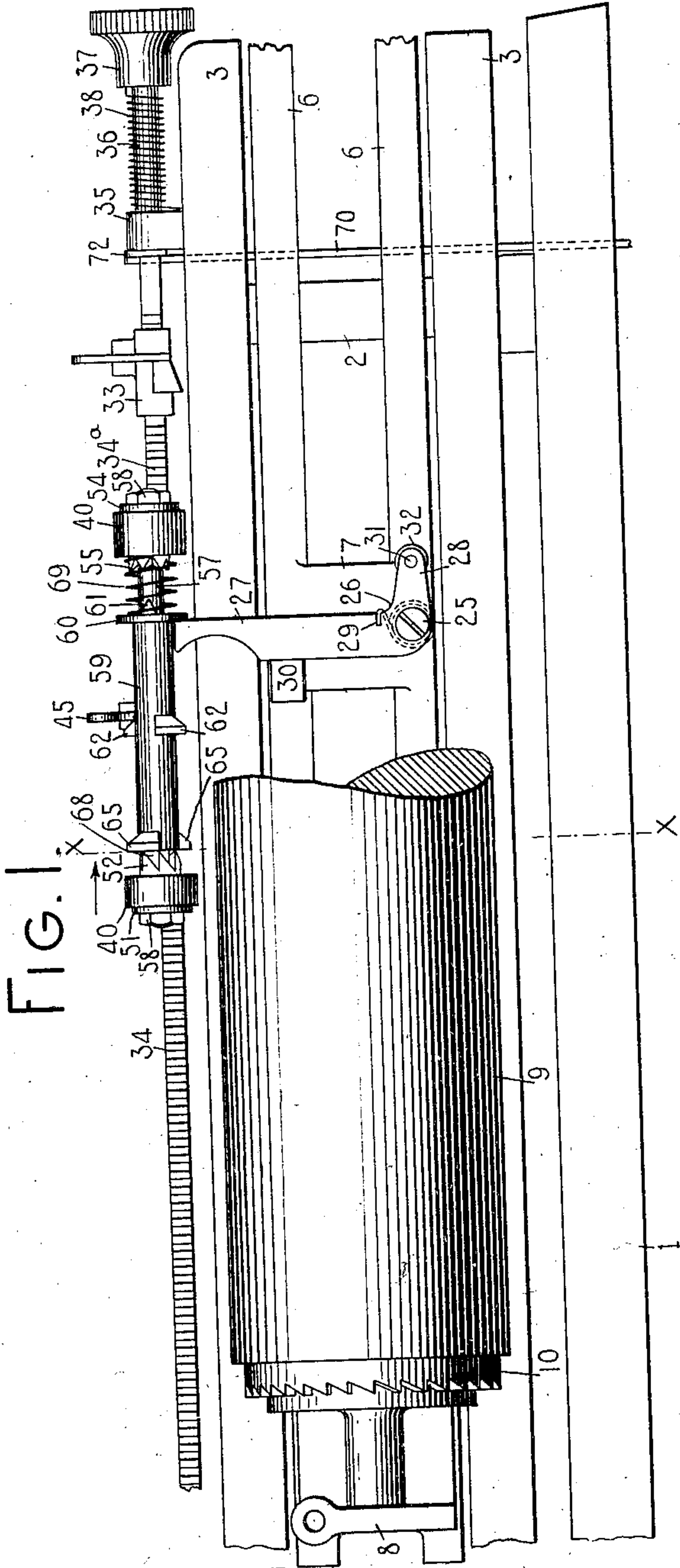


No. 877,608.

PATENTED JAN. 28, 1908.

H. H. STEELE.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 8, 1906.

3 SHEETS—SHEET 1.



WITNESSES:

J. B. Reeves
New Pool.

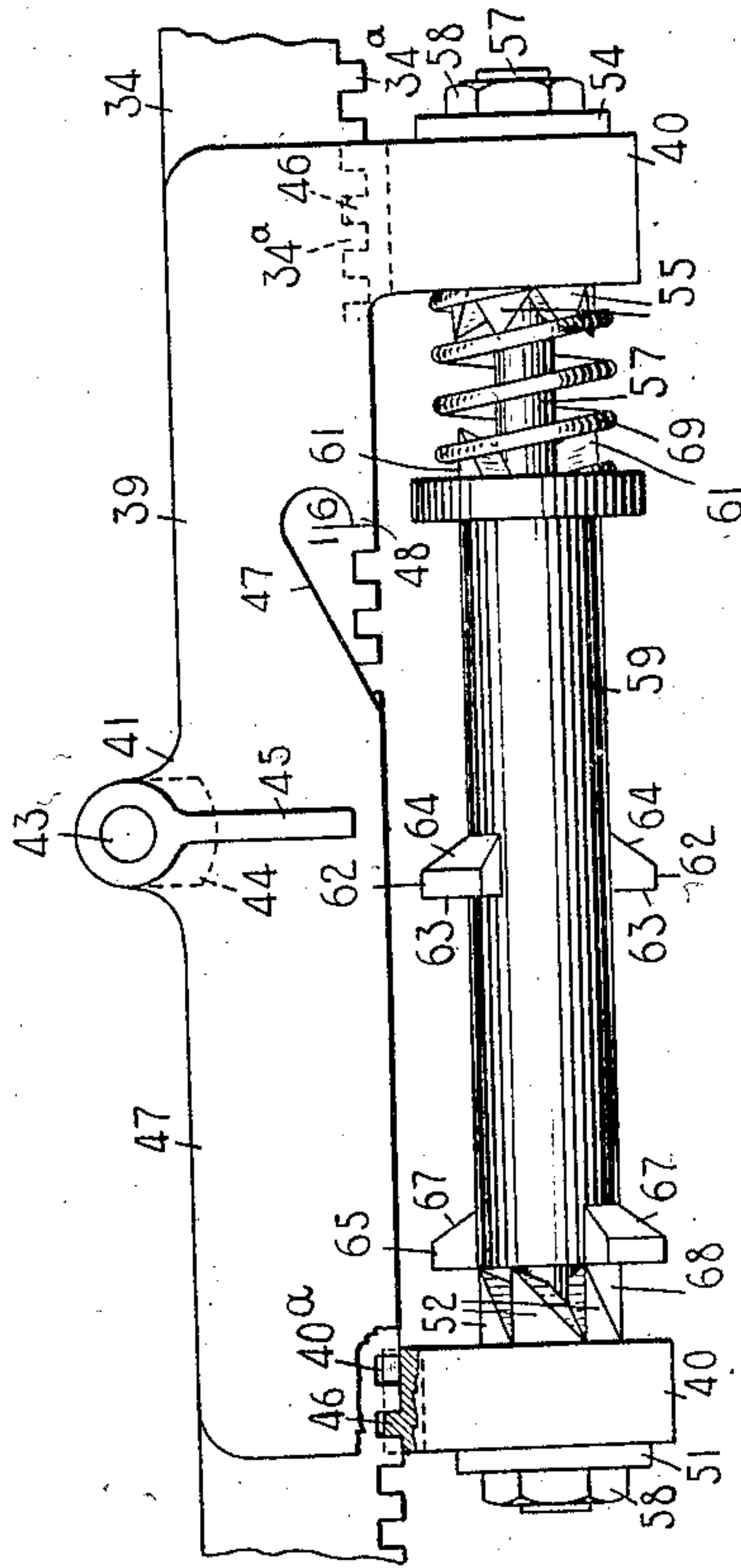


Fig. 2.

