

No. 708,792.

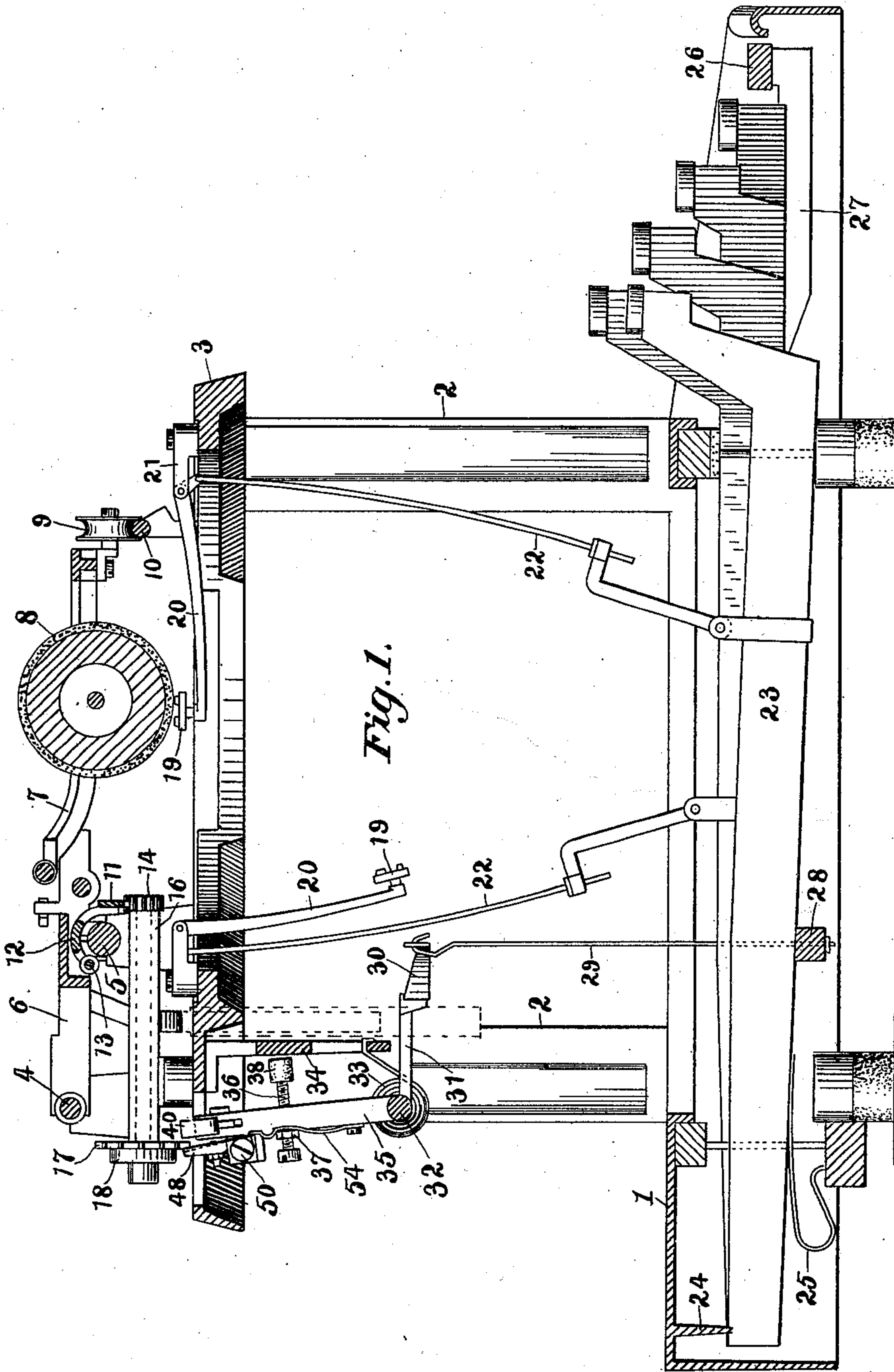
Patented Sept. 9, 1902.

