939,579.

C. B. YAW.

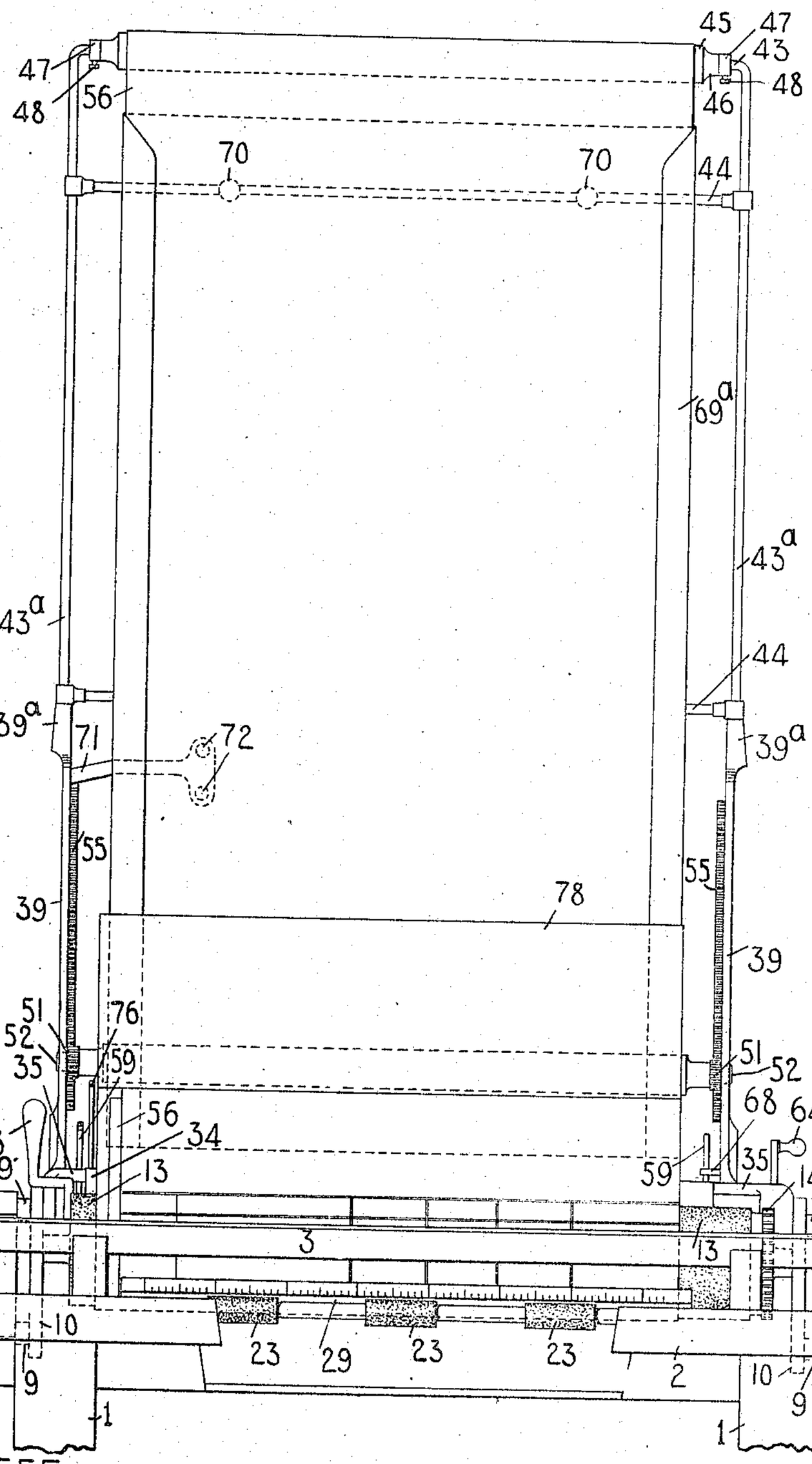
TYPE WRITING MACHINE.

APPLICATION FILED JUNE 5, 1908.

Patented Nov. 9, 1909.

5 SHEETS—SHEET 1.

FIG. 1

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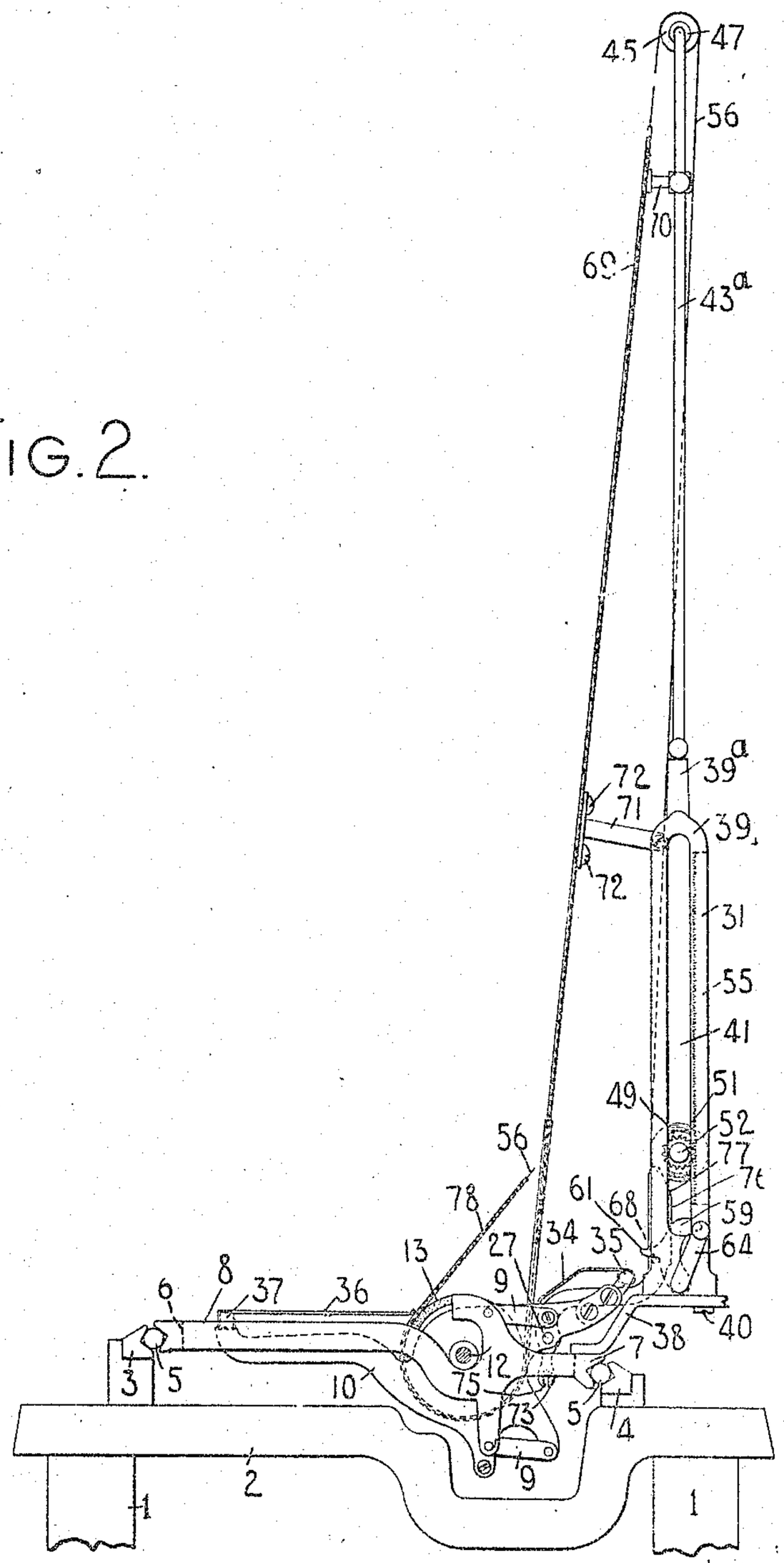
5 SHEETS—SHEET 2.

