

G. W. SINGLETON.
TABULATING MECHANISM FOR TYPE WRITING MACHINES.

APPLICATION FILED AUG. 21, 1902.

2 SHEETS—SHEET 1.

Fig. 1.

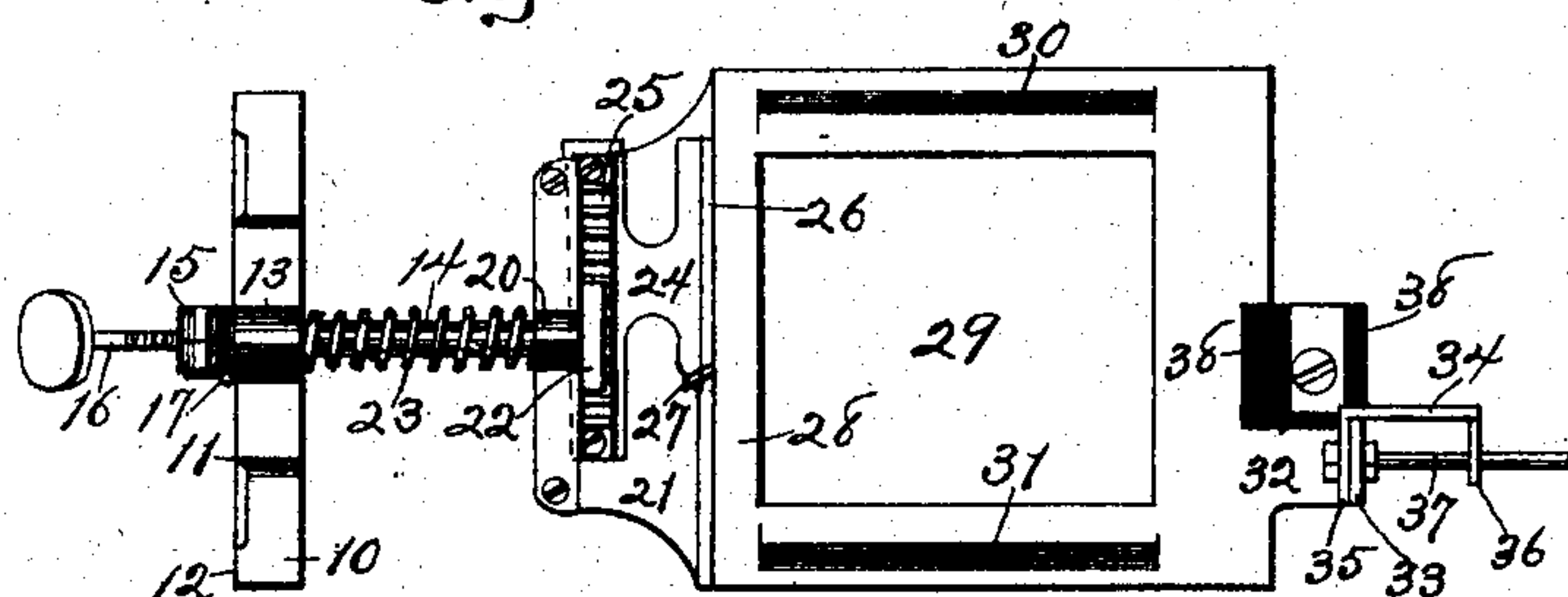


Fig. 2.

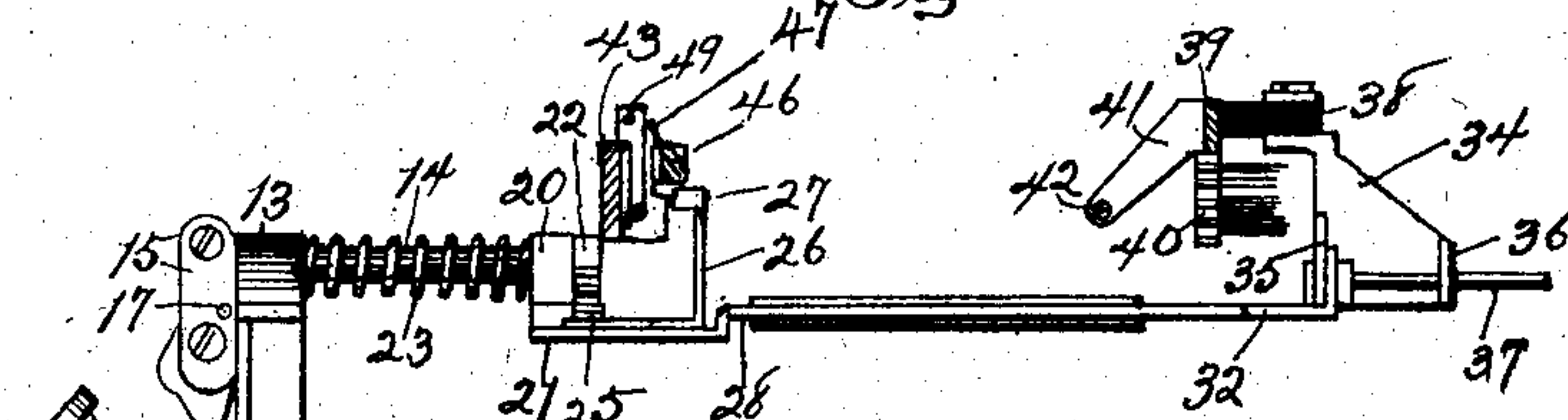


Fig. 7.

