

(No Model.)

H. E. PAYNE.
TYPE WRITING MACHINE.

No. 456,337.

Patented July 21, 1891.

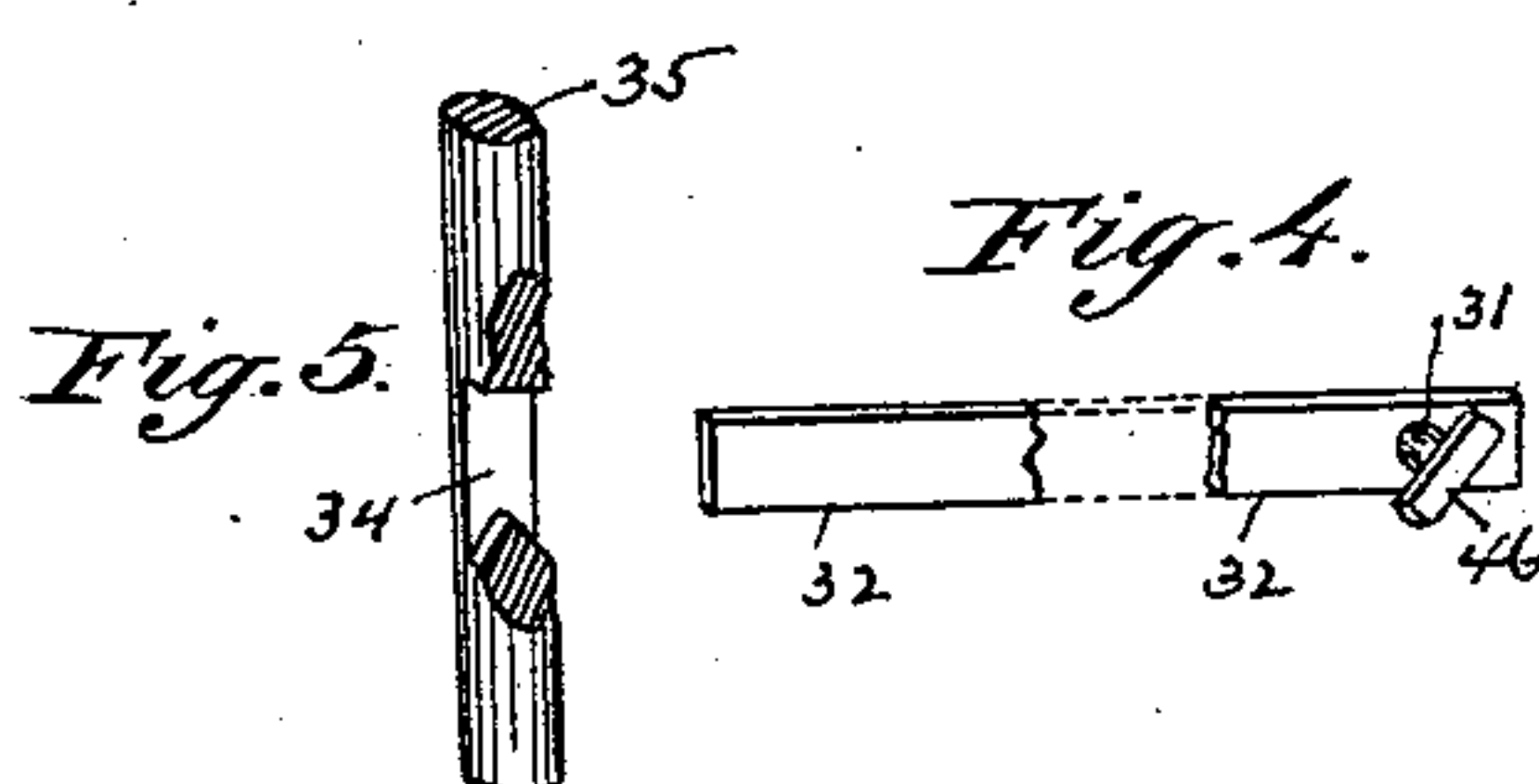
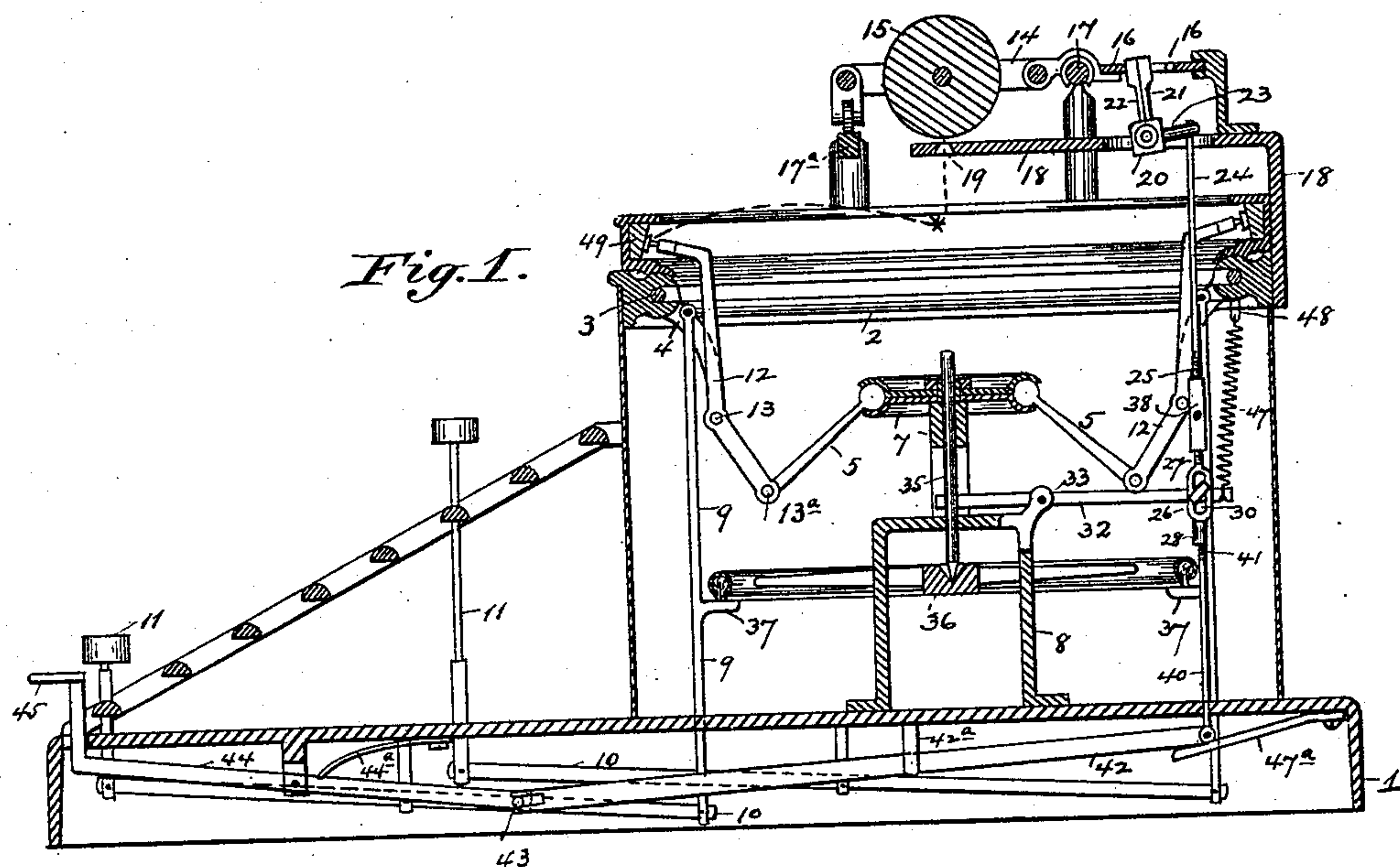