FIG. 2.

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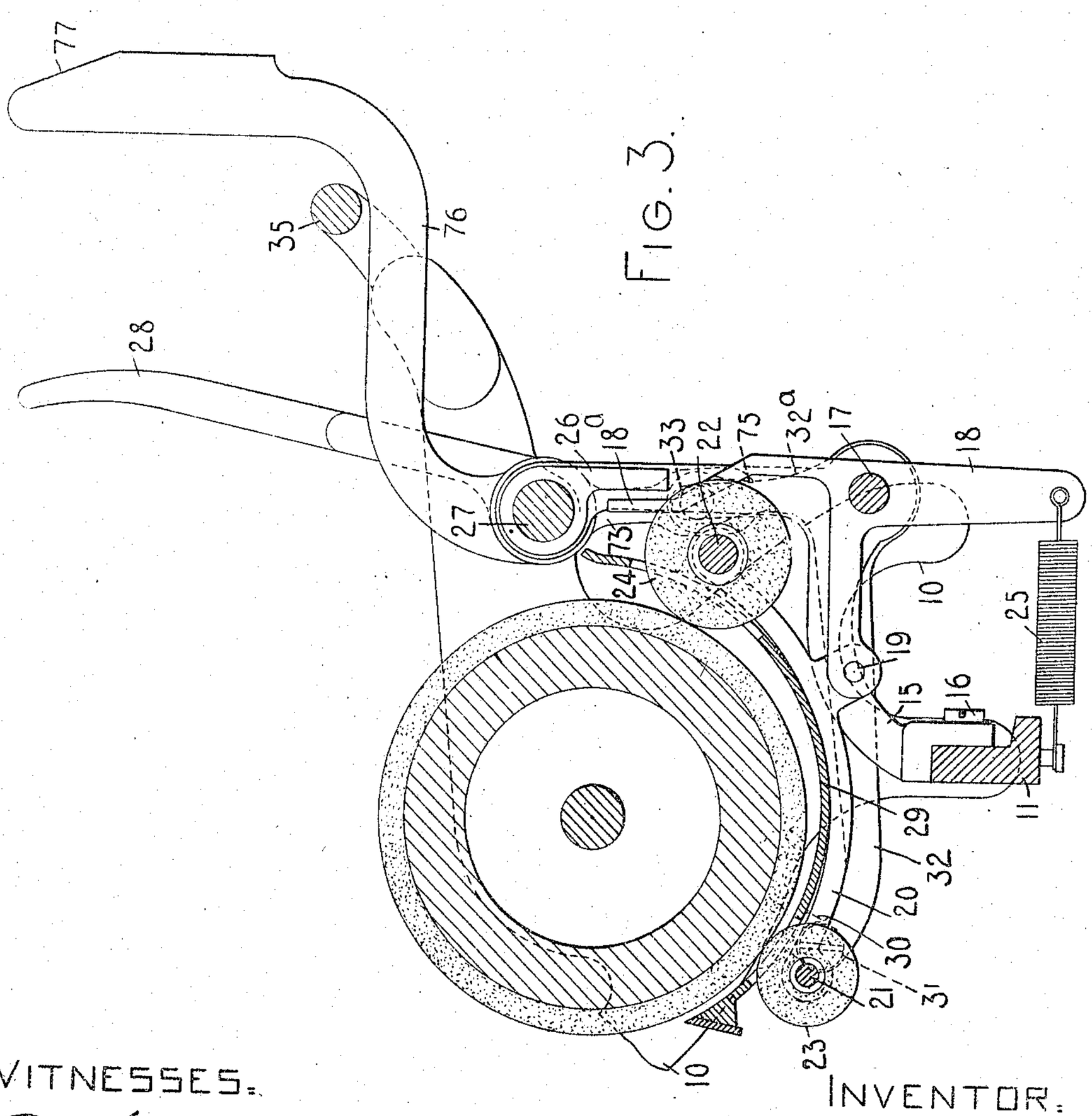
5 SHEETS—SHEET 3.

FIG. 3.

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5 SHEETS—SHEET 4.

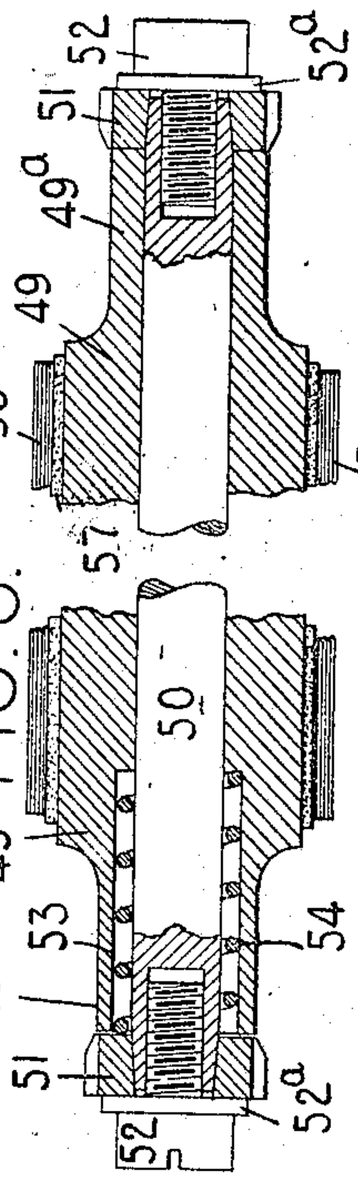


FIG. 6.

