

No. 895,807.

PATENTED AUG. 11, 1908.

C. E. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED OCT. 18, 1905.

4 SHEETS—SHEET 1.

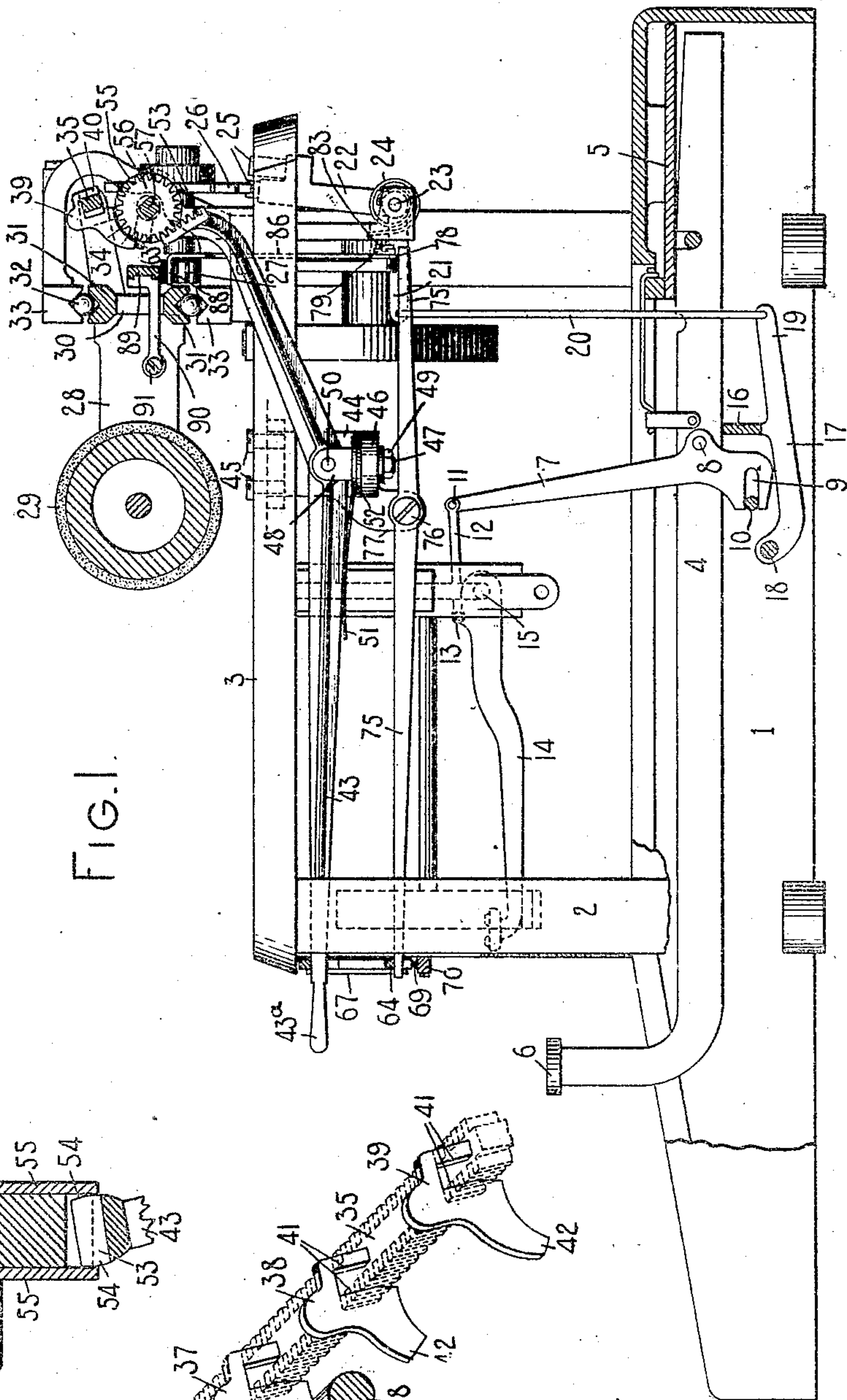
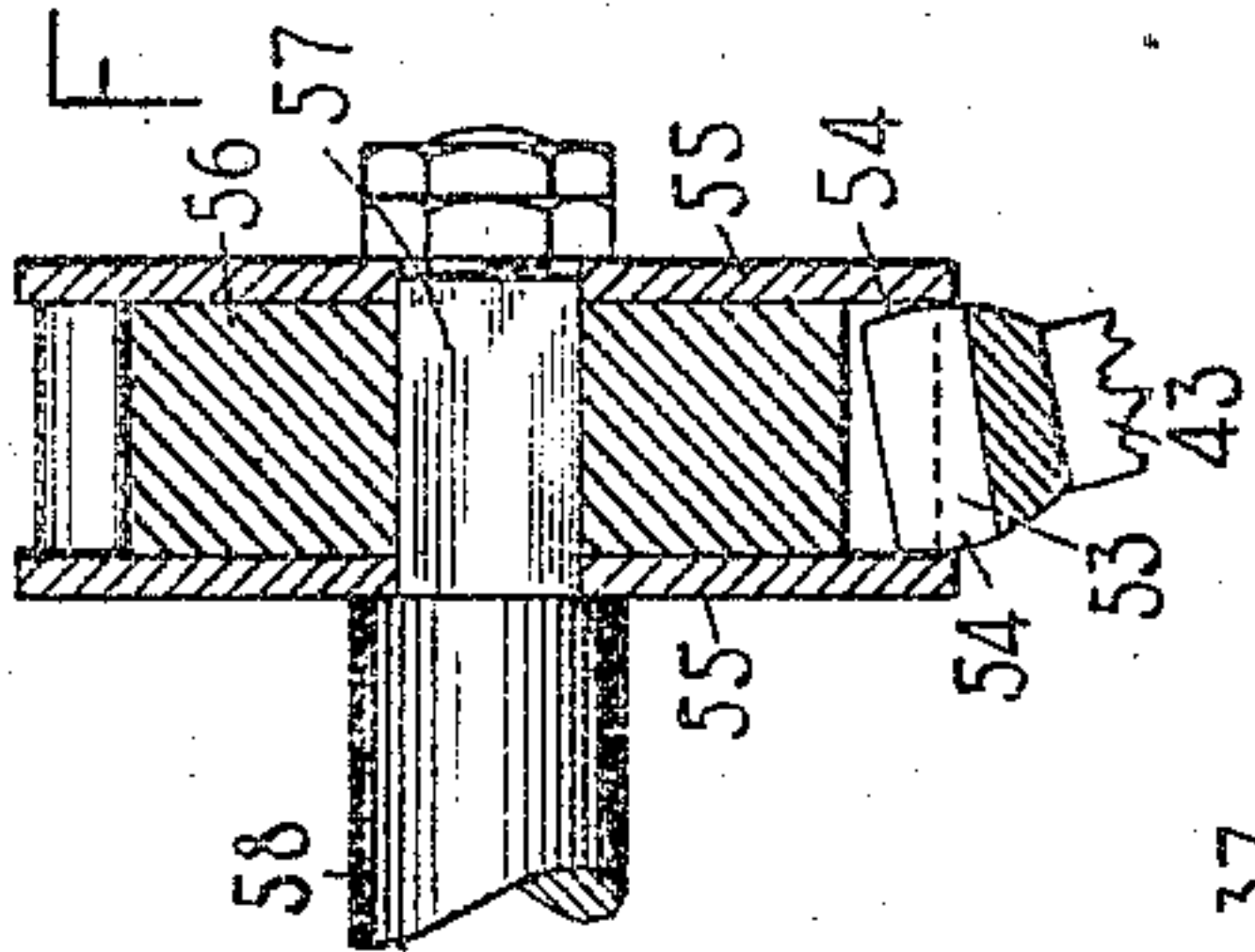


