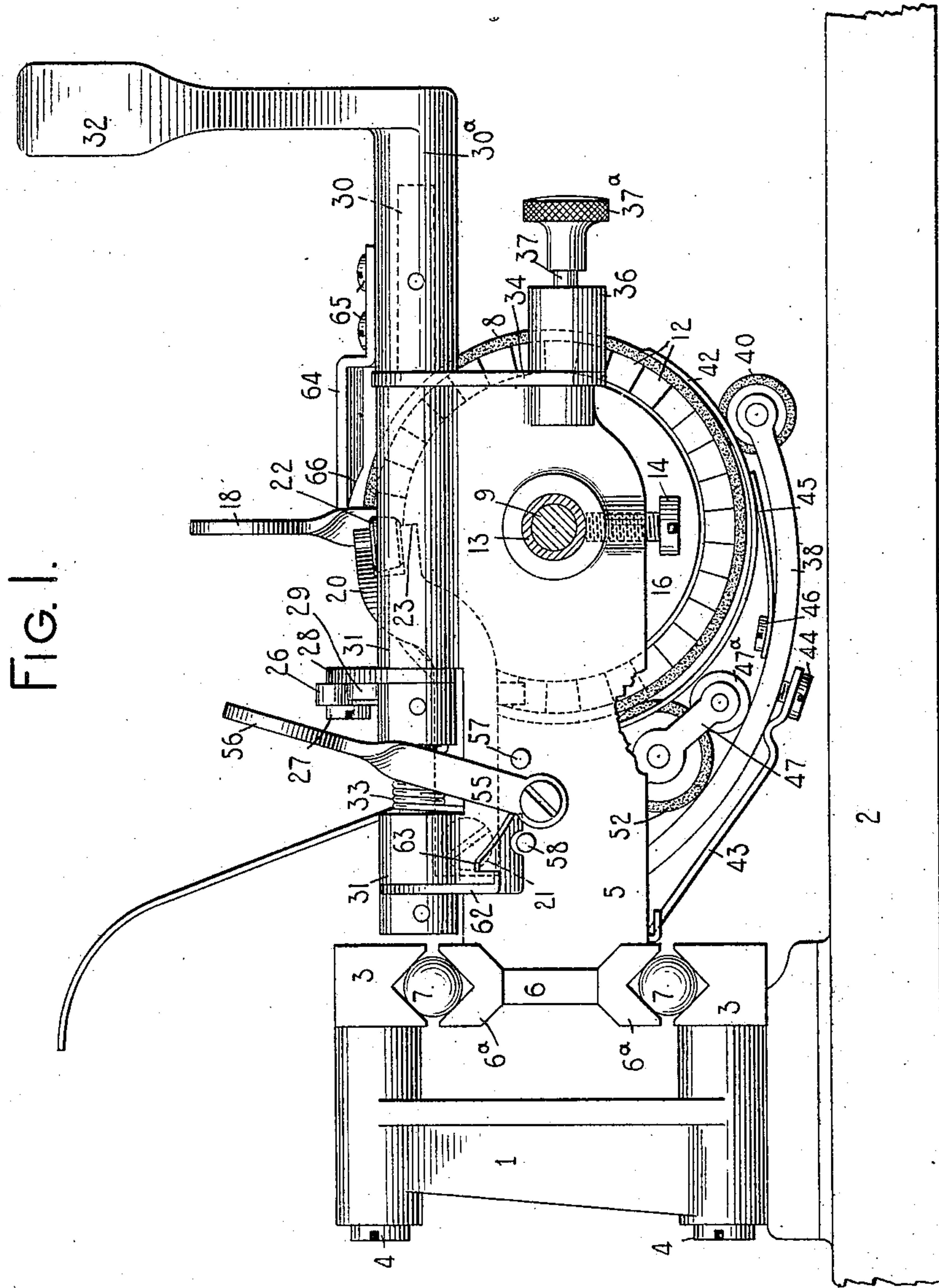


C. E. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED JULY 11, 1906.

980,689.

Patented Jan. 3, 1911.

3 SHEETS-SHEET 1.



WITNESSES:

J. B. Reeves.

R. H. Strother

INVENTOR:

Charles E. Smith

By Jacob F. Felt

HIS ATTORNEY

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3 SHEETS—SHEET 2.

