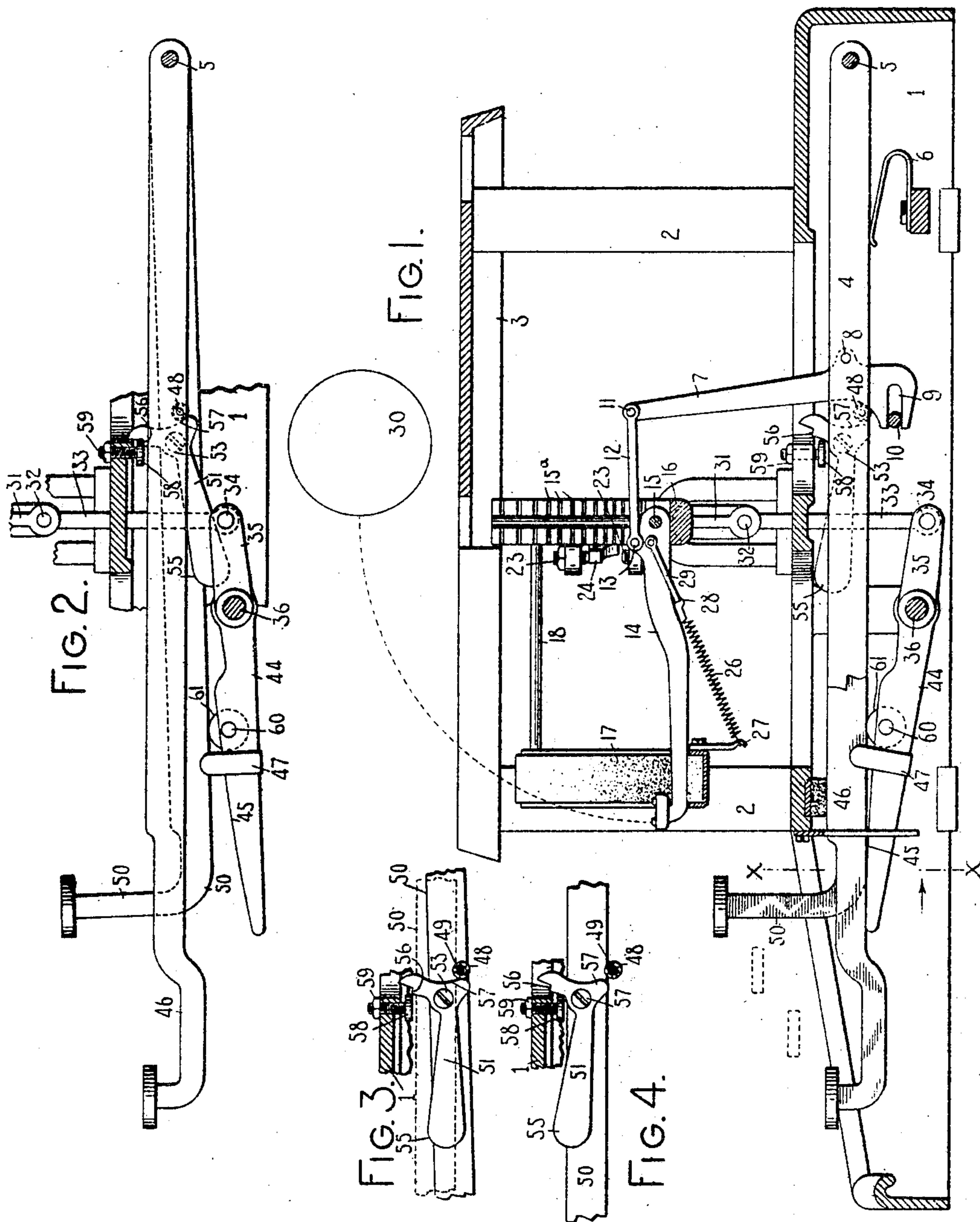


H. E. CURTIS.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 11, 1904.

2 SHEETS—SHEET 1.



WITNESSES.

