position should the operator release the actuated tabulating-key before the carriage has completed its travel, as is the case with some tabulating devices heretofore devised. It will likewise be seen that with the release of the key 33 the carriage is released and the feed-rack is maintained in the disengaged position.

A means having been here afforded for locating the column-field, it is also desirable at times to select the proper "denominational position" or point where the writing is to begin within that field. For this purpose I use a denominational-stop mechanism somewhat similar in some of its features to the construction shown and described in Letters Patent No. 559,449, granted to F. P. Gorin, May 5, 1896, and this mechanism is best shown in Figs. 4, 5, and 6 of the accompanying drawings, where for clearness I have omitted various features of the tabulating mechanism thus far described. A series of horizontal push-rods 105 are provided with keys 106 and are guided at their forward ends in perforations in the front bracket 107, secured to the base of the machine, and suitable retractile springs 108 surround the push-rods, each spring being attached at one end to an adjustable collar 105^a on the push-rod and at the other end to the bracket 107. The rear side of the base of the machine has removably secured thereto by set-screws 109 the lower end of the denominational-stop frame 69, hereinbefore referred to, which is formed with upright sides that support a horizontal pivot 110 about midway of their height. This pivot 110 has denominational levers 111, which rock thereon and whose upper forked ends extend into the recesses in the sides of the sliding denominational stops 112, the lower end of each lever being seated in a slot in the rear end of the associated push-rod. The forks of the levers 111 engage lateral pins 113 on the stops 112, these stops being provided with horizontal slots 114, through which pass guide-rods 115, which unite the uprights of the frame 69 and support and guide the stops 112. The sliding denominational stops 112 are adapted to project into the path of the rearwardly-extending column-stops 116, which may be independent of the column-stops 97, though they are carried by the same rack-bar 96 and are adjustable to various points along said bar and are not interfered with by the stop-dog 73. The uprights of the frame 69 for the denominational stops have pivoted thereto on opposite sides at 117 a rocking yoke 118, whose cross-rod 119 extends in the path and in front of shoulders 120 on all of the denominational stops 112, and when any stop is moved forward it rocks the yoke 118. This yoke has a for-

wardly-projecting and depending arm 121, which bears at its lower end upon the rear end of lever-arm 75, and when the yoke and arm are rocked by the movement of any one of the stops 112 the arm 121 depresses the lever-arm 75 and the carriage is released. On the bracket 107 is a plate 122, which has a series of indices thereon, one adjacent to each denominational push rod or key, and here illustrated as a decimal-point and numbers "1," "10," &c., up to "1,000,000."

When the denominational mechanism is to be employed, the requisite finger-key 33 may first be depressed to effect by a single operation a movement of the carriage from right to left and to arrest the carriage by that column-stop 97 that is to the left of the column-stop 116 with which it is desired to bring the denominational stop into coöperation. The finger-key 33 is then released and the ordinary space-bar of the machine is actuated to unlock the feed-rack and the stop-dog 73. The proper denominational push rod or key is then operated to arrest the carriage as determined by the coöperation of the actuated denominational stop 112 with a coöperating column-stop 116.

In Figs. 11 and 12 are shown other forms of means for operating the lever which elevates the column stop-dog or arresting-stop 73, Fig. 11 showing the forward end of the lever 25^a, provided with a rack 123, which meshes with a segmental rack 124, pivoted at 125 and controlled by an arm or key 126. The arm moves over a segmental scale 127, graded and numbered to show the extent of movement of the lever 25^a and the degree of elevation of the stop-dog 73 that is effective to bring said dog into the path of the different column-stops 97 on the carriage. In Fig. 12 the lever 25^a is also provided with a rack 123, the teeth of which mesh with teeth 128 on the stem 129, having a key 130 and carried by a bracket 131, and the depression of this key to different degrees will result in the elevation of the stop-dog 73 to correspondingly different heights to bring it into the path of the different stops 97 on the carriage.

These and other variations of the different parts may be made without departing from the spirit of my invention.

From the foregoing description it will be seen that an operation of a character-key, space-bar, universal bar, or escapement-rocker effects an automatic release of the locking means for the stop 73 and feed-rack, that the stop 73 and feed-rack are released on the downstroke of a character-key or the space-key, and this does not, therefore, interfere with the letter-space movement of the carriage, which is effected during the up or return stroke of the key actuated and at a time when the release of the parts has been automatically effected.