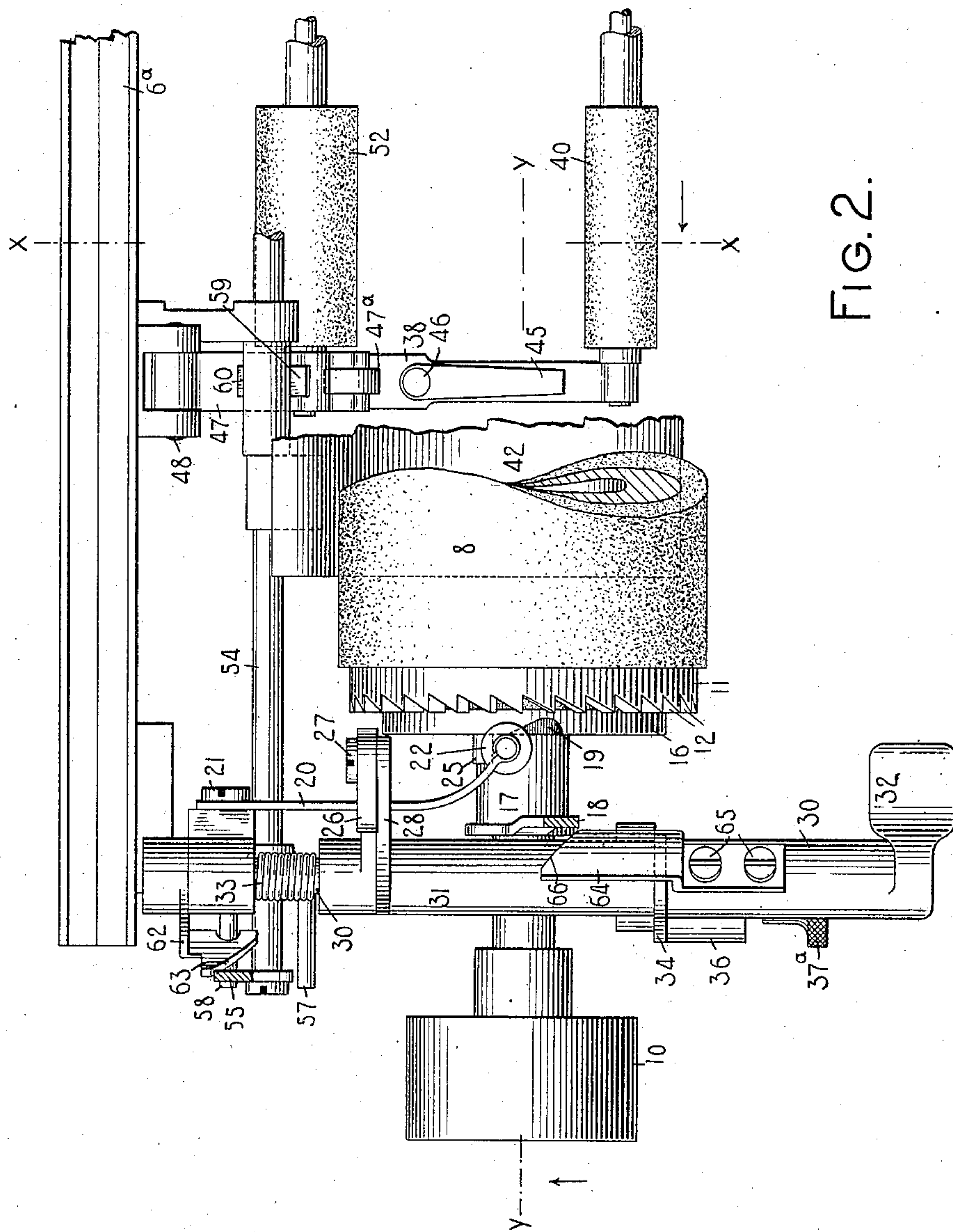


FIG. 2.

WITNESSES:

J. B. Deever.
R. H. Strother.

INVENTOR:

Charles E. Smith
By Jacob F. Feltner
HIS ATTORNEY

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3 SHEETS—SHEET 3.