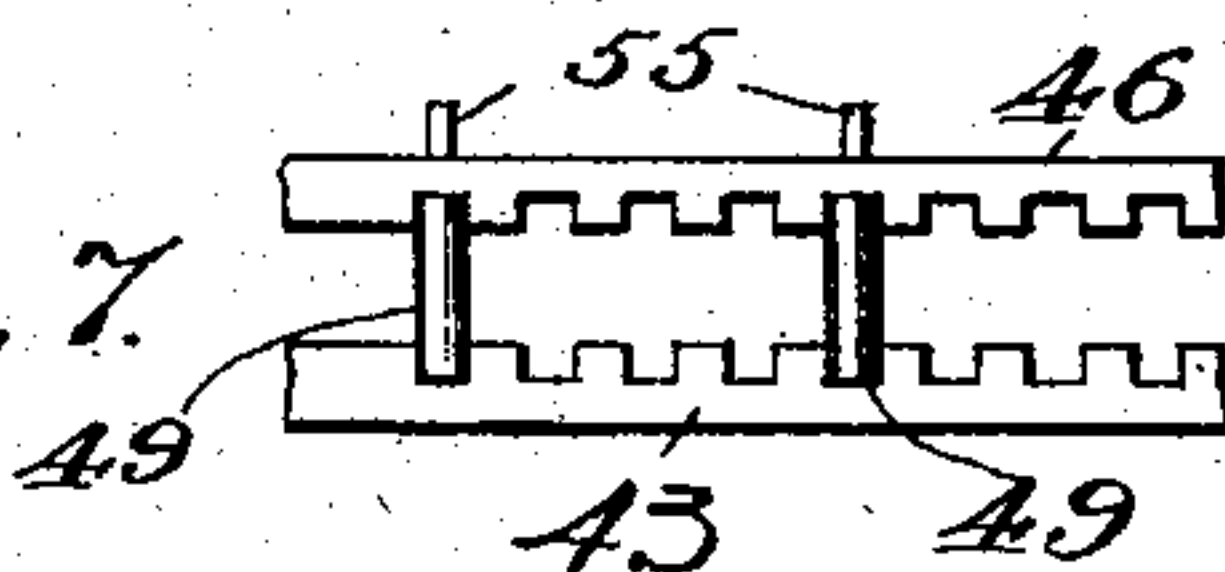


Fig. 3.

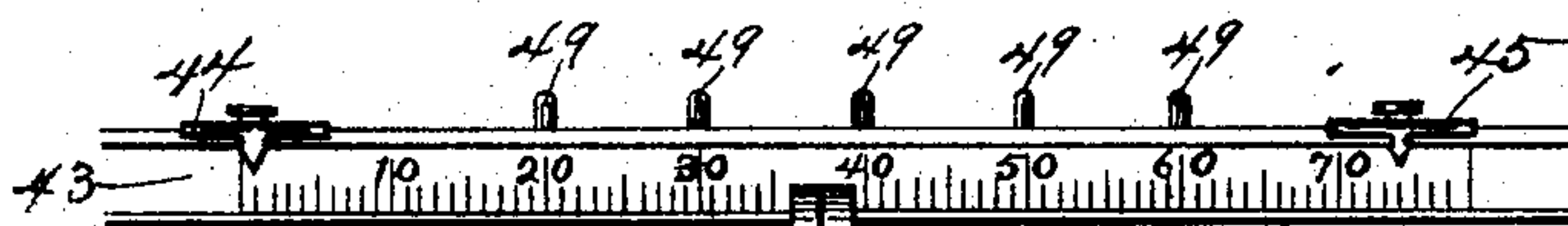


Fig. 4.

