

No. 673,514.

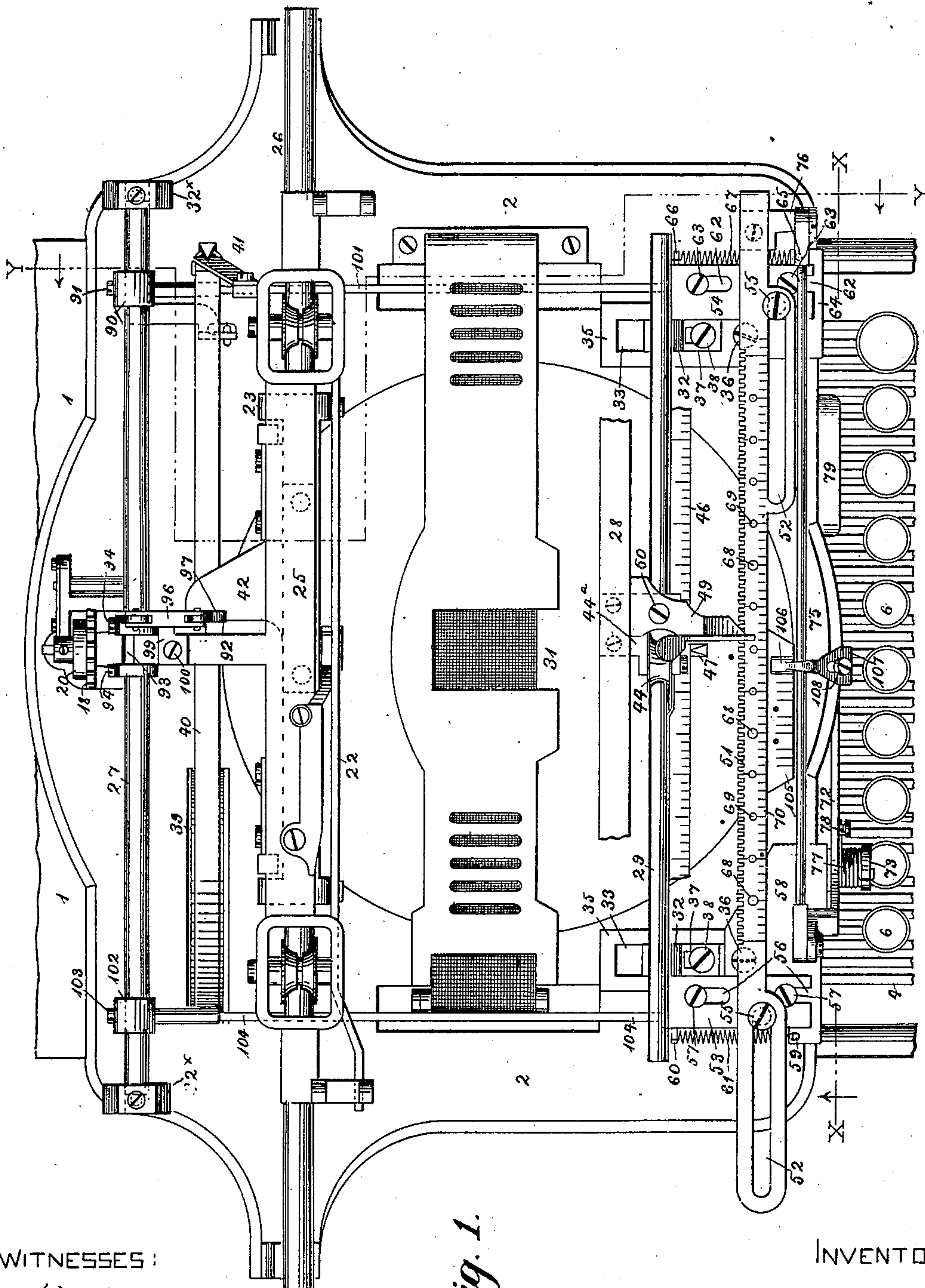
Patented May 7, 1901.

E. B. CRAM.  
TYPE WRITING MACHINE.

(Application filed July 20, 1899.)

(No Model.)

4 Sheets - Sheet 1.



WITNESSES:

*K. V. Donovan*

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*Fig. 1.*

INVENTOR

*Edward B. Cram*

by *Jacob Felbel*  
HIS ATTORNEY





No. 673,514.

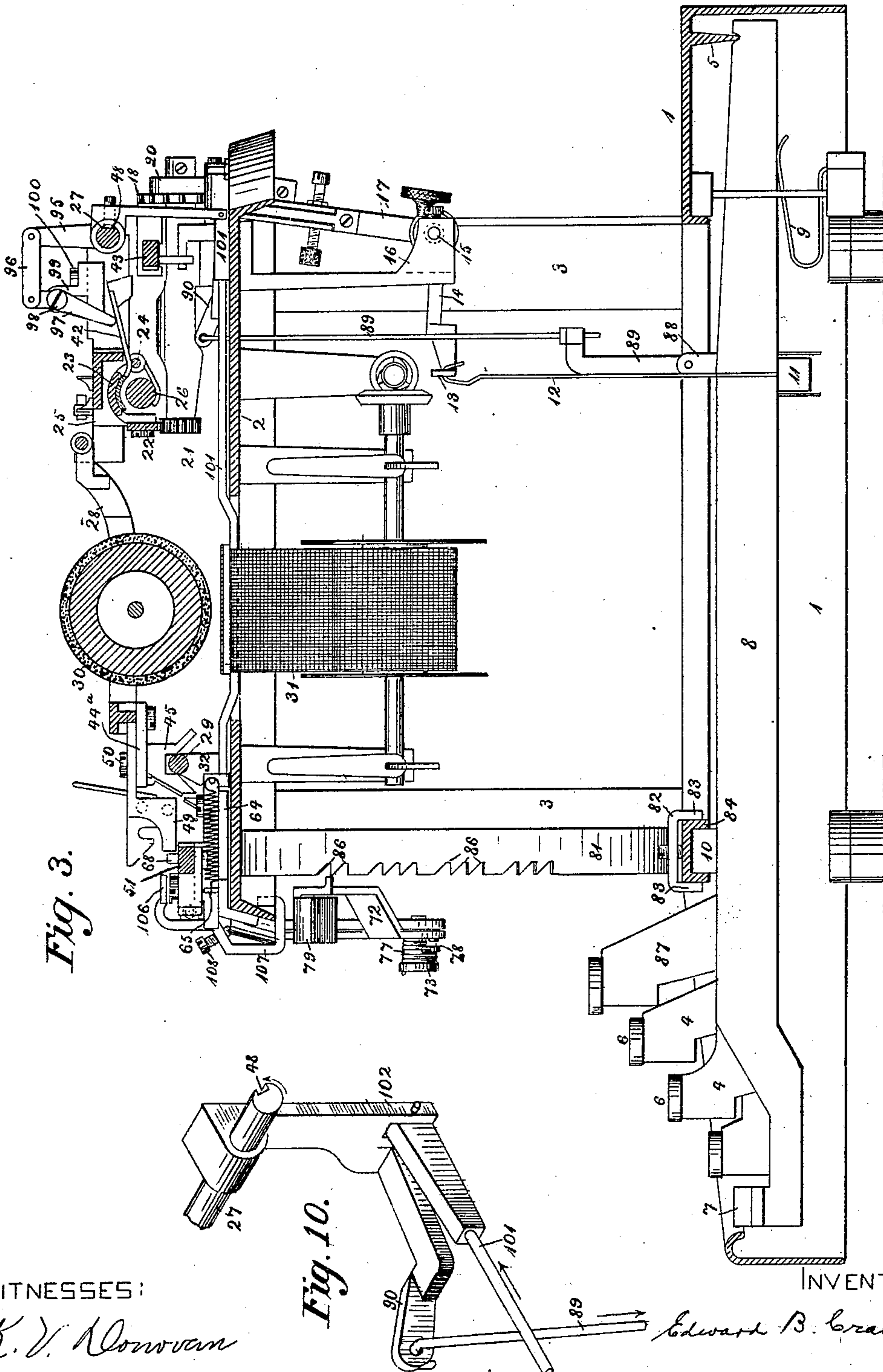
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E. B. CRAM.  
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Application filed July 20, 1899.

