C. B. YAW.

TYPE WRITING MACHINE.

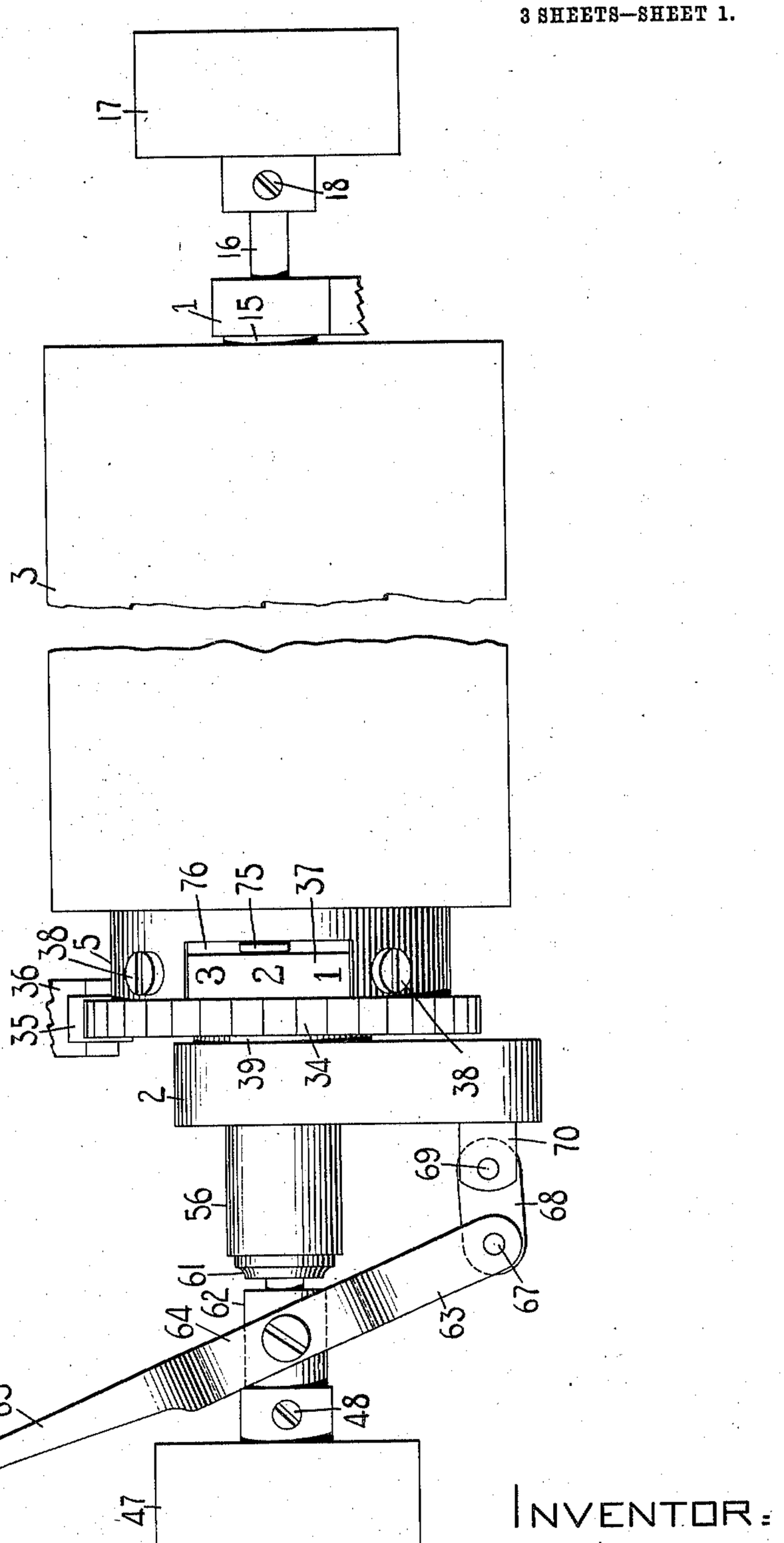
APPLICATION FILED MAY 17, 1909.

965,790.

Patented July 26, 1910.

3 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

M. F. Hanrweber

M. W. Pool

INVENTOR:

Chas B. Yaw

By Jacobs & Hall

HIS ATTORNEY

C. B. YAW.

TYPE WRITING MACHINE.

APPLICATION FILED MAY 17, 1909.

965,790.

Patented July 26, 1910.

3 SHEETS—SHEET 2.

FIG. 2.