INVENTOR:

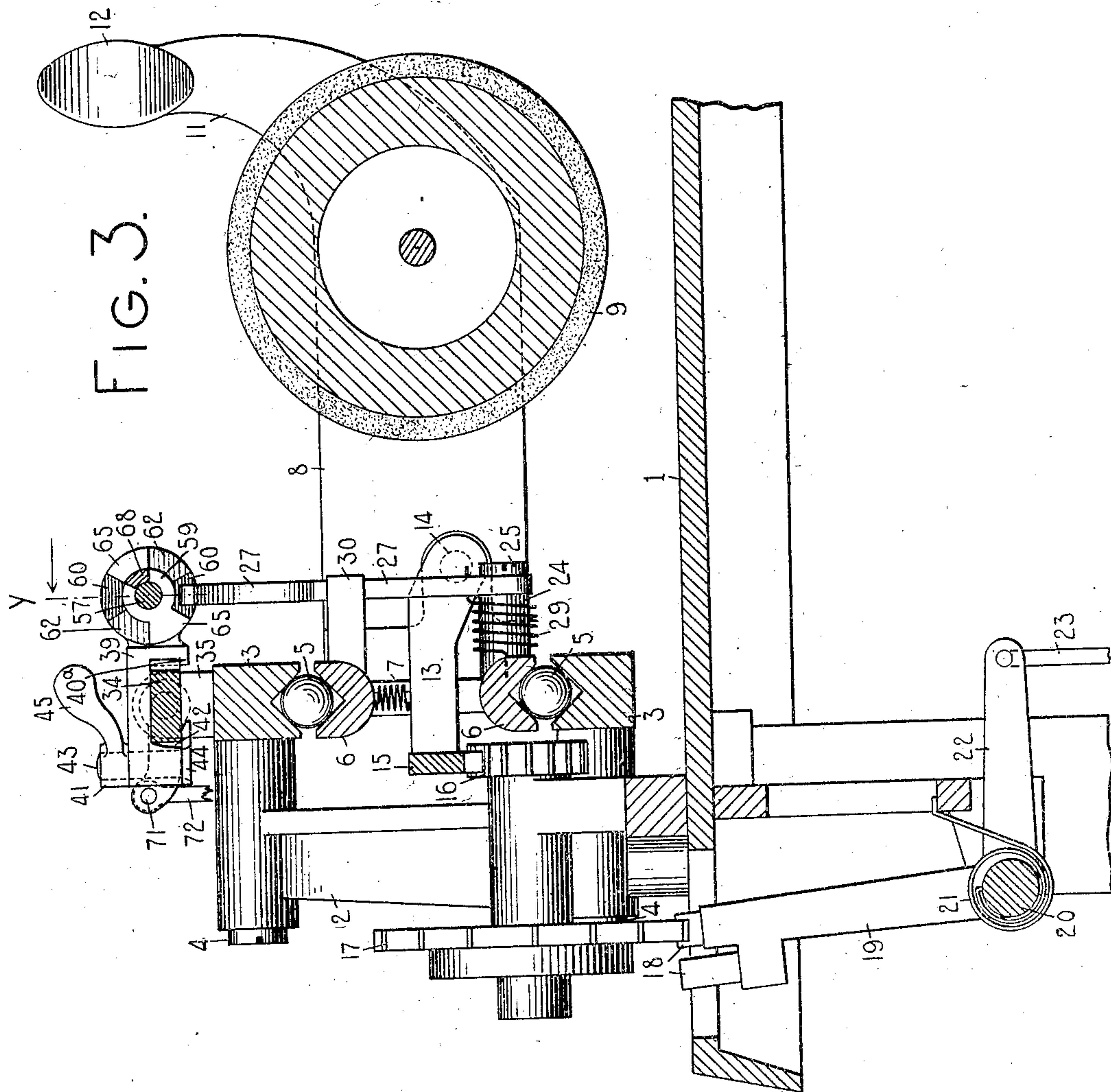
Herbert H. Steele
By Jacob Felbel
HIS ATTORNEY

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WITNESSES:

J. B. Reeves
mwpool

INVENTOR:

