No. 749,538. PATENTED JAN. 12, 1904.

L. P. DISS & W. A. SCHMIDT.

TYPE WRITING MACHINE.

APPLICATION FILED JULY 15, 1901.

NO MODEL. 4 SHEETS—SHEET 1.

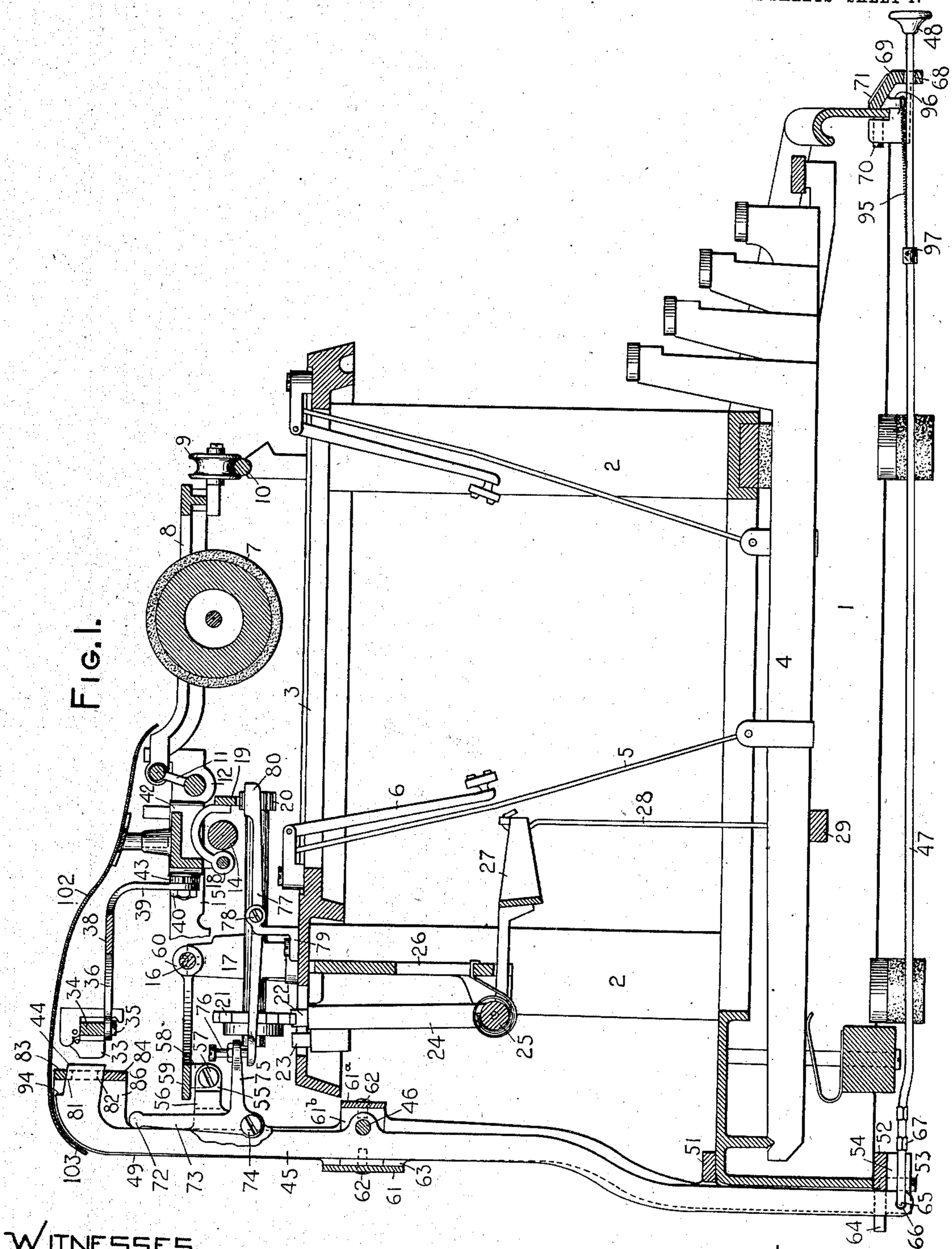

FIG. 1.

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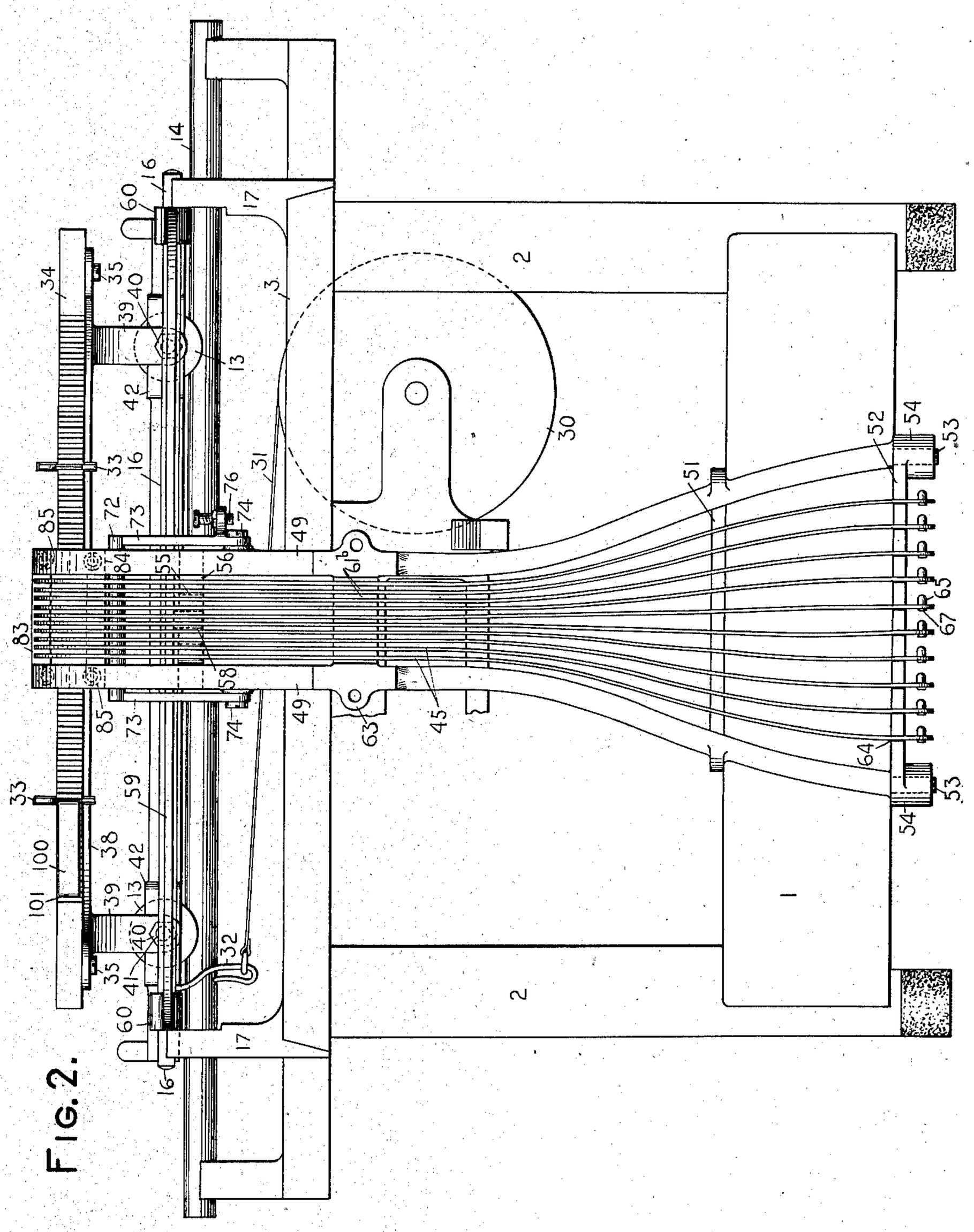