No Model.

4 Sheets—Sheet 3.



WITNESSES:

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Fig. 10.

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No. 673,514.

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(No Model.)

4 Sheets—Sheet 4.

Fig. 4.

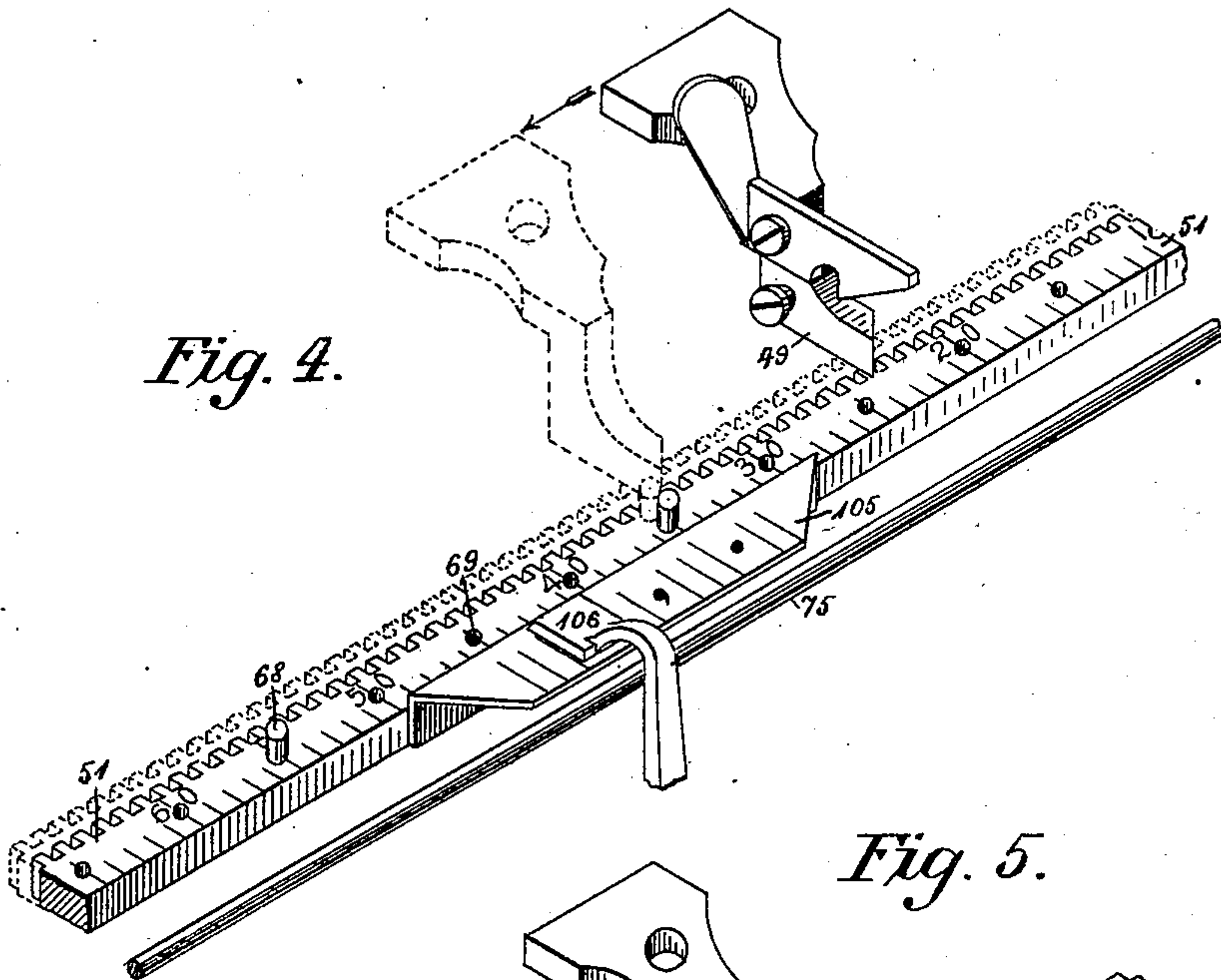


Fig. 5.

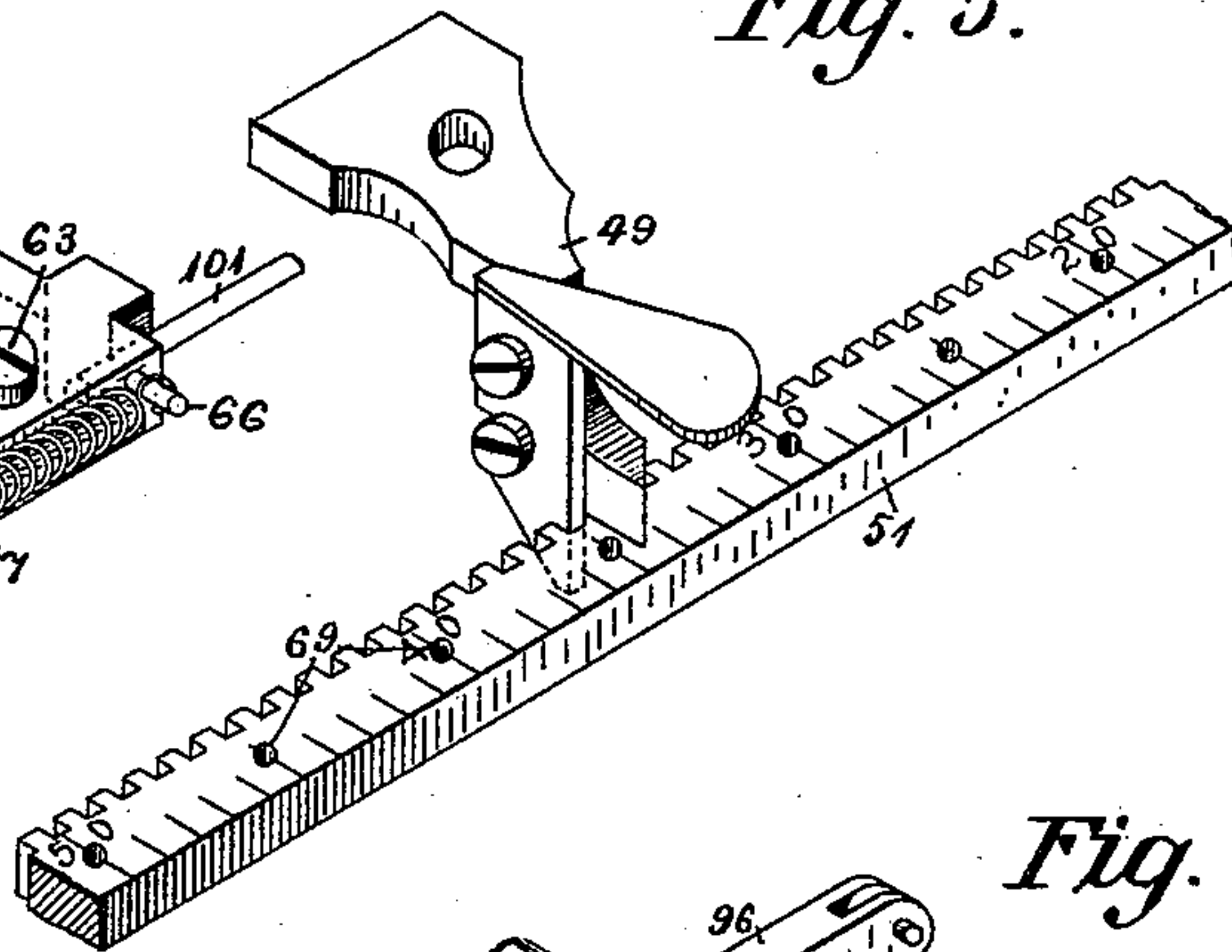


Fig. 6.