Fig. 4.

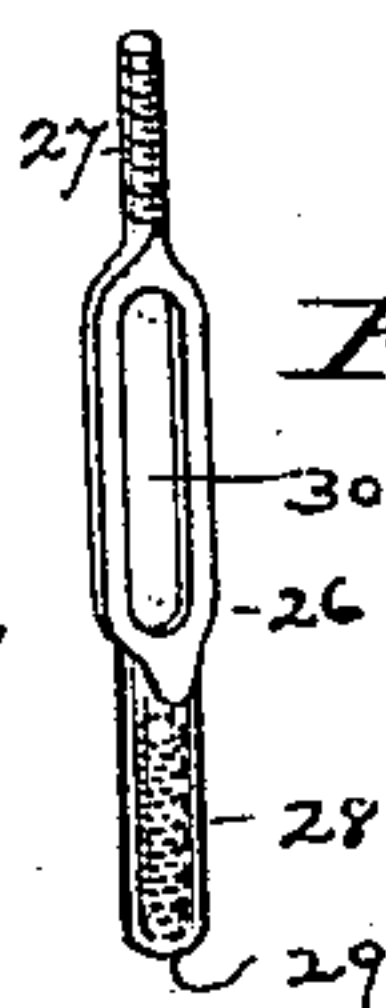
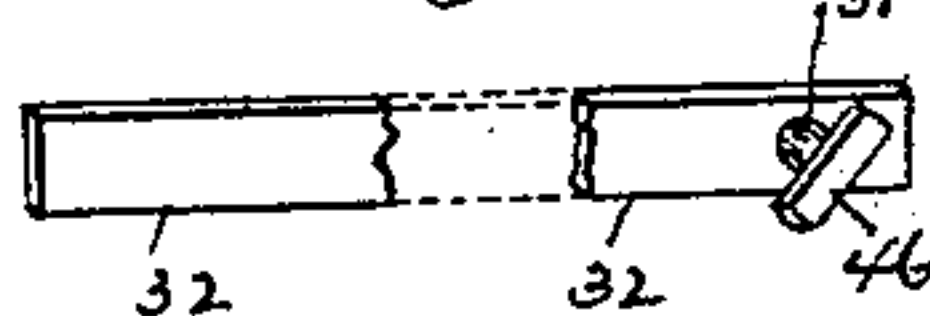
