

No. 807,893.

PATENTED DEC. 19, 1905.

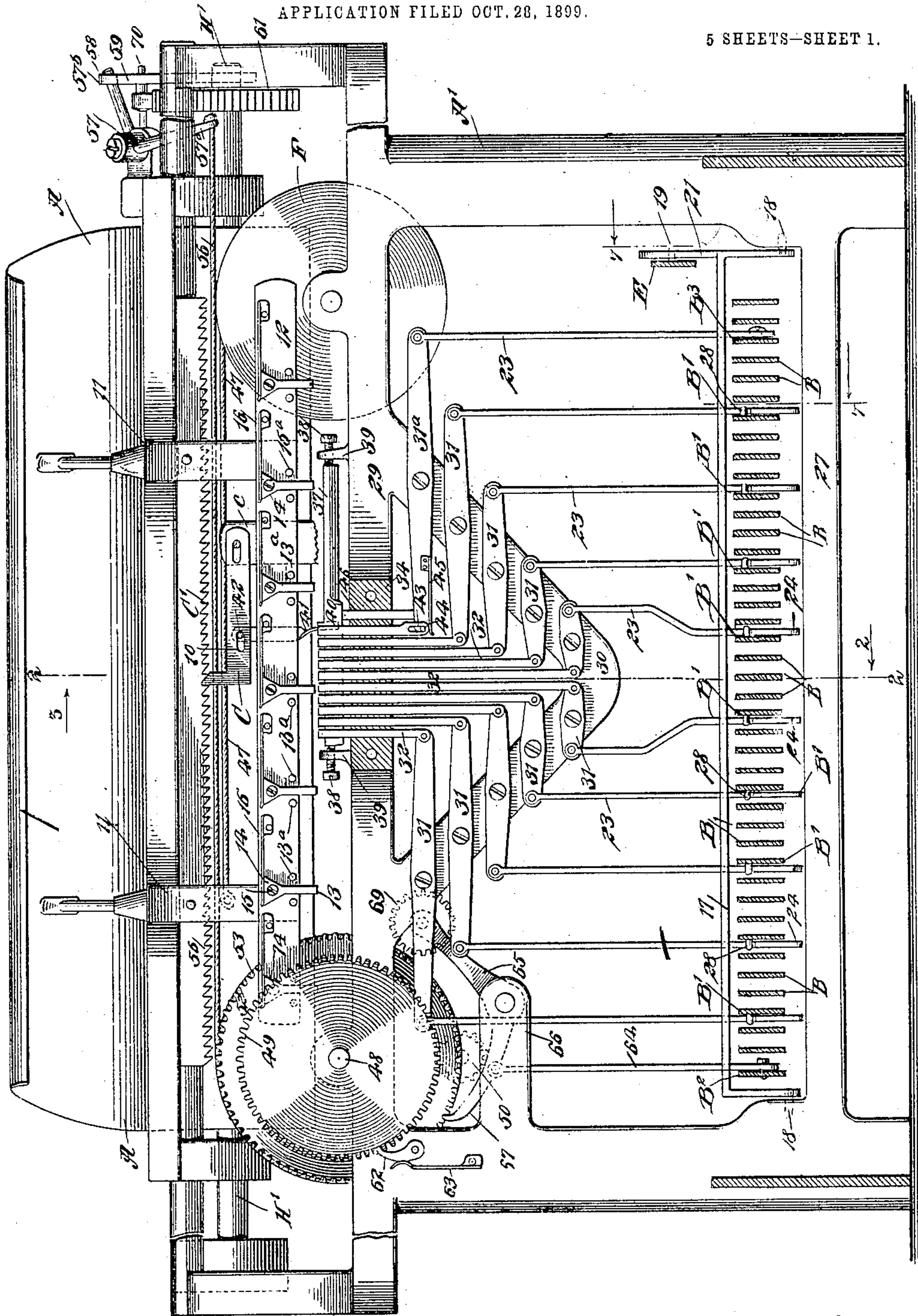
J. C. WOLFE & E. W. MORTON.

TABULATING ATTACHMENT FOR TYPE WRITERS.

APPLICATION FILED OCT. 28, 1899.

5 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

Geo. W. Naylor  
*[Signature]*

INVENTORS  
Jacob C. Wolfe  
By Edwin W. Morton  
*[Signature]*  
ATTORNEYS

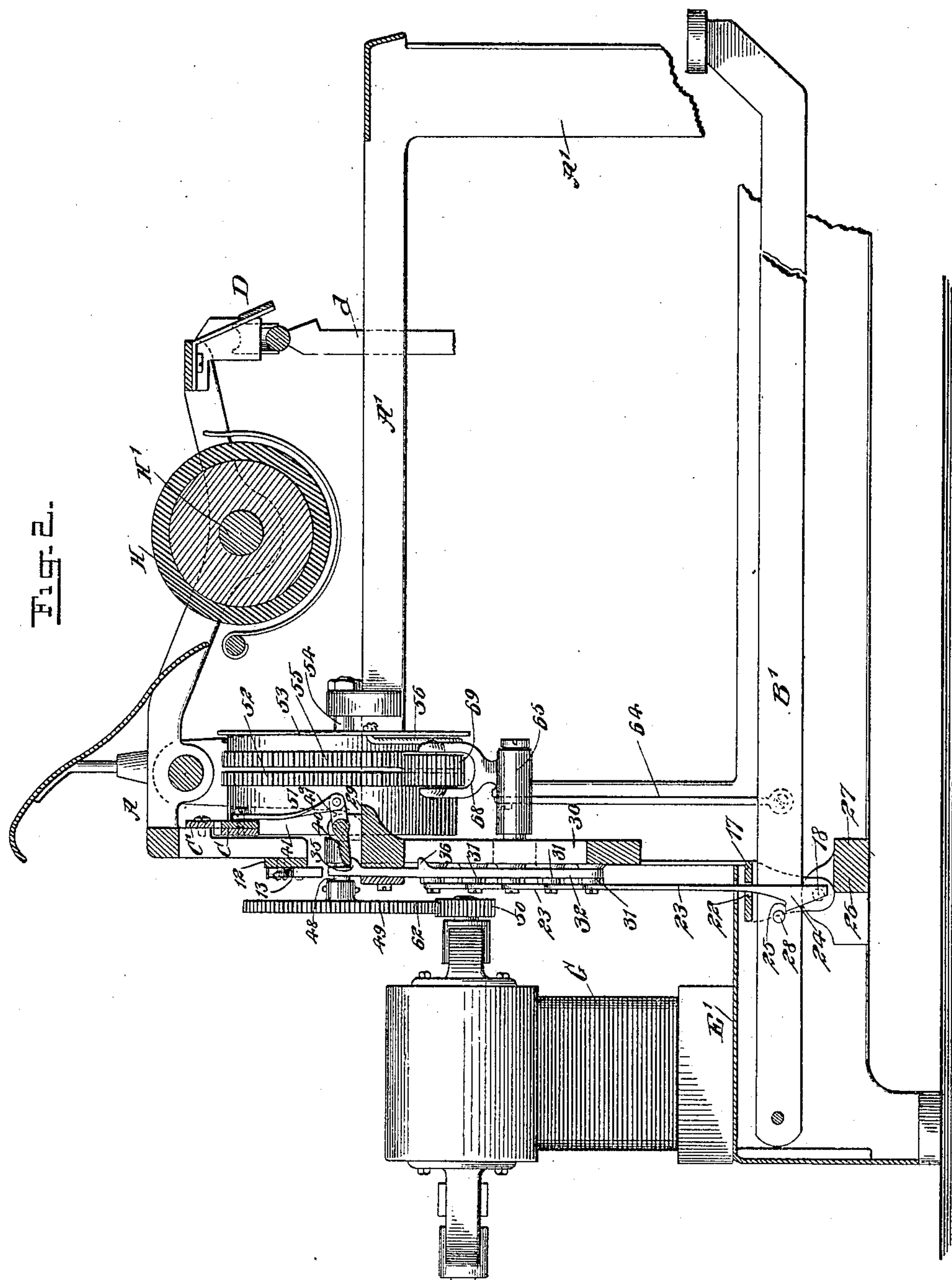
No. 807,893.

