

No. 619,711.

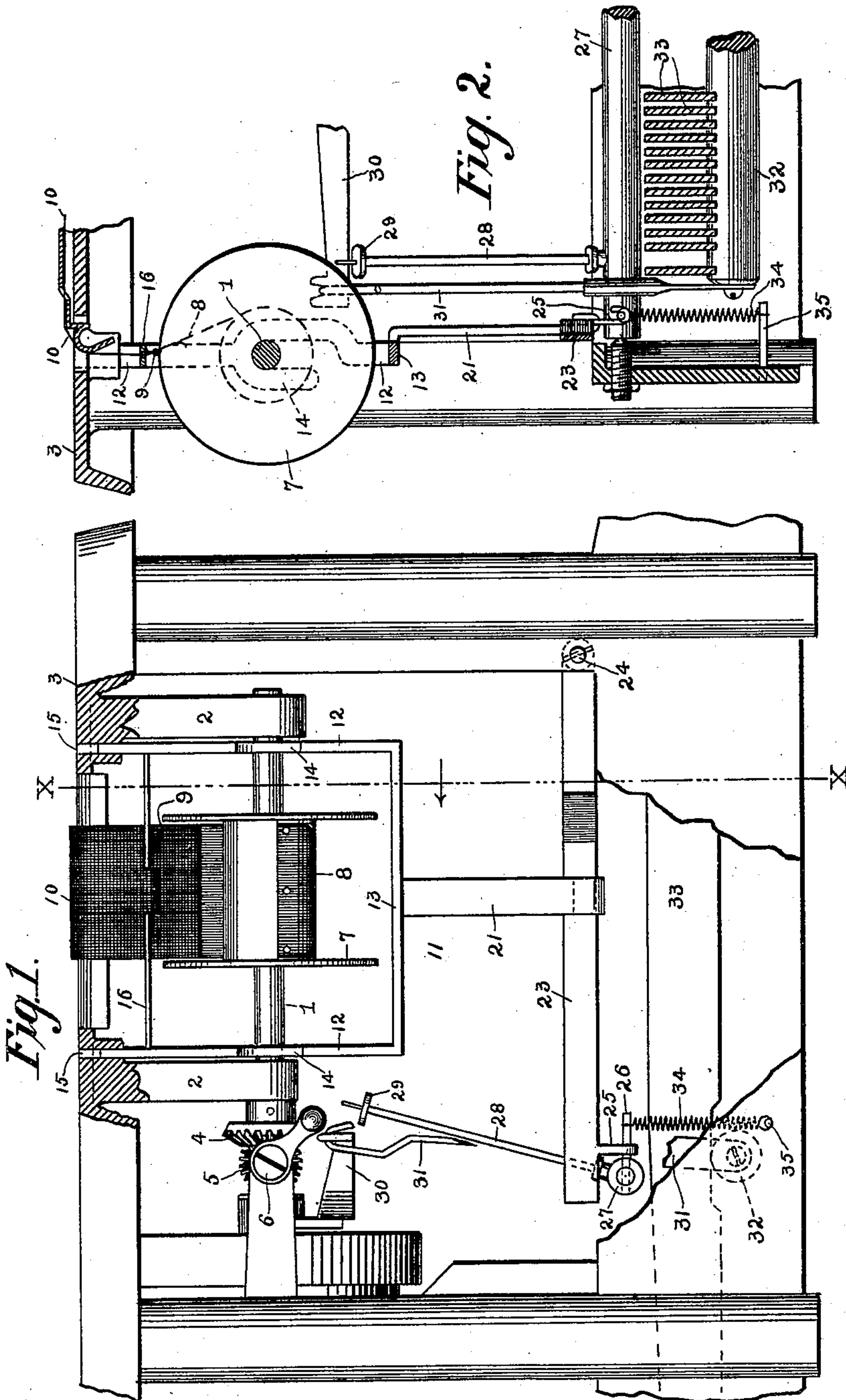
Patented Feb. 21, 1899.

W. J. BARRON.
TYPE WRITING MACHINE.

(Application filed Nov. 28, 1898.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES:

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INVENTOR.

