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H. H. STEELE.
TYPE WRITING MACHINE.
APPLICATION FILED DEC. 2, 1908.

Patented Oct. 25, 1910.

2 SHEETS—SHEET 1.

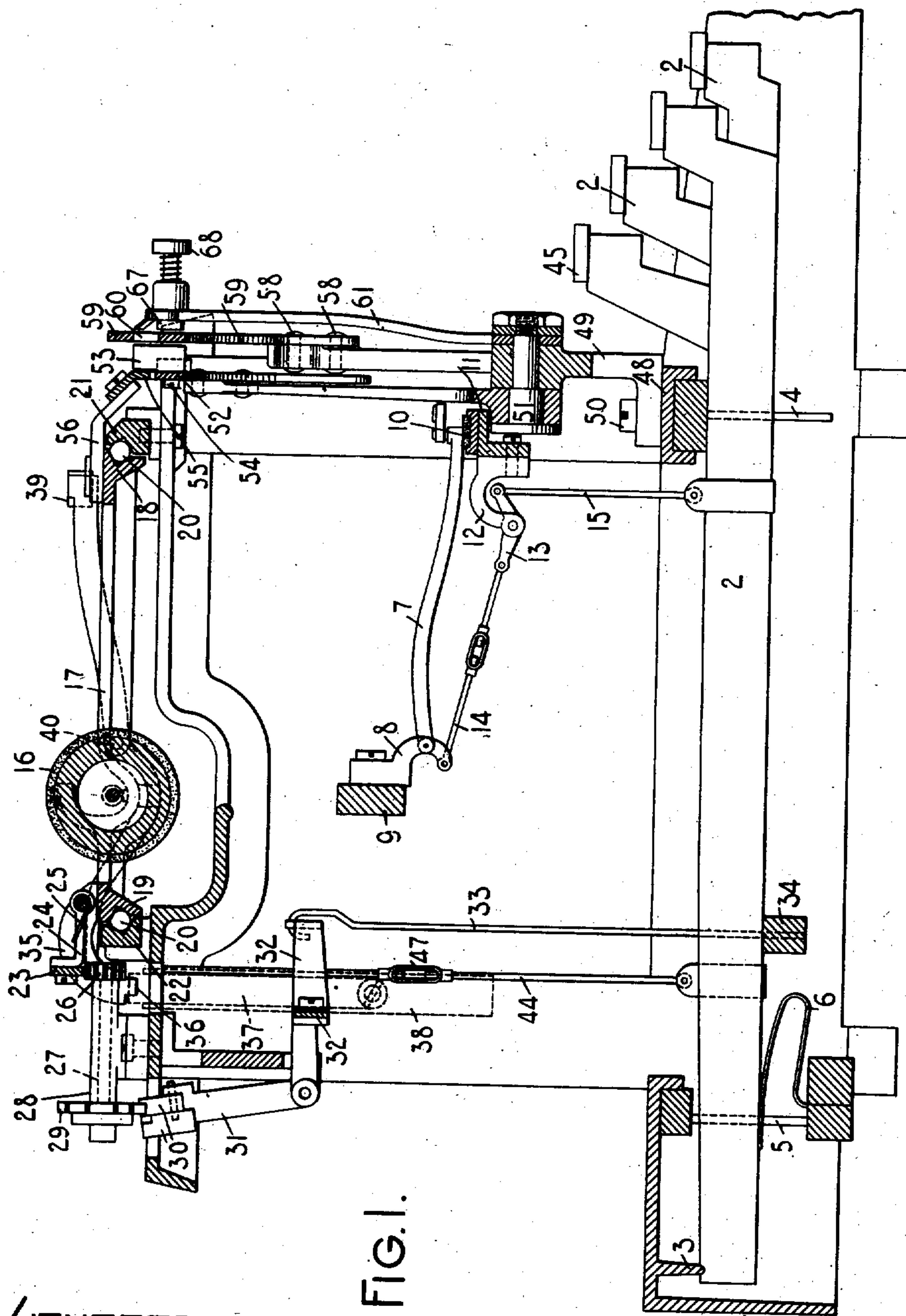


FIG. 1.

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TYPE WRITING MACHINE.
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HERBERT H. STEELE, OF MARCELLUS, NEW YORK, ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

973,988.

Specification of Letters Patent.

Patented Oct. 25, 1910.

Original application filed March 27, 1905, Serial No. 252,216. Divided and this application filed December 2, 1908. Serial No. 465,611.