FIG. 2.

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NO MODEL. 4 SHEETS—SHEET 3.

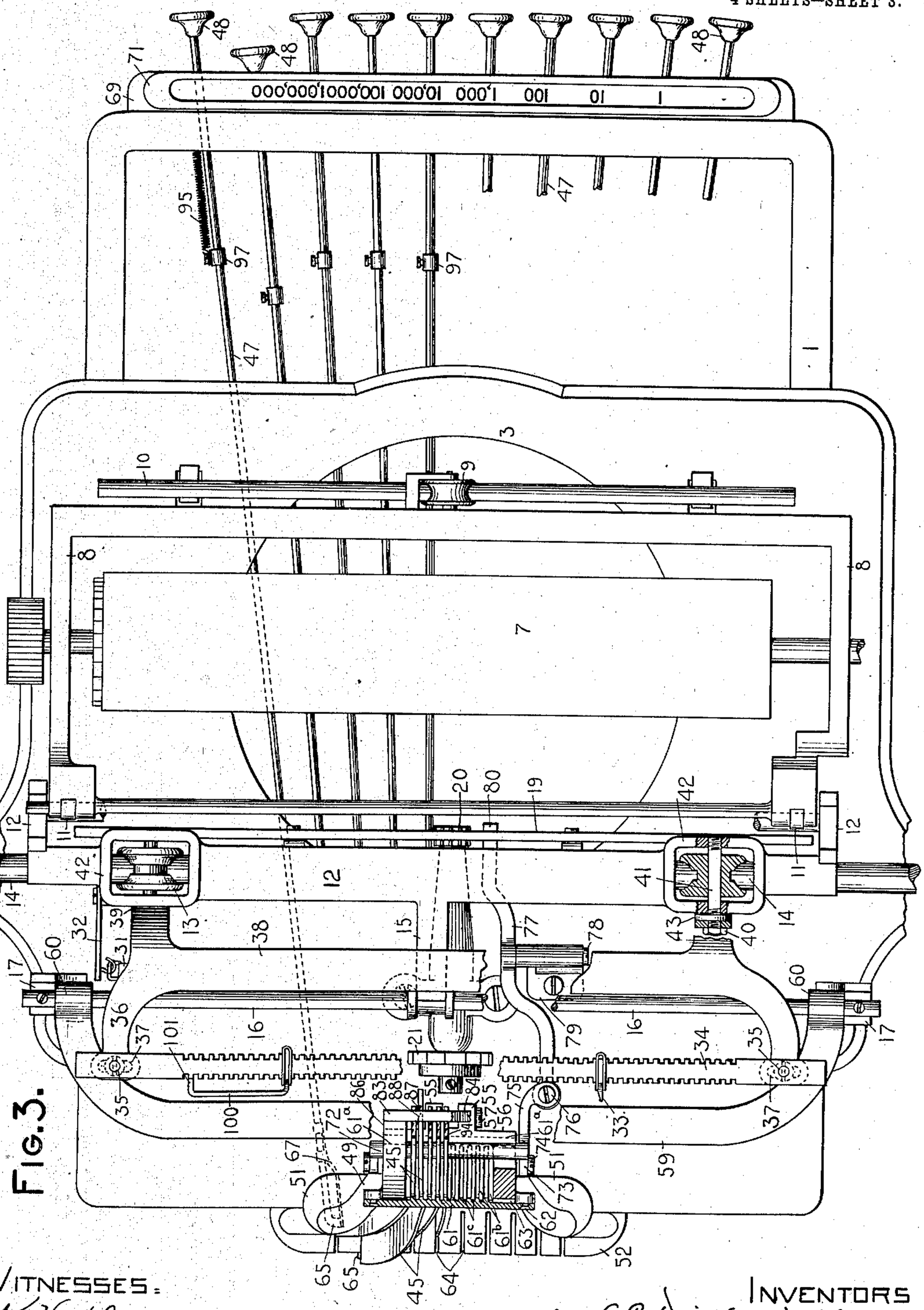

FIG. 3.

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TYPE WRITING MACHINE.

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NO MODEL. 4 SHEETS—SHEET 4.

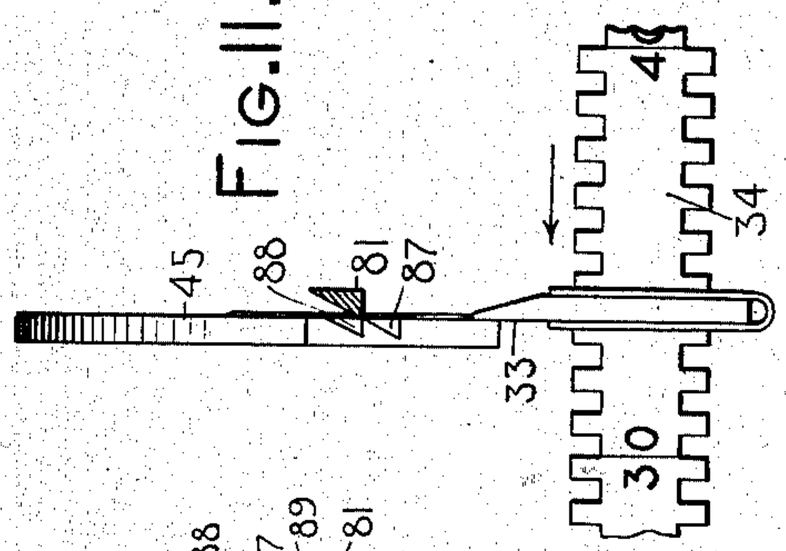


FIG. 11.

