

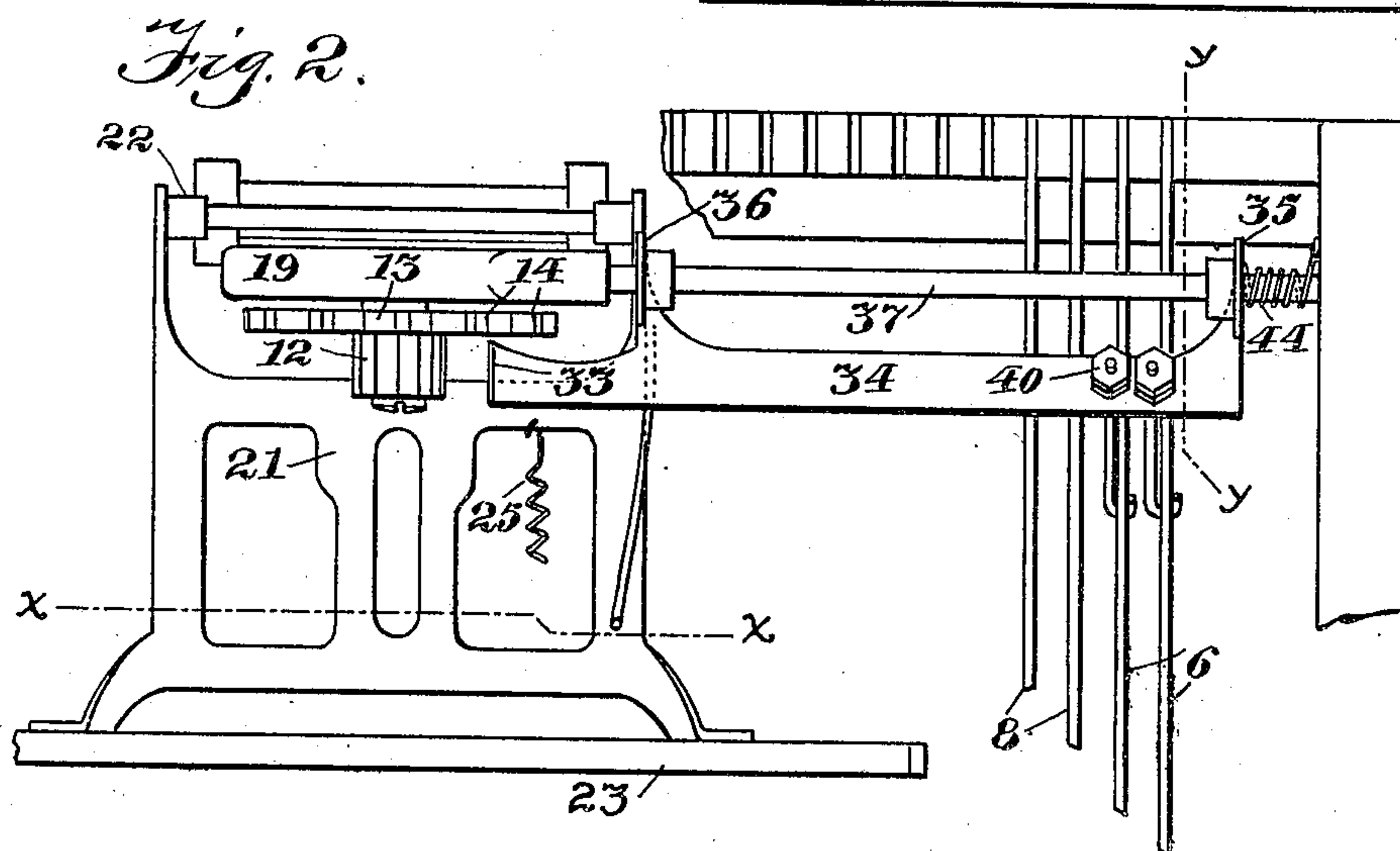
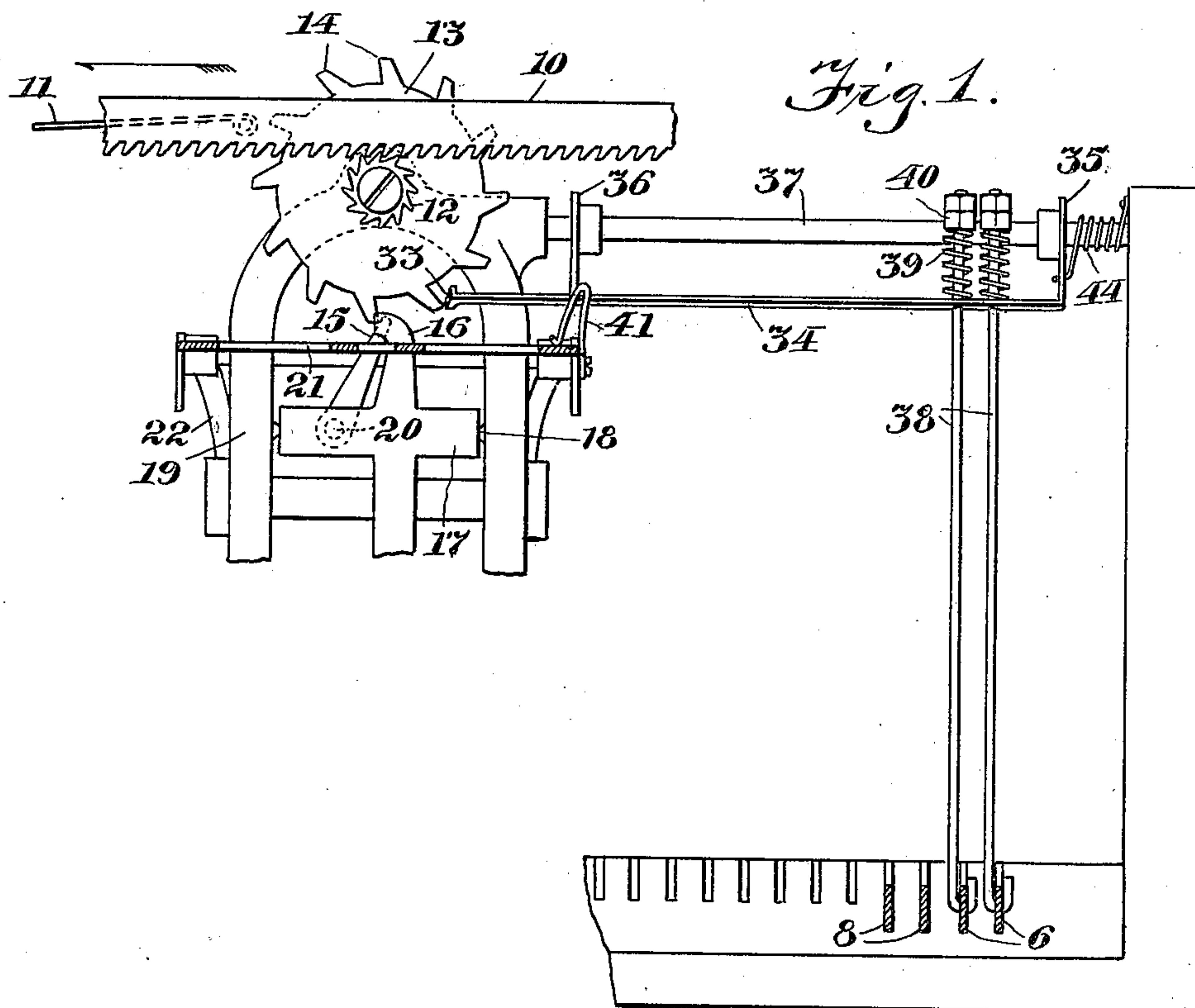
No. 843,828.

