B. C. STICKNEY.

TYPE WRITING MACHINE.

APPLICATION FILED JUNE 30, 1903.

953,561.

Patented Mar. 29, 1910.

3 SHEETS—SHEET 1.

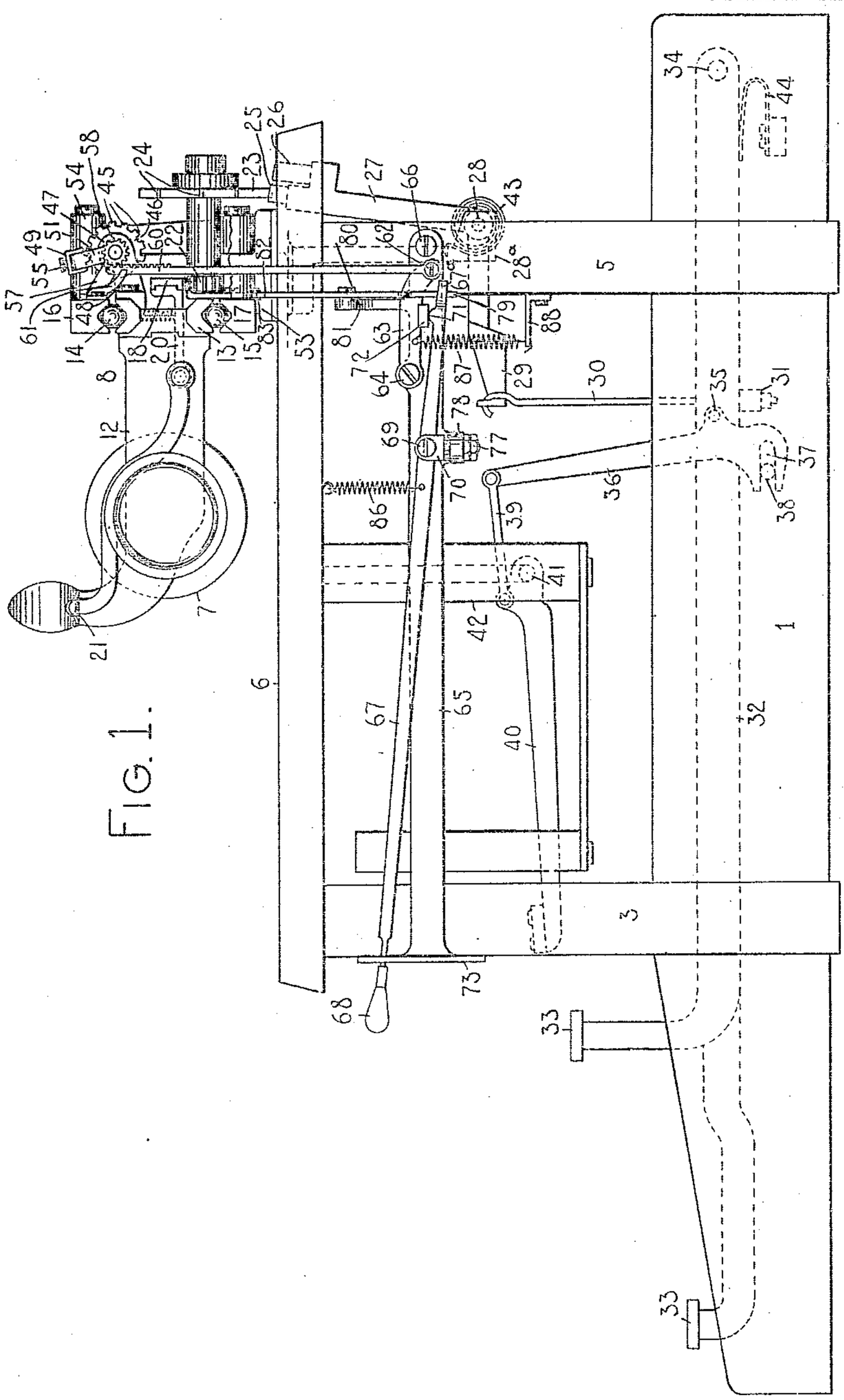


FIG. 1.