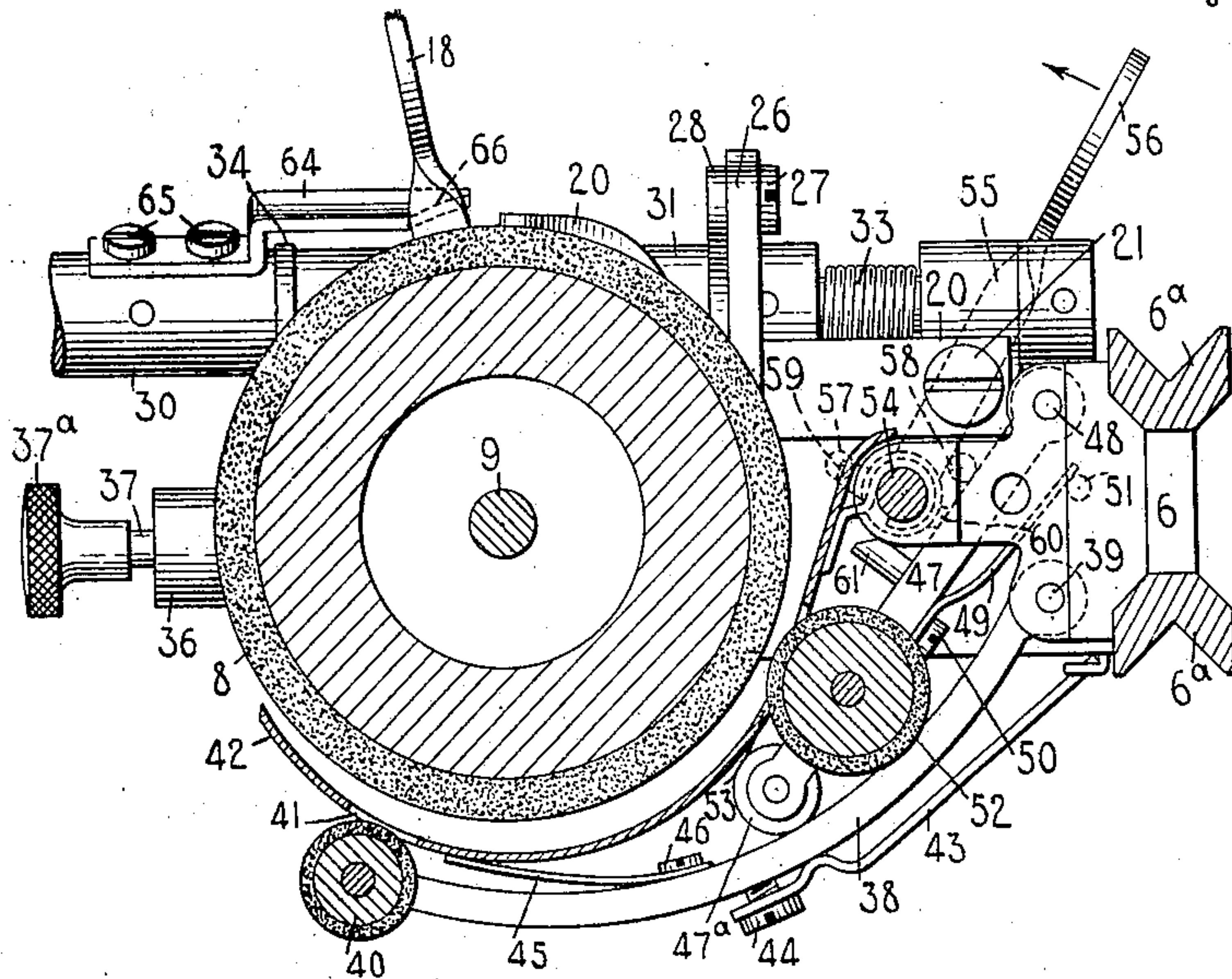


FIG. 3.