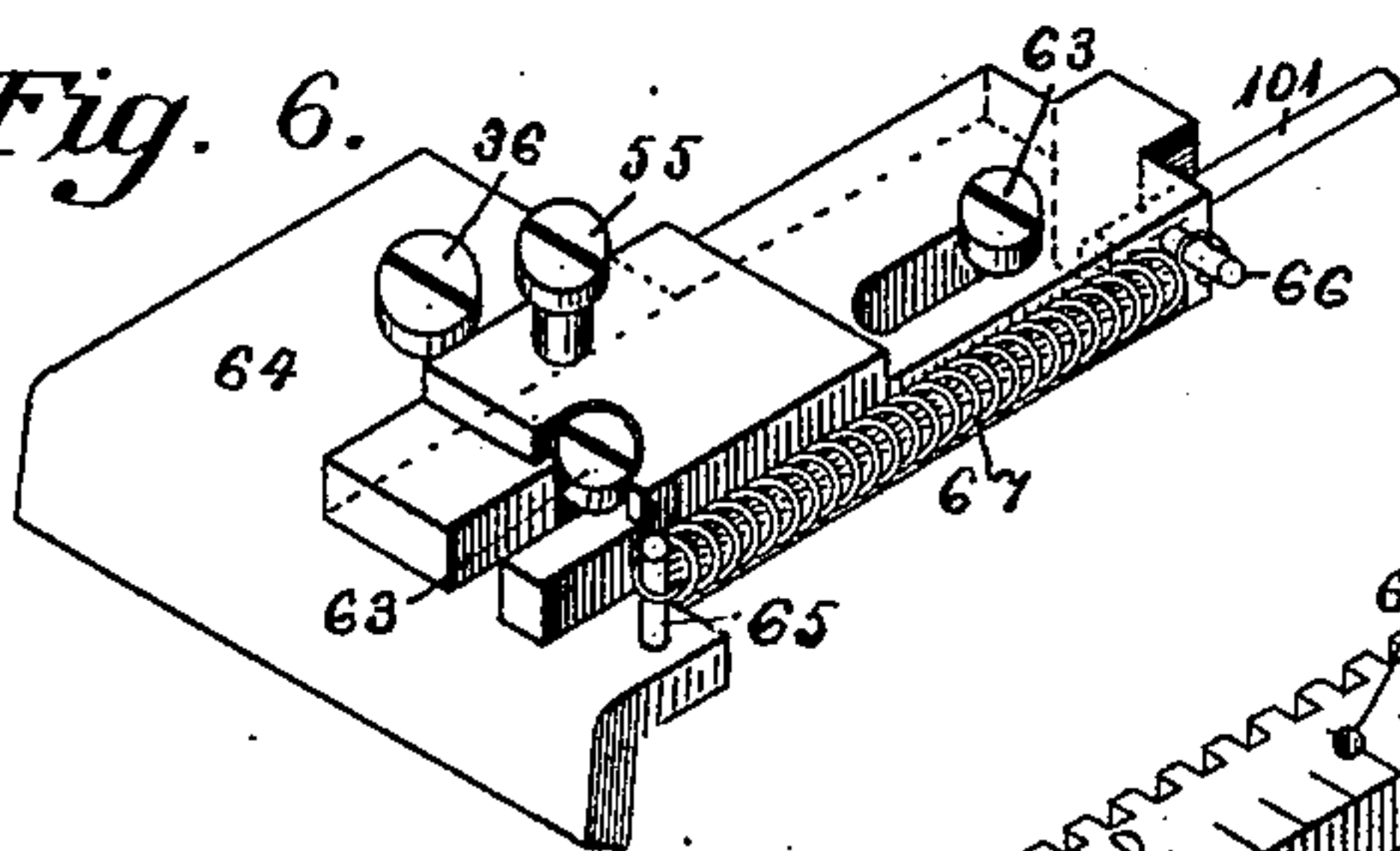


Fig. 7.