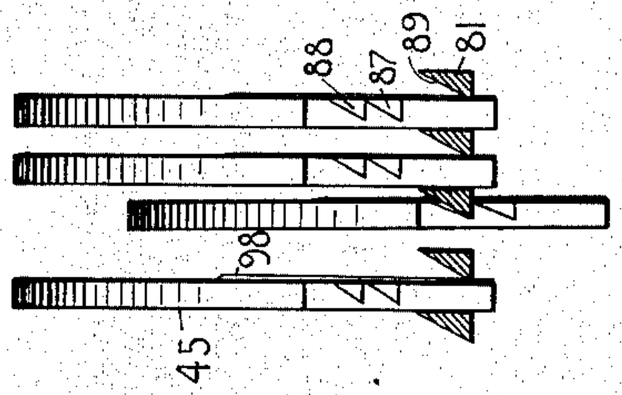


FIG. 10.

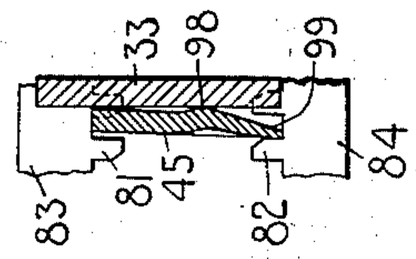


FIG. 13.

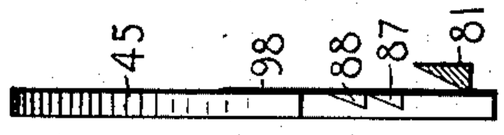
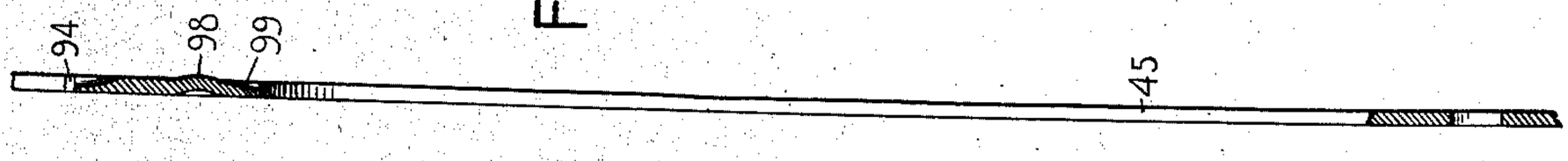


FIG. 12.



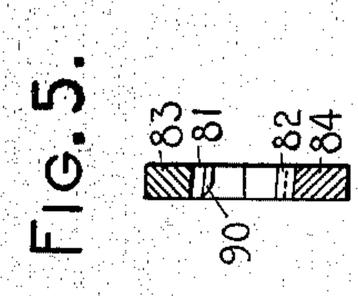


FIG. 5.

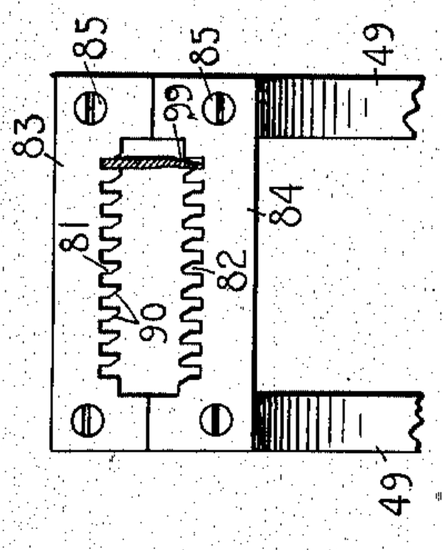


FIG. 4.

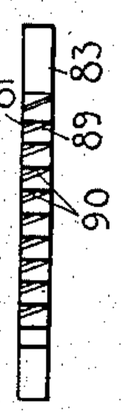


FIG. 6.

FIG. 7.

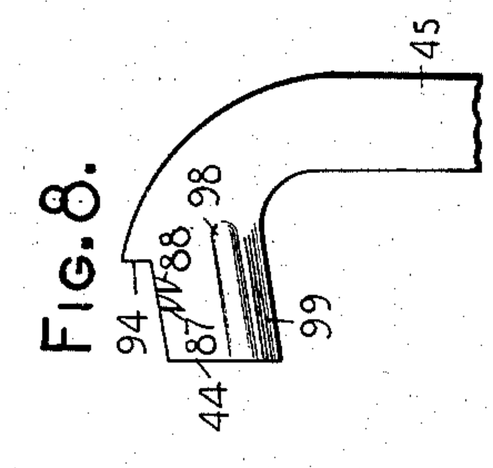


FIG. 8.

FIG. 9.

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No. 749,538. Patented January 12, 1904.

UNITED STATES PATENT OFFICE.

LOUIS P. DISS AND WILLIAM A. SCHMIDT, OF ILION, NEW YORK, ASSIGNORS TO WYCKOFF, SEAMANS & BENEDICT, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 749,538, dated January 12, 1904.

Application filed July 15, 1901. Serial No. 68,363. (No model.)

To all whom it may concern:

Be it known that we, LOUIS P. DISS and WILLIAM A. SCHMIDT, citizens of the United States, and residents of Ilion, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to tabulating mechanisms of writing-machines, and more particularly to that class of tabulators in which at the operation of a denomination-key a stop corresponding thereto is projected and the paper-carriage is also automatically released and permitted to run down under the tension of the usual carriage-spring until arrested by said projected stop at a point where the writing of a number having the denomination of the operated key may be begun. In using machines of this class operators sometimes fail to hold the denomination-key in working position until the completion of the run of the carriage, particularly when there is a long jump or gap between columns, and in consequence the carriage is prematurely reëngaged to its letter-feeding devices and arrested thereby, so that the succeeding number is written out of column.