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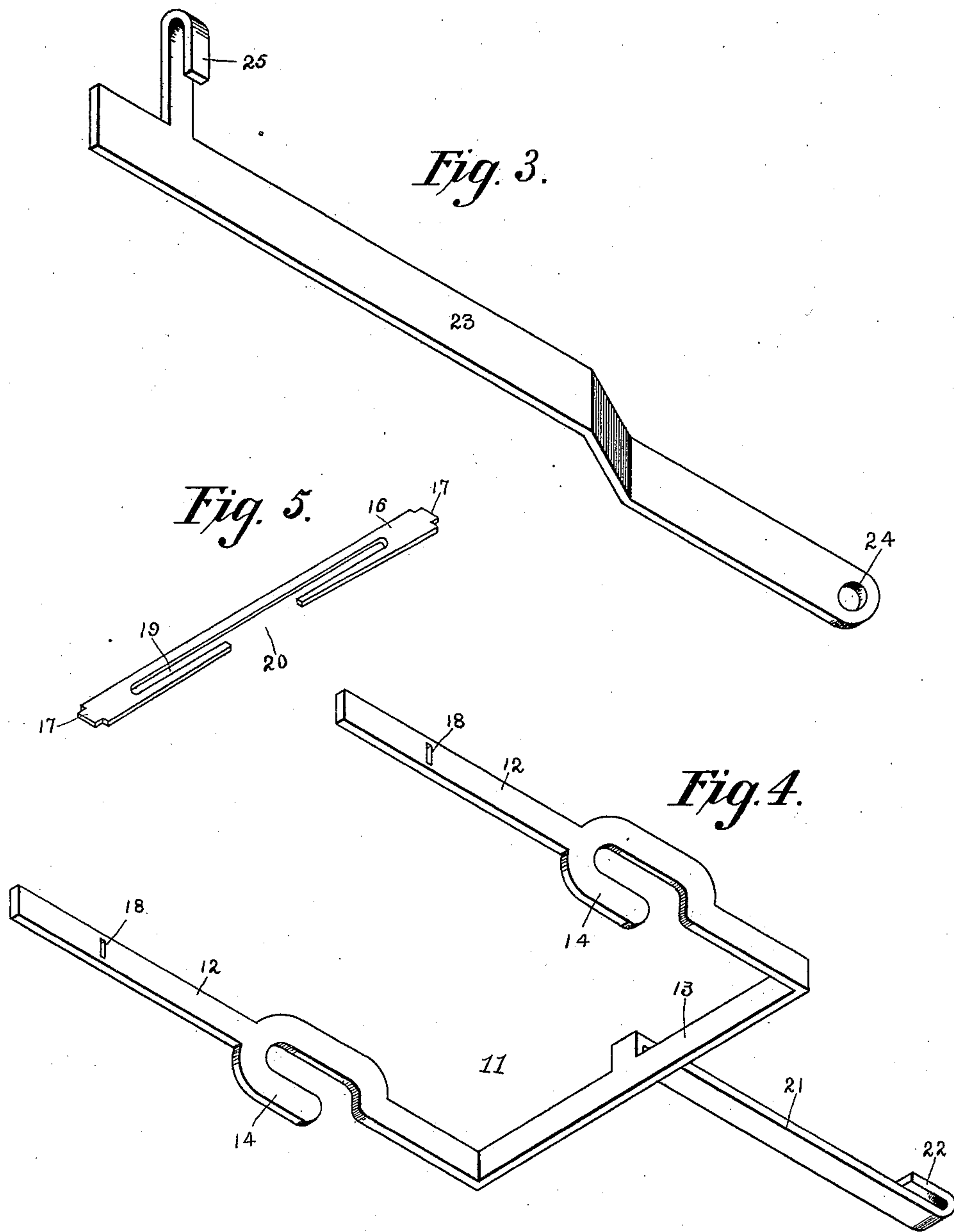
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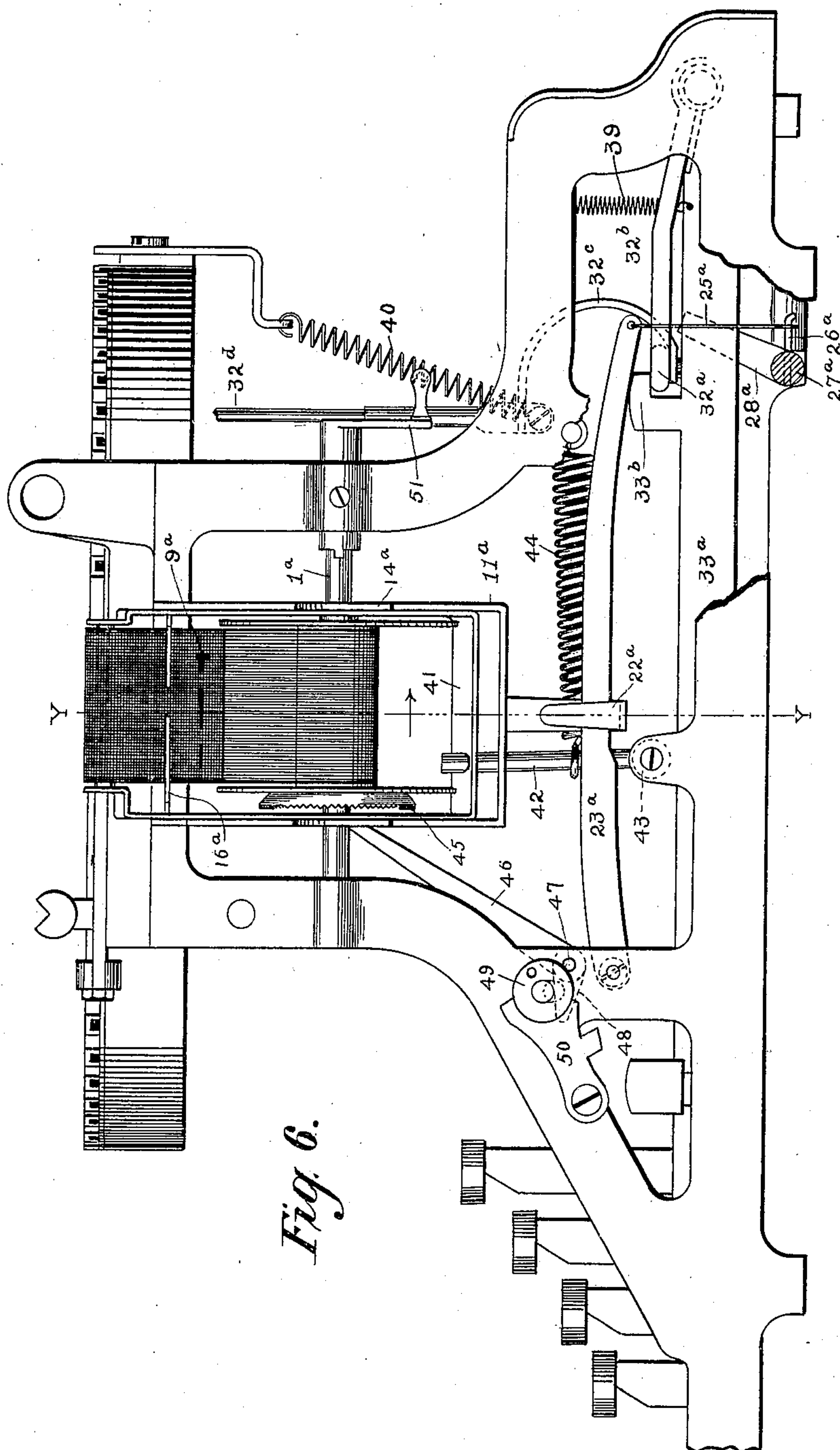


