F. J. TANNER.

TABULATING DEVICE FOR TYPE WRITING MACHINES.

APPLICATION FILED MAY 17, 1901.

912,508.

Patented Feb. 16, 1909.

3 SHEETS—SHEET 1.

Fig. 2

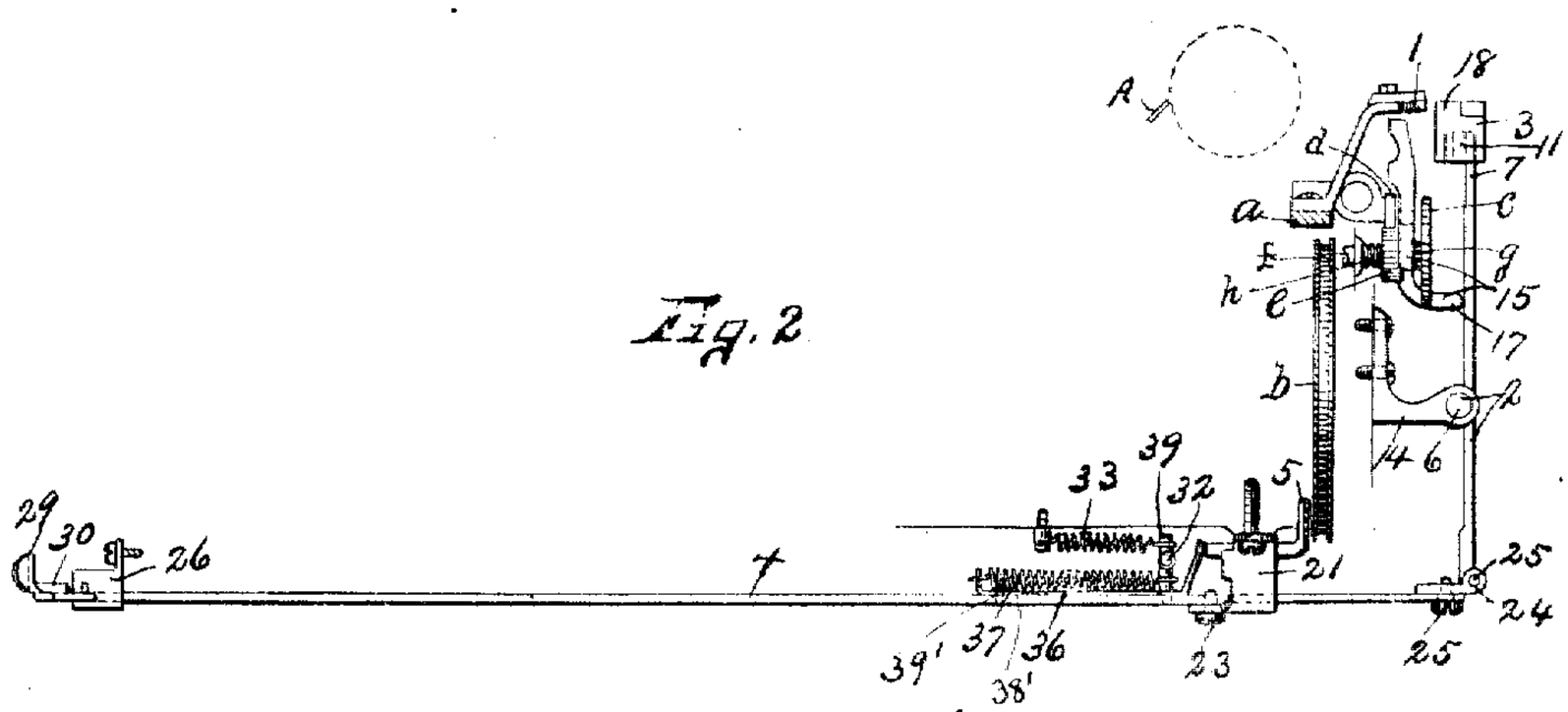
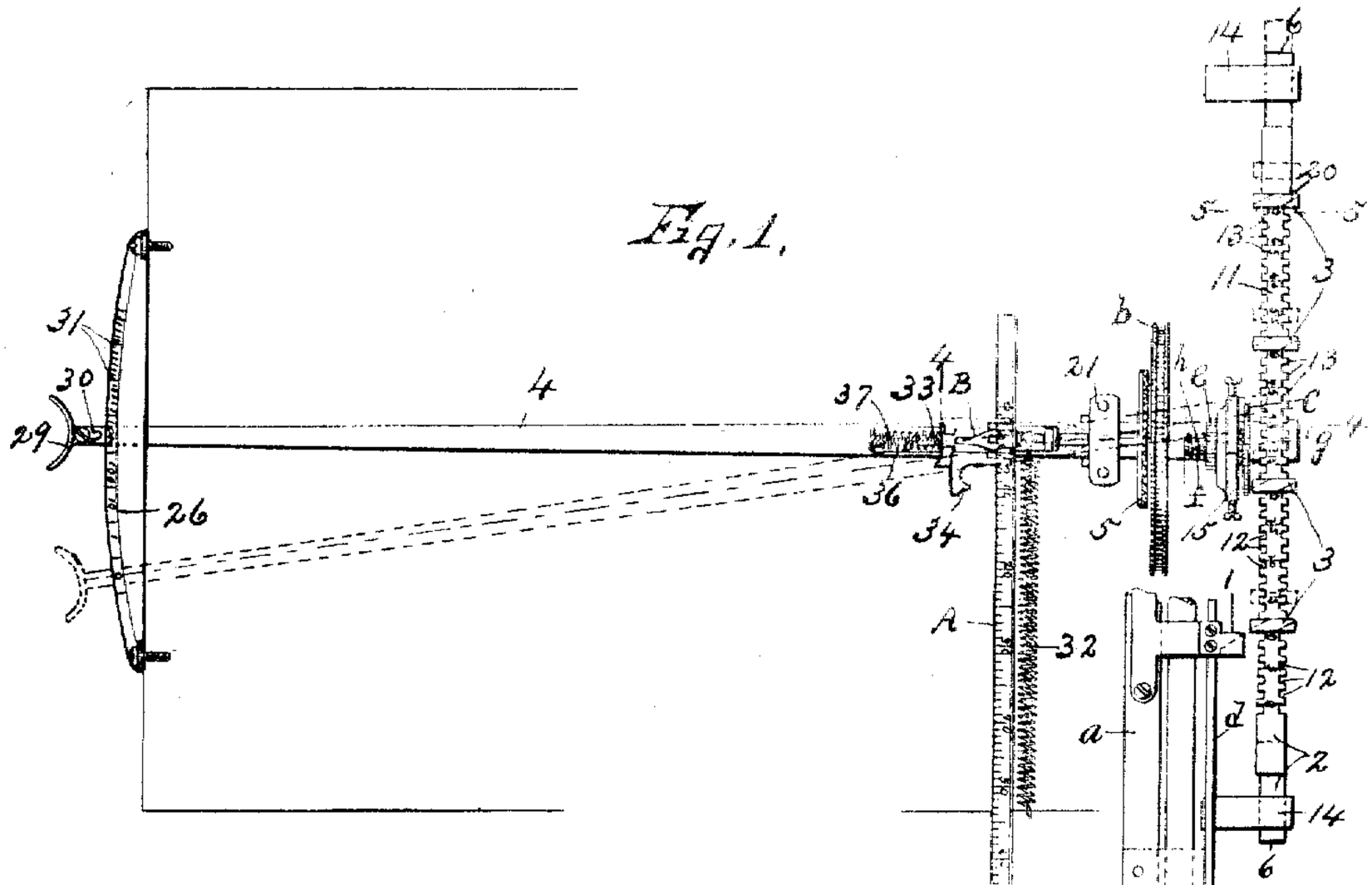


Fig. 1.