WITNESSES:

K. V. Donovan.

M. L. Hammeber.

INVENTOR:

Burton C. Stickney

by Jacob Felbel.

HIS ATTORNEY

B. C. STICKNEY.

TYPE WRITING MACHINE.

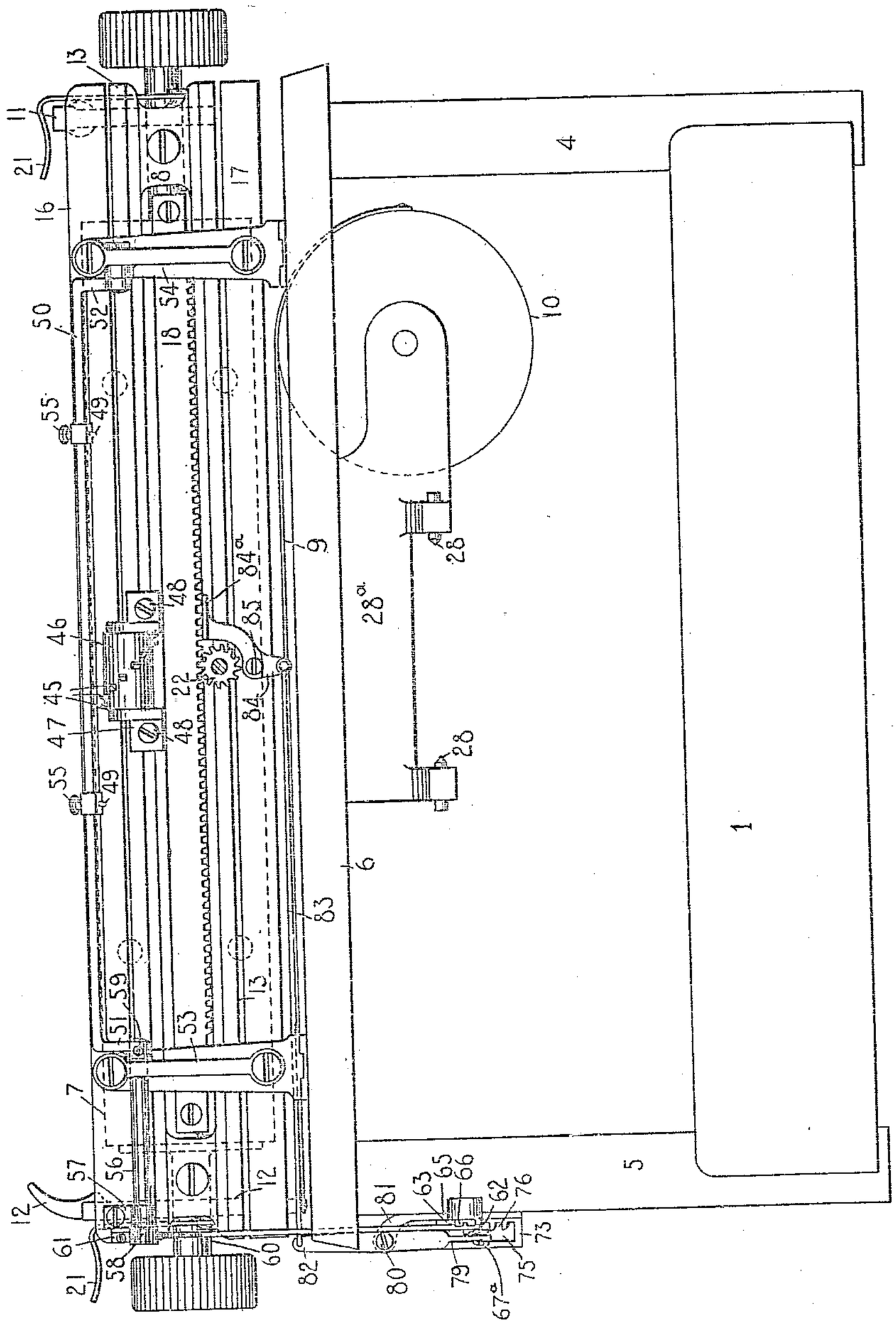
APPLICATION FILED JUNE 30, 1903.