It will be understood that, broadly consid-

ered, the stops 73, 97, 112, and 116 are tabulating-stops; that more specifically considered, the stop 73 is an arresting stop or dog or a column-stop dog; that more specifically considered the stops 97 and 116 are column-stops, the former coöperating with the stop 73 and the latter with the stops 112, and that the latter when more specifically considered are denominational stops, and these various stops are thus differently designated in the claims.

While I have described the column-stop mechanism and denominational-stop mechanism in their use in conjunction with one another, it will be understood that each mechanism may be employed without bringing the other into operation. Thus, for instance, the column-stop may be used independently of the denominational-stop mechanism where columnar fields alone are to be secured, and the denominational-stop mechanism may, when desired, be employed without bringing the column-stop mechanism into operation, so that each mechanism may be operated independently of the other to perform the work for which it is particularly adapted. When the column-stop mechanism is employed, a single actuation of a key 33 (or a key 126 or 130) is all that is necessary to project the stop 73 into the path of the proper column-stop 97 and release the carriage and lock the feed-rack and projected stop 73 in their abnormal positions, these parts being automatically released at the next actuation of a character-key or the space-key. If, on the other hand, the denominational-stop mechanism is to be employed alone, it is merely necessary to actuate a push-key 106 to arrest the carriage at the proper denominational position within a columnar field determined by the location of the stops 116. In either event no preliminary operation of an auxiliary key is necessary to effect the proper operation of the tabulating mechanism, whether it be the column-stop mechanism or the denominational-stop mechanism.

Various changes may be made without departing from the spirit of my invention, and certain features thereof may be employed without the others.

Certain of the features herein shown and described are claimed, broadly, in another application filed by me on the 3d day of March, 1902, Serial No. 96,553.

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

1. In a type-writing machine, the combination of a carriage, a set of denominational stops and a stop to coöperate therewith, a set of column-stops and a stop to coöperate therewith, key-actuated means to render the denominational stops operative, and other independent key-actuated means to render the column-stops operative.

2. In a type-writing machine, the combina-

tion of a carriage, a set of denominational stops and a stop to coöperate therewith, a set of independent column-stops that are independently adjustable, and a stop to coöperate therewith, key-actuated means to render the denominational stops operative, and other independent key-actuated means to render the column-stops operative.

3. In a type-writing machine, the combination of a carriage, a set of denominational stops and a stop to coöperate therewith, a set of independent column-stops and an independently-actuated stop to coöperate therewith, key-actuated means to render the denominational stops operative, independent key-actuated means to render the column-stops operative, and means to automatically release the carriage when each key-actuated means is operated.

4. In a type-writing machine, the combination of a carriage, a column-stop, key-actuated denominational stops actuated from the front of the machine to coöperate therewith, a set of other independent column-stops, a stop or dog to coöperate therewith, and independent keys at the front of the machine to actuate said stop or dog.

5. In a type-writing machine, the combination of a carriage, a column-stop, a set of denominational stops to coöperate therewith, a set of independent column-stops graduated relatively one to another, an independently-actuated stop-dog to coöperate therewith, and means to actuate the stop-dog, and other independent means to actuate the denominational stops, to effect a tabulating operation by either actuating means.

6. In a type-writing machine, the combination of a carriage, a column-stop, a set of denominational stops to coöperate therewith, actuating means to bring said column-stop and said denominational stops into coöperative relations, a set of other independent column-stops graduated relatively one to another, a stop-dog movable to different extents to secure its engagement with the graduated column-stops, and other independent actuating means to actuate said dog.

7. In a type-writing machine, the combination of a carriage, a column-stop, denominational stops to coöperate therewith, actuating means to bring the said column-stop and denominational stops into coöperation and to automatically release the carriage, a set of other independently-adjustable column-stops graduated relatively one to another, a stop-dog to engage a predetermined graduated stop, and other independent actuating means to actuate the dog and simultaneously release the carriage.

8. In a type-writing machine and tabulating mechanism, the combination of a carriage, a series of column-stops graduated relatively to each other, a coöperative arresting-stop, a lever movable through different distances to

bring the arresting-stop immediately into co-operation with a predetermined column-stop, means to actuate said lever, and means to automatically release the carriage with a movement of said lever.