Herbert H. Steele
By Jacob Felbel

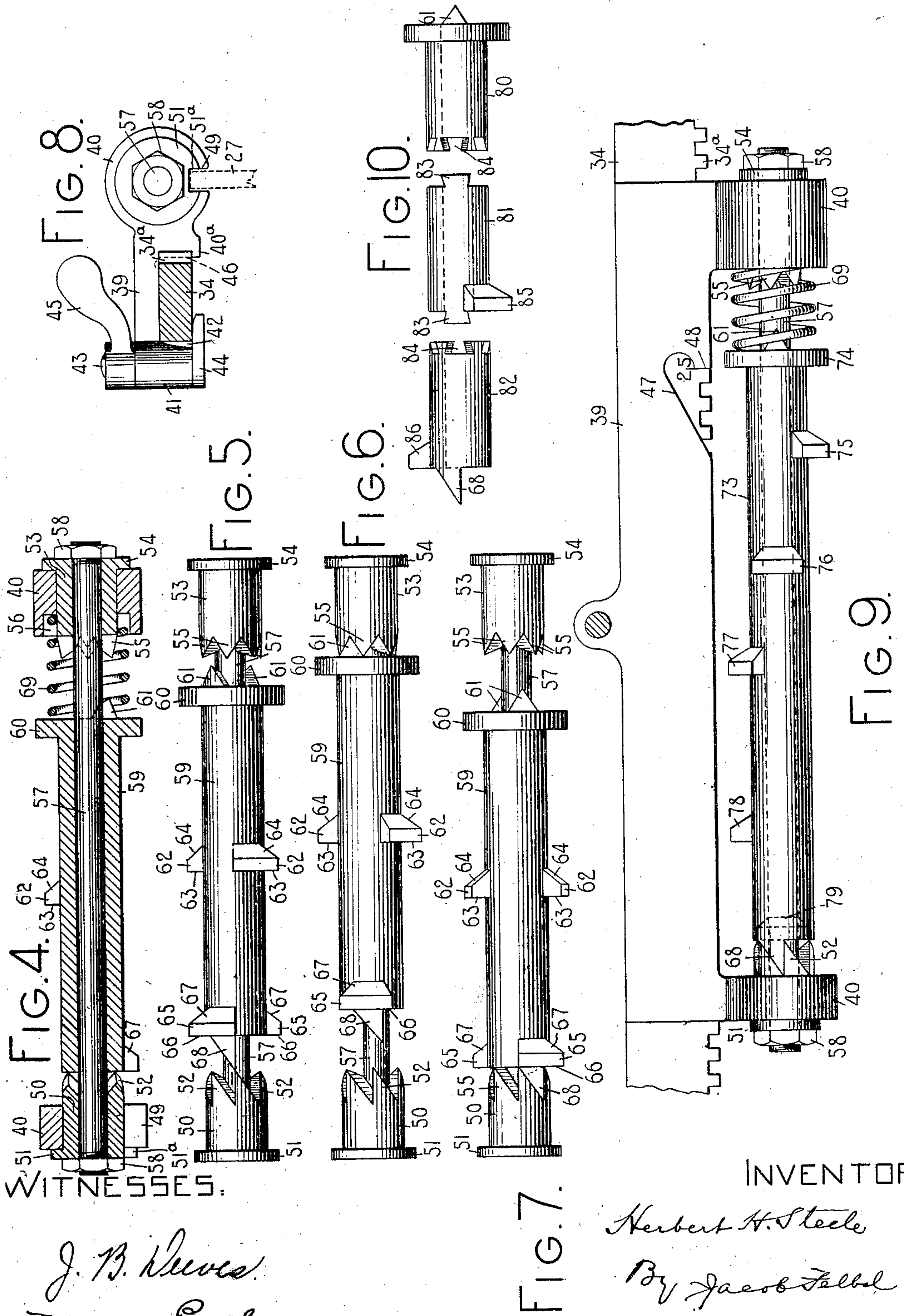
HIS ATTORNEY

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3 SHEETS—SHEET 3.



WITNESSES:

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FIG. 7.

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UNITED STATES PATENT OFFICE.

HERBERT H. STEELE, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE MONARCH TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 877,608.

Specification of Letters Patent.

Patented Jan. 28, 1908.

Application filed March 8, 1906, Serial No. 304,947.

To all whom it may concern:

Be it known that I, HERBERT H. STEELE, a citizen of the United States, and resident of Syracuse, 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.

My invention relates more especially to carriage stops for typewriting machines, the term carriage stops being used in its broad sense as comprehending devices cooperative to arrest the traveling element of a typewriting machine whether such element be the printing element or the work holding element commonly called the platen.

One object of my invention, stated generally, is to provide automatically controlled means for arresting the traveling element or carriage at different points during its travel back and forth, so that lines may be begun at different points on the work sheet. Other objects will subsequently appear.

To the above ends the invention consists in the features of construction, combinations of devices and arrangements of parts hereinafter fully described and particularly pointed out in the claims.

In its broader aspects my invention is adaptable to various styles of what is commonly called tabular work; that is, to work in which the lines of writing do not extend continuously from side to side of the work sheet so that there are blank spaces in the line, or in which successive lines do not begin at the same distance from the margin of the work sheet. In the present application I have shown one form of said invention as embodied in an attachment which may be advantageously employed in directing envelopes, and also a second form adapted to be employed in writing headings of letters or bills. In another application filed March 19th, 1906, Serial No. 306,862, I have shown another form of said invention in combination with a tabulator, so called. Other adaptations will suggest themselves to those skilled in the art.

In actually reducing my invention to concrete form I have applied it to the machine commercially known as the Monarch typewriter and in the drawings I have illustrated a machine generally resembling such typewriter; but the nature of the invention is such that it may be adapted readily to other

forms of writing machines. In carrying out said invention I provide a detachable stop member which may be adjusted at various points on the usual toothed stop bar of the machine, said stop member comprising a reciprocatory spring-pressed sleeve provided with a plurality of contact surfaces stepped circumferentially and longitudinally of said sleeve, said sleeve being cooperative with fixed cams which are adapted to give it rotary motion when it is moved longitudinally by a co-acting carriage stop. The stop member and carriage stop cooperate to arrest the carriage on the return movement of the latter in the form illustrated, so that the stop member serves as a margin regulating device.

In the accompanying drawings, Figure 1 is a fragmentary front elevation of the upper portion of a typewriting machine embodying my invention, parts of the machine not necessary to a complete understanding of said invention being omitted. Fig. 2 is an enlarged top plan view of my novel stop device and a portion of the stop bar on which it is mounted. Fig. 3 is an enlarged sectional view taken on a plane represented by the line $x-x$ in Fig. 1 and looking in the direction of the arrow in said figure. Fig. 4 is a longitudinal sectional view of the stop device, taken on the plane represented by the line y in Fig. 3 and looking in the direction of the arrow in said figure. Fig. 4 is drawn to a scale somewhat larger than is Fig. 3. Figs. 5, 6, and 7 are enlarged front elevations of the stop device showing the movable portion or sleeve thereof in different positions, the support for said stop device being omitted in said figures. Fig. 8 is an enlarged end view of the stop device and showing the support thereof in section. Fig. 9 is an enlarged top plan view of a modified construction of the stop device. Fig. 10 is an enlarged plan view of a modified construction of the movable portion or sleeve of the stop device.