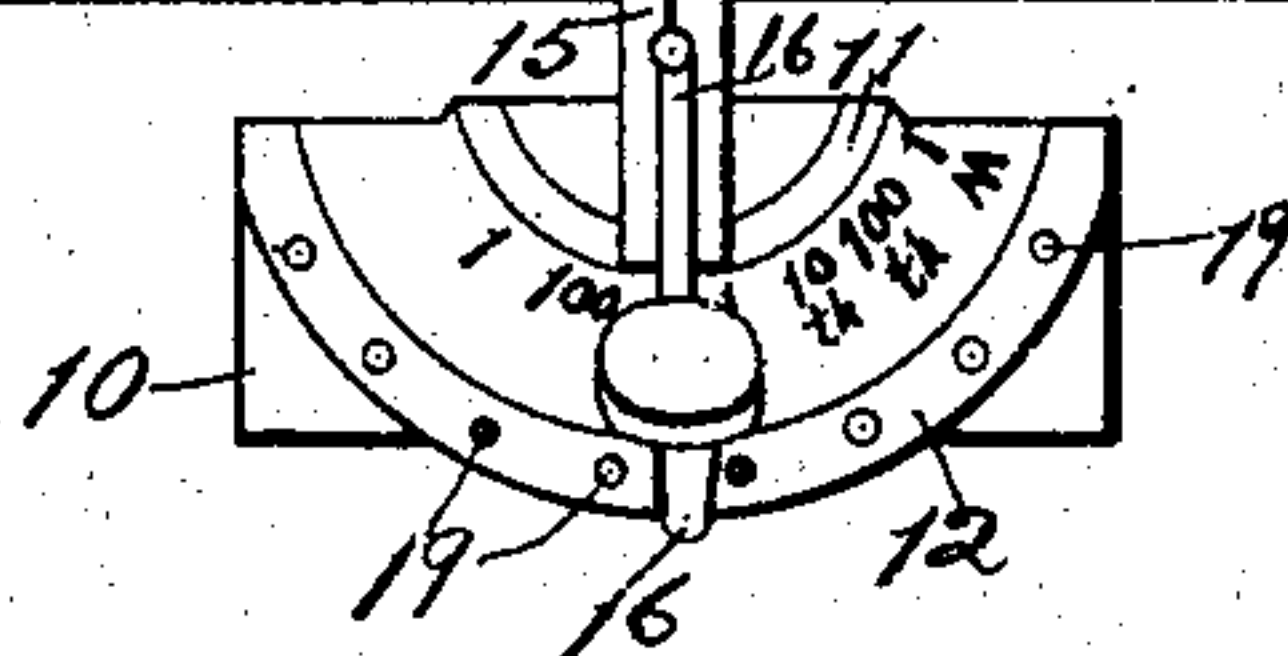
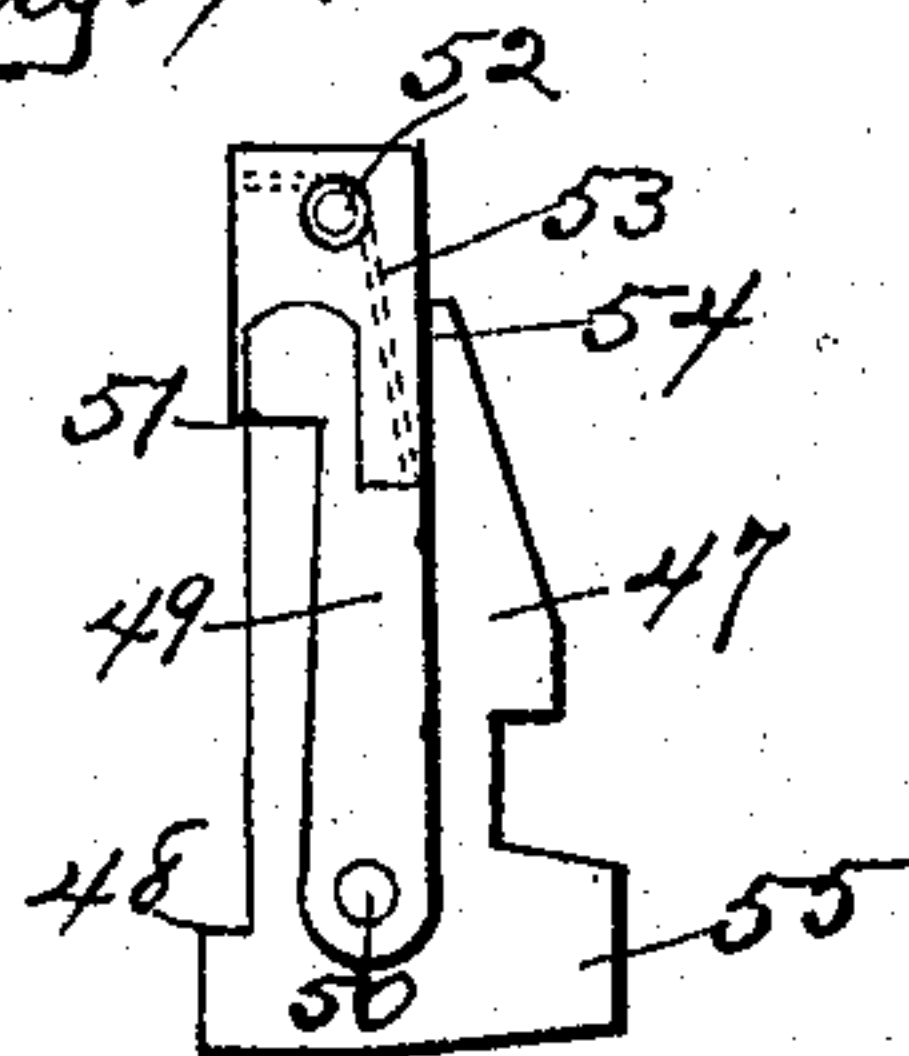
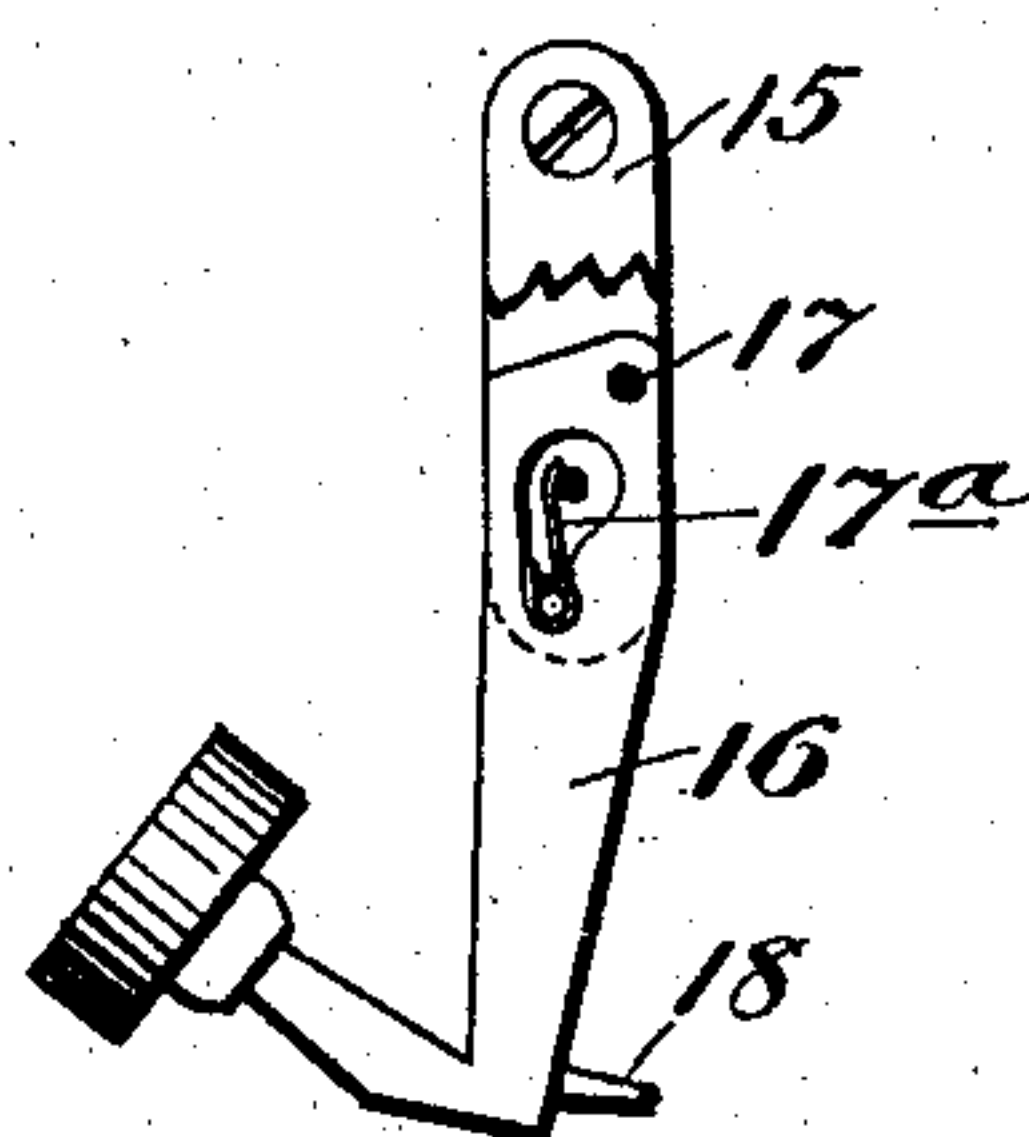