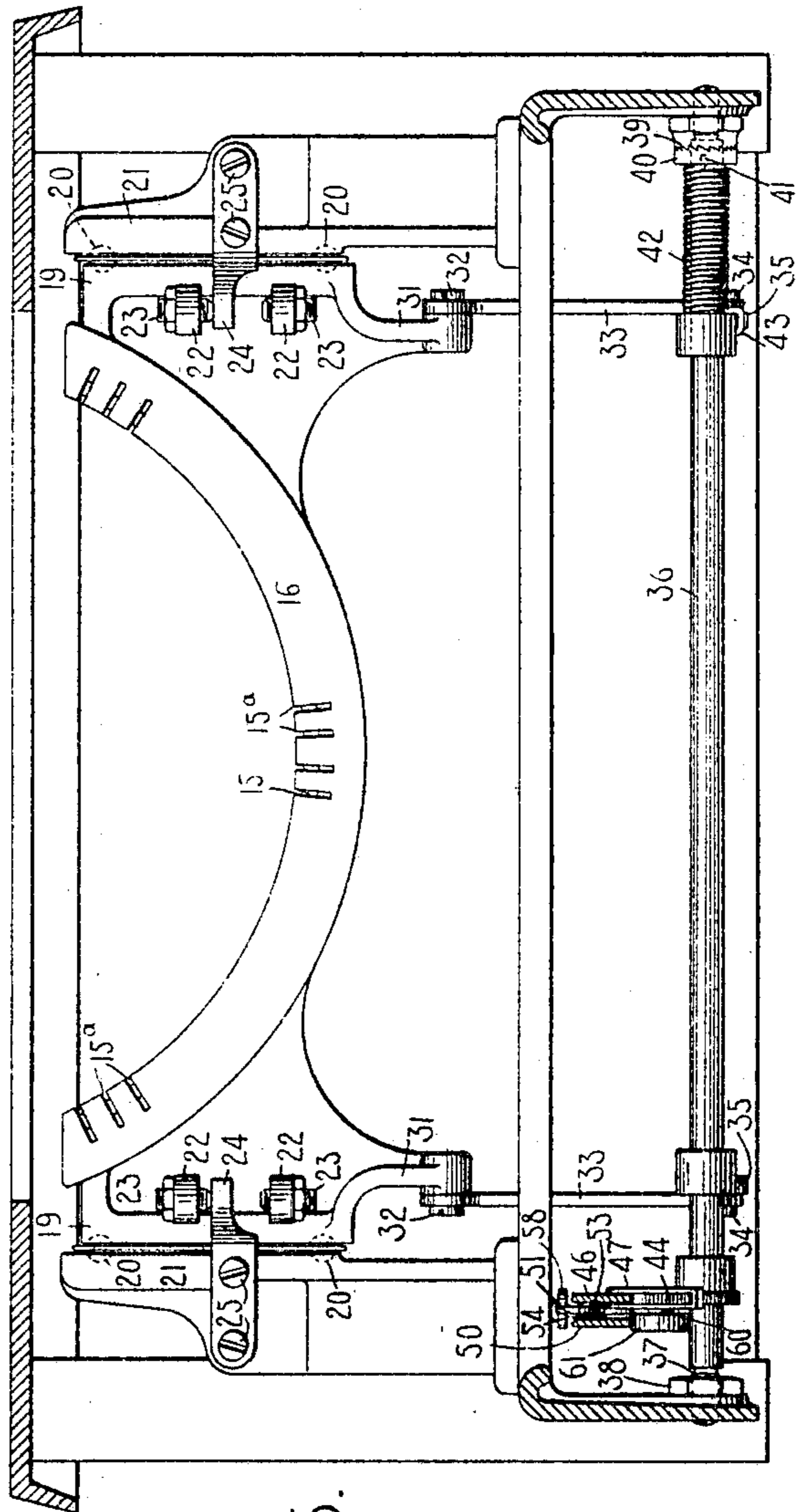
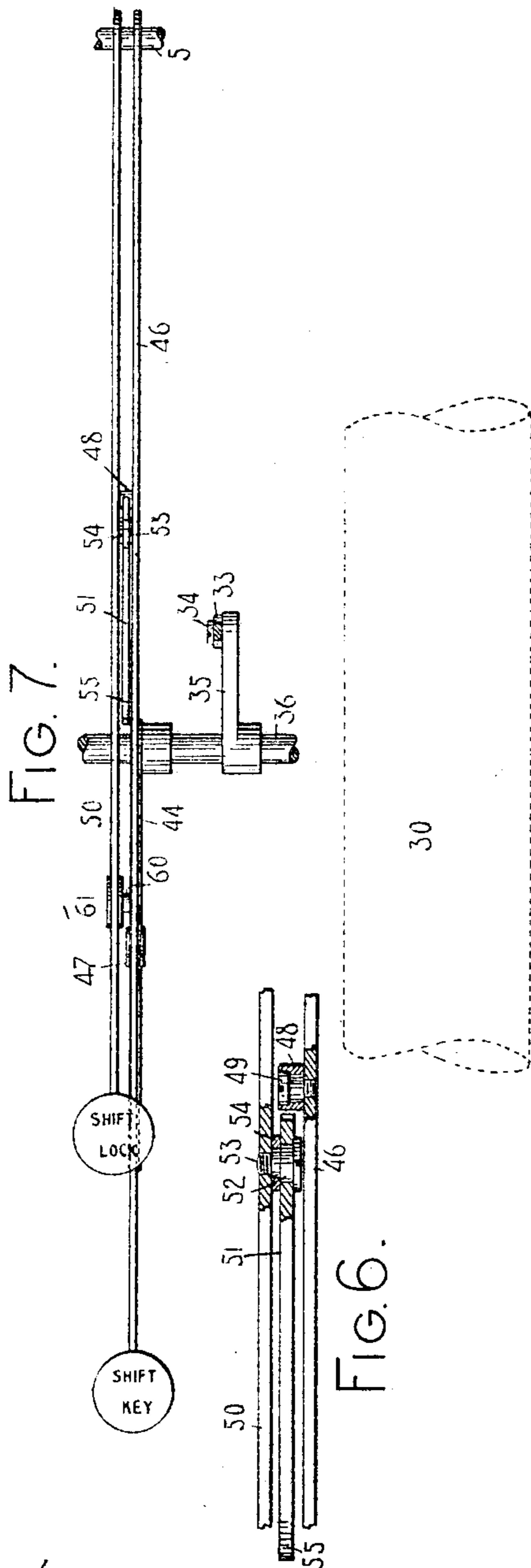
K. V. Monoran.
Charles Smith