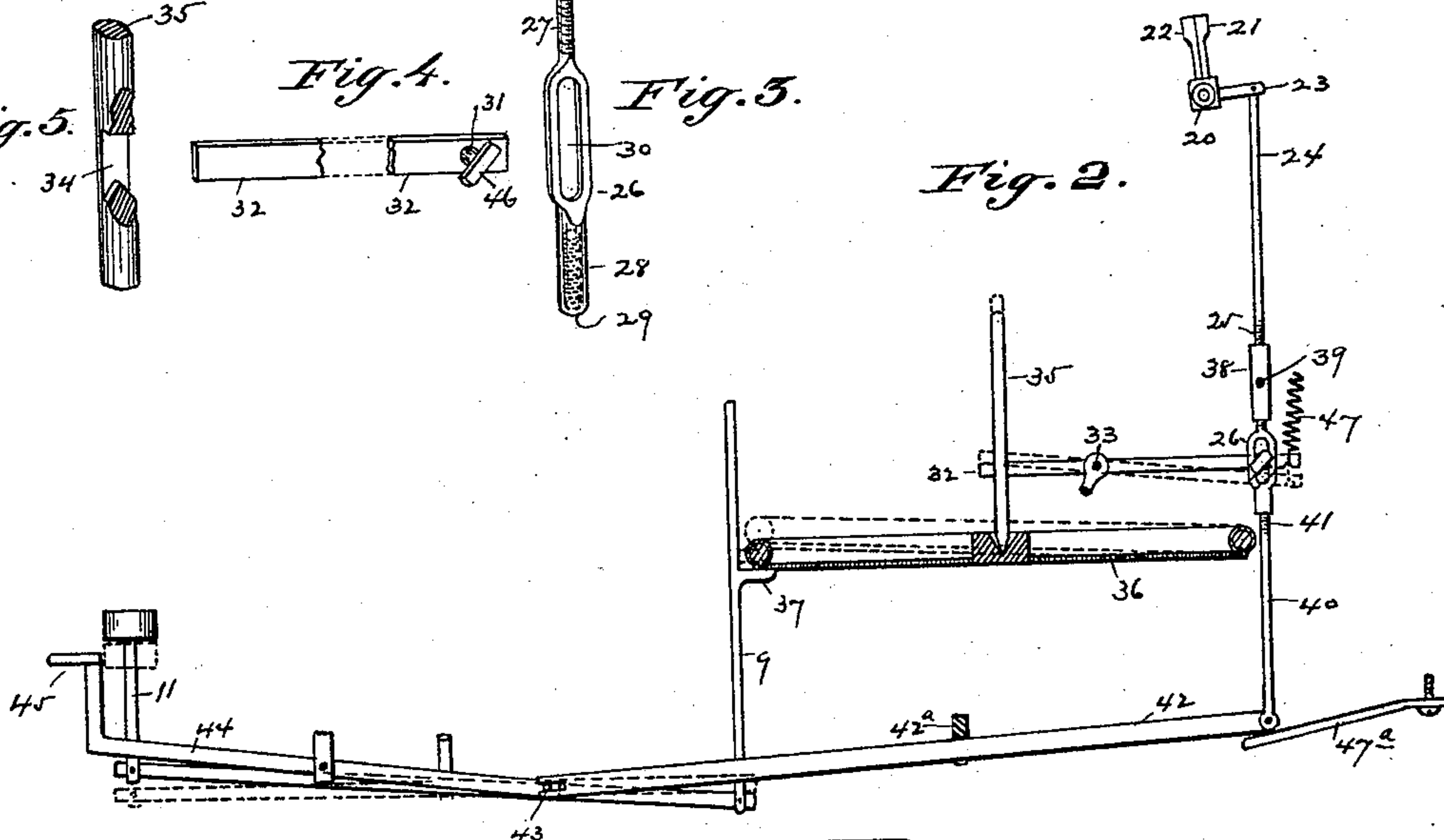
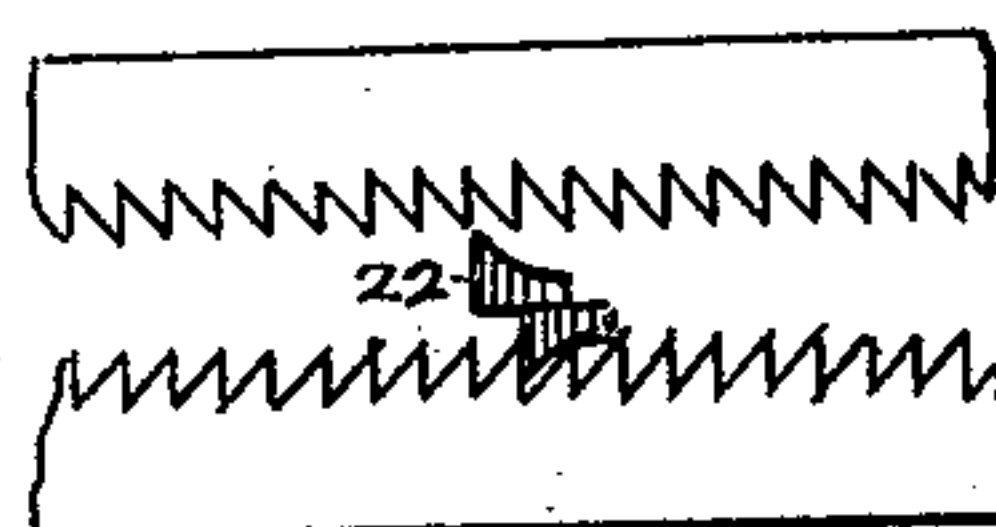
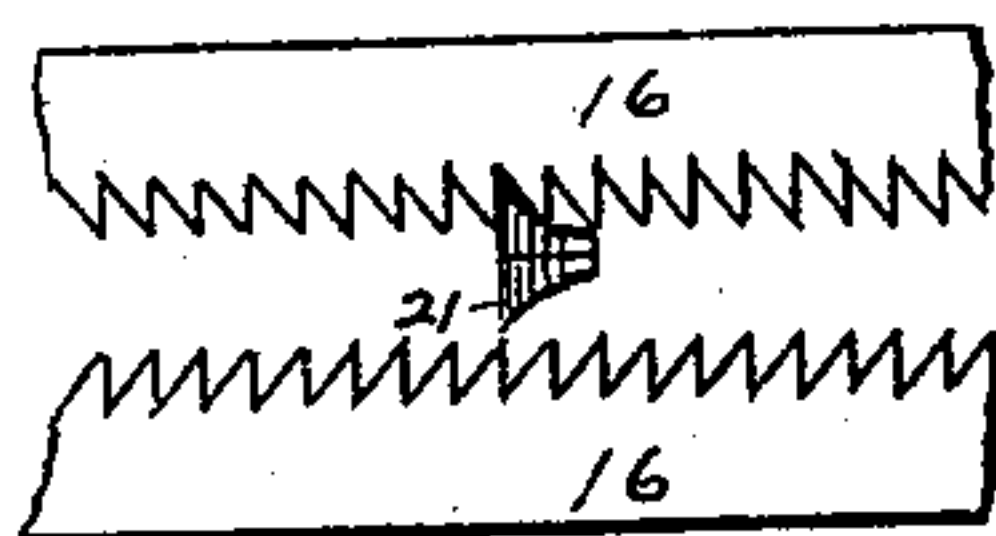