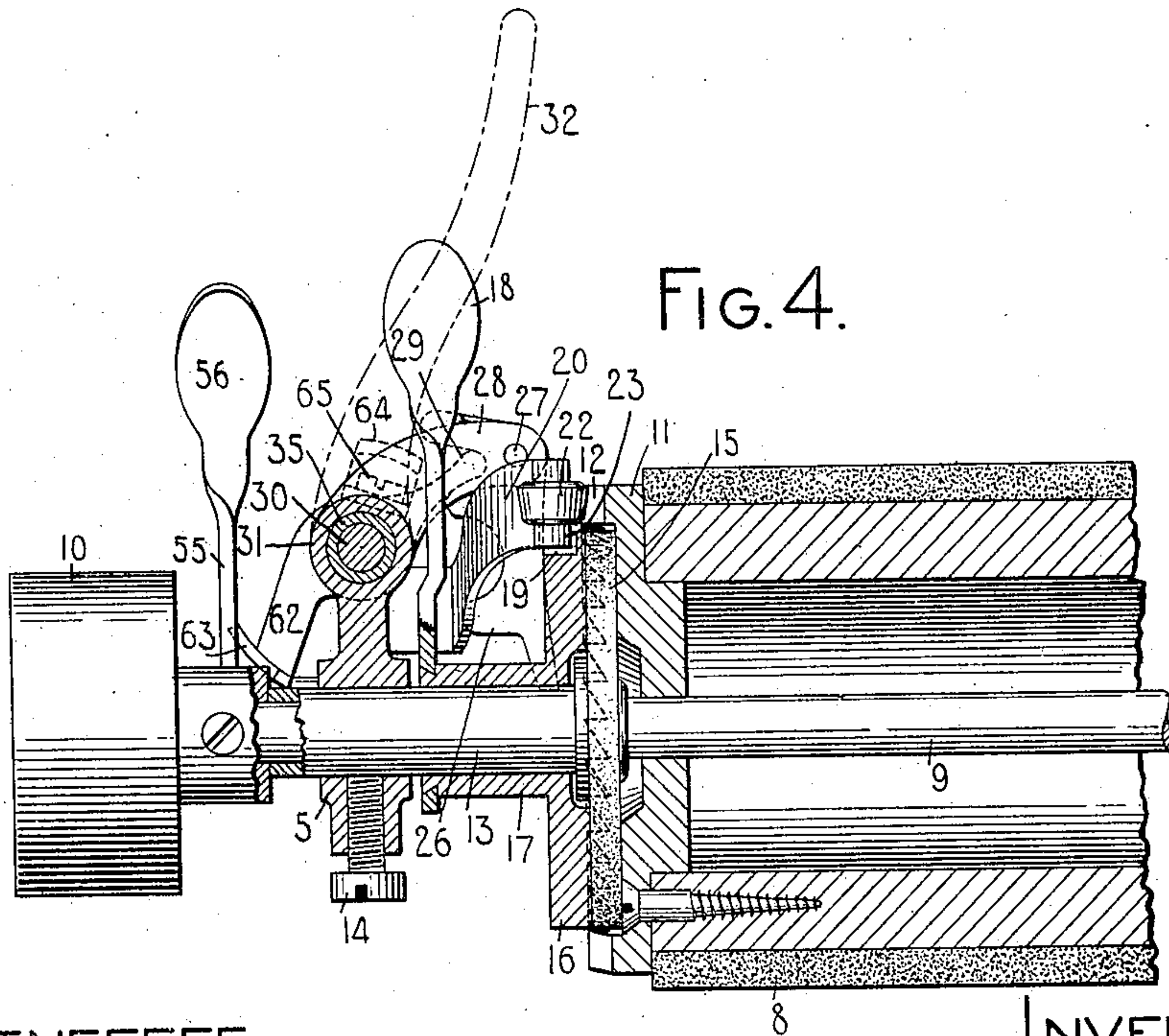


FIG. 4.

WITNESSES:

J. B. Reeves.
R. H. Strother.

INVENTOR:

Charles E. Smith

By Jacob Felber.

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES E. SMITH, OF NEW YORK, N. Y., ASSIGNOR TO UNION TYPEWRITER COMPANY,
OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

980,689.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed July 11, 1906. Serial No. 325,564.

To all whom it may concern:

Be it known that I, CHARLES E. SMITH, citizen of the United States, and resident of the borough of Brooklyn, in the city of New York, in the county of Kings 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 to typewriting machines and more particularly to paper feed mechanism therefor.

In machines having means for locking the feed rollers or other paper feeding or controlling devices in their released or inoperative position, operators, after locking the feed rollers or paper feeding devices in their released position in order to adjust the paper, frequently forget to restore the feeding devices to their normal or operative position before proceeding with the writing. In consequence the paper will not be fed at all or will be fed unevenly and the sheet will be spoiled before the operator realizes that the feed rollers are locked off. So frequently has this occurred that in some cases it has been deemed advisable to dispense with the use of locking means for locking off the feed rollers, notwithstanding the fact that the provision of such means is desirable in order that the operator may have both hands free to adjust the paper.

One object of my invention is to overcome the difficulty pointed out above and to provide simple and efficient means for automatically releasing the paper feed mechanism from a locked off or inoperative position should the operator forget to restore the paper feeding mechanism to operative position.

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

In the drawings, wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a fragmentary end elevation on an enlarged scale of the upper portion of a typewriting machine showing the features of my invention applied thereto, parts being broken away and parts omitted. Fig. 2 is a detail frag-

mentary plan view of the same, some of the parts shown in Fig. 1 being omitted. Fig. 3 is an enlarged detail vertical sectional view of the parts shown in Fig. 2 and with parts broken away; the section being taken on the line $x-x$ of Fig. 2 and looking in the direction of the arrow at said line. Fig. 4 is an enlarged transverse vertical sectional view taken on the line $y-y$ in Fig. 2.

I have shown my invention applied to a Monarch machine to which it may be readily adapted without changing any of the structural features of said machine, though it should be understood that the invention may be applied to various other styles of typewriting machines.

The supporting standards 1 are secured to and extend upwardly from the top plate 2 of the machine. Oppositely disposed grooved fixed carriage rails 3 are secured to the standards by screws 4 which extend through bearings in the standards and take at their forward ends into threaded openings in the carriage rails. The platen carriage or frame 5 is provided with a rear bar 6 having oppositely disposed grooved rails 6^a that receive anti-friction balls 7 which likewise cooperate with the fixed rails 3 to support and guide the carriage in its movements from side to side of the machine and to prevent a swinging movement of the platen such as may be effected in bottom-strike machines. When I refer herein and in the accompanying claims to a platen fixed against swinging movement, I mean to distinguish it from a platen such as those employed in bottom-strike or blind machines in which the platen receives a swinging movement in order to expose the writing.

