

(No Model.)

2 Sheets—Sheet 1.

J. M. FAIRFIELD.
TYPE WRITING MACHINE.

No. 565,728.

Patented Aug. 11, 1896.

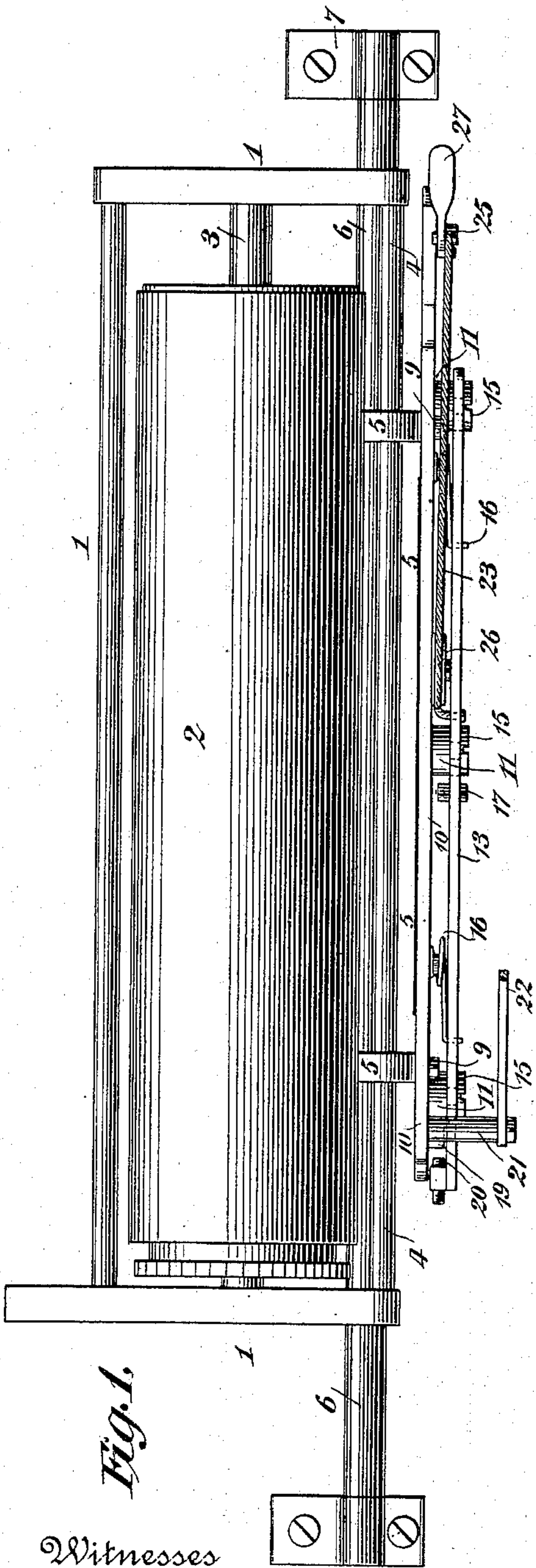


Fig. 1.

Witnesses
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J. W. Lloyd.