Fig. 6.



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No. 796,020.

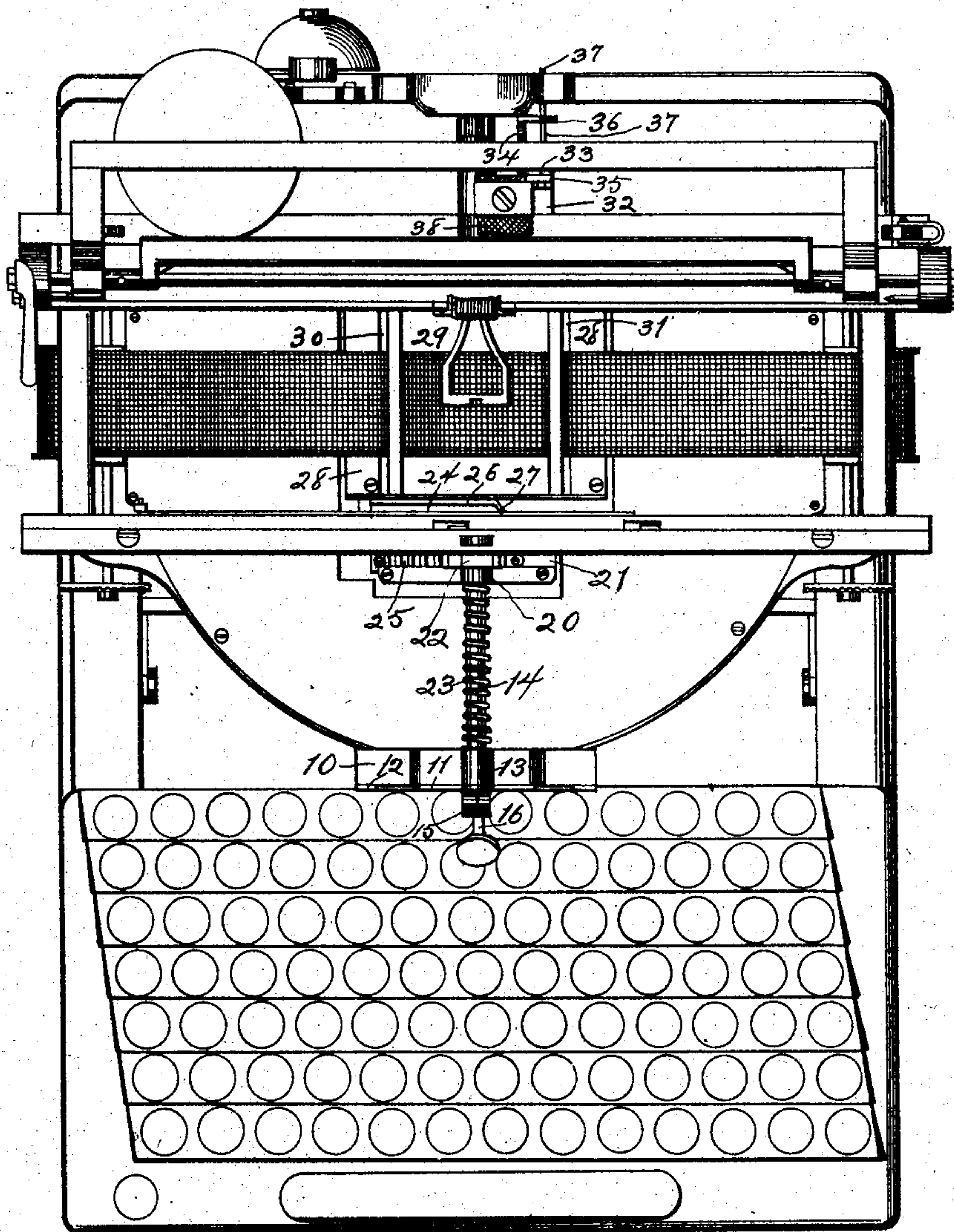
PATENTED AUG. 1, 1905.