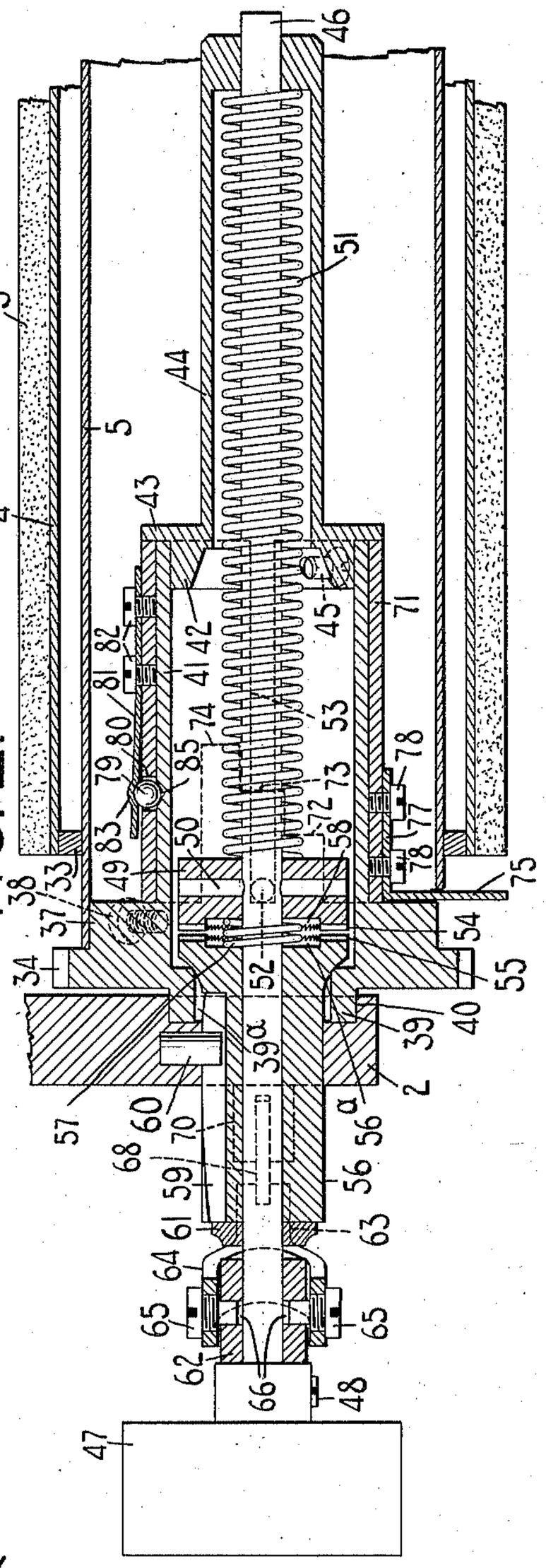
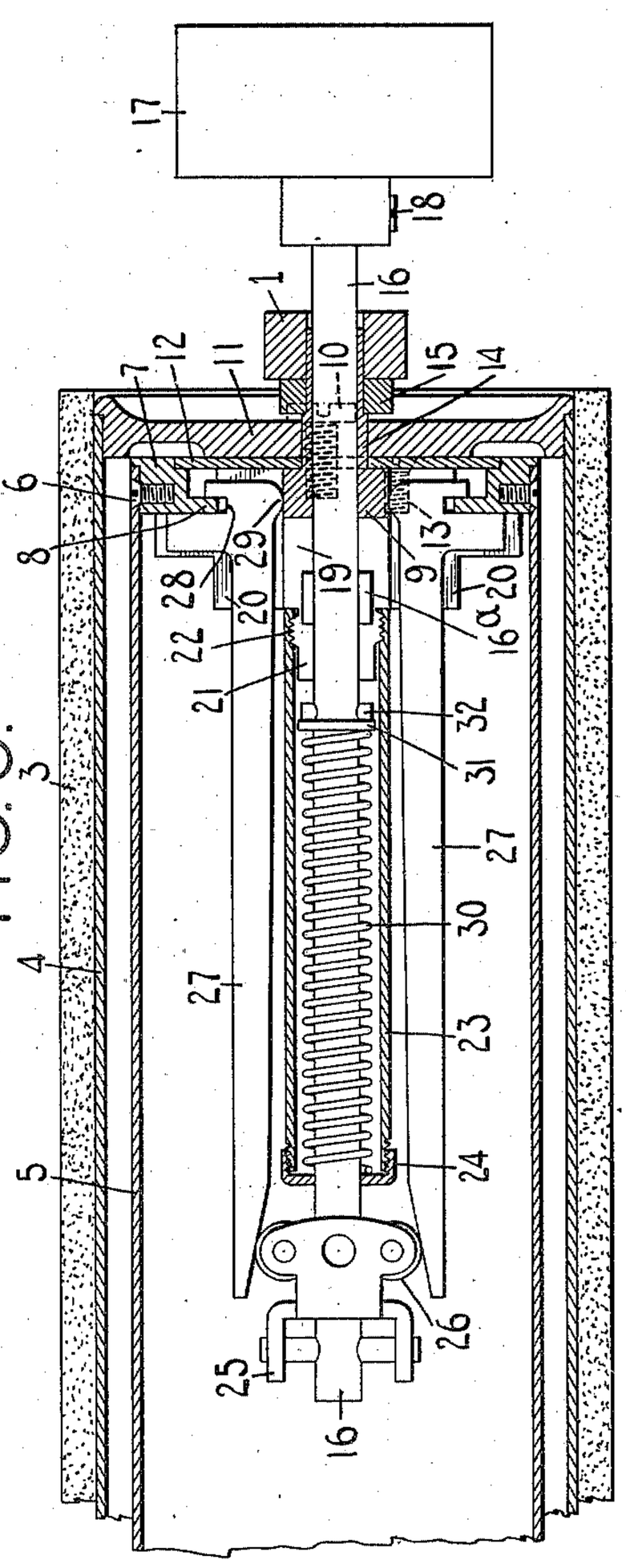