PATENTED DEC. 19, 1905.

J. C. WOLFE & E. W. MORTON.  
TABULATING ATTACHMENT FOR TYPE WRITERS.

APPLICATION FILED OCT. 28, 1899.

5 SHEETS—SHEET 2.



WITNESSES:

*Geo. W. Taylor*  
*Ed. O. K.*

INVENTORS

*Jacob C. Wolfe*  
*Edwin W. Morton*  
*M. W. M.*  
ATTORNEYS



No. 807,893.

PATENTED DEC. 19, 1905.

J. C. WOLFE & E. W. MORTON.  
TABULATING ATTACHMENT FOR TYPE WRITERS.

APPLICATION FILED OCT. 28, 1899.

5 SHEETS—SHEET 3.

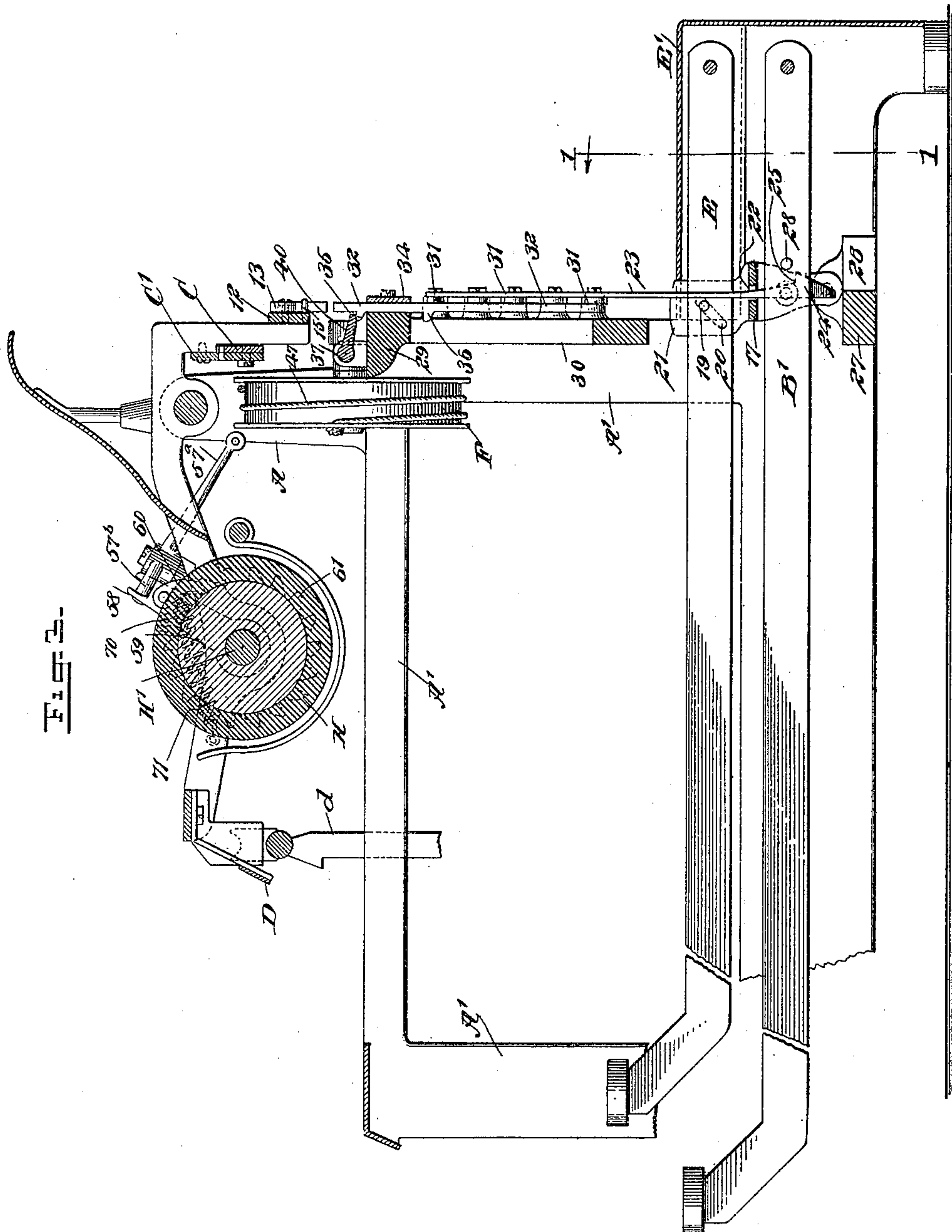


Fig. 3.

WITNESSES:

Geo. W. Taylor  
J. E. Oakes

INVENTORS  
Jacob C. Wolfe  
BY Edwin W. Morton  
ATTORNEYS

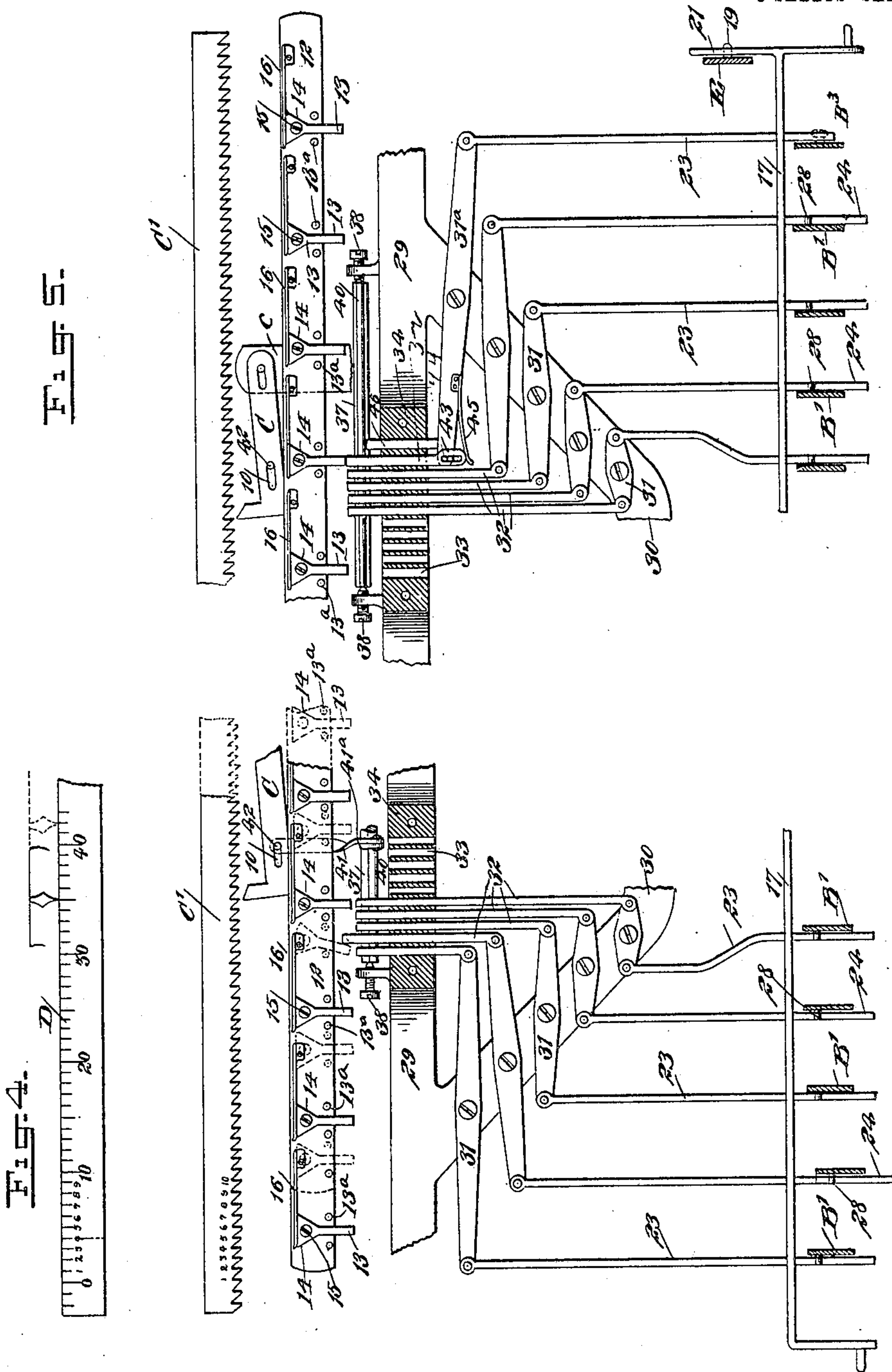
No. 807,893.