PATENTED FEB. 12, 1907.

E. F. KUNATH.
TYPE WRITING MACHINE.

APPLICATION FILED APR. 25, 1904.

2 SHEETS--SHEET 1.



No. 843,828.

PATENTED FEB. 12, 1907.

E. F. KUNATH.
TYPE WRITING MACHINE.
APPLICATION FILED APR. 25, 1904.

2 SHEETS—SHEET 2.

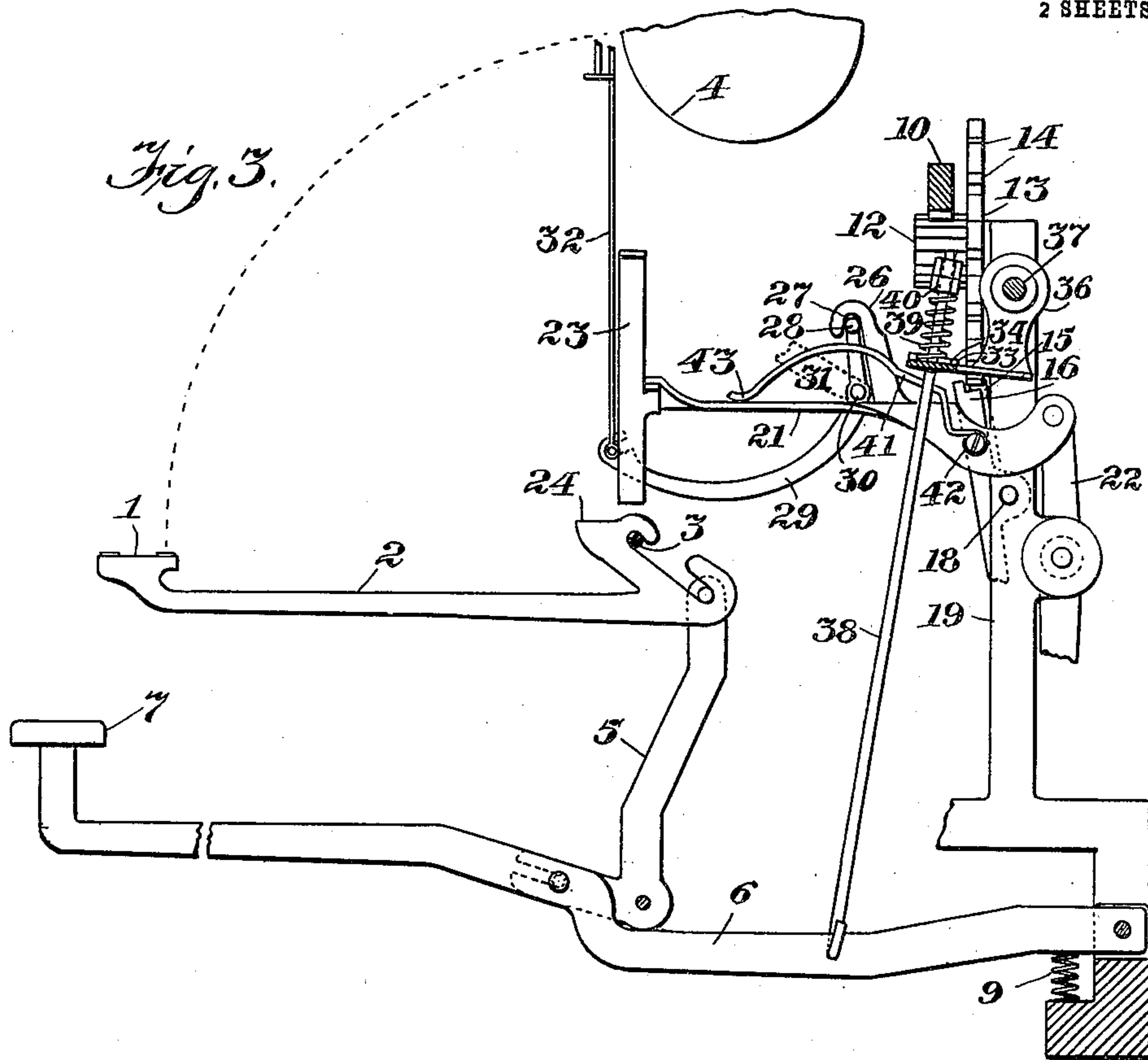


Fig. 4.