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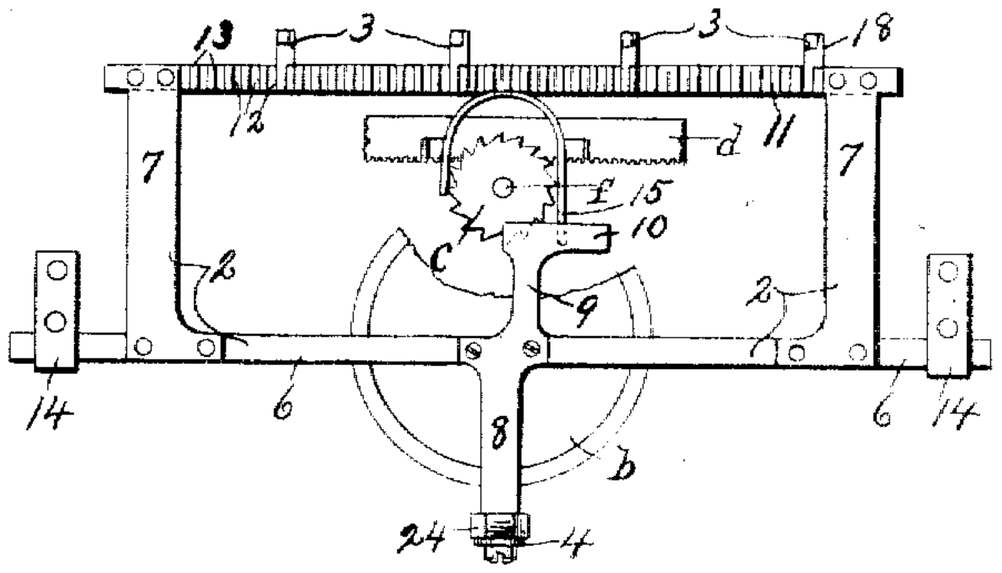
3 SHEETS—SHEET 2.

Fig. 3.



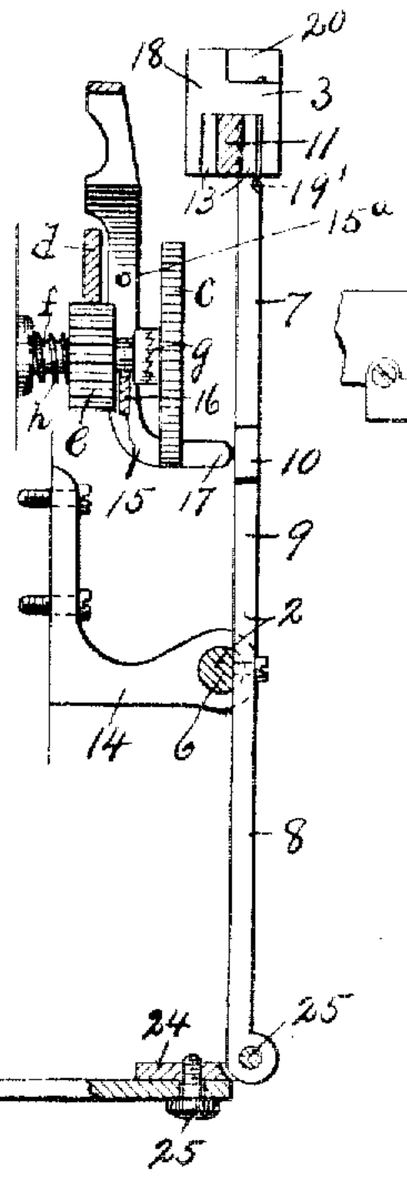


Fig. 4.

Fig. 6.

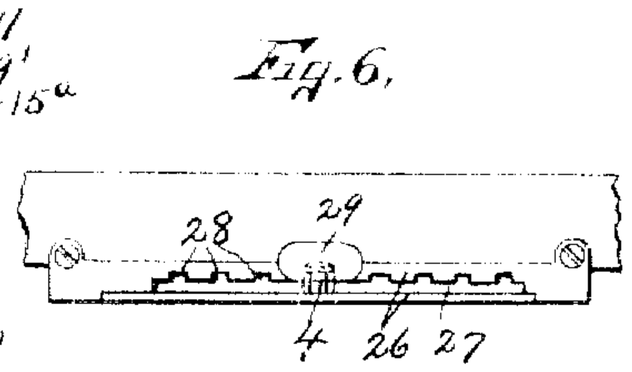


Fig. 5.

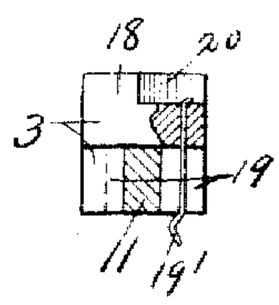
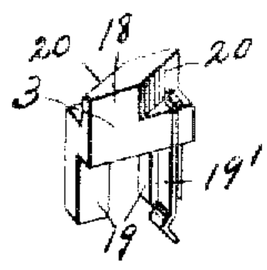


Fig. 7.



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3 SHEETS—SHEET 3.

Fig. 8.

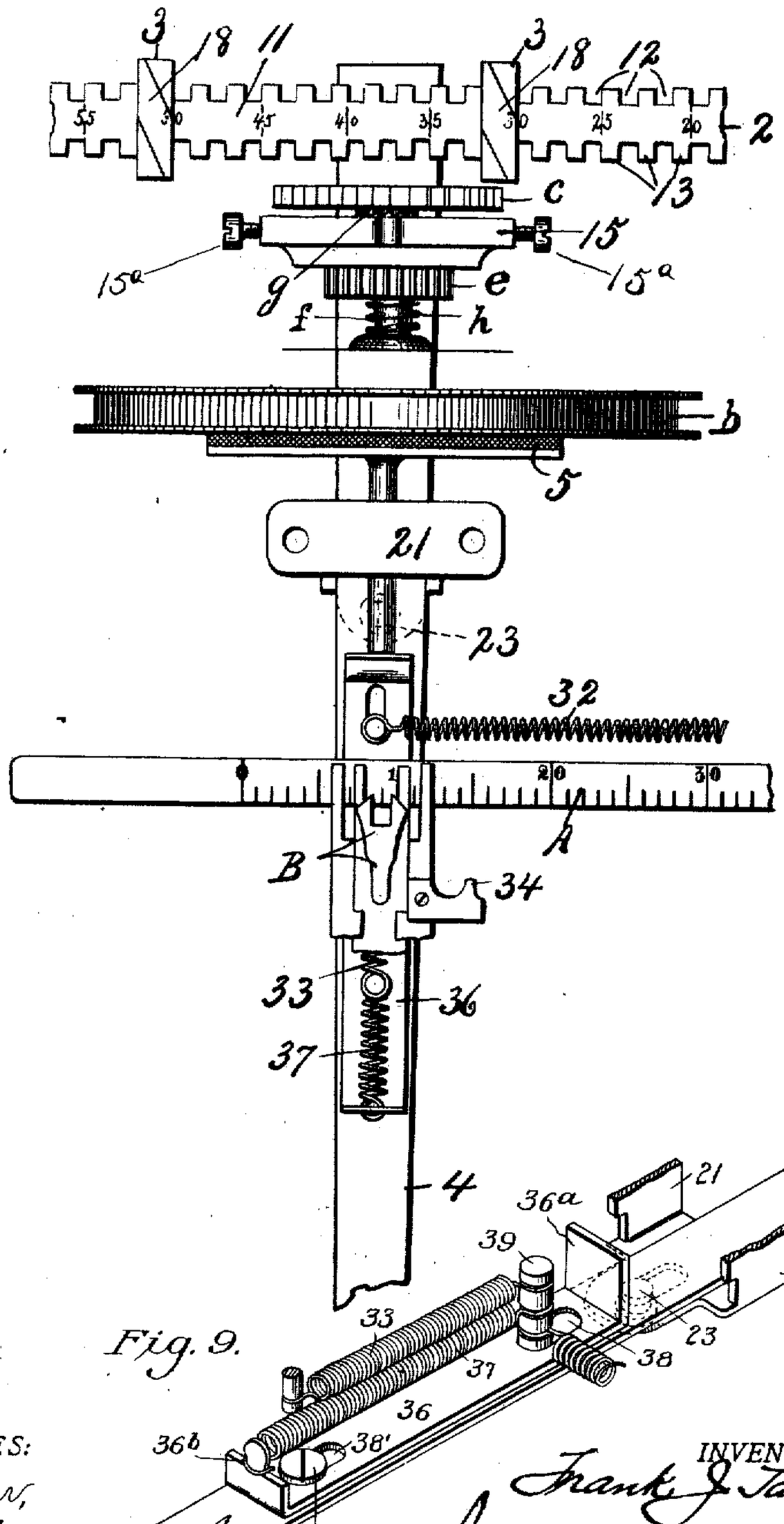

Fig. 9.