FIG. 3.



WITNESSES:

M. L. Hammacher

M. W. Pool

INVENTOR:

Clio B. Yaw

By Jacob Tell

HIS ATTORNEY

C. B. YAW.

TYPE WRITING MACHINE.

APPLICATION FILED MAY 17, 1909.

965,790.

Patented July 26, 1910.

3 SHEETS—SHEET 3.

FIG. 4.

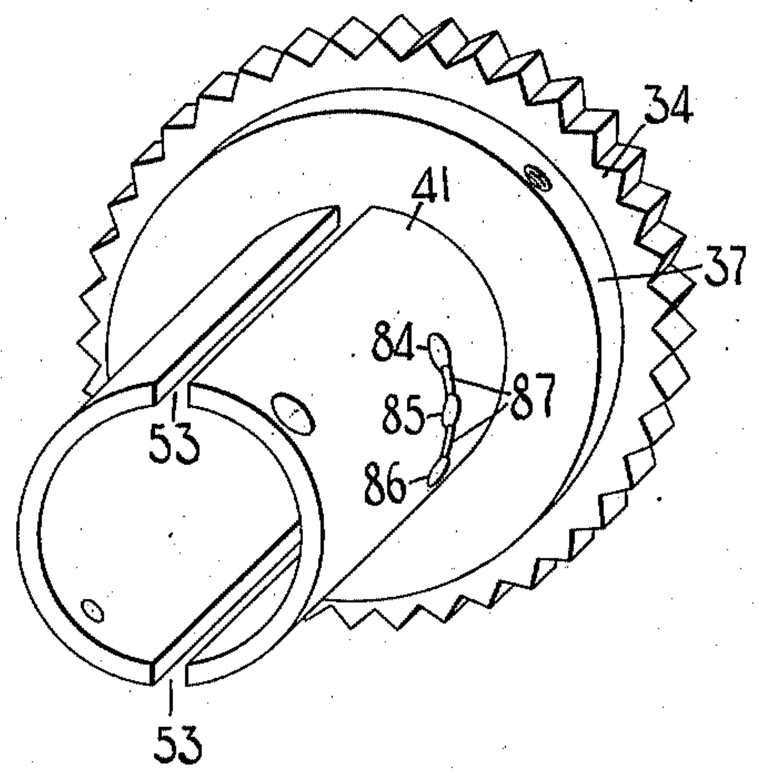


FIG. 5.

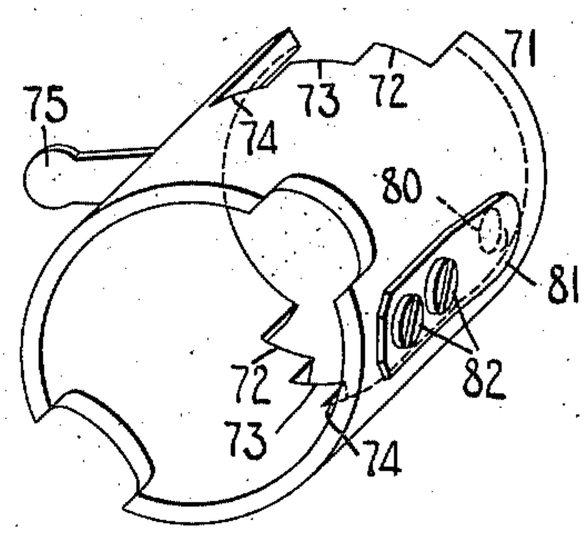


FIG. 6.