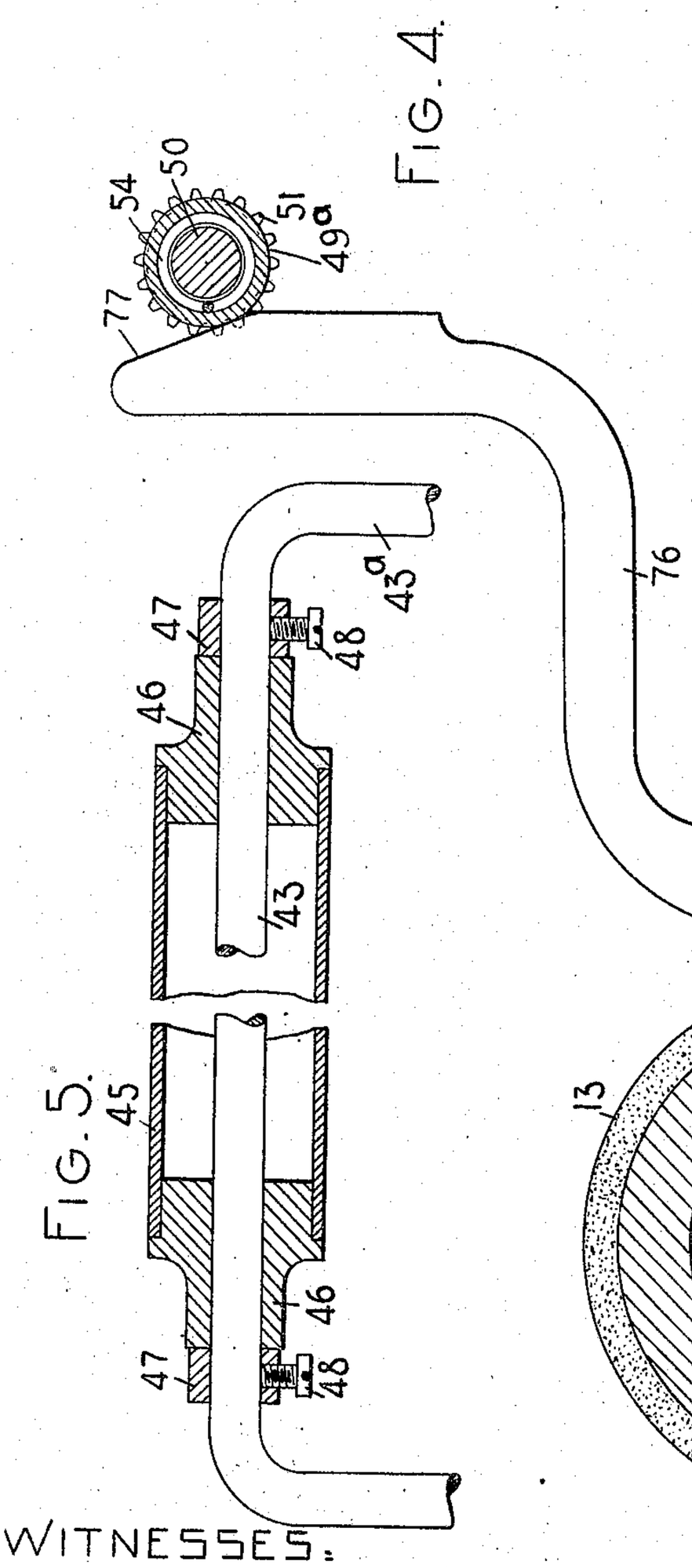


FIG. 4.

FIG. 5.




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6 SHEETS—SHEET 5.

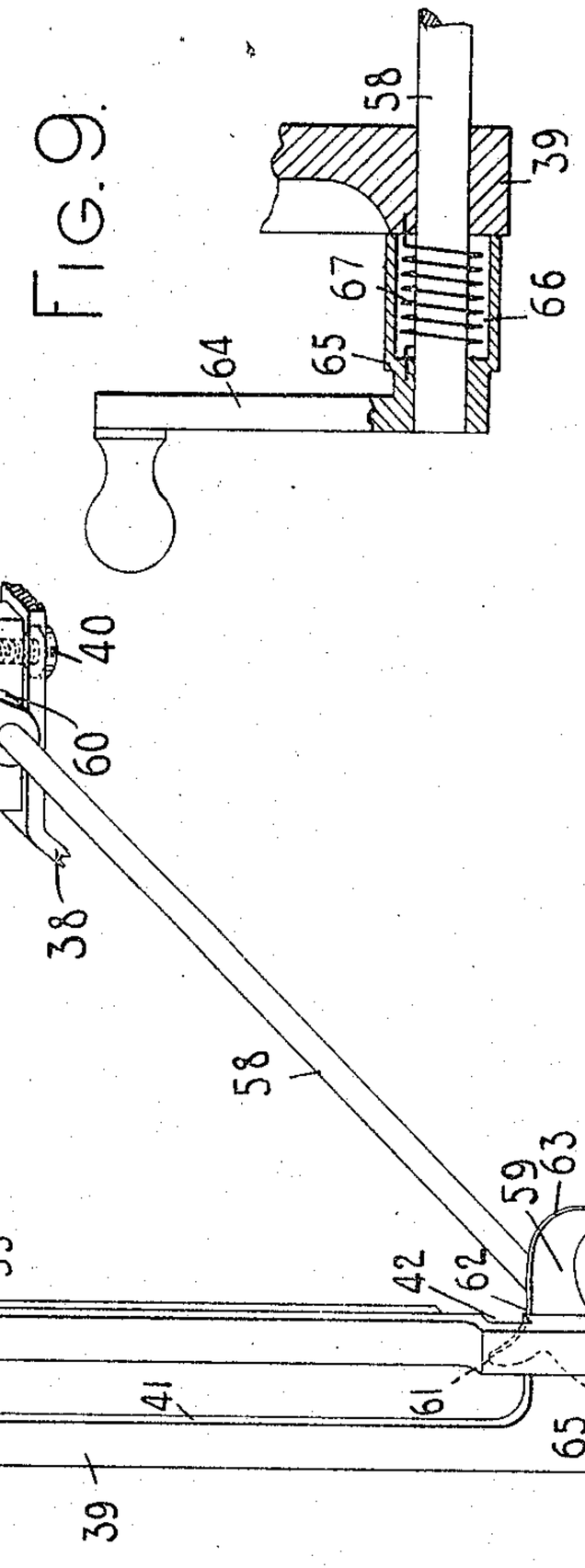


FIG. 9.