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2 SHEETS—SHEET 2.

Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE W. SINGLETON, OF DES MOINES, IOWA, ASSIGNOR TO JEWETT TYPEWRITER COMPANY, OF DES MOINES, IOWA, A CORPORATION OF IOWA.

TABULATING MECHANISM FOR TYPE-WRITING MACHINES.

No. 796,020.

Specification of Letters Patent.

Patented Aug. 1, 1905.

Application filed August 21, 1902. Serial No. 120,515.

To all whom it may concern:

Be it known that I, GEORGE W. SINGLETON, a citizen of the United States of America, and a resident of Des Moines, Polk county, Iowa, have invented a new and useful Tabulating Mechanism for Type-Writing Machines, of which the following is a specification.

The object of this invention is to provide an improved spacing attachment for tabulating or arranging in parallel columns type-written matter on a sheet.

My invention consists in the provision of means for releasing a carriage of a type-writing machine and permitting it to move laterally across the machine-frame to a predetermined point at which it is desired to begin a line in a column and upon the completion of such line in such column again release the machine and permit the movement thereof to a further predetermined point, such operations being susceptible of repetition several times in the length of the possible travel of the carriage, whereby a series of lines in alignment with each other in a series of columns may be adjusted and imprinted.

My invention consists, further, in the provision of means for adjusting a carriage-stop at one or another of several points within the limits of the travel of a carriage and then releasing said carriage and permitting the same to travel into contact with said stop.

My invention consists, further, in the construction, arrangement, and combination of elements hereinafter set forth, pointed out in my claims, and illustrated by the accompanying drawings, in which—

Figure 1 is a plan illustrating my tabulating attachment detached from a type-writing machine. Fig. 2 is a side elevation of my tabulating attachment shown in connection with the front carriage-bar and the carriage-feed rack of a type-writing machine. Fig. 3 is a front elevation of my tabulating device shown in conjunction with the front bar of the carriage of a type-writing machine, said carriage-bar being provided with a marginal stop and a line-stop and a plurality of tabulating-stops intermediate of the marginal stop and line-stop. Fig. 4 is a side elevation of one of the tabulating-stops employed in connection with my tabulating device. The illustration in Fig. 4 is on a scale approximately four times larger than the scale of the

other three figures. Fig. 5 is a plan of a type-writing machine embodying my improvements, the front carriage being removed. Fig. 6 is a detailed view of the tabulator key or lever. Fig. 7 is a detailed view showing bars having rack-faces and column-stops supported in notches in said bars.

In the construction of the device as shown the numeral 10 designates a bracket arranged for mounting on the center and front of the top portion of the frame of a writing-machine. The bracket 10 is formed with ribs 11 12 of segmental shape on its outer face, the rib 11 being concentric with the rib 12 and spaced apart therefrom. A bearing 13 is formed on and extends upwardly from the central portion of the bracket 10, and a rock-shaft 14 is mounted for rotary movement and rectilinear reciprocation in said bearing. A crank-arm 15 is mounted on the forward end of the rock-shaft 14 adjacent the bearing 13 and depends in front of said bearing normally. An actuating-arm 16 is hinged to the crank-arm 15 by a pin 17 and depends therefrom normally in front of the bracket 10. A spring 17^a is interposed between the crank-arm 15 and actuating-arm 16 and tends to hold the actuating-arm away from the bracket. The rear face of the actuating-arm 16 is formed on two planes connecting at an obtuse angle immediately outside of the rib 11, and a pin or stud 18 is formed on or fixed to said actuating-arm and projects from the rear face thereof normally outside of and opposite to the rib 12. The pin 18 is of such diameter as to enter freely one or another of a series of apertures 19, formed in the rib 12 and bracket 10. The apertures 19 are arranged in a segmental row and equally spaced apart throughout the row, as illustrated in Fig. 3. The inner end portion of the rock-shaft 14 extends through a bearing 20, mounted on a movable base-plate 21, and a segmental gear 22 is rigidly fixed to the inner end of said rock-shaft. An expansive coil-spring 23 is mounted on the rock-shaft 14 and tends to separate the bearings 13 and 20. A stop-plate 24 is mounted for lateral sliding movement on the upper surface of the plate 21, and a rack 25 is fixed to one side portion of said stop-plate beneath and in engagement with the segmental gear 22 on the rock-shaft 14. The stop-plate 24

is formed with a flange 26 on and rising from its inner margin, and a carriage-stop 27 is formed on and extends outwardly from one end portion of said flange toward the bearing 20. A connecting-plate 28 is fixed at its forward edge to the rear edge portion of the base-plate 21 and forms a guide for sliding engagement of the rear portion of the stop-plate 24 and flange 26. The connecting-plate 28 extends across the central and rear portions of the type-basket and is centrally apertured at 29 for access to the type or for the passage of the type-arms therethrough and is further slotted at 30 31, with the edges of the slots turned upward and downward, respectively, to form ribbon guides and supports on either side of the central opening. A tongue 32 is formed on and extends rearwardly from the rear edge of the connecting-plate 28, and an ear 33 is formed on and rises from the tongue 32. A bracket 34 is provided and formed with ears 35 36, opposite each other and placed in parallel relation with the ear 33. A guide-pin 37 is mounted through the ears 35 33 36 and secured by nuts, and the rear end of said guide-pin extends through a portion of the machine-frame or escapement-bracket (not shown) and guides the connecting-plate and bracket 34 in manual reciprocation. A friction-block 38, of leather, india-rubber, or similar material, is mounted on and fixed to the bracket 34, and the forward plane edge of said block normally is in contiguity to the rear face of the rack-bar 39 of the carriage, said rack-bar normally being in engagement with a pinion 40 of the escapement or step-by-step mechanism of the machine, as illustrated, described, and claimed in an application for Letters Patent of the United States filed by me therefor, serially numbered 120,512 and pending concurrently herewith. The rack-bar 39 is pivoted by arms 41, one only of which is shown, to a rod 42, supported in a suitable manner in the carriage.