The main object of the present invention is to produce a machine in which a single stroke of the selected key insures that the carriage shall run to the next column and be arrested at the exact point for writing a number of the denomination denoted by said key without any attention on the part of the operator beyond merely pushing the key to working position, so that while the carriage is running he is at liberty to move his hands into position to begin promptly the writing of the number, whereby he is relieved of care and liability to mistakes and is also enabled to execute the work more expeditiously.

Another object of our invention is to simplify and otherwise improve the tabulating mechanism.

Our invention consists in certain features of construction and combinations of parts, all as will be fully hereinafter set forth, and particularly pointed out in the concluding claims.

In the accompanying drawings, Figure 1 is a vertical section taken longitudinally of a Remington No. 6 type-writing machine and showing our improvements applied thereto, all of the parts being illustrated in normal position. Fig. 2 is a rear view, and Fig. 3 a plan, of the machine. Fig. 4 is a front elevation of a double comb for the denomination-stops, one of the latter being drawn in cross-section. Fig. 5 is a cross-section of the double comb shown at Fig. 4. Fig. 6 is a bottom edge view of the upper comb, and Fig. 7 is a top edge view of the lower comb illustrated at Figs. 4 and 5. Fig. 8 is a side view of the upper portion of a denomination-stop lever. Figs. 4 to 8, inclusive, are drawn upon an enlarged scale. Fig. 9 is a front edge view of the upper portion of a denomination-stop lever, the stop itself being shown in cross-section. Fig. 10 is a plan showing a portion of the denomination-stops, whereof one is projected and caught by an adjacent tooth of the upper comb, the latter being shown in horizontal section. Fig. 11 is a plan showing a column-stop, a fragment of its supporting-rack, and a denomination-stop engaged by the column-stop and released thereby from its detaining comb-tooth. Fig. 12 is a view similar to Fig. 10, but showing only one denomination-stop and its associated comb-tooth or detent. Fig. 13 is a fragmentary front elevation showing in cross-section a locked denomination-stop and a moving column-stop contacting therewith. Figs. 9 to 13 are drawn upon a greatly-enlarged scale.

In the several views portions are omitted or broken away to disclose the invention more clearly, and similar parts are designated by similar numerals of reference.

The writing-machine comprises a rectangular base 1, corner-posts 2, erected thereon, a top plate 3, surmounting the posts, key-levers 4, fulcrumed in the base, links 5, connecting said key-levers to type-bars 6, a platen 7, arranged over the types, a platen-frame 8, having a front roll 9 running upon a track 10 and hinged in rear to a vibrating frame 11, which is hinged to a carriage 12, guided by rolls 13 upon a rail 14 and also provided with

a rearwardly-directed guiding-arm 15, which forks a rail 16, the latter being secured in opposite standards 17, provided upon the top plate. Upon the carriage is hinged at 18 a frame which carries a rack 19, meshing with an underlying pinion 20, the latter being connected to an escapement-wheel 21, which is controlled by a feeding-dog 22 and a detent-dog 23, both carried upon the upper end of a dog-rocker 24, pivoted at 25 in a bracket 26, depending from the top plate and having forwardly-extending arms 27, which support, by means of hooks 28, a universal bar 29, that extends across the machine beneath the key-levers. The advance movements of the carriage are effected by a propelling-spring carried in a barrel 30, which is connected by a strap 31 to a hook 32, depending from the carriage.

Column-stops 33, which are of substantially the construction set forth and claimed in the pending application of L. P. Diss, Serial No. 1,181, filed January 12, 1900, are disposed along a column-stop rack 34, which extends parallel with the platen 7 or in the direction of the run of the paper-carriage and is adjustably secured by screws 35 upon the rear ends of a pair of arms 36, said screws passing up through slots 37, formed in said arms, and being tapped into the end portions of said rack 34, and said arms projecting rearwardly from a bar 38, which is attached, by means of a pair of downwardly-bent ears 39 and nuts 40, to the axles 41 of the carriage-guiding rolls 13. These axles are tapped at their forward ends into the front portions of wheel-boxes 42, and the ears 39 are clamped by said nuts 40 against collars 43, arranged upon said axles between said ears 39 and said boxes 42. The arms 36, bar 38, and ears 39 may be formed in one piece and are preferably stamped from sheet metal, thus making a light and stiff frame.

Denomination-stops 44, arranged at letter-space intervals and placed sufficiently in rear of the column-stop rack 34 to clear the column-stops 33, are carried by the upper ends of vertically-disposed levers 45 of the first order, which work upon a common transverse fulcrum-rod 46 and at their lower ends are provided with horizontal push-rods 47, which extend forwardly beneath the base 1 and carry at their front ends keys 48. Said fulcrum-rod 46 is supported at its ends in a vertically-arranged cast frame, which comprises a pair of side bars 49, extending up in rear of the type-writer frame, a cross-bar 51, bearing upon the top of the rear portion of the base 1, and a cross-bar 52, jutting beneath the lower edge of the rear wall of the base. Set-screws 53 are tapped into bosses 54, formed at the junction of the bar 52 with the side arms 49, and bear up against the lower edge of said rear wall of the base, so as to coöperate with the bar 51 to clamp the frame upon said base. Ears 55 project forwardly from a third cross-bar 56, which joins said side arms 49 about midway between the fulcrum-rod 46 and the denomination-stops 44, and are clamped by a screw 57 to an ear 58, depending midway from a yoke or bar 59, which is hinged at 60 upon the rear carriage-rail 16 and fits closely between the standards or supports 17, the left-hand support 17 constituting an abutment for the yoke and which takes the force of the impact of the carriage when it is arrested by the tabulating-stops. Said yoke 59 is capable of a turning movement upon the said rail 16, and hence for assembling purposes affords a vertically movable or adjustable support for the upper end of said denomination-stop-lever frame, the fixed vertical position of the latter being determined by its attachment to the type-writer base and said yoke 59 being then rocked upon the rail 16 until the perforations in the ears 58 and 55 register, whereupon the two devices are clamped together by the screw 57, whereby the lever-frame may be readily secured in place and rigidly supported at its upper end and enabled to receive the shock of arresting the carriage without yielding or springing. The side bars 49 may be further connected by forward and rear plates 61 and 61^a, attached by screws 62 to ears 63, formed upon said arms, said plates serving also to retain a set of squared separators or spacing-plates 61^b, placed between the stop-levers upon the fulcrum-rod 46. Said separators may be formed integrally with the forward plate 61^a and at their rear ends may fit in notches 61^c, cut in the forward side of the rear plate 61, thus forming rigid lateral supports for the fulcrum or hub portions of the stop-levers.