PATENTED DEC. 19, 1905.

J. C. WOLFE & E. W. MORTON.  
TABULATING ATTACHMENT FOR TYPE WRITERS.

APPLICATION FILED OCT. 28, 1899.

5 SHEETS—SHEET 4.



WITNESSES:

Geo. W. Maylor  
Fred. C. Ken

INVENTORS  
Jacob C. Wolfe  
BY Edwin W. Morton  
Mumford  
ATTORNEYS

No. 807,893.

PATENTED DEC. 19, 1905.

J. C. WOLFE & E. W. MORTON.

TABULATING ATTACHMENT FOR TYPE WRITERS.

APPLICATION FILED OCT. 28, 1899.

5 SHEETS—SHEET 5.

Fig. 6.

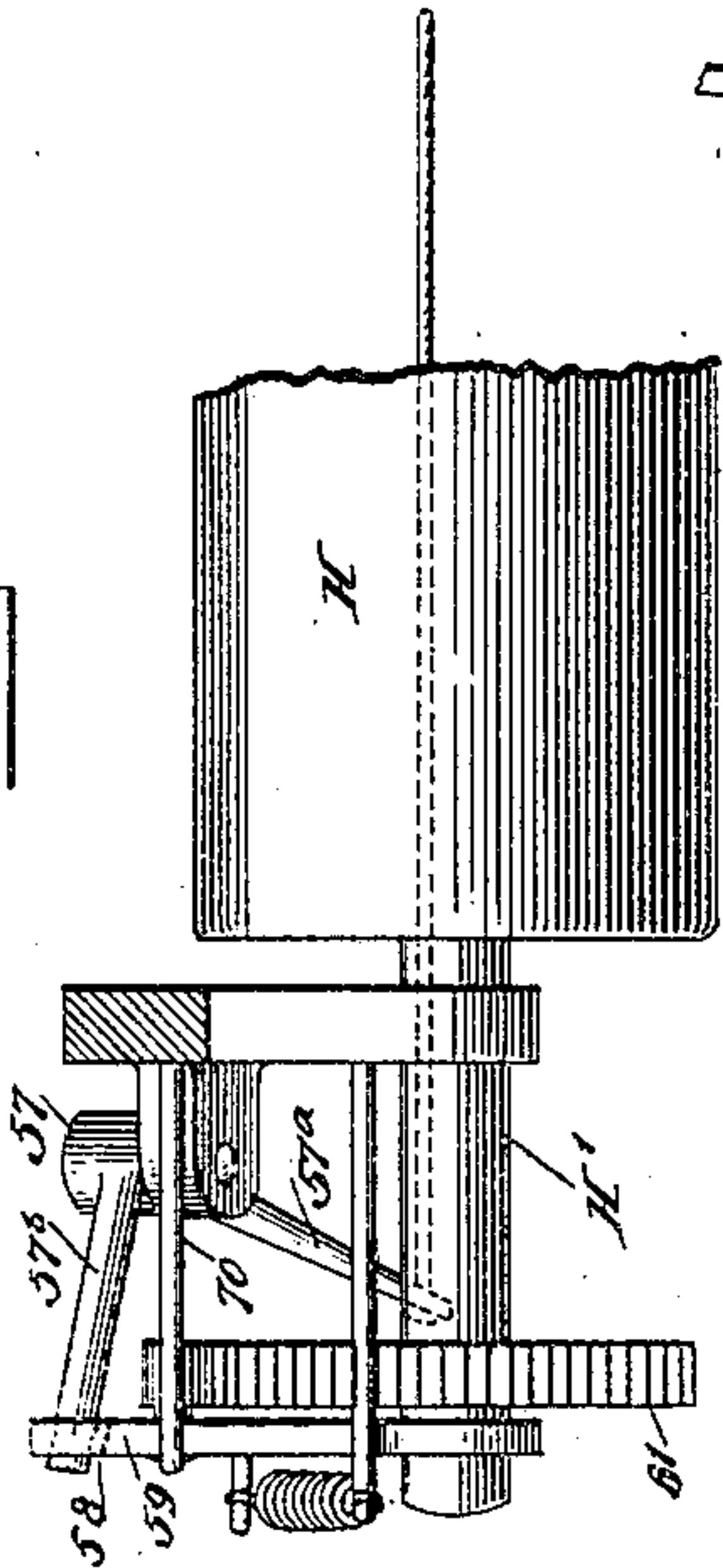
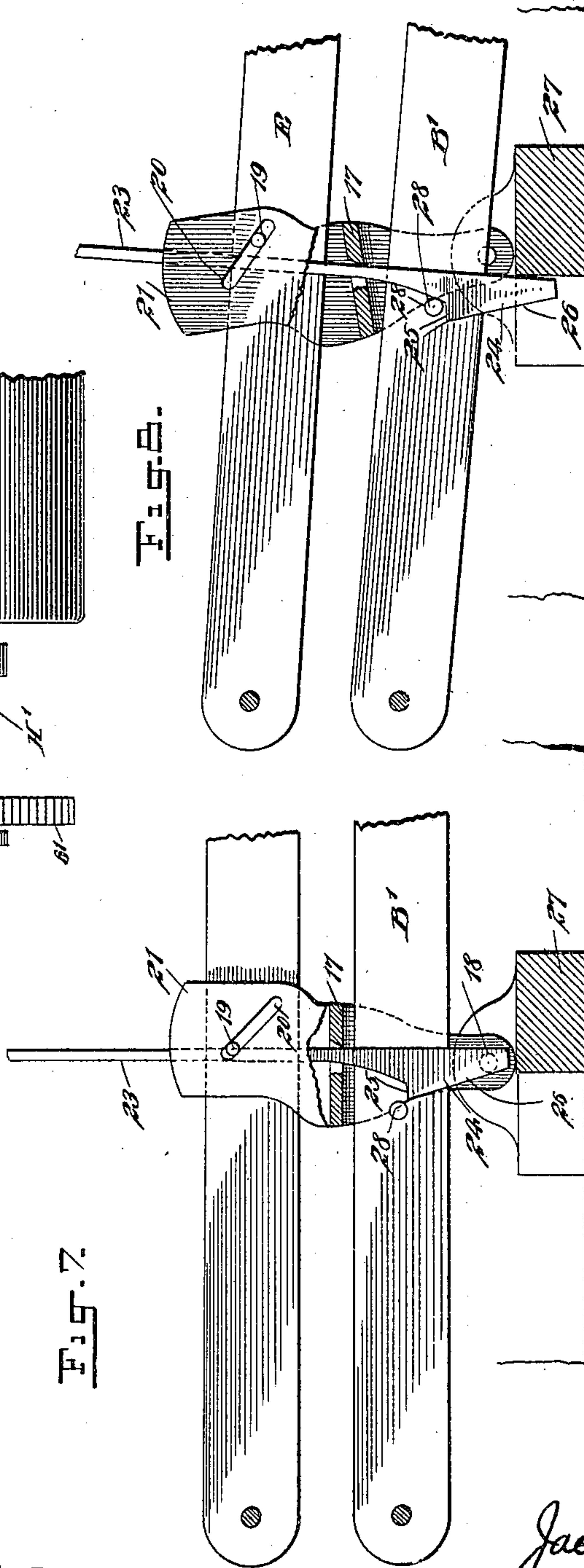


Fig. 7.



WITNESSES:

Geo. W. Taylor  
J. H. K. K.