The carriage of the writing-machine is provided with a front bar 43 such as is described in an application for Letters Patent of the United States filed by me therefor, serially numbered 120,514 and pending concurrently herewith, and a marginal stop 44 and line-stop 45 are mounted for adjustment longitudinally of said front bar, as described in said application. The front bar 43 of the carriage is formed with a rack on its rear face corresponding with the scale on its front face, and a keeper-bar 46, now in use as a support and guide for the paper-fingers of non-tabulating machines, is mounted on the carriage parallel with and at the rear of said front bar, which keeper-bar for tabulating uses is formed with a rack on its front face opposing the rack on the front bar. The marginal and line stops on the front bar are

adjusted and operated without regard to and independently of the keeper-bar, which is spaced apart therefrom. I provide, however, a number of tabulating-stops or column-stops alike in construction and arranged for mounting between and in engagement with the racks of the bars 43 46, as shown in Figs. 2 and 3.

The tabulating-stops above mentioned are illustrated in Fig. 4 and comprise a key 47, arranged to be inserted in notches of the racks of the bars 43 46 from beneath when the carriage of the machine is raised, and a shoulder 48 on said key engages the lower edge of the bar 43 and determines the positioning of the key in its seat. A yoke 49 is pivoted by its arms on a pin 50, extending through the lower portion of the key 47, and the upper end portion of said yoke extends above the bars of the carriage and is provided with a shoulder 51, engaging said upper edge of the front bar 43 to retain the key against downward movement from its seat. A pin 52 is mounted through the upper portion of the yoke 49, and a spring 53, dotted lines, is wound on said pin and has one arm extended within and beneath the closed end of the yoke and the other arm extended downward into a notch 54, formed in the upper end of the key. By means of the spring 53 the yoke 49 is yieldingly held in engagement with the bar 43. A tongue 55 on the key 47 extends into contiguity with the plane of the stop 27 on the flange 26 of the plate 24. One of the tabulating-stops is mounted at a point behind that point of the scale where it is desired to initiate a fractional line in a column or "table." As many of the tabulating-stops are employed as it is desired to imprint columns on the page or sheet in the machine.

The apertures 19 in the rib 12 and bracket 10 are indicated by a scale or table on the front of the bracket, a decimal-mark or period appearing opposite the aperture at the extreme left of the rib, a numeral "1" opposite the next adjacent aperture, the numeral "10" opposite the next aperture, the numeral "100" opposite the next aperture, an index of one thousand opposite the next aperture, an index of ten thousand opposite the next aperture, an index of one hundred thousand opposite the next aperture, and an index of one million opposite the next aperture at the extreme right of said rib.

In Fig. 3 of the drawings I show the marginal stop set to indicate the first mark of the carriage-scale, the line-stop set to indicate the seventy-fourth mark of the carriage-scale, and tabulating-stops set at "20," "30," "40," "50," and "60" of the scale. If it be desired to write a column of figures governed by the tabulating-stop at "20," the machine-carriage would be moved to the right until stopped by the marginal stop 44. Then as-

suming that the numeral or amount to be imprinted is "123," beginning in the hundreds' place the operator would move the actuating-arm 16 to the left from the position shown in Fig. 3 and depress the pin or stud 18 into the aperture 19, (indicated by "100" on the scale of the bracket 10.) The movement of depression of the actuating-arm 16 would bring the meeting-point of the planes of the rear face of said arm into contact with the rib 11 and cause said rib to act as a fulcrum, the actuating-arm being the lever, and move the crank-arm 15 and rock-shaft 14 forwardly through the bearing 13. The movement of the actuating-arm 16 to the left would rotatably move the rock-shaft 14 and segmental gear 22, and the movement of said gear would move the rack 25, stop-plate 24, flange 26, and carriage-stop 27 correspondingly to the left. The movement of the rock-shaft outwardly results in a corresponding movement of the bearing 20, base-plate 21, connecting-plate 28, tongue 32, flange 33, bracket 34, and friction-block 38, which brings the friction-block into contact with the feed-rack and since the movement is greater than the normal space between the friction block and rack results in lifting the rack-bar or feed-rack 39 of the carriage on an arc out of engagement with the escapement-pinion 40. When the feed-rack 39 of the carriage is lifted out of engagement with the escapement-pinion 40 through the forward movement of the block 38, the carriage moves to the left under the strain of its spring (not shown) and under the restraining tendency of frictional engagement between said block and feed-rack until stopped by engagement of the carriage-stop 27 with the tongue 55 on the key 47 of the tabulating-stop at "20." The carriage-stop 27 is brought into the path of travel of the tongue 55 in the forward movement of the rock-shaft through the bearing 13, as above described. When the carriage is stopped by engagement of the tabulating-stop at "20" with the stop 27, manual pressure is relaxed from the actuating-arm 16, and the spring 17 throws said arm forward, releasing the stud 18 from the aperture 19. In the forward movement of the actuating-arm 16 the spring 23 expands and moves the bearing 20, plate 21, stop-plate 24, flange 26, stop 27, connecting-plate 28, and connected parts rearwardly, thus relaxing the pressure of the block 38 from the feed-rack 39 and permitting said rack again to engage with the escapement-pinion 40. It is to be understood that the movement of the feed-rack, block, and connected parts forwardly or rearwardly is very slight, as the degree of engagement between the feed-rack and escapement-pinion is slight. Hence upon a relaxation of the manual pressure from the actuating-arm 16 the feed-rack immediately engages the escapement-pinion and the carriage is locked by