FIG. 1.

FIG. 5.



WITNESSES:

J. B. Reeves
E. M. Wells

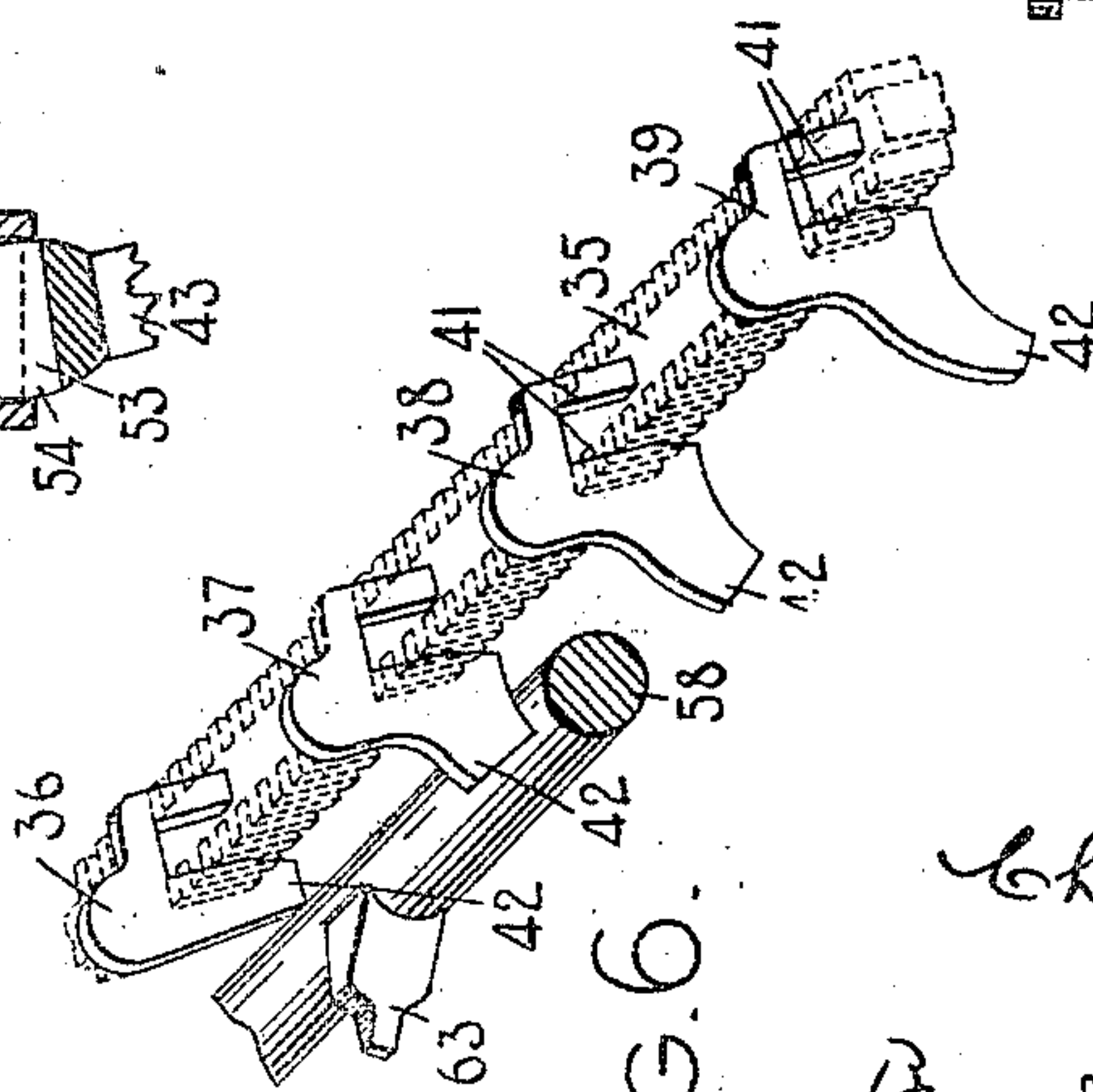


FIG. 6.

INVENTOR:

Charles E. Smith

By Jacob Felbel

HIS ATTORNEY

No. 895,807.