Fig. 2.



Attest:

Andrew Steiger
Martin Cohen



Inventor:

Halbert E. Payne

By Jacob Felbel

Att'y:

UNITED STATES PATENT OFFICE.

HALBERT E. PAYNE, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE
DAVIDSON WRITING MACHINE COMPANY, OF NEW YORK, N. Y.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 456,337, dated July 21, 1891.

Application filed January 2, 1891. Serial No. 376,494. (No model.)

To all whom it may concern:

Be it known that I, HALBERT E. PAYNE, a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to the paper-carriage-feeding mechanisms of type-writing machines, and has for its main objects to lessen the finger-key tension, the driving-tension, the wear of parts, and to increase the speed of the machine.

To these ends my invention consists, primarily, in providing a loose, detached, or lost-motion construction at some suitable locality between the space or universal bar and the letter-space dog or dogs for the purpose of enabling the type-carrier to be moved any desired extent before moving or actuating the letter-space feeding or escapement mechanism, and, secondarily, in certain features of construction and arrangement of parts, all as will be hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a longitudinal vertical section of a type-writing machine embodying my improvements. Fig. 2 is a skeleton view to represent the action of the parts. Fig. 3 is a perspective view of a slotted coupling which forms one part of the lost-motion construction. Fig. 4 is a similar view of an actuating-lever which forms another part of said construction. Fig. 5 is a similar view, partly in section, of a spindle for actuating said lever. Fig. 6 is a detached plan of the feed rack and dogs, and Fig. 7 is a similar view with the dogs in a different position.

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

I have shown my invention embodied in what is known as the "Yost" type-writing machine, the essential features of which are shown and described in the Letters Patent of Great Britain, dated March 26, 1889, No. 5,136, to which reference is hereby made for a fuller understanding of the construction and oper-

ation of said machine as to all parts not pertaining directly to my improvements.

Although I have shown my invention embodied in the machine of the Yost construction, I desire it to be understood that I do not limit myself thereto, as the improvements now to be described may be embraced in type-writing machines constructed on plans wholly dissimilar to said Yost machine.

1 designates the bed or base-plate of the machine; 2, the type-ring or top plate; 3, a fulcrum-ring supported by the latter; 4, driving-links mounted on said fulcrum-ring; 5, guide-links pivoted or supported in a centrally-arranged fulcrum-ring or bracket 7 on a stand 8; 9, a connecting-rod attached at its upper end to each of said driving-links; 10, a key-lever of the first order, connected at its rear end to the lower end of said connecting-rod and bearing at its front end a finger-key 11; 12, a type bar or carrier pivoted at 13 to one end of the driving-link 4 and at 13^a to the outer end of the guide-link 5.

14 designates a paper-carriage, having a platen 15 and a duplex feed-rack 16, the carriage being supported to slide at its rear side upon a guide-rail 17 and at its front side upon a track or way 17^a.

18 designates an arm or bracket formed or provided with a type-guide or directrix 19 in line with the vertical axis of the platen, and provided with a cutaway or opening in which is pivoted a trunnion 20, which carries independently-pivoted feed-dogs 21 and 22, that engage with said duplex rack, and which is provided with a laterally-extended rocker-arm 23, to which is connected the upper end of a vertical rod 24, threaded at its lower end at 25.

26 designates a coupling, having a screw 27 at its upper end and a socket-piece 28 at its lower end which is threaded internally, as indicated at 29.