INVENTOR.

Henry E. Curtis
By Jacob Felbel
HIS ATTORNEY

H. E. CURTIS.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 11, 1904.

2 SHEETS—SHEET 2.



WITNESSES.

R. V. Donovan.
Charles Smith

FIG. 5.

INVENTOR.
Henry E. Curtis
By *Jacob Felbel*
HIS ATTORNEY

UNITED STATES PATENT OFFICE.

HENRY E. CURTIS, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE MONARCH TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 799,034.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Application filed March 11, 1904. Serial No. 197,700.

To all whom it may concern:

Be it known that I, HENRY E. CURTIS, a citizen of the United States, and a resident of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to type-writing machines, and more particularly to case-shifting means for effecting a relative shift between the printing instrumentalities and the platen and for locking the shifting part in its shifted position when desired; and the object of said invention is to provide simple and efficient means of the character specified.

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 hereinafter described, and particularly pointed out in the appended claims.

In the accompanying drawings, wherein like reference characters designate like parts in the various views, Figure 1 is a vertical front to rear sectional view of sufficient number of parts of one form of type-writing machine to illustrate my invention in its application thereto, the parts being shown in their normal positions. Fig. 2 is a detail side elevation, partly in section, of the shifting mechanism, the view illustrating the parts as they appear when the segment is shifted and locked in its shifted position. Figs. 3 and 4 are detail side elevations, with parts in section, of portions of the shifting and locking mechanism. Fig. 5 is a transverse vertical sectional view of the machine, taken on the line *x x* of Fig. 1 and looking in the direction of the arrow at said line. Fig. 6 is an enlarged detail plan view, partly in section, of the latch for the shifting mechanism and certain of its associated parts. Fig. 7 is a detail fragmentary plan view of the shifting mechanism.