W. J. BARRON.
TYPE WRITING MACHINE.

(Application filed June 30, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES :

H. H. Steel.

K. V. Donovan.

INVENTOR

Walter J. Barron

by Jacob Felbel

HIS ATTORNEY

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2 Sheets—Sheet 2.

Fig. 10.

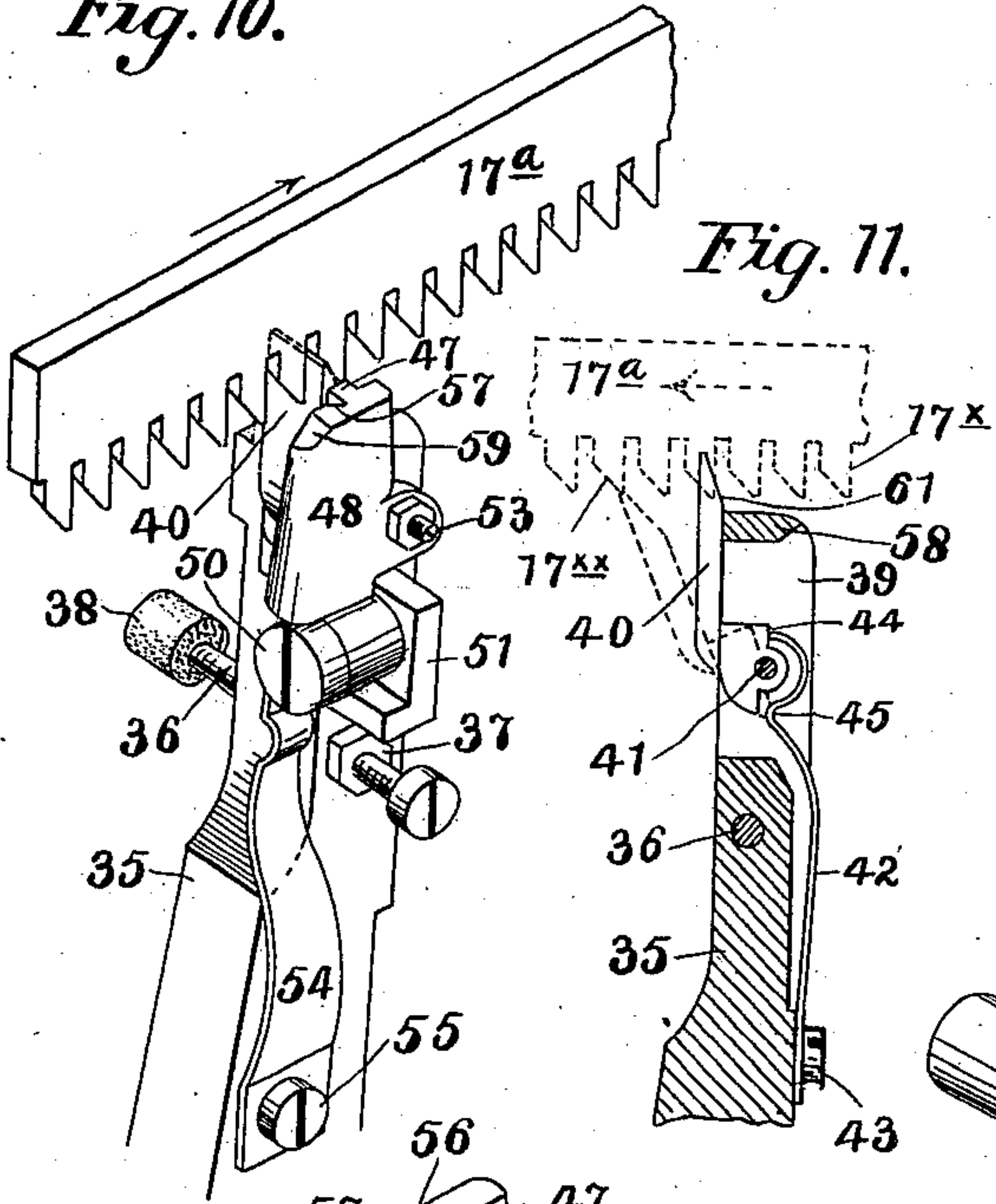


Fig. 11.