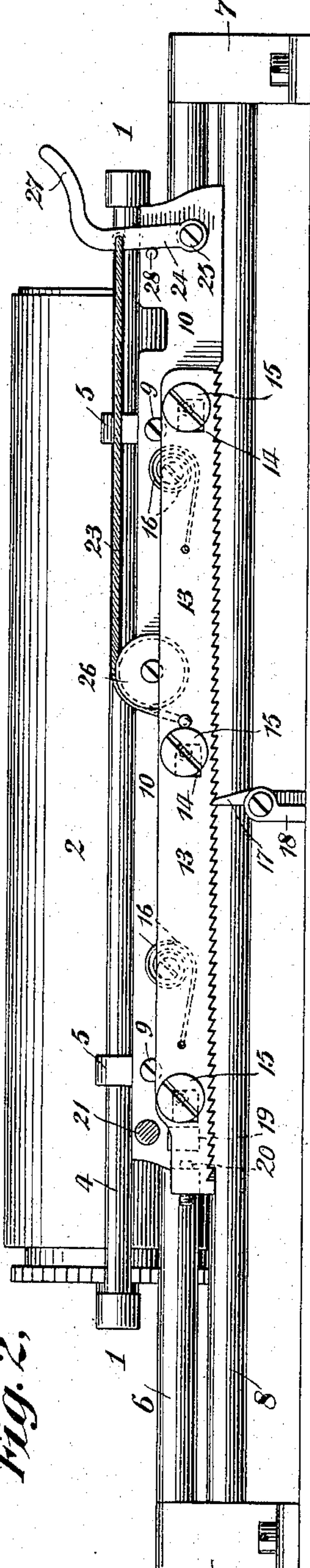


Fig. 2.

By his Attorneys

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Donnelly & Felbel.

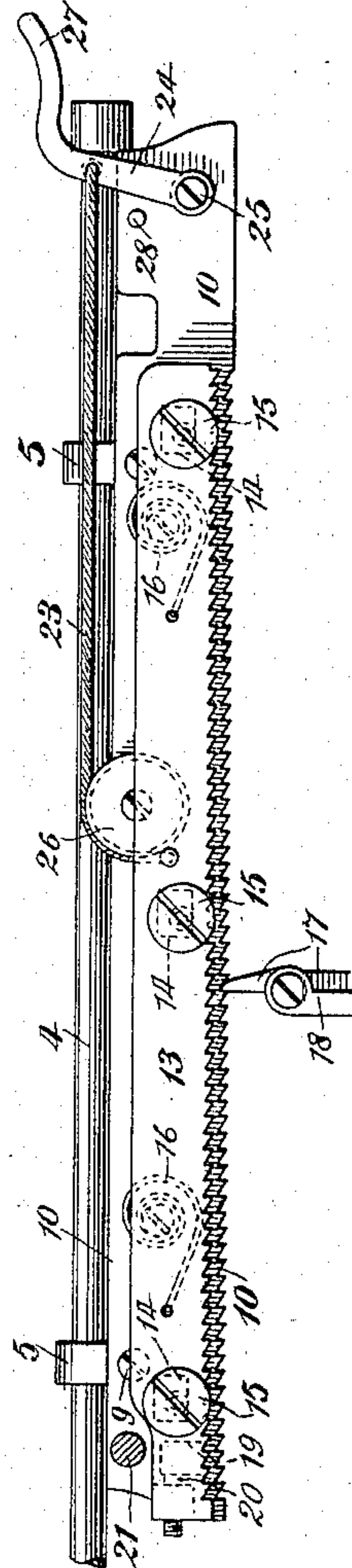


Fig. 3.

(No Model.)