INVENTORS

Jacob C. Wolfe  
BY Edmund W. Morton  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

JACOB C. WOLFE, OF NEW YORK, AND EDWIN W. MORTON, OF WHITE-PLAINS, NEW YORK; SAID MORTON ASSIGNOR OF FORTY-FIVE ONE-HUNDREDTHS OF HIS RIGHT TO SAID WOLFE.

## TABULATING ATTACHMENT FOR TYPE-WRITERS.

No. 807,893.

Specification of Letters Patent.

Patented Dec. 19, 1905.

Application filed October 28, 1899. Serial No. 735,066.

*To all whom it may concern:*

Be it known that we, JACOB C. WOLFE, of the city of New York, borough of Manhattan, in the county of New York, and EDWIN W. MORTON, of Whiteplains, in the county of Westchester, State of New York, citizens of the United States, have invented a new and Improved Tabulating Attachment for Type-Writers, of which the following is a full, clear, and exact description.

Our invention relates to a tabulating attachment for type-writing machines; and the object of the invention is to provide a simple and readily-operated mechanism whereby the carriage may be instantly moved from any fraction of a division on a scale to a fraction of another division on said scale, either up or down the scale, and whereby the carriage may be moved the distance of a full division of the scale at one manipulation of a key, or whereby the carriage may be made to move its full length, if necessary.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a rear elevation of a type-writing machine and a vertical section through the key-levers, the section being taken on the line 1 1 of Fig. 3. Fig. 2 is a transverse section on the line 2 2 of Fig. 1 looking in direction of the left-hand side of the machine as indicated by the arrow 2 in Fig. 1. Fig. 3 is a similar section to that illustrated in Fig. 2, but looking toward the right-hand end of the machine as indicated by the arrow 3 in Fig. 1. Fig. 4 is a detached rear side view of a portion of the spacing device, some parts being shown in section, the said view illustrating the operation of the device when the carriage is moved a fraction of a division on a scale. Fig. 5 is a view similar to Fig. 4, illustrating, however, the operation of the device when the carriage is to be moved the distance of a complete division. Fig. 6 is a detail view of one end of the paper-supporting roll and reversing mechanism at one end of the shaft of the said roll. Fig. 7 is a detail sectional view taken substantially on the line 7 7 of Fig. 1,

illustrating the operative mechanism of the tabulating device in inactive or normal position; and Fig. 8 is a view similar to Fig. 7, illustrating the said mechanism of the tabulating or spacing devices in active or working position.

The improved device is attachable to any machine. The machine to which it is shown attached is the Remington type, being provided with the usual carriage A, mounted on a supporting-frame A', and the said carriage is provided with the usual rack C' and an escapement C, adapted for engagement with the rack and for movement therefrom, as shown in Fig. 1, which escapement has sliding and pivotal movement on a suitable pivot-post c, carried by the frame. The scale D is mounted in the carriage in the usual way, and the carriage has guided movement and support at its front upon a suitable guide-bar d, as illustrated in Figs. 2 and 3.

B represents the letter-keys of the typewriter, and B' the numeral-keys, and these keys are shown mounted in a rear box extension E' from the base of the machine, as is illustrated in Figs. 2 and 3.

The escapement C is provided with a slot 10 near the end, which engages with the rack C' for a purpose to be hereinafter described, and hangers 11 extend downward from the rear of the carriage A to a point below the rack C' and escapement C, as shown in Fig. 1, and said hangers support a horizontal bar 12, as is also shown in Fig. 1. A series of stop-pins 13 is located upon the outer face of the said bar 12, and these stops are usually seven in number, as is shown also in Fig. 1. Each stop is provided with an angular head 14, straight at the top, the body portion of each stop-pin being in the form of a shank, and each stop-pin is pivoted at its head portion to the bar 12 by means of a screw 15 or its equivalent. Springs 16, horizontally attached to the bar 12, supported from the carriage, extend over and in engagement with the upper surfaces of the stop-pins, holding the shank or body portions of said pins about centrally between two limiting-lugs 13<sup>a</sup>, and the distance between the said limiting-lugs 13<sup>a</sup> belonging to a stop-pin is about double the width of the shank portion of a pin, as shown also in Fig. 1. These stop-pins are adapted to act in conjunction with a shifting



and spacing mechanism, to be hereinafter described. The object of pivoting the stop-pins 13 and providing them with limiting-lugs 13<sup>a</sup> is to provide lateral movement to the stop, so that the carriage will pause at the same point relative to the scale when moving toward the right as it will when moving toward the left, the lateral movement being sufficient to compensate for the combined width of the stop and a spacing-bar 32, to be described later on.

A yoke 17 is located near the rear of the key-levers, the horizontal portion of the yoke extending over all the keys, while the ends extend downward and are pivoted by suitable lugs 18 to the right and left hand side portions of the frame. A shifting-key E is located at the left-hand side of the keyboard above the regular keys, and the said shifting-key E is provided with an outwardly-extending pin 19, which pin enters the diagonal slot 20, produced in an upward extension 21 from the shifting yoke-bar 17, as shown in Figs. 3 and 7 and in Fig. 8. When the shifting-key E is depressed, the shifting frame or yoke 17 is carried rearward, occupying the position shown in Fig. 8, the normal position of the shifting frame or yoke 17 being shown in Fig. 7.

A shifting-bar 23 is provided for each of the numeral-keys, and each shifting-bar 23 passes down through an opening 22 in the shifting frame or yoke 17. Each shifting-bar is provided with a head 24 at its lower end so shaped as to form an upper shoulder 25 and an inclined surface 26 adjacent to the said shoulder, as shown in Figs. 7 and 8. The lower portion of the head of a shifting-bar 23 when the said bar is lowered engages with the rear face of a guide-bar 27, and by this means the heads of the shifting-bars are not only guided, but their forward motion is regulated.

The shifting-bars 23 normally occupy the upper position shown in Fig. 7 slightly forward of pins 28, which are located on the numeral-key levers B', and when the shifting-key E is pressed the shifting-bars 23 are carried rearward, as shown in Fig. 8, in such manner that the pins 28 on the numeral-keys will be immediately above the shoulders 25 on the heads of the shifting-bars. Thus when a numeral-key is pressed downward it will carry the corresponding shifting-bar 23 downward with it, and as soon as the shifting-key E is relieved from pressure the shifting bar or frame 17 returns to its normal position, provided the numeral-key is released, and the shifting-bars 23 likewise assume their normal position slightly forward and out of range of the pins on the numeral-keys, as shown in Fig. 7.

A longitudinal brace-bar 29 forms a portion of the frame at its upper rear portion, as shown in Fig. 1, and the said bar 29 is provided with

a central downward extension 30, preferably in the form of a V, as illustrated in Fig. 1. A series of levers 31 is pivoted on the extension 30 of the bar 29 of the frame, and these levers correspond in number to the number of shifting-bars 23. The said levers are graduated in length, the lower ones being the shortest and the upper ones the longest. These levers are graduated in length in order to accommodate the varying distance of the bars 32 from the key-levers B'. The outer end of each lever is pivotally connected with a shifting-bar 23, while the opposite end of each lever is connected with a spacing-bar 32, and these bars 32 are grouped one alongside of the other, having guided movement in slideways 33, produced in a yoke 34, formed centrally upon the outer surface of the rear longitudinal bar 29, as shown in Figs. 4 and 5. When the numeral-keys are in their normal position and the shifting frame 17 is in its normal position, the upper ends of all of the spacing-bars 32 are in the same horizontal plane and the said spacing-bars remain inactive.