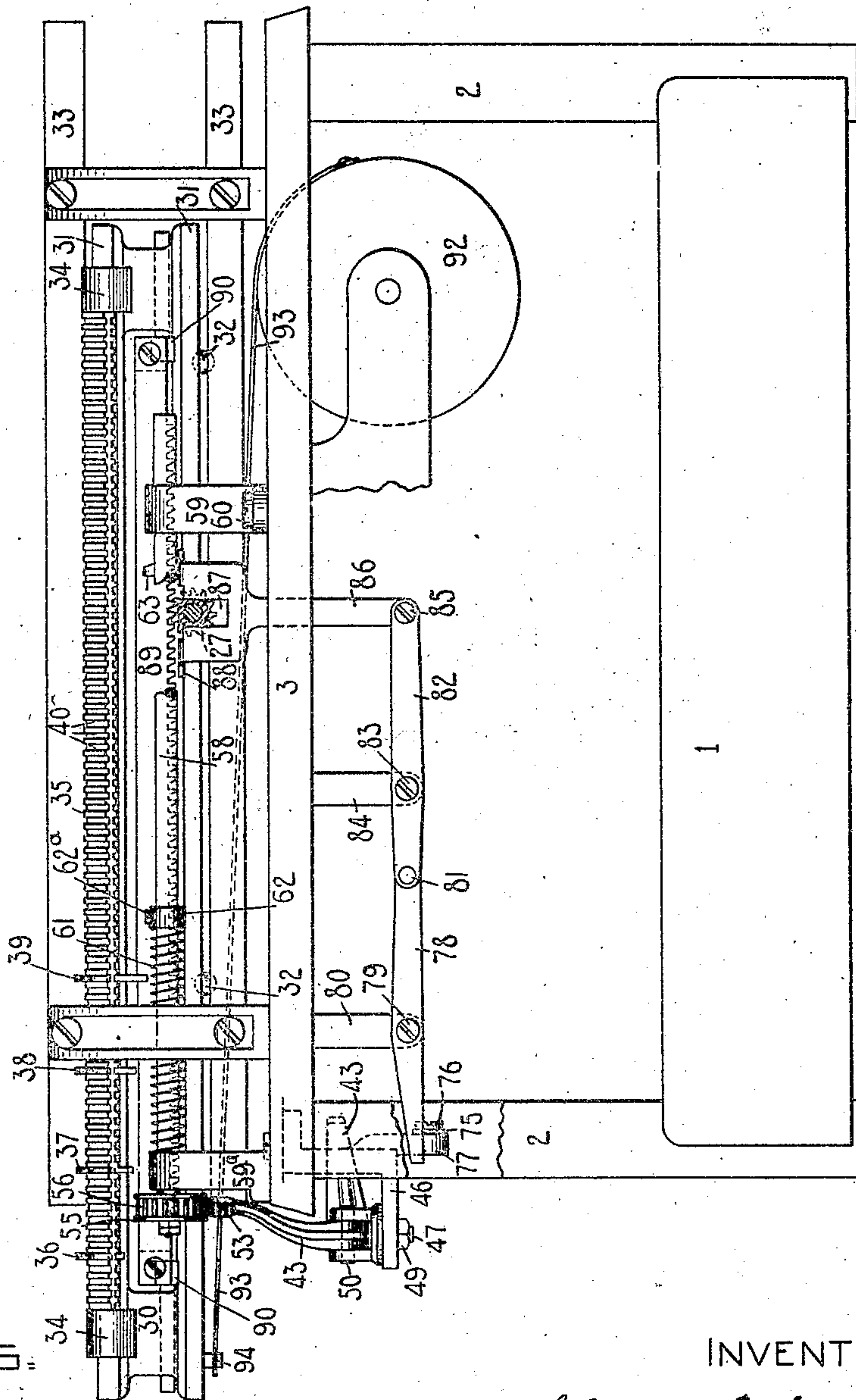
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4 SHEETS—SHEET 2

FIG. 2.



WITNESSES:

J. B. Reeves
E. M. Wells

INVENTOR:

Charles E. Smith
By Jacob Falck

HIS ATTORNEY

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FIG. 3

4 SHEETS—SHEET 3.

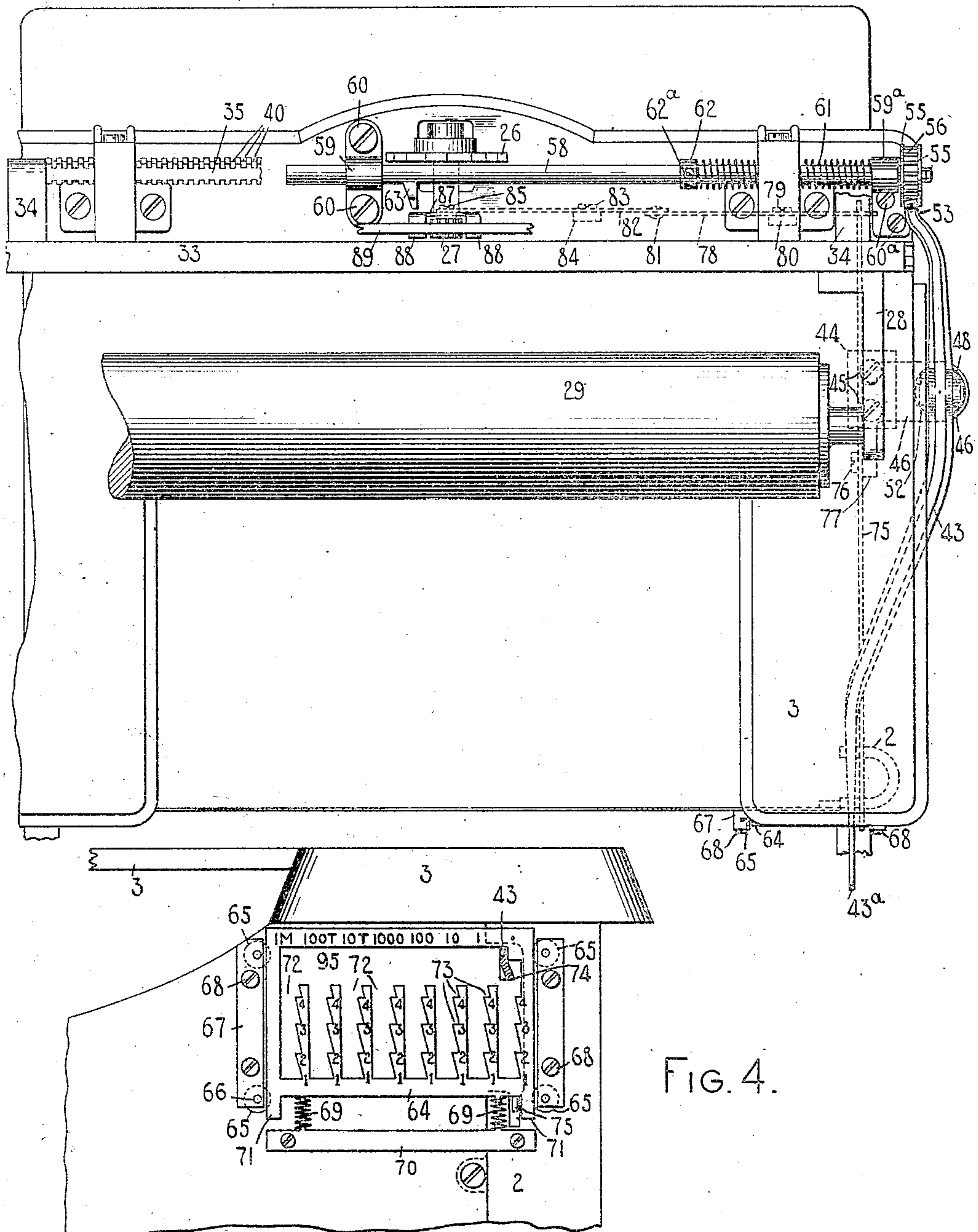


FIG. 4.