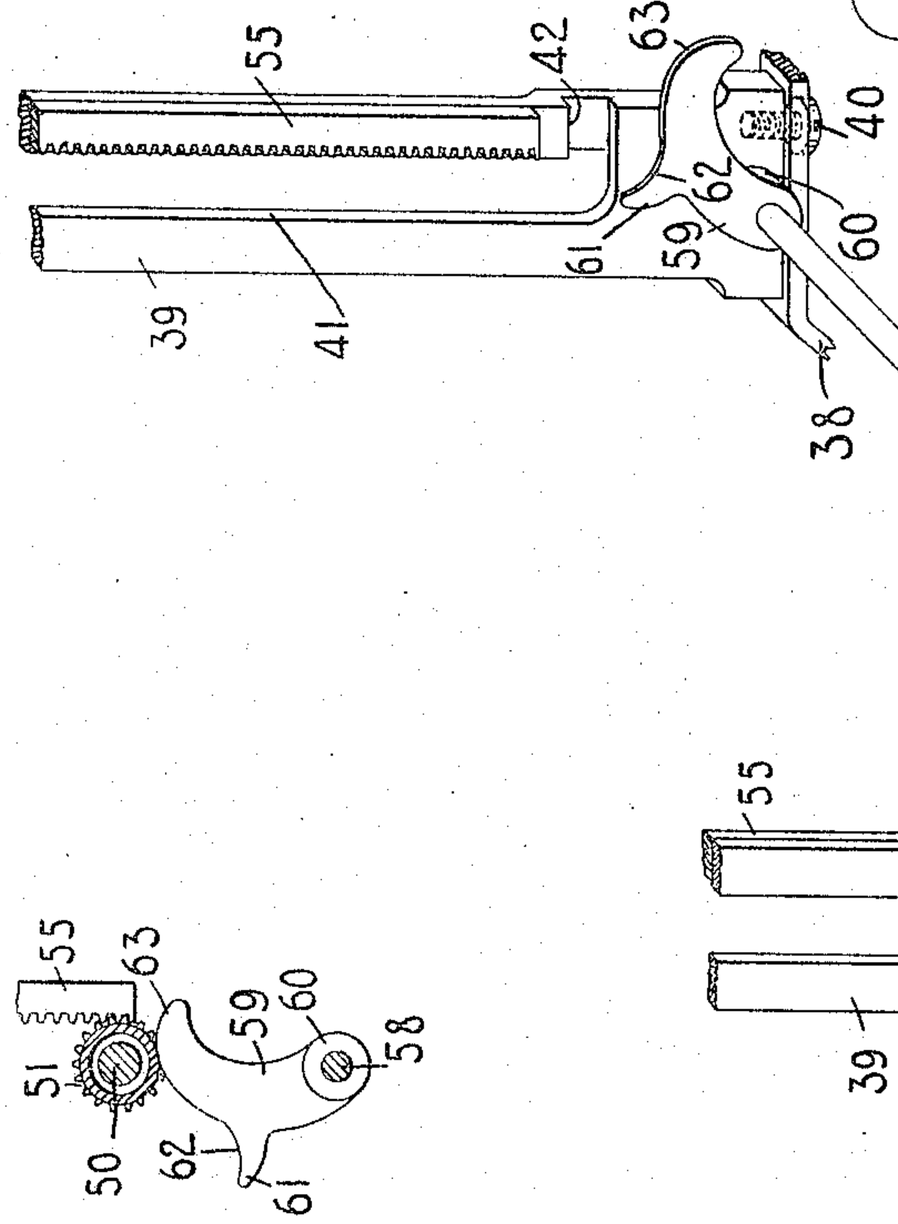





FIG. 7.




FIG. 8.

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# 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.

939,579. Specification of Letters Patent. Patented Nov. 9, 1909.

Application filed June 5, 1906. Serial No. 320,938.

*To all whom it may concern:*

Be it known that I, CLIO B. YAW, 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 what are commonly termed carbon roll mechanisms for typewriting machines and the object of said invention, generally stated, is to provide an improved mechanism of the class specified.

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

The invention is shown applied to a front-strike typewriting machine but the nature of said invention is such that it may be adapted readily to other styles of writing machines.

In the accompanying drawings, Figure 1 is a front elevation of the upper part of a typewriting machine embodying my invention; parts being omitted. Fig. 2 is a side elevation of Fig. 1. Fig. 3 is a sectional view taken transversely of the platen and showing the paper controlling mechanism. Fig. 4 is a sectional view corresponding to Fig. 3 but showing some of the parts in different relations, other parts shown in Fig. 3 being omitted. Fig. 5 is a fragmentary sectional view taken longitudinally of a part hereinafter termed a guide roller or guide. Fig. 6 is a fragmentary longitudinal sectional view of a part hereinafter termed a material-carrying device or roll-holder. Fig. 7 is a fragmentary perspective view illustrating especially a device hereinafter termed a loading device or loader. Fig. 8 is a fragmentary sectional view taken transversely of the roll-holder and illustrating the manner in which the loader coöperates therewith. Fig. 9 is a fragmentary sectional view taken longitudinally of the shaft of the loader.

As illustrated in Figs. 1 and 2, the main frame of the machine comprises corner posts 1 supporting a top plate 2. Grooved guideways 3 and 4 are fixed above the top plate and coöperate with rollers 5, said rollers likewise coöperating with the front and rear bars respectively numbered 6 and 7 of a carriage which also comprises end bars 8. Links 9 connect the end bars 8 with the side or end bars 10 of a platen frame or carrier, said platen frame further comprising a cross bar 11 (Fig. 3) which connects the side bars 10. Journaled on the side bars 10 is an axle 12 which supports a platen 13. The platen is provided with the usual finger wheels (not shown), and with a line spacing ratchet wheel 14 with which coöperates the usual or suitable hand controlled line spacing devices (not shown). The printing instrumentalities and carriage feeding devices are not shown herein but are or may be of the usual construction.

The paper feeding devices are or may be substantially the same as those disclosed in the pending application of Edgar H. Berry, Serial No. 417,183, filed February 21, 1908, and comprise brackets 15 secured by screws 16 to the cross bar 11. Supported on the brackets 15 is a cross rod 17 on which are journaled a pair of three-armed levers 18. Pivoted at 19 to the horizontally disposed arms of said three-armed levers are carriers 20 on which are journaled shafts 21 and 22 carrying respectively front and rear sectional feed rollers 23 and 24. The feed rollers are adapted to be maintained in contact with the platen or the paper thereon as shown in Fig. 3 by springs 25 which are secured to the depending vertical arms of the three-armed levers 18. The upwardly extending arms of said three-armed levers terminate in finger portions $18^a$ which are adapted to be engaged by fingers or lugs 26 fixed to a rock shaft 27 journaled at the upper ends of the brackets 15. A release key 28 is fixed to the left-hand end of the rock shaft 27 and when pushed rearward causes the lugs 26 to act against the fingers $18^a$, turning the three-armed levers on the rods 17 so as to overcome the springs 25 and to move the feed rollers 23 and 24 away from the platen.

A paper apron or scale plate 29 is arranged at the under side of the platen and provided with tabs or ears 30, as shown most clearly in Fig. 4, by which said scale plate is pivotally connected at 31 with arms 32 pivoted on the rod 17. The left-hand arm 32 is provided with an upward extension $32^a$. The arm 32 and its extension $32^a$ constitute an angular lever which is operated in a manner presently to be described through a

lateral pin 33 projecting from the extension $32^a$, to force the forward portion of the paper apron or plate 29 into close contact with the platen or the paper thereon as shown in Fig. 4. In the present construction the usual springs for maintaining the paper apron 29 in contact with the platen may be dispensed with so that the paper apron, except when operated as hereinafter described, lies out of contact with the platen as shown in Fig. 3; or, if preferred, in order to prevent the paper apron from being loose on its pivots 31, a light spring or springs may be used to cause the paper apron to bear very lightly against the platen.

A paper table 34 may be mounted on a support 35 at the rear of the platen, and the usual paper fingers 36 may be mounted on a cross bar 37 at the front of the platen (Fig. 2).

The carbon roll mechanism proper is carried on a supporting frame which is mounted on the usual brackets 38 for the tabulator stop bar (not shown). The supporting frame is vertically disposed and comprises side bars 39 which are secured to the brackets 38 by headed screws 40 passing upward through holes in said brackets 38 into the bases of said side bars 39 (Figs. 2 and 7). The side bars 39 are formed with vertical slots or guide ways 41 having angularly disposed or horizontal entrance ways 42 at their lower ends to receive the carbon roll-holder presently to be described. At their upper ends said side bars terminate in socket portions $39^a$ which receive the ends of the extensions $43^a$ of a frame piece 43, which frame piece provides a bearing for a guide roller presently to be described. The frame piece is preferably made of wire and is shaped like an inverted U, the extensions $43^a$ forming the sides of the U and being fixed in the sockets $39^a$ in any suitable manner. Cross arms 44 connect the sides or extensions $43^a$ and are suitably secured thereto, said cross arms serving as braces to strengthen the supporting frame and make it rigid.