In the present instance I have shown my invention applied to a front-strike type-writing machine, wherein the type-bar segment is shifted vertically to change the position thereof for upper and lower case writing, though it should be understood that from certain aspects of my invention it is not limited to a machine of this construction and may be variously employed to effect a relative shift between the printing instrumentalities and the platen for lower and upper case writing.

The frame of the machine comprises the base 1, corner-posts 2, and a top plate 3, and key-levers 4 are pivoted at 5 in the base of the machine and are provided with the usual finger-keys and restoring-springs 6. Each key-lever has an upright sublever 7 pivoted thereto at 8, and the lower end portion of each sublever is slotted at 9 for the reception of a fixed fulcrum-bar 10, that extends transversely beneath the key-levers from side to side of the machine. The upper end of each sublever is pivoted at 11 to a forwardly-extending link 12, which is pivoted at its forward end, as at 13, to a type-bar 14. The type-bars are segmentally arranged and are pivoted on a segmental wire 15 and work in slots 15^a in the segment 16. The forward ends of the type-bars are supported upon a pad 17, which receives its support from rods 18, that project forwardly from the segment 16. Each side of the segment is provided with grooved tracks or guideways 19 for cooperation with antifriction-balls 20, that are likewise received in grooved upright guides 21, secured to the frame of the machine. The segment 16 is likewise provided at each side with forwardly-extending lugs 22, that have threaded openings therethrough for the reception of oppositely-disposed set-screws 23, the oppositely-projecting inner ends of each pair of set-screws constituting abutments for cooperation with an arm 24, secured by screws 25 to the upright guides 21. By these means the segment 16 is limited in its upward and downward movements, and the exact locations of the segment in its upper and lower case positions may be nicely determined by an adjustment of the set-screws. A restoring-spring 26 for each type-bar is secured at one end to a finger 27, depending from the support for the pad 17, and at its opposite end to a link 29, that is pivoted to the associated type-bar. A suitable carriage (not shown) is mounted to travel from side to side of the machine and supports the usual platen 30. (Diagrammatically illustrated in Figs. 1 and 2). The segment 16 has depending ears or lugs 31, through which threaded openings extend for the reception of the stems of headed screws 32, that pivotally connect upright links 33 to the type-bar segment, the lower ends of said links being pivotally connected at 34 to rearwardly-extending crank-arms 35, which project from a rock-shaft 36, that is

mounted at its ends on cone bearing-screws 37, which are received in threaded openings in the frame of the machine and are secured against movement in their adjusted position by lock-nuts 38. The right-hand lock-nut has ratchet-teeth 39 formed on the inner face thereof, which cooperate with ratchet-teeth on the outer face of a sleeve 40, which is loosely mounted on the rock-shaft 36. The sleeve 40 has an opening in the inner face thereof for the reception of one end 41 of a coiled spring 42, that surrounds the rock-shaft, and is connected at its opposite end 43 to the right-hand crank-arm 35 on the rock-shaft, so that the tension of the spring is applied as a counterbalance against the weight of the type-bar segment and the parts carried thereby in order that a slight pressure on the shift-key may effect a vertical movement of the segment and the parts carried thereby to shift the segment from the normal or lower-case position to the upper-case position.

The rock-shaft 36 carries a forwardly-extending crank-arm 44, the upper face or thread 45 of which is slightly curved for cooperation with the under edge of the so-called "temporary" shift-key lever 46, and a yoke 47 is secured to the crank-arm 44 and embraces the temporary shift-key lever 46 on opposite sides thereof, so as to maintain the parts in operative relation. The temporary shift-key lever, like the key-levers for the type-bars, is fulcrumed on the pivot-rod 5 and is provided with a laterally-extending abutment or trip 48, which in the present instance consists of an antifriction-roller which is secured to the lever by a headed screw 49, the stem thereof being received in a threaded opening in said key-lever and the purpose of which will be hereinafter more clearly described. It will be understood that a depression of the temporary shift-key will depress the arm 44, thus rocking the shaft 36, which is effective to shift the segment to the upper-case position. When pressure on the finger-key is released, the segment will drop by its own weight to the normal position and the key-lever 46 and the associated parts will be restored to their normal positions.