In the drawings the main frame of the machine is shown as comprising a top plate 1 on which are fixed standards 2, said standards supporting fixed guide ways 3 which are secured in place by screws 4. Anti-friction balls 5 cooperate with the guide ways 3 and with oppositely grooved guide rails 6 which are connected by webs 7, said guide rails 6 and webs 7 constituting a slide bar. Side bars 8 project forward horizontally from the

ends of the slide bar and compose with the latter a platen carriage in which is pivotally supported a cylindrical platen 9. One end of the platen is operatively connected with a line spacing ratchet wheel 10 which is operative by a suitable construction of line spacing mechanism. The right-hand side bar 8 is formed at its front with an upwardly projecting portion 11 terminating in a finger piece 12 which is convenient for returning the carriage across the top plate from left to right. Side arms 13, pivoted to the carriage at 14, support a carriage feed rack 15 which normally meshes with a feed pinion 16, the latter being operatively connected with an escapement wheel 17. Feed dogs 18 are mounted at the top of the vertically disposed arm 19 of a dog carrier or rocker 20 which is pivotally mounted on the frame of the machine and is provided with a restoring spring 21. The horizontally disposed arm 22 of the dog carrier is connected by a link 23 with any suitable construction of universal bar mechanism, so that at each operation of one of the printing key levers (not shown) the feed dogs 18 cooperate in a known manner with the escapement wheel 17 to permit the carriage to be drawn a letter space distance leftward across the top plate under the influence of a carriage spring drum (not shown). A lug 24 projects forwardly from the slide bar of the carriage and receives a headed screw 25 which serves as a pivot for an angular lever 26 having an upright arm 27 and a horizontally disposed arm 28, said angular lever constituting a carriage stop. A wire spring 29 is coiled around the lug 24 and cooperates with the carriage stop, acting to maintain the vertical arm 27 in engagement with a stop lug 30 fixed on the slide bar. The horizontal arm 28 of the carriage stop has pivoted to it at 31 a roller 32 which is adapted to cooperate with suitable bell alarm and line-locking mechanism (not shown). The upper portion of the vertical arm 27 is cooperative with line and margin stops suitably mounted on the framework of the machine. The margin stop only is shown herein and is designated by the reference numeral 33. Said margin stop is adjustable along a toothed stop bar 34 which is horizontally disposed above the top guide way 3, extending longitudinally of the platen and being pivotally mounted in lugs 35 integral with said top guide way 3. The right-hand bearing portion 36 of the stop bar 34 projects beyond the supporting lug 35, being provided with a knurled finger piece 37. A coiled restoring spring 38 surrounds the projecting end 36 of the stop bar. The parts above described resemble generally those found in the Monarch machine, and it is not thought necessary to describe them at any greater length.

Referring now to my novel stop device, I preferably provide a yoke-like bracket or

support comprising a body portion 39 extending longitudinally of the stop bar 34 and having at its ends forwardly extending ears or lugs 40. Centrally of the body portion at its rear side is a lug 41 cut away as indicated at 42 (Figs. 3 and 8). Said lug is provided with a vertical perforation which receives a pivot pin 43 and serves as a bearing therefor. Fixed to and projecting horizontally from the lower end of the pivot pin is a locking portion 44 and secured to the upper end of said pivot pin is a finger piece 45, the finger piece, locking portion and pivot pin comprising a rotary latch. The under side of the body portion 39 is cut away to fit over the stop bar 34. The lugs 40 extend down in front of the bar 34 and have rearward flanges 40^a (Fig. 8) that extend back slightly beneath the teeth 34^a of said bar. The stop device is thus held securely in position by these flanges under the forward edge of the bar 34 and the locking piece 44 under the rear edge of said bar. The stop device is formed with one or more teeth 46 which cooperate with the teeth 34^a of the toothed rack bar 34 to prevent the stop device from sliding along said bar. As shown in Fig. 2, the top of the body portion 39 is cut away as indicated at 47 (Fig. 2) to expose the usual indicating marks with which the top of the stop bar 34 is provided, said marks constituting a scale which corresponds with the usual platen scale of the machine (not shown). The left end of the cut-away 47 is shaped to provide a pointer 48 which cooperates with the scale on the stop bar 34. As shown in Figs. 4 and 8, the under side of the left-hand ear 40 is cut away as indicated at 49 to permit of the free passage of the carriage-stop arm 27. Said left-hand ear 40 is formed with an opening into which is driven a sleeve 50 provided with a flange 51 which abuts the outer face of the ear 40, said flange being formed with a cut-away 51^a for the passage of the arm 27. The inner end of the sleeve 50 is formed with a series of saw teeth 52, which project inwardly beyond the inner face of the ear 40 and are beveled on one side only, six of such teeth being shown in the drawings. The right-hand ear 40 is formed with an opening into which is driven a sleeve 53, said sleeve being provided with a flange 54 which abuts the outer face of the right-hand ear. The inner end of the sleeve 53 is formed with a series of teeth 55, projecting inwardly beyond the inner face of the right hand ear 40 and each tooth being beveled on both sides, six of such teeth being shown in the drawings. The inner face of the right-hand ear 40 is counter-bored as indicated at 56 (Fig. 4). The sleeves 50 and 53 are formed with openings which receive a bearing or pivot rod 57, the ends of said rod being threaded to receive binding nuts 58 which are screwed up tight to bind the flanges of

the sleeves 50 and 53 against the faces of the ears which receive them, the pivot rod 57, the sleeves 50 and 53 and the bracket which comprises the ears 40 all being maintained in fixed relation by said binding nuts 58.

Before the rod 57 is mounted in its supports it receives a stop member, which, as here shown, is in the form of an elongated spool or sleeve 59, said sleeve being movable both longitudinally and rotatively upon the bearing rod 57. Near its right-hand end the sleeve 59 is provided with an annular head or flange 60 and outside the flange the body of said sleeve is formed with one or more beveled teeth 61 which are adapted to cooperate with the teeth 55 on the sleeve 53. About midway of its length the sleeve 59 is provided with two oppositely disposed and outwardly extending stops or lugs 62. The left-hand faces 63 of these lugs are plain and serve as stopping or contact faces while the right-hand faces 64 are beveled. In end view each lug 62 appears, as shown in Fig. 3, as comprising a part of a sector of a circle, the circumference of which is equal to and is concentric with the outer circumference of the annular flange 60, the center of said circumference being the axis of the pivot rod 57. As will be understood from a consideration of Fig. 3 and the remainder of the figures from 1 to 7 inclusive, the stops 62 are bounded at their roots by the circumference of the cylindrical sleeve 59.

Near its left-hand end the sleeve 59 is provided with two oppositely disposed stops or lugs 65, said stops being similar in shape and dimensions to the stops 62 and having plain contact faces 66 and beveled faces 67. As plainly appears from an inspection of Fig. 3, the stops 65 are disposed at angles of 60° to the stops 62. Each of the stops 62 and 65 when considered endwise covers one-sixth of the annular face of the flange 60. The shape of these stops 62 and 65 is such, and they are so disposed circumferentially of the sleeve 59, that when the stop member is viewed from the left as in Fig. 3 the only portions of the inner face of annular flange 60 which are exposed correspond both in shape and dimensions to each of the stops 62 and 65, and the exposed portions of said flange 60 are oppositely disposed to each other. At the left of the plain faces 66 of the stops 65 a tooth 68 projects lengthwise from the end of the sleeve 59, said tooth being adapted to cooperate with the teeth 52 of the fixed sleeve 50.