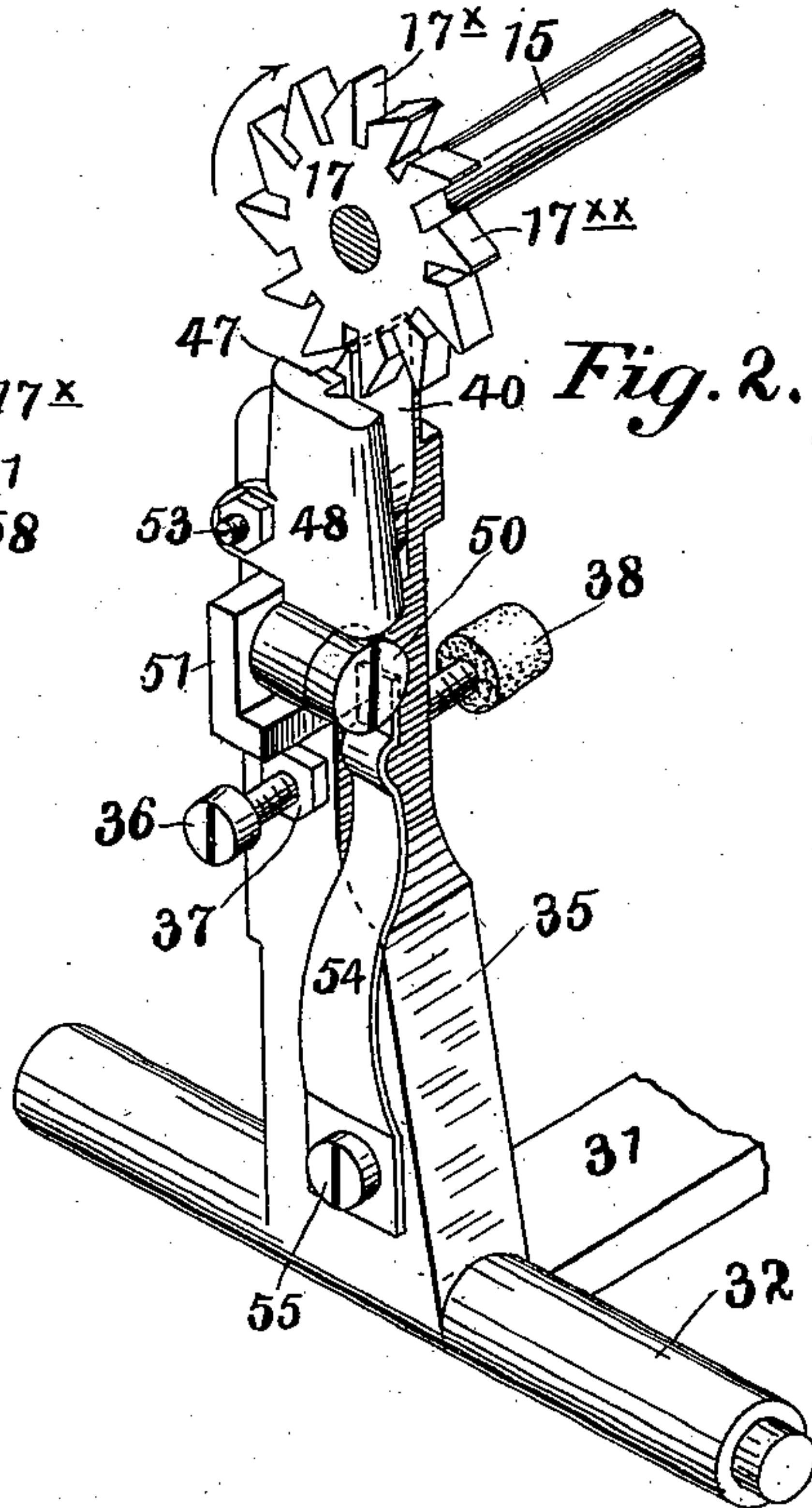


Fig. 2.