953,561.

Patented Mar. 29, 1910.

3 SHEETS—SHEET 2.

FIG. 2.



WITNESSES:

K. V. Donovan.

M. F. Hammeke.

INVENTOR:

Burnham C. Stickney

by Jacob Tesbel

HIS ATTORNEY

B. C. STICKNEY.

TYPE WRITING MACHINE.

APPLICATION FILED JUNE 30, 1903.

953,561.

Patented Mar. 29, 1910.

3 SHEETS—SHEET 3.

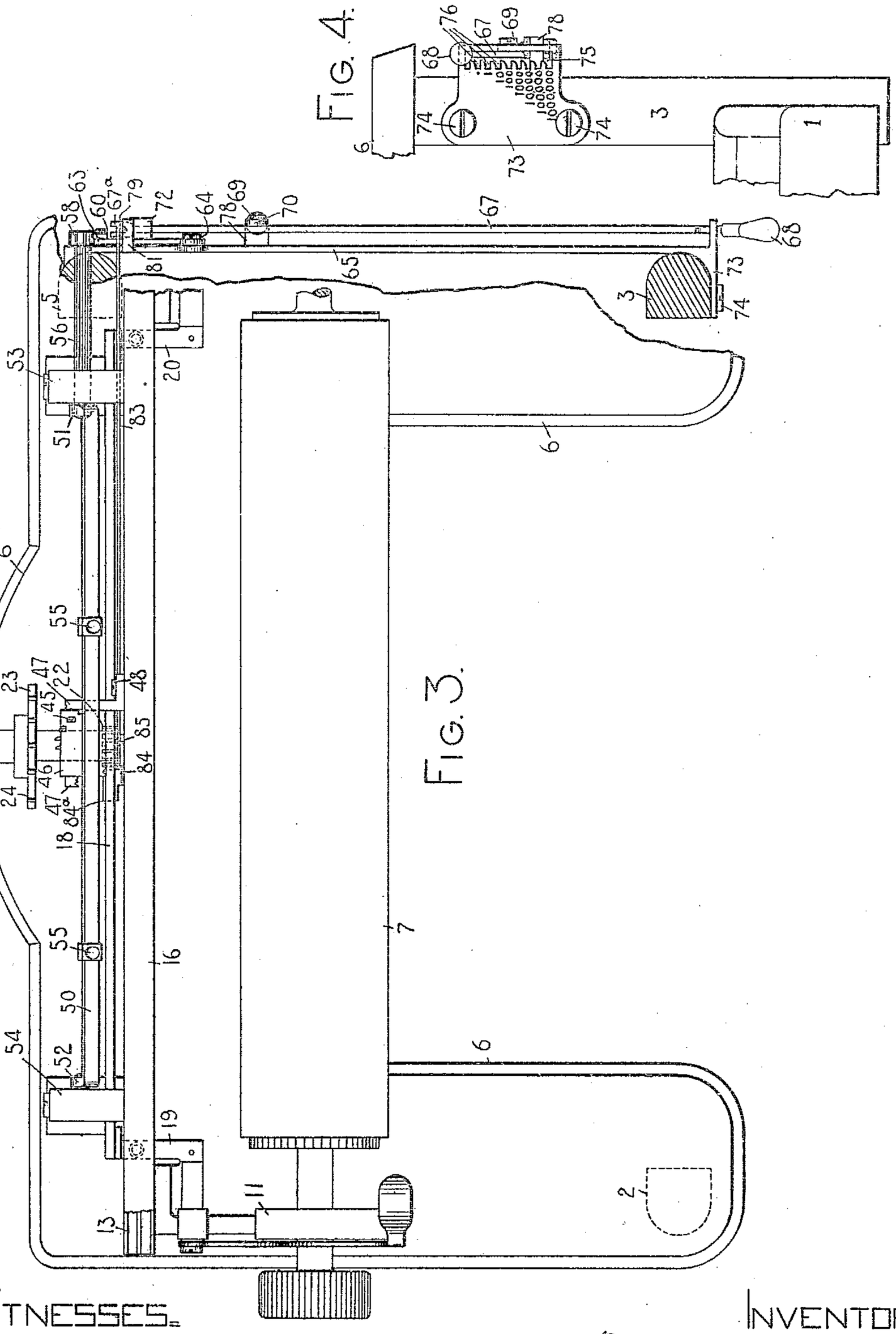


FIG. 3.