9. In a type-writing machine and tabulating mechanism, the combination of a carriage, tabulating devices, a tabulating-key, a carriage-releasing device, and a latch movable with the tabulating-key, and movable in one direction independently of the releasing device and in the opposite direction in actuating engagement with said device.

10. In a type-writing machine and tabulating mechanism, the combination of a carriage, tabulating devices, a tabulating-key, a carriage-releasing device, and locking means controlled by the said key and movable independently of the releasing device during a movement of the tabulating-key in one direction, and engaged with and locking said releasing device to secure it in a releasing position during a movement of said key in the opposite direction.

11. In a type-writing machine and tabulating mechanism, the combination of a carriage, tabulating devices, a tabulating-key, a carriage-releasing device, locking means controlled by the said key and movable independently of the releasing device during a movement of the tabulating-key in one direction, and engaged with and locking said releasing device to secure it in a releasing position during a movement of said key in the opposite direction, and means to automatically release the locking means from engagement with the carriage-releasing device.

12. In a type-writing machine and tabulating mechanism, the combination of a carriage, tabulating devices, a tabulating-key, a carriage-releasing device, a rod that is actuated by said tabulating-key and that passes through an opening in the carriage-releasing device, a latch carried by said rod and allowing a free movement of the rod independently of the releasing device in one direction and capable of imparting motion to the releasing device from the rod during a movement of the latter in the opposite direction.

13. In a type-writing machine and tabulating mechanism, the combination of a carriage, tabulating devices including a stop, a carriage-releasing device, a tabulating-key, a rod operatively connected to said tabulating-stop and movable in one direction by said tabulating-key, means for locking said rod in the abnormal position, a carriage-release rod operatively connected to the tabulating-key, and means for locking the said release-rod to the said releasing device.

14. In a type-writing machine and tabulating mechanism, the combination of a carriage, a tabulating-stop, a tabulating-key lever, a rock-shaft controlled thereby, two arms on said shaft, one of which has a return move-

ment to the normal position independently of the rock-shaft, an arresting-stop controlled by said independently-returnable arm, and carriage-releasing means controlled by the other of said arms.

15. In a type-writing machine and tabulating mechanism, the combination of a carriage, a series of column-stops graduated relatively to each other, a lever, finger-keys adapted to move the lever through different distances, a rock-shaft connected to the lever, an arm loose on the rock-shaft, a rack on said arm, a pawl, a rod carrying the column-stop dog, said rod being actuated by the loose arm, an arm with a lateral projection fast on the rock-shaft and actuating the loose arm, and a rod with means for releasing the carriage, said releasing means being adapted to release the carriage on the return stroke of the rod.

16. In a type-writing machine and tabulating mechanism, the combination of a carriage having a feed-rack and column-stops thereon, a carriage-releasing device, a tabulating-lever, finger-keys for actuating the lever, a rock-shaft connected to the lever, arms on the rock-shaft, a rod carrying a column-stop dog and operated by one of the arms, a rod provided with a latch to engage the releasing device of the feed-rack, and a spring to cause the rod and latch to operate the releasing device when pressure on the tabulating-lever is released.

17. In a type-writing machine, the combination of a carriage, independent column-stops, a key-actuated lever, a rock-shaft connected to the lever, arms on the rock-shaft, rods actuated simultaneously with the rock-shaft, one adapted to actuate and lock in position a column-stop dog, and the other to engage with means for releasing the carriage and to actuate the same when the lever is released.

18. In a type-writing machine and tabulating mechanism, the combination of a carriage, a carriage-releasing device, a lever, a rock-shaft connected to the lever, an independent arm with a rack, a rod carrying a stop-dog and actuated by the independent arm, an arm fast on the shaft provided with a lug to engage and move the independent arm, a rod with a latch to engage the carriage-releasing device, said rod being operated by the arm secured to the shaft, a spring to return the latter arm and its rod to their normal positions, and a pawl to retain the independent arm in its abnormal position when released by the other arm.

19. In a type-writing machine and tabulating mechanism, the combination of a carriage, a carriage-releasing device, a lever, finger-keys to impart different movements to the lever, a rock-shaft connected to the lever, an arm secured to the rock-shaft and having a movement corresponding to that of the lever, a rod actuated by the arm and provided with means for engaging the carriage-releasing device and for releasing the carriage during the return

movement of the said arm, an arm loosely mounted on the rock-shaft, a rod carrying a stop-dog, said rod being moved by said last-mentioned arm a distance determined by the movement of a finger-key, a rack carried by said loosely-mounted arm, a pawl to engage the rack and lock the arm in the position to which it is moved, and means for automatically releasing said pawl.