Fig. 3.

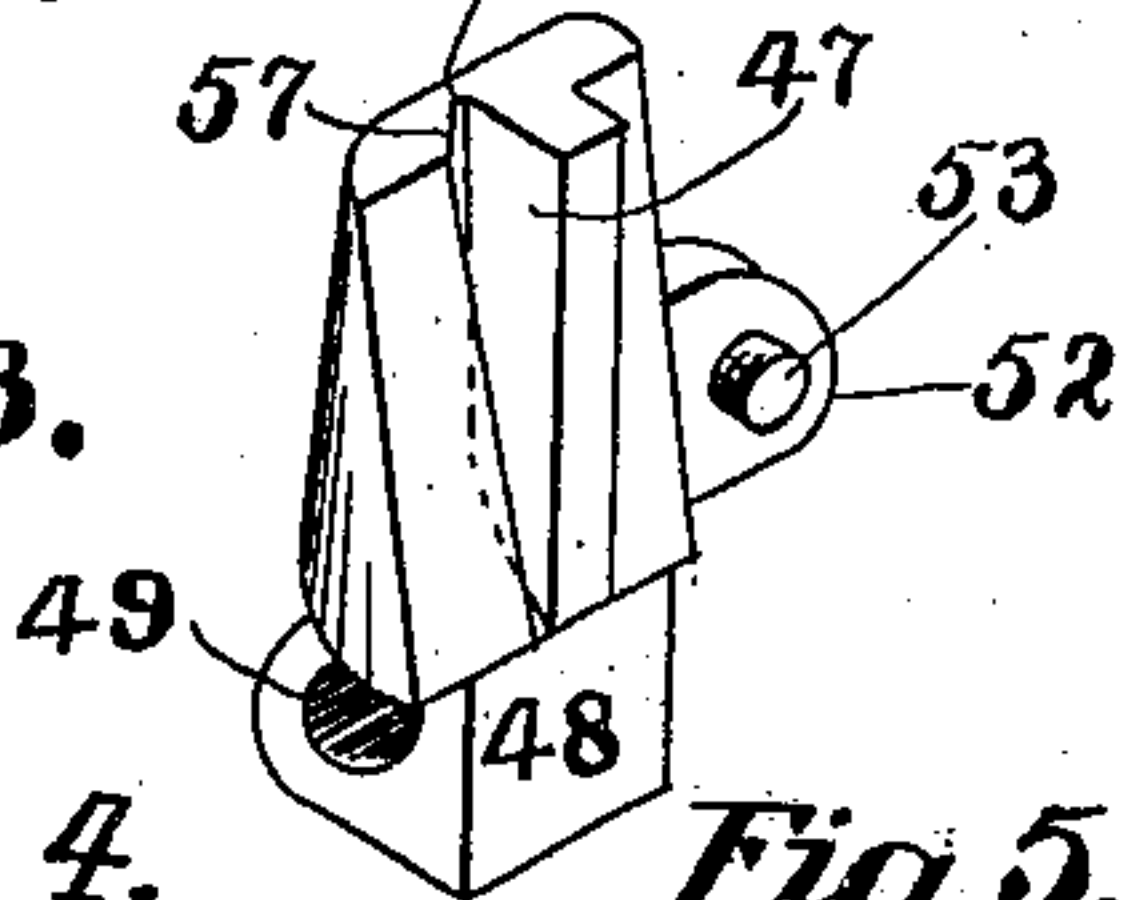


Fig. 4.