Fig. 6.

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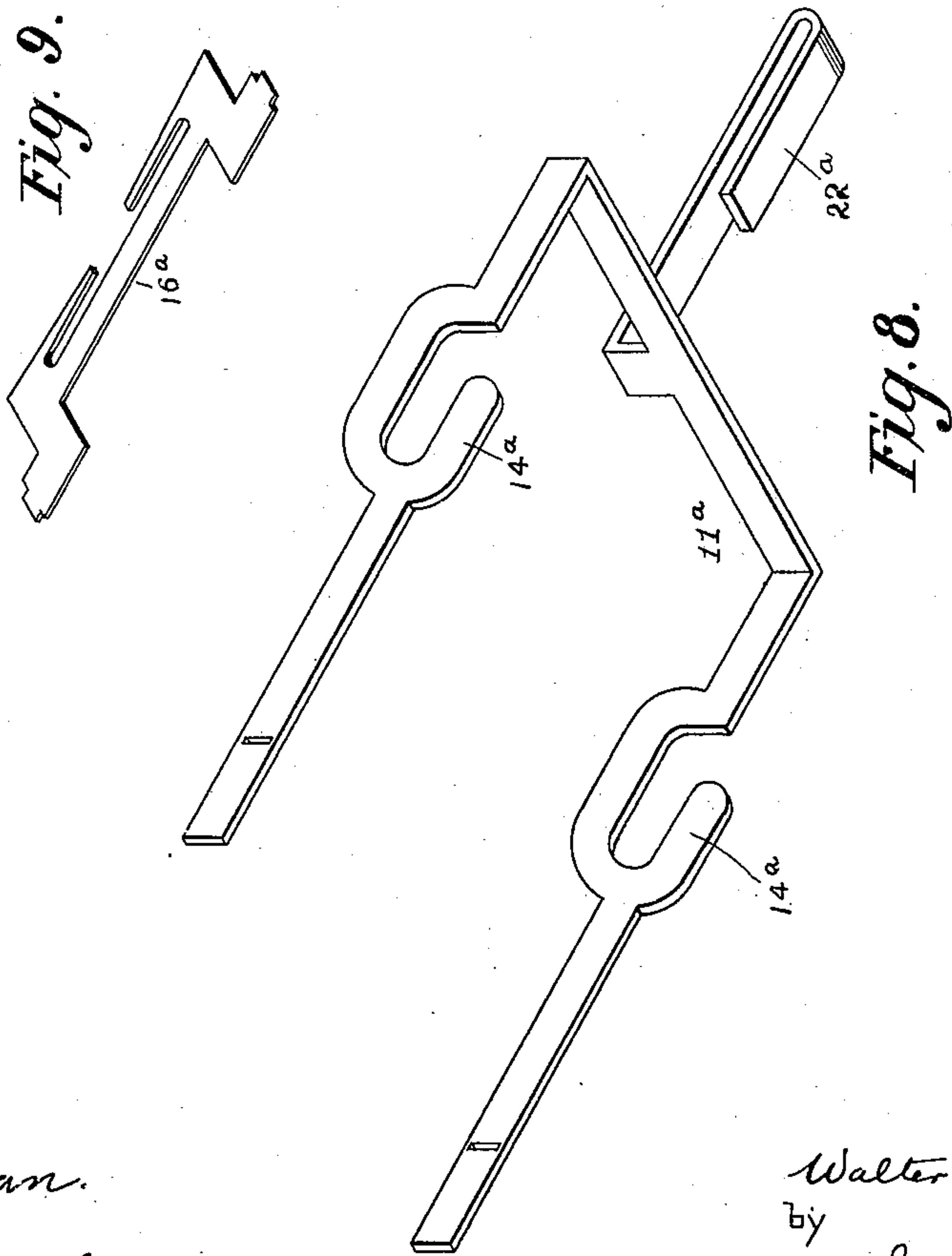