A platen 8 is supported on a platen shaft 9 that extends through bearings in the end bars or plates of the carriage and is provided with finger wheels 10 at the outer ends thereof. The left-hand platen head 11 is provided with crown ratchet teeth 12 thereon and forms a line spacing wheel. Surrounding the platen shaft 9 is a sleeve 13 which is secured against rotation and is maintained fixed relatively to the carriage by a screw 14 that extends through a threaded opening in an end plate of the platen frame and bears at its inner end against the sleeve. A friction washer or disk 15 is secured at its center to the inner end of the sleeve 13 and bears at one side thereof

against the outer face of the platen head. A disk 16 is mounted on or forms part of a sleeve 17 which surrounds the sleeve 13. The sleeve 17 has a finger piece or arm 18 connected thereto and by which it may be turned on the sleeve 13. The disk 16 has a cut-out, recess or cam slot 19 therein (see Fig. 2). A detent spring 20 is secured by a screw 21 to a fixed part of the carriage and the free end of the spring carries a detent roller 22. The bearing 23 formed at the end of the spring for the pivot of the detent roller is adapted to bear against the outer face of the disk 16 or to be received in the recess 19 therein, depending on the adjustment of the disk effected through the finger piece 18. When the bearing 23 is seated in the recess the detent roller bears against the teeth of the line spacing ratchet wheel and performs its usual function as a detent roller, whereas when the finger piece 18 is actuated to turn the disk, a side wall of the recess 19 in the disk will cam the roller out of contact with the teeth and the bearing 23 will rest against the outer face of the disk as shown in Fig. 2. A stop pin 25 is provided on the outer face of the disk to cooperate with the bearing 23 of the roller in order to limit the rotary movement of the disk 16. When the disk is positioned as indicated in Fig. 2 the pressure of the spring 20 is removed from the teeth of the line spacing wheel and is borne by the disk 16, said pressure at this time being effective to move the disk 16 longitudinally of the platen and to press the friction washer 15 against the left hand platen head to produce a frictional contact between the inner face of the friction washer 15 and the platen head, so that the platen is no longer under the control of the detent for step-by-step line feed but is under control of the frictional device for fractional line spacing. The fractional line spacing mechanism described is disclosed in the patent to Carl Gabrielson, No. 717,741, dated January 6th, 1903, and further description thereof is deemed unnecessary.

A line spacing pawl 26 is pivoted at 27 to an arm 28. An actuating crank arm 29 cooperates with the pawl to cause it first to turn on its pivot 27 in order that the nose of the pawl may be forced into engagement with the teeth of the line spacing ratchet wheel and then a further movement of the pawl will cause the platen to be rotated. The crank arm 29 referred to above is operatively connected to a rock shaft 30 received in a bearing 31 at the left-hand end of the carriage and provided with a finger piece 32 at the forward end thereof, by means of which the line spacing pawl may be actuated through the rock shaft and crank arm 29, the part 32 at the same time constituting a finger piece by which the carriage may be returned to the right. A restoring spring 33

is connected to the rock shaft to restore the parts to normal position. A depending crank arm 34 is connected to a sleeve 35 through which the rock shaft 30 extends and which is received in the bearing 31. This sleeve extends rearwardly through the bearing 31 and is operatively connected to the arm 28. The lower end of the arm 34 carries a housing 36 in which a spring-pressed pin 37 is received, said pin having a head 37^a by which it may be moved. The rear end of the pin is adapted to be seated in any one of several openings in the carriage in order to effect an adjustment of the arm 28 so that the normal position of said arm may be changed to determine the extent of line spacing movement that may be given to the line spacing pawl. The line spacing mechanism described above is fully disclosed in the patent to Henry W. Merritt, dated June 6th, 1905, No. 791,483.

Feed roll hangers 38 are pivoted to the carriage at 39 and extend forwardly beneath the platen and carry paper feed rollers 40 at the forward ends thereof, said feed rollers extending through openings 41 in the paper apron 42. Leaf springs 43 are secured at their forward ends by screws 44 to the feed roll hangers 38 and bear at their rear free ends against the carriage and tend to force the feed rollers 40 toward the platen. A leaf spring 45 is secured by a screw 46 to each of the feed roll hangers 38 and bears at its forward free end against the paper apron and tends to force the forward end thereof up toward the platen. Feed roll hangers 47 are pivoted to the carriage at 48 above the feed roll hangers 38 and each of said hangers 47 has a leaf spring 49 secured thereto by a screw 50, the upper end of each spring bearing against a pin 51 on the carriage. The feed roll hangers 47 carry main feed rollers 52 which extend through openings 53 formed in the paper apron and are adapted to be forced into contact with the platen by their springs 49. The lower end of each hanger 47 carries an anti-friction roller 47^a which is adapted to bear on the upper side of the hanger 38 directly beneath it as shown in Figs. 2 and 9.

A rock shaft 54 is received in bearings in the carriage and extends substantially throughout the length thereof. This rock shaft carries at its left-hand end an upwardly extending arm 55 which terminates in a finger piece 56 and by which the shaft may be rocked in either direction from the normal position. The movement of the arm 55 in opposite directions is limited by two stop pins 57 and 58 (see Fig. 1). The rock shaft is provided with two oppositely disposed projections 59 and 60 above each of the hangers 47. Each of the projections 59 is adapted to cooperate with an upwardly projecting pin 61 carried by the associated

hanger 47 when the finger piece 56 is moved in the direction of the arrow in Fig. 3 until the arm 55 contacts with the forward stop pin 57. The effect of this movement of the
 5 finger piece 56 is to bring the projections 59 into coöperation with the pins 61 and to move the feed roll hangers 47 against the tension of their springs, thus forcing the feed rollers away from the platen or to the
 10 inoperative position. This same movement of the parts is effective, through the anti-friction rollers 47^a, to force the feed rollers 40 away from the platen or to the inoperative position.