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UNITED STATES PATENT OFFICE.

FRANK J. TANNER, OF GROTON, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO UNION TYPEWRITER COMPANY, A CORPORATION OF NEW JERSEY.

TABULATING DEVICE FOR TYPE-WRITING MACHINES.

No. 912,508. Specification of Letters Patent. Patented Feb. 16, 1909.

Application filed May 17, 1901. Serial No. 60,706.

To all whom it may concern:

Be it known that I, FRANK J. TANNER, of Groton, in the county of Tompkins, in the State of New York, have invented new and useful Improvements in Tabulating Devices for Type-Writing Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in typewriting machines, having more particular reference to a tabulating attachment herefor.

The primary object of my invention is to produce a simple, compact and easily operated device for tabulating columns of figures or numbers of varying denominations, being applicable also for printing columns of words, or other printed matter at predetermined positions in the travel of the carriage.

Another object in tabulating numbers of varying denominations is to enable the operator to accurately print any number of columns of numbers, and to arrange a decimal point or other dividing character in exact vertical alinement in each column, whereby the liability of error in copying a list of numbers is reduced to a minimum.

A further object of this invention is to enable the operator to release the carriage and to stop the same at any predetermined distance in its travel by a single operating mechanism, and to also retard the speed of movement of the carriage in its travel toward the stopping position.

A still further object is to provide a reversible stop whereby the mere reversal in position of the stop varies the travel of the carriage one space upon its release.

To this end the invention consists in the combination, construction and arrangement of the parts of a tabulating device for typewriting machines as hereinafter fully described and pointed out in the claims.

Referring to the drawings, Figures 1 and 2 are respectively top plan and side elevations of my improved tabulating device and portions of a typewriting machine coöperating therewith. Fig. 3 is a rear elevation of the parts seen in Figs. 1 and 2. Figs. 4 and 5 are sectional views taken respectively on lines 4—4 and 5—5, Fig. 1. Fig. 6 is a front face view of the tabulating index frame and the operating member movable therein. Fig. 7 is an isometric view of the detached reversible stop. Fig. 8 is an enlarged top plan partly broken away of the parts shown at the right of Fig. 4. Fig. 9 is a fragmentary detail perspective view of a portion of the tabulating mechanism.

Similar reference characters indicate corresponding parts in all the views.

In the drawings, Figs. 1, 2, 3 and 8, I have shown portions of a typewriting machine consisting of a carriage bar —*a*—, an operating drum —*b*— for actuating the carriage in one direction and an escapement wheel —*c*— for controlling the movement of the carriage. The connections and operations of these parts being well understood, it is not thought necessary to further illustrate the same, it being understood that the drum —*b*— is actuated by a suitable spring motor and is connected to the carriage for transmitting motion thereto and that the escapement wheel is employed in connection with suitable escapement dogs or pawls and connected to the carriage for permitting the carriage to move step-by-step in the usual manner for letter spacing. It is also well understood that suitable provision is made for releasing the carriage from the escapement mechanism whereby the carriage may be moved endwise in either direction independently of the escapement wheel, or may be returned to its starting position against the action of the motor actuated drum without effecting the movement of said escapement wheel. In order to carry out this operation, I usually provide the carriage with a suitable rack —*d*— operating in connection with the pinion —*e*— which is mounted upon a spindle —*f*— of the escapement wheel, the pinion —*e*— and escapement wheel —*c*— being each provided with clutch teeth —*g*— held in engagement with each other by a suitable spring —*h*—, whereby an actuation of the feed or escapement dogs (not shown) will afford an intermittent rotation of the escapement wheel and pinion connected thereto by the clutch *g*, and the feed rack and carriage will be moved in the direction of their feed movement by power applied thereto through the drum *b*; the clutch teeth *g* being so arranged as to permit the return movement of the carriage without effecting the reverse rotation of the escapement wheel *c*.

The tabulating device which forms the basis of my present invention preferably consists of a stop shoulder —1—, a rocking

frame —2— provided with a reversible stop —3— and having an independent endwise movement, an operating member, key lever or bar —4— for effecting the rocking and endwise movement of the rocking frame —2— and a brake member —5— connected to the operating member for controlling the speed of movement of the carriage.

The stop shoulder 1 is preferably mounted upon the carriage —*a*— independently of the frame which supports the platen and is usually arranged in fixed relation to the carriage, although it is evident that this shoulder may have a slight adjustment, if desired.

The rocking frame —2— is secured to a suitable rock-shaft —6— which forms a portion of the rocking frame and is provided with opposite upwardly projecting arms —7— and an intermediate depending arm —8— having an extension —9— projecting above the axis of the rock-shaft and formed with a lateral extension —10—. Secured to the upper ends of the arms —7— is a stop bar —11— upon which is adjustably mounted the stops —3—, this stop bar —11— also forming a portion of the rock frame, its opposite ends being secured to the arms —7— and the front and rear faces of its intermediate portion being each provided with a series of serrations forming cutouts —12— and projections or shoulders —13—, the cutouts and projections of each series alternating with each other and are arranged in transverse alinement, that is, the shoulders and spaces or cutouts in one face are in transverse alinement with similar shoulders and recesses in the opposite face, the spaces being arranged to receive the stops —3— and the shoulders —13— serving to hold said stops from lateral displacement.

The rock-shaft —6— is journaled at its opposite ends in suitable brackets —14— forming a portion of the typewriter frame and is adapted to be moved endwise in the bearings of said brackets for a purpose hereinafter described.

The upright arms —7— serve as supports for the stop bar —11— and are so mounted on the rock-shaft relative to the brackets —14— as to permit the desired endwise movement of the rock frame.

The depending arm —8— is, as previously stated, secured to the intermediate portion of the rock-shaft and is provided at its lower end with a suitable eye or equivalent bearing to which is connected the operating member —4—.

The extension —9— and lateral offset —10— are here shown as extending upwardly and laterally from the arm —8—, although it is evident that this extension —9— and offset —10— may be otherwise secured to the frame —2— and serve to operate a suitable releasing lever —15— for releasing the carriage when desired. The offset —10— is of sufficient length to be at all times in alinement with the engaging face or shoulder of the releasing member —15— during the endwise movement of the rocking-frame, and it is therefore evident that no matter what position the rocking frame may assume the offset —10— will at all times be in position to operate the releasing member —15—.

The spaces —12— and shoulders —13— in each of opposite faces of the bar —11— are formed of substantially the same width, and the width of each of the shoulders and spaces is substantially equal to the step-by-step movement of the carriage as regulated by the teeth of the escapement wheel —*c*—, and inasmuch as the typewriter is usually provided with a graduated letter spacing scale having its graduations corresponding to the step-by-step movement of the escapement wheel —*c*—, it is apparent that the distance between each of the letter spacing graduations of said scale is equal to the width of one of the spaces or shoulders of the stop bar —11—. Stated, from another point of view, an inspection of Fig. 8 will show that for each distance of ten letter spaces on the stop bar, say, between the indices 40 and 50, there are but five teeth instead of ten as is ordinarily the case; and that consequently the stops 3 and the teeth 13 of the stop bar may be and are made larger and stronger than formerly. The spacing from the center of one tooth on the stop bar 11 to the center of an adjacent tooth is double the letter space movement of the carriage, so that teeth 13 double the size of those ordinarily employed may be used and less cutting of the rack 11 is required and a stronger engaging means between the stops and rack may be provided; yet by reversing the stop it may be set for arresting the carriage at any letter space position.

The releasing member —15— previously mentioned, is pivotally mounted at 15ª on a portion of the frame of the typewriter and is provided with an engaging shoulder —16— and a depending rearwardly extending arm —17—, the shoulder —16— being arranged in a groove in the hub of the pinion —*e*— and the arm —17— being adapted to be engaged by the offset —10— or upper end of the arm —9— so that as the frame —2— is rocked the offset —10— will engage the arm —17— and rock the releasing lever —15— and therefore force the clutch-teeth —*g*— of the pinion *e* endwise out of engagement with the clutch face of the escapement wheel —*c*— and thereby release the carriage.