Between the screw and the socket-piece is an elongated slot or opening 30, which receives a pin 31, extending laterally from a horizontally-arranged lever 32, which is pivoted at 33 in the stand 8 and extends forwardly through a slot 34 in a spindle 35, mounted to slide vertically in the bracket 7 and the stand 8, and which rests at its lower end in a conical de-

pression at the center of a circular universal bar or lever 36, which rests upon lugs or off-sets 37 of the vertical connecting-rods 9. The lower threaded end 25 of the rod 24 and the upper screw portion 27 of the coupling 26 are connected together by a turn-buckle 38, having a capstan-hole 39, by which the parts may be conveniently and nicely adjusted, as required. The vertical rod 40, threaded at 41 at its upper end, which screws into the threaded socket-piece 28, is pivoted at its lower end to a lever of the first order 42, which is coupled at its forward end by a pin-and-slot connection 43 to another similar lever 44, having at its outer end a spacing key or bar 45. The lever 42 is fulcrumed in a bifurcated post 42^a, attached to the bed-plate, and the lever 44 is provided with a spring 44^a, attached also to the bed-plate. The pin 31 is provided with an obliquely-arranged T-head 46, which passes through the slot or opening 30 when the parts have been made to assume an unusual position during the assembling operation, and which during the use of the machine prevents any separation or relative disarrangement of the coupling 26 and lever 32. To the rearmost end of the lever 32 is connected one end of a coiled spring 47, which at its upper end at 48 is connected to some fixed part of the machine.

In the machine shown the type press normally against an inking-pad 49 and move in about the path indicated by the dotted line at Fig. 1—that is to say, first radially inward and then vertically to the platen. Upon the depression of one of the finger-keys 11 the rear end of the key-lever 10 is elevated, the connecting-rod 9 pushed up, and the type caused to travel in the path described through the medium of the driving and guiding links 4 and 5. As the connecting-rod 9 is lifted, the projection 37 thereon raises one side of the universal bar 36, the opposite side thereof resting upon the diametrically-opposite projection 37 as a fulcrum, and the spindle 35 is pushed up to actuate the lever 32. As the rear arm of the lever 32 descends, the pin 31, which normally occupies a position about midway of the slot 30, first travels down to the lower end of the slot, and then, as its descent continues, operates to pull down the rod 24, oscillate the trunnion 20, and move the dogs rearwardly, causing the dog 22 to leave one of the racks 16 and the dog 21 to engage the other of said racks. When this occurs, the dog 22, being a loose, flexible, or spring-actuated dog, is shot or thrown laterally to the right one notch or tooth, as indicated at Fig. 7. On the release of the finger-key the springs 47 and 47^a operate to return the parts to their normal positions, and the dog 22 is rocked back into engagement with its rack, but in rear of the tooth which it formerly engaged, the driving mechanism at this time operating to feed the paper-carriage one letter space or notch. The movement of the dogs is so timed with reference to the

movement of the type-carrier that the type may arrive at about the locality designated by the star at Fig. 1 before any movement of the escapement mechanism or the feed-dogs takes place. In other words, the arrangement is such that the type may arrive at the point referred to before the lever 32 operates to pull down the rod 34, and hence before any oscillation of the trunnion. As the movement of the type is continued in a vertical direction the escapement mechanism is picked up and moved completely in one direction at about the time the type makes its impression upon the paper on the platen. The instant the finger-key is released the escapement mechanism begins to move and the dogs are returned to their first position and the carriage fed one letter space or notch by the time the type has returned to about the locality represented by the star at Fig. 1. From this point to the pad or to its normal position the type travels independently of the dogs and their appendages, which do not move until the universal bar has traveled nearly its full extent. Then the dogs are actuated in one direction and the type makes its impression. On releasing the finger-key the feed of the carriage takes place at once and after the type has moved back but a short distance from the platen. When the lever 32 reaches the bottom of the slot, it is caused to travel a little farther and pull down the rod 34 and draw the dogs rearwardly, at the same time extending the spring 47. When the finger-key is released, the lever 32 and loop travel together at first by reason of the spring 47^a, (the lever being at the bottom thereof.) Then the loop stops and the lever travels up alone under the influence of the spring 47; but the latter is not absolutely essential, as the parts may return by gravity. The spring 47 is of light tension, and is provided more particularly to move the parts with greater speed and prevent any rebound. When the carriage-feed is taking place, the type is returning to its pad; but the feed is effected during the first part of the return movement of the type, and hence another type may be brought up to make its impression some time before the first type has got back to the pad, thus making it possible to actuate the machine much more rapidly.