WITNESSES:

J. B. Reeves.
E. M. Wells

INVENTOR:

Charles E. Smith
By Jacob Fells
HIS ATTORNEY

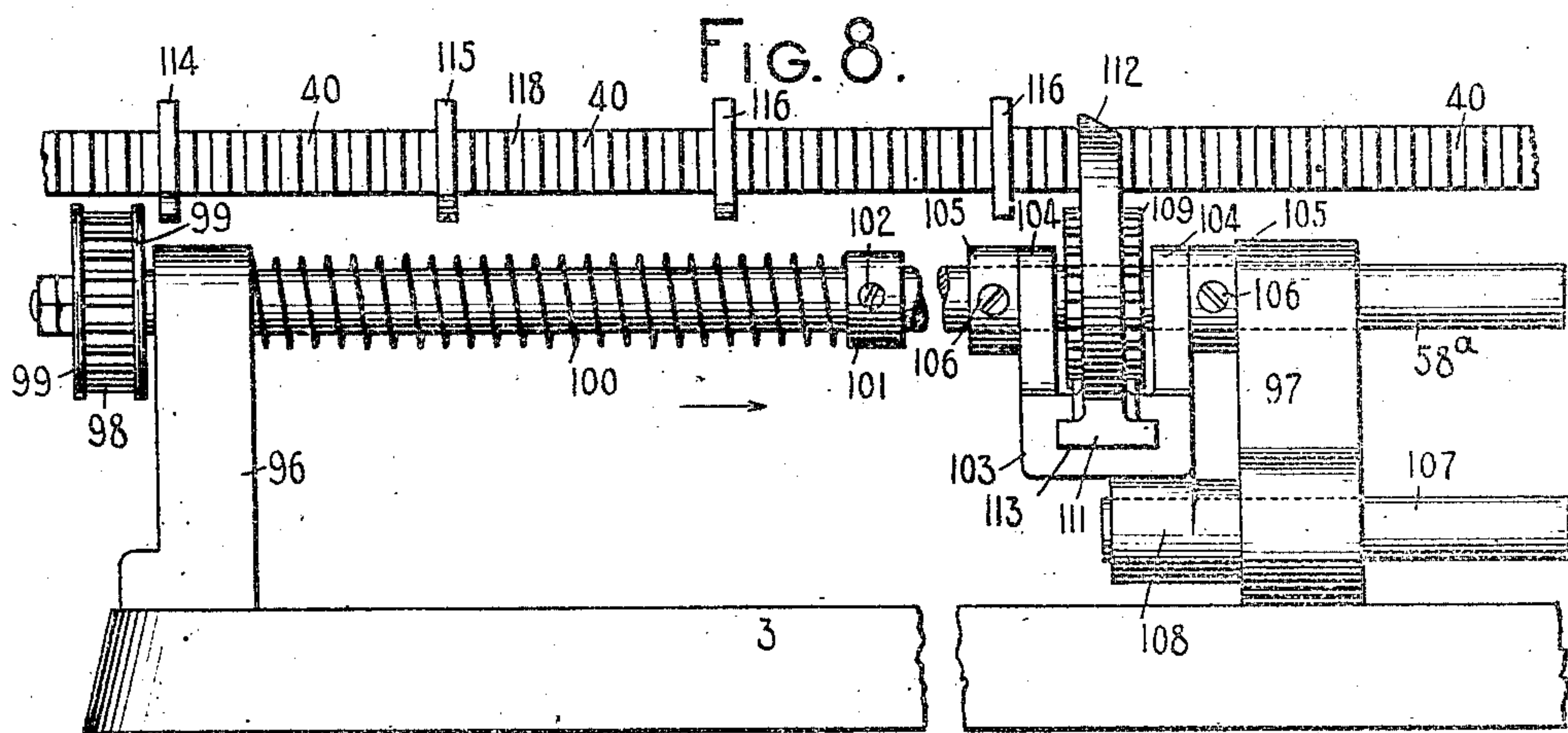
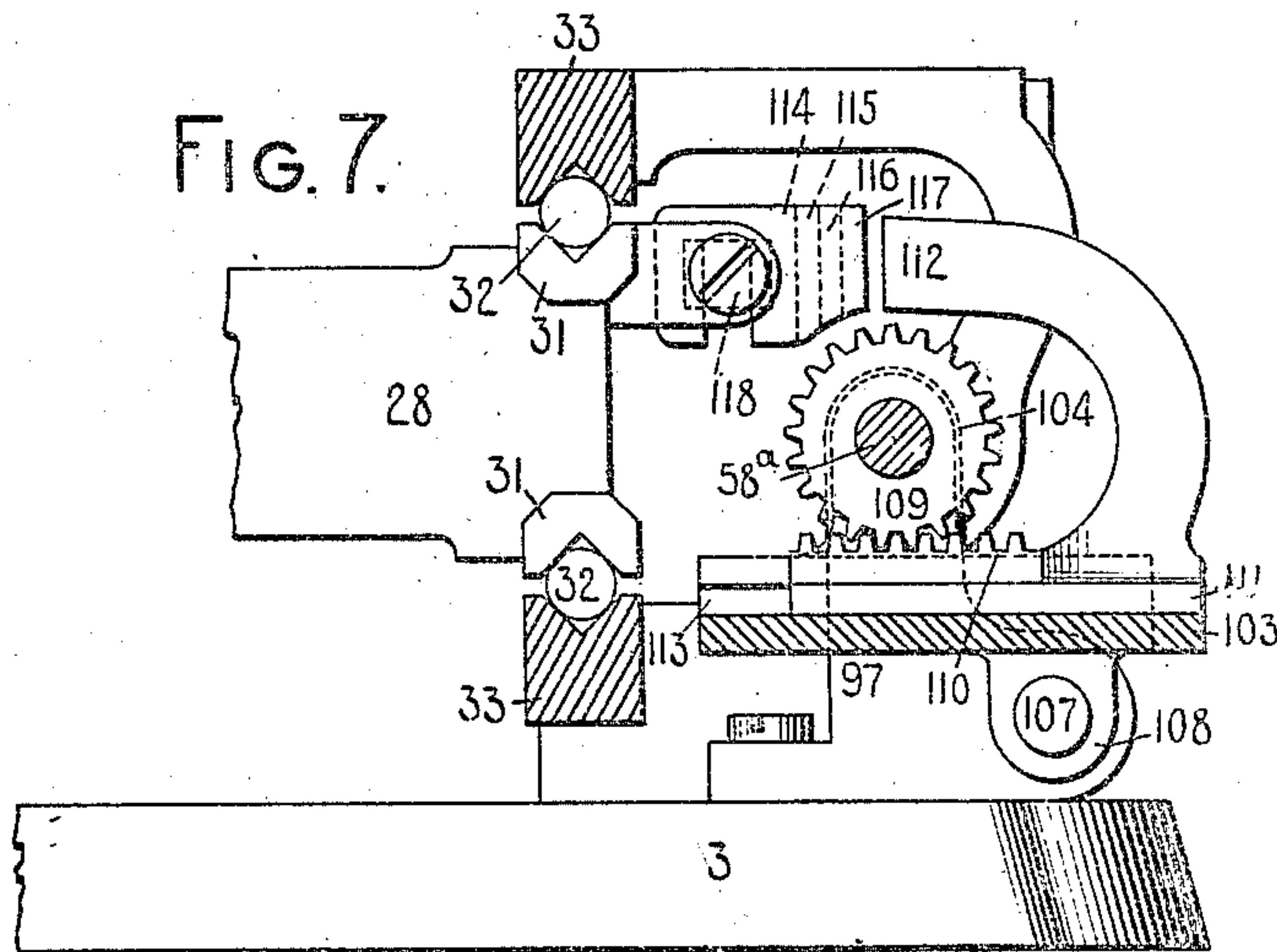
HIS ATTORNEY