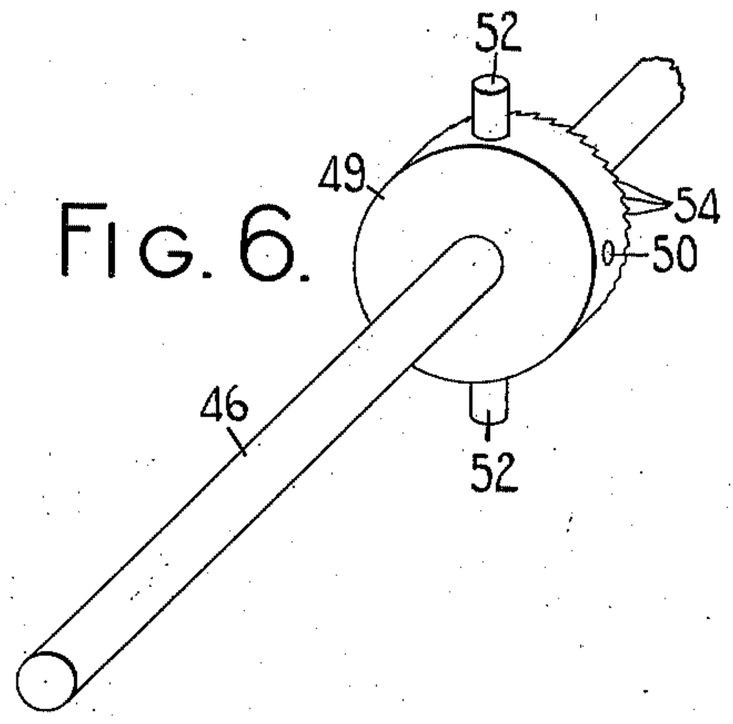
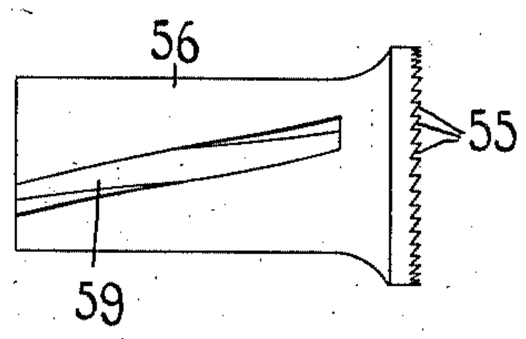


FIG. 7.



WITNESSES:

M. F. Hannweber

M. W. Pool

INVENTOR:

Clio B. Yaw

By Jacobs & Jacobs

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

CLIO B. YAW, OF ARLINGTON, NEW JERSEY, ASSIGNOR TO REMINGTON TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

965,790. Specification of Letters Patent. **Patented July 26, 1910.**

Application filed May 17, 1909. Serial No. 496,483.

To all whom it may concern:

Be it known that I, CLIO B. YAW, a citizen of the United States, and resident of Arlington, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates especially to line spacing devices for typewriting machines and has for its main object to provide improved devices of the class specified.

Another object of the invention is to provide a construction in which liability of the platen to overthrow is greatly lessened.

Another object is to arrange most of the line spacing devices within the platen and concentric therewith so as to lessen vibration and noise and to increase the manifolding power as well as to cover and protect the line spacing devices and avoid liability to injury or disarrangement of the parts.

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

In the drawings, Figure 1 is a fragmentary front elevation of a platen and platen carrier embodying my invention. Fig. 2 is a central horizontal longitudinal sectional view of the left-hand end portion of the platen. Fig. 3 is a central horizontal longitudinal sectional view of the right-hand end portion of the platen. Figs. 4, 5 and 6 are perspective views of different elements of the line spacing mechanism. Fig. 7 is a face view of one of the elements of the line spacing mechanism.

Referring first to Figs. 1 to 3, the platen frame or carrier comprises end bars 1 and 2. The platen is arranged between the end bars and comprises a sheath or cover 3 of a rubber composition or the like and an outer shell, core-piece or tube 4 which may be of metal and which provides a foundation for and carries the sheath 3. Within the outer shell 4 is an inner shell or tube 5, these two shells being normally connected together as presently to be described but being adapted to be disconnected at will to release or free the platen from the line spacing devices.

Arranged for the most part within the right-hand end of the shell 5 and fixedly connected therewith by screws 6 is an annulus 7 provided with an inner flange 8. The annulus bears upon and is supported by a member 9 which is secured by screws 10 to the right-hand platen head 11 and forms in effect part of said platen head which is suitably secured to the right-hand end of the shell 4. The annulus 7 is held from rightward movement relatively to said platen head by a plate or disk 12 which is secured to the member 9 by screws 13. The member 9 is provided with a rightwardly extending hub portion 14 which extends into and bears against the end bar 1. A washer 15 surrounds the hub 14 to the left of the end bar 1 and coöperates with a shoulder on said hub to prevent relative movement between hub and platen frame. The hub 14 and the member 9 are formed with a bearing opening which receives a shaft or spindle 16, said spindle projecting outside the end bar 1 and carrying a finger wheel 17 which is secured in place by a set screw 18.