20. In a type-writing machine and tabulating mechanism, the combination of a carriage, tabulating devices, key-actuated means for controlling the same, a feed-rack, a feed-pinion, a releasing-lever, one arm of which is adapted to lift the feed-rack from engagement with the pinion, a rod with a latch passing through an opening in the other arm of the lever, said rod being controlled by the key-actuated means, and means for retracting the rod when the latch has engaged the lever.

21. In a type-writing machine and tabulating mechanism, the combination of a carriage, column-stops, a feed-rack, a feed-pinion, a lever to release the feed-rack, a rod to connect with and actuate the lever, a second rod carrying a stop-dog, key-actuated means to move the rods in unison, and a spring to retract the rod that connects with the lever.

22. In a type-writing machine and tabulating mechanism, the combination of a carriage, column-stops, a feed-rack, a feed-pinion, a lever to release the feed-rack, a vertical rod to connect with the lever to release the feed-rack, a similar rod carrying a dog to engage the column-stops, a spring to retract the rod carrying the dog, a pawl, means to cooperate with said pawl in locking the rod with the dog in the projected position, and key-actuated means to operate the rods.

23. In a type-writing machine and tabulating mechanism, the combination of a carriage, column-stops, a swinging feed-rack, a lever to actuate the same, a rod with a latch to connect the rod with the lever, a rod with a dog movable into cooperative relation with a column-stop, a rock-shaft carrying arms to operate the rods, a crank-arm on the rock-shaft, a key-lever, a link connecting said crank-arm and key-lever, finger-keys to operate the key-lever, and a spring to retract the latch-rod when a finger-key is released.

24. In a type-writing machine and tabulating mechanism, the combination of a carriage, an escapement-rocker therefor, a tabulating-stop, a rock-shaft, an arm loosely mounted on the rock-shaft, a rack on said arm, a pawl to engage the rack when the arm is elevated, key-actuated means for moving the arm, a rod carrying a stop-dog and adapted to be operated by the arm, and an arm extending from the escapement-rocker to engage the pawl and cause it to release the rack.

25. In a type-writing machine and tabulating mechanism, the combination of a carriage, tabulating devices, a feed-rack, a releasing-

lever, a rod with a latch to engage the rod with the lever, means to actuate the rod when the tabulating devices are brought into operation, and means to release the latch with a subsequent operation of the type-writing machine.

26. In a type-writing machine and tabulating mechanism, the combination of a carriage, a carriage-releasing device, tabulating devices, a rod with a latch to engage the releasing device when the tabulating devices are operated, a bell-crank to release the latch with one arm, and an escapement-rocker having a finger to engage the other arm of the bell-crank and actuate same.

27. In a type-writing machine, the combination of a carriage, a feed-rack therefor, column-stop mechanism, independently-operated denominational-stop mechanism, means to release the feed-rack when either the column-stop or denominational-stop mechanism is actuated, and means to lock the feed-rack in the released position.

28. In a type-writing machine, the combination of a carriage, a feed-rack therefor, column-stop mechanism, independently-operated denominational-stop mechanism, means to release the feed-rack when either the column-stop or denominational-stop mechanism is actuated, means to lock the feed-rack in the released position, and means to release the feed-rack with a movement of a character-key.

29. In a type-writing machine and tabulating mechanism, the combination of a carriage, tabulating devices to stop the carriage at any one of a plurality of predetermined columnar positions after a single run thereof, means to lock said tabulating devices in operative relations to the carriage and maintain them in such relations after the carriage has completed its run, and means to unlock said tabulating devices with a subsequent printing or letter-spacing operation.

30. In a type-writing machine and tabulating mechanism, the combination of a carriage, a series of stops graduated relatively one to another, an arresting-stop or dog movable through different distances into the paths of said graduated stops, means to lock the arresting-stop in any of its advanced positions and maintain it in such position after the carriage has been arrested by said stop, and means controlled by a subsequent operation of the type-writing machine to release said locking means.

31. In a type-writing machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, tabulating-stops, a cooperative arresting-stop, means to advance said arresting-stop to different positions transversely of the paths of movement of the carriage, means to lock the arresting-stop in each advanced position, and means actuated with a movement of a printing instrumentality to release said locking means.