In practice the carriage may be made to release or feed the instant the type-bar starts to return. As the carriage must start and stop for each letter-space after each print or impression, it follows that the more time this occupies the slower must be the writing capacity of the machine, and vice versa.

By providing a lost motion between the dogs and the space or universal bar the load or weight of the escapement mechanism is not picked up until the finger-key has traveled part way and some momentum has been derived, and hence the touch of the machine is made easier and less tiresome to the fingers of the operator. By releasing the carriage

shortly after the type has left the platen and has begun to return to its initial position more time is given to the carriage in which to start and stop, and hence the machine may
5 be worked with greater rapidity.

As there are numerous ways of providing a lost motion between the finger-keys and the escapement devices, I do not wish to be limited to the special construction devised by
10 me and shown herein. When the spacing-key 45 is depressed, the universal bar and the lever 32 are not actuated; but the dogs are moved through the medium of the levers 44 and 42 and rod 40, the loop being pulled
15 down around the pin 31, which remains stationary, the spacing-levers and their connections being returned to their first positions by means of the spring 44^a.

As my improvements are adapted for nearly
20 all types of machines, I do not wish to be limited to any particular form of universal bar, type-movement, or letter-space-feeding devices.

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

1. In a type-writing machine, the combination, with the letter-spacing devices, the space or universal bar, and the finger-keys, of a lost-motion construction arranged between the letter-spacing devices and the space or universal bar, as and for the purposes set forth.
30

2. In a type-writing machine, the combination, with the letter-spacing devices, the space or universal bar, and the finger-keys, of a type-movement and means, substantially as described, arranged between the letter-spacing devices and the space or universal bar for delaying the movement of the feeding devices in one direction until the type has nearly
40 reached the platen to print and for causing the movement of the feeding devices in the opposite direction to release the carriage at about the beginning of the return movement of said type, substantially as set forth.

3. In a type-writing machine, the combination, with the paper-carriage and the letter-spacing devices, of a finger-key, a key-lever, a type-movement, a connecting-rod, a universal bar, a supplemental lever connected to
50 said universal bar, and a rod connected to the

feeding devices and coupled to said lever by a pin-and-slot connection, substantially as described.

4. In a type-writing machine, the combination, with a paper-carriage and the letter-spacing devices, of a finger-key, a key-lever, a type-movement, a connecting-rod, a universal bar, a supplemental lever connected to said universal bar, a returning-spring, and a rod connected to the feeding devices and connected
60 loosely to said supplemental lever.

5. In a type-writing machine, the combination, with a paper-carriage and the letter-spacing devices, of a finger-key, a key-lever, a type-movement, a connecting-rod, a universal bar, a supplemental lever connected to said universal bar and having a lateral pin, and a rod connected to the feeding devices and having an elongated loop embracing said pin, substantially as described.
70

6. In a type-writing machine, the combination, with the paper-carriage having a rack, the duplex dogs, the trunnion, the rocker-arm, the rod for rocking said trunnion, having a threaded lower end, a coupling 26, having a
75 screw 27, a threaded socket 28, and a slot 30, of a turn-buckle 38, a pin 31, a supplemental lever 32, a spindle 35, a universal bar 36, a type-movement, a connecting-rod 9, having an offset 37, a key-lever, and a finger-key, substantially as described.
80

7. In a type-writing machine, the combination, with the paper-carriage and the feeding devices, of a finger-key, a key-lever, a type-movement, a connecting-rod, a universal bar, a supplemental lever connected thereto, an elongated loop coupled to said lever, a rod extending from the upper end of said loop to the feeding devices, and a rod extending from the lower end of said loop to a compound key-
90 lever, having at its forward end the spacing-key, substantially as described.

Signed at New York city, in the county of New York and State of New York, this 31st day of December, A. D. 1890.

HALBERT E. PAYNE.

Witnesses:

JACOB FELBEL,

GEO. W. WEIFFENBACH.