The member 9 is formed with a narrow slot 19 near its center and with two diametrically opposite wider slots 20 connecting with said slot 19. The member 9 terminates at its left in a reduced portion 21 which is provided with external threads 22. A tube 23 internally threaded at its right-hand end screws on to the portion 21 and the member 9 and in effect operates as a part of said member. The left-hand end of the tube 23 is closed by a screw cap 24. The spindle 16 passes leftward through the member 9 and its extension 21 as well as through the tube 23 and its cap 24, bearing in said cap and terminating outside the same and within the shell 5. The left-hand end portion of said spindle carries a support or carrier 25 for a pair of rolls 26. Said rolls are adapted to coöperate with the inclined inner ends of a pair of grippers 27. The right-hand end portions of said grippers are seated in the slots 20 and are notched at 28 to provide jaws which embrace the flange 8. Said grippers are also provided with rounded bearing portions 29 which coöperate with the body of the member 9.

The rolls 26 are pressed constantly rightward by a coiled spring 30 which is housed within the tube 23 and bears at one end against the cap 24 and at the other end against a washer 31 which is held from rightward movement along the spindle 16

by a cross pin 32. The action of the spring 30 normally causes the rolls 26 to force the inner ends of the grippers 27 apart, causing the gripping jaws to grip the flange 8 and thereby connect the shell 5 with the outer shell 4, so as to cause the two parts to rotate together. When the finger wheel 17 is pressed inward toward the left it causes a leftward longitudinal movement of the spindle 16 in its bearings, thereby moving the carrier 25 leftward and causing the rolls 26 to move toward the ends of the grippers 27. The pressure tending to force apart the inner ends of the grippers is thereby relaxed and the flange 8 is freed from the control of said grippers so that the platen proper, comprising the sheath 3 and the shell 4, may be turned independently of the inner shell 5. As hereinafter described said inner shell carries the line spacing ratchet wheel so that when the two shells are disconnected the platen proper may be turned through irregular extents at pleasure. The turning movements of the platen at this time will be caused by turning the right-hand finger wheel 17, connection between the finger wheel and the platen being effected through a cross arm or plate 16[a] which is driven through the spindle 16 and engages the sides of the slot 19. The platen releasing mechanism above described resembles in principle that disclosed in the patent to Woodward No. 784,369, dated March 7th, 1905, although differing therefrom in some details.

Fixed within the left-hand end of the shell 4 is an annulus or bearing ring 33 which surrounds and bears on the left-hand end portion of the inner shell 5. Said inner shell 5 extends outside the platen proper at the left. Arranged at the left end of said shell 5 is a line spacing ratchet wheel 34; the teeth whereof coöperate with a roller detent 35 mounted on a spring arm 36 suitably secured to the platen carrier. The ratchet wheel 34 is part of a member or element which is shown detached in Fig. 4 and in section in Fig. 2. Said member comprises a reduced portion or hub 37 which fits closely within the left end of the shell 5 and is fixedly connected therewith by screws 38. Extending from the opposite or left face of the ratchet wheel 34 is a hub portion 39 which bears in a depression or counterbore 40 in the end bar 2 and is formed with a central opening 39[a]. This construction provides a support for the platen at the left-hand side. Extending within the shell 5 rightward from the hub 37 and integral with said hub is a tube 41, said tube connecting with the opening 39[a] and forming part of the member which comprises also the ratchet wheel 34. The right-hand end of the tube 41 receives the hub 42 of a member which further comprises a flange portion 43 and a closed tubular portion 44. Screws 45 pass through the tube 41 into the hub 42 and secure the member comprising said hub in fixed relationship with the tube 41. The end of the tube 44 provides a bearing for the right-hand end of a spindle 46 which extends leftward through the tube 44, hub 42, tube 41 and end bar 2, terminating outside the platen frame where it is provided with a finger wheel 47 which is secured in place by a screw 48.

Within the tube 41 the spindle 46 carries a clutch member 49 which is fixed to the spindle as by a cross pin 50. Surrounding the spindle 46 and confined between the clutch member 49 and the inner end of the tube 44 is a coiled spring 51 which, acting against the clutch member, tends constantly to force it and the spindle 46 leftward. Passing through the clutch member and the spindle 46 and projecting outside said clutch member 49 at diametrically opposite sides, is an engaging or connecting device or cross pin 52 (Figs. 2 and 6). The projecting end portions of said cross pin engage in parallel slots or cut-outs 53 extending longitudinally through the tube 41. The construction is such that relative endwise movement between the spindle 46 and the tube 41 may take place but by reason of the connection 53 said tube 41 is forced to turn whenever the spindle 46 is turned. Consequently a rotary movement communicated to the spindle 46 will be transmitted through the tube 41 to the ratchet wheel 34 and shell 5, and since said shell 5 is normally connected by the grippers 27 with the platen proper, the latter will ordinarily participate in rotary movements communicated to said spindle 46. The spindle 46 may be turned by turning the finger wheel 47 or through line spacing devices embodied in the present case.