A wire spring 69 is coiled around the rod 57 between the flange 60 and the right-hand lug 40, the outer end of said spring being received in the counterbore 56 in said lug. The spring 69 serves normally to press the sleeve 59 longitudinally leftward along the rod 57, so as to maintain the tooth 68 nor-

mally in engagement with the teeth 52 of the left-hand fixed sleeve 50.

Referring now to the operation of the parts above described and assuming that it is desired to address a number of envelopes, the first envelop is entered in the machine and fed around with the platen in the usual manner. The paper fingers at the front of the platen (not shown) are arranged to properly guide and control said envelop as it is fed upwardly through the machine and the point at which the first letter of the first line of the address is to be written is noted on the usual platen scale (not shown). The improved stop device is then adjusted on the stop bar 34, the pointer 48 of said device being brought to the point of the scale on said stop bar which corresponds with the point selected on the platen scale for beginning the writing. In adjusting the stop device, the teeth 46 are first engaged with the proper openings between the teeth 34^a of the stop bar and then the rear portion of the body 39 of the stop device is pressed down against the stop bar, the cut-away 42 enabling this movement to be readily effected. Thereafter the locking portion 44 of the latch or securing member is swung around under the stop bar 34 by means of the finger piece or handle 45. The parts are so proportioned that the co-action between the locking portion 44 and the under side of the rack bar 34 is sufficient to bind the stop device tightly in place on said bar, and movement of the stop device longitudinally of the stop bar under the shock of co-action with the carriage stop bar 27 is prevented by the cooperation of the teeth 34^a and 46. At the beginning of an operation the sleeve 59 should be in such a position that the stops 62 and 65 are out of the path of the carriage stop arm 27.

The stop device being properly adjusted, let us assume that the various parts are in the relation shown in Figs. 1, 2, 3, and 4, with the spring 69 pressing the tooth 68 into engagement with two of the teeth 52 and with the carriage stop just engaging with the flange 60 of the sleeve 59. It will be noted from an inspection of Fig. 3 that up to this point the movement of the carriage from an indefinite point at the left towards the right has been free and unobstructed, the upright stop arm having passed through the cut-away 51^a in the flange 51, through the cut-away 49 in the left-hand ear 40 and through the space between the two adjacent stops 62 and 65. If now the rightward movement of the carriage be continued from the position illustrated in Fig. 1, the stop arm 27 engaging the flange 60 will overcome the force of the spring 69 and move the sleeve 59 from the position illustrated in the first four figures towards the right. Two of the stages of this rightward movement of the sleeve are

illustrated in Figs. 5 and 6. In Fig. 5 the sleeve is shown as being moved far enough to the right to completely disengage the tooth 68 from the two cooperating teeth 52.

5 From an inspection of this figure it will be noted that the parts are so proportioned and arranged that the disengagement of these teeth has taken place just before the engagement of the teeth 61 at the right of the sleeve

10 with the cooperating fixed teeth 55. Further rightward movement of the sleeve from the position shown in Fig. 5 to that in Fig. 6 will cause the teeth 61 to engage with the fixed teeth 55. These fixed teeth are

15 slightly out of line with the fixed teeth 52 and as the rightward longitudinal movement of the sleeve 59 causes the teeth 61 to cooperate with said teeth 55 a slight forward turning or rotary movement will be

20 communicated to the sleeve, so that when the co-operating teeth 55 and 61 are fully engaged the sleeve will have been turned sufficiently, as illustrated in Fig. 6, to carry the

25 point of the tooth 68 forwardly past the point of the tooth 52 with the straight side of which it had previously cooperated. When the teeth 55 and 61 are fully engaged, as shown in Fig. 6 the sleeve 59 will be arrested and the flange 60 will become fixed for

30 the time being, stopping further rightward movement of the carriage. The spring 69 serves to cushion the sleeve and soften its impact with its support. This stoppage of the carriage will occur at the proper point

35 for beginning the first line of the address on the envelop. Suppose now that the first line of said address be written in the usual manner. As the letters are printed the carriage will be fed step by step from right to

40 left, the arm 27 of the carriage stop moving to the left as the carriage moves. This permits the reciprocatory sleeve 59 to be moved longitudinally leftward by the compressed restoring spring 69. During the first two or

45 three letter space movements of the carriage the flange 60 of said sleeve will be maintained frictionally engaged with the arm 27 under the influence of said restoring spring. As the sleeve moves leftward from the position

50 indicated in Fig. 6 the teeth 61 will separate from the teeth 55 and the tooth 68 will enter the space between two of the teeth 52 forward (or towards the front of the machine) of that space with which said tooth

55 68 had last engaged. As the sleeve 59 is forced further leftward by its spring 69, the beveled edges of the teeth 68 and 52 cooperate to cause a forward rotary movement of the sleeve 59, so that when the tooth 68

60 has completely engaged with the sides of the two teeth 52 with which it now cooperates, said sleeve will have been turned forwardly to the position shown in Fig. 7. It will be recalled that there are six teeth 52, so that

35 the turning movement communicated to the sleeve when the tooth 68 disengages from one opening and passes to and engages with the next opening between said teeth 52 amounts to one-sixth of the circumference of the circle or 60° . This forward turning

70 movement of the sleeve has therefore been sufficient to rotate the stop 62 shown as extending downwardly and forwardly in Fig. 3, from the position shown in said Fig. 3 to the position occupied in said figure by the

75 lowermost exposed portion of the flange 60, that is to say, the stop 62 has been turned down into the path of the carriage stop arm 27. The leftward longitudinal movement of the sleeve 59 and its simultaneous forward

80 turning movement will be stopped when the tooth 68 is fully engaged with the teeth 52, so that further letter space movements of the carriage will move the carriage stop arm 27 away from the flange 60 and cause it, after

85 some five or six additional letter space movements, to engage with the beveled face 64 of the stop 62 which now projects downwardly. The carriage-stop spring 29 will permit the stop arm 27 to swing rightwardly about its

90 pivot 26, separating from the stop lug 30 and sliding over the beveled face 64 of the cooperative stop 62. This movement of the carriage stop causes the roller 32 thereon to swing downward and to cooperate with the

95 bell alarm mechanism so that when the carriage has been fed far enough leftward to permit the stop 27 to swing clear of the stop 62, the carriage stop and its associate parts will return to normal position and the bell

100 will be rung, indicating that the stops are now positioned to cooperate properly. During the printing of the rest of the first line of the address the letter space movements of the carriage are free and unobstructed, the

105 stop arm 27 passing leftward between the stops 65, through the cut-away 49 in the left-hand ear 40 and through the cut-away 51^a in the flange 51. The first line of writing having been completed, the platen is line