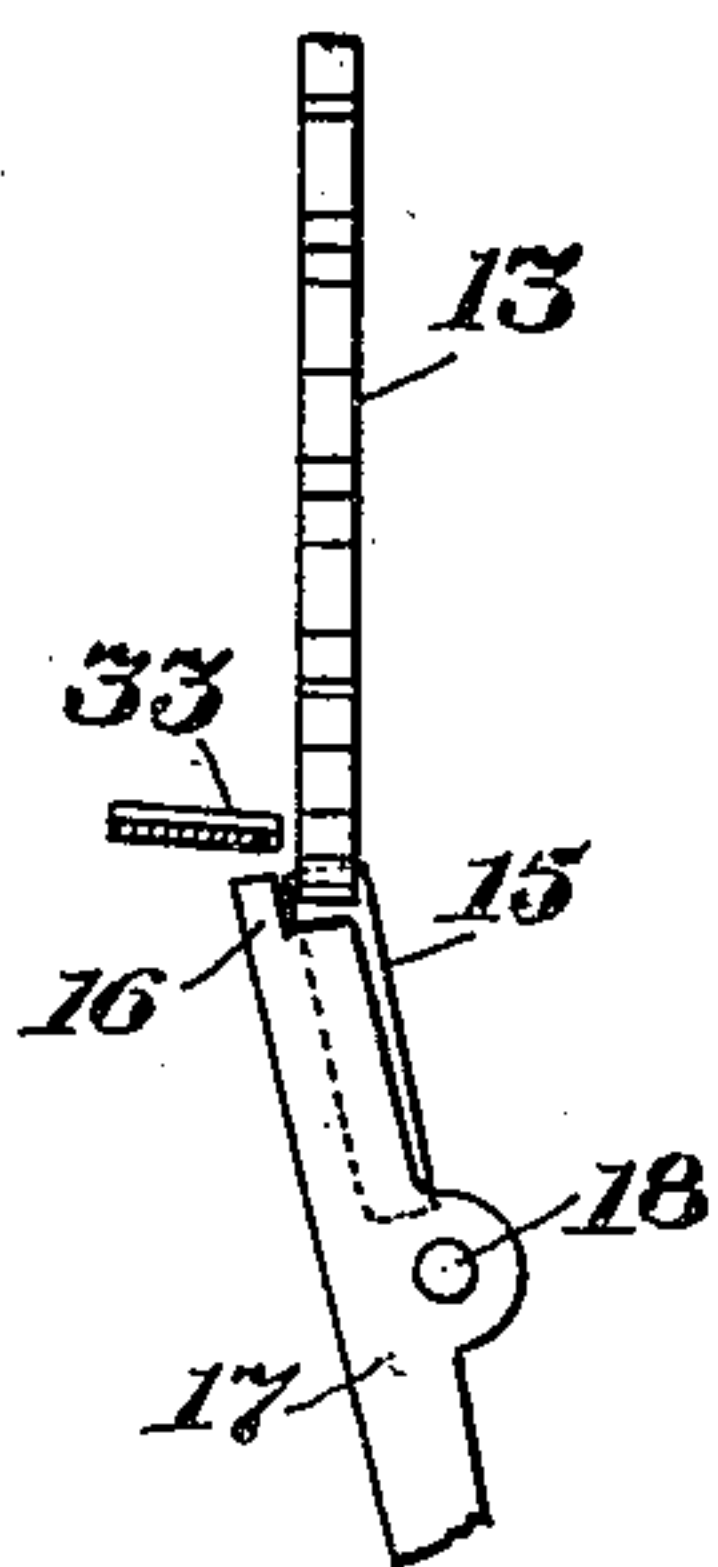


Fig. 5.