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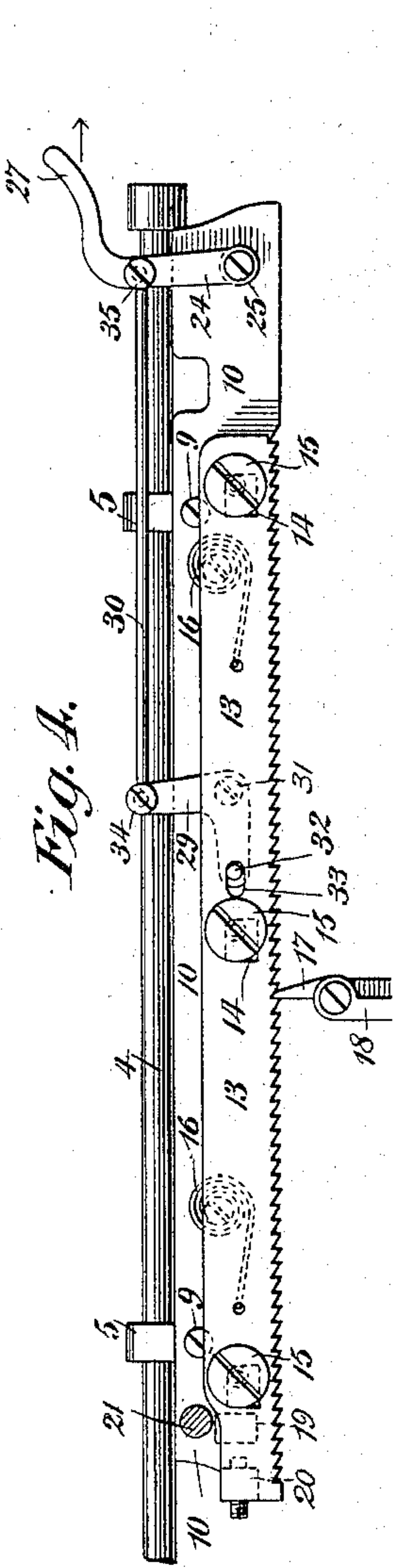


Fig. 4.

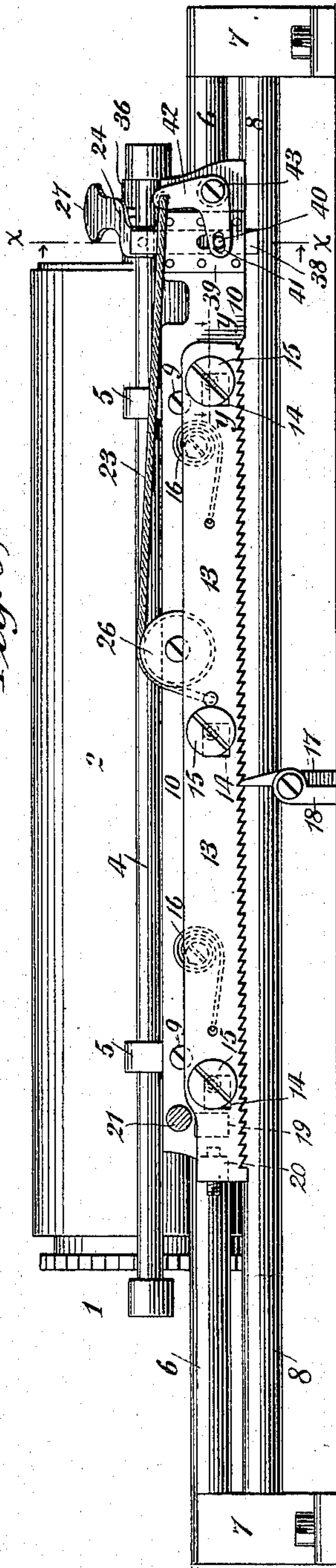


Fig. 5.