15 When pressure on the finger piece 56 is released the parts will be restored to their normal positions by the springs 43 and 49. When the finger piece 56 is moved rearwardly from the normal position shown in
 20 Fig. 1 until the arm 55 is arrested by contacting with the stop pin 58 the other set of projections 60 on the rock shaft are brought into engagement with the feed roll hangers 47 to force the feed rollers away from the
 25 platen to the inoperative position, as shown in Fig. 3. From an inspection of this figure it will be seen that a flat face or nose is formed on each of the projections 60 and that when a full rearward movement of the
 30 finger piece 56 is effected the flat faces on the projections 60 are brought into contact with the upper sides of the feed roll hangers 47 after having moved the feed rollers to the releasing position. The pressure of
 35 the springs 43 and 49 bearing against the feed roll hangers is exerted against the ends of the projections 60 and toward the axis of the shaft 54 so that the means described constitute what may be termed frictional
 40 locking means which tend to maintain the parts locked in the released positions to which they have been moved as shown in Fig. 3. The construction therefore is such that if the handle 56 be moved to the posi-
 45 tion shown in Fig. 3, it may be released and it will remain in that position and the feed rollers will be maintained locked away from the platen until the handle is restored by some means to its normal position.

50 From the foregoing description it will be understood that a forward movement of the finger piece 56 from the normal position shown in Fig. 1 will effect a temporary release of the paper feed rollers 40 and 52 and
 55 said feed rollers will be restored to the normal position when pressure on the finger piece is released. When, however, the finger piece 56 is moved rearwardly to the position shown in Fig. 3 the parallel feed rollers will be moved away from the platen to the inoperative position and they will be
 60 locked in such position. The mechanism for controlling the feed rollers just described is not my invention but is fully disclosed and is claimed in the application of

Herbert H. Steele, filed February 17th, 1906, Serial No. 301,620.

One of the main objects of the present invention is to provide means for automatically releasing the feed rollers in case the
 70 operator should neglect to restore them to the operative position where they are effective to coöperate with the platen in order to effect the forward feed of the paper. This result I accomplish in the present in-
 75 stance by securing a crank arm 62 to the rock shaft 30 of the line spacing mechanism and forming a wiper arm or cam 63 on the lower end thereof. The arm 62 extends radially from a hub fixed on the shaft 30, and
 80 its free end is bent toward the front of the machine and formed with an inclined edge which constitutes the cam 63. From an inspection of Fig. 1 it will be seen that when the arm 55 for controlling the feed rollers
 85 is in the normal position shown in said figure an actuation of the line spacing mechanism at this time is in no way interfered with and the cam 63 and the arm 55 are not brought into coöperation. The same is true
 90 if the arm 55 be moved forwardly to temporarily release the feed rollers. If, however, the finger piece 56 be moved rearwardly to cause the feed rollers to be locked in the released or inoperative position, then
 95 the arm 55 will be moved into the path of the cam 63 and the first actuation of the line spacing arm 32 will cause the arm 55 to be cammed back to the normal position, thus releasing the feed rollers from the
 100 locked or inoperative position.

From what has been said it will be understood that if the operator should lock the feed rollers in the inoperative position in order to adjust the paper and should forget
 105 to restore the feed rollers to operative position and should proceed with the writing no harm can result. Thus, the ordinary paper fingers or the paper apron or both employed in the Monarch machine are sufficient to
 110 maintain the paper in proper position after it has been adjusted until the line is completed even though the feed rollers be locked in the inoperative position. As soon as the line has been completed the operator will
 115 actuate the finger piece 32 to restore the carriage to the right to begin a new line of writing and to effect a line spacing movement of the platen. The first portion of the movement of the finger piece 32 is effective
 120 to automatically release the locked feed rollers and enable them to be restored to the normal or operative position, and in practice it has been found that a proper line feed
 125 will be effected during this movement of the paper feed rollers to normal position. Each subsequent line spacing operation will take place in the usual manner and there is no liability of a sheet being injured or spoiled
 130 by the operator neglecting to release the feed

rollers from their locked-off or inoperative position.

Should the operator neglect to restore the platen to its step-by-step line spacing mechanism after using the fractional line spacing mechanism, such restoration will be automatically effected by the first actuation of the step-by-step line spacing mechanism. Thus, a cam 64 is secured to the rock shaft near the forward end thereof by screws 65 and an actuation of the finger piece 32 will bring the inclined edge 66 of the cam into cooperation with the arm 18 when the latter is moved forwardly, as shown in Fig. 2. In other words, if the operator should move the arm 18 to the position shown in Fig. 2 in order to throw the step-by-step line spacing mechanism out of operation and the fractional line spacing mechanism into operation and forget to restore the parts to normal position, then the first portion of the movement of the finger piece 32 will cause the arm 16 to be restored to its normal position, thereby taking the platen out of control of the fractional line spacing mechanism and restoring it to the control of the detent roller 22 and to the control of the step-by-step line spacing mechanism.