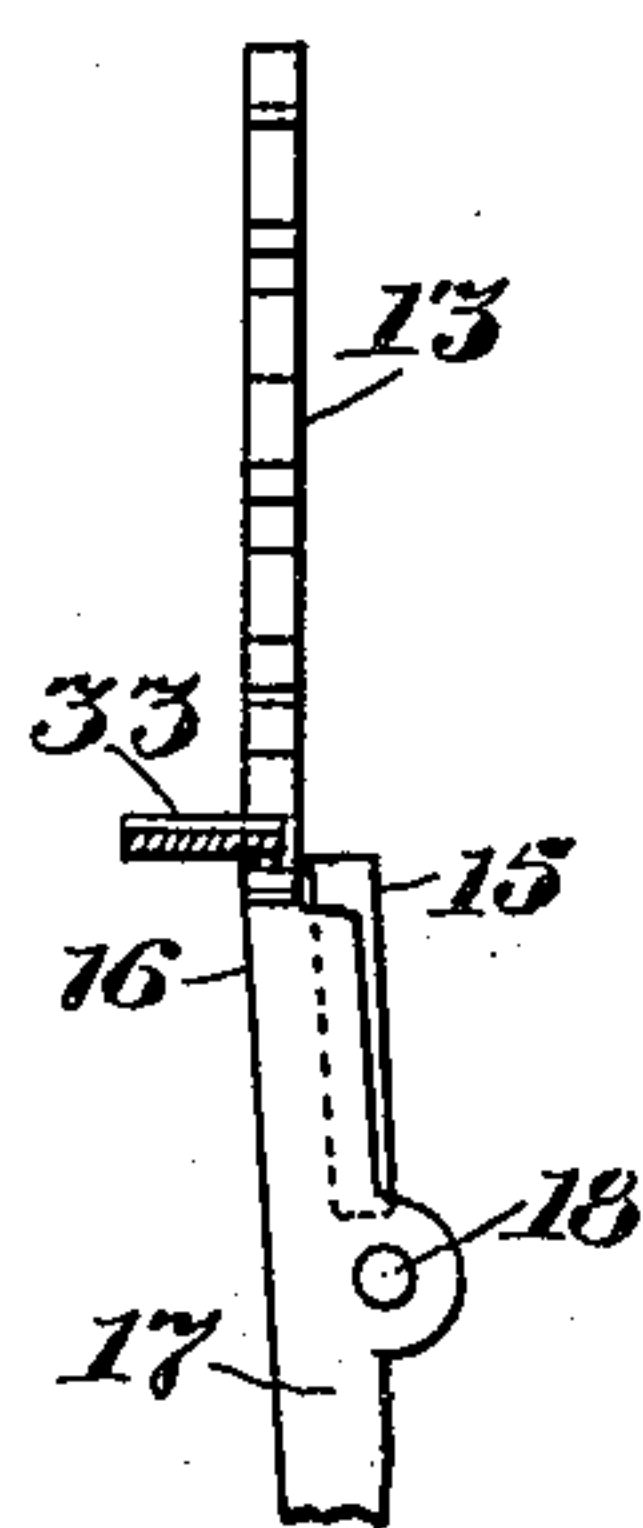


Fig. 6.

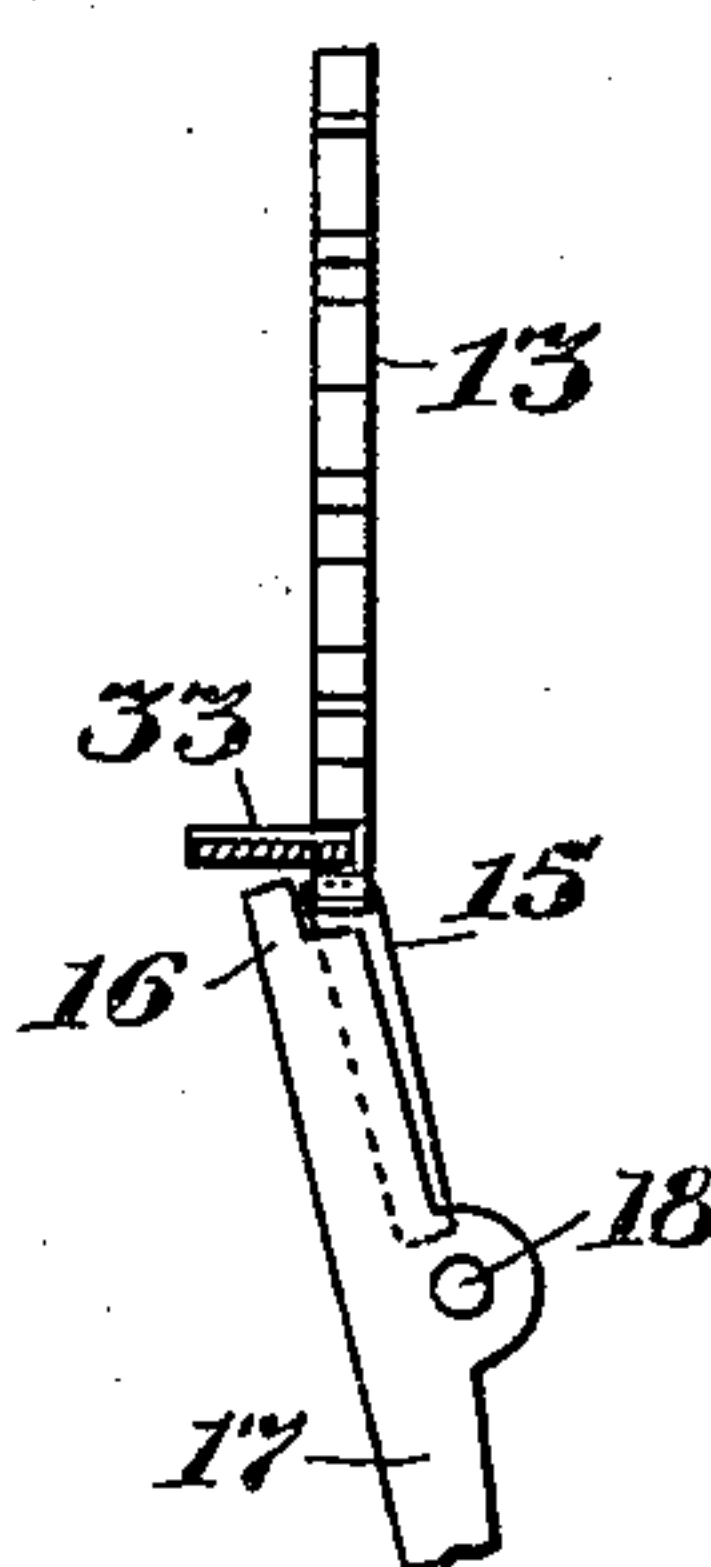


Fig. 7.