110 spaced in the usual and known manner and then the carriage is returned from left to right to begin the second line of writing. As the carriage is moved rightward the stop arm 27 will contact with the face 63 of the

115 downwardly extending stop 62 so that as rightward movement of said carriage is continued the sleeve 59 will be moved bodily rightward again compressing the spring 69 and separating the tooth 68 from the teeth

120 52 with which it was engaged. The carriage will be finally arrested when the sleeve 59 has been moved sufficiently far to the right to cause a full and complete engagement between the teeth 61 on the sleeve and the

125 fixed teeth 55. This time the carriage has been arrested by the cooperation of the stop arm 27 with one of the stops 62 instead of by the cooperation of the stop arm 27 with the flange 60. Consequently the carriage will

130

be in a position to begin the second line some half dozen spaces, more or less, to the right of the first one, the number of spaces between the beginnings of the two lines depending on the longitudinal distance between the flange 60 and the stop 62. In the present instance I have preferred to make these two stops seven letter space distances apart, but the number of spaces, of course, is optional. Before the sleeve 59 has reached the limit of its rightward movement, it will have been turned slightly forward by the cooperation between its teeth 61 and the fixed teeth 55 in a manner already explained. Consequently as the second line of the address is written and the carriage is moved step-by-step to the left, the restoring spring 69 will again serve to move the sleeve 59 leftward along its supporting rod 57, and at the same time the tooth 68 which has been turned slightly forward will cooperate with the fixed opening between the teeth 52 forward of the last previous opening. The rotary movement thus communicated to the sleeve will serve to bring one of the stops 65 into the path of the stop arm 27 so that as the writing of the second line is continued the stop arm 27 will slide down over the beveled face 67 of the stop 65 and when released therefrom will cause the bell to be rung, thereby indicating that the stops are properly positioned for coaction for the third line. The second line having been completed the platen is again line spaced and the carriage is restored to the right. This time the stop arm 27 will cooperate with the downwardly projecting stop 65 to arrest the carriage in position to begin the third line seven letter space distances to the right of the beginning of the second line. As the third line is written, a third rotary movement of the sleeve 59 is completed in the same manner as the two preceding movements. Said sleeve will now have been turned in all through 180°. Consequently when the carriage is next restored to the right the stop arm 27 will cooperate with the flange 60 at the part opposite to that with which it first cooperated. This opposite part of the flange 60 is that shown above the rod 57 in Fig. 3. Ordinarily the address on an envelop will consist of three lines, and I have designed the present attachment for an address of that character. The address on the first envelop being completed, said envelop may be removed from the machine, and a second one may be entered therein and addressed in the same manner as the first. The operation will be exactly the same, except that the stops 62 and 65 that before were inoperative will be automatically fed to operative position. When the second envelop has been addressed, the sleeve 59 will have made one complete rotation, and will be ready for a third envelop. It will be obvious that this

operation may be repeated indefinitely, the sleeve 59 turning always in the same direction and assuming a recurrent series of positions. If it is desired, however, to write a fourth line on any envelop, as, for example, the county in which the addressee resides or the person in whose care the letter is to be delivered, this additional direction may be written in the lower left-hand corner by operating the margin release key which is not shown in the drawings, but which is of suitable construction and, as shown, may be connected with the stop bar 34 by a link 70 pivoted at 71 to an arm 72 fixed to and projecting rearwardly from said stop bar near its right-hand end. The operation of the margin release key effects a tilting of the margin stop bar 34 on its pivots and swings my improved stop device upward out of the path of the carriage stop arm 27, so that the carriage may be moved rightward past the various stopping portions of the sleeve 59, whereupon pressure is removed from the margin release key. The stop bar 34 will thereupon be restored to normal position by its spring 38 and the carriage-stop arm 27 will cooperate with the margin stop 33 to arrest the carriage. Said margin stop 33 should, of course, be adjusted to bring the additional or fourth line to the proper place at the lower left-hand corner of the envelop. In writing the fourth line the stop arm 27 will successively engage and ride over the right-hand lug 40 and flange 60, but will not affect the position of the sleeve 59, so that after the completion of the fourth line a new envelop may be entered and written just as though the last preceding envelop had had an address of three lines only.

In writing the address on the second envelop written, the stop arm 27 will cooperate to arrest the carriage successively with the flange 60, the second one of the pair of stops 62 and with the second one of the pair of stops 65. Consequently the beginning of the first, second and third lines of the address will be spaced seven letter spaces apart as was the case with the first envelop. It will be understood that when the third envelop is entered and written the stop arm 27 will cooperate successively with the flange 60, the same one of the pair of stops 62 with which it cooperated in the first instance and the same one of the pair of stops 65 with which it cooperated in the first instance. It will be seen, therefore, that I provide two stops automatically cooperating to arrest the carriage at a series of varying positions in its path of travel, this series in the present instance comprising three lines; and that furthermore this series is a recurrent one. While in the present instance I have shown said series as varying progressively, that is the second line beginning a certain distance from the first line and the third line begin-

ning an equal distance from the beginning of the second line, still said series need not vary progressively and I have shown and will presently describe one means for bringing about such a result. It will further be noted that I provide a stop having a plurality of contact or engaging surfaces arranged to cooperate with another stop to arrest the carriage at different points in its travel in such a way that contact surfaces intermediate the cooperating stop and the particular contact surface with which it is to cooperate may be skipped or passed; and that in the present case the stops on the frame are automatically changing margin stops which are connected together and which arrest the carriage at different linear positions.

While the particular form of my invention which I have illustrated and described is especially adapted for envelop addresses and has been explained in connection with such work, it will be understood that it may be used for tabular work of various kinds, and that the construction illustrated and explained may be readily adapted to different forms of such tabular work. In Fig. 9, for example, I have illustrated a stop-sleeve or barrel 73 provided with a set of six stops or lugs 74, 75, 76, 77, 78 and 79, said stops following one another in successive order both rotatively and longitudinally of the sleeve 73 instead of being arranged in pairs as was the case with the stops on the sleeve 59. It will, of course, be understood that the stops need not be arranged in this regular succession, but that they may be arranged in any manner suitable to the work to be done. Except for the change in arrangement of the stop lugs, the stop device illustrated in Fig. 9 is similar in construction to the stop device illustrated in the preceding figures and the operation of it is similar. The stop device of Fig. 9, however, is adapted to cooperate with the stop arm 27 on the carriage to arrest the latter in a recurrent series of positions, said series in this instance comprising six lines.