the escapement against further movement to the left pending another actuation. The operator may now strike in succession keys 1, 2, 3, and the decimal or period, followed by a blank space or any desired decimal numbers, the carriage-stop 27 having been disengaged and removed out of the path of travel of the tabulating-stop. The operator may now adjust the machine to write a line in a column to the right or under control of the tabulating-stop at "30" by a repetition of the movement of oscillation and depression of the actuating-arm 16, bringing the carriage-stop 27 into the path of travel of the tabulating-stop at "30." Such operations may be repeated indefinitely across the page and progressively through the rotation of the carriage-platen throughout the length of the page. An adjustment of the actuating-arm 16 for engagement of the stud 18 in the decimal-aperture 19 would position the carriage for the writing of a decimal and decimal-numbers, such as "cents" in a column of "dollars and cents." An adjustment of the actuating-arm 16 for engagement of the stud 18 in the aperture 19 at the extreme right of the rib 12 would position the carriage for imprint of the first numeral in the millions place. Similar adjustment may be made for the writing of a numeral in any desired place within the limit of the scale on the bracket 10, and said scale may be increased to any desired limit and compass a dollar-sign and the pointing of the numbers.

When it is desired to employ the machine for purposes other than tabulating, in which the marginal stop or line-stop may need to be adjusted toward the middle of the scale, the tabulating-stops may be removed downwardly from the carriage-bar by manual operation and laid aside until desired again for use in tabulating.

I do not limit myself to the described construction and plan of operation of the mechanism, for the same result may be obtained through the use of modifications and various forms in connecting stop mechanism with escapement mechanism.

I claim as my invention—

1. A tabulating device, comprising a stop mounted for longitudinal and transverse sliding movement, a carriage, a stop on said carriage arranged to be engaged by the first stop at times, a rock-shaft geared to the first stop and mounted for oscillation whereby said first stop may be adjusted longitudinally and also mounted for rectilinear reciprocation, an actuating-arm connected with the rock-shaft and arranged for manual actuation to oscillate said shaft and also arranged for oscillation manually to move said shaft rectilinearly whereby the first stop may be moved transversely.

2. In a type-writing machine, a tabulating device comprising a bracket, a rock-shaft

mounted for oscillation and rectilinear reciprocation in said bracket, a stop-plate formed with a rack and a carriage-stop, a gear on the rock-shaft engaging the rack of the stop-plate, a base-plate on which the stop-plate is slidably mounted, a bearing on the base-plate traversed by the rock-shaft, a connecting-plate extending rearwardly from the base-plate, and a friction-block mounted on the rear portion of the connecting-plate, in combination with a carriage having a feed-rack arranged for engagement by the friction-block and a tabulating-stop mounted on said carriage and arranged for engagement with the stop on the stop-plate at times.

3. In a type-writing machine, the combination with a carriage spring-drawn in one direction and provided with an oscillatory feed-rack, and a tabulating-stop, of a tabulating device, comprising a friction-block movable laterally in a horizontal plane into contact with said feed-rack, and a stop-plate connected therewith and mounted for manual movement across the path of travel of the carriage over the type-basket, whereby the friction-block will engage and lift the oscillatory feed-rack and the carriage-stop will be positioned for engagement with the tabulating-stop on the carriage.

4. In a type-writing machine, the combination with a carriage spring-drawn in one direction and provided with an oscillatory feed-rack and a tabulating-stop, of a tabulating device comprising a friction-block and a stop-plate connected therewith above and across the type-basket and mounted for manual movement across the path of travel of the carriage, whereby the friction-block will engage and lift the oscillatory feed-rack and the carriage-stop will be positioned for engagement with the tabulating-stop on the carriage.

5. In a type-writing machine, the combination with a carriage spring-drawn in one direction and provided with an oscillatory feed-rack and a tabulating-stop, of a tabulating device comprising a friction-block and a stop-plate connected therewith across the type-basket and mounted for manual movement across the path of travel of the carriage, whereby the friction-block will engage and lift the oscillatory feed-rack and the carriage-stop will be positioned for engagement with the tabulating-stop on the carriage, the ink-ribbon traversing and guided by the connecting-plate.

6. The combination of a carriage provided with an oscillatory feed-rack and a tabulating-stop, of a tabulating device comprising a friction-block arranged for movement laterally of the path of travel of the carriage into lifting engagement with said feed-rack and a carriage-stop arranged for movement longitudinally and transversely of the path of

travel of the carriage for engagement with the tabulating-stop on the carriage at times.

7. In a type-writing machine, the combination of a carriage provided with an oscillating feed-rack and a tabulating-stop, with a tabulating device comprising a fixed bracket and a movable base-plate formed with bearings, a rock-shaft mounted for oscillation in said bearings, an expansive spring on said rock-shaft between said bearings, a stop-plate slidably mounted on the base-plate, a stop on the stop-plate, a rack on the stop-plate, a gear on the rock-shaft meshing with said rack, a connecting-plate leading rearwardly from the base-plate, a friction-block carried by the connecting-plate and arranged for lifting engagement with the carriage feed-rack, a crank-arm on the rock-shaft outside the bracket and an actuating-arm on said crank-arm and arranged for manual actuation to oscillate the rock-shaft and adjust the stop-plate longitudinally and also arranged for manual oscillation to reciprocate the rock-shaft and base-plate rectilinearly whereby the stop of the stop-plate may be brought into the path of travel of the tabulating-stop of the carriage.