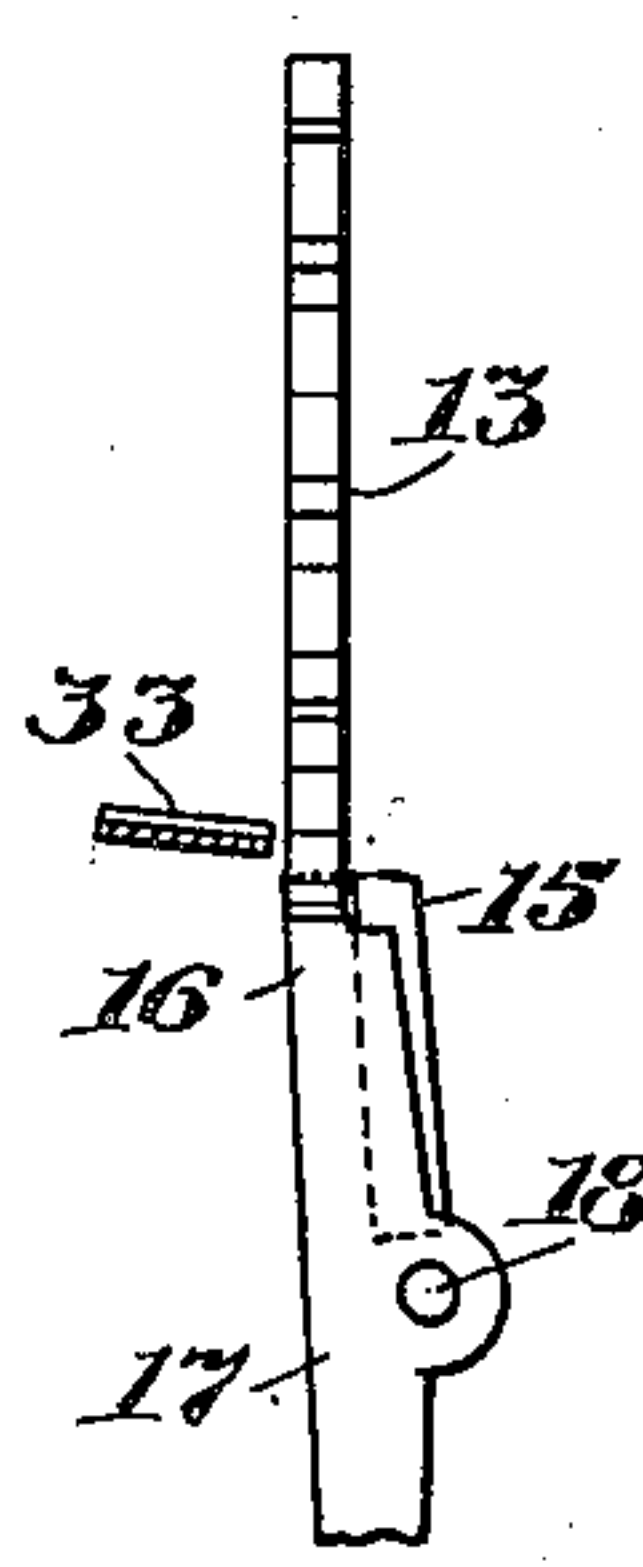
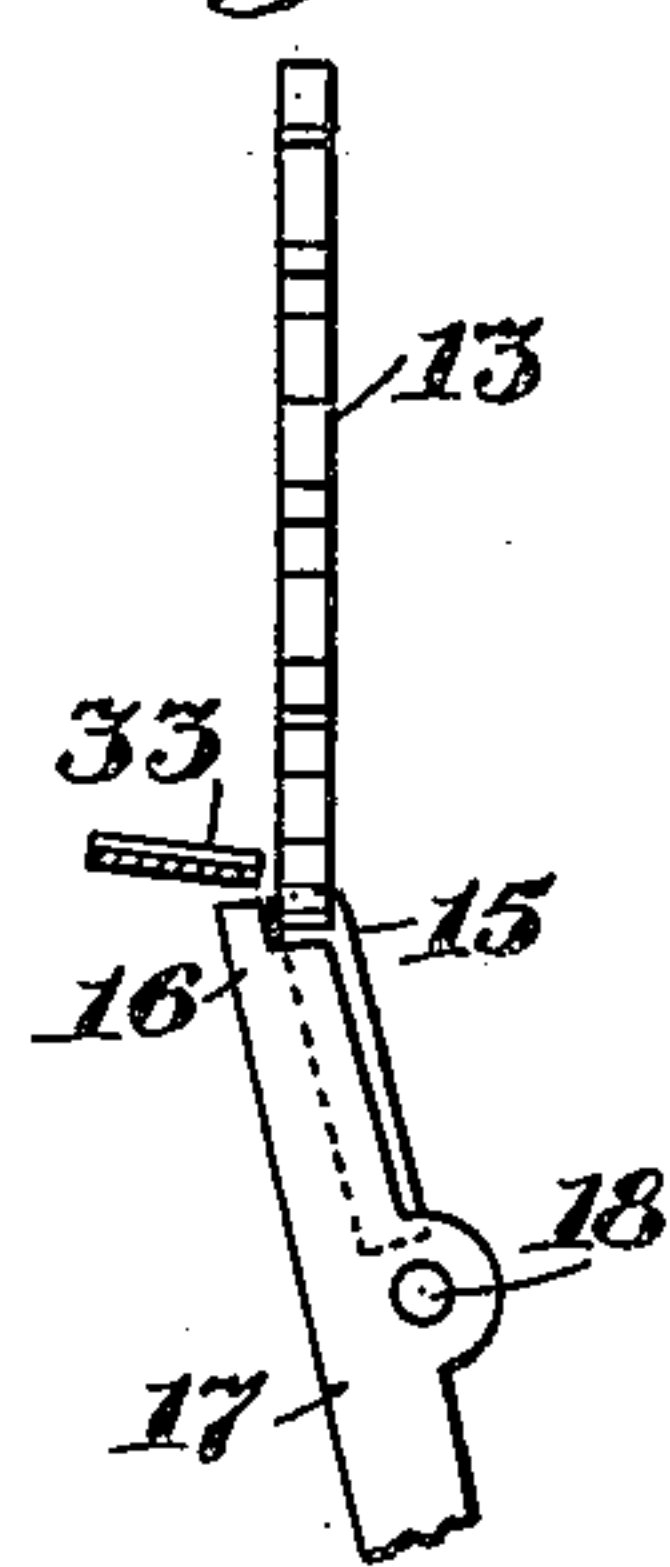


Fig. 8.