Beside the key-lever 46 is a so-called "permanent" shift-key lever 50, that is fulcrumed on the pivot-rod 5 and has a locking latch or device 51 pivoted on the side thereof and which is in the nature of a gravity-catch. This catch is pivoted to the key-lever 50 by a headed screw 52, the stem 53 of which is received in the threaded opening in the side of the key-lever 50, and a washer 54 is interposed between the side of the key-lever and the side of the gravity-catch or locking-latch in order to separate them. The locking-latch comprises a weighted arm 55, a locking-nose or abutment 56, and a cam or engaging surface 57. This locking-latch is adapted to cooperate with a locking-abutment 58, that is

carried by a fixed portion of the machine and is adjustable thereon. In the present instance this abutment comprises a headed screw, the stem thereof being received in a threaded opening in the frame and is held in its adjusted position by a lock-nut 59. The abutment 58 being fixed in any position to which it is adjusted, I have referred to this part herein as a "fixed" abutment. The locking-latch is normally maintained in the position illustrated in Fig. 1, where it will be observed that the abutment 48 on the temporary shift-key contacts with the cam or engaging surface 57 on the locking-latch and maintains it in the position shown in said figure. If at this time the so-called "permanent" shift-key is depressed, as illustrated in Fig. 2, the latch will be moved down with its key-lever 50 and change the position thereof relatively to the abutment 48, which at this time remains fixed, and the lowest portion of the cam or engaging surface 57 on the latch will be brought into cooperation with the abutment 48, and the engaging nose of the locking-latch will be permitted to engage under the abutment 58 at the termination of the depression, as illustrated in Fig. 2, and the permanent shift-key will thus be locked in its depressed position. The crank-arm 44 has a laterally-extending stud or spindle 60, which carries an antifriction-roller 61, as represented in Figs. 1 and 7, that is located beneath the permanent shift-key lever, and a depression of the permanent shift-key lever causes a depression in the arm 44, and the segment is shifted in the manner hereinbefore described. It will thus be understood that a depression of the permanent shift-key is effective to shift the segment for upper-case writing and to effect a locking of the parts in the shifted position, as represented in Fig. 2. Should the operator desire to release the segment and allow it to be restored to the normal position, it is merely necessary to depress the so-called "temporary" shift-key, and the abutment 48 will be brought into contact with the highest portion of the cam or engaging surface 57 on the locking-latch and will act in the nature of a trip to turn the latch on its pivot, thus disengaging the locking-nose from its cooperating fixed abutment 58, and the locking-latch being released the parts will be restored to normal positions when pressure on the temporary shift-key is released.

The purpose of making the abutment 58 adjustable is to regulate or time the engagement and disengagement of the locking-latch with said abutment to correspond to any adjustments of the set-screws 23 which regulate the shift of the segment or so as to assure proper engagement of the locking-latch with the abutment 58 under all adjustments of the screws 23.

From the foregoing description it will be seen that I have provided simple and efficient

shifting mechanism for effecting a relative shift between the printing instrumentalities and the platen for upper and lower case writing and have provided shifting mechanism wherein there is an assured action of the parts under various conditions and adjustments and in which there is little liability of the parts being accidentally displaced when they are locked in the shifted position, as is sometimes the case in other constructions employed for this purpose. Furthermore, it will be seen that the locking-latch 51 is key-controlled and that the key-levers 46 and 50 and the parts carried thereby cooperate with the locking-latch to afford a locking thereof when the lever 50 is depressed, to effect a release from the locked position when the lever 46 is depressed, and to afford a shift of the segment without locking when the lever 46 alone is depressed.