The stops —3— are mounted upon and adjustable lengthwise of the stop-bar —11— and each preferably consists of a head —18— and a bifurcated depending extension —19—, the head —18— being of substantially the same width laterally as the

combined width of one of the shoulders and spaces of the stop-bar —11—, and the depending arms of the bifurcated extension are formed of substantially the same width as the spaces for permitting the insertion and removal of said arms into the opposite spaces, one of the lateral flat contact or arresting faces of the head —18— and extension —19— of the stop being arranged in alinement with each other, and it is therefore evident that the opposite flat contact or arresting face of the head extends beyond or is off-set laterally relatively to the corresponding face of the bifurcated extension or engaging portion a distance equal to the width of one of the shoulders or spaces of the stop bar so that when the stop is inserted into the spaces the head will overlap the adjacent shoulders. By constructing the stop as just described, it is apparent that when the stop is removed from one space and reversed and then reinserted in the same space the position of the face of the stop adapted to engage the stop shoulder —1— will be varied the distance of one letter space and will stop the carriage at different positions in its travel thereby varying the travel of the carriage one space and enabling the operator to stop the carriage at odd or even numbers or letter spaces with the use of a minimum number of shoulders and spaces 13 and 12. Suppose for example the operator is printing a column of numbers with four figures each and the stop is set at 30, as seen at the right of Fig. 8, and it is desired to continue the column with numbers having only three figures each and still have the right hand figures in vertical alinement, this stop would then be reversed by the operator in the same space 12 which would bring its stop face at —31— and the carriage would, therefore, stop automatically at this point or one point to the left of where it previously stopped for numbers of four figures. In order to hold the stop from vertical displacement I usually provide the same with a spring catch —19'— having its upper end secured to the head —18— and its lower end provided with a shoulder adapted to engage the lower face of the stop bar, this catch being so arranged as to permit the stop to be readily inserted or withdrawn from the spaces of the stop bar for the purpose of permitting the stop to be reinserted into any other space upon the stop bar. The upper portion of the head —18— of each of the stops is provided with oppositely substantially parallel inclined faces —20— one of which is always in the rear of the active contact face of a stop irrespective of which contact face is presented for coöperation with the stop 1. The rear face of the stop 1 is likewise beveled to correspond to the bevels or inclined faces on the stops 3, when the position of the carriage is such as to bring the shoulder —1— in alinement with a stop —3—, a forward movement of the stop 3 will not result in blocking the operation of or injuring the tabulator mechanism as the stop 3 will be brought into the path of the stop 1 and the carriage will be released. The beveling of the coöperating tabulating stops on the rear face is a common expedient and its purpose is well understood, but it will be understood that by my arrangement a beveled rear face of a stop —3— is presented for coöperation with the coöperating inclined face of the stop 1 no matter which of the two contact or arresting faces of a stop —3— is presented for operation.

The operating member —4— is pivotally connected at its intermediate portion to a suitable bracket —21— forming a portion of the typewriter frame and also has an endwise movement, the bracket —21— being provided with an elongated slot —22— for receiving a pivotal pin —23— secured to the operating member —4—. This operating member usually consists of a horizontal rocking lever adapted to be moved endwise independently of its rocking movement, its rear end being connected to the lower end of the arm —8— of the frame —2— by a hinge member —24—, said hinge member being pivotally connected at —25— to the arm —8— and the adjacent end of the lever —4— is similarly connected by a pivotal pin —25— to the member —24—. The opposite end of the lever —4— extends toward the front of the machine, is guided in a suitable tabulating index frame —26— having a guide-way —27— and a series of notches or cutouts —28—, said front end of the operating member being also provided with a handpiece —29—, and a shoulder —30— adapted to enter the notches —28— as the lever —4— is moved rearwardly endwise. The tabulating index frame —26— is provided with a series of graduations —31— corresponding to numbers of varying denominations from zero to one million, as illustrated in Fig. 1, although it is evident that any number of numbers of different denominations may be used, these graduations being so spaced as to correspond with the spaces or shoulders of the stop bar —11—, that is, the distance from one graduation to the next graduation is proportioned to the width of one of the spaces or one of the shoulders of the stop bar, so that in moving the lever from one graduation to the next, the stop bar —11— will be moved the distance of one space. These graduations are numbered consecutively from right to left, as 0, 1, 10, 100, 1000, etc., and the operating lever is normally held at the starting point, as in this instance, zero, by a suitable spring or equivalent device —32— and is also held in its normal endwise position with the shoulder —30— out of engagement with the recesses

—28— by a spring or equivalent device —33—.

The stops —3— which are mounted upon the stop bar —11— are normally out of the path of the shoulder —1— on the carriage for permitting the free movement of said carriage, as in the operation of the spacing bar or the keys of the typewriter and the carriage may even be released from connection with the escapement mechanism by an independent releasing mechanism, not illustrated, for permitting the operator to move the carriage backwardly and forwardly independently of said escapement mechanism without engaging the stops. When the operating member or lever —4— is moved rearwardly against the action of the spring —33— the stops are rocked into the path of the shoulder —1— and the carriage is simultaneously released by the lateral offset —10— of the extension —9—, and it is therefore evident that the carriage will move automatically into engagement with the first stop in the path of the shoulder —1— and that as soon as the operator releases the pressure upon the handpiece —29— the spring —33— automatically rocks the frame —2— for moving the stops —3— in the reverse direction out of the path of the shoulder —1—, thereby enablin the operator to print in the usual manner from this predetermined stopping point in the travel of the carriage as many numerals or other characters as may be desired.

The stop bar —11— is provided with a series of graduations corresponding to the graduations of the letter spacing scale of the typewriter, said graduations being numbered, however, in reverse order from those of the letter spacing scale. This reverse arrangement being necessitated by the movement of the carriage and platen from right to left in printing.

It will be noted that in the drawings, I have shown in Figs. 1 and 8, a letter spacing scale —A— graduated from 0 to 70 inclusive and numbered consecutively from left to right, this graduating scale being mounted on the platen-frame and movable with reference to a fixed frame —B— having an indicator 34. The graduations upon the stop bar —11— indicate the successive spaces and shoulders upon said stop bar and correspond with the graduations upon the letter spacing scale —A— these graduations upon the stop bar being numbered consecutively from 0 to 70 inclusive from right to left in the reverse order from those on the letter spacing scale of the typewriter. The indicator —34— is generally arranged a certain number of spaces at one side, and in this instance, six spaces to the right of the printing point for the purpose of revealing the numerals of the letter spacing scale and indicating the exact position of the carriage with reference to the printing point. The opening in the frame B which is adapted to register with the graduations on the scale as indicated in Fig. 8 indicates the exact location of the printing point but the inking ribbon ordinarily obscures the indices on the scale at this point and hence the off-set pointer 34 is employed.

The brake —5— is for the purpose of retarding the speed of movement of the carriage when the same is released, is preferably actuated by the operating member —4— and consists of a reciprocally movable plunger mounted on the bracket —21— and having a friction face adapted to engage the drum —*b*—. A sliding plate —36— is mounted upon the intermediate portion of the lever —4— preferably in front of the pivot —23— and is held in its normal position with the friction face of the brake away from the drum —*b*— by the spring 33. The plate 36 is formed with an upwardly extending portion 36ª that co-acts with the stem of the brake and has slots 38 and 38′ (Fig. 9) for permitting its endwise or sliding movement independently of the endwise movement of the operating member 4, and is held from lateral displacement by suitable studs or screw threaded posts 39 and 39′ which pass through the slots 38 and 38′ respectively and are secured at their lower threaded ends in threaded openings in the operating member 4. A spring 37 is secured at one end to the post 39, its other end being fastened to the front upturned end of the plate 36, as indicated at 36ᵇ, and it is apparent from the above description that when the operating member —4— is moved rearwardly the brake member is also simultaneously forced into engagement with the drum —*b*— and the continued movement of the operating member —4— after the friction face of the brake has engaged the drum serves to tension the spring —37—, thereby affording a yielding brake.

