No. 806,274. PATENTED DEC. 5, 1905.

H. W. MERRITT.

TYPE WRITING MACHINE.

APPLICATION FILED MAR. 11, 1904.

2 SHEETS—SHEET 1.

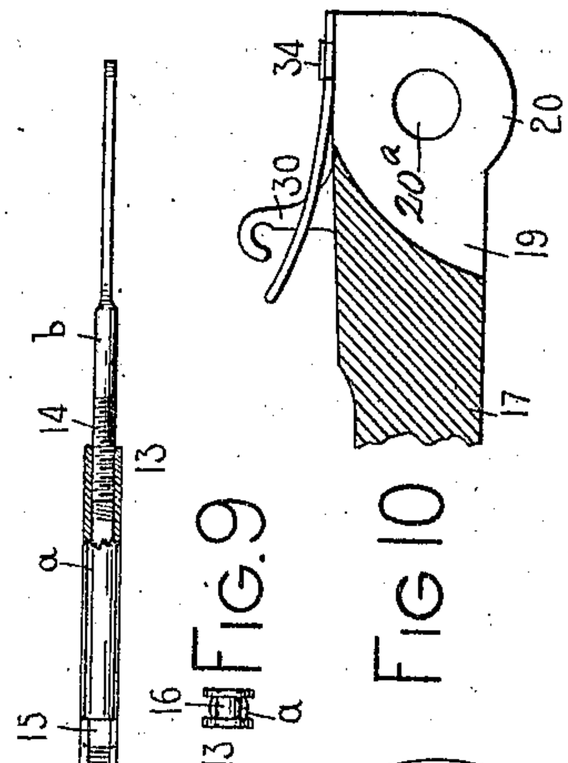

FIG. 8.

FIG. 9.

FIG. 10

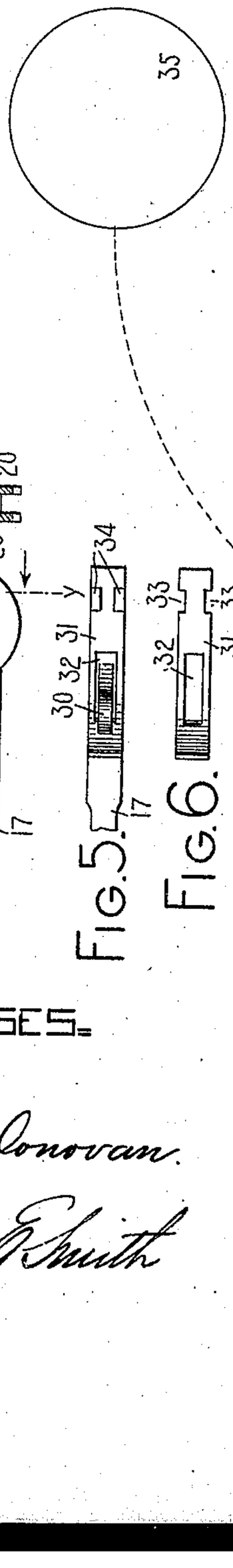

FIG. 7.