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4 SHEETS—SHEET 4.



WITNESSES:

J. B. Reeves.
E. M. Wells.

INVENTOR:

Charles E. Smith
By Jacob Falbel
HIS ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES E. SMITH, OF NEW YORK, N. Y., ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

No. 895,807.

Specification of Letters Patent.

Patented Aug. 11, 1908.

Application filed October 18, 1905. Serial No. 283,240.

To all whom it may concern:

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

My invention relates to tabulating mechanism for typewriting machines, and one of the main objects of said invention is to provide a simple tabulating mechanism by which an operator can readily secure any desired columnar position and any desired denominational position within the column by a single tabulating mechanism and preferably at a single tabulating operation.

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

In the accompanying drawings wherein like reference characters indicate corresponding parts in the various views:—Figure 1 is a side elevation with parts broken away and in section of sufficient number of parts of one form of typewriting machine to illustrate my invention in its application thereto. Fig. 2 is a rear elevation of the same with parts broken away. Fig. 3 is a fragmentary detailed top plan view of the same. Fig. 4 is a detailed fragmentary front elevation showing a portion of the tabulating mechanism. Fig. 5 is an enlarged detailed sectional view showing the connection between portions of the tabulating mechanism to be hereafter more clearly described. Fig. 6 is a detailed isometric view of the column stops and the cooperating stop, the column stop bar being shown in dotted lines. Fig. 7 is a detailed fragmentary side elevation partly in section of another form of tabulating mechanism embodying my invention, and Fig. 8 is a detailed rear elevation of the same.

I have shown my invention applied to a Monarch machine, though it should be understood that the invention is applicable to various forms of typewriting machines.

The frame of the machine comprises a base 1, corner posts 2 and top plate 3. Key levers 4 have a rolling fulcrum on a fulcrum plate 5 and are provided with the usual finger keys 6 at the forward ends thereof. Each key

lever has a sub-lever 7 pivoted thereto at 8, and the lower end of each sub-lever is slotted at 9 for the reception of a fixed fulcrum rod 10 which extends beneath the various key levers and is connected at its ends to the base of the machine. The upper end of each sub-lever is pivoted at 11 to a forwardly extending link 12, the forward end of each link being pivoted at 13 to a type bar 14. The various type bars are pivoted on a curved pivot wire 15 to swing upwardly and rearwardly to the printing point.

A universal bar 16 extends beneath the various key levers and is connected to a frame 17 pivoted at 18 in the base of the machine. A central rearwardly extending arm 19 projects from the frame 17 and is connected to an upwardly extending link 20, which in turn is connected to a forwardly extending arm of a dog-rocker 22, pivoted at 23 and which is provided with the usual restoring spring 24 and feed dogs 25. The feed dogs cooperate with an escapement wheel 26 which is operatively connected to a feed pinion 27. A carriage 28 carries a platen 29 and the carriage bar 30 has oppositely disposed grooved tracks 31 in which bearing or anti-friction balls 32 are received. Oppositely disposed fixed tracks 33 likewise cooperate with the anti-friction balls to support the carriage in place and afford an easy travel thereof from side to side of the machine.

Projecting rearwardly from the carriage are supporting arms 34 to which a tabulating stop rod 35 is secured. The stop rod 35 is preferably co-extensive with the length of the carriage and is provided with suitable means for affording an adjustment of the column stops 36, 37, 38 and 39 thereon. In the present instance the means for affording the adjustment of the stops consist in forming grooves or slots 40 in opposite sides of the stop rod for the reception of the bifurcated portions of the stops so that the stops are adapted to straddle the stop rod, whereas the parallel sides 41 are received in the grooves 40 at opposite sides of the rod and the stops are secured in this manner against longitudinal displacement on the rod.

From an examination of Fig. 6 it will be observed that the coacting or arresting portions 42 on the various stops project to different distances from the rod for purposes which will hereinafter more clearly appear. A tabulating key lever 43 is mounted on a

gimbal or universal joint so that it is adapted to receive a swinging horizontal motion and also a vertical swinging movement. Thus a bracket 44 is secured by screws 45 to the top plate of the machine and the outwardly extending arm 46 of the bracket is perforated to receive a vertical pivot 47 which extends freely therethrough. This pivot is formed as a part of the bifurcated carrier 48. The lower end of the vertical pivot 47 is threaded for cooperation with the nut 49 to secure the carrier 48 against removal from the bracket arm 46, but to enable it to receive a turning movement thereon. The bifurcated portion of the carrier 48 receives the tabulating lever 43 between the arms thereof and a pivot 50 connects the tabulating lever to the carrier and enables the tabulating lever to receive a vertical swinging movement. A restoring spring 51, which is in the nature of a leaf spring, is secured to, or forms part of, a disk 52 that is supported on the carrier 48 and is secured to turn therewith so that the spring 51 is always maintained in a position where it exerts an upward pressure on the lever 43 to restore it to the normal position. The rear end of the lever 43 carries a rack 53 that is preferably formed in cross-section with rounded edges, as indicated at 54 in Fig. 5, for cooperation with plates 55 supported on each side of a pinion 56 which, together with the disks, is received upon a squared end 57 or rock shaft 58.