FIG. 4.

WITNESSES.

K. V. Donovan.

M. F. Hammeber.

INVENTOR.

Burnham C. Stickney

by Jacob Tabel

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

BURNHAM C. STICKNEY, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO UNION TYPE-WRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

953,561. Specification of Letters Patent. Patented Mar. 29, 1910.

Application filed June 30, 1903. Serial No. 163,703.

To all whom it may concern:

Be it known that I, BURNHAM C. STICKNEY, citizen of the United States, and resident of Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to tabulators such as used in typewriting and other machines, and its object is to condense, simplify and improve the mechanism, particularly the denomination stops and the means for adjusting a column stop to coöperate therewith.

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

In the drawings forming part of this specification, Figure 1 is a side elevation of a front strike typewriting machine embodying my present improvements. Fig. 2 is a rear elevation, and Fig. 3 a plan of the upper portion of the machine. Fig. 4 is a fragmentary front elevation, showing particularly the right-hand front corner post of the framework, and a denomination key-rack mounted thereon.

In the several views, like signs denote like parts.

The framework comprises a base 1, front corner posts 2, 3, rear corner posts 4, 5, and a top plate 6. Above the latter a platen 7 is mounted in a carriage 8 which is connected by a strap 9 (Fig. 2) to a propelling-spring drum 10. The carriage comprises side bars 11 and 12, united by a rear bar 13, and the latter by means of balls 14 and 15 is supported between upper and lower fixed guide-rails 16 and 17. The carriage movements are controlled by a letter spacing rack 18, mounted upon the carriage by means of arms 19 and 20 (the former being provided with a forward extension to form a release key 21) and meshing with a pinion 22, with which is connected a wheel 23, having escapement teeth 24, which coöperate with feeding and detent dogs 25 and 26. Said dogs are mounted upon a rocker 27, pivoted at 28 in a hanger 28^a, and having a forwardly extending forked arm 29, from the forward ends whereof depend hooks 30, attached at their lower ends to a universal bar 31. Said universal bar extends horizontally and transversely beneath a set of horizontal levers 32, which at their forward ends bear keys 33, and extending to the rear of the base 1, where they are pivoted upon a fulcrum rod 34. To each lever is pivoted at 35 an upright sub-lever 36, forked at its lower end at 37 to embrace a common transverse fulcrum rod 38, and connected at its upper end by a link 39 to one of a series of type bars 40, which are pivoted upon a fulcrum rod 41 mounted in a segment 42, and are adapted to be swung upwardly and rearwardly against the platen. At each key-lever stroke the sub-lever 36 is vibrated rearwardly, and through the link 39 pulls the type bar up to print, while the key lever 32 presses down the universal bar 31, and through the described mechanism vibrates the dog rocker, so that upon the return movement of the key the carriage is fed forward one space by the power of its spring 10. Springs 43 and 44 are provided for returning the dog rocker and the key lever or type-action to normal position.

Denomination stops 45 are arranged in a helical series, being preferably formed upon a small cylinder 46, which is fixed by brackets 47 and screws 48 to the rear bar 13 of the carriage. The working face of each of said stops is placed at a letter-space from the vertical plane in which the adjoining stop lies. The series of stops preferably begins at the top of the cylinder and extends around the rear side of the same. The topmost stop is preferably used for the decimal point, the next for units, the next for tens, and so on. Upon the carriage is mounted a set of column stops 49 for coöperation with said denomination stops, the former adjustable concentrically with the latter, being for this purpose mounted upon a bar 50, which extends longitudinally of the carriage and in the direction of the run thereof, said bar being mounted at its ends upon depending arms 51 and 52, which are hinged at their lower ends upon and between standards 53 and 54 fixed upon the top plate 6 and carrying the carriage-guiding rails 16 and 17. The column stops may be adjustably secured

by set-screws 55 along the bar 50; and the latter, together with its supporting arms, forms a bail, which overhangs the system of denomination stops. The column stops are normally clear of the denomination stops, but are movable about the bail hinge, which is concentric with the cylinder 46 or with the series of denomination stops, so that any column stop is capable of engaging any selected denomination stop.