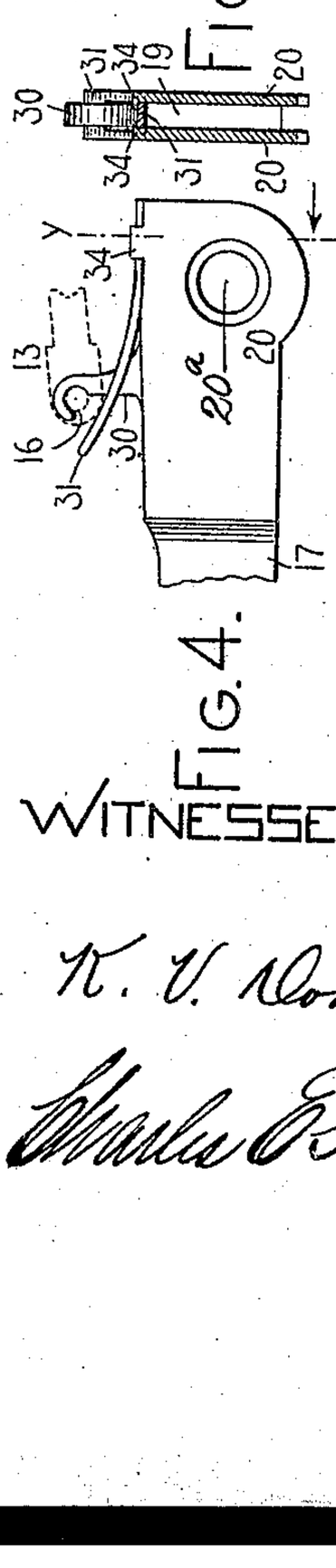

FIG. 4.

FIG. 5.

FIG. 6.

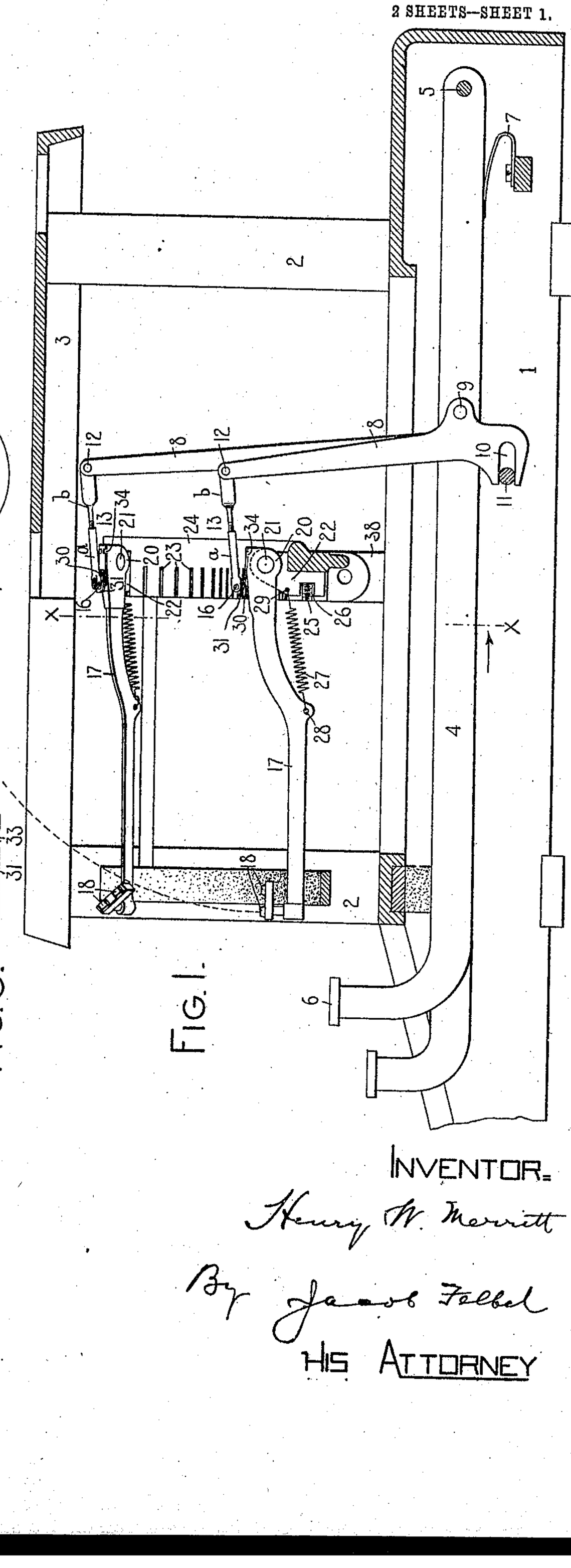

FIG. 1.

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2 SHEETS—SHEET 2.

FIG. 3.