Before the wire forming the frame piece 43 is bent into shape it receives a guide roller or guide 45, the construction of which is best shown in Fig. 5. The guide roller proper is a hollow cylinder which is provided with solid hubs or bearing pieces 46, said hubs being suitably secured in the ends of the guide roller 45. The guide roller is adapted to turn freely on the frame piece 43 but is held from endwise motion by collars 47 abutting against the end of the hubs 46. Said collars 47 are secured to the frame piece by set screws 48.

The details of the material carrying or roll-holder device are best shown in Fig. 6. The roll-holder proper 49 is preferably made solid to give it weight, for the reason that in the present construction gravity is depended on to move the roll-holder automatically and rewind the carbon paper or other material thereon, as will presently be described. The roll-holder 49 is cylindrical and is formed with reduced end portions $49^a$. Said roll-holder is mounted on a shaft 50 and is adapted to turn with said shaft ordinarily but may have a rotary motion independent thereof by reason of a frictional connection with said shaft. The shaft at its ends is slightly tapered and carries pinions 51, said pinions being driven on to the tapered end portions of the shaft and being held in place by headed screws 52 which are received in tapped openings in the ends of the shaft, the heads of said screws being provided with flanges $52^a$ which abut against the outer heads of the pinions 51.

One end of the roll holder 49 is formed with a depression or socket 53 which receives a coiled friction spring 54, said spring surrounding the shaft 50 and bearing at one end against the bottom of the depression 53 and at the other end against the inner face of the adjacent pinion 51. It will be seen that the pinions 51 are fixed to the shaft 50 so that they always turn with it and it will be understood that by reason of the frictional connection through the spring 54 between the roll-holder proper 49 and one of the pinions 51, said roll-holder will normally turn with the shaft and pinions without any change in relationship among them. It will be understood, however, that if the shaft and pinions are held from turning the roll-holder 49 may, nevertheless, be turned if sufficient power be applied to overcome the friction of the spring 54. As shown in Fig. 6 the distance between the inner faces of the pinions 51 is slightly in excess of the length of the roll holder proper 49 so that said pinions in themselves will not prevent relative turning movement of the roll-holder, the friction spring 54 performing this function.

The heads of the screws 52 are adapted to coöperate with the sides of the guide ways or slot-ways 41 in the side bars 39 to guide the roll-holder up and down lengthwise of said slots, the flanges $52^a$ preventing endwise displacement of the roll-holder. In order to cause turning movements of said roll-holder during its excursions up and down the slot-ways 41, rack bars 55 (Figs. 1, 2 and 7) to coöperate with the pinions 51 are provided, said rack bars extending lengthwise of said slots and being secured to the inner walls of the side bars 39 at the rear sides of the slot-ways 41.

To insure the proper engagement of the teeth of the pinions 51 with corresponding teeth of the rack bars 55, a mechanical loading device is provided for receiving the roll-holder and entering the roll-holder in place on the machine, or "loading" it. Before entering the roll-holder in place a rolled

sheet or roll of carbon paper 56 or other suitable material wound upon a core or carrier 57 is mounted on said roll-holder, the core 57 being forced on to the roll-holder and the friction between the core and the surface of said roll-holder being sufficient to cause the roll-holder and the core to rotate in unison to unwind or wind the sheet 56.

The loading device is illustrated in Figs. 1, 2, 7 and 9, comprising a rock-shaft 58 having bearings in the bases of the side bars 39. Adjacent the inner faces of the side bars 39, cradle pieces 59 are mounted on the rock shaft 58, said cradle pieces being provided with hubs 60 which are pinned or otherwise suitably secured to the shaft. Each cradle piece is provided with a toe or extension 61, having a curved edge 62 which is a continuation of the curved upper edge 63 of the body of the cradle piece. The shaft 58 extends outward through and beyond the right-hand side bar 39 as shown most clearly in Fig. 9, which is a rear view. The extended part of said shaft receives a handle 64 which is provided with a hub portion 65, said hub being driven or otherwise suitably secured to the shaft 58. The hub 65 is provided with a depression 66 which receives a coiled restoring spring 67, one end of which engages the hub, the other end engaging the adjacent side bar 39. The spring 67 tends constantly to turn the shaft 58 and the cradle pieces forward, and normally maintains the right-hand cradle piece in contact with a stop pin 68 projecting laterally inward from the left-hand side bar 39. If desired, the spring 67 may be dispensed with and the loader operated entirely by hand.

When it is desired to enter the roll-holder in place in the machine the handle 64 is pushed rearward, turning the loader to the position shown in Fig. 7; then the roll is placed on the loader with the reduced end portions 49ª engaging the curved edges 62—63. The roll holder is thus seated or cradled, as it were, on the loader, the handle whereof is then released, enabling the spring 67 to turn the loader forward on its axis of rotation and causing the edges 63 to press the roll-holder forward. During the first part of the forward motion of the roll-holder, the heads of the screws 52 will pass through the mouths or entrances 42 of the guideways 41, and the forward movement of the roll-holder will continue until the heads of said screws contact with the front walls of the slots 41. Thereafter, during the further forward rotary movement of the loader the curved edges 63 will operate to lift or raise the roll holder in the slot ways 41 until at the end of the rotary movement of the loader, the roll-holder will have been lifted far enough to bring the pinions 51 into mesh with the racks 55 as appears from an inspection of Fig. 8. It will be seen that the loading device or loader affords a simple and convenient means of entering or feeding the roll-holder or material carrying device into place into the machine and insures that corresponding teeth of the rack bars 55 will be engaged by the associate pinions 51.

When the roll-holder is in place, the free end of the carbon paper 56 may be drawn upward at the front side of the roll-holder and over the top of the guide roller 45. Thence the carbon paper passes down over the front of an inclined chute or table 69 (Figs. 1 and 2). The chute is fastened to and supported by rods 70 extending forward from the upper cross rod 44 and is also fixed to an angled bracket 71 which extends forward from the left-hand side bar 39 and thence inward behind the chute, broadening out near its end to receive two securing screws 72 which enter the back of the chute. The side edge portions of the chute 69 are bent or inclined inward as indicated at 69ª over the top of the chute toward each other, providing guide ways through which the free end of the carbon paper is guided downward over the chute. Said chute is vertically disposed, being inclined slightly forward as best shown in Fig. 2, so that when the carbon paper passes the lower free end of the chute, which terminates slightly above the platen, said carbon paper will pass downward behind the platen and in between said platen and the rear feed roller 24. The platen may now be turned in line spacing direction to feed the carbon paper through the machine until it passes so far beyond the forward edge of the paper apron 29 that at the end of the automatic retracting movement presently to be described, the free end portion of the carbon paper will be between the platen and the forward end of the paper apron so that the carbon paper may be clamped by the paper apron as hereinafter explained.