The operation of my invention is as follows: First—the stops —3— are adjusted or set to the desired graduation to establish predetermined points at which the carriage is to be stopped in its travel to determine the different columns. Second—the operating lever is then rocked to the graduation upon the tabulating index plate indicating the denomination of the number to be printed. Third—the lever is then moved endwise for rocking the stop into the path of the shoulder on the carriage and at the same time operates the member —15— to release the carriage. Fourth—the carriage then moves automatically until its shoulder engages the first stop in its path. Fifth—the operating member is then released and returns to its normal position, thereby returning the stop bar and escapement mechanism to their normal positions. Sixth—the return of the operating lever endwise and laterally to its normal position moves the stop bar and its stop

one or more points to the left of the previously established stopping point of the carriage corresponding to the number of figures selected on the index plate, whereupon the typewriter may be operated in the usual manner to print the previously chosen number, as indicated by the graduation above referred to, the decimal point or other dividing character being printed at the predetermined stopping point along the carriage and any remaining figures, as decimals, may be added, if required.

As stated in the preamble, it is sometimes desired to print one or more columns of words or other matter at predetermined distances in the travel of the carriage. In this instance it is simply necessary to arrange the stops upon the stop bar at predetermined stopping points in the travel of the carriage and to then move the operating member endwise for releasing the carriage, it being understood that as soon as the carriage is released the shoulder thereon will immediately engage the first stop in its path of movement. The lever is then permitted to return endwise to its normal position whereupon the columns of words or other matter may be printed in a vertical column in the usual manner, the initial letter of each word being in direct vertical alinement.

This device is also adapted for printing columns of decimal numbers. For example—suppose it is desired to print a series of columns of numbers with the decimal points in each column in exact vertical alinement and to arrange the decimal points of the various columns at 10, 30, 50 and 70 points respectively from the left of the sheet to be printed—the stops are adjusted, with their engaging faces alined respectively with the graduations 10, 30, 50 and 70 of the stop bar. Now suppose it is desired to print 1000—the lever —4— will then be rocked by the operator four points from its normal position, or in other words, to the graduation corresponding with 1000. This operation moves the stop bar and the stops carried thereon four points to the right of its normal position;—in this position the shoulder —30— of the lever is registered with the recess —28— corresponding also with the 1000 graduation; the lever is then moved endwise, the shoulder —30— entering the recess and holding the lever from further rocking movement, and the stop to be first engaged by the shoulder on the carriage is rocked into the path of movement of the shoulder, said shoulder engaging the stop and arresting the movement of the carriage. During this operation, the carriage is released simultaneously with the movement of the stop into the path of the shoulder on said carriage. The operator then permits the return of the lever —4— and the mechanisms operated thereby to their normal positions by the springs 32, 33 and 37, the spring —33— effecting the endwise return movement and the spring —32— causing the member —4— to rock to its normal position while the lever —4— returns the plate —36— to its normal position and releases the brake. When the lever —4— is rocked to its normal position, the stop bar —11— is moved to the left the same number of points, as four, whereupon the printing of 1000 may be effected in the usual manner. In like manner, any other number may be printed, and by operating a line spacer any number of numerals of varying denominations may be arranged in a vertical column or columns with their decimal points and figures of like denominations arranged in vertical alinement.

The operation of my device will now be readily understood upon reference to the foregoing description and the accompanying drawing and it will be noted that from certain aspects of my invention my tabulator may be used with any suitable escapement for the carriage and that the brake may be otherwise operated, or entirely disposed with, if desired.

Having thus described my invention what I claim and desire to secure by Letters Patent is,

1. In a typewriting machine, the combination of a carriage; a toothed stop bar, the distance from the center of one tooth of said bar to the center of an adjacent tooth being double a letter space movement of the carriage; and a stop engaging the teeth of said stop bar, the construction and arrangement being such that the stop when set in different positions at the same point on the stop bar varies the travel of the carriage.

2. In a typewriting machine, the combination of a carriage; a toothed stop bar, the distance from the center of one tooth of said bar to the center of an adjacent tooth being double a letter space movement of the carriage; and a stop having different contact faces any one of which may be presented for use, said stop engaging the teeth of the stop bar, the construction and arrangement being such that the presentation of different contact faces of the stop varies the travel of the carriage even though the stop be connected at the same point on the bar.

3. In a typewriting machine, the combination of a carriage, a toothed stop bar, the distance from the center of one tooth of said bar to the center of an adjacent tooth being double a letter space movement of the carriage; and a reversible stop engaging the teeth of said stop bar, the construction and arrangement being such that a reversal of the stop varies the travel of the carriage.

4. In a typewriting machine, the combination of a carriage; a toothed stop bar, the distance from the center of one tooth of said bar to the center of an adjacent tooth being

double a letter space movement of the carriage; and a reversible stop engaging the teeth of said stop bar, the construction and arrangement being such that a reversal of the stop varies the travel of the carriage one letter space.

5. In a typewriting machine, the combination of a carriage; a toothed stop bar, the distance from the center of one tooth of said bar to the center of an adjacent tooth being double a letter space movement of the carriage; and a reversible stop having means for engaging said stop bar and contact faces at varying distances from said engaging means, whereby the positions of the contact faces may be changed relatively to the stop bar without varying the position of engagement of the stop along said bar.

6. In a typewriting machine, the combination of a carriage; a toothed stop bar, the distance from the center of one tooth of said bar to the center of an adjacent tooth being double a letter space movement of the carriage; and a reversible stop engaging the teeth of said bar and having opposite arresting or engaging faces disposed in planes at unequal distances from the point of engagement of the stop with said stop bar.

7. In a typewriting machine, the combination of a carriage; a toothed stop bar, the distance from the center of one tooth of said bar to the center of an adjacent tooth being double a letter space movement of the carriage; a reversible stop engaging the teeth of said stop bar, the construction and arrangement being such that a reversal of the stop varies the travel of the carriage; and yielding means detachably locking the stop to said stop bar.

8. In a typewriting machine, the combination of a carriage, a tabulator stop on the carriage, a coöperating tabulator stop on the framing of the machine, and a manually operated lever that has a swinging movement and an endwise movement, with intermediate connections between said lever and said last mentioned stop, to change the position of the stop parallel with and at right angles to the endwise movement of the carriage.

9. The combination with the carriage of a typewriting machine, of a bar having a plurality of stops, and a controlling lever that has a swinging movement and an endwise movement, with intermediate connections between said lever and bar for moving the bar endwise and laterally relative to the carriage.

10. In a typewriting machine, a tabulating device comprising a reversible stop for varying the arrest of the carriage, a supporting bar having an endwise and transverse movement relative to the carriage, the stop being removable from points intermediate the ends of the bar, and means for moving said bar.

11. In a typewriting machine, a tabulating device comprising a movable stop and its support, the support being movable endwise relative to the carriage and the stop having engaging faces at different distances from its point of engagement with the support for varying the travel of the carriage independently of the endwise movement of the support, a coöperating stop, and means for bringing said stops into coöperative relation.

12. In a typewriting machine, a tabulating device having means movable in planes at right angles to each other to stop the carriage at predetermined points in its travel, and a single lever having a swinging and endwise movement for effecting such movements of said means.

13. In a typewriting machine, a carriage and release mechanism, a tabulating device having means operated by a single member having a rotary and an endwise movement to release the carriage and to stop the same at different denominational positions.

14. In a typewriting machine, a carriage, a tabulating device comprising a rock bar independent of the carriage and having an independent endwise movement, a reversible stop mounted on the bar, and a single operating member acting directly on the bar to rock the bar and to effect the endwise movement thereof.

15. The combination with the carriage and release mechanism of a typewriting machine, of a movable stop-bar for the carriage, and a lever movable endwise to actuate the release mechanism and stop bar by a single movement.

16. In a typewriting machine, a carriage, a tabulating device comprising an operating member having independent rocking and endwise movements, and a stop bar independent of the carriage and actuated by both movements of said member for the purpose specified.

17. In a typewriting machine, a carriage and release mechanism, a tabulating device having means operated by a single rotary member movable endwise to release the carriage and to stop the same at different points in its travel, said tabulating device including coöperative stops and means for bringing said stops into coöperative relation, and a brake actuated by the endwise movement of said means to retard the speed of movement of the carriage.

18. In a typewriting machine, a tabulating mechanism having a single member connected to release the carriage and to stop the same at different predetermined points in its travel, the predetermined point of arrest depending on the actuation of said single member, and means actuated by said mem-

ber to retard the speed of movement of the carriage.