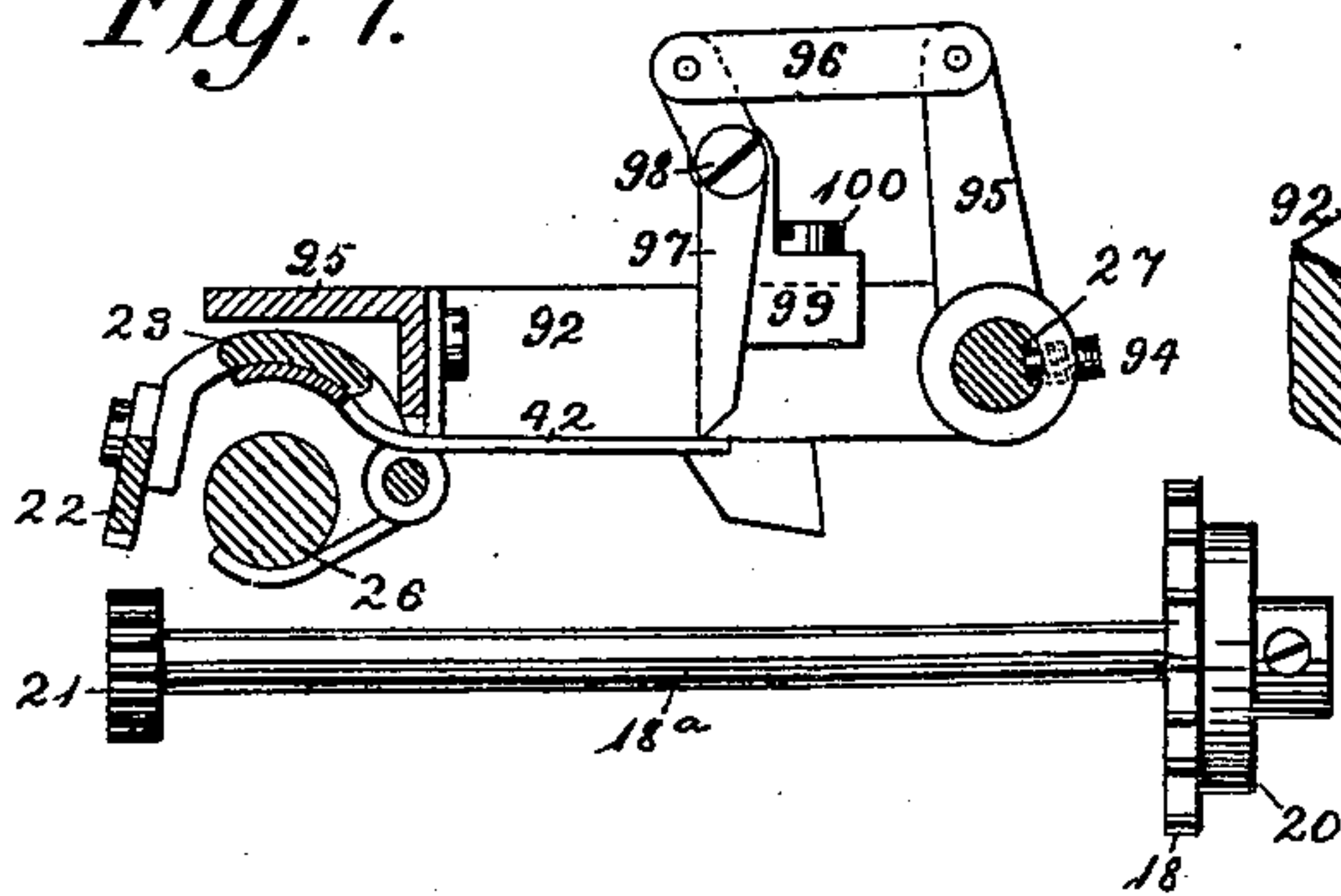
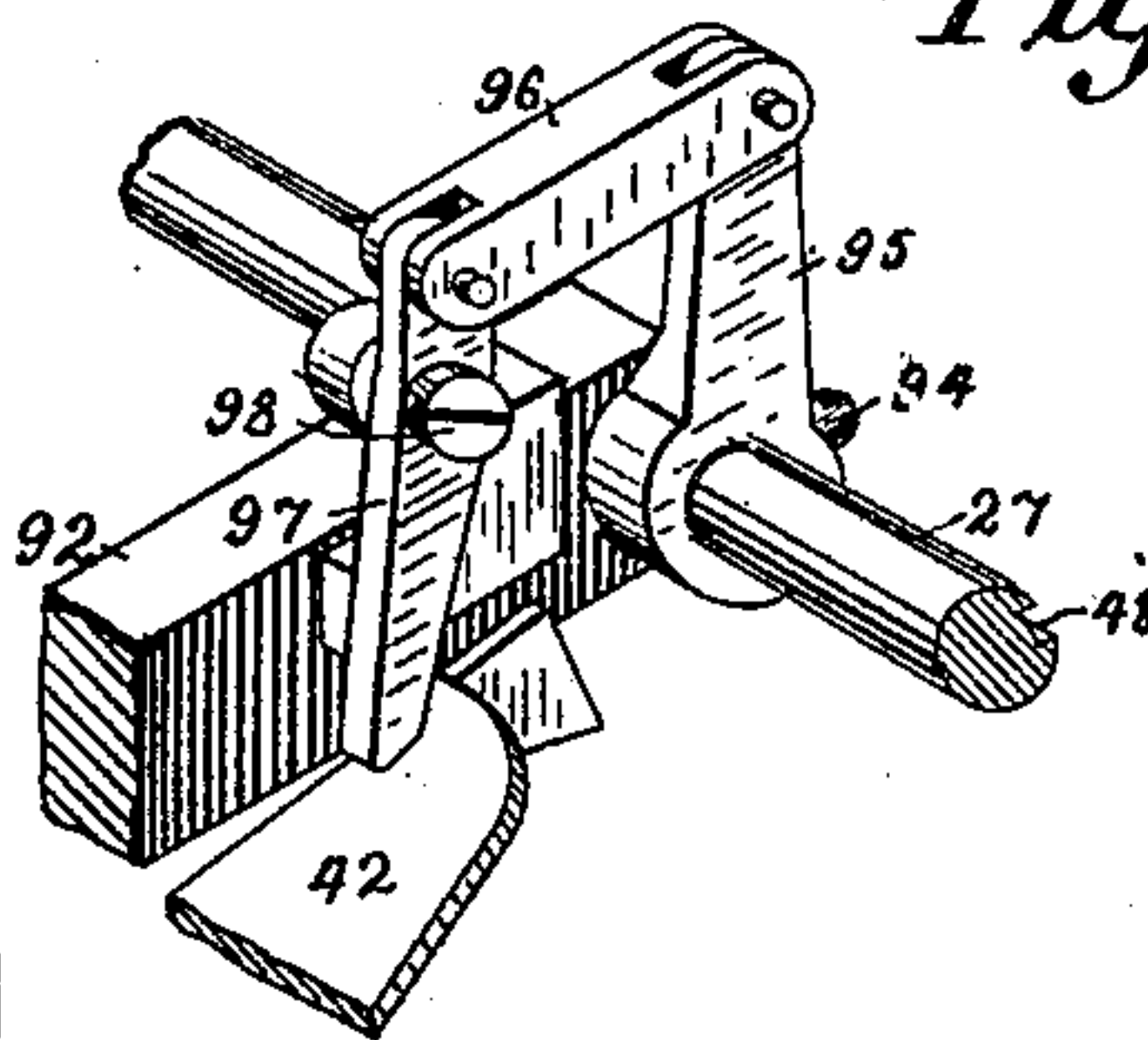


Fig. 8.



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# UNITED STATES PATENT OFFICE.

EDWIN BEECHER CRAM, OF BROOKLYN, NEW YORK, ASSIGNOR TO  
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## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 673,514, dated May 7, 1901.

Application filed July 20, 1899. Serial No. 724,553. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN BEECHER CRAM, a citizen of the United States, and a 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.

The present invention relates to column-stop and carriage-moving mechanism for type-writing machines in general, and more particularly for that class of type-writing machines in which the carriage, whether a paper or a type carriage, is drawn forward by power and is controlled by an escapement mechanism in such forward motion.

One object of the invention is to advance the carriage quickly from any position thereof and arrest the same at any one of a given number of distances from a predetermined point or points.

Another object is to adjust or vary the position of said predetermined point or points.

Another object is the provision of a denomination-indicator whereby the numbers in each column may be placed with each denomination in the same vertical line as like denominations, and other objects will hereinafter more fully appear.

To these ends the invention includes features of construction and combinations of devices hereinafter described, and more fully pointed out in the appended claims.

One form of the invention is illustrated in the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of part of a type-writing machine in which the invention is embodied. Fig. 2 is a front elevation, partly in section, on the line X X in Fig. 1 with parts broken away. Fig. 3 is a sectional elevation from the right-hand side on the planes indicated in Fig. 1 by the line Y Y. Figs. 4, 5, 6, 7, 8, 9, and 10 are detail views of various features, illustrative some of details of construction and some of modes of operation.

The invention is shown in the drawings as an attachment to an existing form of type-writing machine, (Remington No. 6;) but it is to be understood that the invention may be embodied in a machine as an integral part

thereof, in which case some of the devices hereinafter described may be omitted, since they merely form means for attaching the working parts of the invention to the machine. It is to be understood also that the invention may be used in conjunction with types of machines other than that shown.

The same numeral or character of reference will be used to designate the same part in the various views.

Referring to the drawings, 1 indicates the base of a Remington machine; 2, the top plate or type-ring; 3, standards connecting the base 1 and the top plate 2; 4, key-levers of the usual construction, fulcrumed upon a rib 5, depending from the top of base 1 and provided with keys 6 at the forward ends; 7, a space-key bar carried by levers 8, also fulcrumed upon the rib 5; 9, springs bearing up against the under edges of the key-levers and normally retaining the same against the rib 5 and a forward padded stop 10. The type-bars, their hangers, and the connections from the bars to the key-levers are omitted for the sake of clearness.

11 marks the usual universal bar, which is suspended by rods 12 from a transverse bar 13, carried by an arm 14, projecting forwardly from a rocker or shaft 15, journaled in arms of a plate 16, depending from the top plate 2.

17 marks the usual rocker-bar carrying the fast and loose dogs which coact with the usual escapement-wheel 18. The wheel 18 is connected with a shaft 18<sup>a</sup> (journaled in a bearing 19, Fig. 3) in any suitable way, as by a backing-ratchet within a casing 20. At its forward end said shaft 18<sup>a</sup> is provided with a pinion 21, with which a carriage rack-bar 22 engages, the latter being carried by arms 23, journaled at 24 to a carriage 25, guided upon rods 26 27 in a known manner.