The left-hand hinge-pintle at Fig. 2 is prolonged at 56, and at its outer end is journaled in a fixed hanger 57. Upon the extreme end of the pintle is mounted a pinion 58, whereby the pintle may be rotated and the column-stop bar adjusted accordingly, the pintle being made rigid with said bar by means of a set screw 59. In mesh with the pinion is a vertical operating-rack 60, whose upper end is guided in a bracket 61, and whose lower end is pivoted at 62 to the rear end of an arm 63, the latter at its forward end being pivoted upon a screw 64, which is threaded into a horizontally fixed bar or bracket 65, extending from the rear corner post 5 to the front corner post 3 of the framework, and being secured to the former by a screw 66.

For lifting the arm 63 and the rack 60, and thereby rotating the pinion 58 to adjust the column stops, I provide a lever 67, extending forwardly to the keyboard, and there provided with a key or finger-piece 68. This key lever 67 is pivoted between its ends at 69 upon a support 70, and at its rear end is provided with an upward projection 71, adapted to bear up against the under side of a horizontal bearing-plate 72 fixed upon the under side of said rack-operating arm 63. Thus by depressing the key 68, the lever 67 is swung upon the pivot 69, and the rear end of the lever presses up the plate 72 and lifts the arm 63 and the rack thereon. The extent to which the key is moved determines the adjustment of the column stops relatively to the denomination stops.

To enable the operator to move the key 68 the correct distance for positioning the column stops to coöperate with any selected denomination stop, I provide upon the front corner post 3 a vertical plate 73, secured thereto by screws 74, and having at its right-hand side a vertical slot 75, in which the forward end of the key lever 67 plays up and down; said slot being formed along its left-hand side with a series of notches 76 forming a denomination rack. Into any one of these notches the lever 67 may be slipped by a sidewise movement thereof, this movement being permitted by vertically swiveling the lever-support 70, as at 77, upon an ear 78 formed upon the fixed bar 65. Said bar is preferably formed integral with or attached to said slotted plate 73. As seen at Fig. 4, each notch is numbered to indicate its denomination, so that by pulling down the key and catching it in any selected notch, the column stops are set so that the foremost one thereof will be arrested by the corresponding denomination stop at the succeeding movement of the platen carriage. In order to enable the carriage to be released by said lateral movement of the denomination key-lever 67, the latter is forked at its extreme rear end, as at 67ª, to engage the lower arm of a vertical lever 79, which is pivoted by a screw 80 upon an arm 81 formed on the bar 65. The upper arm 82 of said lever is connected by a horizontal link 83 (Fig. 2) to the lower arm of a carriage-releaser 84, which is pivoted between its ends at 85 to the lower carriage-guiding rail 17, and at its upper end carries a lifting-plate or shoe 84ª, adapted to contact with the carriage rack 18 and lift the same clear of the pinion 22, to permit rapid advance of the carriage under the influence of its propelling spring 10.

In operation, the column stops 49 are adjusted along the bar 50 to locate the columns upon the page of writing, the stops being secured by the screws 55, although it will be understood that any other kind of stop or stop bar may be used within the scope of my invention. Then, supposing the number "294" is to be written, the denomination key 68 is first depressed and then slipped into the notch marked hundreds or "100" on plate 73. This movement of the lever, through the rack 60, pinion 58, pintle 56, and arm 51, adjusts the bar 50 until the stops thereon are in register with the fourth denomination stop 45, this being the stop for hundreds. Said notch-engaging or lateral movement of the lever 67, through the lever 79 and link 83, swings the releaser 84 and elevates the plate 84ª to lift the rack, so that the carriage is freed from the control of the escapement mechanism, and is enabled to run freely until the foremost column stop 49 thereon is arrested by contact with said fourth denomination stop 45. Thereupon the operator swings the lever 67 out of its notch 76, thereby enabling the rack 18 to drop into reëngagement with the escapement pinion 22; and upon the release of said lever 67, the same is returned to normal position by a spring 86; while the rack-operating arm 63 is returned, together with the rack, pinion, and stop bar, by a spring 87, caught upon said arm and also upon a bracket 88 provided upon the rear corner post 5. The carriage is thus arrested in such a position that the first figure written will fall in the proper column at the hundreds point. The operator then taps the

keys for the "2", the "9" and the "4", and then operates the denomination key 68 to cause the release of the carriage again and its subsequent arrest at the proper point to begin the writing in the succeeding column of the next number to be written.