To all whom it may concern:

Be it known that I, HERBERT H. STEELE, citizen of the United States, and resident of Marcellus, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

Typewriting machines have heretofore been provided with tabulating mechanism that enable the operator to jump the carriage from one column stop to the next succeeding column stop, and where it is necessary to skip over certain columns the carriage must be released and arrested at each intermediate stop, until it finally reaches the predetermined stop and arrests the carriage at the columnar field where the desired entry is to be made. Another form of mechanism enables the operator to skip over any intermediate stops and arrest the carriage at any predetermined columnar position, without being temporarily stopped by the first or any intermediate column stops. Still another form of machine embodies the tabulating mechanism last described and also includes a second independently operable tabulating or denominational stop mechanism, first one mechanism and then the other being operated to cause the desired results. With this last form of machine, which includes both column and denominational-stop mechanisms, to print denominationally at any desired column, it is first necessary to arrest the carriage at the predetermined point by the engagement of the predetermined column stop with a cooperating stop and then to release the carriage a second time to bring the said column stop into engagement with a denominational stop, to arrest the carriage and bring a predetermined point on the paper to the printing position, whereby a series of numbers may be printed in units, tens, hundreds columns, etc., within the same column field.

My present invention has for one of its objects to overcome this objection of successively arresting the carriage, when it is desired to skip over certain intermediate column fields and print denominationally within any predetermined column, by enabling the operator to jump the carriage at one operation or by one movement to any desired

denominational position within any desired columnar field.

Another object of the invention is to provide mechanical means which enable the operator to release the carriage and then arrest it at any predetermined letter space position along the entire line of print by a single movement of the carriage.

Another object is to place the whole tabular mechanism at the front of the machine where it is more convenient than at the rear of the machine.

Another object is to define the columnar positions of the line of print on the index of the column stop sector or disk, by employing a clip or pointer that is movable along the edge thereof.

A still further object is to attach a tabulator guide, index or chart at any desired point along the column stop sector or disk, to define each denominational position of print, within any defined columnar field.

A still further object of my invention is to provide a single mechanism operable to secure the proper arrest of the carriage at any desired denominational position within any desired columnar-field.

Another object of my invention is to provide a tabulating mechanism in which a single actuation of a part is sufficient to determine the proper point of arrest of the carriage at any desired denominational position within any desired columnar-field.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, arrangements of parts and combinations of devices to be more fully described and particularly pointed out in the appended claims.

Figure 1 is a view in vertical section through a visible writing typewriting machine, showing my invention applied thereto; some of the parts being broken away and other parts omitted for the sake of clearness. The section in this view is taken on the line $x-x$ of Fig. 2. Fig. 2 is a fragmentary detail front elevation of the tabulating mechanism. Fig. 3 is a fragmentary rear elevation of the upper portion of the machine to illustrate the manner of releasing the carriage from the escapement mechanism. Fig. 4 is a detail front view of a modified form of tabulating mechanism

showing a single column stop arranged to assume variable positions around the disk; a series of clips or pointers introduced around the edge of the disk to indicate columnar positions along the line of print, and a tabulating chart arranged to denote the denominational positions at the end of the line of print. Fig. 5 is a central vertical section view of the same, the section being taken on the line y, y of Fig. 4. Fig. 6 is a detail plan view of the tabulating chart which in Fig. 4 is shown attached to the disk. Fig. 7 is a detail fragmentary transverse sectional view of the hand-controlled tabulator stop.

The main base frame 1, incloses the usual key levers 2, that may be fulcrumed at 3 and provided with front and rear combs 4 and 5 respectively. A restoring spring 6 co-operates with each key lever and maintains it normally in the elevated position. Each key lever is connected with a type bar 7 that is pivotally mounted within a suitable hanger 8 adjustably secured to the type bar segment 9. The forward end of each type bar normally rests on a pad 10 mounted upon a sector 11 to form a basket for the whole series of bars. The sector also supports a series of segmentally arranged hangers 12 each hanger having a lever 13 pivoted thereto and each lever 13 is connected with the associated type bar through a link 14 and is connected with the associated key lever through a link 15. Each type bar 7 is adapted to swing upwardly and rearwardly and strike a platen 16 at the front thereof so that each character printed may be visible from the front of the machine. The platen 16 is of the cylindrical type mounted upon a shaft that turns in bearings supported in a suitable carriage 17 comprising two end bars, a front bar 18 and a rear bar 19, each of the latter bars being provided with suitable ways to receive anti-friction balls or rollers 20 that engage with similar ways formed in the ordinary carriage rails 21 and 22 that support the carriage above the top plate of the frame and permit said carriage to move freely from side to side of the machine. The carriage is provided with a feed rack 23 that may be attached to pivoted arms 24 pivoted to the carriage and having a spring 25 that may be coiled around the pivots of said arms as shown, to force the rack down and normally maintain the teeth thereof in operative engagement with a feed pinion 26. The shaft 27 of this pinion is mounted in a stationary bearing 28 and an escapement wheel 29 is operatively connected to the shaft in the usual manner and is coöperative with suitable feed dogs 30 that afford the usual step-by-step letter space feed to the paper carriage. The escapement dogs 30 are mounted upon a dog rocker 31 having