The Remington No. 6 is a double-case machine in which a platen-carrier 28 is supported upon the carriage 25 and shifting rail 29.

30 indicates a platen, and 31 the usual ribbon. The shifting rail 29 is carried by rock-arms 32, which project through slots 33 in the top plate 2 of the machine, the said arms being secured at their lower ends to a rock-shaft, (not shown,) which is operated by an upper-



case key-lever 34 at the left-hand side of the machine. The rearward motion of the arms 32 is limited by means of slotted plates 35, which are adjustably held in position by screws 36 passing therethrough and engaging with threaded holes in the top plate 2. The forward motion of the said arms 32 is limited by means of the stops 37, which are adjustably held in place by screws 38 passing therethrough and engaging threaded holes in the top plate 2.

The carriage 25 is drawn toward the left by means of a spring-drum 39 and a strap 40, connecting it with an arm 41, projecting from the carriage.

42 is an arm, usually connected to the rack-carrying arms 23, extending rearwardly of the machine for coaction with margin-regulating devices, (not shown,) usually carried by a rocking rack-bar 43, which is journaled in standards 32<sup>x</sup>.

44 is a front roll running upon the shifting guide-rail 29 and mounted in a bracket 44<sup>a</sup>, screwed to the platen-carrier.

45 is a yoke attached to the platen-carrier 28 and embracing the guide-rail 29.

46 is a scale attached to the platen-carrier, and 47 is a pointer therefor connected to the shift-rail 29.

The devices thus far described are to be found in the usual Remington No. 6 machine, with the exception that the rear guide-rod 27 for the carriage 25 is not rigidly secured to the posts 32<sup>x</sup>, but is mounted to rock in its bearings and is provided with a longitudinal slot 48 for a purpose presently to appear.

A projection or arm 49 is attached to the bracket 44<sup>a</sup> by a screw 50, the rear end of the arm 49 being widened in order to have a bearing against the front bar of the platen-carrier 28. In front of and below the arm 49 is a stop-carrying bar 51, lying parallel with the shift-rail 29 and provided with slots 52, extending lengthwise thereof. Immediately below the bar 51 are two rearwardly-movable slides 53 54, and the bar 51 is connected with these slides by means of shoulder-screws 55, which pass through the slots 52 and engage threaded holes in said slides. The slots permit endwise motion of the bar. The sliding plate 53 is provided with slots 56, through which retaining-screws 57 pass, the said screws engaging threaded holes in a plate 58, which is rigidly secured to the top plate 2 by means of the screw 36 aforesaid, and by being bent over to fit the downwardly-extending front flange of the top plate 2 is prevented from turning upon said top plate. The plate 58 is provided with a pin 59 and the slide 53 is provided with a pin 60, and a spring 61, hooking over said pins, is tensioned to draw the plate 53 forwardly of the machine into the position shown in Fig. 1. The slide 54 is likewise provided with slots, as 62, through which retaining-screws 63 pass, which engage threaded holes in a plate 64, secured to the top plate by the right-hand screw 36 and further

secured by being bent downwardly at its front side to fit against the downwardly-extending flange of the top plate 2. The plate 64 is likewise provided with a pin 65, and the slide 54 is likewise provided with a pin 66, and a spring 67 hooks over said pins and is tensioned to draw the right-hand portion of plate 54 forwardly of the machine and into the position shown in Fig. 1.

From the construction thus far described it will be seen that while the bar 51 may move freely lengthwise it may always be moved sidewise. It carries one or more column-stops, as pins 68, inserted in holes 69 in the bar, which stops in the normal position of the bar lie out of the path of the stop arm or member 49. The stops are carried into the path of the arm 49 by a rearward movement of the carrier 51, which is also provided with a scale 70, corresponding with the carriage-scale 46. The holes 69 may be spaced at any desired intervals, preferably five letter-spaces apart. The bar 51 has endwise motion for a distance, preferably, equal to about twenty letter-spaces.

A bell-lever 72 is pivoted at 73 upon an arm depending from the plate 58 aforesaid, and the end of the upright arm of the lever 72 is connected with the stop-bar 51 by means of a link 75, pivoted at one end to the lever and at the other end to the bar or to an arm 76, projecting therefrom. A spring 77 is loosely coiled upon the axis 73 and has one end secured to the head of the screw forming said axis and the other end bearing under a screw 78, engaging a threaded hole in the horizontal arm of the lever 72. The tension of the spring is to lift said arm, and the arrangement of the lever and link is such that the spring normally retains the bar 51 in the left-hand position. (Shown at Fig. 1.) The horizontal arm of the lever 72 is provided with a flattened or bent-over portion 79, forming a finger-piece, and an ear or tooth 80, bent at a right angle to form a catch. A metal bar 81, curved concentrically to axis 73, is secured to the frame of the machine in any suitable way, as by providing it with a foot 82, having clips 83, bent downwardly to fit over the horizontal inverted-U-shaped cross-piece 84 of the base 1, and a screw 85 engaging a threaded hole in the said arm 82 and bearing upon the top of the said bar 84. The upper end of the bar 81 bears against the under side of the top plate 2, and the whole is so arranged that by turning down the screw 85 and lifting the arm 82 the upward pressure of the bar 81 against the top plate 2 serves to jam or secure the rod firmly in position. Upon its front edge the bar 81 is provided with notches 86, and the lever 72 is loosely mounted upon its pivot 73, so that its horizontal arm may be pressed back to engage its catch 80 with any of the notches 86. The notches 86 are arranged in one group containing two and in three groups containing each three notches, and the notches of each group are uniformly



spaced, and the groups are separated from each other by equal distances. The arms of the levers 72 are so proportioned that the movement of the lever and the index or lip 80 from engagement with one notch 86 to the next notch of the same group will, through the link 75 and the bar 51, cause a column-stop 68 to be moved a letter-space distance, and the blank or unnotched spaces between the groups of notches 86 represent a blank space for the decimal-point and blank spaces for separating hundreds from thousands and thousands from millions.

At the right of the keyboard a key 87 is arranged, having a strap 88, to which one end of a connecting-rod 89 is pivotally connected. The other end of the rod 89 is connected with a bent arm 90, which is rigidly connected at its upper end to the rock-shaft 27, as by a screw 91 engaging with the threaded hole in the sleeve of the arm 90 and entering the slot 48 in the shaft. The arm depends slightly in rear of the shaft 27 to a point near the top plate 2 and is then bent forwardly and upwardly, the upper end of the connecting-rod 89 being pivotally connected to the forward end of the arm, as shown in Fig. 10. The described construction of the arm 90 not only takes it out of the way of parts of existing machines, but also provides for its rocking without coming in contact with the top plate 2. The carriage 25 is connected with the guide-rod 27 by means of a rearwardly-extending arm 92, forking a sleeve 93 on the rod 27, the ends of the sleeve being flanged and the forked end of the arm 92 engaging between the said flanges. The sleeve is prevented from turning upon the shaft and is compelled to turn therewith by means of one or more screws 94, which engage threaded perforations in the flanges of the sleeve and extend into engagement with the slot 48. To the sleeve is secured a vertical arm 95. A link 96 is pivotally connected at one end to the upper end of arm 95 and at its other end to a lever 97, pivoted at 98 to a bracket 99, which is secured to the arm 92 of the carriage 25, as by a screw 100 passing through a perforation in the bracket and engaging with the threaded hole in the arm. The lower arm of the lever 97 normally stands with its end slightly above or in contact with the plate or arm 42 aforesaid, and the pivots 24 and 98 and the arms 42 and 97 are so related that the lower end of the lever 97 exerts a camming action upon the arm 42 whenever the said lower arm is moved rearwardly of the machine, thus causing the arms 42 and 23 to lift the rack 22 out of engagement with the toothed wheel 21, all as indicated in Fig. 7.