The left-hand face of the clutch member 49 is provided with ratchet teeth 54, said ratchet teeth being adapted to co-act with corresponding ratchet teeth 55 formed on a flange or enlargement at the right-hand end of a cam member, sleeve or turning device 56 (Figs. 2 and 7). Said cam member 56 is in the form of a cylinder extending leftward loosely through the opening 39[a] and through a bearing opening in the end bar 2. The spindle 46 passes through a central opening in said cam member, which also may be said to be supported in part on said spindle.

The ratchets 54 and 55 are normally maintained separated by a coiled spring 57, said spring surrounding the spindle 46 and being seated in a depression or countersink 58 in the clutch member 49 and a corresponding opposite depression 56[a] in the cam member 56. The spring 57 is somewhat weaker than the spring 51. Cut in the outer face of the cam member 56 is a cam slot 59 which may have a gradual pitch; say, proportional to one complete turn in $7\frac{1}{2}$ inches of length.

Engaging in the slot 59 is a stud 60 fixed in the end bar 2. Said stud is only slightly less in diameter than the slot 59 so that while it permits free movement of the cam member 56 lengthwise there is nevertheless little or no lost motion possible of said cam member in the direction of rotation. Obviously when the cam member 56 is moved endwise it will receive a rotary movement because of the co-action between the cam slot 59 and the stud 60. If at this time the ratchets or clutch devices 54 and 55 are in engagement, such rotary movement will be communicated to the platen and said platen will be turned in line spacing direction.

Surrounding the spindle 46 at the left of the cam member 56 is a washer 61 (Figs. 1 and 2) which affords a connection between the end of the cam member 56 and a sleeve 62 mounted on the spindle 46 between the washer 61 and the hub of the member 47. The actuating movements of the sleeve 62 are controlled by a lever 63 shown in Figs. 1 and 2. Said lever has an open portion 64 which loosely embraces the sleeve 62 and is pivotally connected therewith by shouldered screws 65 which screw into the opposite sides of the portion 64 and are provided with reduced cylindrical end portions which engage in diametrically opposite openings 66 in the sides of the sleeve 62. Above the sleeve the lever 63 is shaped to provide a finger piece 63^a or actuating handle. At its lower end the lever 63 is pivotally connected at 67 to a link 68 which is horizontally disposed and is pivotally connected at its opposite end at 69 to a lug 70 extending laterally from the end bar 2 of the platen frame. When the finger piece 63^a is pushed rightward it causes the sleeve 62 to engage the washer 61 and through it the cam member or sleeve 56 and to force the latter rightward, compressing the spring 57 and causing an engagement between the ratchets 54 and 55. Thereafter as rightward movement of the finger piece is continued the spindle 46 will move rightward and will also participate in the rotary movement communicated to the cam member 56 from the cam 59 and stud 60.

The rotary movement of the spindle as has been explained will be communicated to the platen, causing the platen to be advanced in line spacing direction. The extent to which the platen may be turned will depend upon the rightward movement communicated to the sleeve 56 and the handle 63^a. The extent of movement of the cam member 56 may be varied at pleasure by a line space regulating device which is shown detached in Fig. 5 and also appears in Figs. 1 and 2. Said device, designated as a whole as 71, is in the form of a sleeve which is mounted to turn with and on the tube 41 and is confined between the flange 43 and the hub 37. The sleeve 71 may be cut out in steps at its left-hand end to provide a plurality of pairs of diametrically opposite stop faces. There are three pairs of these stop faces shown and numbered respectively 72, 73 and 74 corresponding to three different extents of line space movement, although, of course, a greater or less number of pairs of stop faces may be provided. These pairs of stop faces are adapted to close the slot-ways 53 in the tube 41 and thereby limit the movement of the cross pin 52 rightward in said slot-ways. For example, as shown in Fig. 2, the stop faces 73 are arranged to co-act with the cross pin 52. Hence the movement of said cross pin, and consequently of the cam member 56 rightward, will be arrested after the cam member has turned far enough to advance the platen two units of line space distance, corresponding to two teeth of the ratchet wheel 34. When the stop faces 74 are operated, the rightward movement of the cam member 56 will be greater and the platen will be advanced three units of line space distance; while when the stop faces 72 are in operation, the platen will be turned through a single line space.

The means for turning the sleeve 71 on its support to present at pleasure one or another of the pairs or sets of stop faces, comprises a finger piece 75 which projects radially outward through an opening or cut-out 76 in the shell 5. The finger piece 75 is provided with an extension 77 disposed at right angles to it and secured to the sleeve 71 by screws 78. That portion of the periphery of the hub 67 which is exposed by the cut-out 76 and is opposite the finger piece 75 is or may be provided with indicating marks or numerals as shown in Fig. 1, and the finger piece 75 coöperates with these numerals to indicate the extent of line spacing movement. When the finger piece is moved lengthwise of the slot or cut-away 76 it will be understood that it turns the sleeve 71 on its support. The sleeve may be maintained set in one of the three line spacing positions by detent devices which comprise a ball 79 arranged in a hole 80 in the sleeve 71 and maintained in said opening by a spring finger 81 which is secured to the sleeve 71 by screws 82. The spring finger has a rounded depression 83 which forms a shallow seat for the ball 79; and said ball is further adapted to engage with depressions or seats 84, 85 and 86 formed in the surface of the sleeve 41 and connected by shallow grooves 87 (Fig. 4). It will be understood that the ball 79 will be maintained by the pressure of the spring-plate 81 in engagement with one or another of the depressions 84, 85 or 86 and that these depressions are arranged at such a distance apart that they permit a turning and setting of the sleeve 71 to bring the respective stop faces 72, 73 and 74 into operative position. After being set, the

sleeve 71 will participate in rotary movements of the sleeve 41 without relative movement occurring between the sleeves.