WITNESSES:
Robert Head
Arthur Andersson

INVENTOR
Edward F. Kunath
BY
B. Stickney
ATTORNEY

UNITED STATES PATENT OFFICE.

EDWARD F. KUNATH, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

No. 843,828.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed April 25, 1904. Serial No. 204,770.

To all whom it may concern:

Be it known that I, EDWARD F. KUNATH, a citizen of the United States, residing in Jersey City, 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.

This invention relates to mechanism in a type-writing machine that provides for accenting or underscoring letters, particularly in machines in which the ribbon is vibrated to cover and uncover the printing-point at each type impression, as is usual in "front-strike" machines. One or several of the types are provided with accent or other marks, and the keys controlling these accent-types are first struck and then the ordinary letter is written in position beneath or over the accent mark or marks. Provision is made whereby the accent-type key omits to cause the usual letter-feeding movement of the paper-carriage, so that by striking the accent-key first and then the ordinary type-key the letter and its accent are caused to register properly upon the written sheet. These accent-type keys are sometimes termed "silent" keys, because of their omission to feed the carriage, and when occasion arises two or more of these keys may be struck before writing the ordinary letter, whereby the latter may be provided with both top and bottom accents or marks. The striking of the ordinary type-key of course causes the carriage to feed as usual, so that the letters may appear in proper sequence upon the page.

In some varieties of writing-machines the lever of an accent-type key or silent key may be cut away, so that such lever may fail to actuate the "universal bar" which controls the usual carriage-feeding devices and itself is actuable by any key-lever in the system. This is common in "under-strike" machines; but in front-strike machines, where it is customary to connect the universal bar not only to the carriage-feeding devices, but also to the ribbon-vibrator, the failure of a silent key to actuate the universal bar would result in the failure of the ribbon to cover the printing-point at the instant of printing, so that an inked impression of the accent-type upon the paper would not be produced.

One of the principal objects of my invention is to overcome this difficulty, although some features of my invention will be found useful in both visible-writing and "blind" machines.

According to my present improvements the ribbon-vibrator may be operated in the usual manner by the universal bar, and the latter may be operated as usual by all the type-keys, including the accent-type keys; but the latter also control means for preventing the carriage from being fed as usual by the operation of the universal bar, whereby it becomes practicable by striking an accent-key before the ordinary type-key to secure the proper relationship of the accent to the letter upon the written sheet.

In my preferred construction a detent, which is independent of or additional to the usual spacing-dogs, is provided for holding the carriage stationary, said detent being normally idle, but capable of being set by the operation of any accent-type key.

A further detail of the invention resides in provision for enabling any subsequently-operated ordinary key to release said detent, so that the carriage may feed as usual.

In the accompanying drawings, Figure 1 is a front sectional elevation of a rear portion of an "Underwood" writing-machine, showing my improvements applied thereto, the section being taken on line *x x* of Fig. 2. Fig. 2 is a plan of the parts seen at Fig. 1, omitting the straight carriage-rack. Fig. 3 is a sectional side elevation showing the parts seen at Fig. 1 and also a type-bar and connections. Figs. 4 to 8 are diagrams showing successive stages in a cycle of movements of the feeding devices that control the carriage in connection with the additional detent, Fig. 4 showing the normal positions of the parts; Fig. 5, the position at the depression of an accent-type key, whereby the additional detent is moved into the path of a tooth of the escapement-wheel; Fig. 6, the position at the relief of the accent-type key from pressure, the usual dogs having returned to normal position, but the additional detent still holding the carriage; Fig. 7, the position at the subsequent operation of an ordinary type-key which, by means presently to be described, causes the release of the additional detent; and Fig. 8, the normal position

of all the parts at the relief of the ordinary type-key from pressure.

In the several views like parts are identified by like signs.

At Fig. 3 is shown a double type 1, provided with accent-marks and mounted upon a type-bar 2, which forms one of a series of radial bars that are usually mounted upon a curved fulcrum-rod 3 and strike rearwardly against a platen 4. The type-bar 2 is connected by a bell-crank 5 to a key-lever 6, whose key 7 bears an accent-mark to correspond with the mark on the type 1. The key-levers for the ordinary types are indicated at 8, Fig. 2, these levers being similarly connected to their type-bars, and all of the levers being provided with returning-springs 9.

The platen 4 is mounted upon a carriage, a part whereof consists of a straight rack 10, (shown at Fig. 1 as connected by a strap 11 to the usual carriage-driving spring-barrel, the latter being omitted.) Said rack meshes with a small pinion 12, which is connected to a large escapement-wheel 13, having teeth 14. With this escapement-wheel cooperate the usual detent and spacing-dogs 16 and 15, although so far as my improvements are concerned the construction and operation of the dogs is not important; and a straight escapement-rack may be employed in place of the circular escapement-rack 14. The detent-dog 16 is usually formed upon the tip of a rocker 17, pivoted at 18 upon a portion 19 of the framing of the machine, and the spacing-dog 15 is pivoted at 20 upon said rocker, these parts being returned to normal position after operation by the usual spring or springs. (Not shown.) Said dog-rocker 17 is directly engaged by a portion of the usual universal-bar frame 21, which at its rear end is hinged upon rocker-arms 22 and carries at its forward end a segmental universal bar 23, which occupies a position close to the hubs of the type-bars and is movable rearwardly by any of the heels 24, provided upon all of the type-bars, including those which carry the accent-types.