The arm 90 is slotted at its elbow, as shown in Fig. 10, and one end of a horizontal connecting-rod 101 is pivotally connected thereto, as by a pin 102 engaging holes in the arm 90 and rod 101. The rod 101 lies adjacent to the top plate 2 of the machine and extends forwardly to and is connected with the slide

54, being bowed downwardly to pass under the ribbon 31. The forward end of the rod 101 may be screw-threaded and engage with a threaded hole in the slide 54. In order to move the slide 53 simultaneously with the slide 54, the shaft 27 is provided near the left-hand post 32<sup>x</sup> with a second vertical and downwardly-extending arm 102, secured to the shaft by means of a screw 103, which engages with a threaded perforation in the arm and enters the longitudinal groove 48 aforesaid. Said arm 102 is similar to that part of the arm 90 with which the rod 101 engages and is pivotally connected to a rod 104, similar to the rod 101 and similarly connected to the slide 53.

Assuming that it is desired to write the number "1,234.56" in proper relation to a number or numbers previously written or in proper relation to a ruled form or sheet upon the platen 30 and that the position of the ruled line indicating the division between units and tenths has been ascertained by reference to the usual platen-scale and that the operator has placed a column-stop 68 in that hole 69 in bar 51 that corresponds to the position that will be occupied by the decimal-figure "6," the operation of the machine is as follows: By depression of the finger-piece 79 the lever 72 is swung downwardly until the index 80 is opposite the mark or notch upon the bar 81 which represents thousands. (The upper notch of the middle group of three notches shown in Fig. 3.) The lever 72 is then pressed rearwardly to engage the tooth 80 with the said notch, the motion of lever 72 is communicated to the bar 51, and the column-stop thereon is moved toward the right of the machine eight letter-spaces from its normal position. The key-lever 87 is now depressed, drawing down the link 89, rocking the bent lever 90, the shaft 27, and arms 102, and drawing the rods 101 and 104 with the slides 53 54, the bar 51, and its column-stop rearwardly to bring the stop into the path of the arm 49. At this time the arm 95 has been swung forward and the lever 97 has been, through the link 96, vibrated to such an extent as to cause the arms 42 and 23 to lift the rack 22 out of engagement with the pinion 21, and the carriage runs toward the left until the stop-arm 49 comes in contact with the said column-stop. The lever 87 is now released, and through the tension of springs 61 and 67 the connected parts are returned to usual position, the rack 22 reengaging with the gear 21 and the column-stop moving out of engagement with the arm 49. The lever 72 is then released, and the spring 78 returns the connected parts thereby to normal position. The operator now strikes the "1," the comma, the "2," the "3," the "4," the decimal-point, the "5," and the "6" keys in the order named, (or, if writing upon ruled paper, the operator may strike the space-key instead of the comma and the decimal-point keys.)



In order to write a number containing fewer or more digits than the one specified, the index 80 is first moved to the corresponding notch of the bar 81. As many column-stops 68 may be used as desired, scale 51<sup>x</sup> upon the bar 51 serving as a guide for setting the column-stops in position.

As a more convenient indicator a scale-plate 105 is attached to the forward side of the bar 51, its graduations being spaced at letter distances apart and being arranged in one group of two and three groups of three lines or marks to represent the position of integers (or denominations) and being otherwise marked to indicate the decimal-point and also the commas or other marks for separating hundreds from thousands and thousands from millions. The commas may, however, be omitted from the written numbers. The scale-plate 105 moves to and fro with the bar 51. A double index 106 is attached to the top plate 2 by means of a hook 107, adapted to engage with the down-turned flange of the said top plate and a screw 108, which engages with a threaded perforation in the metal connecting the hook with the index 106 and bears against the top of the plate 2, as more clearly shown in Fig. 3. The index 106 is in the form of a rectangular plate secured in position upon the frame of the machine and is of such a width as will secure (when the scale 105 is in normal position) that the right-hand edge thereof (see Fig. 1) will coincide with or be directly above the mark on plate 105 which indicates hundredths and that the left-hand edge thereof will cover or be just above the mark on the scale 105 which indicates the decimal-point. The right-hand edge of the index 106 is intended for use when writing columns or numbers containing decimals, while its left-hand edge may, if desired, be used in those cases in which the numbers to be written do not contain decimals. When the scale 105 is used, it is preferable to have an unbroken or continuous series of notches 86 on bar 81.

The carriage may be released in other ways than that illustrated in the drawings and hereinbefore described, as by the usual release-key, in which case the arm 95, link 96, and arm 97 may be omitted, and many other changes in details of construction and arrangement of parts may be made without departing from this invention, which is not limited to the precise form or embodiment thereof illustrated in the drawings and hereinbefore described.

It will be seen that I have combined a carriage, a series of column-locating stops, and a key-operated mechanism for adjusting said stops to different denominational positions and effecting cooperation between said stops and said carriage. The lever 72, which is mounted upon the framing of the machine, shifts the bar or stop carrier 51 longitudinally or in the direction of the feed of the paper-carriage, while the lever 87 causes a trans-

verse movement of said stops—that is, said lever 87 causes a movement of said bar or carrier into a position such that the stops thereon may arrest the movement of the paper-carriage. Said lever 87 also operates the carriage-release mechanism. Said bar or carrier 51 is mounted by means of its slides 53 54 upon stationary bearings—that is, upon fixed parts of the machine, or parts which do not move longitudinally with the paper-carriage.

By the term “column-stop” or “column-locating stop” wherever used in the claims I refer to the stop by which it is determined whether the figures shall be on the right-hand side of the sheet, on the left-hand side of the sheet, in the center of the sheet, or at any other particular point on the sheet. Heretofore the column-locating stop has been adjusted manually by loosening a thumb-screw or latch and again securing it by the thumb-screw or latch. Such adjustment did not move the column-locating stop to different denominational positions, but merely to a different column-locating position. I believe that I am the first to adjust a series of column-locating stops to different denominational positions by key mechanism.

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

1. In a type-writing machine, the combination of a carriage, a track therefor, a bar arranged upon the machine-frame forward of the carriage and independently of the track and parallel therewith, a column-locating stop adjustable along the bar, a coacting stop device arranged upon the front portion of the carriage, and means for moving one of said coacting stop members independently of the carriage movement and without disturbing the adjustment of said column-locating stop upon said bar, so as to vary the position at which the carriage shall be stopped, whereby the position of the column upon the written page is determined by the adjustment of said column-locating stop along said bar, and the point in said column at which the writing shall begin is determined by said independent movement of one of the coacting stop members.

2. In a type-writing machine, the combination of a power-driven escapement-controlled carriage, a track therefor, a bar arranged upon the machine-frame forward of the carriage, independently of said track and parallel therewith, a column-stop adjustable along the bar, a coacting stop device arranged upon the front portion of the carriage, means for moving one of said coacting stop members independently of the carriage movement and without disturbing the adjustment of said column-stop upon said bar, so as to vary the position at which the carriage shall be stopped, and means for causing a movement of one of said coacting stop devices into the path of the other thereof and for simultaneously releasing the carriage from the control



of its escapement mechanism, so that said coacting stop members may come into engagement and arrest the carriage, the position of the column upon the written page being determined by the adjustment of said column-stop along said bar, and the point in said column at which the writing shall begin being determined by said independent movement of one of said coacting stop members.