Variations may be resorted to within the scope of my invention, and portions of my improvements may be used without others. While I have shown the column-stop bar as adjustable by means of a single key, it will be understood that the bar may be rendered otherwise adjustable within the scope of my invention, and also that other carriage-releasing means may be employed.

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

1. In a tabulating mechanism, the combination with a carriage of a spiral series of denomination stops, a coöperating stop, and means for effecting adjustment of said cooperating stop around outside of and concentrically with said spiral series of stops.

2. In a tabulating mechanism, the combination with a carriage of a spiral series of denomination stops, a coöperating stop, means for effecting relative adjustment between said coöperating stop and said series of stops in the direction of the run of the carriage for determining the position of the column, and means for enabling said cooperating stop by a movement around outside of and concentric with said spiral series of stops and of predetermined extent, to cooperate with any stop in the series.

3. In a tabulating mechanism, the combination with a carriage of a spiral series of denomination stops, a coöperating stop, means for adjusting said coöperating stop in the direction of the run of the carriage, for determining the position of the column, a single denomination key, and means for enabling said key to move said coöperating stop to different extents concentrically with said spiral series of stops.

4. In a tabulating mechanism, the combination with a carriage of a spiral series of denomination stops mounted rigidly thereon, a coöperating stop mounted upon the framework, and means for effecting adjustment of said coöperating stop around outside of and concentrically with said spiral series of stops.

5. In a tabulating mechanism, the combination with a carriage of a spiral series of denomination stops, a bar extending longitudinally of the carriage and off-set from the center of said series of denomination stops, a column stop mounted upon said bar and adjustable therealong, and means for swinging said bar in a direction concentric with said series of stops.

6. In a tabulating mechanism, the combination with a carriage of a spiral series of denomination stops, a key-controlled bar extending longitudinally of the carriage and off-set from the center of said series of denomination stops, a column stop mounted upon said bar and adjustable therealong, means for swinging said bar in a direction concentric with said series of stops, and means for returning said bar to normal position.

7. In a tabulating mechanism, the combination with a carriage of a spiral series of denomination stops, a bar extending longitudinally of the carriage, arms whereon said bar is supported at its ends, said arms being hinged concentrically with said series of stops; and a stop mounted on said bar and adjustable therealong, and in position normally clearing said denomination stops but engageable therewith by a swinging adjustment of said bar.

8. In a tabulating mechanism, the combination with a carriage of a spiral series of denomination stops, a bar extending longitudinally of the carriage and mounted for swinging movement concentrically with said series of stops, a column stop adjustable along said bar, a denomination key, and operative connections between said key and said bar for swinging said bar to different extents.

9. In a tabulating mechanism, the combination with a carriage of a spiral series of denomination stops mounted rigidly thereon, a bar extending longitudinally of the carriage, a column stop mounted upon said bar and adjustable therealong, and means for swinging said bar around outside of and in a direction concentric with said series of stops.

10. In a tabulating mechanism, the combination with a carriage of a spiral series of denomination stops mounted rigidly thereon, a bar extending longitudinally of the carriage, arms whereon said bar is supported and between which said series of stops reciprocates during the carriage movements, said arms being hinged concentrically with said series of stops, a column stop adjustable along said bar, key controlled means for swinging said bar upon said arms, and a spring for returning said bar to normal position.

11. In a tabulating mechanism, the combination with a carriage of a spiral series of denomination stops mounted thereon, a bar extending longitudinally of the carriage, arms whereon said bar is supported at its ends, said arms being hinged upon the framework concentrically with said series of stops; a stop mounted on said bar and adjustable therealong and in position normally clearing said denomination stops but en-

gageable therewith upon swinging adjustment of said bar, and a denomination key operatively connected to said bar and operative to swing said bar different extents.