From the foregoing detail description it will be understood that when any type-key is depressed its type-bar is swung up to print, and by means of the heel 24 on the type-bar the segmental universal bar is pressed rearwardly and in turn rocks rearwardly the dog-rocker 17, so that its detent-dog 16 engages an escapement-tooth 14, while the spacing-dog 15 escapes from said tooth and flies to the left in Fig. 1 in position to engage the succeeding tooth 14 when the carriage and escapement-wheel move. Upon the relief of the key from pressure it is returned to normal position by the spring 9, together with the type-bar, the universal bar being retracted by a spring 25, Fig. 2, and the dog-

rocker 17 also moving forwardly to normal position, whereby the detent-dog 16 escapes from the tooth 14, permitting the carriage to advance and the escapement-wheel 13 to rotate until arrested by the coaction of the feeding-dog 15 with the succeeding tooth 14.

Erected upon the universal-bar frame 21 is the usual arm 26, which by means of a slot 27 engages a pin 28, that projects from one arm of a ribbon-vibrating lever 29, the latter being pivoted at 30 upon a part 31 of the platen-shifting frame and at its forward end being pivoted to a vertical ribbon-carrying slide 32, as usual. Whenever the universal-bar frame is forced rearwardly by either an ordinary type-bar or an accent-type bar, the ribbon is thus moved up to cover the printing-point.

The mechanism for preventing feed of the carriage when an accent-type is operated comprises an independent or additional detent 33 in position to be moved directly into the path of one of the carriage-escapement teeth 14, such movement being effected by the depression of the key-lever that is connected to the accent-type. This movement of the detent 33 is effected simultaneously with the usual movement of the dog-rocker 17, whereby the usual dogs 15 16 are rendered temporarily ineffectual to feed the carriage. The invention may be carried out in many forms; but that herein illustrated comprises a bar or arm 34, upon the left-hand end of which in Fig. 1 said detent 33 is formed, said bar 34 lying horizontally and extending transversely of the key-lever system to the right-hand side of the machine and being pivotally supported or hinged by means of a pair of arms 35 36, fixed upon and pendent from a horizontal transverse rock-shaft 37. The detent 33 hence moves into and out of engagement with the escapement-teeth upon the axis 37. Its movements are effected by means of pendent links 38, detachably pivoted at their lower ends to the accent-key levers 6 and at their upper ends passing through perforations in the bar 34, above which the links are provided with compression-springs 39, confined by locked nuts 40, threaded upon the tips of the links, the nuts admitting of adjustment of the tension of the springs. The downward pull on either link caused by the key-lever 6 during the printing-stroke of the type-bar 2 operates through the spring 39 to press the bar 34 downwardly, while the other link 38 remains idle, this movement of the bar carrying the detent 33 from normal ineffective position, Fig. 4, into effective position, Fig. 5—that is, into the path of one of the escapement-teeth 14. Upon the relief of the accent-type key from pressure the type-bar and key-lever return to normal position, together with the link 38; but the detent 33 remains in effective posi-

tion, being there held by the mere pressure of the escapement-tooth 14 thereon. This will be understood from Fig. 6, where it is indicated that the dog-rocker 17 has returned to normal position, together with the universal bar and the accent-type, this movement of the dog-rocker permitting the escape of the dog 16 from the tooth 14, so that the entire pressure of the carriage-driving spring is taken by the detent 33, such pressure being sufficient to hold said detent in its effective position. By the subsequent movement of any of the ordinary type-keys, however, the detent 33 is released, this being effected through a yielding cam carried by the universal-bar frame 21 and illustrated in the form of a spring-wire 41, secured by a screw 42 at its rear end and at its forward end bearing upon the frame at 43. This wire 41 is shaped suitably to engage the under forward edge of the bar 34 and cam the same upwardly during the rearward movement of the frame 21, whereby the detent 33 is swung out of engagement with the escapement-wheel 13, as at Fig. 7, this movement being assisted by a lightly-tensioned spring 44, Fig. 1, coiled upon one end of the rock-shaft 37. Upon relief of said ordinary type-key from pressure the dog-rocker 17 returns to normal position, as at Fig. 8, whereby a feeding movement of the carriage is effected in the manner already explained. Thus during the actuation of all of the types, including the accent-types, the universal bar is operated and the ribbon vibrated thereby, while the feeding of the carriage at the operation of the accent-types is prevented.

It will be observed that the detent 33 is inoperable by the universal bar 23 or by any of the ordinary type-keys—that is, not movable to effective position thereby, although the yielding device 41, carried by the universal-bar frame, effects the release of the detent 33. This releasing device 41 is of course operated by all of the keys, including the accent-keys, but is ineffective during the operation of the latter, because of the control exercised by the springs 39 upon the detent-carrying bar 34, said springs being sufficiently strong to hold down said bar during the return movements of the key-levers 6 until the device 41 moves forward out of engagement with the bar 34. Said detent 33, it will also be seen, is directly operable by the key-levers 6, while the dogs 15 16 are operated through the intervention of the universal bar 23. The carriage-detent 33 is normally idle during the operation of the ordinary type-keys, the latter being incapable of setting said detent, while the accent-keys are incapable of releasing the same.

Having thus described my invention, I claim—

1. In a type-writing machine, the combination with types, type-keys, and a carriage,

of a universal bar operable by the type-keys, a ribbon-vibrator operable by said universal bar, an escapement-rack for said carriage, carriage-feeding devices operable by said universal bar and cooperating with said rack, and a detent normally out of engagement with said rack and inoperable by said universal bar but directly operable by one of said type-keys and caused thereby to engage said rack independently of said carriage-feeding devices, to prevent a feeding movement of the carriage.

2. In a type-writing machine, the combination with types, type-keys, and a carriage, of carriage-feeding mechanism controlled by the type-keys, a stop-detent movable to set position by certain of said keys and non-returnable therewith, to prevent feeding movement of the carriage, a ribbon-vibrator movable to the printing-point by all of the keys, means being provided for causing the ribbon-vibrator to return to normal position together with all of the keys, and means for enabling any of the keys except the stop-detent keys to release the carriage from the control of said detent after the return of the detent-operating key to normal position.