3. In a type-writing machine, the combination of a carriage, an arm thereon, and a set of independently-adjustable column-locating stops connected to means for adjusting them to different denominational positions independent of said carriage and in the direction of the travel of the arm, one of said column-stop and arm elements being movable in a direction transversely to the line of travel of the carriage.

4. In a type-writing machine, the combination of a power-driven carriage, an arm thereon, a coacting column-stop carrier connected to means for adjusting it to different denominational positions, in the direction of the travel of the carriage, and means for moving one of said column-stop and arm elements in a direction transversely to the line of travel of the carriage and simultaneously releasing the carriage from its controlling mechanism.

5. In a type-writing machine, the combination of a power-driven carriage, an arm connected thereto, a key-operated column-locating-stop carrier movable variable distances from normal position and adapted to coact with the arm to arrest the carriage, and means for moving one of said stop-carrier and arm elements into the path of the other and simultaneously releasing the carriage to permit it to run forward under the influence of its driving mechanism.

6. In a type-writing machine, the combination of a carriage, an arm connected thereto, a series of independently-adjustable column-stops mounted upon a key-operated bar, said bar being mounted upon the framework and being movable endwise variable distances from normal position, and means for moving one of said bar and arm elements in a direction transversely of the line of travel of the arm.

7. In a type-writing machine, the combination of a power-driven carriage, an arm connected thereto, an endwise-movable bar mounted parallel with the line of travel of the arm, a column-stop adjustable along said bar, key-controlled means for moving said bar endwise for variable distances from a normal position, and a key for releasing said carriage and simultaneously moving one of said bar and carriage-arm elements in a direction transversely of the line of travel of the bar.

8. In a type-writing machine, the combination of a power-driven carriage, an arm connected thereto, a series of column-locating stops independently adjustable along a common carrier, a key for moving said carrier and column-locating stops simultaneously va-

riable distances from normal position, a spring for returning said carriage-stops and key to normal position, and means for releasing the carriage and simultaneously projecting one of said column-locating stop and carriage-arm elements into the path of the other.

9. In a type-writing machine, the combination of a carriage, a stop member thereon, a series of column-stops arranged upon a common carrier, means for adjusting said column-stops to different denominational positions independently of said carriage and in the direction of the travel of said carriage-stop member, and means for moving one of said column-stop carrier and carriage-stop member elements into the path of the other.

10. In a type-writing machine, the combination of a power-driven carriage, an arm connected thereto, a column-stop, a bar carrying said stop and connected to means for adjusting it to different denominational positions in the direction of the travel of the arm, one of said bar and arm elements being movable transversely of the travel of the arm, a series of notches as 86 for positioning said bar, and an indicator for showing the position of said bar.

11. In a type-writing machine, the combination of a power-driven carriage, an arm connected thereto, a bar extending parallel with the line of travel of the arm, a column-stop carried by said bar, key-operated mechanism for moving said bar variable distances from normal position, a series of positioning-notches as 86 for said key-operated mechanism, an indicator for showing the position of said bar, a spring for returning said bar and operating mechanism to normal position, and means for releasing the carriage from its controlling mechanism and simultaneously moving one of said bar and arm elements in a direction transversely of the line of travel of the arm.

12. In a type-writing machine, the combination of a power-driven carriage, escapement devices therefor, a column-stop, means for moving said stop to and fro variable distances in the direction of the travel of the carriage, and means for releasing the carriage from and reengaging it with its controlling mechanism, and for simultaneously moving said stop transversely of its said to-and-fro movement and thereby projecting it into the path of a part connected to the carriage, whereby the carriage may be released and thereafter arrested and reengaged to its escapement devices at variable distances from a predetermined point.

13. In a type-writing machine, the combination of a power-driven carriage, an endwise-movable bar mounted parallel with the line of travel of the carriage, means for positioning the bar at letter-space intervals in its endwise movements, a column-stop adjustable along said bar, a stop connected to the carriage, means for releasing the carriage from its controlling mechanism, and simul-



taneously moving said bar transversely of its length, so that the stop thereon is carried into the path of said stop on the carriage.

14. In a type-writing machine, the combination of a carriage, an arm or part connected thereto, a series of independently-adjustable column-stops, a spring-retained key-operated mechanism, constructed to move said stops in two directions and into the path of said carriage arm or part, and a series of denomination devices as 86 for positioning said stops in their movement in one of said directions.

15. In a type-writing machine, the combination of a power-driven carriage, an arm or part connected to the carriage, a column-locating stop, and spring-retained key-operated mechanism constructed to move said stop in two directions and into the path of said arm and to release the carriage from its controlling mechanism.

16. In a type-writing machine, the combination of a power-driven carriage, an arm or part connected thereto, a spring-retained key-operated bar movable both endwise and transversely, a column-stop borne by said bar and moved thereby into the path of said arm for arresting the carriage at predetermined distances from a given point, and means for releasing the carriage from its controlling mechanism.

17. In a type-writing machine, the combination of a carriage, an arm connected thereto, a bar mounted upon the framework of the machine and lying parallel with the path of said arm and spring-held in a normal position, key-actuated mechanism for moving said bar both endwise and transversely, and a stop member adjustable along said bar to coact with said carriage-arm when the bar is shifted transversely.

18. In a type-writing machine, the combination of a power-driven carriage, an arm connected to the carriage, a column-stop, mechanism for moving said stop in a direction parallel with the path of said arm and also in a direction at right angles to said path and provided with two actuating-keys, the operation of one of which moves the stop parallel with the path of said arm and the operation of the other of which moves the stop at right angles to said path, and a carriage-release mechanism connected to and operated by the last-named key.

19. In a type-writing machine, the combination of a power-driven carriage, an arm connected thereto, a bar parallel with the path of said arm, a column-stop adjustable along said bar, means for moving said bar endwise, a carriage-release mechanism, and mechanism for simultaneously moving said bar transversely of itself to bring the column-stop into the path of said arm and for operating said carriage-release mechanism.

20. In a type-writing machine, the combination of a power-driven carriage, an arm connected thereto, a bar parallel with the path of said arm, a column-stop on said bar, means

for moving said bar endwise, an indicator for showing the position of said bar and stop relatively to a predetermined point, a carriage-release mechanism, and mechanism for simultaneously operating said carriage-release mechanism, and moving said bar transversely to bring the stop into the path of said arm.

21. In a type-writing machine, the combination of a power-driven carriage, an arm connected thereto, blocks mounted upon the framework of the machine to move at right angles to the path of the said arm, a bar mounted upon said blocks to move endwise parallel with the path of said arm, springs for holding said plates and bar in normal position, means for moving said bar endwise from its normal position, mechanism for moving said plates from their normal positions, and a stop on said bar arranged to engage said carriage-arm when the bar is shifted transversely.

22. In a type-writing machine, the combination of a carriage, an arm connected thereto, a column-stop movable to and fro variable distances in the direction of the line of travel of said arm and one of said stop and arm elements being movable at right angles to said direction to bring said elements into engagement, a scale for showing the position of a decimal-point and of numbers at each side thereof, and a double index, one portion of which indicates whole numbers and decimals and the other of which indicates whole numbers only, and one of said scale and index elements being connected to and moving with the stop.

23. In a type-writing machine, the combination of a power-driven carriage, an arm connected to and moving with the carriage, a bar marked as at 105, to indicate letter-space distances from a predetermined point, an index movable along said bar, a column-stop on the bar for arresting the arm and carriage at different distances from said predetermined point, and the bar and stop being movable at right angles to the line of travel of the arm to engage therewith, and means for releasing the carriage.