a transverse arm 32 that is connected by links 33 to the usual universal bar 34 underlying the key levers 2. The carriage is provided with a rearwardly extending arm 35 that may be provided as shown, with a hook member 36 (Fig. 3) adapted to receive the free end of a suitable tape or band 37 that is connected to the usual spring-drum 38 that moves the carriage in a letter-space feed direction. The usual carriage release key 39 may be pivoted to an end bar of the carriage as at 40 and extends rearwardly to and beneath the end of the feed rack 23, in order to provide means to raise the said rack out of engagement with the pinion 26 when it is desirable to move the carriage freely in either direction. It should be understood, however, that so far as my present invention is concerned it may be applied to various styles of typewriting machines.

While the carriage may be moved freely in either direction by the use of the release lever 39 as just described, for the purposes of my present invention, I prefer to use other means to release the carriage from its step-by-step feed or escapement mechanism when the tabulating mechanism is brought into operation. One way to accomplish this result is shown in Figs. 1 and 3. A lever 41 is pivotally mounted to a suitable bracket 42, made fast to the top plate of the machine, and said lever is provided with a shoe 43 which underlies the feed rack 23, and is situated at the right hand end of the lever adjacent the escapement wheel 29. The outer end of said lever 41 is perforated to receive the end of a wire connection or link 44 that passes downwardly through the top plate and is connected at the lower end to the release key 45 (Fig. 1), which is of the same general shape as the character keys, but is positioned so as to be depressible independently of the universal bar 34. I prefer to make the link 44 in the nature of a two-part link, the two parts being united by a turn buckle 47 in order to obtain proper adjustment between the key 45 and the lever 41.

The base frame 1 is usually formed with a stiffening brace 48 and on this brace, adjacent the center thereof, is mounted an upright bracket 49 that may be removably secured thereto by screws 50. The bracket is provided with an opening in which a short spindle or shaft 51 is received and fixed, forming a stationary axis or spindle for a toothed gear or sector 52 at the rear of said bracket. The shaft 51 likewise extends forwardly from said bracket 49 for purposes presently to appear. The gear 52 is provided with a projecting member, tabulating stop or dog 53 that may be rigidly fixed thereto by screws 54. A toothed rack 55 is adjustably fixed to suitable arms 56 that are fastened to the front bar 18 of the carriage.

The teeth of the rack 55 are always in engagement with the teeth of the gear 52, hence as the carriage is moved in either direction, the gear and its associated dog or
 5 tabulating stop 53 will rotate through a fixed path and will move in unison with the carriage. The rack bar 50 is provided with graduations to indicate letter space positions along the line of print as shown in
 10 Fig. 2, the position of the printing point being indicated by a suitable pointer 57, thus forming a carriage scale and pointer.

To the front face of the bracket 49, is rigidly fixed as with rivets 58 or otherwise,
 15 a sector 59 having a series of radial slots 60 suitably spaced apart to correspond to the different letter space positions of the carriage throughout its travel, and each slot is indexed to correspond with the graduations
 20 on the rack 55. By referring to Fig. 1, it will be seen that the slots 60 are segmentally arranged and correspond to the rotative path of movement of the dog 53, as it moves around its axis 51, under the action of the
 25 carriage. Thus, when the carriage is moved by hand or otherwise, so that the printing point will be at, say, 35, as indicated by the graduation "35" on the bar 55 registering with the pointer 57, the dog or tabulating
 30 stop 53 will be automatically positioned to register with the thirty-fifth slot in the disk 59, indicated by the index numeral "35" on the sector. Similarly, when the carriage has been moved to the extreme right-hand for
 35 the commencement of a line as indicated by the registration of the pointer 57 with the zero graduation on the carriage scale, the dog 53 will have moved along its circular path to register with the zero slot in the
 40 dial.