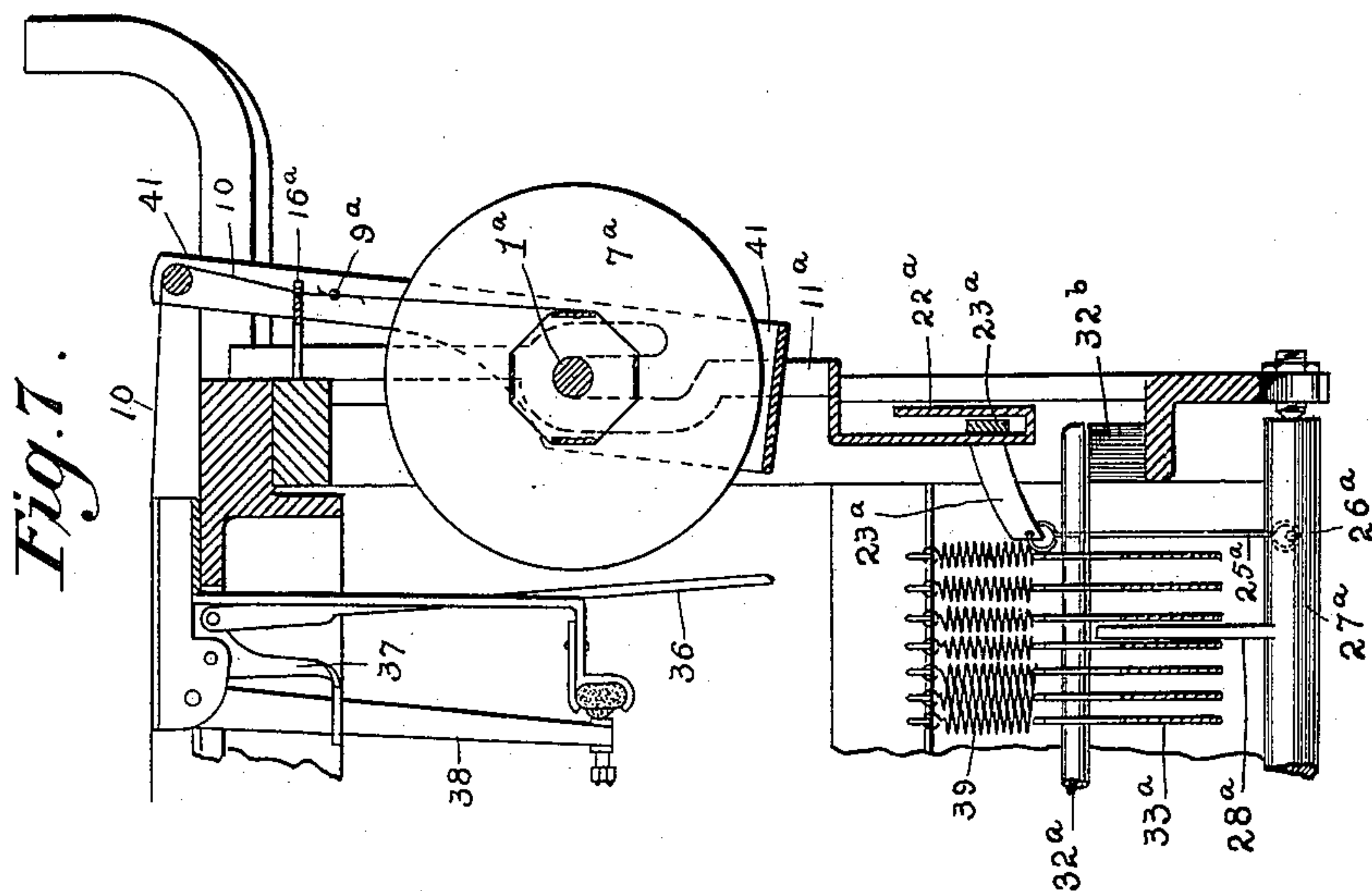
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UNITED STATES PATENT OFFICE.