As shown in Figs. 2 and 3, each of the spacing-bars is provided with two lugs 35 and 36 upon its front face, one of which lugs (the lug 35) is near the upper end of a spacing-bar. The lower lugs 36 limit the upward movement of the spacing-bars 32 by being brought in engagement with the bottom surface of the yoke extension 34 of the longitudinal frame-bar 29, and the upper lug 35 of each of the spacing-bars 32 is adapted to operate a trip device when a spacing-bar is elevated and release the escapement C from the rack C'. This trip device consists, preferably, of a shaft 37, located above the central portion of the longitudinal frame-bar 29, as shown in Fig. 1, the ends of the said shaft being centered, preferably, and pivoted by screws 38, adjustably passed through lugs 39, carried by the said frame-bar 29, and the shaft 37 is provided with a longitudinal fin 40, which fin is engaged by the upper lugs 35 of the spacing-bars, as shown in Fig. 3, so that when a spacing-bar is raised by moving the numeral-key downward, the said key being coupled with the spacing-bar, the fin of the shaft 37 will be raised and the said shaft rocked, thus drawing downward upon a link 41, pivoted to a crank-arm 41<sup>a</sup> on the rock-shaft 37, as shown in Figs. 2 and 4, the upper end of the said link being provided with a pin 42, which is mounted to slide in the slot 10 of the escapement, as shown in Fig. 1. It will be noted that whenever the shifting-key E is actuated the same causes the lower ends of the shifting-bars 23 to be moved into position to be then engaged by the pin 28 on whichever one of the numeral-keys B' is depressed and that this engagement between the pin 28 of a numeral-key lever and the locking-point on the lower end of the shifting-bar 23 will prevent such key-lever B' from being depressed to its full stroke by



reason of the spacing-bar 23 being connected, through levers 31, with the gage or spacing bars 32, which are each provided with a lug or stop 36. The engagement of each with the under side of the fixed part 29 will thus limit the movement of such numeral-key lever. In this way any one of the numeral-key levers may be prevented from actuating its type to print. On the other hand, when a numeral-key lever B' is actuated at a time when the shifting-key E is not depressed then such numeral-key lever can be given its full stroke and the printing be done. When the carriage is to be moved a given distance and no impression is to be made, the numeral-key lever operated is prevented from printing by reason of the stop 36 on the spacing-bars engaging with the frame-bar 29, which action will so limit the movement of the type that the latter will not touch the paper although the carriage is moved the required distance. It is evident that the said result is accomplished, for if the movement of the bar 32 is limited the key-levers being rigidly connected thereto for the time being must necessarily be limited in stroke thereby. It will be understood that when the parts are in their normal position the machine is in condition for printing. Therefore when the machine is to be moved and no impression made under the conditions stated the machine is restored to its normal position when the stop 36 is released from the frame-bar 29, which is accomplished by releasing the numeral-key just operated upon.

The connection between all of the spacing-bars 32 and their levers is the same, with the exception of the connection between the spacing-bar and lever designed to move the carriage ten spaces or one division at each action, which is operated by a key-lever, (designated as B<sup>3</sup>), which is an auxiliary lever and not designed for printing. The actuating-lever is designated as 31<sup>a</sup>, is shown best in Figs. 1 and 5, and is provided with a pin 44 at its inner end, which enters and is mounted to slide in a slot 43, made at the lower end of the spacing-bar belonging to said actuating-lever, which bar is at all times in connection with the auxiliary lever B<sup>3</sup>. A spring 45, attached to the lower portion of the lever 31<sup>a</sup>, has bearing against the bottom portion of the spacing-bar. Thus it will be observed that this lever 31<sup>a</sup> will have a limited upward movement without bringing about a corresponding movement of its connected spacing-bar, and this lever 31<sup>a</sup>, which is at the upper left-hand portion of the frame, is provided with an auxiliary spacing-bar 46, located parallel with yet at the left-hand side of the main spacing-bar 32, and when the lever 31<sup>a</sup> is raised by pressing downward upon a zero-key this auxiliary spacing-bar 46 will carry upward the fin 40 of the rock-shaft 37 and release the escapement C from the rack C', leaving the carriage at liberty to move. The carriage is

controlled in the usual way—namely, through the medium of a spring-drum F, to which one end of a cord 47 is attached, the cord being wound around the drum and carried to an engagement with the carriage at or near its right-hand end, as is also shown in Fig. 1. Thus it will be observed that the key-lever B<sup>3</sup> may be operated at any time to rapidly yet regularly move the carriage.

The center of the pivot-pin 15 of each stop-pin 13 is always in vertical alinement with a degree-mark on the scale D, and the distance between the center of the pivot-pins of two adjacent stop-pins corresponds exactly to the distance between ten points or degree-marks on the scale, and the teeth on the rack C' correspond in number and in location to the degree-marks on the scale, as illustrated in Fig. 4. In any position in which the carriage may be a stop-pin 13 will be immediately over one of the spacing or gage bars 32, and the longitudinal center of each spacing or gage bar 32 is in vertical alinement with a degree-mark on the scale, and consequently the longitudinal center of a gage or spacing bar will be in vertical alinement with the center of the pivot-pin belonging to the stop-pin 13, that may be over the said spacing or gage bar. In Fig. 4 the dotted lines illustrate the position of the carriage-and-stop mechanism after the numeral-key has been depressed and the carriage has been skipped and just before the key has been released.

In the operation of the attachment, if the pointer, for example, indicates "35" on the scale, as shown in positive lines in Fig. 4, and it is desired to have the carriage move to "42," by pressing down the zero-key the auxiliary gage or spacing bar, through the medium of the shaft 37, will disengage the escapement C from the rack C', and the gage or spacing bar 32, carried by the lever 31<sup>a</sup>, connected with the zero-key, will extend upward in the path of the next following stop-pin, and the carriage will move five spaces, at which time the stop-pin will be engaged by the elevated gage or spacing bar 32, and upon releasing the numeral-key pressed the escapement returns immediately to locking engagement with the rack, and the elevated gage or spacing bar will drop downward to its normal position, and the stop-pin just engaged by the said spacing-bar will be immediately over gage or spacing bar which had been in action. The carriage will then have moved so as to bring the pointer to "40" on the scale, and by again pressing the shifting-key E and then pressing the numeral-key 2 the spacing or gage bar connected with that key will be raised and the carriage released, and when the next following stop-pin engages with the elevated gage or spacing bar the carriage will have moved two points, and the pointer will be opposite the degree-mark indicating "42" on the scale, as shown in dotted lines in Fig. 4. Whenever



a stop-pin 13 is brought immediately over the gage or spacing bar connected with the zero-key, and by means of which the carriage is moved to the extent of a full space of ten points at each manipulation of the key, the gage-bar connected with the said zero-key will be pressed downward against the tension of the spring 45, as shown in Fig. 5; but the carriage may be again moved ten points by again pressing down the zero-key, as the auxiliary gage or spacing bar 46 will act while its mating gage-bar is rendered inactive. Thus it will be observed that the carriage may be moved at any time ten points on the scale or any number of points within the range of ten.

It is frequently necessary to have the carriage travel backward, so as to commence a new line at any point in the scale. To that end a mechanism is employed for the purpose, operated by the auxiliary key B<sup>2</sup> at the right-hand end of the mechanism. This mechanism consists of a gear 49, which is attached to a shaft 48, mounted to revolve at the rear right-hand portion of the frame of the machine, and on the same shaft 48 at its forward end a drum 51 is mounted, the spring of which drum is connected to the periphery of said drum and to the shaft, and the drum 51 is provided with peripheral teeth 52. Adjacent to the drum 51 a second drum 53 is mounted upon an independent shaft 54, and the second drum 53 is provided with peripheral teeth 55, which are quite close to the teeth of the drum 51, as shown in Fig. 2. A cord 56 is attached to the drum 53 and is partially wound thereon, the cord being carried in an opposite direction to the ordinary tension-cord 47 for the carriage, and the said cord 56 is attached to an arm 57<sup>a</sup> of an angle-lever 57, mounted to turn on suitable bearings located at the left-hand end of the machine, and the opposite member 57<sup>b</sup> of the angle-lever 57 is made to enter a crotch 58 in an arm 59, mounted to turn on the shaft H' of a platen-roller H, as is shown in Figs. 3 and 6. The arm 59 is provided with a dog 60, and this dog is arranged for engagement with ratchet-teeth on a wheel secured to the shaft H'. The spring in the drum 51 may be wound up at any time by causing a pinion 50 to mesh with the gear 49, the pinion being located on a motor G of any description. The spring of the auxiliary drum is much stronger than that of the usual drum F.