With the construction thus far described, the carriage has a free movement in either direction when released from the escape-
 45 ment mechanism and the dog 53 will traverse its circular path in either direction corresponding to the distance that the carriage is moved. To arrest the dog or stop 53 at varying positions, by inserting a tabulating
 50 stop or arresting member through the slots 60 to intersect the path of said dog 53, forms a feature of my invention that will be next described.

On the shaft or spindle 51 that projects through the bracket and through the bearing
 55 of the sector 52 is loosely mounted a rigid arm 61 provided with a plunger tabulating stop 67 and a coiled spring surrounds the stem of the stop (see Fig. 7) and bears at one end against the head or finger piece or
 60 key 68 of the stop and at its opposite end against the arm or the casing for the stop, to normally hold the stop away from the sector 59 and out of engagement with the slots 60. The arm 61 shown in Figs. 1 and 2 may
 65 be formed from non-resilient metal and

adapted to rotate on its axis 51 with only sufficient friction to hold it temporarily in any position to which it may be adjusted around its pivot to the proper denomina-
 tional position opposite a slot 60. The key 70 68 is then pressed rearwardly to interpose the stop 67 in the path of the stop 53. The carriage is then released and the carriage at the end of a single run will be arrested at the proper denominational position. 75

In Figs. 4 and 5 I have shown a modified form of the construction in which a disk 59^a is employed in place of the sector 59 previously described. In this modified con-
 struction a gear wheel 52^a is substituted for 80 the sector 52 of the previously described construction but like the sector 52 meshes with the rack 55. Like the sector 52 the wheel 52^a carries a stop 53^a. The parts of the modified construction in many respects 85 correspond to those shown in the previously described construction and when the parts are essentially the same the same reference numerals will be employed to indicate them. The pivoted arm 61^a in the present construction 90 is resilient and carries a finger piece or key 68^a by which the stop 67^a is turned around to the proper position on the disk or dial and by which the stop is projected through the slots 60 against the inherent re- 95 siliency of the spring arm 61^a and into the path of the stop 53^a.

From certain aspects of the invention the construction shown in Figs. 1 and 2 is preferred to that shown in Figs. 4 and 5 since 100 in the latter construction the stop 53^a defines a circular path around its pivot, the stop being capable of turning through about three quarters of a circle and as the graduations around the disk are arranged radially of the 105 axis, it is sometimes more or less difficult to readily read certain of the graduations. In the construction shown in Figs. 1 and 2 the use of the sector 59 overcomes the disad- 110 vantages inherent in the other construction and presents the indices so that they can be readily seen and a proper adjustment of the stop may be more readily effected.

Around the edge of the slotted sector 59 or disk 59^a may be arranged a series of adjust- 115 able clips or pointers 75 indicating the columnar determining positions as shown in Figs. 4 and 5. The first of the indicators shown in Fig. 4 is set at the index 12 on the dial 59^a and indicates that the first column 120 begins at twelve, the second at twenty-three, etc. When the arm 61^a is shifted to register with the first pointer as shown in dotted lines, in Fig. 4, the stop 67^a is in position 125 when forced through the slot 60 to arrest the dog 53^a in such position that the carriage will be arrested at 12 on the carriage scale, or in a position to write within a columnar field beginning at 12.

While the description thus far has been 130

confined to the operation of releasing and arresting the carriage at predetermined points for the purpose of printing within columns, it will be seen that with the arrangement of parts as shown in the drawings, the single movable stop 67 or 67^a may be moved certain letter space distances from any columnar position and thus determine the arrest of the carriage at varying points or denominational positions within the columnar field, and providing thereby means to permit rows of figures being printed in proper denominational order, one beneath the other. In order to facilitate positioning the stop 67 or 67^a for coöperation with the dog 53 or 53^a so as to properly arrest the carriage at the desired denominational position within a selected column field or at the extreme end of the line, I provide a denominational chart or index 76 that may be adjustably attached to the sector 59 or to the disk 59^a as shown at Fig. 4, to indicate the proper positions for setting the arm 61 or 61^a in order that the carriage may be arrested at the proper position to write at the desired denominational position within a columnar field. In the present instance the index 76 is shown set on the dial in advance of a point "70" thereon, said point "70" corresponding to the normal point of arrest of the carriage at the end of a line. When the arm is shifted to the position shown in dotted lines to register with the index mark at sixty-two, the carriage will be arrested at a point to enable the operator to print, say, 10,000.00 in advance of the extreme travel of the carriage at "70." At Fig. 6 is shown a detailed view of this denominational chart, illustrating two overhanging ears 77 that embrace the edge of the slotted sector 59 or the disk 59^a and by which the chart or index may be adjusted around the dial or around the sector.