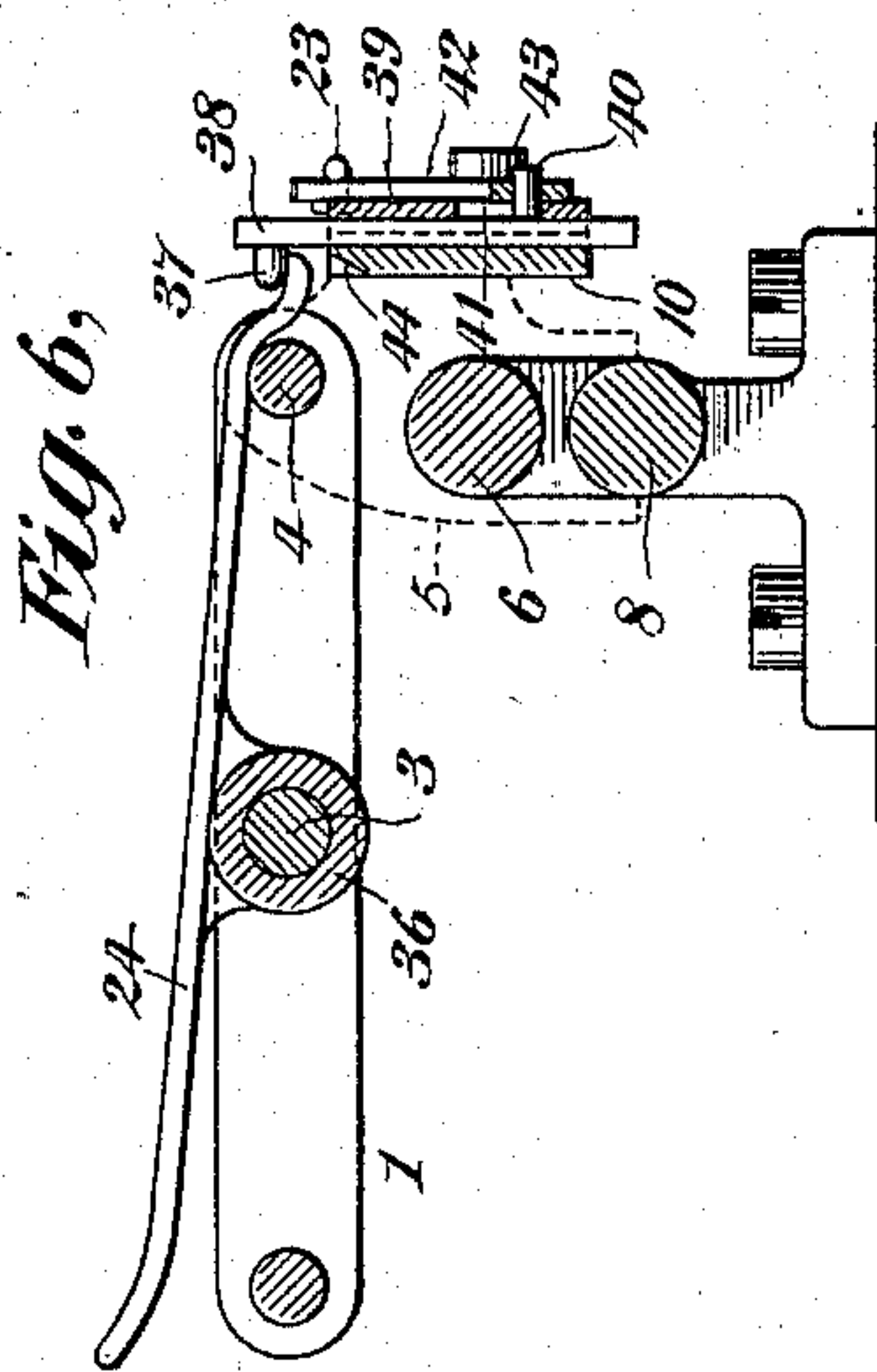
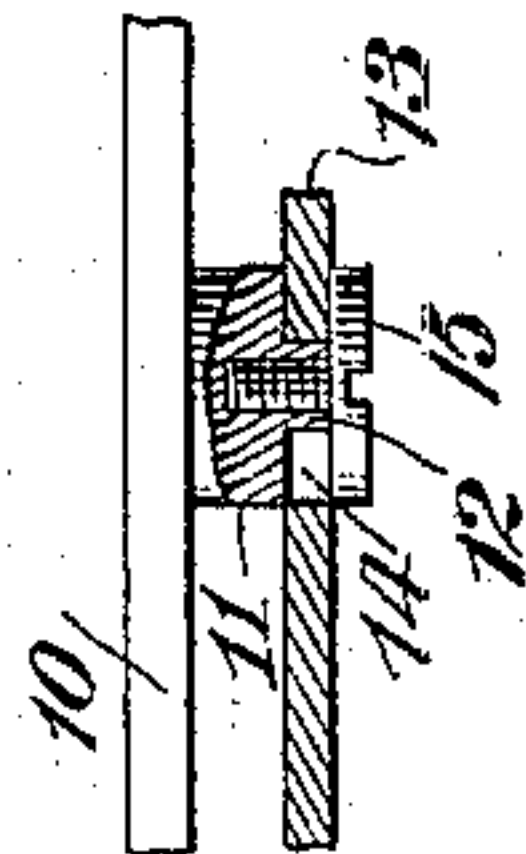