32. In a type-writing machine and tabulat-

ing mechanism, the combination of a carriage, carriage feed devices, means to release the carriage from its feed devices, tabulating-stops, an arresting-stop, means to project said arresting-stop through different distances into the paths of different tabulating-stops, locking means to lock the arresting-stop in a projected position and the releasing means in a releasing position, and means controlled by a movement of the carriage feed mechanism to release said locking means.

33. In a type-writing machine and tabulating mechanism, the combination of a carriage, feed devices therefor, means to release the carriage from its feed devices, printing instrumentalities, tabulating-stops, a coöperative arresting-stop, means to project said arresting-stop through different distances, locking means to lock the arresting-stop in a projected position and the releasing means in a releasing position, and means operable with a movement of a printing instrumentality to release said locking means.

34. In a type-writing machine and tabulating mechanism, the combination of a carriage, a series of column-stops graduated relatively one to another, a column-stop dog to coöperate therewith, a key to project said stop-dog into coöperative relation with any of the graduated stops by a single movement of said key, means to lock the stop-dog in the projected position, and means controlled by said key to release said carriage.

35. In a type-writing machine and tabulating mechanism, the combination of a carriage, a series of column-stops graduated relatively one to another, a column-stop dog to coöperate therewith, a key to project said stop-dog into coöperative relation with any of the graduated stops, means to lock the stop-dog in the projected position, means controlled by said key to release said carriage, and means controlled by a subsequent operation of the type-writing machine to release the locking means.

36. In a type-writing machine and tabulating mechanism, the combination of a carriage, a releasing device therefor, tabulating devices, a tabulating-key, and a latch controlled by said key and movable independently of the carriage-releasing device when the tabulating-key is depressed and capable of engaging the releasing device to cause it to move therewith when the key is released.

37. In a type-writing machine and tabulating mechanism, the combination of a carriage, a releasing device therefor, tabulating devices, a tabulating-key, a latch controlled by said key and movable independently of the carriage-releasing device when the tabulating-key is depressed and capable of engaging the releasing device to cause it to move therewith when the key is released, and means to disengage the latch from the carriage-releasing device.

38. In a type-writing machine and tabulat-

ing mechanism, the combination of a carriage, a releasing device therefor, tabulating devices including a stop, a tabulating-key, means controlled by said key to project said tabulating-stop into operative position, means to lock the stop in the operative position, independent locking means controlled by the tabulating-key and movable independently of the carriage-releasing device when the tabulating-key is depressed and capable of engaging the releasing device to cause it to move therewith when the key is released, and means to release both locking means.

39. In a type-writing machine and tabulating mechanism, the combination of a carriage, a series of column-stops, an arresting-stop movable into the path of any of said column-stops and clear of any of the other column-stops, a rock-shaft controlling said arresting-stop, means to impart different rocking movements to said shaft, means to lock the said stop in the position to which it is moved, and means to release said locking means.

40. In a type-writing machine and tabulating mechanism, the combination of a carriage, carriage-escapement mechanism including a feed-rocker, tabulating devices including a stop, a rock-shaft controlling said stop, means to lock the stop at the end of a movement, and means actuated by the feed-rocker to release said locking means.

41. In a type-writing machine and tabulating mechanism, the combination of a carriage, a carriage-releasing device, tabulating devices including a stop, a rock-shaft controlling said stop and carriage-releasing device, means to rock said shaft, means to lock the stop at the end of a movement, and means to release said locking means.

42. In a type-writing machine and tabulating mechanism, the combination of a carriage, a carriage-releasing device, tabulating devices including a stop, a rock-shaft controlling said stop, a latch or locking device controlled by said rock-shaft and movable in one direction independently of the carriage-releasing device and capable of imparting motion thereto when the latch or locking device is moved in an opposite direction, means to rock said shaft, means to lock the shaft at the end of a movement, and means to release said last-mentioned locking means and said locking device or latch.

43. In a type-writing machine and tabulating mechanism, the combination of a carriage, a series of column-stops graduated relatively to each other, a coöperative arresting-stop, a tabulating-key lever movable through different distances to project said arresting-stop into the paths of the different column-stops, intermediate connections between said key-lever and arresting-stop, means to coöperate therewith to lock the arresting-stop in its projected position, and means controlled by a subsequent operation of the type-writing machine to release said locking means.