From the foregoing description of the operation of my invention it will be seen that while the arm 61 (or 61^a) and its associated stop 67 (or 67^a) constitute a column stop to arrest the carriage at the various predetermined columnar positions and at the same time permit the operator to skip over at will one or more intermediate columnar fields, it will also be seen that the arm and stop also constitute a denominational stop and allow the operator to print denominational positioned characters within any columnar-field. It will also be seen that when it is desired to skip over certain intermediate columnar fields and print characters at any desired predetermined denominational positions within any desired predetermined columnar-field, the carriage when arrested by the stop 67 (or 67^a) is arrested at once at the proper denominational position within the proper columnar field, and not as heretofore first at the columnar

position and afterward at the denominational position. This feature of skipping intermediate columnar fields and jumping by a single tabulating operation and by a single movement of the carriage to a denominational position within the proper columnar field without first arresting the carriage by a column stop to define first the columnar field and then the proper denominational positioning within that field is novel with and is an important feature of my invention. To assist the operator in defining the denominational positions when shifting the arms and stops, the chart or index shown in Figs. 4, 5 and 6 may be used to indicate the proper location of any series of digits in order that columns of figures may be printed in proper denominational order to bring units under units, tens under tens, etc.

The position of the different column fields at which the carriage may be arrested is indicated on the tabulator by the pointers 75, the arm 61 (or 61^a) being shifted to register with any of these pointers and is then pushed rearwardly to project the stop 67 through the slot 60 with which it registers as already described and the carriage will be arrested by the coöperation of the stops 67 and 53 or 67^a and 53^a. To print denominationally, the arm is shifted to register with the requisite index on the chart 76 as shown in dotted lines in Fig. 4 to arrest the carriage at the proper position to enable denominational positions of the written characters to be secured. The single stop 67 or 67^a is arranged to intercept the stop or dog 53 or 53^a at any point in its movement, the points where the stops 67 and 53 or 67^a and 53^a may be brought into coöperation corresponding to the seventy letter space movements of the carriage in a complete travel thereof.

While I have described certain mechanism as the embodiment of my invention, it will be understood that the same can be still further modified and still keep within the spirit and scope of my invention and that the invention may be applied to other designs of machines than the one shown in my drawings. Thus, for example, other methods of moving the stop 67 or 67^a to intersect the path of the dog or stop 53 or 53^a may be employed. The term "column stop" as used in the following claims is intended from certain aspects of my invention to designate any stop that determines a columnar position of arrest of the carriage, whereas the term "denominational stop" from certain aspects of my invention is intended to designate any stop that determines the denominational position of arrest of the carriage. The term "combined column and denomination stop" is employed from certain aspects of my invention to designate

any stop that is employed, or is capable of being employed, to determine either the columnar position of arrest or the denominational position or to determine the proper denominational position of arrest within a given columnar field, whereas the term "tabulating stop," whether applied to the stops 67, 67^a 53 or 53^a, is intended to designate broadly a stop for tabulating purposes. Furthermore, other devices may be substituted for the dog 53 or 53^a to arrest the carriage by the coöperation therewith of suitable tabulating devices and the use of the terms "dog" and "rotating dog" or "rotating stop" in the claims is intended to apply to any suitable mechanism that will perform the required function of the part in question.

I believe that I am the first to provide key controlled tabulating mechanism which can be positioned for arresting the carriage at any predetermined denominational position in any predetermined columnar field at one operation; that I am the first to provide a single tabulating mechanism operable for arresting the carriage at any desired denominational position in any desired columnar field; that I am the first to provide tabulating mechanism which by a single operation can be positioned to arrest the carriage at any letter space position in its travel, and that I am the first to provide two coöperating tabulating stops and associated tabulating mechanism for accomplishing any and all of the results pointed out above; that I am the first to provide a single key controlled stop movable to different distances to determine not only the position of arrest of the carriage in any desired columnar position but also the denominational position of arrest and I wish to be understood as claiming all of such features broadly.

From the foregoing description it will be seen that I have provided a simple, cheap and efficient tabulating mechanism which is in the nature of an attachment that can be applied to existing forms of typewriting machines without changing the structural features of said machines; that the tabulator may be applied to the front of the machine where it is easily accessible to the operator, and, nevertheless, does not interfere with the operation of other parts of the machine; that it is unnecessary to detach any of the column stop or other parts of the tabulator in order to effect an adjustment of the parts for tabulating work; that the tabulator may be quickly and accurately operated by a single movement of a single key in one direction to determine the position of arrest of the carriage at any denominational position within any columnar field and that the carriage by a single movement passes to and is arrested in such position.