3. In a type-writing machine, the combination with types, type-keys and a carriage, of a ribbon-vibrator, means for enabling each of said keys to move the vibrator to the printing-point, means being provided for causing the vibrator to return to normal position together with each of said type-keys, and a carriage-detent movable to set position by certain of said type-keys and non-returnable therewith, but releasable by the remaining type-keys after the return of the detent-operating key to normal position.

4. In a type-writing machine, the combination with types, type-keys, and a carriage, of a universal bar operable by the type-keys, means being provided for causing the universal bar to return to normal position together with each of said keys, a ribbon-vibrator operable by said universal bar, an escapement-rack for said carriage, carriage-feeding devices operable by said universal bar and cooperating with said rack, a carriage-detent, certain of the type-keys having means for setting the detent to effective position but ineffective for returning the detent, and means for enabling a succeeding operation of the universal bar to release said detent.

5. In a type-writing machine, the combination with types, type-keys, and a carriage, of a universal bar operable by the type-keys, means being provided for causing the universal bar to return to normal position together with each of said keys, a ribbon-vibrator operable by said universal bar, key-operated carriage-feeding devices, a carriage-detent, certain of the type-keys having means independent of the universal bar for setting the

detent to effective position but ineffective for returning the detent, and means for enabling the universal bar to release said detent after the return to normal position of the key which set the detent.

6. In a type-writing machine, the combination with types, type-keys, and a carriage, of a universal bar operable by all the type-keys, means being provided for causing the universal bar to return to normal position together with each of said keys, a carriage-feeding mechanism controlled by said universal bar, a carriage-detent, means operated by certain of said keys independently of the universal bar for setting said detent to and holding it in effective position after their return to normal positions, means for enabling the universal bar to release said detent so that the latter may return to normal position, and means operated by said detent-setting keys for rendering said releasing means ineffective only during their depression.

7. In a type-writing machine, the combination with types, type-keys, and a carriage, of a universal bar operable by all the type-keys, means being provided for causing the universal bar to return to normal position together with each of said keys, a carriage-feeding mechanism controlled by said universal bar, a carriage-detent, means operated by certain of said keys independently of the universal bar for setting said detent to and holding it in effective position after their return to normal positions, a yielding device operated by the universal bar to release said detent so that the latter may return to normal position, and a spring stronger than said yielding device and caused by said detent-setting key or keys to retain said detent in effective position only during the depression of said detent-setting keys.

8. In a type-writing machine, the combination with types, type-keys, and a carriage, of a universal bar operable by the type-keys, means being provided for causing the universal bar to return to normal position together with each of said keys, a carriage-detent, means for enabling certain of said type-keys to set said detent to effective position and to return to normal position independently of said detent, and a yielding device for enabling said universal bar to release said detent at a subsequent operation of the universal bar by one of the remaining keys.

9. In a type-writing machine, the combination with types, type-keys, and a power-driven carriage, of a normally ineffective detent for the carriage, means for enabling certain of said type-keys to set said detent to effective position and to elevate and lower the ribbon and to return to normal position independently of said detent, and means for enabling a subsequent stroke of any of the other type-keys to release said detent after

the return to normal position of the detent-setting key.

10. The combination with types, including an accent-type, type-keys, a carriage, an escapement-rack, and the usual carriage-feeding devices under the control of the keys, of a pivoted detent for engaging the rack, a yielding connection from said detent to the accent-type key whereby the latter may set the detent to effective position, and a yielding key-operated member for releasing said detent.

11. In a type-writing machine, the combination with types, including a plurality of accent-types, a carriage, an escapement-rack, and type-keys, of a universal bar operable by the keys, a ribbon-vibrator operable by the universal bar, carriage-feeding devices controlled by the universal bar, an independent detent to engage said rack, means for enabling any of the accent-type keys to set said detent to effective position, and means operable by the remaining type-keys for releasing said detent.

12. In a type-writing machine, the combination with types, including a plurality of accent-types, a carriage, an escapement-rack, and type-keys, of the usual carriage-feeding devices controlled by the keys, a detent inoperable by the ordinary type-keys, yielding means for enabling any of the accent-type keys to set said detent to engage said rack, and a yielding device controlled by the ordinary keys for releasing said detent.

13. In a type-writing machine, the combination with types, including a plurality of accent-types, a carriage, an escapement-rack, and type-keys, of a universal bar operable by the type-keys, a ribbon-vibrator operable by the universal bar, the usual carriage-feeding devices under the control of the universal bar, an independent detent for the rack, an arm or bar for causing said detent to engage the rack, and a set of yielding devices controlled by the accent-type keys for enabling either of the latter to actuate said arm or bar; means being also operable by said universal bar and including a yielding member, for releasing said detent.

14. In a type-writing machine, the combination with types, including a plurality of accent-types, a series of key-levers for operating said types, and a carriage, of a universal bar operable by the key-levers, a ribbon-vibrator operable by the universal bar, an escapement-rack, the usual carriage-feeding devices under the control of the universal bar, an independent tooth for engaging the rack, a pivoted frame whereon said tooth is mounted, said frame including a bar or arm extending transversely of the series of key-levers, connections from the accent-key levers to said bar or arm, and means for enabling the universal bar to release said detent.

15. In a type-writing machine, the combination with types, type-operating key-levers, a carriage, and a universal-bar frame operable by the keys, of letter-spacing devices
5 operable by said universal-bar frame, a pivoted carriage-detent, a link and spring connecting said detent to one of said key-levers

for setting said detent, and a yielding device upon said universal-bar frame for engaging said detent to release the same.

EDWARD F. KUNATH.

Witnesses:

S. T. SMITH,
M. S. EYLAR.