An actuation of the line space member 63ª compresses the spring 57, causing an engagement between the ratchets 54 and 55 so that the cam member 56 picks up the spindle 46 and moves it longitudinally rightward and causes it to turn. The rightward movement of the spindle compresses the spring 51. After the line spacing has been effected and the spindle 46, cam member 56 and line spacing handle have been arrested by the coaction between the cross pin 52 and one of the pairs of stop faces on the sleeve 71, the line spacing handle may be released. Thereupon the spindle 46, clutch member 49 and cam member 56, together with the washer 61, sleeve 62 and line spacing lever 63, will be restored toward the left by the spring 51. The leftward return movement of the spindle 46 and clutch member 49 will be limited by the engagement of the end portions of the cross pin 52 with the left-hand face of the flange of the hub 37. After the arrest of the clutch member 49 the cam member 56 will continue to move leftward under the influence of the spring 57 until the rounded surface which connects the enlarged end of the cam member with the body portion thereof engages with the right-hand edge of the opening 39ª. The spring 57 is weaker than the detent spring arm 36 so that prior to the complete separation of the ratchet teeth 54, 55 during the return movement, the reverse rotary movement of the cam member 56 will not turn the clutch member 49 but will simply cause the ratchet teeth 55 to slide over the ratchet teeth 54.

During the turning of the spindle 46 as it moves inward, the sleeve 62 will not be affected since it is loosely mounted on the spindle. Furthermore, during the rightward movement of the sleeve 62 the pivotal point 67 will swing downward upon the pivotal center 69 so that there will be no bind of the line space lever 63 on the sleeve 62.

It will be understood that the rightward movement of the finger piece 63ª is adapted not only to effect a line spacing of the platen but also a restoring movement of the platen and platen carrier from left to right to begin a new line of writing. The bodily rightward movement of the platen and platen carrier will ordinarily take place prior to the line spacing operation but both the restoring movement and the line spacing movement will be effected by what is practically a single operation of the line spacing handle. It will further be noted that most of the parts that comprise the line spacing mechanism are contained within the platen which covers and protects them from injury and accidental disarrangement. Further, they are close to the axis on which the platen is supported and therefore cause much less vibration than do the ordinary line spacing devices. Consequently the stability of the platen and its manifolding power are increased.

Certain features herein disclosed are not claimed as they form in part the subject-matter of my companion application Serial No. 496,482 filed May 17, 1909.

Various changes may be made 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 with a platen, of line spacing devices including a shaft co-axial with said platen, a sleeve supported on said shaft, and a lever connected with said sleeve and operative to move the same, the fulcrum of said lever being independent of said shaft.

2. In a typewriting machine, the combination with a platen carrier and a platen thereon, of line spacing devices including a shaft co-axial with said platen, a sleeve slidable on said shaft, and a lever pivotally connected with said sleeve and with said platen carrier.

3. In a typewriting machine, the combination with a platen carrier and a platen thereon, of line spacing devices including a shaft connected to said platen and co-axial therewith, a sleeve on said shaft, a lever embracing said sleeve and pivotally connected therewith, and devices connecting said lever with said platen carrier.

4. In a typewriting machine, the combination with a platen carrier and a platen thereon, of line spacing devices including a shaft, a sleeve on said shaft, a lever pivotally connected with said sleeve and a link pivotally connected with said lever and also pivotally connected with said platen carrier.

5. In a typewriting machine, the combination of a platen; a shaft co-axial with said platen; connections between said shaft and said platen; and means for turning said shaft including a sleeve rotatable on said shaft and also movable lengthwise thereon, and means for moving said shaft and sleeve including a second sleeve slidably supported on said shaft and a finger piece connected with said second sleeve.

6. In a typewriting machine, the combination of a platen, a shaft co-axial therewith, said shaft and said platen being connected to turn together, a rotary sleeve supported on said shaft, relatively fixed means assisting to turn said sleeve, normally inoperative means at one end of said sleeve for connecting said sleeve with said shaft, and a second sleeve controllable by hand to actuate the first named sleeve.