WALTER J. BARRON, OF NEW YORK, N. Y., ASSIGNOR TO THE DENSMORE TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 619,711, dated February 21, 1899.

Application filed November 28, 1898. Serial No. 697,611. (No model.)

To all whom it may concern:

Be it known that I, WALTER J. BARRON, a citizen of the United States, and a resident of the borough of Brooklyn, 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 has for its main object to provide means for notifying the operator when the inking-ribbon has completed its longitudinal travel from one spool to the other and its operating mechanism needs reversing, so that the ribbon may be arranged to travel in the opposite direction or back from the full to the empty spool.

To this end my invention consists, primarily, in providing suitable means for automatically locking the keys, and hence printing mechanism and spacing mechanism, when the ribbon has completed its longitudinal travel in either direction, and, secondarily, in certain features of construction and combinations of parts, all as will be hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 represents a partial side elevation, partly in section, showing my improvement applied in one form to a "Remington" machine. Fig. 2 is a vertical cross-section taken at the line $x x$ of Fig. 1. Fig. 3 is a detail perspective view of the lever that actuates the locking mechanism that is in turn operated by the inking-ribbon. Fig. 4 is a similar view of a frame or device that is connected to the inking-ribbon and that operates the lever shown at Fig. 3. Fig. 5 is a like view of a part belonging to the frame shown at Fig. 4. Fig. 6 is a partial side elevation of a "Densmore" machine, showing my invention applied thereto in another form, a part of the side frame of the machine being broken away to more fully show the construction and arrangement of parts of the locking mechanism. Fig. 7 is a vertical cross-section taken at the line $y y$ of Fig. 6, and Figs. 8 and 9 are detail views similar to Figs. 4 and 5 of parts likewise used in the embodiment of my invention in connection with the Densmore machine.

Referring now more particularly to Figs. 1

to 5, inclusive, 1 designates a ribbon-spool shaft or axle mounted in bearings 2, depending from the top plate 3. On the rear end of said axle is a bevel-gear 4, which meshes with a similar gear 5 on a power-shaft 6, extending crosswise of the machine and having at its opposite end a bevel-gear similar to that marked 5, which meshes with a gear like that marked 4 at the rear end of another ribbon-spool shaft similar to that marked 1, all as common in the ordinary Remington machine. While one set of the gears 4 5 is in mesh, the gears of the other set at the opposite side of the machine are disengaged, and hence one ribbon-spool shaft is positively rotated and the other one left free to turn under the strain of the ribbon. For the sake of simplifying the drawings I have shown the ribbon-spool-driving mechanism at only one side of the machine. On each ribbon-spool shaft is keyed or splined a ribbon-spool 7, to the cylindrical body of which is preferably tacked one end of a short band 8, to the opposite end of which is attached, by means of a pin or other fastening 9, one end of the inking-ribbon 10.

On each ribbon-spool shaft is loosely mounted a U-shaped frame 11, comprising two upright arms or members 12 and a lower cross-bar 13. Each upright side arm 12 is formed or provided with an elongated open hook 14, by which the frame or device is adapted to be supported from the shaft 1 and also to slide up and down thereupon, slots or openings 15 being made in the top plate to permit the up-and-down movement of the side frame and also for supporting and guiding the upper free ends of the side arms 12.

Near the top of the side frame is a cross-bar 16, that is preferably formed at its ends with tenons 17, which enter slots 18 in the side arms 12 and are set or riveted thereto, so as suitably to connect said cross-bar with the said side arms of the frame. The cross-bar 16 is formed with a longitudinal slot 19 slightly longer than the width of the inking-ribbon and of a width such that the said ribbon may pass freely therethrough. One edge of the cross-bar is cut away or formed with a lateral passage-way 20 to facilitate the insertion of the ribbon into the narrow slot 19 and also its removal therefrom, as occasion may require.

While the slot 19 in the cross-bar is sufficiently wide to permit the ribbon to pass freely through it during the longitudinal travel of said ribbon, it is nevertheless too narrow to permit the pin 9 or other fastening or obstructing device to go through, and hence when said pin, which in this instance acts not only as a fastening device, but as an obstructing device also, arrives at the said slot it is arrested thereat, and in consequence any further travel or pull of the ribbon causes the said obstructing device to lift the frame 11, and this movement of said frame is employed to automatically actuate the device that locks or arrests the printing mechanism and stops further operation of the machine, as will presently appear.