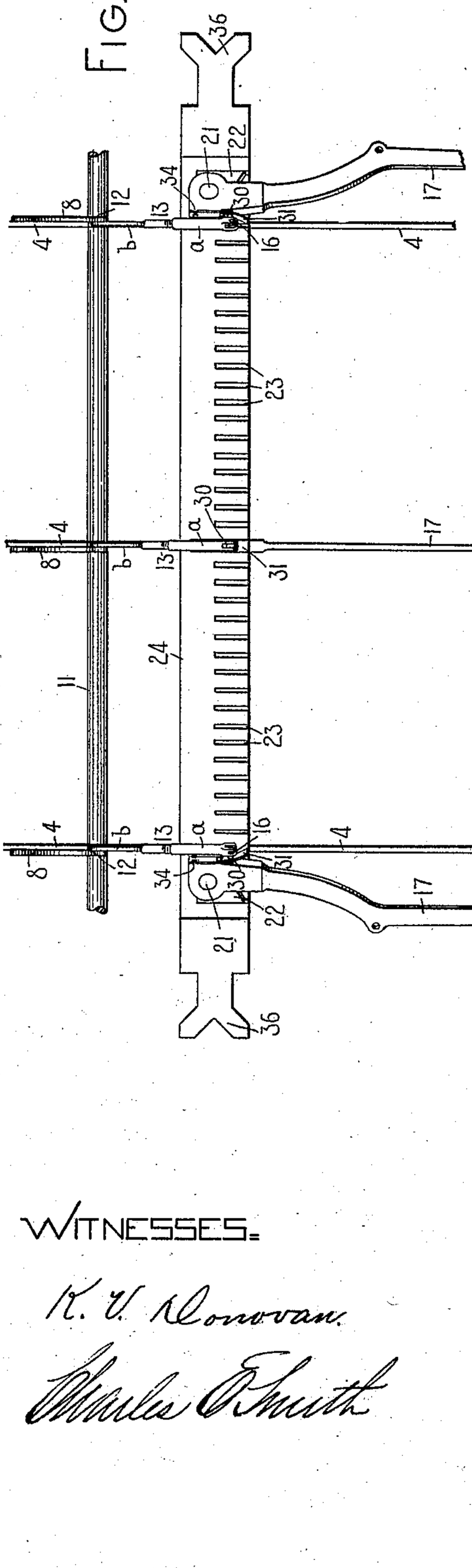
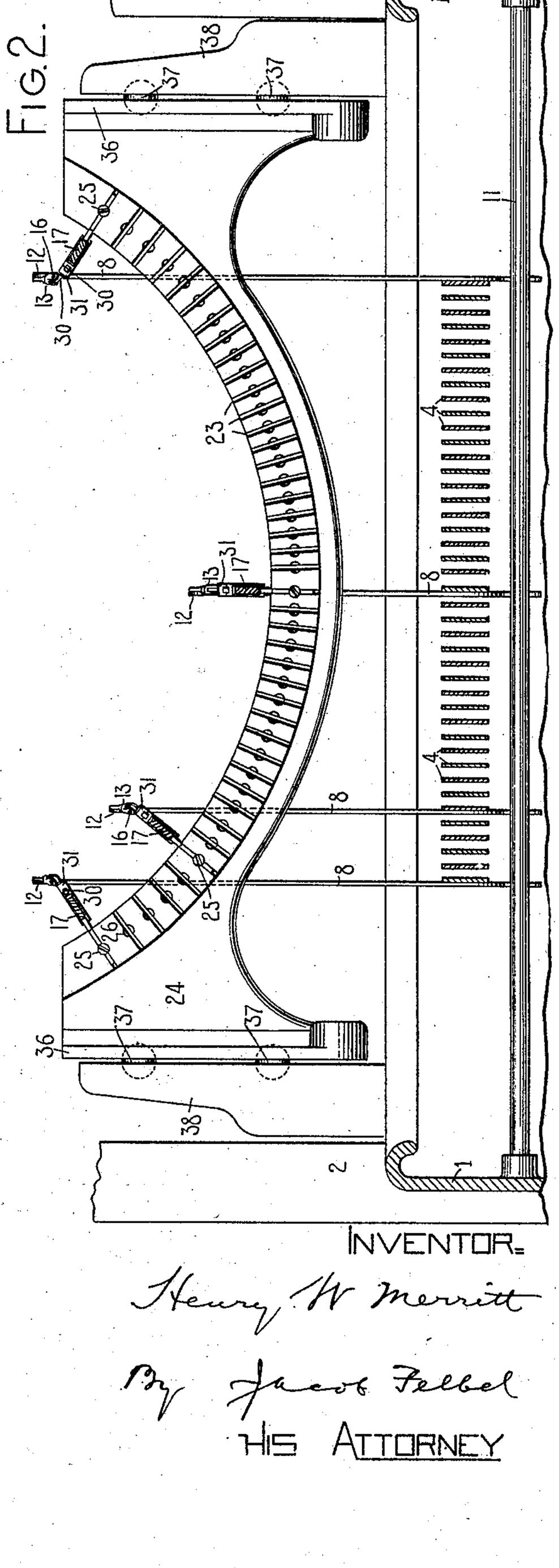