The difference between the width of the set of denomination-stops and that of the set of denomination-keys is compensated partly by fanning the stop-levers 45 at their lower ends, as illustrated at Fig. 2, and partly by fanning the key-rods 47, as at Fig. 3. The diverging ends of said levers 45 are guided in slots 64, cut in a rearwardly-jutting portion of the flange 52. By means of bent fingers 65 the push-rods detachably engage perforations 66 in said levers 45, the connection being maintained by yielding keepers 67. The forward ends of said key-rods are guided in perforations formed in a vertical flange 68, depending from a longitudinal bracket 69, clamped by screws 70 along the lower edge of the front wall of the base, said bracket being also provided with a bevel-face, upon which is arranged a plate 71, labeled with a series of numbers indicating the denominations of the underlying keys.

A carriage-releasing bar 72, arranged transversely in front of the upper portions of the stop-levers 45, is carried by a pair of vertical rocker-arms 73, which are pivoted at their lower ends upon shoulder-screws 74, tapped into the side bars 49 of the stop-lever frame. Upon the left-hand rocker-arm 73 is formed a

forwardly-projecting arm or lever 75, carrying an adjustable screw 76, adapted to depress the rear end of a forwardly-extending release-lever 77, which is pivoted between its ends at 78 upon a fixed bracket 79 and is provided at its forward end with a head 80, adapted to lift the carriage-feed rack 19 out of mesh with its pinion 20.

The denomination-stops 44, which are formed integrally upon the levers 45 and project forwardly from the upper ends thereof, work in a guide-comb comprising an upper set of teeth 81 and a lower set 82, the upper set being formed upon a transverse plate 83 and engaging the top edges of the denomination-stops, the lower set being formed upon a plate 84 and engaging the lower edges of said denomination-stops, and said plates being secured at their ends by screws 85 to forwardly-projecting lugs 86, cast upon the upper ends of the lever-frame. Said stops are made thin in order to provide room for the intervening comb-teeth 81 and are increased in width or height, so as to insure sufficient strength to withstand the shock of arresting the carriage, while they are supported at their top and bottom edges by the guide-comb, so as to prevent twisting or distortion. The forward edge of each stop is practically vertical, while its top and bottom edges may be cut upon lines substantially concentric with the lever-axis 46, and the comb-teeth may be cut upon a corresponding inclination, as illustrated at Fig. 5.

Upon the right-hand side of each denomination-stop and in rear of the comb-plate 83 are cut forward and rear locking-notches 87 and 88. The lower portions of the upper comb-teeth are beveled at 89, so as to match said notches, and the abrupt forward faces of said teeth 81 are adapted to engage the abrupt portions of the notches when the stops are projected forwardly, so as to prevent return movement of the latter. The tips of the teeth 81 may also be beveled at 90, so as to permit them to fit more fully and securely in the shallow denomination-stop notches, which are cut upon a double bevel, as will be understood by comparing Figs. 8 and 12. Before assemblage the upper portion of each of the levers 45 is bowed slightly toward the right, as illustrated at Fig. 9, so that it is necessary to spring them slightly to the left in order to introduce the stops between the comb-teeth, said teeth being in register with the spacing-plates 61^b at the lever-hubs. By this means the levers are given a natural or inherent spring tension toward the right, whereby the denomination-stops when projected forwardly are caused to snap into lateral engagement with the comb-teeth or detents 81, thus locking the stops against backward movement.

In operation after setting the column-stops at the desired points along the rack 34 a key 48 of the selected denomination is pushed rearwardly and by means of rod 47 swings its lever 45 upon the axis 46, the stop 44 carried at the upper end of said lever being projected forwardly into the path of the column-stops 33. The stroke of the lever and key is limited by a shoulder 94, which is formed upon the top of the lever and contacts with the rear face of the comb 83, while at the same time, owing to the lateral tension of the upper arm of the lever 45, the rear notch 88 thereon is caused to snap into engagement with its associated detent or comb-tooth 81, as illustrated at Fig. 10, thus locking the denomination-stop in working position. The release-bar 72 is also borne forwardly by said stop-lever 45, and by means of the arms 73 and 75 and screw 76 depresses the rear end of lever 77, the forward end of which lifts the carriage-feed rack 19 clear of the pinion 20, whereby the carriage is freed from the control of its escapement devices and is rapidly advanced by the spring-barrel 30 and strap 31, whereupon the succeeding column-stop 33 thereon abuts against the projected denomination-stop 44, thus arresting the carriage in position to begin the writing of a number having the selected denomination. By the impact or pressure of the column-stop the denomination-stop is moved from the Fig. 13 to the Fig. 11 position, the force of the carriage-propelling spring being sufficient to overcome the inherent spring tension of the lever 45, so that the denomination-stop being thus disengaged from its detent is free to move backward under the tension of a returning-spring 95, one end of which is hooked into a perforated flange 96, formed upon the key-bracket 69, and the other end whereof is attached to an adjustable collar 97, secured upon the key-rod 47, which controls the denomination-stop lever 45. The pull of said spring is sufficient to overcome the friction between the column-stop and the denomination-stop, as well as that between the denomination-stop and the comb-teeth, and to draw the denomination-stop back out of the path of the column-stop, at the same time permitting the retraction of the carriage-releasing devices and the reëngagement of the carriage-feed rack 19 with the pinion 20 under the tension of the usual rack-spring. (Not shown.)

Although a single notch 88 is sufficient for locking the denomination-stop and the carriage-releasing mechanism in operative positions, still as the carriage frequently rebounds upon striking the denomination-stop and would be liable, if permitted, to become reëngaged to its escapement devices during such rebound to settle at an erroneous position, we provide an additional safety-notch 87 forward of the locking-notch 88, so that when the carriage does rebound the inherent lateral tension of the stop-lever 45 causes the said safety-notch 87 to snap into engagement with the detent 81, whereby the denomination-stop is prevented from immediately withdrawing from the path

of the column-stop and the carriage-releasing devices are temporarily detained in operative position. When the carriage recovers from the rebound and strikes the denomination-stop a second blow, the safety-notch 87 is released from the detent 81, the denomination-stop lever is returned to normal position by the spring 95, and the carriage is reconnected to its escapement devices in position for beginning the writing of a number of a denomination corresponding to the operated key 48. Inasmuch as a second rebound is not apt to occur it is not deemed necessary to provide a second safety-notch. The carriage thus having been positioned, the type-keys are operated and through the levers 4 and links 5 cause the type-bars 6 to impress the desired number upon the paper, each key movement also causing a movement of the universal bar 29 and the escapement-dogs 22 and 23, whereby the carriage is fed along with each impression. Then another denomination-key is selected and pushed back, again releasing the carriage and permitting it to run until arrested at the proper position for writing a number in the next column, and so on.