From the foregoing description it will be seen that I have provided simple and efficient means for automatically restoring the paper feed devices of the machine to operative position should the operator neglect to restore them to such position and that no injury to the sheet which is being written can result by reason of the operator's neglect.

While I have described one means for carrying out my invention by an actuation of the line spacing mechanism it should be understood that the automatic release of the parts from a locked position may be effected automatically by an actuation of any essential working part of the machine and that various changes may be made without departing from the spirit of my invention which, from certain aspects, contemplates broadly the provision of automatically actuated means for releasing the paper feeding devices in a machine which employs a carriage which is fixed against swinging movement or in which said release is effected automatically through a hand actuated part also employed to operate another working part of the machine.

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

1. In a visible typewriting machine, the combination of a rotative platen fixed against swinging movement, a paper feeding device, means for locking said paper feeding device in the inoperative position, and means for automatically releasing said paper feeding device from its locked position, said last mentioned means including

means whereby the act of locking the paper feeding device in the inoperative position alone renders said automatically operating releasing means operative to release the paper feed device.

2. In a typewriting machine, the combination with line spacing mechanism, of a paper feeding device, means for locking said paper feeding device in the inoperative position, and means for automatically releasing said feeding device from its locked position by an actuation of said line spacing mechanism.

3. In a typewriting machine, the combination of a carriage, a finger piece for returning the carriage to the right, a paper feeding device, means for locking said paper feeding device in the inoperative position, and means for automatically releasing said feeding device from its locked position, said last mentioned means including means whereby the act of locking said paper feed device, alone, renders said releasing means operative to release the paper feeding device when the finger piece is used to return the carriage to the right.

4. In a typewriting machine, the combination of a platen fixed against swinging movement, a paper feeding device, means for locking said paper feeding device in the inoperative position, and means for automatically releasing said paper feeding device from its locked position.

5. In a typewriting machine, the combination of a platen fixed against swinging movement, a paper feeding device, means for locking said paper feeding device in the inoperative position, hand actuated means for controlling a working part of the machine, and means controlled by an actuation of said hand actuated means for automatically releasing the paper feeding device from its locked position.

6. In a typewriting machine, the combination of a paper feed roller, means for moving the paper feed roller to and locking it in the inoperative position, line spacing mechanism, and means controlled by an actuation of the line spacing mechanism for automatically releasing the paper feeding roller from its locked position.

7. In a typewriting machine, the combination of a platen, a platen frame, a plurality of parallel paper feed rollers, means for simultaneously moving said feed rollers away from the platen, means for locking the feed rollers in the released or inoperative position, a hand actuated device carried by the platen frame and movable relatively thereto for actuating a part of the machine other than said feed rollers, and means controlled by an actuation of said hand actuated device for automatically releasing the feed rollers from their locked position.

8. In a typewriting machine, the combina-

tion of a platen, a plurality of parallel paper feed rollers, means for simultaneously moving said feed rollers away from the platen, means for locking the feed rollers in the released or inoperative position, line spacing mechanism, and means controlled by an actuation of said line spacing mechanism for automatically releasing the feed rollers from their locked position.

9. In a typewriting machine, the combination of a platen, a paper feed roller, a finger piece for controlling the movement of the feed roller into and out of operative position, the movement of the finger piece in one direction being operative to move the feed roller away from the platen or out of operative position and to afford a restoration of the feed roller to operative position when pressure on the finger piece is released, means brought into action by a movement of the finger piece in another direction for locking the feed roller in the inoperative position, and means for automatically releasing the feed roller from its locked position.

10. In a typewriting machine, the combination of a platen, a paper feed roller, a finger piece for controlling the movement of the feed roller into and out of operative position, the movement of the finger piece in one direction being operative to move the feed roller away from the platen or out of operative position and to afford a restoration of the feed roller to operative position when pressure on the finger piece is released, means brought into action by a movement of the finger piece in another direction for locking the feed roller in the inoperative position, line spacing mechanism, and means controlled by an actuation of the line spacing mechanism for automatically releasing the feed roller from its locked position.

11. In a typewriting machine, the combination of a platen, a paper feed roller, a finger piece for controlling the movement of the feed roller into and out of operative position, means for locking the feed roller in the inoperative position, and movable hand actuated means constantly related to and coöperating with said finger piece to automatically release the feed roller from its locked position whenever said movable hand actuated means are operated.

12. In a typewriting machine, the combination of a carriage, a platen, a feed roller, a finger piece for moving said feed roller to inoperative position, means for locking the feed roller in inoperative position, a finger piece carried by the carriage and operable to move the carriage from left to right to begin a new line of writing, and means controlled by an actuation of said last mentioned finger piece for automatically releasing the feed roller from its locked position.