FIG. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY W. MERRITT, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE MONARCH TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 806,274. Specification of Letters Patent. Patented Dec. 5, 1905.

Application filed March 11, 1904. Serial No. 197,668.

To all whom it may concern:

Be it known that I, HENRY W. MERRITT, 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 present invention relates to type-actions for type-writing machines; and one of the objects of the invention is to provide efficient means for readily connecting and disconnecting the type-bars and their actuating means.

A further object of my invention is to provide simple and efficient means for preventing dust, grit, or rubbings which may drop from the paper at the front face of the platen from entering the pivotal bearings of the type-bars.

A still further object of my invention is to provide simple and efficient means for connecting the type-bars to their actuating sublevers or devices by links, which will afford a turning movement or adjustment of one end of a link relatively to the other end thereof, so that pivotal axes at opposite ends of each link may lie in planes that are at angles to each other.

To the above and other ends, which will be hereinafter described, 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 fragmentary front to rear vertical sectional view of sufficient number of parts of one form of type-writing machines to illustrate my invention in its application thereto. Fig. 2 is a fragmentary transverse sectional view of the same, the section being taken on the line *x x* of Fig. 1 and looking in the direction of the arrow at said line. Fig. 3 is a plan view of the same. Fig. 4 is an enlarged detail fragmentary side elevation showing the rear or pivotal end of one of the type-bars. Fig. 5 is a plan view of the same. Fig. 6 is a detail plan view of one of the retaining-springs. Fig. 7 is a transverse sectional view of a type-bar, the section being taken on the line *y y* of Fig. 4 and looking in the direction of the arrow at said line. Fig. 8 is an enlarged detail plan view of one of the connecting-links. Fig. 9 is an end view of the same looking toward the front end of the link, and Fig. 10 is an enlarged detail longitudinal sectional view through the rear or pivotal end of one of the type-bars.

The base 1 of the machine is provided with corner-posts 2, which support a top plate 3. Key-levers 4 are pivoted at 5 in the base and are each provided with a finger-key 6 and a restoring-spring 7. Each key-lever has a sublever 8 pivoted thereto at 9, and the lower end of each sublever is slotted at 10 for the reception of a fixed fulcrum-bar 11, which extends beneath the key-levers from side to side of the machine. The upper end of each sublever is pivoted at 12 to a forwardly-extending link 13, and each link is made of a plurality of parts or members *a b*, that are united by a threaded or similar connection 14, so that the members of each link are adapted to turn one relatively to the other on their longitudinal axes. The socketed member *a* is provided with internal screw-threads that coöperate with the external screw-threads on the member *b*, and the forward end of each socketed member is bifurcated at 15, and a rivet 16 is connected to and extends between the arms formed by the bifurcated portion, so as to constitute a pivot for connection to the associated type-bar.