A pawl 62 (see Fig. 1) is normally held in engagement with the ratchet-wheel 49, this pawl being pressed by a spring 63, and a link 64 is connected with the auxiliary key B<sup>2</sup>. The said link is likewise connected with an arm 67 of an elbow-lever 65, fulcrumed upon a projection 56 from the frame, the other arm 68 of the elbow-lever being bifurcated, and at its forked portion a pinion 69 is mounted to revolve, of sufficient width to mesh with both sets of teeth 52 and 55 of the drums 51

and 53, so that motion may be communicated from the main drum to the auxiliary pinion-drum 53, and the member 67 of the elbow-lever 65 acts in the capacity of a pawl, being in engagement with the teeth of the drum 51 when the pinion 69 is carried out of engagement with its teeth.

If the carriage is to be reversed its full length of travel, the auxiliary key B<sup>2</sup> only is depressed. When, however, the carriage is to be reversed to a given point in its travel, the shifting-key E is depressed, connecting the numeral-key levers with the stop mechanism, and when the proper numeral-key lever B' is depressed the gage-bar operated by said key will be brought into action to limit the movement of the carriage. If it be desired to move the carriage through the medium of the auxiliary spring-drum, it is then necessary to bring into action the shifting-key E, the numeral-key B', and the auxiliary key B<sup>2</sup>. When the shifting-key E is depressed, connecting the numeral-key levers with the stop mechanism, the spring of the drum 51 is free to act, and through the medium of the pinion 69 said drum will communicate movement to the winding-drum 51, and the said drum through the medium of the cord 56 will draw upon an elbow-lever 57 and cause the carriage to slide to the right, and at the same time the paper-carrying roller is turned, presenting another line. At the return or rearward movement of the carriage the escapement C slips over the teeth of the rack as said teeth point in direction of the forward travel of the carriage. The carriage may be moved back by hand in the usual way either to its full extent or to any point determined by a stop 13. The movement of the elbow-lever 57 is limited in one direction by bringing its arm 57<sup>b</sup> in engagement with a stop 70, and a spring 71 serves to return the arm 59 to its normal position after the arm has been operated by the action of the elbow-lever 57, which action serves to turn the paper-supporting roller H in a manner to change the line. If it be desired to move the carriage backward a certain number of points, the rearward movement of the carriage is controlled in the same manner as in the forward movement of the carriage, except that the gage or spacing bars 32 will strike the right-hand faces of the stop-pins 13 instead of their left-hand faces. The pivoted stops are placed in the same vertical plane as the gage members in order to get the same lateral movement on one side as the other and so that the gage member connected with the lever 31<sup>a</sup> at the left of the machine will rise directly under one of the stops.

It is obvious that the mechanism for operating the attachment in its forward movement is independent of the mechanism employed to operate the carriage in its return movement.



It is here remarked that as soon as the shifting frame is rocked rearward the finger may be removed from the key E as soon as a numeral-key is depressed, as the depressed numeral-key will prevent the shifting frame having the necessary forward motion to restore it to normal position. This is obvious, since when the shifting bars 23 are down they have forward engagement with the base-bar 27 and cannot leave said bar until relieved from the influence of the numeral-keys. It will be understood that the key-levers and shifting frame are returned to their normal position by any well-known tension devices.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A stop device for the carriage of a type-writing machine, and character or printing keys controlling the movement of the said carriage relative to said stop device, and means for temporarily preventing said keys from printing.

2. A pivoted stop device for the carriage of a type-writing machine, and means for limiting the lateral or sidewise movement of the said stop device, character or printing keys, and gage-bars controlled by the said character or printing keys, and adapted to extend in the path of the stop when the carriage is in action.

3. A series of gage members, a carriage, a series of stops mounted thereon, means for limiting the movement of the stops in opposite directions, said stops having sufficient lateral and sidewise movement to cause the carriage to pause at the same point when a certain stop engages with a certain gage member and means for bringing said stops into co-operative action with said gage members.

4. A series of gage members, a carriage, a series of stops having lateral or sidewise movement, mounted on the carriage and having such relation to the gage members that when the carriage is in action it is caused to pause at the same point when a certain stop engages with a certain gage member and means for actuating said gage members.

5. A series of gage members, a carriage, a series of stops, and means for causing a lateral or sidewise coöperation between the said parts, causing the carriage to pause at the same point when a certain stop engages a certain gage member, either at the advance or at the return movement of the carriage.

6. The carriage of a type-writing machine provided with stop devices, and the numeral-keys of the machine connected to operate the stop devices and means for preventing said keys from printing.

7. A carriage for type-writing machines, stops located upon the carriage, gage-bars capable of extending in the path of the stops and arranged to limit the movements of the stops and carriage, and character producing

or printing keys arranged to operate the gage-bars, as set forth.

8. A carriage for a type-writing machine, an escapement for the carriage, a character-printing key-lever, a gage member operated by said lever, a horizontal projection from the gage member, and a trip for the escapement, operated by the projection from the gage member.

9. A carriage for type-writing machines, a series of stops upon the carriage, having points which extend in the same vertical plane as the gage-marks upon the scale of the carriage, numeral-printing keys, a series of gage members operated by the said numeral-printing keys, and a trip device for the escapement of the carriage influenced by the said gage members.

10. A carriage for type-writing machines, a series of pivoted stops upon the carriage, the center of the pivots of the said stops being in the same vertical plane with the gage-marks upon the scale of the carriage, numeral-keys, and a series of gage members operated by the said keys, adapted to be carried into or away from the path of the said stops, a line drawn longitudinally through the gage members being in the same vertical plane with the center of the pivot of a stop when carried over a gage member, as described.

11. A carriage for type-writing machines, a series of pivoted stops upon the carriage, the center of the pivots of the said stops being in the same vertical plane with the gage-marks upon the scale of the carriage, numeral-keys, a series of gage members operated by the said keys, adapted to be carried into or away from the path of the said stops, a line drawn longitudinally through the gage members being in the same vertical plane with the center of the pivot of a stop when carried over a gage member, and a trip device for the escapement of the carriage, operated by the movement of said gage members, as set forth.

12. A carriage for type-writing machines, a series of pivoted stops upon the carriage, numeral or printing keys, and a series of gage members operated by said keys, adapted to be carried into or away from the path of the said stops, a line drawn longitudinally through a gage member being in the same vertical plane with the center of the pivot of a stop carried over the gage member, as described.

13. A carriage for type-writing machines, a series of stops pivoted upon the carriage, pins located at each side of each stop, limiting the lateral or sidewise movement of the same, each stop being provided with a tension device and having a point which extends in the same vertical plane with the gage-marks on the carriage-scale, the distance between the said points of opposing stops corresponding to the distance between the initial and final gage-marks of a division of a scale,



gage members arranged to move in the path of the stops, and a trip for the escapement of the carriage, operated by the gage-bars.

14. A carriage for type-writing machines, 5 a series of stops upon the carriage, having points which stand in the same vertical plane with the gage-marks on the carriage-scale bar, the distance between the said points or opposing stops corresponding to the distance 10 between the initial and final gage-marks of a division of a scale, gage members arranged to move in the path of the stops, a trip for the escapement of the carriage, key-levers, actuating mechanism connected with the gage 15 members, each mechanism including shifting-bars, a projection from the key-levers, adapted for engagement with the said shifting-bars, and a shifting frame arranged to carry the shifting-bars to or from the path of the pro- 20 jections from the said key-levers, as specified.

15. A carriage for type-writing machines, a series of stops pivoted upon the said carriage, the pivot-points of the stops being in vertical alinement with the gage-marks on the 25 scale-bar of the carriage, limiting-pins located at each side of the said stops, tension devices normally holding the stops centrally between the said limiting-pins, gage-bars, key-levers from which the said gage-bars are op- 30 erated, the gage-bars being adapted to be carried into or away from the path of the stops, as the carriage moves, shifting devices for disconnecting the key-levers from the said gage-bars when necessary, and a release for 35 the carriage operated from the said gage-bars, as set forth.