7. In a typewriting machine, the combina-

tion of a platen, a shaft co-axial therewith, said shaft and said platen being connected to turn together, a rotary sleeve supported on said shaft, relatively fixed means assisting to turn said sleeve, a normally inoperative clutch member at one end of said sleeve for connecting said sleeve with said shaft, and a second sleeve controllable by hand to actuate the first named sleeve, said second sleeve being arranged on said shaft at the end opposite from said clutch member.

8. In a typewriting machine, the combination with a platen, of line spacing devices including a shaft, a sleeve thereon controllable by hand, relatively fixed means assisting to turn said sleeve when the same is moved by hand, a clutch member fixed to said shaft, and a spring arranged between said clutch member and said sleeve and normally operating to separate said clutch member and said sleeve.

9. In a typewriting machine, the combination with a platen, of line spacing devices including a shaft, a sleeve thereon controllable by hand, relatively fixed means assisting to turn said sleeve when the same is moved by hand, a clutch member fixed to said shaft, a spring normally operating to separate said clutch member and said sleeve, and a restoring spring for said shaft.

10. In a typewriting machine, the combination with a platen provided with heads, of line spacing devices including a shaft, a hand-controlled sleeve on said shaft provided with a cam slot, a relatively fixed stud coöperative with said slot to turn said sleeve when the same is moved by hand, a clutch member fixed to said shaft, and a spring arranged between said clutch member and said sleeve and normally operating to separate said clutch member and said sleeve and to maintain said sleeve in contact with the head of the platen.

11. In a typewriting machine, the combination with a platen, of line spacing devices including a shaft, a sleeve on said shaft controllable by hand, normally inoperative means for connecting said sleeve with said shaft to cause the two to turn together, means assisting to turn said sleeve when the same is moved by hand, a spring assisting to maintain said sleeve in normal position against a relatively fixed part, and a second spring assisting to maintain said shaft in normal position engaged with a relatively fixed part.

12. In a typewriting machine, the combination with a platen, of line spacing devices including a shaft extending within the platen and co-axial therewith, a camming sleeve on said shaft, a clutch member within said platen and coöperative with said sleeve to connect it with said shaft, a restoring spring within said platen for said shaft, means for moving said shaft endwise relatively to the platen, and adjustable means for regulating the extent of said endwise movement, said adjustable means being contained within the platen.

13. In a typewriting machine, the combination with a platen, of line spacing devices including a hand-controlled actuating device, and adjustable means for varying the extent of movement of said actuating device, said adjustable means being connected to turn with the platen, said actuating device being movable for operation lengthwise of the axis of the turnable adjustable means and said adjustable means variably limiting such lengthwise movement of the actuating device.

14. In a typewriting machine, the combination with a platen, of line spacing devices including an endwise movable shaft, means for regulating the extent of endwise movement of said shaft, said means comprising a rotatable sleeve, a sleeve support, and a detent for said sleeve.

15. In a typewriting machine, the combination with a platen, of line spacing devices including an endwise movable shaft, means for regulating the extent of endwise movement of said shaft, said means comprising a rotatable sleeve, a sleeve support, and a detent for said sleeve, said detent comprising a ball carried by said sleeve, a spring coöperative with said ball, and a plurality of seats for said ball in the sleeve support.

16. In a typewriting machine, the combination of an outer shell carrying a platen sheath, a second shell within said first named shell, normally operative connecting devices coupling said shells, a ratchet wheel connected with the inner shell, a detent cooperating with said ratchet wheel, and line space turning devices including a spindle, a cam sleeve thereon, a clutch connection between said sleeve and said spindle, and a connection between said spindle and said ratchet wheel.

17. In a typewriting machine, the combination of an outer shell carrying a platen sheath; an inner shell within said outer shell; a normally operative clutch between said inner and outer shells at one end of the platen; means for disconnecting said clutch comprising a spindle and a finger wheel for moving said spindle inward, said finger wheel being normally operative to turn the platen; and line spacing devices at the opposite end of the platen from said clutch, said line spacing devices comprising a second spindle controlled by a finger wheel and movable inward to line space the platen.

18. In a typewriting machine, the combination of an outer shell carrying a platen sheath, said shell being provided at one end with a head, a second shell within said outer shell, the inner shell being provided with an annulus which bears on said head, a platen

frame supporting said head at one end of the platen, said platen frame supporting the second shell at the opposite end of the platen, said second shell at said opposite end of the platen supporting an annulus secured on the outer shell.

19. In a typewriting machine, the combination of a platen comprising an outer shell, an inner shell, a line spacing ratchet wheel mounted on said inner shell, a clutch connection between said inner and outer shells, and means for actuating said clutch connection including a spindle, a platen head connected to said outer shell and providing a bearing for said spindle, a tube detachably supported on said head and also providing for a bearing for said spindle, and a restoring spring for said spindle contained within said tube.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 15th day of May A. D. 1909.

CLIO B. YAW.

Witnesses:
CHARLES E. SMITH,
J. B. DEEVES.