Each upwardly and rearwardly striking type-bar 17 is provided with a plurality of types 18 and is bifurcated at its rear or pivotal end, as indicated at 19, and the cheek-plates 20 of the bifurcated portion are apertured at 20[a] for the reception of a rivet 21. A type-bar hanger 22 has its bearing portion received within the bifurcated portion 19 and between the cheek-plates 20 of the type-bar, and the rivet 21 extends through both cheek-plates and through an opening in the type-bar hanger, so as to unite the type-bar and hanger. Each hanger may be secured in a slot 23 in a segment 24 by means of a set-screw 25, that is received in a threaded opening in the forward face of the segment and passes into an aperture or recess 26 in the type-bar hanger. A restoring-spring 27 is connected at one end 28 to the type-bar and at its other end 29 to the associated type-bar

hanger. Extending upwardly from each type-bar is a hook or engaging member 30, the hook opening forwardly, as represented in Fig. 4. A leaf-spring 31 has an elongated aperture 32 therein to enable the spring to straddle the hook, as represented in Fig. 4. This spring is likewise apertured or recessed at 33 for the reception of lugs or studs 34, which project upwardly from the type-bar and are preferably formed integral therewith, and these studs are bent over the body of the spring at their upper ends, as represented in Figs. 5 and 7, in order to secure the spring at one end to the type-bar in the rear of the engaging hook 30. The looped end of the member *a* of each connecting-link 13, formed by the bifurcated portion and rivet, is adapted to straddle the engaging hook on the type-bar, so that the rivet or pivot 16 is seated within the bill of the hook to connect the type-bar to its actuating means. The retaining-spring 31 is adapted to bear at its free end against the forward end of the associated link and to prevent an accidental disengagement between the link and the engaging hook of its associated type-bar, at the same time enabling a disengagement between the parts to be readily effected when desired.

From an examination of Fig. 10 it will be observed that the retaining-spring 31 extends over and constitutes a top wall or cover-plate for the bifurcated portion 19 of the type-bar, to which the spring is connected, so as to cover the pivotal joint between the type-bar and hanger and to prevent the admission of any dust, grit, or rubbings which may drop from the front face of the platen 35 or the paper thereon, which is above and in a plane substantially coincident with the pivotal bearings of the type-bars. The platen is diagrammatically illustrated in Fig. 1, and it may be mounted in a suitable carriage (not shown) that is adapted to travel from side to side of the machine in the usual manner.

From an inspection of Figs. 2 and 3 it will be observed that the type-bar segment 24 is provided with grooved tracks 36, that receive antifriction balls or rollers 37, which are likewise received in grooved tracks in the upright guides 38, so as to afford a vertical shifting movement of the segment to effect a relative shift between the type-bars and platen in order to bring either upper or lower case types into use. It will be observed that the construction of the sublevers, link connections, and the manner of attaching the same to the type-bars afford a shift of the type-bar segment in order to change the case position thereof without affecting the operation of the individual type-actions.

From an examination of Figs. 1, 2, and 3 it will be seen that the key-levers 4 at those portions thereof where the sublevers are connected to them are parallel, that the upright sublevers are parallel and terminate at their upper ends in an arc which is substantially coextensive with the arc in which the type-bars are situated, that the links 13 are horizontally disposed and are likewise situated in an arc which is substantially coextensive to the arc in which the upper ends of the sublevers and the type-bars are located, that said links or actuating devices 13 extend forwardly from the sublevers to the type-bars in straight lines that extend fore and aft of the machine, that the links which unite the sublevers and type-bars at the sides of the system each have an end which is connected to its sublever and which is located in a vertical plane, and that the forward end of said link is situated in a plane that extends at an angle to said vertical plane and corresponds to the plane of movement of the associated type-bar. In other words, it will be understood that the axis of the pivotal connection between a link and type-bar at a side of the system is at an angle to the axis of the pivot which unites the opposite end of said link to its sublever and that these angles increase gradually from the center to the sides of the system. By making the links of a plurality of parts or members in the manner shown and described, so that one end of each link may be turned on its longitudinal axis relatively to the other end, a construction is provided which enables a uniform character of link to be used throughout the system and without bending the individual links to provide for the difference in the planes of movement of the different individual sublevers and type-bars and the difference in the angular relation of the pivotal connection of the links. Furthermore, it will be understood that this construction affords means for readily assembling the parts without the liability of effecting any lateral or torsional or twisting strain between the parts in the operation of the machine, as is sometimes the case where single-piece links are employed. The threaded connection between the members of the two-part links likewise enables a shortening or lengthening of the links to be effected, so as to take up and compensate for any undue lost motion that may be present throughout the action, and to enable all of the type-bars to be properly brought to rest in the basket.