12. In a tabulating mechanism, the combination with a carriage of a spiral series of denomination stops, a hinged bar extending longitudinally of the carriage and swinging concentrically with and around said denomination stop, a column stop mounted upon said bar, a pinion rigid with said bar and concentric with said series of denomination stops, a rack in mesh with said pinion, and means for moving said rack and arresting it at any selected point to enable said column stop to coöperate with any selected denomination stop.

13. In a tabulating mechanism, the combination with a carriage of a spiral series of denomination stops, a hinged bar extending longitudinally of the carriage, a column stop mounted upon said bar, a pinion rigid with said bar and concentric with said series of denomination stops, a rack in mesh with said pinion, and means for moving said rack and arresting it at any selected point to enable said column stop to cooperate with any selected denomination stop, said rack moving means including a single denomination key and a denomination rack for positioning said key.

14. In a tabulating mechanism, the combination with a carriage of a series of denomination stops spirally mounted thereon, a bar hinged upon the framework concentrically with said spiral series of stops, a column stop mounted upon said bar, a pinion rigid with said bar, a rack in mesh with said pinion, a pivoted arm to which said rack is pivoted, a lever mounted upon a universal joint and having a bearing upon said arm, a key upon the forward end of said lever, and a denomination rack for said key.

15. In a tabulating mechanism, the combination with a framing, including a top plate, of standards erected upon the top plate, a carriage rail supported by said standards, a carriage mounted upon said rail, a spiral series of denomination stops affixed upon said carriage between said standards, a bar extending longitudinally of the carriage, a column stop adjustable along said bar, arms upon the ends of said bar whereby it is hinged upon said standards concentrically with and around said series of denomination stops, and means for moving said bar upon said hinge and arresting it at any selected position.

16. In a tabulating mechanism, the combination with a framing, including a top plate, of standards erected upon the top plate, a carriage rail supported by said standards, a carriage mounted upon said rail, a spiral series of denomination stops affixed upon said carriage between said standards, a bar extending longitudinally of the carriage, a column stop adjustable along said bar, arms upon the ends of said bar whereby it is hinged upon said standards concentrically with said series of denomination stops, and means for moving said bar to different extents upon said hinge and arresting it at any selected position, said bar-moving means including a pinion rigid on said bar and concentric with said hinge, a rack in mesh with said pinion, and a key provided with means for controlling said rack.

17. In a tabulating mechanism, the combination with a framing, including a top plate, of standards erected upon the top plate, a carriage rail supported by said standards, a carriage mounted upon said rail, a spiral series of denomination stops affixed upon said carriage between said standards, a bar extending longitudinally of the carriage, a column stop adjustable along said bar, arms upon the ends of said bar whereby it is hinged upon said standards concentrically with said series of denomination stops, and means for moving said bar different extents upon said hinge and arresting it at any selected position, said bar-moving means including a pintle for said bar, a pinion upon said pintle, a rack in mesh with said pinion, a single denomination key provided with means for moving said rack, and means for enabling said rack to be arrested at such points as to enable said column stop to coöperate with any selected denomination stop.

18. In a typewriting and tabulating mechanism, the combination with a power driven escapement-controlled carriage of a spiral series of denomination stops, a cooperating stop, means for effecting adjustment of said coöperating stop concentrically with and around said spiral series of stops, and a carriage-release connected to said adjusting means.

19. In a typewriting and tabulating mechanism, the combination with a power driven carriage and escapement mechanism therefor, of a spiral series of denomination stops, a coöperating stop, means for effecting relative adjustment between said coöperating stop and said series of stops in the direction of the run of the carriage, for determining the position of the column, means for enabling said coöperating stop, by a movement concentric with and around said spiral series of stops and of predetermined extent, to coöperate with any stop in the series, and means for releasing the carriage from the control of said escapement mechanism.

20. In a typewriting and tabulating mechanism, the combination with a power driven escapement-controlled carriage of a spiral series of denomination stops, a cooperating stop, means for adjusting said cooperating stop in the direction of the run of the carriage, for determining the position of the column, a single denomination key, means for enabling said key to move said coöperating stop to different extents concentrically with said spiral series of stops, and carriage-releasing mechanism operable by said denomination key.