Various changes may be made without departing from the spirit of my invention, and certain features thereof may be employed without others.

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

1. In a type-writing machine, the combination of a platen, a series of type-bars, means for effecting a relative shift between the type-bars and platen for upper and lower case writing, said shifting means comprising a fixed abutment carried by a fixed portion of the machine, a key-controlled locking-latch that is adapted to be moved into and out of contact with said fixed abutment, and independent key-controlled means for tripping said latch to release it.

2. In a type-writing machine, the combination of a platen, a series of type-bars, means for effecting a relative shift between the type-bars and platen for upper and lower case writing, said shifting means comprising a fixed abutment carried by a fixed portion of the machine, a locking-latch that is adapted to be moved into and out of contact with said fixed abutment, means for effecting a relative adjustment between said abutment and locking-latch, key-actuated means for effecting an engagement of said latch, and independent key-controlled means for tripping said latch to release it.

3. In a type-writing machine, the combination of a type-bar segment, and means for shifting said segment, said shifting means comprising an adjustable abutment secured to a fixed portion of the machine, a locking-latch that cooperates with said abutment to hold the segment in its shifted position and moves into locking engagement with said abutment by gravity, and key-actuated means for controlling said locking-latch.

4. In a type-writing machine, the combination of a platen, a series of type-bars, means for effecting a relative shift between the type-bars and platen for upper and lower case writ-

ing, said shifting means comprising two key-levers arranged side by side, a locking-latch on one of said levers and a cooperating trip on the other, and an abutment with which said locking-latch cooperates.

5. In a type-writing machine, the combination of a platen, a series of type-bars, means for effecting a relative shift between the type-bars and platen for upper and lower case writing, said shifting means comprising two key-levers arranged side by side, a gravity locking-latch pivoted on one of said levers and a cooperating trip on the other, and an abutment with which said locking-latch cooperates.

6. In a type-writing machine, the combination of a platen, a series of type-bars, means for effecting a relative shift between the type-bars and platen for upper and lower case writing, said shifting means comprising two key-levers, a gravity locking-latch pivoted on one of said key-levers and adapted to maintain the key-lever to which it is connected depressed, a trip connected to the other key-lever and which is effective to cooperate with the locking-latch to release it from locked position, and a fixed abutment with which said locking-latch cooperates.

7. In a type-writing machine, the combination of a platen, a series of type-bars, means for effecting a relative shift between the type-bars and platen for upper and lower case writing, said shifting means comprising two key-levers and either of which is effective to bring about a relative shift between the type-bars and platen, a locking-latch pivoted on one of said key-levers and adapted to maintain the key-lever to which it is connected depressed, a trip connected to the other key-lever and which is effective to cooperate with the locking-latch to release it from locked position and to release the key-lever to which the latch is connected from the depressed position, and an abutment with which said locking-latch cooperates.

8. In a type-writing machine, the combination of a platen, a series of type-bars, means for effecting a relative shift between the type-bars and platen for upper and lower case writing, said shifting means comprising two key-levers arranged side by side and either of which is effective to bring about a relative shift between the type-bars and platen, a gravity locking-latch pivoted on one of said key-levers, a trip on the other key-lever, which trip is adapted to cooperate directly with the locking-latch to release it from the locked position, and an adjustable abutment with which said latch cooperates.

9. In a type-writing machine, the combination of a type-bar segment, and means for shifting said segment for upper and lower case writing, said shifting means comprising two key-levers arranged side by side and either of which is effective to shift said segment, a gravity locking-latch pivoted on one

of said key-levers and adapted to maintain the key-lever to which it is connected depressed, a trip on the other key-lever and adapted to coöperate directly with said locking-latch to
 5 release it from the locked position and to release the key-lever to which the latch is connected from the depressed position, an abutment that is secured to a fixed portion of the machine, and means for effecting a relative
 10 adjustment between the locking-latch and said abutment.