This application is a division of my application, Serial No. 252,216 filed March 27th, 1905. I have elected to present broad claims herein covering the structures disclosed in both applications, whereas the claims in the original case are restricted to features not shown herein.

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

1. In a typewriting machine and a tabulating mechanism, the combination of a single rotating tabulating stop moving in unison with the carriage, and a second tabulating stop movable to different positions and coöperative with said first mentioned tabulating stop to arrest the carriage at varying columnar positions along the line of print as determined by the position of said second stop.

2. In a typewriting machine and a tabulating mechanism, the combination of a rotating stop member and a coöperating tabulating stop movable to different positions to intercept the path of said rotating stop member at varying positions corresponding to any letter space position in the travel of the carriage as determined by the position of said tabulating stop.

3. In a typewriting machine and a tabulating mechanism, the combination of a single stop movable in unison with the carriage, a slotted member, and a stop coöperative with said first mentioned stop to arrest the carriage at varying columnar positions defined by said member.

4. In a typewriting machine and a tabulating mechanism, the combination of a single tabulating stop movable in unison with the carriage, a stop positioning determining member, and a column-stop movable to different positions and coöperative with said single tabulating stop to arrest the carriage at varying columnar positions along the line of print as determined by the position of said column stop relatively to said stop positioning determining member.

5. In a typewriting machine and a tabulating mechanism, the combination of a rotating tabulating stop movable in unison with the carriage, a stop positioning determining member, and a tabulating stop movable to different positions and coöperative with said rotating stop to arrest the carriage at varying columnar positions as determined by the position of said stop which is movable to different positions as defined by said stop positioning determining member.

6. In a typewriting machine and a tabulating mechanism, the combination of a tabulating stop movable in unison with the carriage, a slotted member that is indexed to correspond with the carriage scale, and a second tabulating stop movable to different positions and coöperative with said first mentioned stop to arrest the carriage at

varying columnar positions that are determined by the position of the stop which is movable to different positions and as defined by said slotted member.

5 7. In a typewriting machine and tabulating mechanism, the combination of a rotating tabulating stop movable with the carriage, and a cooperative pivoted tabulating stop movable to different positions to intercept the path of said first mentioned stop at
10 different positions in the travel thereof, to arrest the carriage at any predetermined letter space point along the line of print as determined by the movement of said pivoted
15 tabulating stop.

8. In a typewriting machine and tabulating mechanism, the combination of a rotating tabulating stop movable in unison with the carriage, and key controlled means movable to any letter space determining position and cooperative with said stop to arrest the carriage at any predetermined letter space point along the line of print as determined by the actuation of said key controlled
20 means.
25

9. In a typewriting machine and tabulating mechanism, the combination of a rotating tabulating stop movable in unison with the carriage, and key controlled means that
30 normally are spring-pressed out of the path of said stop but are movable to different positions in the direction of the travel and into the path of said rotating tabulating stop to intercept the rotating stop at varying
35 points in its travel in order to arrest the carriage at varying columnar positions along the line of print as determined by said key controlled means.

10. In a typewriting machine and tabulating mechanism, the combination of a
40 tabulating stop moving in unison with the carriage, a cooperative tabulating stop normally out of the path of said first mentioned stop, and key actuated means for effecting
45 a movement of one of said stops to any letter space selective position, to arrest the carriage at any latter space point along the line of print as determined by said key controlled means.

11. In a typewriting machine and tabulating mechanism, the combination of a rotating tabulating stop moving in unison with the carriage, and a movable cooperative tabulating stop that normally is spring-
55 pressed out of the path of said rotating stop but is movable in the general direction of the travel of the rotating stop and is adapted to intercept and arrest it and the carriage at any predetermined latter space
60 position along the line of print.

12. In a typewriting machine and tabulating mechanism, the combination of a carriage, a single tabulating stop only movable in unison with the carriage, a single tabulating stop cooperative with said first men-
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tioned stop, and key actuated means for controlling the relation of said stops and for effecting different extents of relative movement between said two stops to set one of said stops in the denominational and column
70 selecting position.