16. A carriage for type-writing machines, a series of stops pivoted upon the carriage, tension devices normally holding the stops in 40 a vertical position, limiting projections located equidistant from the sides of the stops when the stops are in their normal position, a series of gage-bars arranged to have vertical movement to and from the said carriage and to be 45 brought in the path of the stops as the carriage moves, each of the gage-bars being independent of the other, key-levers, lever connections between the key-levers and the gage-bars, and a releasing device for the carriage, 50 arranged to be operated by the movement of either of the gage-bars.

17. A carriage for type-writing machines, a series of stops pivoted upon the carriage, tension devices normally holding the stops in 55 a vertical position, limiting projections located equidistant from the sides of the stops when the stops are in their normal position, a series of gage-bars arranged to have vertical movement to and from the said carriage and to be 60 brought in the path of the stops as the carriage moves, each of the gage-bars being independent of the other, key-levers, lever connections between the key-levers and the gage-bars, a releasing device for the carriage, arranged to 65 be operated by the movement of either of the

gage-bars, and a shifting mechanism arranged to bring any of the gage-bars in position to be operated upon by a key-lever, the said shifting mechanism in its normal position maintaining the said gage-bars from being acted 70 upon by the said levers, as described.

18. In a tabulating attachment for type-writing machines, a carriage, means for moving the said carriage upon a suitable frame, stops pivoted upon the carriage at its rear, the 75 center of the pivot-points of the stops being in vertical alinement with the gage-marks on the scale of the carriage, limiting-pins at each side of each stop and tension devices arranged to normally hold the stops centrally between 80 the limiting-pins, a series of gage-bars grouped together at the central portion of the frame beneath the said stops, each gage-bar being capable of independent movement to and from the path of the stops, the vertical center of 85 each gage-bar when beneath a stop being in vertical alinement with the center of the pivot of the stop, key-levers, actuating-levers connected with the said gage-bars, shifting-bars connected with the said levers, and a key-oper- 90 ated shifting mechanism arranged to bring the shifting-bars in a position to be acted upon by the key-levers or to hold the said shifting-bars out of operative range of the said key-levers, as specified. 95

19. In a tabulating attachment for type-writing machines, the combination, with a carriage, stops pivoted upon the said carriage, limiting-pins located at each side of each stop, tension devices arranged to hold the stops cen- 100 trally between their limiting-pins, an escapement for the carriage, a rock-shaft, and a connection between the rock-shaft and the escapement, of means for actuating the carriage, a series of gage-bars grouped centrally in the 105 frame of the machine beneath the said stops, each gage-bar having independent vertical movement, projections from the gage-bars, adapted for actuating engagement with the rock-shaft, actuating-levers connected with 110 the said gage-bars, key-levers having projections therefrom, shifting-bars pivoted to the actuating-levers, each shifting-bar being provided with a head arranged for engagement with a projection from a key-lever, and a key- 115 operated shifting mechanism controlling the movement of the shifting-bars to and from the projections of the key-levers.

20. In a type-writing machine, a carriage, stops mounted for lateral or sidewise move- 120 ment upon the carriage, a check mechanism arranged to act in conjunction with the stops to limit the movement of the carriage within desired points, and numeral or printing levers arranged for actuating the check mechanism. 125

21. In a type-writing machine, a carriage, a spring-controlled drum in connection with the carriage and adapted to automatically move the carriage to the left, a second drum arranged to move the carriage to the right, 130



the latter drum being of greater power than the former, means for bringing the right-hand drum into action and normally maintaining it out of action, stops mounted upon the carriage, and a check mechanism arranged to limit the movement of the carriage within desired bounds.

22. In a type-writing machine, a carriage, a spring-controlled drum in connection with the carriage, adapted to automatically move the carriage to the left, a second drum arranged to move the carriage to the right, the latter drum being of greater power than the former, means for bringing the right-hand carriage-shifting device into action and for normally maintaining it out of action, and mechanism substantially as described, for turning the paper-roll the distance of the space between lines when the right-hand shifting device is in action, stops mounted upon the carriage, and a check mechanism arranged to limit the movement of the carriage within desired bounds.

23. In a type-writing machine, the combination, with the frame, a carriage mounted upon the frame, and a drum arranged to move the carriage to the left, of a stronger spring-drum connected with the carriage and adapted to move the same to the right, a check for the spring-drum, a key-lever operatively connected with the check, stops mounted upon the carriage, and a check mechanism arranged to limit the movement of the carriage within desired bounds.

24. In a type-writing machine, the combination, with the frame, a carriage mounted upon the frame, and a drum arranged to operate the carriage to the left, of a device for returning the carriage to the right, which device comprises a spring-drum provided with peripheral teeth, and an auxiliary peripherally-toothed drum independent of the main drum, a cord wound around the auxiliary drum and connected with the carriage, an angle-lever mounted upon a fixed support, provided with a pinion at one end adapted to engage with the teeth of both of the said drums, the pinion being normally out of engagement with the said teeth, the said angle-lever having a pawl at its opposite end normally in engagement with the teeth of the spring-drum, and means for operating the said lever, whereby when the pawl is out of engagement with the spring-drum the ratchet-wheel is carried in engagement therewith and also with the auxiliary drum.

25. In a type-writing machine, a carriage, stops on the carriage, having lateral or side-wise movement, checks adapted to extend in the path of the stops, the checks and stops being so arranged that the carriage can be stopped at the same point relative to the scale, and with the same stop, whether moved to the right or to the left and means for actuating said checks.

26. The combination of means for producing or printing characters, a set of character-keys for operating the said means, said characters and the platen or part against which they act to produce or print the respective characters having relative lateral movement, a set of stops arranged at certain intervals along the range of the said relative lateral movement, a set of gage members connected with and operated by certain of said character-keys and adapted to cooperate with any selected stop at will, and means for preventing the production or printing of the character controlled by each of the said gage-controlling keys while actuating or setting its gage, substantially as described.

27. The combination of means for producing or printing characters, a set of character-keys for operating said means, the said characters and the platen or part against which they act to produce or print the respective characters having relative lateral movement, a movable gage connected with and operated by each of the numeral-keys of said set and adapted to cooperate with any selected stop at will, and means for preventing the production or printing of the character controlled by each of said gage-controlling keys while actuating or setting its gage, substantially as described.

28. The combination of means for printing or producing characters, a platen or part against which said means act to produce said characters, said characters and said platen or part having a relative lateral movement, operating-keys for actuating the numeral characters, a gage or positioning device actuated by each of said numeral-keys for positioning said characters and platen or part in their relative lateral movement in accordance with the ordinal value of said numeral-keys respectively, substantially as described.

29. The combination of means for printing or producing characters, a platen or part against which said means act to produce said characters, said characters and said platen or part having a relative lateral movement, operating-keys for actuating the numeral characters, a gage or positioning device actuated by each of said numeral-keys for positioning said characters and platen or part in their relative lateral movement in accordance with the ordinal value of said numeral-keys respectively, and means for preventing the production or printing of the character controlled by each of said gage-controlling keys while actuating or setting its gage, substantially as described.

30. The combination of a type-writing machine provided with operating-keys including the usual numeral-keys, a platen or part against which the printing characters act, said characters and platen or part having a relative lateral movement, a gage or positioning device actuated by each of said numeral-keys for



positioning said characters and platen or part in their relative lateral movement in accordance with the ordinal value of said numeral-keys respectively, substantially as described.

5 31. The combination of a type-writing machine provided with operating-keys including the usual numeral-keys, a platen or part  
10 against which the printing characters act, said characters and platen or part having a relative lateral movement, a gage or positioning device actuated by each of said numeral-keys  
15 for positioning said characters and platen or part in their relative lateral movement in accordance with the ordinal value of said numeral-keys, and means for preventing the production or printing of the character controlled  
20 by each of said gage-controlling keys while actuating or setting its gage, substantially as described.

20 32. The combination of a type-writing machine provided with operating-keys, a platen or part against which the writing characters act, said characters and platen or part having  
25 a relative lateral movement, a set of non-adjustable stops arranged at intervals over the range of said lateral movement, a gage or positioning device actuated by each of said numeral-keys for positioning said characters and  
30 platen or part relative to any selected one of said stops in accordance with the ordinal value of said numeral-keys respectively, substantially as described.