When the carbon paper is led off the roll-holder and is pulled upward and over the guide roller 45, the roll-holder will, of course, be turned or rotated. Because of the engagement of the pinions 51 with the straight rack bars 55 the roll-holder as it rotates, will also move bodily upward, the pinions rotating and traveling along the rack bars and the heads of the screws 52, which screw heads are in the nature of guides, traversing the guide slots 41. When the upper ends of the guide slots are reached by the guides 52, the roll holder will be prevented from further bodily upward movement, but although the pinions 51 will be in engagement with the upper ends of the rack bars 55, nevertheless the roll-holder will continue to turn and permit further uninterrupted movement of the free end of the carbon paper because of the frictional device or

spring 54. The lengths of the slot-ways 41 and rack-bars 55 are preferably proportioned to allow a length of carbon paper to be unwound during the upward bodily movement of the roll-holder equal to the length of the longest bill sheet or work sheet which is intended to be written.

Supposing that the carbon paper 56 has been drawn forward past the paper apron as above explained and that the release key 28 be pushed rearward to move the feed rollers 23 and 24 away from the platen and release the carbon paper, then the roll-holder 49 being weighty will promptly run downward in its slot-ways under the influence of gravity. As it runs or moves downward, the roll holder will be rotated through the pinions 51 and racks 55, thus rewinding the carbon paper. This rotation or turning of the roll-holder and rewinding of the carbon paper will continue until the roll-holder reaches a position of rest near the botton of the slot-ways 41, where it may be arrested by contact with the edges 63 of the loader. It will be noted then that the loader may perform an additional function, serving as a closure for the lower ends of the slot-ways 41 and as a stop to limit the downward run of the roll-holder.

In order to prevent running up or excess movement of the transfer sheet or carbon paper during the rapid downward movement of the roll-holder, means are provided for causing the paper apron 29 to automatically grip or clamp the free end of the carbon paper when the roll-holder reaches the end of its downward travel. This automatic gripping or clamping means comprises an arm 73 fixed to and depending from a sleeve 74 surrounding the rock shaft 27. The arm 73 is provided with an open-mouthed slot 75 which receives the lateral pin 33, as best shown in Fig. 4. An angular arm 76 is fixed to the top of the sleeve 74 and extends rearward from said sleeve and then upward, being formed at the rear of its upper end portion with an inclined or cam edge 77. This cam edge coöperates with the left-hand reduced end 49ª of the roll-holder so that when the roll-holder nears the end of its downward travel it contacts with the edge 77 and turns the gripping member (comprising the arm 76, sleeve 74 and arm 73) on the shaft 27, thereby rotating the lever 32—32ª on the rod 17 and forcing the forward portion of the paper apron or gripping device toward the platen to clamp or grip the carbon paper and arrest its further backward feeding movement around the platen. The operative positions of the gripping member and paper apron are illustrated in Fig. 4.

It will be understood that an operation such as that described, beginning with the loading and ending with the downward run of the roll-holder, is only necessary when the roll of carbon paper is first loaded or entered in the machine. Assuming that the operation has been gone through with as above described, the mechanism and the carbon paper are now arranged to coöperate with the bill sheet or paper to be written on. As is well understood the work sheets commonly employed with this class of mechanism are in the form of folded bill sheets, such as that illustrated in Fig. 1 and numbered 78. The bill sheet is entered into the machine by first passing the folds or leaves thereof one in front of and one behind the chute 69 so that the bill straddles the chute and the fold of said bill is brought into engagement with the right-hand edge of the chute. Then the bill is slid downward until its edge passes between the rear feed roller 24 and the platen, said platen being then turned until the bill has been advanced into position to receive the first line of writing. As is well understood, this operation results in inclosing the carbon paper between the folds of the bill and said carbon paper will be fed forward through the machine with the bill sheet. At the start of the feeding of the carbon paper, the bodily upward movement of the roll holder will begin and said roll holder will separate from the cam edge 77, permitting the paper apron 29 to fall away from the platen to the position shown in Fig. 3. As the feeding of the bill sheet and carbon paper continues, the roll holder may move upward as before until it reaches the upper ends of the slots 41. Thereafter, during any further feeding of the bill sheet and carbon paper the roll holder will turn on the shaft 50 but without any bodily movement.

The writing is done in the usual way, the usual inking ribbon (not shown) inking the outer fold of the bill and the inner fold thereof being printed from the carbon paper as is well understood.

When the writing on the bill has been completed said bill may be fed forward out of the machine and then the release lever 28 may be pushed rearward to release the carbon paper or transfer sheet. As soon as the carbon paper is released, the roll holder 49 will run downward under the influence of gravity, turning during its downward run to wind up the carbon paper and feed it backward through the machine until said carbon paper is arrested by the clamping plate or paper apron 29 in position to begin the operations for writing on a new or second bill sheet. This clamping operation is preferably timed to coincide with the arrest of the roll-holder by the edges 63 on the loading device.

When a very long sheet or strip of carbon paper is wound upon the roll-holder, thus adding considerably to the weight thereof and consequently to the momentum during the downward run of said roll-holder, it

may be desirable in order to insure the proper operation of the paper apron or clamping plate to arrange the inclined edge 77 of the clamping member or lever so that said edge will itself serve as a stop for the roll-holder during its downward run. Obviously when the edge 77 operates in this way, the weight of the roll-holder will be applied to the paper apron through the connections between said paper apron and the edge 77 so that the clamping power or friction will be maintained constant. When the edge 77 is arranged in the manner last described it will, of course, be necessary, in order to introduce the roll-holder into its guide-ways and to withdraw it therefrom to force the upper arm 76 forward on the rock shaft beyond its working position. There must therefore be sufficient yield or give in the connections between the arm 76 and the clamping plate or paper apron, or sufficient resiliency in the arm 76, to permit of the forcing forward of said arm 76.