Depending from the lower cross-bar 13 of each movable frame 11 is an arm 21, that is provided at its lower end with a hook 22, which engages with a horizontally-arranged lever 23, pivoted at 24 in the side frame of the machine and provided at near its rear end with a downwardly-projecting hook 25, that embraces a forwardly-extending pin 26 on a rock-shaft 27, extending across the machine and provided at near each end with an upwardly-extending arm 28, having a head or abutment 29 at near its upper end, which is adapted at the proper time to swing over under the cross-bar 30, forming part of the usual reciprocating spacing-rocker employed in the Remington machine. At each end of the cross-bar 30 is hooked a rod or link 31, that extends down and is connected to the universal bar 32, which, as is well known, extends across the machine beneath all of the key-levers 33 and in a manner such that when any key-lever of the series is depressed the said universal bar is caused to descend and pull the rod 31 down and vibrate the spacing-rocker through the cross-arm 30, the spacing-rocker carrying the usual spacing-dogs, which coact with a rack on the paper-carriage in the customary manner. The key-levers are of course connected by suitable rods with the type-bars, so that when the key-levers are moved downwardly the type-bars swing upwardly to strike the inking-ribbon and leave their impression on the paper supported on the platen in the paper-carriage. I have omitted from the drawings the paper-carriage, spacing-dogs, type-bars, &c., in order to simplify the drawings and because their construction and arrangement are well known and illustrated in numerous prior patents to myself and others. Besides, my improvements are not confined to any special construction and arrangement of printing and spacing mechanisms, but are adapted for practically all kinds or styles of machines.

From the foregoing it will be understood that when the obstructing device, as 9, on the longitudinally-moving ribbon is unwound from the spool and reaches the cross-bar 16 the frame 11 will be raised and will lift the pivoted arm or lever 23, which in turn will

rock the shaft 27 and cause the rocker-arms 28 to swing rearwardly and the heads thereof to come under the cross-bar 30, so as to prevent it from descending. By thus obstructing the said cross-bar 30 the escapement mechanism is prevented from acting, and hence the carriage cannot feed, and at the same time the universal bar is locked or held up, and hence the key-levers and the printing mechanism and the ribbon-feeding mechanism connected thereto are all precluded from operating. The moment the operator discovers that the keyboard is locked he is thereby informed that the ribbon has traveled lengthwise either its full extent or to the extent predetermined and that the ribbon-moving mechanism requires manipulation in order to cause the ribbon to travel in the opposite direction. Accordingly in this construction of machine the operator will move the shaft 6 lengthwise to disengage the gears 4 and 5, which happen to be in mesh, and simultaneously throw into engagement the other set of gears, whereupon the ribbon will then proceed to wind back on the spool which it has just been unwound from, and as the obstruction passes away from the cross-bar 16 the frame 11 is permitted to descend and with it the lever 23. As the latter drops the rock-shaft is preferably oscillated in the reverse direction by a light coil-spring 34, and the arms 28 are carried forward out of the path of vibration of the cross-bar 30. The said spring may be attached at one end to the pin 26 and at its lower end to an inwardly-extended pin 35, attached to the side frame; but instead of the said spring the hook 25 may be formed as an eye, completely inclosing the pin 26, whereby the rock-shaft is worked positively in both directions by the lever 23.

After the ribbon-switch has been actuated to change the direction of travel of the ribbon the spool may be given a partial turn by hand prior to the actuation of the key-levers, so as to insure the unlocking of the printing and spacing mechanisms prior to the recommencement of the work of printing.

The obstruction on the ribbon may be set at any desired locality to lock the keyboard or the printing or spacing mechanism at any desired time in the travel of the ribbon, which is a desideratum, because operators frequently use two different kinds of ribbon at one time on the machine, which are used alternately for different pieces of work, and it is desirable to provide some means whereby the operator may know when the particular ribbon in use has come to an end, so as to prevent the undesired ribbon from crossing the printing-point and being acted upon. The locking mechanism being the same at each side of the machine, the printing and feeding mechanisms will be arrested when the ribbon has completed its predetermined longitudinal travel in either direction.

Referring now to Figs. 6 to 9, wherein my

invention is shown as applied to a Densmore machine, it will be observed that the frame or device 11^a, which is actuated by the obstruction 9^a on the ribbon, is substantially identical in construction to that shown in the previous views and that it is supported upon the ribbon-spool shaft 1^a by elongated slotted hooks 14^a in the same manner. The hook 22^a at the lower end of said vertically-movable frame engages with an arm or lever 23^a, pivoted at its forward end to the side frame of the machine. To the free rear end of said lever is attached the upper end of a vertical link 25^a, which at its lower end is hooked upon a pin 26^a, projecting rearwardly from a transversely-arranged rock-shaft 27^a, provided at near each end with a rocker-arm 28^a, adapted to swing forward under the universal bar 32^a, forming part of the spring-actuated pivoted frame 32^b. Each key-lever 33^a is provided on its upper edge with a hook 33^b, which overhangs said universal bar in a manner such that when a key-lever is depressed the universal bar is carried down with it and through suitable connections 32^c and 32^d the escapement mechanism (not shown) is actuated to cause the carriage to feed letter-space distances. To each key-lever is attached an actuating-rod 36, which, through an intermediate lever 37, is connected to a type-bar 38.