21. In a typewriting and tabulating mechanism, the combination with a power driven escapement-controlled carriage of a spiral series of denomination stops, a bar extending longitudinally of the carriage, a column stop mounted upon said bar and adjustable therealong, means for swinging said bar in a direction concentric with and around said series of stops, and carriage-releasing means operatively connected to said bar-swinging means.

22. In a typewriting and tabulating mechanism, the combination with a power driven escapement-controlled carriage and releasing means therefor, of a spiral series of denomination stops, a bar extending longitudinally of the carriage and mounted for swinging movement concentrically with and around said series of stops, a column stop adjustable along said bar, a single denomination key having different extents of movement, and operative connections between said key, said bar, and said carriage-releasing means.

23. In a typewriting and tabulating mechanism, the combination with a power driven escapement-controlled carriage of a stop carrier a spiral series of denomination stops, said stops projecting outwardly from said carrier, a hinged bar extending longitudinally of the carriage, a column stop mounted upon said bar, a pinion rigid with said bar and concentric with said series of denomination stops, a rack in mesh with said pinion, means for moving said rack and arresting it at any selected point to enable said column stop to coöperate with any selected denomination stop, and carriage-releasing means connected to said rack-moving means.

24. In a typewriting and tabulating mechanism, the combination with a power driven escapement-controlled carriage of a spiral series of denomination stops, a hinged bar extending longitudinally of the carriage, a column stop mounted upon said bar, a pinion rigid with said bar and concentric with said series of denomination stops, a rack in mesh with said pinion, means for moving said rack and arresting it at any selected point to enable said column stop to coöperate with any selected denomination stop, said rack moving means including a single key operable to move said rack varying distances, and a carriage-release operable by said key.

25. In a typewriting and tabulating mechanism, the combination with a power driven carriage and escapement mechanism therefor, including a rack, of a series of denomination stops spirally mounted thereon, a bar hinged upon the framework concentrically with said spiral series of stops, a column stop mounted upon said bar, a pinion rigid with said bar, a rack in mesh with said pinion, a pivoted arm to which said rack is pivoted, a lever mounted upon a universal joint and having a bearing upon said arm, a key upon the forward end of said lever, and carriage-releasing means connected to said lever.

26. In a typewriting and tabulating mechanism, the combination with a power driven carriage and escapement mechanism therefor, including a rack, of a series of denomination stops spirally mounted thereon, a bar hinged upon the framework concentrically with said spiral series of stops, a column stop mounted upon said bar, a pinion rigid with said bar, a rack in mesh with said pinion, a pivoted arm to which said rack is pivoted, a lever mounted upon a universal joint and having a bearing upon said arm, a key upon the forward end of said lever, and carriage-releasing means connected to said lever and including a lever, a link, and a pivoted carriage-rack lifter connected to said link.

27. In a typewriting and tabulating mechanism, the combination with a framing, including a top plate, of standards erected upon the top plate, a carriage rail supported by said standards, a carriage mounted upon said rail, means for propelling said carriage escapement mechanism, a spiral series of denomination stops affixed upon said carriage between said standards, a bar extending longitudinally of the carriage, a column stop adjustable along said bar, arms upon the ends of said bar whereby it is hinged upon said standards concentrically with said series of denomination stops, and means for moving said bar upon said hinge and arresting it at any selected position, and carriage-releasing means connected to said bar-moving means.

28. In a typewriting machine and tabulating mechanism, the combination of a series of spirally arranged denominational stops, and a column stop bar that is movable to different extents around said denominational stops to bring the column stop or stops into coöperation with the different denominational stops.

29. In a typewriting machine and tabu-

lating mechanism, the combination of a stop carrier, a series of spirally arranged denominational stops that extend outwardly from said stop carrier, and a column stop bar that is movable to different extents around said denominational stops and their carrier to bring the column stop or stops into coöperation with the different denominational stops.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 23d day of June A. D. 1903.

BURNHAM C. STICKNEY.

Witnesses:
K. V. Donovan.
E. M. Wells.