33. The combination of a type-writing machine provided with operating-keys including  
35 the usual numeral-keys, a platen or paper-carriage having an advance lateral movement to effect the printing of a line, and a return lateral movement, one or more stops or positioning devices for stopping said platen or carriage  
40 at a certain point or points in either direction of its traverse, a gage or positioning device actuated by each of said numeral-keys and adapted to cooperate with each and any one of said stops and serving to position said  
45 platen or carriage in its advance movement relatively to the selected stop in accordance with the ordinal value of said numeral-keys respectively, substantially as described.

34. The combination with means for producing or printing characters, a set of character-keys for operating said means, said characters and the platen or part against which they act to produce or print the respective characters having relative lateral movement,  
50 one or more intermediate stops, each one of certain of said character producing or printing keys having a gage controlled thereby and each gage adapted to cooperate with any one of said selected stops, the said gage-controlling character-keys each acting in setting their  
55 respective gages to relatively shift said platen and characters independently of the ordinary shifting of said parts effected in producing or printing and spacing said characters, substantially as described.  
60 65

35. The combination with a type-writing machine provided with type and a platen and means for relatively moving the same for character-spacing, a set of character-keys for actuating said type to print, tabulating mechanism controlling said character-spacing means and rendering it inoperative when said mechanism is actuated, said tabulating mechanism serving to relatively move said type and platen and bring the same to rest at various  
70 different points of their range of relative movement, the said different points of rest being each controlled by a character-key, and means for preventing the character-key from causing its type to print whenever such character-key is actuated to control the spacing,  
75 substantially as and for the purpose set forth.

36. The combination with a type-writing machine provided with type and a platen, a set of character-keys for actuating said type to print, a device for relatively shifting said type and platen for character-spacing and the same controlled by each of said character-keys, tabulating mechanism also connected with and controlling said device for character-spacing and comprising means for effecting a movement of one or more character-spaces, according to the character-key operated, certain of said character-keys being connected with and controlling the tabulating mechanism and each causing the same to produce a different number of character-spaces, substantially as and for the purpose set forth.  
80 85 90 95

37. The combination with a type-writing machine provided with type and a platen and means for relatively moving the same for character-spacing, a variable-spacing tabulating mechanism, a set of character-keys for actuating said type to print and certain keys thereof being adapted to both control the said tabulating mechanism to set the same and to subsequently print its character, substantially as and for the purpose set forth.  
100 105

38. In a type-writing machine, the combination of printing mechanism, a series of keys therefor, tabulating mechanism normally disconnected from said keys, and means for operatively connecting the tabulating mechanism with said keys.  
110 115

39. In a type-writing machine, the combination of printing mechanism, a series of keys for operating said printing mechanism, tabulating mechanism adapted also to be operated by said printing-keys, and means for preventing the printing operation of said keys when they are employed to operate the tabulating mechanism.  
120 125

40. In a type-writing machine, the combination of printing mechanism, a series of keys for actuating said printing mechanism, tabulating mechanism, and means for shifting said tabulating mechanism into and out of operative relation with said printing-keys.  
130 135

41. In a type-writing machine, the combination of a carriage, printing mechanism,  
140



printing-keys for said printing mechanism, tabulating mechanism, means for releasing said carriage, said tabulating and releasing mechanisms being controlled by the printing-keys, the construction and arrangement being such that the printing-keys may be employed either to effect the printing operations or merely to effect the tabulating operations.

42. In a type-writing machine, the combination of printing mechanism, printing-keys therefor, and denominational tabulating mechanism controlled by said printing-keys, the construction and arrangement being such that the printing-keys may be employed either to effect the printing operations or merely to effect the tabulating operations.

43. In a type-writing machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing-keys therefor, and means for arresting the carriage at a predetermined point, said arresting means being controlled by the said printing-keys, the construction and arrangement being such that the printing-keys may be employed to effect the printing operations or may be employed merely for the purpose of causing the arrest of the carriage at predetermined points.

44. In a type-writing machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing-keys therefor, means for releasing the carriage, and means for arresting the carriage at a predetermined point, said releasing and arresting means being controlled by said printing-keys, the construction and arrangement being such that the printing-keys may be employed to effect the printing operations, or may be employed merely for the purpose of releasing the carriage and causing the same to be arrested at predetermined points.

45. In a type-writing machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing-keys therefor, means for arresting the carriage at a predetermined point, said arresting means being controlled by the said printing-keys, and means for rendering said finger-keys ineffective to actuate said arresting means.

46. In a type-writing machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing-keys therefor, means for releasing the carriage, means for arresting the carriage at a predetermined point, said releasing and arresting means being controlled by the said printing-keys, and means for rendering said printing-keys ineffective to actuate said arresting and releasing means.

47. In a type-writing machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing-keys therefor, denominational stops, a column-stop, and means for moving said denominational and column stops one in the path of the other, the

moving means being controlled by the said printing-keys.

48. In a type-writing machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing-keys therefor, denominational stops, a column-stop, means for moving said denominational and column stops one in the path of the other, the moving means being controlled by the said printing-keys, and means for automatically effecting the release of the carriage through an actuation of said printing-keys.

49. In a type-writing machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing-keys therefor, denominational stops, a column-stop, means for projecting said denominational and column stops one in the path of the other, the moving means being controlled by the said printing-keys, means for automatically effecting the release of the carriage through an actuation of said printing-keys, and means for rendering said printing-keys ineffective to actuate the projectable stop or stops and to release the carriage.

50. The combination in a type-writer, of a mechanism arranged beneath the type-writer keys and adapted to be actuated by the said type-writer keys, and an operative connection between the said mechanism and the type-writer carriage to arrest said carriage at a predetermined point and without effecting a printing operation.

51. In a type-writing machine, the combination of a carriage, carriage-feed mechanism, printing mechanism, printing-keys for said mechanism, tabulating mechanism independent of said carriage-feed mechanism, and means for releasing said carriage, said tabulating and releasing mechanisms being controlled by the printing-keys.

52. In a type-writing machine, the combination of printing mechanism, printing-keys therefor, letter-spacing mechanism, and denominational tabulating mechanism independent of the letter-spacing mechanism and controlled by said printing-keys.

53. In a type-writing machine and tabulating mechanism, the combination of a carriage, feed mechanism therefor, printing instrumentalities, printing-keys therefor, and means independent of the carriage-feed mechanism for arresting the carriage at a predetermined point, said arresting means being controlled by said printing-keys.

54. In a type-writing machine and tabulating mechanism, the combination of a carriage, carriage-feed mechanism, printing instrumentalities, printing-keys therefor, means for releasing the carriage, and means independent of the carriage-feed mechanism for arresting the carriage at a predetermined point, said releasing and arresting means being controlled by said printing-keys.



55. The combination with a type-writer, of a tabulator having an adjustable column-stop and mechanism arranged beneath the printing-keys of the type-writer to effect an actua-  
5 tion of the column-stop by a depression of said keys and to arrest the carriage at a predetermined columnar position determined by the adjustment of said tabulating-stop.

56. The combination with the keys and  
10 printing mechanism of a type-writer and a plurality of tabulating-stops for intercepting the movements of the carriage, and connections for operating said stops from the character-keys of the type-writer.

15 57. The combination with a type-writer, of a plurality of tabulating stops and connections for coupling the same to certain of the type-writer character-keys, and means for throwing the carriage-escapement out of ac-

tion when any one of the said stops is rendered operative by a depression of one of the coupled keys. 20

58. The combination with a type-writer of a plurality of carriage-intercepting tabulating stops, stop-actuating connections involving coupling-heads for coupling the said stops  
25 to certain of the keys of the keyboard, and means for simultaneously moving said coupling-heads to and from coupling positions.

JACOB C. WOLFE.

EDWIN W. MORTON.

Witnesses to signature of Jacob C. Wolfe:

JOHN DEVETT,

J. FRED ACKER.

Witnesses to the signature of Edwin W. Morton:

J. FRED ACKER,

F. W. HANAFORD.