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN M. FAIRFIELD, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE
AMERICAN WRITING MACHINE COMPANY, OF SAME PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 565,728, dated August 11, 1896.

Application filed April 11, 1892. Serial No. 428,568. (No model.) Patented in England May 26, 1892, No. 9,994.

To all whom it may concern:

Be it known that I, JOHN M. FAIRFIELD, a citizen of the United States, and a resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

British Patent No. 9,994, dated May 26, 1892, has been obtained for this invention.

My invention has for its main object to provide simple and effective means for separating the escapement devices which control the movements of carriages of type-writing machines in order to release the carriage for rapid movements in either direction.

My invention consists in various features of construction and combinations of devices, as hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a top view of so much of a type-writing machine as is necessary to illustrate my invention. Fig. 2 is a rear elevation of the same with the feeding devices in their normal positions. Fig. 3 is a partial rear elevation showing the releasing mechanism in action. Fig. 4 is a partial rear elevation showing a variation in the construction of the releasing means. Fig. 5 is a rear elevation showing still another variation in the construction of the releasing means. Fig. 6 is a vertical cross-section taken at the line *xx* of Fig. 5, and Fig. 7 is a horizontal section taken at the line *yy* of Fig. 5.

In the several views the same part will be found designated by the same numeral of reference.

The type-writing machine represented in part will be recognized by those skilled in the art as that known as the "calligraph," to which description of machines I have applied my improvements in practice. As is well known, the escapement mechanism of the calligraph consists of two feed-racks upon the paper-carriage, one rigid and the other movable, and one feed-dog capable of vibration in the machine-framework and of coöperating with both said racks to effect a step-by-step feed of the paper-carriage.

In the paper-carriage 1 is mounted the usual

cylindrical platen 2, its shaft or axle 3 being arranged to turn in bearings in the side bars of the carriage. Connected to the back rod 4 of the paper-carriage is a yoke 5, which travels upon and is guided by a rail 6, mounted in standards 7 at each end of the top plate (not shown) of the machine. The said yoke is bifurcated at each end to embrace a parallel rod 8, mounted at its ends in said standards, said rod being provided to prevent the said yoke from swinging about or turning upon the guide-rail 6. To the ends of said yoke is attached rigidly by screws 9 a feed-rack 10, from which project rearwardly three studs 11, each of which is reduced in diameter to form a short projection 12, which serves as a stop for a movable rack 13, which is formed or provided at points opposite said projections 12 with elongated openings or slots 14, which embrace said projections. The rack 13 is connected to the rack 10 by screws 15, which pass into threaded perforations in the projections 12.

16 16 represent two coiled springs, one end of each of which is connected to the rack 13 and the other to the rack 10, and the said springs have a tendency to keep the rack 13 down and to move the same toward the left.

17 represents a feed-dog which is mounted on a spacing-rocker 18, connected, as usual in the calligraph, back to the finger-keys.

On the fixed feed-rack 10 is a rearwardly-projecting lug 19, and on the movable rack 13 is an adjustable stop 20, both said devices being employed to regulate or limit the movements of the rack 13 toward the left under the influence of the springs 16.

The dog 17, in the normal condition of the machine, stands in engagement with the feed-rack 13, and the carriage is prevented from moving under the pull or action of the driving power by reason of the fact that the projections 12 stand at this time at the left-hand ends of the openings or slots 14 in the restrained feed-rack 13.