By the construction above described it will be noted that the spring devices heretofore commonly employed to automatically retract or rewind the carbon paper in this class of carbon roll mechanism are dispensed with, and the construction is thereby simplified and rendered more certain in operation. Furthermore, it will be noted that the automatic clamping device or paper apron 29 advantageously replaces the brake mechanism heretofore made use of to prevent overrunning or excess rewinding of the carbon paper. It will further be seen that by my present invention I provide a roll-holder device comprising a roll-holder proper, a shaft extending through said roll-holder proper, pinions fixed to said shaft at the ends of said roll-holder proper, and a yielding connection between said roll-holder proper and said shaft; that said yielding connection is a frictional connection and comprises a friction spring which coöperates with said roll-holder proper and with said shaft; that said pinions are retained on said shaft and prevented from accidental displacement therefrom by screws which are provided with heads that serve as guides for said roll-holder device when it is mounted in the machine; that combined with the roll-holder device or roll-holder is a loading device or loader for receiving said roll-holder outside the machine and introducing it into place in the machine so that it is automatically brought into coöperation with controlling mechanism, said controlling mechanism comprising a pair of racks or rack bars; that said loading device is pivotally mounted on the machine and is movable by hand into position to receive the roll-holder; that said roll-holder is brought into cooperation with said rack bars by bringing the pair of pinions carried by said roll-holder into mesh with said rack bars; that said roll-holder is adapted to coöperate with guide-ways on the machine, said guide-ways being provided with entrances or mouths, said entrances being at an angle to the lengths of the guide-ways, said guide-ways being vertical and said entrances or mouths being horizontal; that said loading device is movable to introduce the roll-holder into said entrances, to carry it along through said entrances horizontally and then to change its direction and lift it upward along said guide-ways a limited distance; that the loading device or loader comprises a rock shaft and a pair of cradle pieces fixed thereto and providing seats or cradles for said roll-holder; that cams are also provided for moving said roll-holder, said cams in the present instance being formed on the rotary cradle pieces and operating to move the roll-holder upward along said guide-ways after said roll-holder has passed horizontally through said entrances and has left its seats on said cradle pieces; that said loading device also comprises a handle fixed to said rock shaft, a restoring spring and a stop with which said restoring spring normally maintains said loading device in coöperation; that means are combined with the roll-holder for causing it to be moved bodily, so that it receives a movement of translation as it is turned by the drawing-off or unwinding of the material or rolled sheet, said sheet in the present instance being preferably carbon paper or a similar transfer medium; that the sheet is drawn off the roll-holder by the paper feeding mechanism comprising the two feed rolls, which mechanism cooperates with the platen to feed the sheet when the platen is turned; that in the present instance the said bodily movement of the roll-holder or material-carrying device is an upward movement; that means are provided for stopping said bodily upward movement, said stopping means being in the present instance the closed upper ends of the guide-ways 41; that means are provided for permitting rotary movement of the roll-holder to continue after its upward bodily movement has been stopped, said last named means comprising the friction spring connecting the roll-holder with its shaft; that the means for causing this bodily upward movement comprises the rack bars, and the pinions on the roll-holder; that when the paper releasing devices are operated to free the carbon paper the force of gravity causes a bodily downward movement of said roll-holder; that the rack bars and pinions cooperate during this bodily downward movement to rotate the roll-holder and rewind a portion of the carbon paper thereon; that said racks and pinions operate to cause bodily movement of the roll-holder in one direction when said roll-holder is turned in the

operation of feeding the carbon paper, while during bodily movement of said roll-holder in the opposite direction under the force of gravity, said racks and pinions operate to cause a rotary rewinding movement of said roll-holder; that bodily downward movement of said roll-holder may be limited by the loading device, said loading device in such case serving as a stop for said roll-holder and also as a closure for the open-mouthed guide-ways along which said roll-holder runs; that the roll-holder is mounted on a vertically arranged supporting frame which is secured to the platen carriage of the machine; that the guide-ways hereinbefore referred to are on the supporting frame; that said supporting frame carries a guide or guide roller at its top; that the material or carbon paper passes from the roll holder at the front side thereof upward over the guide roller and thence down over the chute or paper table which also is carried by said supporting frame; that from said chute the carbon paper passes down into the control of the platen and the coöperating feed rollers; that said roll-holder may be termed a gravity roll-holder and its downward run on said guide-ways may be termed a gravity run; that rewinding mechanism is provided in combination with said roll holder, which rewinding mechanism includes devices brought into operation by gravity, said devices including the rack bars and pinions; that means are provided for automatically arresting the work sheet after it has been rewound to a certain extent, said means operating to clamp the work sheet against the platen; that when the means for releasing the paper feeding devices is operated to force the paper from the control of said paper feeding devices said clamping means operates to automatically clamp the paper after said paper has been moved a predetermined distance independently of said paper feeding devices and of the platen; that this independent movement of the paper in the present instance is a movement of withdrawal or retraction; that the automatic clamping means comprise a clamping plate which in the present instance is the paper apron or scale plate; that devices are provided for automatically actuating said clamping plate to clamp the paper, said devices comprising arms fixed on a rotary sleeve, said arms and sleeve constituting a lever or clamping member; and that said lever or clamping member is provided with a cam which coöperates with said roll-holder during the downward run of the latter, said roll-holder serving to actuate said member or lever.

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, a roll-holder device comprising a roll-holder proper, a shaft extending therethrough, pinions fixed to said shaft outside said roll-holder, and a friction spring contained within said roll-holder and surrounding said shaft, said friction spring coöperating with said roll-holder and said shaft to frictionally connect them.

2. In a typewriting machine, a roll-holder device comprising a roll-holder proper, a shaft passing therethrough and connected with said roll-holder, pinions on the ends of said shaft, and screws for holding said pinions in place, said screws being provided with heads which serve as guides for said roll-holder device when it is mounted in the machine.

3. In a typewriting machine, the combination of a rack on the machine, a roll-holder provided with a pinion, and a loader operative to receive the roll-holder from outside the machine and to move it to bring said pinion into mesh with said rack.

4. In a typewriting machine, the combination of a roll-holder provided at its ends with pinions, a pair of racks mounted on the machine, and a loader operative to receive the roll-holder and to move it to bring said pinions into mesh with said racks.

5. In a typewriting machine, the combination of a roll-holder, guide-ways therefor on the machine, said guide-ways being provided with entrances, a loading device for receiving said roll-holder from outside said guide-ways, said device being movable to introduce said roll-holder into the entrances to said guide-ways and to move it a limited distance along said guide-ways.

6. In a typewriting machine, the combination of a roll-holder, guide-ways therefor on the machine, said guide-ways being provided with entrances angularly disposed to the lengths of said guide-ways, and a loading device operative to receive said roll-holder from outside the machine and to introduce it through said entrances into the guide-ways.

7. In a typewriting machine, the combination of a roll-holder, guide-ways therefor on the machine, said guide-ways being provided with entrances angularly disposed to the lengths of said guide-ways, and a loading device operative to receive said roll-holder from outside the machine to introduce it through said entrances into the guide-ways and to move it a limited distance along said guide-ways.

8. In a typewriting machine, the combination of a roll-holder, vertical guide-ways therefor provided at their lower ends with horizontally disposed entrances or mouths, a loading device adapted to introduce said

roll-holder into said entrances and to carry it along through said entrances horizontally and then to coöperate with said guide-ways to change the direction of movement of said roll-holder and lift it upward along said guide-ways, and means for operating said loading device.

9. In a typewriting machine, the combination of a roll-holder, an . a loading device therefor, said device comprising a rock shaft and a cradle-piece fixed thereon.

10. In a typewriting machine, the combination of a roll-holder, and a loading device therefor comprising a rock shaft and a pair of rotary cradle-pieces fixed on said rock shaft and providing a seat or cradle for said roll-holder, said device also comprising cams for moving said roll-holder.

11. In a typewriting machine, the combination of a roll-holder and a loading device therefor comprising a pair of rotary cradle-pieces connected together and spaced apart to coöperate with the roll-holder near its ends, said cradle-pieces providing seats for said roll-holder, and being provided also with cams for moving said roll-holder bodily after it leaves said seats.

12. In a typewriting machine, the combination of a roll-holder; and a loading device therefor, said loading device comprising a rock shaft, a pair of cradle-pieces fixed thereto and spaced apart to receive said roll-holder, a handle fixed to said rock shaft, a restoring spring; and a stop with which said restoring spring normally maintains said device in coöperation.

13. In a typewriting machine, the combination of a roll-holder, guide-ways along which said roll-holder is movable, said guide-ways being provided with entrances, and means for moving said roll-holder through said entrances into said guide-ways, said means serving also as a closure for said guide-ways.