In Fig. 10 I have illustrated a stop-sleeve or barrel comprising a plurality of sections, three of such sections being shown in the drawing and numbered 80, 81 and 82, the ends of the middle section being formed with dovetail teeth 83 which are adapted to cooperate with dovetail slots 84 in the adjacent ends of the end sections 80 and 82. This construction provides means for varying the relative positions of the sections circumferentially; so that the stops 85 may be arranged to cooperate with the stop on the carriage after one or more rotary movements have been communicated to the sleeve by the cooperation of the teeth 61 and 68 with the fixed teeth on the sleeve support. By employing the construction

illustrated in Fig. 10, or the equivalent of such construction, it will be understood that the stops on the stop sleeve may be arranged to cooperate with the carriage stop to arrest the latter at a recurrent series of positions, which positions are not progressive longitudinal of the platen.

Various other changes may be effected without departing from the spirit and scope of my invention.

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

1. In a typewriting machine, the combination of a traveling carriage, a rotary platen thereon, changeable stop devices independent of the platen and cooperative to arrest said carriage, and means operating automatically to change said stop devices to cause the arrest of the carriage at different points in its travel.

2. In a typewriting machine, the combination of a traveling carriage, a plurality of stop devices cooperative to arrest said carriage at a plurality of different positions, and means operating automatically to throw one of said stop devices out of action and another one into operative position so that on a succeeding movement of the carriage the carriage will be arrested at a different point in its travel.

3. In a typewriting machine, the combination of a traveling carriage, a plurality of stops, and a cooperative stop, the plurality of stops being movable by the cooperative stop to different positions to arrest the carriage at different points in different lines of writing.

4. In a typewriting machine, the combination of a rotary platen; a traveling carriage; a stop thereon independent of the platen; and a stop on the frame of the machine having a plurality of engaging surfaces, one of said stops being movable by the other stop to different positions to cause said two stops to co-act directly to arrest the carriage at different points in its travel.

5. In a typewriting machine, the combination of a rotary platen; a traveling carriage; a stop thereon independent of the platen; and a stop on the frame of the machine, one of said stops being provided with a plurality of contacting surfaces and means cooperative with the other stop to position the first stop to bring different contacting surfaces to operative position.

6. In a typewriting machine, the combination of a rotary platen; a traveling carriage; a stop thereon independent of the platen; a cooperative stop on the frame of the machine one of said stops having a plurality of engaging surfaces; and means co-acting with one of said stops to move it to different positions, said co-action being caused by the other stop.

7. In a typewriting machine, the combination of a traveling carriage, a group or collection of stops, part thereof being on the frame of the machine and part on the carriage, one of said stops being movable in one direction by another moving stop of said group, and means co-acting with said movable stop to move it simultaneously in another direction.

8. In a typewriting machine, the combination of a traveling carriage; a group of stops part on the carriage and part on the frame of the machine, one of said stops being capable of rotary movement and also of a movement of translation, another of said group of stops coöperating with the movable stop to give it one of said movements; and means co-acting with the movable stop to give it the other of said movements.

9. In a typewriting machine, the combination of a traveling carriage; a stop thereon; a stop on the frame of the machine, one of said stops being capable of rotary movement and also of a movement of translation, the other stop coöperating with the movable stop to give it one of said movements; and means co-acting with the movable stop to give it the other of said movements, said movable stop being provided with a plurality of contacting surfaces, different ones of which are brought, by the double movement of said movable stop, to position to subsequently coöperate with the other stop to arrest the carriage.

10. In a typewriting machine, the combination of a traveling carriage, a set of stops, a coöperative stop, and means brought into play by the movement of the carriage for causing a change in relation between the stops of the set and the coöperative stop, whereby the latter is caused to engage at different times with the several stops of the set and thus arrest the carriage at different positions in different lines of writing.

11. In a typewriting machine, the combination of a rotary platen; a traveling carriage; a stop thereon independent of the platen; a stop on the frame of the machine; and automatic means for causing a change of relationship between said stops to cause the arrest of the carriage at different points in its travel.

12. In a typewriting machine, the combination of a rotary platen; a carriage; a stop thereon independent of the platen; a stop on the frame of the machine; and means automatically operating to cause a change in relationship of said stops to cause the arrest of the carriage at a recurrent series of varying positions.

13. In a typewriting machine, the combination of a rotary platen; a carriage; a stop thereon independent of the platen; a stop on the frame of the machine; and means auto-

matically operating to cause a change in relationship of said stops to arrest the carriage at a recurrent series of progressively varying points in its travel.

14. In a typewriting machine, the combination of a carriage; a stop thereon; a stop on the frame of the machine, one of said stops being provided with a plurality of contact surfaces; and means automatically operating to cause the contact surfaces of the last mentioned stop to come into and go out of operative position and to coöperate in recurrent order with the other stop.

15. In a typewriting machine, the combination of a traveling carriage; a stop thereon; a stop on the frame of the machine having a plurality of stop faces; and automatic means for causing said stop faces to change relatively to the stop on the carriage to arrest the carriage at progressively varying points in its travel.

16. In a typewriting machine, the combination of a traveling carriage; a stop thereon; a stop on the frame of the machine, one of said stops being provided with a plurality of contacting surfaces and being rotatable to bring different ones of said contacting surfaces into operative position and being also capable of a movement of translation, said movement of translation being caused by co-action with the other stop; and automatic means for causing said rotary movement of said rotary stop.

17. In a typewriting machine, the combination of a traveling carriage; a stop thereon; a stop on the frame of the machine, one of said stops being provided with a plurality of contacting surfaces and being rotatable to bring different ones of said contacting surfaces into operative position and being also capable of a movement of translation, said movement of translation being caused by co-action with the other stop; and means for causing said rotary movement of said movable stop, said means being brought into play automatically during the translatory movement of said stop.

18. In a typewriting machine, the combination of a traveling carriage; a stop thereon; a stop on the frame of the machine, one of said stops being reciprocatory and provided with a plurality of contacting surfaces; and means for automatically rotating said reciprocatory stop as it is reciprocated in order to bring the contacting surfaces to operative position in turn.

19. In a typewriting machine, the combination of a traveling carriage; a stop thereon having a plurality of contact surfaces; a stop on the frame of the machine, one of said stops being movable bodily in one direction by the other stop; means for moving said stop bodily in the opposite direction; and means for causing a rotary movement of said movable

stop as it is reciprocated and thereby bringing different contact-surfaces of said stop into position to co-operate with the other stop.

20. In a typewriting machine, the combination of a carriage, a set of stops, a coöperative stop, the set of stops being arranged to arrest the carriage at different predetermined points in lines of travel, and means for changing the stops comprised in said set relatively to the coöperative stop, the said set of stops being constructed and arranged to enable the coöperative stop to skip or pass the intermediate stop or stops of the said set on the return movement of the carriage.