In order to connect an actuating-link to its associated type-bar, it is merely necessary to slightly elevate the forward end of the bar, so as to enable the pivot 16 of the link to be forced within the bill of the hook by pressing the retaining-spring 31 against its tension. As soon as the pivot 16 is seated within the hook the spring may be freed and will maintain a proper engagement between the parts and will prevent an accidental disconnection between the type-bar and its actuating link

or device 13, and in the operation of the machine the pressure exerted by each link is against the rear or closed portion of its hook and tends to maintain the pivot 16 seated in the hook. A disengagement of a link from its associated type-bar may be effected in a like manner by first slightly raising the free end of the type-bar and then depressing the forward end of the link to overcome the tension of the retaining-spring 31, when the pivot may be withdrawn from the bill of the hook and the type-bar and link thus disconnected, and, if desired, the type-bar, its associated hanger, and restoring-spring may then be removed from the machine as an entirety by partly withdrawing the set-screw 25, which maintains the hanger in place in the segment.

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 pivoted type-bar, a spring that covers the pivotal joint of the type-bar, and means connected to the type-bar for actuating it and which are prevented from accidental disengagement with said type-bar by said spring.

2. In a type-writing machine, the combination of a pivoted type-bar, a spring that is independent of but is connected to and moves with the type-bar and covers the pivot-joint of the type-bar, and means connected to the type-bar for actuating it and which are prevented from accidental disengagement with said type-bar by said spring.

3. In a type-writing machine, the combination of a hanger, a type-bar pivoted to said hanger; a spring that covers the joint between the type-bar and hanger, and means connected to the type-bar for actuating it and which are prevented from accidental disengagement with said type-bar by said spring.

4. In a type-writing machine, the combination of a type-bar that is bifurcated at one end, a hanger that is received within the bifurcated portion, a pivot that unites the type-bar and hanger, a leaf-spring connected to the type-bar and covering the bifurcated portion of the bar and the joint between the type-bar and hanger, and means connected to the type-bar for actuating it and which are prevented from accidental disengagement with said type-bar by said spring.

5. In a type-writing machine, the combination of a platen, an upwardly and rearwardly swinging type-bar pivoted at one end in a vertical plane substantially coincident with the front face of the platen, a spring that covers the pivotal joint of the type-bar and excludes dust or rubbings therefrom, and means connected to the type-bar for actuating it and which are prevented from accidental disengagement with said type-bar by said spring.

6. In a type-writing machine, the combination of a platen, an upwardly and rearwardly swinging type-bar bifurcated at one end and arranged at its bifurcated end below the platen and in a plane substantially coincident with the front face of the platen, a type-bar hanger received within the bifurcated portion of the type-bar and pivotally connected thereto, a spring that covers the pivot-joint between the type-bar and hanger, and means connected to the type-bar for actuating it and which are prevented from accidental disengagement with said type-bar by said spring.

7. In a type-writing machine, the combination of a type-bar, engaging means carried by said type-bar, type-bar-actuating means disengageably connected to said engaging means, a spring for preventing an accidental disengagement between the actuating means and the engaging means on the type-bar, and means formed integral with the type-bar for connecting the said spring thereto.

8. In a type-writing machine, the combination of a type-bar having a hook with a bill that extends toward the free end of the type-bar, a spring connected to the type-bar by integral projections on said type-bar and adapted to prevent the accidental disengagement between the type-bar and its actuating means, and an actuating device adapted to engage said hook.

9. In a type-writing machine, the combination of an upwardly and rearwardly swinging type-bar having a hook that opens forwardly or toward the free end of the type-bar, a spring connected at one end to the type-bar by integral projections on said type-bar and adapted to prevent the accidental disengagement between the type-bar and its actuating-link, and an actuating-link adapted to engage said hook and to connect the type-bar to its actuating means.