14. In a typewriting machine, the combination of a roll-holder, guide-ways along which said roll-holder is movable, said guide-ways being provided with entrances, and means for moving said roll-holder through said entrances into said guide-ways, said means also serving as a stop to arrest movement of said roll-holder along said guide-ways.

15. In a typewriting machine, the combination of a roll-holder, guide-ways along which said roll-holder is movable, said guide-ways being provided with entrances, and means for moving said roll-holder through said entrances into said guide-ways, said means also serving as a stop for said roll-holder and as a closure for said guide-ways.

16. In a typewriting machine, the combination of a rotary roll-holder, and means for causing said roll-holder to receive a movement of translation as it is turned to unwind the sheet carried thereby.

17. In a typewriting machine, the combination of a platen, paper feeding mechanism, a material-carrying device which rotates as the material is drawn off it and fed over the platen, and means operating to cause said device to receive a movement of translation as it is rotated.

18. In a typewriting machine, the combination of a platen, paper feeding mechanism, a material-carrying device which rotates as the material is drawn off it and fed over the platen, means operating to cause said device to receive a movement of translation as it is rotated, and means for stopping bodily movement of said device, said first recited means comprising means permitting rotary movement of said device to continue after bodily movement thereof has been stopped.

19. In a typewriting machine, the combination of a rotary roll-holder, and means for causing said roll-holder to receive a movement of translation as the sheet is unwound therefrom, said means comprising a pinion on said roll-holder and a coöperating rack.

20. In a typewriting machine, the combination of a platen, paper feeding devices, a roll-holder which rotates as the material is drawn off it and fed over the platen, means for causing the roll-holder to move bodily in an upward direction during its rotary movements, means for releasing the sheet from said paper feeding devices and permitting the roll-holder to move bodily downward under the influence of gravity, said first recited means operating to rotate said roll-holder during its bodily downward movement.

21. In a typewriting machine, the combination with a roll-holder, of paper feeding devices operating to turn said roll-holder when the sheet is unwound and drawn off therefrom, means operating to cause bodily movement of said roll-holder in one direction as it is rotated to unwind the material therefrom, said means operating during bodily movement of said roll-holder in the opposite direction to rotate said roll-holder and rewind the material thereon.

22. In a typewriting machine, the combination of a roll-holder, paper feeding devices operating to rotate said roll-holder and draw off the sheet therefrom, a rack and pinion coöperating to cause bodily movement of said roll-holder in one direction as it is rotated to unwind the material therefrom, said rack and pinion operating to effect a rotary rewinding movement of said roll-holder when it is moved bodily in the opposite direction.

23. In a typewriting machine, the combination of a platen, a vertically arranged

supporting frame, a roll-holder, guide-ways on said supporting frame for said roll-holder, a guide for the material at the top of said frame, the material passing from the roll-holder up over the guide and thence down to the platen, paper feeding devices coöperating with said platen to draw off the paper from said roll-holder, means on said frame coöperating with said roll-holder to cause it to move bodily upward on said guide-ways as it is rotated in the drawing off of the paper, means for releasing the paper from said paper feeding devices and permitting said roll-holder to run bodily down said guide-ways under the influence of gravity, said first recited means operating to turn said roll-holder to rewind said paper thereon during the bodily downward movement of said roll-holder.

24. In a typewriting machine, the combination of a carriage, a platen thereon, an upright frame secured to said carriage, guide-ways on said frame, a guide at the top thereof, a chute mounted substantially vertically at the front of said frame, a roll-holder in said guide-ways; the material passing from said roll-holder upward over said guide and thence downward over said chute to the platen, paper feeding devices coöperating with said platen, paper feed releasing devices, pinions on said roll-holder, and vertically disposed rack bars on said frame and coöperative with said pinions during bodily up and down movements of said roll-holder on said guide-ways.

25. In a typewriting machine, the combination of a gravity operated roll-holder, and means for rotating said roll-holder during its gravity run.

26. In a typewriting machine, the combination of a platen, a roll-holder, means coöperative with the platen to unwind the sheet from said roll-holder, and mechanism including devices operating by gravity for rewinding the sheet on the roll-holder.

27. In a typewriting machine, the combination of a gravity operated roll-holder, and means for rotating said roll-holder during its gravity run, said means comprising a rack and pinion.

28. In a typewriting machine, the combination of a gravity operated roll-holder, and means for rotating said roll-holder during its gravity run, said means comprising a pair of pinions on said roll-holder and a pair of relatively fixed vertically arranged racks coöperative with said pinions.

29. In a typewriting machine, the combination of paper feeding devices, means for releasing said paper feeding devices to free the paper from the control of said feed devices, a clamp adapted to clamp the paper, and means for automatically operating said clamp when the paper has been moved a predetermined distance independently of said paper feeding devices.

30. In a typewriting machine, the combination of a rotary platen, paper feeding devices coöperating with said platen, means for releasing said paper feeding devices to allow the paper to be withdrawn, a clamp adapted to coöperate with the paper to press the same against the platen, and means for automatically operating said clamp when the paper has been withdrawn to a predetermined extent.

31. In a typewriting machine, the combination of a rotary platen, releasable paper feed devices coöperating with said platen, means for moving the paper independently of the platen when the feed devices are released, and means for automatically clamping and arresting the paper after it has been so moved to a predetermined extent.

32. In a typewriting machine, the combination of a platen, a roll-holder operative to rewind the sheet carried by it after said sheet has been unwound from the roll-holder and fed over the platen, and means for automatically arresting the sheet after it has been rewound to a certain extent.

33. In a typewriting machine, the combination of a platen, a roll-holder operative to rewind the sheet after said sheet has been unwound from the roll-holder and fed over the platen, and means for clamping the sheet against the platen after it has been rewound to a certain extent.

34. In a typewriting machine, the combination of a platen, a roll-holder operative to rewind the sheet after said sheet has been unwound from the roll-holder and fed over the platen, and automatic clamping means operative on said sheet to limit its backward or rewinding movement, said clamping means comprising a clamping plate coöperative with the platen, and means actuated by said roll-holder for operating said plate.

35. In a typewriting machine, the combination of a platen, a roll-holder operative to rewind the sheet after said sheet has been unwound from the roll-holder and fed over the platen, and automatic clamping means operative on said sheet to limit its backward or rewinding movement, said clamping means comprising a pivoted paper apron and devices actuated by said roll-holder for swinging said paper apron into clamping engagement with said platen.

36. In a typewriting machine, the combination of a platen, a roll-holder operative to rewind the sheet after said sheet has been unwound from the roll-holder and fed over the platen, and automatic clamping means operative on said sheet to limit its backward or rewinding movement, said clamping means comprising a paper apron and devices actuated by said roll-holder for

swinging said paper apron into clamping engagement with said platen, said devices comprising arms on which said paper apron is mounted and a lever connected with one of said arms and provided with a cam cooperative with said roll-holder.

37. In a typewriting machine, the combination of a platen, a material-carrying device having a rotary movement to wind up the material carried by it and having also a bodily movement, a clamp for said material, and means for operating said clamp, said means being actuated by said device and said clamp being adapted to be maintained or held in operation by the weight of said device.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 2nd day of June A. D. 1908.

CLIO B. YAW.

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