44. In a type-writing machine and tabulating mechanism, the combination of a carriage, a series of column-stops graduated relatively to each other, a coöperative arresting-stop, a tabulating-key lever movable through different distances to project said arresting-stop into the paths of the different column-stops, intermediate connections between said key-lever and arresting-stop, said connections including a rock-shaft, a rack connected to said rock-shaft, a locking-pawl to coöperate with the rack in locking the arresting-stop in its projected position, and means controlled by a subsequent operation of the type-writing machine to release said locking-pawl from engagement with the rack.

45. In a type-writing machine and tabulating mechanism, the combination of a carriage, a carriage-releasing device, a series of column-stops graduated relatively to each other, a coöperative arresting-stop, a tabulating-key lever movable through different distances to project said arresting-stop into the paths of the different column-stops intermediate connections between said key-lever and arresting-stop and between said key-lever and carriage-releasing device, said connections including a rock-shaft, a rack connected to said rock-shaft, a pawl to coöperate with the rack in locking the arresting-stop in its projected position, means to lock the carriage-releasing device in a releasing position, and means controlled by a subsequent operation of the type-writing machine to disengage said pawl from the rack.

46. In a type-writing machine and tabulating mechanism, the combination of a carriage, a key-actuated rock-shaft, arms movable together with said shaft when it is rocked in one direction, one of said arms being movable in the other direction alone after the return movement of the shaft, a tabulating-stop controlled by the arm thus movable alone, a locking device to coöperate with said last-mentioned arm, a carriage-releasing device to coact with the other arm in releasing the carriage, and means to release said locking device.

47. In a type-writing machine and tabulating mechanism, the combination of a carriage, a key-actuated rock-shaft, arms movable together with said shaft when it is rocked in one direction, one of said arms being movable in the other direction alone after the return movement of the shaft, a tabulating-stop controlled by the arm thus movable alone, a locking device to coöperate with said last-mentioned arm, a carriage-releasing device, a latch or locking device connected to the other arm and capable of engaging the carriage-releasing device only when the arm moves in one direction, and means to release both of said locking devices.

48. In a type-writing machine and tabulating mechanism, the combination of a carriage,

a series of independent column-stops graduated relatively to each other, a stop-dog movable into the path of any of said column-stops and clear of that of any of the others, a key-lever movable through different distances, and means controlled by said key-lever to move the stop-dog and lock it in its projected position and to release the carriage and lock its releasing means in a releasing position, and means controlled by a subsequent operation of the type-writing machine to release the locked parts.

49. In a type-writing machine and tabulating mechanism, the combination of a carriage, a stop carried thereby, a lever, finger-keys to actuate the lever, a rock-shaft connected with the lever, an arm loose on the rock-shaft, a rack on the arm, a rod carrying a stop-dog and movable by the arm, an arm on the rock-shaft to actuate the loose arm, and a pawl engaging the rack to hold the loose arm with the rod and stop-dog in the projected position.

50. In a type-writing machine and tabulating mechanism, the combination of a tabulating-stop, a lever, finger-keys to move said lever through different distances, a rock-shaft connected to the lever, an arm on the shaft, this arm having a lateral projection, another arm loose on the shaft and movable by said lateral projection, a rack on the loose arm, a pawl to lock the loose arm when the projection is withdrawn, and another coöperative tabulating-stop operatively connected to the loose arm.

51. In a type-writing machine and tabulating mechanism, the combination of a carriage, a series of column-stops graduated relatively to each other, a column-stop dog, a key-actuated lever movable through different distances, a rock-shaft connected with said lever, an arm on the rock-shaft, a locking device carried by said arm, a coöperative locking device to hold the arm in the position to which it is moved by the rock-shaft, operative connections between said stop-dog and arm, and means to disengage the locking devices.

52. In a type-writing machine and tabulating mechanism, the combination of a carriage, a series of column-stops graduated relatively to each other, a coöperative arresting-stop, a lever to change the relations between said arresting-stop and column-stops, to render the arresting-stop temporarily coöperative with a single predetermined column-stop only, means to lock the stops in coöperative relation, means to impart different movements to said lever, means to release the carriage with a movement of said lever, means to lock the carriage-releasing means in a releasing position, and means to release said locking means after the carriage stops.