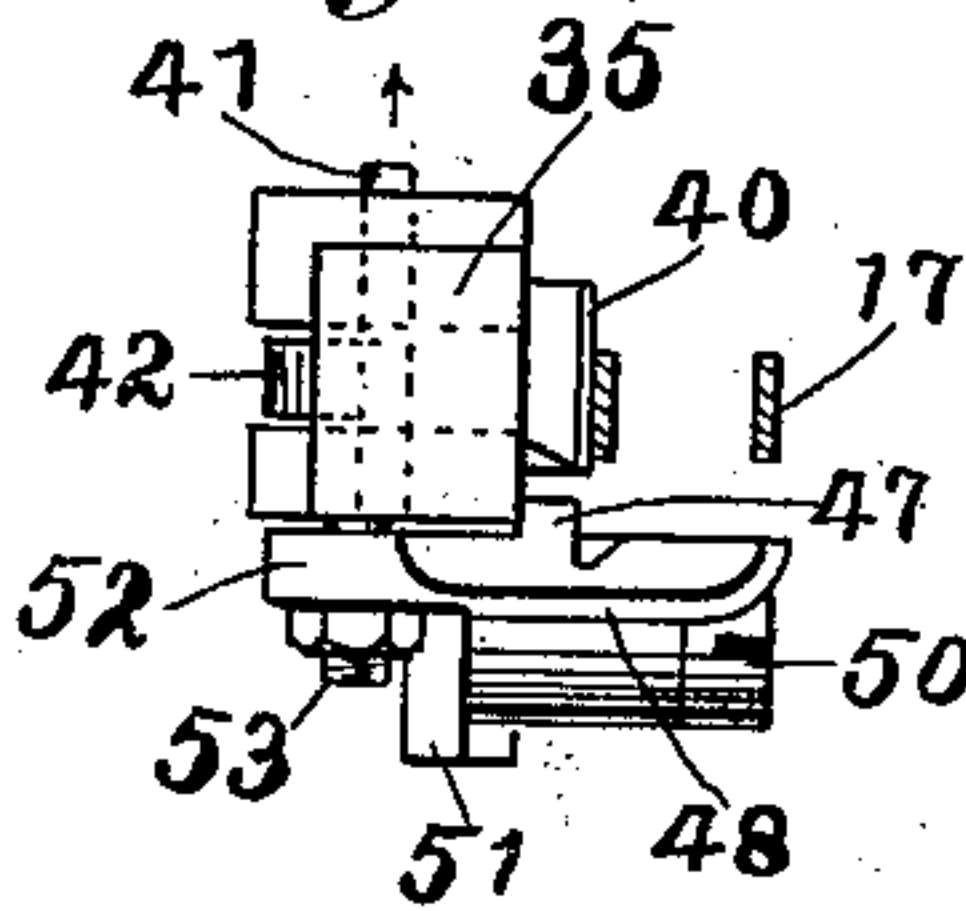


Fig. 5.