19. In a typewriting machine, the combination with a carriage and release mechanism, a stop movable into and out of engagement with the carriage and having an independent endwise movement, an operating lever movable endwise horizontally and connected to actuate the release and stop, and a brake actuated by the endwise movement of the lever and to check the movement of the carriage.

20. In a typewriting machine, the combination with a carriage and escapement mechanism, of a stop movable into and out of engagement with the carriage and having an independent endwise movement, an operating lever movable horizontally endwise and laterally and connected to actuate the stop, means operated by the endwise movement of the lever to disengage the carriage feed from the escapement, and a brake controlled by the lever for checking the speed of movement of the carriage.

21. In a typewriting machine, a carriage and release mechanism, a tabulating device comprising a rock-bar having an endwise movement parallel with the movement of the carriage, a stop adjustably mounted on the bar and removable from points intermediate the end of the bar, a lever which likewise has an endwise movement and is connected to the bar for effecting its rocking and endwise movement, means actuated by the bar to release the carriage, and a brake actuated by the endwise movement of the lever to check the speed of movement of the carriage.

22. In a typewriting machine, a carriage and release mechanism, a tabulating device comprising a rock-bar having an endwise movement parallel with the movement of the carriage, a reversible stop mounted on the bar and adjustable lengthwise thereof, a lever for operating the bar, means operated by the bar to release the carriage, and a brake actuated by the lever for engaging the feeding drum of the carriage.

23. In a typewriting machine, a carriage having a shoulder, a feeding drum, a tabulating device comprising a stop movable into and out of the path of the shoulder and having an independent endwise movement parallel with the carriage, an operating lever which likewise has an endwise movement and is connected to actuate the stop, means for holding the lever in its actuated position, a brake actuated by the endwise movement of the lever to engage the feeding drum of the carriage, and a spring interposed between the lever and brake for the purpose described.

24. In a typewriting machine, a tabulating device comprising a movable stop and its support, the stop having engaging faces at different distances from its point of engagement with the support for varying the travel of the carriage, and a swinging operating member for moving the support endwise of the carriage.

25. In a typewriting machine, the combination with a carriage having a stop, a movable stop bar, a stop reversibly mounted on the bar and constructed and arranged to arrest the carriage at different points according to which side of said reversible stop is present for coöperation with the carriage stop, and an oscillatory member having an endwise movement and connected to rock the bar and move the same endwise.

26. In a typewriting machine, the combination with a carriage having a stop, a movable stop bar, one or more stops adjustably mounted on the bar, and a horizontally swinging member having an endwise movement to rock the bar and the swinging movement acting to move the bar endwise.

27. In a typewriting machine, the combination with a carriage having a stop, a movable stop bar, one or more stops adjustably mounted on the bar, a tabulating index, and a lever movable along the index and having an independent endwise movement, said lever being connected to rock the bar and to move the same endwise.

28. In a typewriting machine, the combination with a carriage having a stop, a release mechanism for the carriage, a movable stop bar, provided with one or more stops and having a rocking and endwise movement, and a single swinging and end thrusting member connected to release the carriage by its end thrust and to actuate the stop bar.

29. In a typewriting machine, a carriage, carriage releasing means, a tabulating device comprising a stop, and a single rotary controlling member operatively connected to said stop and having an independent endwise movement and connected to release the carriage and to arrest the same through said stop at different predetermined points in the travel of the carriage.

30. In combination with the carriage and releasing mechanism of a typewriting machine, a tabulating index, and a single rocking lever movable along the index and having an independent endwise movement, said lever being connected to release the carriage and to stop the same at any predetermined graduation on the index.

31. In combination with the carriage and releasing mechanism of a typewriting machine, a tabulating index, a rock bar having an independent endwise movement, one or more stops adjustably mounted on the bar for stopping the carriage at predetermined distances in its travel, and a single operating member connected to the bar and movable along the index for varying the position of the stops, said member having an inde-

pendent endwise movement for releasing the carriage and rocking the bar.

32. In combination with the carriage of a typewriting machine, a tabulating device consisting of a graduated stop-bar having one or more reversible stops adjustably mounted thereon, said bar having independent rocking and endwise movements, a tabulating index, and a single lever movable along the index and connected to actuate the bar.

33. In a typewriting machine and tabulating mechanism, the combination of a carriage, feed dogs therefor, a feed rack, intermediate mechanism between said feed dogs and rack, said intermediate mechanism including a clutch, tabulating devices, a single key for positioning the tabulating devices to arrest the carriage at different denominational positions, and means for automatically releasing the clutch to free the carriage when the tabulating devices are actuated.

34. The combination with a typewriting machine of tabulating devices located at the rear of the machine, and a swinging and longitudinally movable key lever that extends to the front of the machine and controls said tabulating devices to arrest the carriage at different denominational positions.

35. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices adapted to arrest the carriage at different denominational positions, and a single key lever that is adapted to swing and to receive an endwise or longitudinal movement, the swinging movement of said key lever effecting the denominational positioning of the tabulating devices and the longitudinal movement of the key lever effecting a release of the carriage.

36. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating stops adapted to arrest the carriage at different denominational positions, and a single key lever that is adapted to swing and to receive an endwise or longitudinal movement, the swinging movement of said key lever effecting the denominational positioning of a tabulating stop and the longitudinal movement of the key lever effecting the interpositioning of the stops one in the path of the other and a release of the carriage.

37. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices adapted to arrest the carriage at different denominational positions, a single key lever that is adapted to swing and to receive an endwise or longitudinal movement, the swinging movement of said key lever effecting the denominational positioning of the tabulating devices and the longitudinal movement of the key lever effecting a release of the carriage, and means for automatically returning the key lever to its normal position after a tabulating operation has been effected.

38. In a typewriting machine, and tabulating mechanism, the combination of a carriage, tabulating stops adapted to arrest the carriage at different denominational positions, a single key lever that is adapted to swing and to receive an endwise or longitudinal movement, the swinging movement of said key lever effecting the denominational positioning of a tabulating stop, and the longitudinal movement of the key lever effecting the interpositioning of the stops one in the path of the other and a release of the carriage, and means for automatically returning the key lever to its normal position after a tabulating operation has been effected.

39. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating stops adapted to arrest the carriage at different denominational positions, a single key lever that is adapted to swing and to receive an endwise or longitudinal movement, the swinging movement of said key lever effecting the denominational positioning of a tabulating stop, and the longitudinal movement of the key lever effecting the interpositioning of the stops one in the path of the other and a release of the carriage, and spring pressed means for first effecting a longitudinal and then a swinging movement of the said key lever after a tabulating operation takes place, in order to automatically restore the key lever to its normal position.

40. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating stops adapted to arrest the carriage at different denominational positions, a brake for retarding the movement of the carriage, and a single key lever that is adapted to swing and to receive an endwise or longitudinal movement, the swinging movement of said key lever effecting the denominational positioning of a tabulating stop, and the longitudinal movement of the key lever effecting the interpositioning of the stops one in the path of the other a release of the carriage and the application of the brake.

41. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating stops adapted to arrest the carriage at different denominational positions, a brake for retarding the movement of the carriage, a spring interposed between the brake and the part that applies it, so that the brake will be applied through said spring, and a key that is movable in two directions, the movement of the key in one direction setting a stop to determine the denominational position at which the car-

riage is to be arrested, and the movement of the key in the other direction releasing the carriage and applying the brake.

42. In a typewriting machine and tabulating mechanism, the combination of a carriage, a part connected to the carriage to rotate as the carriage travels, tabulating devices, a brake, key actuated means for automatically applying said brake to the rotating part when the tabulating devices are actuated, and a spring through which the finger pressure on said key actuated means is exerted to apply the brake.

43. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices, a key lever for controlling said tabulating devices, said key lever having a swinging and an endwise or longitudinal movement, and means for preventing the key lever from swinging during the longitudinal movement thereof.

44. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices, a key lever for controlling said tabulating devices, said key lever having a swinging and an endwise or longitudinal movement, the swinging movement of the key lever effecting a positioning of the tabulating devices, and a longitudinal movement of the key lever effecting a release of the carriage, and means for preventing the key lever from swinging during the longitudinal movement thereof.

45. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices, a brake, a key lever for controlling said tabulating devices and brake, said key lever having a swinging and an endwise or longitudinal movement, the swinging movement of the key lever effecting a positioning of the tabulating devices, and a longitudinal movement of the key lever effecting a release of the carriage and an application of the brake, and means for preventing the key lever from swingimg during the longitudinal movement thereof.

46. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices, a brake, a key lever for controlling said tabulating devices and brake, said key lever having a swinging and an endwise or longitudinal movement, the swinging movement of the key lever effecting a positioning of the tabulating devices, and a longitudinal movement of the key lever effecting a release of the carriage and an application of the brake, means for preventing the key lever from swinging during the longitudinal movement thereof, and a spring interposed between the key lever and brake so that the pressure of the spring will be exerted in applying the brake.

47. In a typewriting machine and tabulating mechanism, the combination of a carriage, a brake that is adapted to retard the movement of the carriage, tabulating devices, and a key that is movable in two directions and controls the tabulating devices and brake, a movement of the key in one direction operating the tabulating devices and a movement of the key in the other direction applying the brake.

48. In a typewriting machine and tabulating mechanism, the combination of a carriage, a carriage releasing device, a brake that is adapted to retard the movement of the carriage when released, tabulating devices, and a key that is movable in two directions and controls the tabulating devices—the releasing device and brake, a movement of the key in one direction operating the tabulating devices, and a movement of the key in the other direction actuating the releasing device and applying the brake.

49. In a typewriting machine and tabulating mechanism, the combination of a carriage, a carriage releasing device, a brake that is adapted to retard the movement of the carriage when the latter is released, tabulating stops, and a key that is movable in two directions and controls the tabulating stops—releasing device and brake, a movement of the key in one direction operating to set a tabulating stop at the proper denominational position, and a movement of the key in the other direction being effective to interpose the tabulating stops one in the path of the other, to actuate the releasing device and to apply the brake.

50. In a typewriting machine and tabulating mechanism, the combination of a carriage, a releasing clutch therefor, tabulating stops, a brake for retarding the movement of the carriage, and an endwise or longitudinally movable hand actuated operating member that controls the interpositioning of the tabulating stops one in the path of another, the release of the clutch and the application of the brake.

51. In a typewriting machine and tabulating mechanism, the combination of a carriage, a releasing clutch therefor, tabulating stops, a brake for retarding the movement of the carriage, an endwise or longitudinally movable hand actuated operating member that controls the interpositioning of the tabulating stops one in the path of another, the release of the clutch and the application of the brake, and a spring interposed between said member and brake, so that the pressure applied to the member will be applied through said spring to the brake.

52. In a typewriting machine, the combination of a carriage, a denominational stop that is moved to different extents to arrest the carriage at different denominational positions, a brake, hand actuated means for moving said stop and automatically applying said brake, and a spring between the hand-actuated means and the brake so as to

apply the latter by power exerted through said spring.

53. In a typewriting machine, the combination of a carriage, denominational tabulating mechanism, a spring drum, a brake, hand actuated means for actuating said denominational tabulating mechanism and applying said brake to the spring drum, and a spring between the hand actuated means and the brake so as to apply the latter by power exerted through said spring.

54. In a typewriting machine and tabulating mechanism, the combination of a carriage, a feed rack carried thereby, a feed pinion with which said feed rack meshes, an escapement wheel, a clutch between said pinion and escapement wheel, tabulating stops, and a key that has a movement in two directions, one to effect the denominational positioning of one of the stops and the other to disconnect the members of the clutch.

55. In a typewriting machine, the combination of a carriage, key actuated denominational tabulating devices for arresting the carriage at different denominational positions, and a brake which is automatically applied by the pressure exerted on said key actuated device, said pressure being exerted through a spring to retard the movement of the carriage when the tabulating devices are actuated.

56. In a typewriting machine, the combination of a carriage, denominational tabulating devices for arresting the carriage at different denominational positions, a finger key for actuating said tabulating devices, and a brake that is controlled by said key, the pressure on the key being applied through a spring to retard the movement of the carriage.

57. In a typewriting machine, the combination of a carriage, denominational tabulating devices for arresting the carriage at different denominational positions, a swinging and longitudinally movable key lever for actuating said tabulating devices and for releasing the carriage, and a brake which is controlled by said key lever and is effective to retard the movement of the carriage.

58. In a typewriting machine, the combination of a carriage, denominational tabulating devices for arresting the carriage at different denominational positions, a swinging and longitudinally movable key lever for actuating said tabulating devices and for releasing the carriage, a brake which is controlled by the longitudinal movement of said key lever and is effective to retard the movement of the carriage, and a spring through which the pressure is applied to said brake.

59. In a typewriting machine, the combination of a carriage, a tabulator comprising a carriage stop, a manually operated lever that has a swinging movement and an endwise movement with intermediate connections between said lever and stop to change the position of the stop parallel with and at right angles to the endwise movement of the carriage, and means for automatically releasing the carriage by an actuation of said manually operated lever.

60. In a typewriting machine, the combination of a carriage, a tabulator stop on the carriage, a coöperating tabulator stop on the frame of the machine, and a manually operated lever that has a swinging movement and an endwise movement with intermediate connection between said lever and said last mentioned stop to change the position of the stop parallel with and at right angles to the endwise movement of the carriage.

61. The combination with a carriage of a typewriting machine, of a bar having a plurality of stops and a controlling lever that has a swinging movement and an endwise movement with intermediate connections between said lever and bar for moving the bar endwise and laterally relative to the carriage, and means for automatically releasing the carriage by an actuation of said lever.

62. In a typewriting machine, the combination of a carriage releasing mechanism, a tabulating device having means movable in planes at right angles to each other to stop the carriage in predetermined points in its travel, and a single lever having a swinging and endwise movement for effecting such movements of said tabulating means, and means for automatically actuating said carriage releasing means by a movement of said lever.

63. In a typewriting machine, the combination of a carriage, a tabulating stop carried by said carriage, carriage releasing mechanism, a second tabulating stop, and means including a single member having a rotary and endwise movement to bring the stops into coöperative relation and to arrest said carriage at different denominational positions and to automatically release the carriage when the stops are brought into coöperative relation.

64. In a typewriting machine, the combination of a carriage, a tabulating stop carried by the carriage, a tabulating device having means movable in planes at right angles to each other to stop the carriage at predetermined points in its travel, said device being carried by the frame of the machine, and a single lever having a swinging and endwise movement for effecting such movements of said means.

65. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices adapted to arrest the carriage at different denominational positions, and a single manually-controlled member adapted to rotate and to receive an endwise or longitudinal movement, a rotary movement of said member effecting the de-

nominational positioning of the tabulating devices and the longitudinal movement of the member effecting a release of the carriage.

66. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices adapted to arrest the carriage at different denominational positions, and a single key lever adapted to swing and to receive an endwise or longitudinal movement, a swinging movement of said key lever effecting the denominational positioning of the tabulating devices and the longitudinal movement of the key lever effecting a release of the carriage and a movement of the tabulating devices into coöperative relation.

67. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices adapted to arrest the carriage at different denominational positions, a manually operated bar adapted to rotate and to receive an endwise or longitudinal movement, the rotary movement of said bar effecting the denominational positioning of the tabulating devices and the longitudinal movement of the bar effecting a release of the carriage, and means for automatically returning the bar to its normal position after the tabulating operation has been effected.

68. In a typewriting machine and tabulating mechanism, the combiantion of a carriage, tabulating devices adapted to arrest the carriage at different denominational positions, a single key lever adapted to swing and to receive an endwise or longitudinal movement, the swinging movement of said key lever effecting the denominational positioning of the tabulating devices and the longitudinal movement of the key lever effecting a release of the carriage and a movement of the tabulating devices into coöperative relation, and means for automatically returning the key lever to its normal position after the tabulating operation has been effected.

69. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices, a manually operated bar for controlling said tabulating devices, said bar having a rotary and an endwise or longitudinal movement, the rotary movement of the bar effecting a positioning of the tabulating devices to determine the point of arrest of the carriage, and a longitudinal movement of the bar effecting a release of the carriage, and means for preventing the bar from rotating when the longitudinal movement thereof has been effected.

70. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices, a key lever for controlling said tabulating devices, said key lever having a swinging and an endwise or longitudinal movement, the swinging movement of the key lever effecting a positioning the tabulating devices to determine the point of arrest of the carriage, and a longitudinal movement of the key lever effecting a release of the carriage and a movement of the tabulating devices into coöperative relation, and means for preventing the key lever from swinging during the longitudinal movement thereof.

71. In a typewriting machine and tabulating mechanism, the combination of a carriage; tabulating devices; a brake; a manually controlling member for controlling said tabulating devices and brake, said member having a rotary and an endwise or longitudinal movement, the rotary movement of the member effecting a positioning of the tabulating devices to determine the point of arrest of the carriage, and a longitudinal movement of said member effecting a release of the carriage and an application of the brake; and means for preventing the member from rotating when the longitudinal movement thereof has been effected.

72. In a typewriting machine and tabulating mechanism, the combination of a carriage; tabulating devices; a brake; a key lever for controlling said tabulating devices and brake, said key lever having a swinging and an endwise or longitudinal movement, the swinging movement of the key lever effecting a positioning of the tabulating devices to determine the point of arrest of the carriage, and a longitudinal movement of the key lever effecting a release of the carriage and an application of the brake and a movement of the tabulating devices into coöperative relation; and means for preventing the key lever from swinging during the longitudinal movement thereof.

73. In a typewriting machine and tabulating mechanism, the combination of a carriage; tabulating devices; a brake; a manually operated member controlling said tabulating devices and brake, said member having a rotary and an endwise or longitudinal movement, the rotary movement of the member effecting a positioning of the tabulating devices to determine the point of arrest of the carriage and a longitudinal movement of the member effecting a release of the carriage and an application of the brake; means for preventing the member from rotating after the longitudinal movement thereof has been effected; and a spring interposed between the bar and brake, so that the pressure will be exerted in applying the brake.

74. In a typewriting machine and tabulating mechanism, the combination of a carriage; tabulating devices; a brake; a key lever controlling said tabulating devices and brake, said key lever having a swinging and an endwise or longitudinal movement, the swinging movement of the key lever effecting a positioning of the tabulating devices to determine the point of arrest of

the carriage, and a longitudinal movement of the key lever effecting a release of the carriage and an application of the brake and a movement of the tabulating devices into coöperative relation; means for preventing the key lever from swinging during the longitudinal movement thereof; and a spring interposed between the key lever and brake so that the pressure of the spring will be exerted through the spring in applying the brake.

75. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop bar movable to different extents, a stop carried by said bar, carriage releasing mechanism, and a manually operated rotary and endwise movable bar operatively connected with said stop bar and with said carriage releasing mechanism, the rotary movement of said manually operated bar determining the extent of movement of the stop bar and the stop carried thereby and the endwise movement of said manually operated bar effecting a release of the carriage.

76. In a typewriting machine and tabulating mechanism, the combination of a carriage, carriage releasing means, a stop movable to different extents and movable into the path of the carriage, and a single hand actuated rotary member which is also movable horizontally endwise and which is operatively connected with said stop to move it by the rotary movement of said member, and operative connections between said member and the carriage releasing means to effect a release of the carriage by an endwise movement of said member.

77. In a typewriting machine and tabulating mechanism, the combination of a carriage, carriage releasing means, a stop movable to different extents and movable into the path of the carriage, a single hand-actuated rotary member which is also movable horizontally endwise and which is operatively connected with said stop to move it by the rotary movement of said member, operative connections between said members and the carriage releasing means to effect a release of the carriage by an endwise movement of said member, and carriage retarding means operatively connected with and operated by an endwise movement of said member.

78. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a plurality of stops carried by said bar, a coöperative stop, a manually operated member for effecting different extents of relative movement between the stops on the bar and the coöperative stop, said member having a rotary movement and an endwise movement, carriage releasing and carriage retarding means controlled by said manually operated member, the relative movement between said stops on the bar and the coöperative stop being effected by a rotary movement of said member and the carriage retarding and carriage releasing means being controlled by an endwise movement of said member.

79. In a typewriting machine and tabulating mechanism, the combination of a carriage having a stop, releasing means for said carriage, a movable stop bar, one or more stops adjustable on said bar to determine the columnar position of arrest of the carriage, a movement of the stop bar determining the denominational position of arrest of the carriage, a tabulating index, and a rotary and longitudinally movable manually operated member which coöperates with said index and with said stop bar and with the carriage releasing means.

80. In a typewriting machine and tabulating mechanism, the combination of a carriage having a stop, releasing means for said carriage, a carriage retarding brake, a movable stop bar, one or more stops adjustable on said bar to determine the columnar position of arrest of the carriage, a movement of the stop bar determining the denominational position of arrest of the carriage, a tabulating index, and a rotary and longitudinally movable manually operated member which coöperates with said index and with said stop bar and with the carriage releasing means, a rotary movement of said member effecting a movement of said stop bar to determine the denominational position of arrest of the carriage and the longitudinal or endwise movement of said member effecting a release of the carriage and an application of the brake.

81. In a typewriting machine and tabulating mechanism, the combination of a carriage, stop devices located at the rear of the machine, and manually operated rotary and longitudinally movable bar operatively connected to certain of said stop devices and extending to the front of the machine, the control of certain of the stop devices by said manually operated bar determining the denominational position of arrest of the carriage.

82. In a typewriting machine and tabulating mechanism, the combination of a carriage, carriage releasing devices, stop devices located at the rear of the machine, and a manually operated rotary and longitudinally movable bar operatively connected to certain of said stop devices and extending to the front of the machine, the control of certain of the stop devices by said manually operated bar determining the denominational position of arrest of the carriage and effecting an actuation of said carriage releasing devices.

83. In a typewriting machine and tabulating mechanism, the combination of a car-

riage, tabulating devices operative to arrest the carriage at different denominational positions, and a single manually operated bar mounted to turn and to receive an endwise movement or longitudinal movement, the turning movement of the bar effecting the denominational positioning of certain of said tabulating devices and the longitudinal movement of said bar effecting the release of said carriage.

84. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices operative to arrest the carriage at different denominational positions, a single manually operated bar mounted to turn and to receive an endwise movement or longitudinal movement, the turning movement of the bar effecting the denominational positioning of certain of said tabulating devices and the longitudinal movement of said bar effecting the release of said carriage, and means for restoring the parts to normal position after a tabulating operation has been effected.

85. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices, a manually operated bar mounted to turn and to receive a straight line longitudinal or endwise movement, and means for preventing said bar from turning when it has received an endwise movement.

86. In a typewriting machine and tabulating mechanism, the combination of a carriage; carriage releasing devices; tabulating devices; a brake; and a manually operated bar for controlling said tabulating devices, carriage releasing devices and brake, said manually operated bar having a turning and an endwise or longitudinal movement, the turning movement of the bar effecting a positioning of certain of said tabulating devices, and a longitudinal movement of said bar effecting an actuation of said carriage releasing devices and an application of the brake; and means for preventing said manually operated bar from turning after it starts to receive a longitudinal movement.

87. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices, a key lever therefor which is movable in two directions, one being a turning movement and the other a right line movement, and means for preventing the key lever from moving in one direction when it starts to move in the other direction.

88. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices, a key lever therefor which is adapted to receive a pivotal and sliding right line movement, and means for preventing the key lever from moving in one direction when it starts to move in the other direction.

89. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices, a key lever therefor which is adapted to receive a pivotal and a sliding right line movement, and means for preventing the key lever from receiving a pivotal movement when it starts to slide.

90. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices, a pivoted key lever therefor, which is likewise adapted to receive a longitudinal movement, and guides in which said lever is adapted to move, the construction and arrangement being such, that when said lever starts to move in one direction it will be moved into one of said guides and will be prevented from moving in any direction other than that permitted by the guide in which the lever is seated.

91. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating devices, a pivoted key lever therefor, which is likewise adapted to receive an endwise movement, and guides in which said lever is adapted to be seated and to move, the construction and arrangement of the parts being such that when the lever is moved endwise the said lever will be moved into a guide and the lever will be prevented from receiving a pivotal movement but is free to move endwise.

In witness whereof I have hereunto set my hand this 13th day of May 1901.

FRANK J. TANNER.

Witnesses:

ORVILLE A. BENEDICT,

FRED. L. MEDBERY.