53. In a type-writing machine and tabulating mechanism, the combination of a carriage, a feed-rocker therefor, a stop carried by the carriage, a coöperative arresting-stop, means

to project the arresting-stop in the path of the stop on the carriage, means to lock the arresting-stop in the projected position, and an arm on the feed-rocker to act on the locking means to release the arresting-stop.

54. In a type-writing machine and tabulating mechanism, the combination of a carriage, column-stops graduated relatively to each other, a column-stop dog, a key-actuated lever to move the dog into coöperative relation with any predetermined column-stop, a rock-shaft, operatively connected to the lever, an arm loosely mounted on the rock-shaft, a rod to which the dog is connected and which is movable by said arm, an arm fixed on the shaft, and a rod movable by the fixed arm and provided with means to release the carriage.

55. In a type-writing machine and tabulating mechanism, the combination of a carriage, column-stops graduated relatively to each other, a column-stop dog, a key-actuated lever adapted to move the dog into coöperative relation with any predetermined column-stop, a rock-shaft operatively connected to the lever, an arm loosely mounted on the rock-shaft, a rod to which the dog is connected and which is movable by said arm, a lock to coöperate with said loose arm, an arm fixed on the shaft, a rod movable by the fixed arm and provided with means to release the carriage, and means to release said lock.

56. In a type-writing machine, the combination of tabulating devices, a lever to actuate said devices, independent keys to impart different movements to said lever, and adjustable devices between each key and said lever to regulate the movement imparted to said lever by the key.

57. In a type-writing machine, the combination of tabulating devices, a lever to actuate said devices, independent keys to impart different movements to said lever, adjustable devices between each key and said lever to regulate the movement imparted to said lever by the key, and means to limit the movements of said keys.

58. In a type-writing machine, the combination of tabulating devices, a lever to actuate said devices, a series of key-stems to coöperate with said lever, and adjustable devices between said key-stems and said lever.

59. In a type-writing machine, the combination of tabulating devices, an actuating-lever therefor, key-stems to impart different movements to said lever, a fixed bracket, guides for the key-stems carried by said fixed bracket, and adjustable devices interposed between said lever and said key-stems.

60. In a type-writing machine and tabulating mechanism, the combination of tabulating devices, a lever therefor, adjustable abutments carried by said lever, and key-stems to actuate the lever by contact with said adjustable abutments.

61. In a type-writing machine and tabulating mechanism, the combination of tabulating devices, an actuating-lever therefor, adjustable screws carried by said lever, fixed guides, and key-stems movable in said guides and in contact with said adjustable screws to impart motion to the actuating-lever.

62. In a type-writing machine and tabulating mechanism, the combination of a carriage, key-actuated tabulating devices, a carriage-releasing device having an opening, a rod with a latch movable in said opening, said rod being controlled by the key for the tabulating devices, and independent means to retract the rod when the latch has engaged the carriage-releasing device.

63. In a type-writing machine and tabulating mechanism, the combination of a carriage, key-actuated tabulating devices, a carriage-releasing device having an opening, a rod with a spring-pressed latch movable in said opening to change its relation to the carriage-releasing device when the rod is moved in one direction and secure its engagement with the releasing device when the rod moves in the opposite direction, said rod being controlled by the key for the tabulating devices, and a spring to retract the rod when the latch has engaged the carriage-releasing device.

64. In a type-writing machine, the combination of a carriage, a series of graduated column-stops, a stationary guide, a stop-dog in said guide, dog-actuating means to project said stop-dog into coöperative relation with any of said graduated stops, means to lock the stop-dog in the projected position, and means controlled by said dog-actuating means to release the carriage.

65. In a type-writing machine comprising the combination of a carriage, a series of stops on the carriage, and a stop-dog movable in a guide into coöperative relations with the other stops, a frame to which said guide is affixed, the frame being supported at its ends near the sides of the machine and between its ends by a fixed device at the back of the machine.

66. In a type-writing machine comprising the combination of a carriage, a series of stops on the carriage, and a stop-dog movable in a guide into coöperative relations with the other stops, a frame to which said guide is affixed, said frame being secured at its ends between posts on the top and near the sides of the machine-frame and attached between its ends to a fixed device at the back of the machine.

Signed at Milwaukee, in the county of Milwaukee and State of Wisconsin, this 28th day of February, A. D. 1903.

LOUIS SCHLESINGER.

Witnesses:

HENRY L. PETERSEN,

CHRIST H. BOEDECKER, Jr.