39 marks the key-lever-returning spring, and 40 the returning-spring for the universal bar and its connections.

In this machine the ribbon-spools are adapted to slide endwise on their shafts in order that the ribbon may be used transversely or in the direction of its width, and the mechanism here shown for accomplishing the widthwise movement of the ribbon through the endwise movements of the spools is somewhat similar to that now commonly used in the Densmore machine, and comprises a rectangular frame 41, that embraces each ribbon-spool and is adapted to slide endwise on the shaft thereof.

At each side of the machine there is a rocker-arm 42, that engages with the lower cross-bar of the frame 41 and moves the frame and the spool and the ribbon back and forth transversely. Each rocker-arm 42 rises from a rock-shaft 43, extending across the machine, and the said rock-shaft is connected up to the carriage-driving power of the machine, by which it is turned in one direction, thus causing the rocker-arms 42 to vibrate forwardly and carry their frames and the ribbon-spools and ribbon toward the front of the machine and against the stress of a coiled spring 44, which is connected at one end to the machine-frame and at its other end to one of said rocker-arms 42 and acts to move said arm and through the rock-shaft the opposite arm 42 rearwardly, and hence cause the frames 41, the ribbon-spools, and the ribbon to move rearwardly. The said spring 44 operates during the step-by-step movements of the paper-carriage toward the left, and hence the rib-

bon is moved rearwardly and used crosswise progressively during the printing movement of the carriage. The ribbon is moved crosswise toward the operator during the retraction of the carriage for the beginning of a new line, at which time, of course, the types do not strike the ribbon.

The ribbon is moved longitudinally a short distance in the course of its forward travel during the retraction of the carriage, each ribbon-spool being provided at its front end with a ratchet-wheel 45, with which coöperates a driving-pawl 46, pivoted at 47 in the framework and having a heel or projection 48, controlled by a switch device 49, extending across the machine and so constructed as that when one pawl 46 is in operative engagement with or relation to one ratchet-wheel 45 the other one is held out of such engagement, the positions of these pawls being adapted to be reversed by a sliding endwise movement of the switch-rod 49, which may be locked or latched by a pivoted device 50, all as common in the Densmore machine and not requiring any further explanation than to remark that when the spools move forwardly the pawl 46 that may happen to be in working position to engage with the ratchet-wheel 45 turns the same a small part of a revolution, thus enabling the spool to wind upon itself a short length of the ribbon—say about an eighth of an inch—the opposite spool being free and able to pay out the ribbon as required.

When the obstruction at the paying-out spool acts on the cross-bar 16^a of the frame 11^a, which preferably embraces the frame 41, the frame 11^a is lifted as before and the hook 22^a is caused to pull up the lever 23^a and the pin 26^a, and thereby cause the locking-arms 28^a to swing under the universal bar 32^a, and thus arrest its movement. The universal bar being locked, the key-levers, the type-bars, and the escapement mechanism are likewise locked or prevented from working, and hence the operator is made aware of the fact that the ribbon needs reversing. To reverse the ribbon in this type of machine, it is only necessary for the operator to lift the latch 50 and move the switch-rod 49 endwise, so as to permit the previously-inactive pawl to come into operative relation with its ratchet-wheel and positively to hold the other pawl out of engagement with the ratchet-wheel with which it is associated. Thus the ribbon may travel back or in the reverse direction. As the ribbon rewinds upon the empty spool the frame 11^a and the lever 23^a will descend by gravity and the locking-arms 28^a will be rocked out of the path of vibration of the universal bar. As in the case of the Remington machine, the ribbon may be wound back slightly by hand through the crank 51 on the ribbon-spool shaft, so as positively to unlock the universal bar before the recommencement of the writing.

Various other modifications of my invention may be made, one of which is shown in

a companion application, and hence I do not wish to be restricted to exactly what is herein shown and described in so far as the broad feature of my invention is concerned.

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

1. The combination of a printing mechanism, an inking-ribbon, and means for locking the printing mechanism when the inking-ribbon has traveled longitudinally a predetermined distance.

2. The combination of a printing mechanism including a series of key-levers, an inking-ribbon, and a locking mechanism adapted to prevent the operation of said key-levers when the inking-ribbon has traveled a predetermined distance and needs reversing.

3. The combination of a printing mechanism including a series of key-levers, an inking-ribbon provided with an obstruction, and a locking mechanism for preventing the operation of said key-levers and adapted to be actuated by the said obstruction on the ribbon.