13. In a typewriting machine and tabulating mechanism, the combination of a carriage, a tabulating stop that moves in unison with the carriage, a combined denominational and column selective stop cooperative
75 with said tabulating stop, and key actuated means for controlling the relation between said stops and to afford a skipping of one or more intermediate column fields and to
80 effect an arrest of the carriage after it is released at any desired denominational position within a predetermined column field by the co-action of said stops.

14. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop that moves in unison with the carriage, a cooperative tabulating stop mounted for movement on its support to any letter space determining position, and key
85 actuated means for moving said last mentioned stop to any letter space determining position within the travel of the carriage and to interpose it in the path of the first mentioned stop to intercept it and arrest the
90 carriage at any desired letter space position in the travel thereof and to skip all preceding positions in the travel of the carriage, whereby the carriage may be arrested at any
95 desired denominational position within a predetermined column field.
100

15. In a typewriting machine and tabulating mechanism, the combination of a carriage, a rotating stop that moves in unison with the carriage, an indexed stop positioning
105 determining member, a tabulating stop cooperative with said rotating stop and mounted for movement to different column selecting and denominational selecting positions, and means including key actuated means for
110 controlling said tabulating stop to render the stop operative to skip intermediate column fields and arrest the carriage at any desired denominational position within a predetermined column field.
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16. In a typewriting machine and tabulating mechanism, the combination of a single rotating tabulating stop, carriage releasing mechanism, and a column selective stop cooperative with said first mentioned stop,
120 and key controlled means for controlling the relation between said stops and for moving one of said stops to different column selecting positions to arrest the carriage at varying columnar positions along the line of
125 print as determined by the cooperation of said stops under control of said key controlled means.

17. In a typewriting machine and tabulating mechanism, the combination of a tab-
130

ulating stop, a carriage releasing mechanism, a member having radial slots, a pivoted column selective stop to co-act with said slots and coöperative with said tabulating stop to arrest the carriage at varying columnar positions along the line of print, and hand actuated means for moving said column selective stop into coöperative relation with said tabulating stop.

10 18. In a typewriting machine and tabulating mechanism, the combination of a rotating tabulating stop, a carriage releasing mechanism, and a key actuated pivoted tabulating stop operative under control of its
15 key actuated means to intercept the path of said rotating stop to arrest the carriage at any predetermined letter space position along the line of print.

20 19. In a typewriting machine and tabulating mechanism, the combination of a rotating stop, a carriage releasing mechanism, and key controlled means movable to any letter space determining position and coöperative with said rotating stop to arrest
25 the carriage at will at any predetermined letter space position along the line of print as determined by the actuation of said key controlled means.

30 20. In a typewriting machine and tabulating mechanism, the combination of a rotating tabulating stop, a carriage releasing mechanism, and a key controlled tabulating stop normally out of the path of said rotating stop but movable to intercept said rotating
35 stop at various points in its travel from a given point and to arrest the carriage at any predetermined point along the line of print as determined by the operation of said key controlled tabulating stop.

40 21. In a typewriting machine and tabulating mechanism, the combination of a rotating tabulating stop, a carriage releasing mechanism, and a key controlled pivoted tabulating stop mounted for movement to
45 any letter space determining position around its pivot and for movement to intercept the rotating stop and arrest the carriage at any letter space position along the line of print as determined by the position
50 of said pivoted stop.

55 22. In a typewriting machine and tabulating mechanism, the combination of a tabulating stop, a carriage-releasing mechanism, a combined denominational and column selective stop coöperative with said
60 tabulating stop, and key controlled means for controlling the relation between said combined stop and said tabulating stop to afford a skipping if desired of one or more intermediate column fields and to effect an
65 arrest of the carriage at any desired denominational position within any predetermined column field.

23. In a typewriting machine and tabulating mechanism, the combination of a tabu-

lating stop, a carriage releasing mechanism, a combined denominational and column selective stop that normally is spring pressed out of the path of the tabulating stop, and which is coöperative with said tabulating
70 stop to afford an arrest of the carriage at a single movement thereof at any desired denominational position within any desired column, and key controlled means for controlling the relation of said tabulating and
75 selective stops for the purpose stated.

24. In a typewriting machine and tabulating mechanism, the combination of a tabulating stop moving in unison with the carriage, and a pivoted column stop that is movable
80 denominational distances on either side of the columnar position, and key controlled means for so moving said column stop and for bringing said stop and the tabulating stop into coöperative relation.
85

25. In a typewriting machine and tabulating mechanism, the combination of a stop moving in unison with the carriage, a pivoted tabulating stop, a slotted member for the pivoted stop and relatively to which said
90 pivoted stop may be adjusted, and indicating means to define different columnar positions on the paper, said defining means being carried by said slotted member.