Upon a depression of any of the finger-keys of the machine the feed-dog 17 is vibrated forwardly out of the movable feed-rack 13 and into engagement with the relatively rigid feed-rack 10. As soon as this movement is effected the feed-rack 13 is propelled by the

springs 16 one notch or tooth to the left (considered from the front of the machine) or until the stop 20 strikes the lug 19. At the completion of this movement of the feed-rack the
 5 projections 12 stand at or near the right-hand ends of the slots 14. Upon releasement of the finger-key the feed-dog 17 is moved back into engagement with the sliding feed-rack 13 and the carriage is permitted to move a
 10 letter-space distance under the influence of the driving power, the carriage being connected to such power through the usual arm 21 and link 22. (Shown only in part.) During the travel of the carriage the projections
 15 12 move from the right-hand to the left-hand ends of the slots or openings 14, the rack 13 at this time being held stationary by the dog 17.

As in the normal condition of the machine
 20 the feed-dog 17 stands in engagement with the rack 13, I have so constructed said rack that it is capable of being slid up vertically in order to disengage it from the feed-dog 17, and thus release the paper-carriage for rapid
 25 movements. This lifting capacity of the feed-rack is effected by increasing the width of the openings or slots 14, which surround the pins or projections 12. By this construction it will be seen that the rack 13 may not only be
 30 moved endwise, but may be moved vertically or widthwise a distance sufficient to cause its teeth to stand above the plane of the feed-dog 17, as represented at Fig. 3, in which condition of the parts the paper-carriage may be
 35 allowed to run quickly toward the left of the machine under the influence of the carriage-driving power or may be returned or run toward the right rapidly under the pull or pressure of the hand of the operator.

40 Various means may be employed for conveniently lifting the rack 13 from its engagement with the feed-dog, and in the several views I have shown three ways in which this may be accomplished.

45 Referring to Figs. 1, 2, and 3, 23 designates a cord or chain, one end of which is connected at or near the center of the feed-rack 13, and the other end of which is connected to a lever 24, pivoted at 25 on the rigid feed-
 50 rack 10. The said cord or chain passes over a grooved pulley or wheel 26, supported by the rigid rack 10, to change the direction of the cord or chain and permit it to pull in a substantially vertical direction upon an out-
 55 ward and downward movement of the lever 24, which is provided preferably with a bent finger-piece 27. When said lever is actuated as represented at Fig. 3, it operates, through the means described, to lift the rack 13 from
 60 engagement with the feed-dog. Upon releasement of said lever the springs 16 act to cause said feed-rack to descend, reengage with said dog, and restore the lever to its normal position, there being provided preferably
 65 a stop 28 on the rack 10 to limit the return movement of said lever.

Referring to Fig. 4, it will be observed that

in place of the grooved wheel a bell-crank 29 is employed, and in lieu of a flexible connection a rigid rod 30 is substituted. The bell-
 70 crank is pivoted at 31 on the rack 10 and is provided with a pin 32, which projects rearwardly to enter a slot 33 in the feed-rack 13. The rod 30 is connected at one end to the up-
 75 per arm of the bell-crank at 34, and said rod is connected at its opposite end at 35 to the actuating-lever 24. The operation of this construction will be readily understood, and it is only necessary to state that upon a move-
 80 ment of the actuating-lever in the direction of the arrow the pin 33 on the bell-crank will act to lift the feed-rack 13 out of engagement with the feed-dog and upon releasement of said lever that the springs 16 will operate to return all of the parts to their first positions.
 85

In Figs. 1, 2, 3, and 4 the finger-piece of the release-key is arranged to terminate in rear of the hinge-line of the paper-carriage, which is an advantage; but if desired the release-key may be extended in front of said
 90 line to or past the platen.