4. The combination of a printing mechanism including a series of key-levers, an inking-ribbon provided with an obstruction, a device adapted to be moved by said obstruction, and a locking mechanism actuated by said movable device and adapted to prevent the operation of said key-levers when the ribbon has traveled longitudinally a predetermined distance.

5. The combination of a printing mechanism including a series of key-levers, a carriage spacing mechanism actuated by said key-levers, an inking-ribbon, and means for locking the printing and spacing devices when the ribbon has traveled longitudinally a predetermined distance.

6. The combination of a printing mechanism including a series of key-levers, a carriage spacing mechanism actuated by said key-levers, a ribbon-feeding mechanism, an inking-ribbon provided with an obstruction, a frame adapted to be moved by said obstruction, a device for preventing the operation of said key-levers, and connections between said movable frame and said key-lever-arresting device.

7. The combination of a series of key-levers, a spacing-bar, a device for locking said spacing-bar and said key-levers, an inking-ribbon having an obstruction, and intermediate devices adapted to be actuated by said obstruction and to move the locking device to an operative position when the inking-ribbon has traveled longitudinally a predetermined distance.

8. The combination of a printing mechanism including a series of key-levers, a spacing-bar actuated by said key-levers, a locking device adapted to arrest said spacing-bar and said key-levers, an inking-ribbon, means for feeding the same longitudinally, and means for actuating said locking device when the

ribbon has been moved lengthwise a predetermined extent.

9. The combination of a printing mechanism including a series of key-levers, a spacing-bar actuated by said key-levers, a locking device adapted to arrest said spacing-bar and said key-levers, an inking-ribbon, means for feeding the same longitudinally, an obstruction on said ribbon, a device adapted to be moved by said obstruction, and a lever connected to said device and to said locking device.

10. The combination of a printing mechanism including a series of key-levers, a spacing-bar actuated by said key-levers, a locking device adapted to arrest said spacing-bar and said key-levers, an inking-ribbon, means for feeding the same longitudinally, an obstruction on said ribbon, a vertically-movable frame adapted to be lifted by said obstruction, and a lever connected to said frame and also connected to said locking device.

11. The combination of an inking-ribbon provided with an obstruction, a vertically-movable frame having a slotted cross-bar through which the ribbon passes but through which the said obstruction cannot pass, a lever connected to said frame, a rock-shaft, a rocker-arm, a spacing-bar and a series of key-levers.

12. The combination of an inking-ribbon having an obstruction, ribbon-spools, means for rotating the same, a frame mounted loosely on the ribbon-spool shaft and adapted to be raised by said obstruction, a lever connected to said frame, a series of key-levers, a spacing-bar, a rocker-arm, a rock-shaft, and a connection from the same to the lever that is connected with the movable frame.

13. The combination of an inking-ribbon having an obstruction, ribbon-spools, a frame having slotted side bars and a slotted cross-bar and mounted upon the ribbon-spool shaft, a hook depending from said frame, a lever engaged by said hook, a rock-shaft connected to said lever, a rocker-arm on said shaft, a series of key-levers, and a spacing-bar.

14. The combination with an inking-ribbon, of a series of keys and means for locking or arresting the keys when the ribbon has traveled a predetermined distance.

15. The combination with an inking-ribbon and its actuating means, of a series of keys, and means for preventing the operation of the keys when the ribbon has completed its longitudinal travel or moved longitudinally a predetermined distance and needs reversing.

16. The combination of an inking-ribbon, means for moving said ribbon longitudinally, a series of key-levers, means for preventing the operation of the key-levers when the ribbon has traveled lengthwise a predetermined distance, and a device on or carried by the ribbon for actuating the means that locks or prevents the operation of said key-levers.

17. The combination of an inking-ribbon,

means for feeding the same longitudinally, a locking means and a device on or carried by the ribbon for actuating said locking means when the ribbon needs reversing.

5 18. The combination of an inking-ribbon, means for feeding the same longitudinally, a locking mechanism, an obstruction on the ribbon, and a movable device connected with the locking mechanism and adapted to actuate
10 the same when moved by the obstruction on the ribbon.

15 19. The combination of an inking-ribbon, means for feeding the ribbon longitudinally, an obstruction on the ribbon, a movable frame carrying a part through which the said obstruction will not pass, a series of keys and a locking mechanism adapted to be actuated by said frame when moved by said obstruc-

tion and in turn to arrest or prevent the operation of the keys. 20

20. The combination of an inking-ribbon, a vertically-movable frame having a slotted cross-bar, an obstruction on the ribbon adapted to contact with and lift said frame, a mechanism for feeding said ribbon longitudinally, 25 a series of key-levers, and a locking device actuated by said movable frame for arresting the said key-levers.

Signed at the borough of Manhattan, city of New York, in the county of New York and 30 State of New York, this 14th day of October, A. D. 1898.

WALTER J. BARRON.

Witnesses:

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M. W. POOL.