24. In a type-writing machine, the combination of a power-driven carriage, an arm connected thereto, a column-stop, a bar carrying said stop and arranged parallel with the path of said arm, a scale on the bar, an indicator for the scale, means for moving the bar endwise to position the stop, and one of said arm and bar elements being movable in a direction at right angles to the travel of the arm, and carriage-release mechanism.

25. In a type-writing machine, the combination of a carriage, an arm connected to and moving with the carriage, a column-stop, a bar parallel with the path of said arm and carrying said stop and being endwise movable and one of said bar and arm elements being movable at right angles to the travel of the arm, a fixed bar notched to indicate letter-space



distances from a predetermined point, a lever provided with a tooth for entering the notches, and connections intermediate said lever and said stop-carrying bar for moving the latter endwise.

26. In a type-writing machine, the combination of a power-driven carriage, a column-stop, an indicator for showing letter-space distances from a predetermined point and comprising a fixed and a movable element, means connecting said movable indicator element and said column-stop for moving the latter in the direction of the travel of the carriage, means for moving the stop at right angles to said direction into and out of the path of a part on or connected to the carriage, and carriage-release mechanism.

27. In a type-writing machine, the combination of a power-driven carriage, a column-stop, a fixed bar as 81, marked to indicate letter-space distances from a predetermined point, a lever provided with an index for co-operation with said marked bar and connected to and moving said column-stop in the direction of the travel of the carriage, means for moving the stop into and out of the path of a part on or connected to the carriage, and carriage-release mechanism.

28. In a type-writing machine, the combination of a power-driven carriage, a column-stop, a longitudinally and transversely movable bar carrying said stop, a fixed bar, as 81, marked to show letter-space distances from a predetermined point, a lever provided with an index for co-operation with the said marked bar and operatively connected with the stop-carrying bar to move the latter endwise, and key-operated mechanism for moving said stop-carrying bar transversely into the path of a part on or connected with the carriage and for simultaneously releasing the carriage.

29. In a type-writing machine, the combination of a power-driven carriage, a column-stop movable to and fro in the direction of the travel of the carriage, and movable transversely of such direction into and out of the path of a part connected to the carriage, means for releasing the carriage from its controlling mechanism, a letter-space indicator, and operating connections from the movable indicator element to said column-stop.

30. In a type-writing machine, the combination of a carriage, an arm connected thereto, a column-stop spring held in a normal position out of the path of said arm, and two keys operatively connected to said column-stop, one key to move the stop in a direction parallel with the path of said arm, and the other key to move the stop in a direction at right angles to said path so as to move the stop into position for coaction with said arm to arrest the carriage at various distances from a predetermined point.

31. In a type-writing machine, the combination of a power-driven carriage, an arm or part connected thereto, a spring-retained key-

operated bar movable endwise, a column-locating stop borne by said bar, means for moving said bar so as to cause said stop to move transversely into the path of said arm for arresting the carriage at predetermined distances from a given point, and means for releasing the carriage from its controlling mechanism.

32. In a type-writing machine, the combination of a carriage, an arm connected thereto, a bar mounted upon the framework of the machine and lying parallel with the path of said arm and spring-held in normal position, a column-locating stop adjustable along said bar, and means for moving said bar both endwise and also in a direction to cause said column-stop to move transversely to a position for coaction with said carriage-arm.

33. In a type-writing machine, the combination of a power-driven carriage, an arm connected thereto, a bar parallel with the path of said arm, a column-locating stop adjustable along said bar, means for moving said bar endwise, a carriage-release mechanism, and mechanism for operating said carriage-release mechanism and simultaneously moving said bar so as to cause a transverse movement of said column-stop into the path of said arm.

34. In a type-writing machine, the combination of a power-driven carriage, an arm connected thereto, a bar parallel with the path of said arm, a column-locating stop on said bar, means for moving said bar endwise, an indicator for showing the position of said bar and stop relatively to a predetermined point, a carriage-release mechanism, and mechanism for simultaneously operating said carriage-release mechanism and moving said bar so as to cause a transverse movement of said column-stop into the path of said arm.

35. In a type-writing machine, the combination of a power-driven carriage, an arm connected thereto, a column-locating stop, a bar carrying said stop and arranged parallel with the path of said arm, a scale on the bar, an indicator for the scale, means for moving the bar endwise to position the stop, and carriage-release mechanism, one of said arm and stop elements being movable transversely, whereby said arm is enabled to engage said stop to arrest said carriage.

36. In a type-writing machine, the combination of a carriage, an arm connected to and moving with the carriage, a column-locating stop, a bar parallel with the path of said arm and carrying said stop and being endwise movable, one of said column-locating stop and arm elements being movable at right angles to the travel of the arm, a fixed bar notched to indicate letter-space distances from a predetermined point, a lever provided with a tooth for entering the notches and connections intermediate said lever and said stop-carrying bar for moving the latter endwise.

37. In a type-writing machine, the combination of a carriage, an arm connected thereto, a series of independently-adjustable column-



- locating stops mounted upon a key-operated bar, said bar being mounted upon the framework and being movable endwise variable distances from normal position, and means for
- 5 causing a movement of one of said column-locating stop and arm elements in a direction transversely of the line of travel of the arm.
38. In a type-writing machine, the combination with a carriage of a series of column-locating stops and key-operated mechanism for
- 10 adjusting said stops to different denominational positions.
39. In a type-writing machine, the combination with a carriage of a series of independently-adjustable column-locating stops and
- 15 key-operated mechanism for adjusting all of said stops simultaneously to different denominational positions.
40. In a type-writing machine, the combination with a carriage of a series of column-locating stops and key-operated mechanism for
- 20 adjusting said stops to different denominational positions and effecting cooperation between said stops and said carriage.
41. In a type-writing machine, the combination with a carriage, of a series of transversely-movable column-locating stops, and key mechanism for adjusting them to different denominational positions.
- 25 42. In a type-writing machine, the combination with a carriage of a series of column-locating stops connected to key-operated means for adjusting them to different denominational positions in the direction of the carriage-feed, said stops being also movable in a
- 30 direction transversely of their first-described movements, to effect the arrest of the carriage.
43. In a type-writing machine, the combination with a carriage of a longitudinally-adjustable bar carrying a series of column-locating stops, a lever for moving said bar so as
- 40 to cause said stops to move into position for arresting said carriage, and means for return-

ing said stops and said stop-bar to normal position.

44. In a type-writing machine, the combination with a carriage of a longitudinally-adjustable stop-bar mounted to move on stationary bearings and provided with means for engaging a stop on the carriage to arrest the

50 movement of the latter, a lever carried by the framing of the machine for shifting said stop-bar longitudinally, and means for effecting cooperation of said stop-bar with said carriage.

45. In a type-writing machine, the combination with a carriage of a longitudinally-adjustable bar, a stop mounted thereon, a corresponding stop mounted on the carriage, carriage-release mechanism, and a lever for operating said carriage-release mechanism and

60 causing a movement of said stop-bar into position to arrest the movement of the carriage.

46. In a tabulating device for type-writing machines, the combination of a movable carrier, a series of independently-adjustable column-locating stops carried thereby, a stop cooperating therewith to limit the movement of the carriage, and means for moving the

65 movable carrier in the direction of the feed of the carriage without changing the adjustment of said adjustable stops with respect to their carrier and for moving the adjustable stops into position to arrest the carriage, whereby when the said stop-carrier is operated, the carriage will be arrested at a point

70 predetermined by the positioning of said stop-carrier.

Signed at the borough of Manhattan, city of New York, in the county of New York and State of New York, this 19th day of July, A. D. 1899.

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EDWIN BEECHER CRAM.

Witnesses:

K. V. DONOVAN,  
E. M. WELLS.