13. In a typewriting machine, the combination of a carriage fixed against swing-

ing movement, a platen, a feed roller, a finger piece for moving said feed roller to inoperative position, means for locking the feed roller in inoperative position, and hand actuated means for automatically releasing said feed roller from its locked position.

14. In a typewriting machine, the combination of a carriage, a platen, a feed roller, a finger piece for moving said feed roller to inoperative position, means for locking the feed roller in inoperative position, and an automatically actuated cam constantly related to said locking means and operative to release the feed roller from the locked position whenever said cam is actuated.

15. In a typewriting machine, the combination of a carriage, a platen, a feed roller, a finger piece for moving said feed roller to inoperative position, means for locking the feed roller in inoperative position, a rock shaft, and means constantly related to said locking means and controlled by said rock shaft for automatically releasing said feed roller from the locked position whenever said rock shaft is actuated.

16. In a typewriting machine, the combination of a carriage, a platen, a feed roller, a finger piece for moving said feed roller to inoperative position, means for locking the feed roller in inoperative position, a line spacing rock shaft, line spacing means controlled by said rock shaft, and means controlled by an actuation of said rock shaft for automatically releasing the feed roller from its locked position.

17. In a typewriting machine, the combination of a platen, step-by-step line feed mechanism, fractional feeding means, and means for automatically taking the platen from control of the fractional feeding means and putting it under control of the step-by-step line feed mechanism.

18. In a typewriting machine, the combination of a line spacing wheel, a detent therefor, means for throwing said detent out of coöperation with said line spacing wheel, line spacing mechanism coöperating with said line spacing wheel to effect a step-by-step line feed of the platen, frictional means coöperating with the platen when the detent is off to afford fractional spacing of the platen, and means controlled by an actuation of the line spacing mechanism to automatically throw the frictional means out of operation and the detent into operation.

19. In a typewriting machine, the combination of a platen, step-by-step line feed mechanism, fractional feeding devices, and means for taking the platen from control of the fractional feeding devices and putting it under control of the step-by-step line feed mechanism, said means being automatically actuated by an operation of the step-by-step line feed mechanism.

20. In a typewriting machine, the combi-

nation of a step-by-step line space device, and a lock that is adapted to be automatically unlocked by an actuation of said step-by-step line space device.

5 21. In a typewriting machine, the combination of a line space device, paper feed devices adapted to be thrown into or out of operation, and means controlled by said line space device for throwing said paper feed
10 devices into operation.

22. In a typewriting machine, the combination of paper feeding devices, means for holding said paper feeding devices in inoperative position, a roller platen, means for
15 turning said platen, and means adapted to restore said paper feeding devices to operative position automatically when said platen is turned by said turning means.

23. In a typewriting machine, the combination of a platen; paper feeding devices
20 coöperative therewith; releasing and locking means for said paper feeding devices, said releasing and locking means including a finger piece movable in two directions:
25 means whereby when the finger piece is moved in one direction the paper feeding devices will be moved to an inoperative position and will be locked in such position and when said finger piece is moved in the
30 opposite direction the paper feed devices will be released from their locked position; and automatically actuated means for moving said finger piece to the releasing position.

35 24. In a typewriting machine, the combination of a platen, a paper feeding device, means for locking the paper feeding device in the inoperative position, a working part of the machine, and means for automatically
40 releasing said locking means by the operation of said working part, said last mentioned means including means whereby the act of locking the paper feeding device in the inoperative position, alone, renders said
45 working part operative to release said paper feed device.

25. In a typewriting machine, the combination of a platen, a platen frame, a paper feed device, means for moving said paper feed device away from the platen, means
50 for locking the paper feed device in the released or inoperative position, a hand actuated device carried by the platen frame and movable relatively thereto for actuating a part other than said paper feed device, and
55 means constantly related to the locking means controlled by an operation of said hand actuated device for automatically releasing the paper feed device from its locked position whenever said hand actuated device
60 is actuated.

26. In a typewriting machine, the combination of a platen fixed against swinging movement, a paper feed roller, a finger
65 piece for controlling the movement of the feed roller into and out of operative position, means for locking the feed roller in the inoperative position, and movable hand actuated means constantly related to and co-
70 operative with said finger piece to automatically release the feed roller from its locked position when said movable hand actuated means are operated.

27. In a typewriting machine, the combination of a carriage, a platen, a feed roller,
75 a finger piece for moving said feed roller to inoperative position, means for locking the feed roller in the inoperative position, and an automatically actuated cam constantly related to said finger piece and which is carried by and movable on the carriage and
80 which is operative to release the feed roller from the locked position.

Signed at the borough of Manhattan, city of New York, in the county of New
85 York, and State of New York, this 10th day of July, A. D. 1906.

CHARLES E. SMITH.

Witnesses:

E. M. WELLS,
J. B. DEEVES.