10. In a type-writing machine, the combination of a type-bar having a hook, a spring connected to the type-bar by integral projections on said type-bar and slotted to straddle the hook and designed to prevent an accidental disengagement between the type-bar and its actuating means, and an actuating device detachably connected to said hook.

11. In a type-writing machine, the combination of a type-bar having an engaging member and studs, a spring that is apertured to receive said studs and by means of which the spring is connected to the type-bar, and an actuating device that coöperates with the engaging member on the type-bar and which is disengageable therefrom and is prevented from accidental disengagement by said spring.

12. In a type-writing machine, the combination of a type-bar having an engaging hook and studs, a spring that is apertured to receive said studs and straddle said hook and by means of which studs the spring is connected to the type-bar, and an actuating-link that coöperates with the engaging hook on the type-bar and which is disengageable therefrom and is prevented from accidental disengagement by said spring.

13. In a front-strike type-writing machine, the combination of a series of substantially horizontally disposed type-bars that swing upwardly and rearwardly to print, an engaging member on each of said type-bars, a spring secured to each type-bar back of the engaging member, and rearwardly-extending actuating-links disengageably connected to said engaging members and prevented from accidentally disengaging therefrom by said spring.

14. In a front-strike type-writing machine, the combination of a type-bar that swings upwardly and rearwardly to print, an engaging hook on said type-bar, said hook opening forwardly or toward the free end of the type-bar, a leaf-spring secured at one end to the type-bar back of the hook, and an actuating-link disengageably connected to said hook and prevented from accidentally disengaging the same by said spring.

15. In a type-writing machine, the combination of a type-bar that is pivoted to swing upwardly and rearwardly to print, an engaging member on said type-bar, an actuating device disengageably connected to said engaging member, and a spring connected to the type-bar and which covers the pivotal joint of the type-bar and prevents an accidental disengagement between the said actuating device and engaging member.

16. In a type-writing machine, the combination of a platen, an upwardly and rearwardly swinging type-bar located below said platen, a hanger to which the type-bar is pivoted, an engaging member on the type-bar, an actuating device disengageably connected to said engaging member, and a spring secured to the type-bar and preventing the accidental disengagement between the said engaging member and actuating device and covering the pivotal joint between the type-bar and hanger.

17. In a type-writing machine, the combination of a series of segmentally-arranged type-bars, a series of sublevers, a series of key-levers for actuating said sublevers, and a series of links between said sublevers and type-bars, each of said links being made of a plurality of parts that are adapted to turn axially one relatively to another, so that one end of the link may be connected to a sublever in one plane and the other end of the link may be connected to the associated type-bar in a plane at an angle to the sublever at its point of connection with the other end of the link.

18. In a type-writing machine, the combination of a series of segmentally-arranged type-bars, a series of upright parallel sublevers, that vibrate fore and aft of the machine, a series of key-levers for actuating said sublevers, and a series of links between said sublevers and type-bars, each of said links being made of a plurality of parts that are adapted to turn axially one relatively to another, so that one end of the link may be connected to a sublever in one plane and the other end of the link may be connected to the associated type-bar in a plane at an angle to the sublever at its point of connection with the other end of the link.

19. In a type-writing machine, the combination of a series of segmentally-arranged type-bars that are adapted to be shifted for upper and lower case writing, a series of sublevers, keys for actuating said sublevers, and a series of substantially horizontally disposed links between said sublevers and type-bars, each of said links being made of a plurality of parts that are adapted to turn axially one relatively to another, so that one end of the link may be connected to a sublever in one plane and the other end of the link may be connected to the associated type-bar in a plane at an angle to the sublever at its point of connection with the other end of the link.

20. In a type-writing machine, the combination of a series of segmentally-arranged type-bars, actuating devices therefor, a series of substantially horizontally disposed links, each pivoted at one end to an actuating device and at the other end to a type-bar, each of said links being made of a plurality of parts that are adapted to turn axially one relatively to another so that the axes of the pivots at the ends of each link may extend at angles to each other.

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

HENRY W. MERRITT.

Witnesses:
PERCY RIDINGS,
CHAS. H. COOKE.