Referring to Figs. 5 and 6, a construction is shown in which the release-key or lever 24 is horizontally arranged and extended out
 95 past the platen to the front edge of the paper-carriage. The said lever is provided with a bearing 36, which surrounds the left-hand end of the platen-axle 3, and said lever, at its rearmost end, is bent to pass over the rear
 100 rod 4 of the paper-carriage and to stand beneath a forwardly-projecting pin 37 on a vertical slide 38, which is guided in a groove formed by the end of the rack-bar 10 and a plate 39, secured thereto. Near the lower end
 105 of said slide is provided a rearwardly-projecting pin 40, which is embraced by a slot 41 on the horizontal arm of a bell-crank 42, pivoted at 43 on the rack-bar 10. To the upper end of the vertical arm of the bell-crank is connected one end of a cord or chain 23, the other
 110 end of which, after passing around a pulley 26, is connected to the feed-rack 13. By this construction and arrangement when the outer end of the lever 24 is depressed the slide is raised, the bell-crank vibrated, and the feed-
 115 rack 13 lifted from engagement with the feed-dog, and upon releasement of said lever the springs 16 return all of the parts to their first positions, as before. In this construction when the carriage is turned up to a vertical
 120 position for inspection or correction of the work the rear bent end of the lever 24 recedes from the pin 37, the edge of the rack-bar 10 being beveled at 44 to permit the end of the lever to pass down.
 125

Various changes may be made in the means for lifting the spring-actuated independently-movable feed-rack without departing from the spirit of the main features of my improvements.
 130

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

1. In a type-writing machine, the combination with a paper-carriage, of a feed-dog, and

a pair of feed-racks, one of which has an independent endwise movement and also an independent lifting movement.

2. In a type-writing machine, the combination with a paper-carriage, of a feed-dog, a pair of feed-racks, one of which is capable of an independent longitudinal movement, and also capable of an upward lifting movement, and one or more springs for moving said rack longitudinally and for moving said rack downwardly.

3. In a type-writing machine, the combination with a paper-carriage, of a feed-dog, a pair of feed-racks, one of which is provided or formed with one or more slots or openings to enable it to have an independent longitudinal movement and also a transverse movement, and a spring or springs for moving it downwardly.

4. In a type-writing machine, the combination with a paper-carriage, of a feed-dog, a pair of feed-racks, one of which is capable of an independent longitudinal movement, means for lifting said rack in a direction transverse to that of its longitudinal movement and one or more springs for returning it to its normal position.

5. In a type-writing machine, the combination with a paper-carriage, of a feed-dog, a rigid rack, a spring-actuated feed-rack independently movable in the direction of its length, and also in the direction of its width, and means comprising a key and a spring for moving said rack in the last-mentioned direction.

6. In a type-writing machine, the combination with a paper-carriage, of a feed-dog, a

fixed feed-rack provided with projections, and a spring-actuated independently-movable feed-rack provided with slots or openings of a width or size sufficient to enable the said rack to be lifted from engagement with the feed-dog and to also feed longitudinally.

7. In a type-writing machine, the combination with a paper-carriage, of a feed-dog, a feed-rack, an independent, longitudinally and transversely movable feed-rack, a release-key, connections between said key and said rack whereby the latter may be raised from engagement with the feed-dog, and a spring for moving the said rack downwardly.

8. In a type-writing machine, the combination with a paper-carriage, of a feed-dog, a fixed feed-rack, an independent longitudinally and transversely movable feed-rack, a release-key, a slide, a bent lever, a flexible connection, and a pulley.

9. In a type-writing machine, the combination with a paper-carriage, of a feed-dog, a fixed feed-rack provided with one or more projections, a spring-actuated independently-movable feed-rack formed or provided with one or more enlarged slots or openings embracing said projections, a key-lever, a slide, a bent lever, a flexible connection, and a pulley.

Signed at Hartford, in the county of Hartford and State of Connecticut, this 7th day of April, A. D. 1892.

JOHN M. FAIRFIELD.

Witnesses:

HARRY M. HEFFLON,
ARTHUR H. CRITTENDEN.