The teeth 81 in the upper comb are beveled in two directions to correspond with the angular notches formed in the stops, thus weakening the teeth; but in order to distribute the force of the carriage impact between the upper and lower comb-teeth in proportion to their strength we form upon each of the stops 44 a small rib 98, which is located nearer to the lower comb-teeth and directly receives the impact of the carriage. The lower comb-teeth are beveled in one direction only, thus leaving their strength unimpaired, while the lower portions of the stops are correspondingly beveled or cut away at 99, thus leaving a space between the stops and the teeth sufficient to permit the necessary lateral play of the stops.

The last column-stop in the series (shown at the right upon the rack 34) is provided with an elongated guard 100, having a bent finger 101 for bearing against the rear side of the rack, said guard extending longitudinally of the rack and preventing the projection of any denomination-stop when the carriage has nearly reached the end of the line of writing, so as to avoid the liability of any of said stops being accidentally projected and locked, and consequently obstructing the return of the carriage for the beginning of a new line.

A paper-shelf 102, mounted upon the carriage, is extended rearwardly over both the column-stops and denomination-stops and curves downwardly and rearwardly at its rear end at 103, thus allowing the paper to hang in rear of the denomination-stop frame and avoiding the liability of catching and tearing the edges thereof.

It will be seen that when projected each denomination-stop latch is set by a lateral movement of less than a letter-space, thus conducing to the compactness and accurate operation of the mechanism, and that a guide-comb is provided for the upper ends of the stop-carrying levers, the latter having notches which form teeth in proximity to the comb-teeth and adapted to engage the latter, so as to detain the levers in working position, each lever having a lateral spring for this purpose. It will also be seen that each denomination-stop is further provided with means, as the safety-notch 87, for checking the return movement thereof to normal position, said checking means also being released by the carriage, that the carriage first releases the stop-detaining means and subsequently releases the checking means, so that in order for the projected stop to return to normal position it is necessary to have a repeated impact or continued pressure of the carriage-stop against the denomination-stop, and hence it is impossible for the latter to return to normal position while the carriage is rebounding. The said stop must wait for a repetition of the carriage impact or pressure, and hence must remain practically in working position until the carriage has come to rest, that each denomination-stop is provided with a double latch for first detaining and then checking the return movement thereof, said double latch being moved to inoperative position and there held by the carriage and also serving to prevent the premature return of the carriage-releasing devices to normal position, so that a rebound of the carriage cannot occur simultaneously with the return to normal position of the projected stop and the carriage-releasing devices.

It will be understood that certain features of the invention herein disclosed may be applied to carriage-arresting devices differing widely in construction and scope of operation from those illustrated, and hence that it is not essential in so far as these features are concerned that the denomination-stops be independently movable, or that they be mounted upon the framework, or that the carriage-stop be mounted directly upon the carriage, or that means be provided for variably arresting the carriage, or that a set of denomination-keys be employed. The devices for detaining the projected stop in working position and checking its return to normal position may be varied widely within the scope of the invention, and this feature is not limited to the use of devices having teeth or notches nor to devices released by the impact of the carriage-stop against the stop upon the framework, an important feature of this portion of the invention consisting in providing a stop-detaining device which cannot be released by momentary impact of the carriage, but which must be either held or repeatedly moved to a releasing position in order to enable the return of the projected stop to normal position. Other changes may be resorted to without departing from the spirit of the invention. Por-

tions of the improvement may be used without others.

Certain features herein shown are claimed in an application filed simultaneously herewith by Walter J. Barron.

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

1. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of denomination-stops mounted upon the framework, means for moving said stops laterally a distance less than a letter-space, stop-projecting means, and stop-detaining means releasable by the pressure of the carriage-stop against said denomination-stops, said stop-detaining means comprising a plurality of teeth on each denomination-stop and engaging means coöperating therewith.

2. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of denomination-stops mounted upon the framework, means for projecting said stops one at a time and causing the projected stop to have a limited lateral movement, and stop-detaining means set by such lateral movement, said stop-detaining means comprising a plurality of teeth on each denominaton-stop and engaging means coöperating therewith.

3. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of independently-movable denomination-stops mounted upon the framework, means for projecting said stops, means for causing each stop when projected to move laterally automatically, and a plurality of detents on each denomination-stop and set by a lateral movement and released by the pressure of the carriage-stop against the projected denomination-stop.

4. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of independently-movable denomination-stops mounted upon the framework, means for projecting said stops, means for causing each stop when projected to move laterally automatically, and a plurality of detents upon each denomination-stop, said detents being set by a lateral movement and being released by the pressure of the carriage-stop against the projected denomination-stop, the initial impact of the carriage-stop effecting the release of one detent and the rebound effecting the release of another detent.

5. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a set of independently-movable denomination-stops coöperating with said stop, means for projecting said denomination-stops, means for causing each denomination-stop when projected to move laterally, a plurality of notches which form teeth upon each denomination-stop, and devices engaged by said teeth upon such lateral movement.

6. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of independently-movable laterally-springing levers mounted upon the framework, stops carried upon said levers and projected thereby into the path of the carriage-stop and also sprung thereby in a lateral direction, and notches which form teeth upon each denomination-stop for detaining said stops in their projected positions.

7. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a set of independently-movable levers, a guide-comb for said levers, a plurality of teeth upon each of said levers for engaging said comb-teeth by a lateral movement, and stops projected by said levers.

8. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a rack arranged longitudinally of the carriage, a column-stop adjustable along said rack, a set of independently-movable levers, keys connected to said levers, a set of comb-teeth for guiding the free ends of said levers, teeth formed upon each of said levers in proximity to said comb-teeth, and stops also formed upon said levers and projected thereby into the path of the carriage-stop and subsequently released automatically by the pressure of the carriage.

9. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a column-stop adjustable upon the carriage, a set of levers arranged vertically in rear of the machine and fulcrumed between their ends, key-bearing push-rods extending forwardly from the lower ends of said levers, forwardly-projecting stops formed upon the upper ends of said levers, a comb having teeth for guiding the upper ends of said levers, teeth formed upon each of said levers for engaging said comb-teeth, and means for limiting the stop-projecting movements of the levers, said lever-teeth engaging said comb-teeth so as to detain the levers in working position, and said levers being released by the carriage.

10. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a column-stop adjustable along the carriage, a set of vertical key-operated levers arranged in rear of the machine, spacing-plates interposed between the levers at their hub portions, a guide-comb for the upper ends of said levers, teeth formed upon the sides of said levers for engaging the teeth of said guide-comb, said levers having each a lateral spring for forcing their said teeth into engagement with said guide-comb teeth, forwardly-projecting stops formed upon

the upper ends of said levers, jogs 94 formed upon the latter for arresting the stop-projecting movement thereof, and a set of returning-springs.

11. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a set of denomination-stop-carrying levers, each of said levers having a lateral tension, and teeth for each of said levers and which are set by the lateral movement of said levers for holding the latter in working position.

12. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a set of denomination-stop-carrying levers, each of said levers having a lateral tension, and teeth set by the lateral movement of each of said levers and holding the latter in working position, each of said levers being released from the control of said teeth by the pressure of the carriage.

13. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a set of independently-movable levers, each of said levers having a lateral tension, means for guiding the hub portions of said levers, a series of stops formed upon the free ends of said levers, means for guiding said free ends, and teeth formed upon said free end of each of said levers for detaining said levers in working position.

14. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a carriage-stop, a cooperating stop, a notch cut in one of said stops, means for projecting the notched stop, means for causing the notched stop to move laterally when projected, and means engaging with said notch for detaining said stop in its projected position.

15. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a carriage-stop, a cooperating stop, a notch cut in one of said stops, means for projecting the notched stop, means for causing the notched stop to move laterally when projected, and means engaging with said notch for detaining said stop in its projected position, said detained stop being released by the pressure thereon of the other of said stops at the arrest of the carriage.

16. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a carriage-stop, a cooperating stop, a lever upon which one of said stops is carried, said lever having a lateral tension, a tooth, a device engaged by said tooth upon a lateral movement of said lever effected at the stop-projecting movement thereof, so as to detain said lever and stop in projected position, and a second tooth that coöperates with said device and which is automatically released by the rebound impact of the carriage.

17. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating with said stop, a guide-comb for said denomination-stops, notches in each of said denomination-stops, means for projecting said denomination-stops, and means for causing each of them to move laterally so as to cause the engagement of said notches with a tooth of said guide-comb.

18. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating with said stop, bowed levers carrying said stops, a guide-comb for the stop-carrying ends of said levers, means for guiding the fulcrum portions of said levers, and notches cut in said stops and adapted to spring into engagement with the teeth of said guide-comb when the stops are projected with the levers.

19. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a carriage-stop, a set of levers, a set of denomination-stops formed upon said levers, ribs 98 provided upon said stops, opposing sets of guiding-teeth for said stops, notches formed upon said stops and adapted to engage the teeth in one of said sets, and bevels or cut-aways 99 formed upon the edges of said stops and engaged by the teeth in the other of said sets.

20. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of denomination-stops, a set of laterally-springing levers carrying said denomination-stops, a guiding-comb for the free ends of said levers, a set of separators for the fulcrum portions of said levers, plates 61 and 61[a] confining said separators, and keys connected to said levers.

21. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of denomination-stops, a set of laterally-springing levers carrying said stops, a guide-comb for the free ends of said levers, a fulcrum-rod for said levers, a set of separators arranged upon said fulcrum-rod and formed upon a transverse plate 61 having notches 61[c] in which the edges of said separators fit, and keys connected to said levers.

22. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop upon the carriage, a set of independently-movable laterally-springing levers mounted upon the framework, carriage-releasing devices operable by said levers, stops carried upon said levers and projected thereby into the path of the carriage-stop and also sprung thereby in a lateral direction, and a plurality of teeth for each lever for detaining said stops in their projected positions.

23. In a type-writing and tabulating mech-

anism, the combination with a power-driven carriage and carriage-feeding devices, of cooperating stops, one arranged upon the carriage and the other upon the framework, means for projecting one of said stops, means releasable by the impact of the carriage for detaining said stop in its projected position, and means for preventing a simultaneous rebound of the carriage and return of the projected stop to normal position.

24. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of cooperating stops, one arranged upon the carriage and the other upon the framework, means for projecting one of said stops, and means for detaining said stop in its projected position and subsequently checking the return movement thereof.

25. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of cooperating stops, one arranged upon the carriage and the other upon the framework, means for projecting one of said stops, and means for detaining said stop in its projected position and subsequently checking the return movement thereof, said detaining and checking means being released by the carriage when it is arrested by the coöperation of said stops.

26. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of cooperating stops, one arranged upon the carriage and the other upon the framework, means for projecting one of said stops, and a double latch for detaining the projected stop in working position and subsequently checking the return movement thereof.

27. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of cooperating stops, one arranged upon the carriage and the other upon the framework, means for projecting one of said stops, and a double latch for detaining the projected stop in working position and subsequently checking the return movement thereof, said double latch being moved to an inoperative position and held there by the carriage so as to permit the return of said stop to normal position.

28. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a set of independently-movable denomination-stops coöperating with said stop, and means for detaining in working position and subsequently checking the return to normal position of any of said denomination-stops, said detaining and checking means being releasable by the carriage.

29. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop upon the framework, a carriage-stop, carriage-releasing devices, means for projecting one of said stops to a position where it may engage the other and simultaneously operating said carriage-releasing devices, automatically-operating means for detaining in working position both the projected stop and said carriage-releasing devices, said detaining means being releasable by the impact of the carriage, and means for preventing a simultaneous rebound of the carriage and return of the projected stop and carriage-releasing devices to normal position.

30. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a coöperating stop, carriage-releasing devices, means for projecting one of said stops, and means for detaining in operative position and subsequently checking the return to normal position of both said projected stop and said carriage-releasing devices, said detaining and checking means being releasable by the carriage.

31. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a set of denomination-stops coöperating with said stop, carriage-releasing devices, and means for detaining in operative position and checking the return to normal position of any of said denomination-stops and said carriage-releasing devices, said detaining and checking means being releasable by the carriage.

32. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop upon the framework, a carriage-stop, means for projecting one of said stops to a position where it may engage the other, means for releasing the carriage from the control of its feeding devices, and means for mechanically detaining said carriage-releasing means in an operative position and checking the return thereof to normal position, said detaining and checking means being releasable by the carriage.

33. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a carriage-releasing device, a double latch, and means engageable therewith for detaining said carriage-releasing device in operative position and checking the return thereof to normal position, said double latch having a part which is movable into the path of a part upon the carriage so as to enable the latter to disengage said latch repeatedly.

34. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a set of independently-movable denomination-stops coöperating with said stop,

means for projecting said denomination-stops, means tending to cause each denomination-stop to move laterally, a series of notches or teeth provided upon each denomination-stop, and devices engageable by said notches or teeth upon such lateral movement.

35. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop upon the carriage, a set of independently-movable laterally-springing levers mounted upon the framework, stops carried upon the levers and projected thereby into the path of the carriage-stop and also sprung thereby in a lateral direction, and a series of teeth formed upon each lever or stop for detaining said stops in their projected position and checking the subsequent return movement thereof to normal position.

36. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating therewith, a guide-comb for said denomination-stops, a series of notches cut in each of said denomination-stops, means for projecting one of said stops, and means for causing them to move laterally so as to cause an engagement of said notches with the teeth of said guide-comb.

37. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop upon the carriage, a set of independently-movable denomination-stops mounted upon the framework, means for projecting said denomination-stops, carriage-releasing devices operated by said stop-projecting means, means for causing each stop when projected to move laterally, a detent set by such lateral movement and released by the impact of the carriage-stop against the denomination-stop, and means for checking the return movement of said denomination-stop, said checking means being also released by the pressure of the carriage-stop against the projected denomination-stop.

38. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop upon the carriage, a set of independently-movable laterally-springing levers mounted upon the framework, a carriage-releasing device operable by said levers, stops carried upon said levers and projected thereby into the path of the carriage-stop and also sprung thereby in lateral direction, and a series of notches or teeth upon each stop for detaining the latter in their projected positions and subsequently checking their return movements.

39. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a bar 38 extending longitudinally of the carriage and rigidly attached thereto by fixed ears 39, fixed arms 36 upon said bar, a rack mounted upon said arms, a stop adjustable along said rack, and a coöperating stop upon the framework.

40. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of rolls for said carriage, a bar 38 extending longitudinally of the carriage and attached by integral bent ears 39 to the axles of the carriage-rolls, arms 36 formed upon said bar 38, a rack adjustably mounted upon said arms, a stop adjustable along said rack, and a coöperating stop upon the framework.

41. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of denomination-stops, a set of denomination-stop levers arranged vertically in rear of the machine, a vertical frame upon which said levers are fulcrumed, said frame being attached at its lower end to the framework of the machine, a pivoted device adjustably supporting the upper end of said frame, and a lateral abutment against which said pivoted device bears, so as to support said lever-frame against the impact of the carriage.

42. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of denomination-stops, a set of denomination-stop levers arranged vertically in rear of the machine, a vertical frame upon which said levers are fulcrumed, said frame being attached at its lower end to the framework of the machine, and a yoke or bar 59 attached to the upper end of said lever-frame and hinged upon a carriage-rail and bearing against a support upon which said carriage-rail is mounted.

43. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of denomination-stops, a set of denomination-stop levers arranged vertically in rear of the machine, a vertical frame upon which said levers are fulcrumed, said lever-frame being attached at its lower end to the framework of the machine, and a yoke or bar 59 attached to the upper end of said lever-frame and hinged upon a carriage-rail and fitting closely between fixed supports upon which said rail is mounted at its ends, and also being clamped by an ear 58 and screw 57 to an ear 55 provided upon said lever-frame.

44. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of denomination-stops, a set of denomination-stop levers arranged vertically in rear of the machine, a vertical frame upon which said levers are fulcrumed, said lever-frame being attached at its lower end to the framework of the machine, an abutment

formed upon the upper portion of the frame-work, and an adjustable device attached to the upper portion of said frame and bearing against said abutment so as to support said lever-frame against the impact of the carriage.

45. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of denomination-stops, a set of levers carrying said stops, a guiding-comb for the free ends of said levers, a set of separators for the fulcrum portions of said lever, plates 61 and 61ª confining said separators, and keys connected to said levers.

46. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of denomination-stops, a set of levers carrying said stops, a guiding-comb for the free ends of said levers, a fulcrum-rod for said levers, a set of separators arranged at said fulcrum-rod and formed upon a transverse plate 61ª, a transverse plate 61 having notches 61ᶜ in which the edges of said separators fit, and keys connected to said levers.

47. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of key-operated levers, a set of denomination-stops formed upon said levers, and a guide-comb for said stops comprising two opposing sets of teeth engaging opposite edges of said denomination-stops.

48. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a set of key-operated levers, a set of denomination-stops formed upon said levers, a frame upon which said levers are fulcrumed, plates 83 and 84 attached to said frame, and opposing sets of teeth 81 and 82 formed upon said plates and engaging respectively the upper and lower edges of said stops.

49. In a type-writing machine, the combination with a carriage and carriage-feeding devices, of a carriage rail or rod along which the carriage travels, a tabulating-stop on the carriage, coöperating tabulating-stops, levers therefor, a frame upon which said levers are fulcrumed, said frame being attached at its lower end to the frame of the machine, a connecting device attached to the upper end of said lever-frame and to said carriage rail or rod, and an abutment against which the connecting device bears.

50. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a set of independently-movable denomination-stops coöperating with said stop, means for projecting said denomination-stops, means for causing each denomination-stop when projected to move laterally, each of said denomination-stops being notched to form teeth, and devices engaged by said teeth on the denomination-stops when a lateral movement takes place.

51. In a type-writing machine and tabulating mechanism, the combination of a carriage, a stop, a coöperating stop, an automatically-actuated double-locking device which locks one of the said stops in its projected position and releases it at the first impact between the stops and again at the rebound impact.

Signed at Ilion, in the county of Herkimer and State of New York, this 8th day of July, A. D. 1901.

LOUIS P. DISS.
WM. A. SCHMIDT.

Witnesses:
RALPH W. GOUGH,
M. K. JENNE.