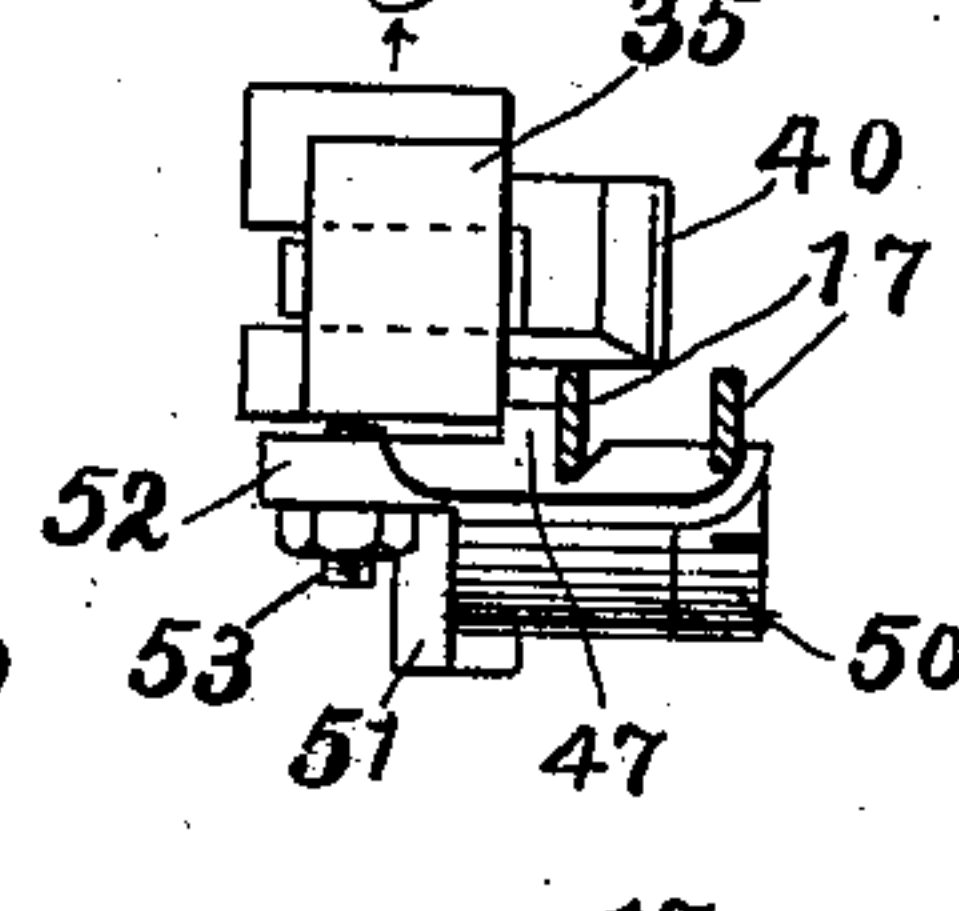


Fig. 6.