From an inspection of Fig. 5 it will be understood that the rack 53 always remains in mesh with the pinion irrespective of the position of the lever 43. The rock shaft 58 is mounted to rotate and receive a longitudinal movement in bearings 59 and 59^a, one of which is supported near each end of the rock shaft on the top plate by screws 60 and 60^a. A coiled spring 61 surrounds the rock shaft and bears at its inner end against a collar 62, which is secured to the rock shaft by a screw 62^a, whereas the opposite end of the spring bears against the bearing 59^a, thus tending to exert an expanding force which normally maintains the rock shaft in the longitudinal position shown in Fig. 3.

Projecting from the rock shaft 58 is a denominational stop 63 which may be rotated to different positions and into the paths of the different column stops 36, 37, 38 and 39 in accordance with the extent of rotation given the denominational stop rod 58, as will be clearly understood from an inspection of Fig. 6. The rotation of the stop rod to bring the denominational stop 63 into the path of the different column stops is effected by the tabulating lever 43 which has a finger piece 43^a that projects through a frame 64. This frame is preferably a four-sided frame and is preferably mounted so that it may receive a vertical movement on anti-friction rollers 65 which are pivoted

at 66 in guideways 67 that are secured to the front of the machine by screws 68. The rollers may be received in grooves in the side of the frame so as to guide it in its vertical movement and to prevent any lateral displacement of the frame. The frame 64 is normally maintained in an elevated position by expansion springs 69, one at each side of the frame and each of which bears at one end against the bottom of the frame and at the opposite end against a fixed bar or support 70, and downwardly projecting arms 71 on the frame are adapted to bear against the support 70, limiting the downward movement of the frame. The frame has a series of vertical slots 72 throughout the width thereof and each slot is of a width sufficient to receive the tabulating lever 43. A side wall of each slot, and preferably the right hand wall, is notched, as indicated by 73, for cooperation with a laterally projecting tooth 74 on the tabulating lever. A series of indices, such, for instance, as the numerals "1", "2", "3" and "4" are provided on the face of the frame 64, one near each of the notches 73, the numerals being progressively arranged with the numeral 1 at the bottom or at the lowermost notch and the numeral 4 at the uppermost notch in each slot. On the front of the upper cross bar of the frame 64 and opposite each vertical slot 72 therein, is a numeral or index, the various indices extending from right to left, as follows:—

1 10 100 1000 10T 100T 1M

The forward end of a carriage releasing lever 75 projects beneath the lower cross bar of the frame 64, the lever itself being pivoted at 76 to an arm 77 which extends from the bracket that carries the tabulating lever 43. The rear end of the lever 75 extends beneath a lever 78 at the rear of the machine, and which is pivoted at 79 to a depending stud 80. The opposite end of the lever 78 is connected by a pin and slot connection 81 to one end of another lever 82, which is pivoted at 83 to a depending lug or bracket 84. The other end of the lever 82 is pivoted at 85 to a vertically moving rack releasing device 86, which is bifurcated at its upper end, as indicated at 87, where it straddles the bearing for the shaft of the feed pinion and is turned at right angles at the upper end thereof, so as to form broad lifting shoes 88 which extend under the feed rack 89, which cooperates with the feed pinion 33 and is connected at its end to arms 90 which are pivoted at 91 to the carriage.

From the foregoing it will be understood that a depression of the frame 64, through the tabulating lever 43, effects a downward depression on the forward end of the lever 75, transmitting motion through the levers 78 and 82 to the rack releasing device 86

which is thus elevated to lift the rack 89 out of engagement with the feed pinion, thereby releasing the carriage to afford a free movement thereof under the propulsion of the spring drum 92 that is connected to the carriage through a band 93 secured at one end to the drum and at its opposite end 94 to the carriage.

In the operation of my device the proper columnar position and denominational position in that column can be readily secured by a single operation of the device. Thus it may be assumed that the operator desires to write 7000 within the second column, which column is controlled or determined by the column stop 38. To effect this it is merely necessary for the operator to move the tabulating lever 43 from right to left along a horizontal slot 95 until he reaches the position indicated by the index "1000" which indicates the thousands denominational position of arrest which the operator desires to secure. The tabulating lever 43 is then depressed within the vertical slot 72 under the index "1000" until it reaches the notch indicated by the index "2" which indicates the second column, and a slight movement to the right is sufficient to cause an engagement of the tooth 74 on said lever in said notch. After an engagement between the lever 43 and the releasing frame 64 is thus effected, a further slight depression of the lever, until the frame is arrested by the stop 71 coming in contact with the stop 70, will release the carriage through the levers 75, 78, 82 and the rack raiser 86 and the carriage will be arrested at the thousands position in the second columnar field and the operator may proceed to write 7000. The movement of the key lever 43 along the horizontal slot 95 effected a horizontal swinging movement of the lever and produced a longitudinal movement of the rock shaft 58 in its bearings to secure the proper denominational positioning of the denominational stop 63 without, however, effecting a rotation of that stop. The vertical movement of the lever 43 in the slot 72 effected a vertical swinging movement of the rack 53 and thus produced, through the gear connection with the pinion 56, a partial rotation of the shaft 58. This resulted in turning the denominational stop 63 to a position where it was in position to cooperate with the second column stop 38 as determined by engagement of the lever in the notch 73 indicated by the index "2". After the engagement of the tabulating lever in the notch 73 in the manner described, the further depression of the tabulating lever resulted in transmitting movement through the various connections to the rack lifter which was effective to raise the rack from engagement with its feed pinion, thereby freeing the carriage and the denominational stop 63 was properly positioned in the path of the column stop 38

and the carriage ran free until this particular column stop was brought into engagement with the stop 63 on the rock shaft. It will be understood that the impact of the carriage on the stop 63 tends to move the rock shaft 58 longitudinally towards the left and this movement, transmitted to the lever 43, tends to force the forward end thereof towards the right, but at this time the lever is seated against a side wall of the frame with the tooth 74 in one of the notches 73, and thus any tendency to shift the stop 63 from the position in which it is set, by an impact of the carriage against the stop, will be resisted by the forward end of the lever bearing against a side wall of a slot 72 and the stop 63 will thus be maintained against accidental displacement from the position to which it is set and cannot be dislocated or moved from this position by the impact of the carriage.

In Figs. 7 and 8 I have shown another form of construction embodying my invention. In this construction the means for effecting a rotation and longitudinal movement of the rock shaft 58^a, which corresponds to the rock shaft 58 in the construction previously described, is the same as that heretofore described in connection with Figs. 1 to 6 of the drawings. In the modified construction, however, instead of the denominational stop receiving a rotary movement with the rock shaft it receives a rectilinear movement to different extents fore and aft of the machine to interpose it in the path of the different column stops carried by the carriage and projecting to different distances therefrom; thus the shaft 58^a is mounted in bearings 96 and 97 secured to the top plate of the machine and adapted to receive rotary and longitudinal movements therein. The outer end of the rock shaft has a pinion 98 and side plates 99 secured thereto in the same manner as in the construction heretofore described.