10. In a type-writing machine, the combination of a platen, a series of type-bars, means for effecting a relative shift between the type-
 15 bars and platen for upper and lower case writing, said shifting means comprising two key-levers arranged side by side, a locking-latch carried by and pivoted to one of said levers and having a weighted portion that turns said
 20 latch on its pivot to the locking position, a trip on the other lever that is adapted to contact with the locking-latch and move it to the releasing position, and an abutment with which said locking-latch coöperates.

25 11. In a type-writing machine, the combination of a platen, a series of type-bars, means for effecting a relative shift between the type-bars and platen for upper and lower case writing, said shifting means comprising two key-
 30 levers arranged side by side and either of which is effective to bring about a relative shift between the type-bars and platen, the one to effect a relative shift between said parts and to allow them to resume the normal po-
 35 sition when the finger-pressure thereon is released and the other to effect a relative shift and to lock the shifted part in the shifted position, a locking-latch carried by and pivoted to one of said levers and having a weighted
 40 portion that turns said latch on its pivot to the locking position, a trip on the other lever that is adapted to contact with the locking-latch and move it to the releasing position, and a fixed abutment with which said lock-
 45 ing-latch coöperates.

12. In a type-writing machine, the combination of a platen, a series of type-bars, means for effecting a relative shift between the type-
 50 bars and platen for upper and lower case writing, said shifting means comprising two key-levers, a rock-shaft, connections from said rock-shaft to the part to be shifted, a crank-arm on said rock-shaft and with which one of
 55 said key-levers coöperates to rock the said shaft, a locking-latch carried by and movable on one of said key-levers, a trip controlled by the other key-lever and which is effective to release the locking-latch, and an abutment with which the locking-latch coöperates.

60 13. In a type-writing machine, the combination of a platen, a series of type-bars, means for effecting a relative shift between the type-bars and platen for upper and lower case writing, said shifting means comprising two

key-levers arranged side by side, a rock-shaft, 65 connection from said rock-shaft to the part to be shifted, a crank-arm on said rock-shaft and with which one of said key-levers contacts to rock the said shaft, a locking-latch carried by and movable on one of said key- 70 levers, a trip controlled by the other key-lever and which is effective to contact with and release the locking-latch, and an abutment with which the locking-latch coöperates and which is carried by a fixed portion of the ma- 75 chine.

14. In a type-writing machine, the combination of a platen, a series of type-bars, means for effecting a relative shift between the type-
 bars and platen for upper and lower case 80 writing, said shifting means comprising two key-levers, one of which is effective to actuate the other, a rock-shaft, connection from said rock-shaft to the part to be shifted, a crank-arm on said rock-shaft and with which 85 one of said key-levers coöperates to rock the said shaft, a locking-latch carried by and movable on one of said key-levers, a trip controlled by the other key-lever and which is effective to release the locking-latch, and a fixed abut- 90 ment with which the locking-latch coöperates.

15. In a type-writing machine, the combination of a platen, a series of type-bars, means for effecting a relative shift between the type-
 bars and platen for upper and lower case 95 writing, said shifting means comprising two key-levers arranged side by side and one of which is effective to actuate the other and either of which is effective to shift the shift-
 100 able part, a rock-shaft, connections from said rock-shaft to the part to be shifted, a crank-arm on said rock-shaft and with which one of said key-levers contacts to rock said shaft, a locking-latch carried by and pivoted to one of
 105 said key-levers, a trip carried by the other key-lever and adapted to contact with said latch and turn on its pivot to the releasing position, and an adjustable abutment carried by a fixed portion of the machine and with which said
 110 locking-latch is adapted to coöperate.

16. In a type-writing machine, the combination of a shiftable type-bar segment, adjustable means for regulating the extent of shift
 of said segment, two key-levers, a locking- 115 latch pivoted to one of said key-levers, a trip carried by the other of said key-levers, an abutment with which said locking-latch coöperates, and means for effecting an adjustment between the said abutment and locking-
 120 latch.

Signed at Syracuse, in the county of Onondaga and State of New York, this 9th day of March, A. D. 1904.

HENRY E. CURTIS.

Witnesses:

PERCY RIDINGS,
 CHAS. H. COOKE.