8. In a type-writing machine, the combination of a carriage provided with an oscillating feed-rack and a tabulating-stop, with a tabulating device comprising a fixed bracket and a movable base-plate formed with bearings, a rock-shaft mounted for oscillation in said bearings, an expansive spring on said rock-shaft between said bearings, a stop-plate slidably mounted on the base-plate, a stop on the stop-plate, a rack on the stop-plate, a gear on the rock-shaft meshing with said rack, a connecting-plate leading rearwardly from the base-plate, a friction-block carried by the connecting-plate and arranged for lifting engagement with the carriage feed-rack, a crank-arm on the rock-shaft outside the bracket and an actuating-arm on said crank-arm and arranged for manual actuation to oscillate the rock-shaft and adjust the stop-plate longitudinally and also arranged for manual oscillation to reciprocate the rock-shaft and base-plate rectilinearly whereby the stop of the stop-plate may be brought into the path of travel of the tabulating-stop of the carriage, and a segmental scale on the face of the bracket.

9. In a type-writing machine, the combination of a carriage provided with an oscillating feed-rack and a tabulating-stop, with a tabulating device comprising a fixed bracket and a movable base-plate formed with bearings, a rock-shaft mounted for oscillation in said bearings, an expansive spring on said rock-shaft between said bearings, a stop-plate slidably mounted on the base-plate, a stop on the stop-plate, a rack on the stop-plate, a gear on the rock-shaft meshing with

said rack, a connecting-plate leading rearwardly from the base-plate, a friction-block carried by the connecting-plate and arranged for lifting engagement with the feed-rack, a crank-arm on the rock-shaft outside the bracket and an actuating-arm on said crank-arm and arranged for manual actuation to oscillate the rock-shaft and adjust the stop-plate longitudinally and also arranged for manual oscillation to reciprocate the rock-shaft and base-plate rectilinearly whereby the stop of the stop-plate may be brought into the path of travel of the tabulating-stop of the carriage, together with a segmental scale on the face of the bracket and seats in said bracket corresponding with the segmental scale thereof and arranged for reception of a stud on the actuating-arm.

10. In a type-writing and tabulating mechanism, the combination of a carriage having a bar arranged thereon and extending longitudinally thereof and formed with a rack on its forward face, a scale-bar arranged on the carriage in front of and parallel with the first bar and formed with a rack on its rear face, a series of column-stops mounted between and independently adjustable along said bars, a carriage-stop mounted independent of the carriage and means for variably adjusting said carriage-stop in respect of the path of travel of the column-stops.

11. In a type-writing and tabulating mechanism, the combination of a carriage having a bar arranged thereon and extending longitudinally thereof, a scale-bar arranged on the carriage in front of and parallel with the first bar, a series of column-stops mounted between and independently adjustable along said bars and a carriage-stop mounted independent of the carriage and means for variably adjusting said carriage-stop in respect of the path of travel of the column-stops.

12. In a type-writing and tabulating mechanism, the combination of a carriage having a bar arranged thereon and extending longitudinally thereof and formed with a rack on its forward face, a scale-bar arranged on the carriage in front of and parallel with the first bar and formed with a rack on its rear face, a series of column-stops mounted between and independently adjustable along said bars and a carriage-stop mounted independent of the carriage and means for variably adjusting said carriage-stop in the direction of travel of the carriage and also across the plane of travel of the column-stops.

13. In a type-writing and tabulating mechanism, the combination of a carriage, a scale-bar arranged thereon and extending longitudinally thereof, a series of independently-adjustable column-stops along and mounted on said scale-bar, a marginal stop and a line-stop mounted on and independently adjust-

able along said scale-bar, a carriage-stop mounted independently of the carriage, means for moving said carriage-stop longitudinally in respect of the direction of travel of the column-stops, means for locking the carriage-stop in said adjusted position and also for moving said carriage-stop transversely in respect of the direction of travel of the column-stops.

14. In a type-writing and tabulating mechanism, the combination of a carriage, an escapement mechanism therefor, a series of column-stops arranged upon said carriage and independently adjustable to different denominational positions, a carriage-stop mounted independently of the carriage, means for adjusting said carriage-stop, an interengaging pin and aperture for maintaining the adjustment of said carriage-stop and a mechanism, consisting of a friction-block and a connecting-plate crossing above the type-basket, controlled by said adjusting means for releasing said carriage from the control of said escapement mechanism.

15. In a type-writing and tabulating mechanism, the combination of a carriage, an escapement mechanism, a series of column-stops mounted on said carriage and independently adjustable in respect of the length thereof, a carriage-stop mounted independent of the carriage for rectilinear horizontal movements, a key connected to said carriage-stop and movable in one direction for adjusting the carriage-stop longitudinally in respect of the direction of travel of the carriage, and a carriage-release mechanism operated by an independent movement of said key in a horizontal direction transversely of the direction of travel of the carriage, the carriage-release movement of the key locking the previous longitudinal adjustment of the carriage-stop.

16. In a type-writing and tabulating mechanism, the combination of a carriage, an escapement mechanism, a series of column-stops independently adjustable on said carriage, a carriage-stop independent of the carriage and mounted for rectilinear horizontal movements, means for adjusting said carriage-stop in respect of the travel of the carriage, a carriage-release mechanism controlled by said adjusting means, a locking device for maintaining said adjustment and a friction device in said carriage-release mechanism and frictionally controlling endwise movement of the released carriage.

Signed by me at Des Moines, Iowa, this 26th day of May, 1902.

GEORGE W. SINGLETON.

Witnesses:

GEO. A. JEWETT,
S. C. SWEET.