A coiled expansion spring 100 surrounds the rock shaft and bears at one end against the bearing 96 and at its other end against a sleeve 101 secured to the rock shaft by a set screw 102 so that the tendency of this expansion spring is to move the rock shaft in the direction of the arrow in Fig. 8, or from left to right when examined from the rear of the machine. A yoke or bearing piece 103 has two arms 104 which are spaced apart and perforated to receive the rock shaft 58^a loosely therethrough. Sleeves 105 are secured to the rock shaft by screws 106, one on each side of the member 103 and on each side of the arms 104 thereof, so that any longitudinal movement of the shaft 58^a will effect a corresponding movement of the part 103, though the shaft may receive a rotary movement independently of the part 103, and in order to prevent the part 103 from rotating with the shaft 58^a a pin or spindle 107 projects from and is secured to a depending

member 108 on the part or bearing 103. The spindle 107 projects freely through an opening in the bearing 97 so that the spindle is free to move with the part 103 during the movement of the latter with the shaft in a longitudinal direction, but when the shaft receives a rotary movement, the spindle 107 will prevent a rotation of the part 103 with the shaft. A pinion 109 is secured to the shaft 58^a between the arms 104 and this pinion meshes with a rack 110 secured to the slide 111 on which a denominational stop 112 is formed or secured. The slide 111 is received in an undercut way or guide 113 in the member 103 so that the slide and the stop 112 connected thereto may receive a rectilinear movement to different extents fore and aft of the machine to bring it into coöperation with different column stops 114, 115, 116 and 117 which are carried on a stop rod 118 secured to the carriage and which corresponds to the stop rod 35 of the construction previously described.

From an examination of Fig. 7 it will be observed that the stops 114 to 117 extend to different distances from the stop bar and that the extent of forward movement of the stop 112 will bring it into coöperation with the different column stops, as determined by the extent of the movement of the stop 112, and that the other stops to the left thereof (when viewed from the front of the machine) will not coöperate with the denominational stop at this time.

The operation of the construction shown in Figs. 7 and 8 is similar to that previously described in connection with the other figures, thus the horizontal swinging movement of the tabulating lever determines the denominational position of the stop 112 by moving it longitudinally with the shaft 58^a, whereas a vertical movement of the tabulating lever effects a rotary movement of the shaft 58^a, thereby turning the pinion 109 to different extents determined by the extent of vertical movement of the tabulating key lever. The rotary movement thus transmitted to the pinion will effect a forward movement of the stop 112 to bring it into the path of the proper column stop to arrest the carriage at the proper columnar field without the necessity of first arresting the carriage at the preceding columnar fields determined by the preceding column stops.

From the foregoing description it will be seen that either of the constructions described require but a single movement of the single tabulating key 43^a in one direction and then in another to secure an arrest of the carriage by a single operation in the proper columnar field, no matter where that columnar field may be situated and at the same time to secure the proper denominational positioning of the carriage within the selected columnar field.

Should the operator desire merely to use the tabulating mechanism as a "column jumper" or to afford a movement of the carriage to any desired columnar field without first arresting the carriage at the preceding columnar fields and without arresting it at a particular denominational position within the selected field, it is merely necessary to depress the key lever 43 to the desired extent in the first vertical slot 72 in the frame 64, or in that slot 72 over which the key lever is normally situated and over which the decimal mark or index is located. It will be understood that this straight downward movement of the tabulating key from its normal position will not effect a denominational positioning of the denominational stop, but will merely move it forward to the desired extent to coöperate with the particular column stop which is to be selected and the selection of which depends on the extent of depression of the tabulating key. The release of the carriage is effected in the manner previously described without affecting a change in the denominational position of the stop 63 (or 112).

When I refer herein to a "carriage", it will be understood that for the purpose of my present invention it is immaterial whether the "carriage" be a platen carriage such as is shown in the accompanying drawings or is any other kind of a typewriter carriage, such, for instance, as a type action carrying carriage of the character sometimes employed in flat platen machines.

When I refer herein to arresting the carriage at any desired columnar position or field I mean that the carriage may by one movement be brought to the desired columnar field whether that field be the second, third, or fourth field, and that it is unnecessary to bring the carriage to a stop first at one field and then at the next and so on until the desired columnar field is reached.

From the foregoing description it will be understood that either mechanism shown and described is operative to arrest the carriage at any desired columnar field without first arresting the carriage at the preceding columnar fields; that this result may be secured with a single key and a single actuation or stroke thereof; that the denominational stops 63 and 112 are moved to different extents in the direction of the travel or run of the carriage to secure the denominational positioning of arrest of the carriage; that said stops are moved to different extents in a direction transverse to the travel of the carriage, or fore and aft of the machine in order to determine the columnar position of arrest of the carriage; that each of the stops 63 and 112 receives movements in two directions at right angles to each other, the movement of each stop in one direction determining the denominational position of ar-

rest of the carriage and the movement of each stop in the other direction determining the columnar position of arrest of the carriage. It will also be seen that notwithstanding the fact that the tabulating key lever 43 and its key 43^a are moved to different extents in two directions and that the stop 63 (or 112) controlled thereby is likewise moved to different extents in two directions, the release of the carriage will, nevertheless, always be effected at the same time relative to the proper interpositioning of the stop and irrespective of the extent of movement of the carriage is always released after the stop 63 (or 112) has received its proper denominational position and after the said stop has been interposed in the path of the proper column stop, notwithstanding the fact that in order to secure the proper denominational and columnar position of arrest it is necessary to move the stop 63 (or 112) to different extents in two directions, and that, therefore, the coöperation of the stops to arrest the carriage in the proper position is assured. Then again it will be seen that the same tabulating mechanism comprising the single set of stop devices 63 (or 112) and 36, 37, 38 and 39 (or 114, 115, 116 and 117) are operable by the same key actuated controlling means to arrest the carriage at any desired columnar position and are also operable to arrest the carriage at any desired denominational position within the selected column.

It will be seen from the foregoing that I have provided column selective means and denominational positioning means whereby the operator may, by the operation of a single key connected with said means, cause the arrest of the carriage at will in any desired or selected column field and at any desired or selected denominational position in said field.

While I have shown and described with considerable particularity two forms of construction embodying my invention, it should be understood that various changes may be made without departing from the spirit of my invention and that I do not limit myself to the constructions shown and described.

It will likewise be understood that various changes in the construction may be rendered necessary in order to adapt the invention to different forms of typewriting machines, although the mechanisms shown may be applied to the "Monarch", and possibly to other existing forms of typewriting machines without changing the structural features of said machines.