26. In a typewriting machine and tabulating mechanism, the combination of a tabulating stop moving in unison with the carriage, a pivoted combined denominational and column determining stop, a slotted member for said combined stop, adjustable column
95 indicating means, and indicating means to define the denominational positions within a predetermined column field along the line of print, said defining means being carried by the slotted member and
100 registered with certain of the slots therein.

27. In a typewriting machine and tabulating mechanism, the combination of a carriage, a single key, and combined column and denominational selective means including
105 two tabulating stops, one of which is under control of said single key to determine the columnar and denominational position of arrest, whereby said single key is effective to control the relation of the stops to determine
110 the arrest of the released carriage in any desired columnar position and any desired denominational position within the selected columnar field at each actuation of said key.
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120

28. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating stops, a key, and means whereby said key is effective to control the
125 relation of said stops, said key being movable in two directions, one to effect a relative columnar and denominational selective positioning of the stops to determine the position of arrest of the carriage in any desired
130 denominational position within any desired

one of a number of different columnar fields, the other to effect a relative positioning of the stops to bring them into coöperative relation.

29. In a typewriting machine and tabulating mechanism, the combination of a carriage, a single set of stop devices including combined columnar and denominational determining means, a single tabulating key at the front of the machine, and means whereby said single key is effective to control the relation between said single set of stop devices to arrest the carriage at any desired one of a number of different columnar positions and at any desired denominational position within the column.

30. In a typewriting machine, the combination with the paper support and with the printing mechanism, one of said parts being movable with respect to the other in the direction of the line of print, of means for arresting the travel of said movable part, said means embracing two stop members, one of said members being mounted on one of said parts and the other of said members moving in unison with the other of said parts, and key actuated means operable from the front of the machine for variably actuating one of said members to position it to control the columnar and denominational position of arrest, to effect an arrest of said movable part at any desired denominational position in any desired one of a number of different columnar fields at the end of a single run of the carriage.

31. In a typewriting machine and tabulator mechanism, the combination of a carriage, a key controlled combined column and denominational determining stop that is moved to different extents in one direction by said key controlled means to determine both the denominational and columnar position of arrest of the carriage, and means co-operating with said stop to effect an arrest of the carriage in a selected columnar position and in a selected denominational position within the column.

32. In a typewriting machine and tabulating mechanism, the combination of a carriage, tabulating stops, and key actuated means for effecting a relative rotation to different extents between said stops to different columnar and denominational selecting positions to arrest the carriage at any desired one of a number of different columnar fields and at any desired denominational position within the selected columnar field at the end of a single run of the carriage.

33. In a tabulating machine and tabulating mechanism, the combination of a carriage, tabulating stops, key controlled means for effecting a column determining relative

movement between said stops in order to arrest the carriage in any desired one of a number of different columns and for effecting a denominational determining relative movement between these same stops to select any desired denominational position within the selected columnar field, so that the desired columnar and denominational position can be attained at the end of a single run of the carriage.

34. In a typewriting machine and tabulating mechanism, the combination of a carriage, coöperating tabulating stops, a perforated indicator, and means for moving one of said stops through said perforated indicator at different points thereon and into a position where it is in coöperative relation with another of said tabulating stops.

35. In a typewriting machine and tabulating mechanism, the combination of a carriage, coöperating tabulating stops, an indicator having a series of indexed perforations therein, and means for moving one of said stops through any of the perforations in said indicator and into coöperative relation with another of said stops.

36. In a typewriting machine and tabulating mechanism, the combination with a carriage, of tabulating mechanism including a combined denominational and column selective stop, and key controlled means for rendering said stop effective to select any desired one of a number of different columns and any denominational position within the selected column.

37. In a typewriting machine and tabulating mechanism, the combination with a carriage, of a tabulating stop, a second key controlled pivoted selecting tabulating stop movable around its pivot to different selective positions corresponding to the letter space positions in the travel of the carriage, and means whereby an actuation of said selecting stop is effective to bring the stops into coöperative relation.

38. In a typewriting machine and tabulating mechanism, the combination of a carriage, carriage releasing means, a single key at the front of the machine, selective means mounted for movement to different positions under control of said single key for arresting the released carriage at any selectable letter space position by an actuation of said single key.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 30th day of November A. D. 1908.

HERBERT H. STEELE.

Witnesses:

GEORGE L. COLING,
MARIE K. UNDERDOWN.