21. In a typewriting machine, the combination of a carriage; a stop member thereon; a stop member on the frame of the machine, one of said stop members comprising a plurality of contact surfaces arranged at different points longitudinally of the carriage; and means acting automatically to change the relationship of said stop members to cause the coöperation of a predetermined contact surface on one stop member with the other stop member, intermediate contact surfaces being skipped or passed.

22. In a typewriting machine, the combination of a traveling carriage; a stop thereon; a stop on the frame of the machine, one of said stops comprising a rotary and reciprocatory sleeve provided with a plurality of contact surfaces arranged at different points longitudinally and circumferentially of said sleeve, the other stop being brought into co-operation with said sleeve to move it in one direction during the movement of the carriage; a spring constantly tending to move said sleeve in the opposite direction; and cams coöperating with said sleeve to give it rotary movement during its reciprocatory movement.

23. In a typewriting machine, the combination of a traveling carriage; a stop thereon; a sleeve mounted on the frame of the machine; a spring pressing it in one direction, said sleeve being provided with a plurality of contact surfaces, said carriage stop coöperating with said sleeve to move it against the force exerted by said spring; a cam co-acting with said sleeve to give it rotary movement as it is moved by said carriage stop; and a second cam coöperative with said sleeve to give it further rotary movement as it is restored to normal position by said spring.

24. In a typewriting machine, the combination of a carriage; means for feeding said carriage step-by-step in one direction; a stop on said carriage; a reciprocatory sleeve movable from normal position by said stop as said carriage is returned in the opposite direction; a spring adapted to restore said sleeve to normal position, said sleeve being provided with a plurality of contact sur-

faces circumferentially and longitudinally arranged; and cams coöperating with said sleeve as it is reciprocated to give it progressive rotary movements.

25. In a typewriting machine, the combination of a carriage; means for feeding said carriage step-by-step in one direction; a stop on said carriage; a stop bar on the frame of the machine; a stop member adjustable on said stop bar, said stop member comprising a reciprocatory sleeve provided with a plurality of contact surfaces arranged circumferentially and longitudinally of said sleeve; a spring constantly tending to press said sleeve in the direction of the step-by-step movement of the carriage, said carriage stop being coöperative with said sleeve to move it in the opposite direction; a cam on said stop member coöperative with said sleeve to give it rotary movement as it is moved by said carriage stop; and a second cam coöperative with said sleeve to give it rotary movement as it is restored to normal position by said spring.

26. In a typewriting machine, the combination of a carriage; means for feeding said carriage step-by-step in one direction; a stop on said carriage; a stop bar on the frame of the machine; and a margin stop attachment adjustable on said bar and coöperative with said carriage stop, said attachment comprising a yoke or bracket, a pivot rod secured in said bracket, circularly arranged sets of teeth fixed at opposite ends of said rod, a sleeve rotatable on said rod, said sleeve being provided with radially disposed contact lugs arranged progressively circumferentially of said sleeve and said sleeve being further provided at its ends with teeth adapted to coöperate with the teeth fixed on the bracket, and a spring coiled on said rod and operating to press said sleeve constantly in the direction of the step-by-step feeding movement of said carriage.

27. In a typewriting machine, the combination with a to-and-fro moving carriage and a rotary platen thereon, of stop devices independent of the platen for arresting said carriage in different positions in different lines, and means controlled by said carriage and operating automatically for changing said stop devices so as to variably arrest the carriage for different lines.

28. In a typewriting machine, the combination with a to-and-fro moving carriage and a rotary platen thereon, of stop devices independent of the platen for arresting said carriage; and means operative upon each to-and-fro excursion of said carriage for automatically setting said stop devices to arrest said carriage at a series of different automatically recurring points.

29. In a typewriting machine, the combination with a carriage, of a plurality of

margin stops automatically changeable to automatically arrest the carriage at different places in different lines.

30. In a typewriting machine, the combination with a carriage, of a plurality of margin stops, and means operating automatically during the travel of the carriage to change the relationship of said stops so as to provide for arresting the carriage on its return movement at different places in different lines.

31. In a typewriting machine, the combination of a carriage, a plurality of margin stops connected together, a cooperative stop, and means for bringing the margin stops one at a time into working relationship with the cooperative stop.

32. In a typewriting machine, the combination of a carriage, a plurality of margin stops, means for cooperating therewith to arrest the carriage at different marginal points, and means operating automatically for changing the relationship between said margin stops and their cooperative means whereby the margin stops are brought into operative position one after another.

33. In a typewriting machine, the combination of a carriage, cooperative margin stop devices, and means for automatically changing the relationship of said devices to arrest the carriage at different points in different lines.

34. In a typewriting machine, the combination of a carriage, cooperative margin stop devices, and automatically operating means for changing the arresting position of one of said cooperative margin stop devices to arrest the carriage at different points in different lines, said automatic means being controlled wholly by the movements of the carriage.

35. In a typewriting machine, the combination of a carriage, a set of margin stop devices placed to arrest the carriage at different linear positions, cooperative means therefor, and means operating automatically to bring said margin stop devices one at a time into cooperation with said cooperative means.

36. In a typewriting machine, the combination of a traveling carriage, a plurality of stops, a cooperative stop, the plurality of stops being movable by the cooperative stop to different positions to arrest the carriage at different points in different lines of writing, and means for adjusting said plurality of stops in the direction of the travel of the carriage, to vary the points in the line of writing at which they will co-act with said cooperative stop.

37. In a typewriting machine, the combination of a traveling carriage, a stop thereon, and a stop on the frame of the machine having a plurality of engaging surfaces, one of said stops being movable by the other stop to different positions to cause said two stops to co-act to arrest the carriage at different points in its travel, and the stop on the frame being adjustable in the direction of the travel of the carriage to vary the points at which said engaging surfaces will co-act with the stop on the carriage.

38. In a typewriting machine, the combination of a traveling carriage, a stop bar, a device comprising a plurality of stops which device is adjustably mounted upon said stop bar, and a stop cooperative with said plurality of stops, the plurality of stops being movable by the cooperative stop to different positions to arrest the carriage at different points in different lines of writing.

39. In a typewriting machine, the combination of a traveling carriage, a stop bar, an attachment adjustable on said stop bar and comprising a rotary member provided with a plurality of contact surfaces, and a stop cooperative with said plurality of contact surfaces to move them to different positions to arrest the carriage at different points.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 6th day of March A. D. 1906.

HERBERT H. STEELE.

Witnesses:

JOHN S. MITCHELL,
W. J. LOGAN.