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

1. In a typewriting machine and tabulating mechanism, the combination of a carriage, means for releasing the carriage, column selecting and denominational positioning means, and a single key operative in con-

junction with said means to cause the carriage to be released and arrested at any desired denominational position in any desired columnar field.

2. In a typewriting machine and tabulating mechanism, the combination of a carriage, a releasing device for said carriage, a series of column stops, a denominational stop, means for positioning said stop denominationally and relatively to any of said series of column stops, and a single key operative in conjunction with said stops for causing the carriage to be arrested at any denominational position in any selected columnar field.

3. In a typewriting machine and tabulating mechanism, the combination of a carriage, a carriage releasing device, column selecting and denominational positioning means, and a single key for controlling said selecting and positioning means and said releasing device.

4. In a typewriting machine and tabulating mechanism, the combination of a carriage, column selective and denominational stops, a single key, means which enables said key to control the relationship of the said stops so that the carriage may be arrested at any desired denominational position in any selected column field by the operation of said key, and means controlled by said key for effecting the release of the carriage.

5. In a typewriting machine and tabulating mechanism, the combination of a carriage, denominational and column selective stops, and a key that controls the relation of said stops and that is moved in two directions, one to control the arrest of the carriage in any desired columnar position without first arresting the carriage in the preceding columnar positions, the other to control the arrest of the carriage at any denominational position within that column.

6. In a typewriting machine and tabulating mechanism, the combination of a carriage, denominational and column selective stops, a key that controls the relation of said stops and that is moved in two directions, one to control the arrest of the carriage in any desired columnar position without first arresting the carriage in the preceding columnar positions, the other to control the arrest of the carriage at any denominational position within that column, and automatically actuated carriage releasing means controlled by the movement of said key.

7. In a typewriting machine and tabulating mechanism, the combination of a carriage, denominational and column selective stops, and a single key that controls the relation of the stop to determine the arrest of the carriage in any desired columnar position and any desired denominational position within the column by a single operation of said key, and automatically actuated

releasing means controlled by the said operation of the key.

8. In a typewriting machine and tabulating mechanism, the combination of a carriage, a single set of denominational and column selective stop devices, a single tabulating key for controlling said single set of stop devices to arrest the carriage at any desired columnar position and at any desired denominational position within the column, and means controlled by said tabulating key for releasing the carriage.

9. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops that extend to different distances from their support, a co-operating stop, and controlling means for bringing said stops into coöperative relation and for effecting a relative adjustment between them to different extents, said controlling means comprising a key controlled rock-shaft that is adapted to be turned to different extents to determine the columnar position of arrest of the carriage, and key controlled means for moving the shaft longitudinally to determine the denominational position of arrest of the carriage within the selected columnar field.

10. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops that extend to different distances from their support, a co-operating stop, controlling means for bringing said stops into coöperative relation and for effecting a relative adjustment between them to different extents, said controlling means comprising a key controlled rock shaft that is adapted to be turned to different extents to determine the columnar position of arrest of the carriage, and key controlled means for moving the shaft longitudinally to determine the denominational position of arrest of the carriage within the selected columnar field, and means for automatically releasing the carriage when the stops have been adjusted to arrest the carriage in the proper columnar position and in the proper denominational position within the column selected.

11. In a typewriting machine and tabulating mechanism, the combination of a carriage, denominational and column selective stops, means for controlling certain of said stops, said means comprising a rock shaft, and key actuated means for rotating said shaft to different extents and for moving it longitudinally.

12. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop bar, a series of column stops carried by said stop bar and projecting different distances therefrom, a single stop co-operating with the column stops, and a key actuated rock shaft that is adapted to rotate and to move longitudinally in its bearings

and which coöperates with said single stop to move it different extents in each of two directions, one direction being transverse to the direction of the travel of the carriage to bring said single stop into coöperation with the desired column stop it is desired to select, so as to afford an arrest of the carriage in any desired columnar field without first arresting the carriage at a preceding columnar field, and the other movement of said single stop being in the direction of the travel of the carriage to determine the denominational position of arrest within the selected columnar field.

13. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop bar, a series of column stops carried by said stop bar and projecting different distances therefrom, a single stop coöperating with the column stops, a key actuated rock shaft that is adapted to rotate and to move longitudinally in its bearings and which coöperates with said single stop to move it different extents in each of two directions, one direction being transverse to the direction of the travel of the carriage to bring said single stop into coöperation with the desired column stop it is desired to select, so as to afford an arrest of the carriage in any desired columnar field without first arresting the carriage at a preceding columnar field, and the other movement of said single stop being in the direction of the travel of the carriage to determine the denominational position of arrest within the selected columnar field, and means for automatically releasing the carriage.

14. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop bar, a series of column stops carried by said stop bar and projecting different distances therefrom, a rock shaft that is adapted to rotate and to move longitudinally, a single stop controlled by said rock shaft, and a single tabulating key that is movable in two directions and controls said rock shaft.

15. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop bar, a series of column stops carried by said stop bar and projecting different distances therefrom, a rock shaft that is adapted to rotate and to move longitudinally, a single stop controlled by said rock shaft, a single tabulating key that is movable in two directions and controls said rock shaft, and carriage releasing mechanism controlled by said tabulating key.

16. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating stops, a key that controls the relation of said stops to effect an arrest of the carriage at any desired denominational position in any desired columnar field by a single operation of said key, and a carriage releasing frame through which said key pro-

jects and which is moved by said key and affords an independent movement thereof in two directions at substantially right angles to each other.

5 17. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating stops, carriage releasing mechanism, a movable release frame operatively connected to said releasing mechanism and
10 having a series of slots or openings that extend in one direction and a slot or opening that extends at substantially right angles to said first mentioned slots, and a tabulating key mounted to swing in two directions and
15 operatively connected to certain of said stops and adapted to move in any of said slots and operative to move the frame.

18 In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating stops, carriage releasing
20 mechanism, a movable release frame operatively connected to carriage releasing mechanism and having denominational determining and column determining slots therein,
25 and a tabulating key for controlling the re-

lation of said stops and which is movable in said denominational and column determining slots.

19. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating stops, carriage releasing mechanism, a movable release frame operatively connected to carriage releasing mechanism and having denominational determining and column determining slots therein, 30
and a tabulating key for controlling the relation of said stops and which is movable in said denominational and column determining slots and which is operative to engage
said frame at different points in the movement thereof in certain of said slots. 40

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 16th day of October A. D. 1905.

CHARLES E. SMITH

Witnesses:

E. M. WELLS,
J. B. DEEVES.