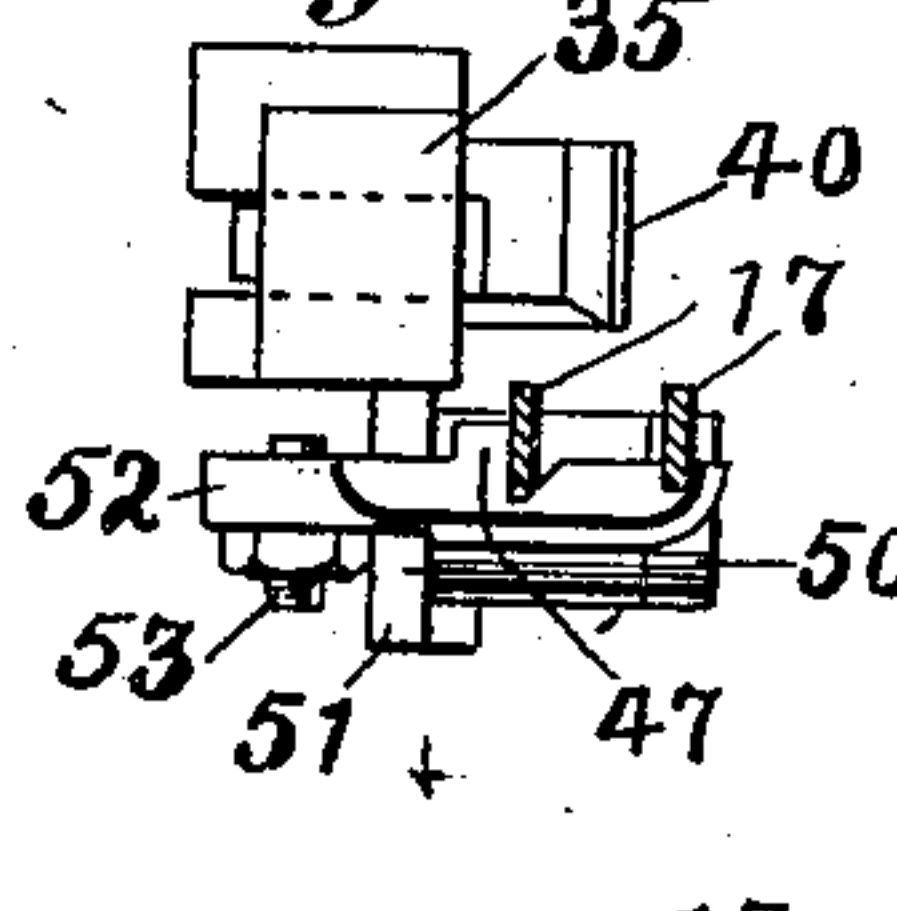


Fig. 7.

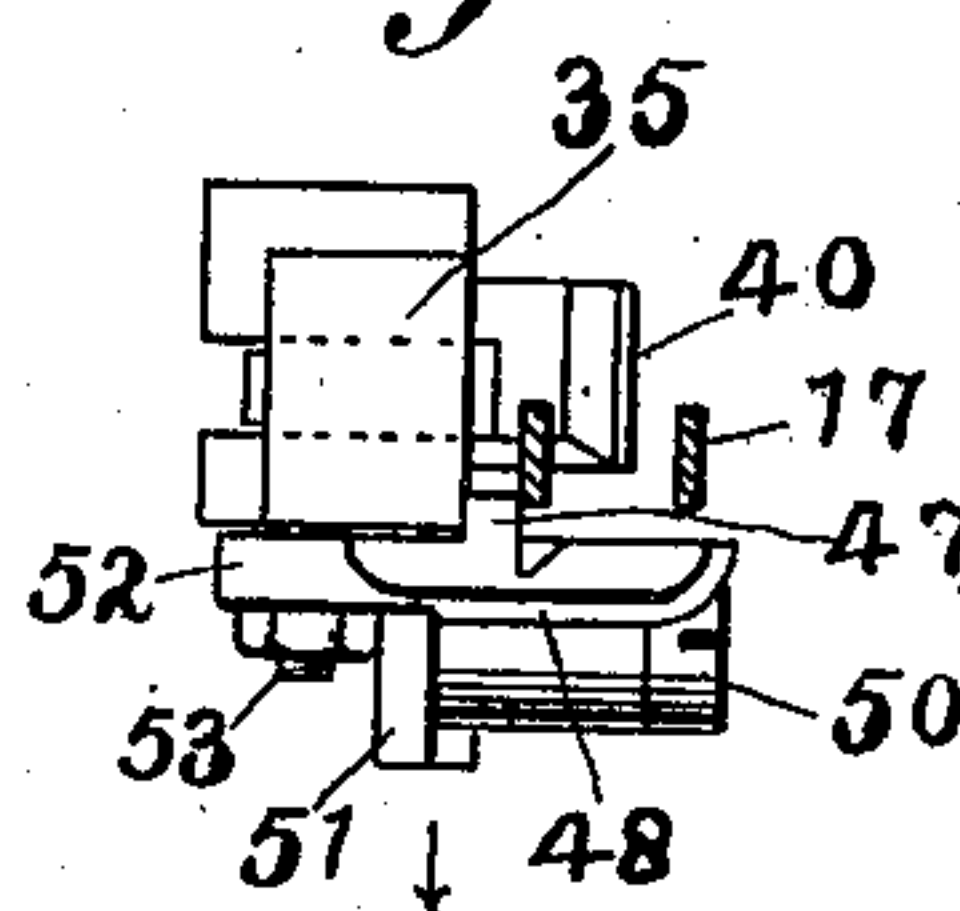


Fig. 8.

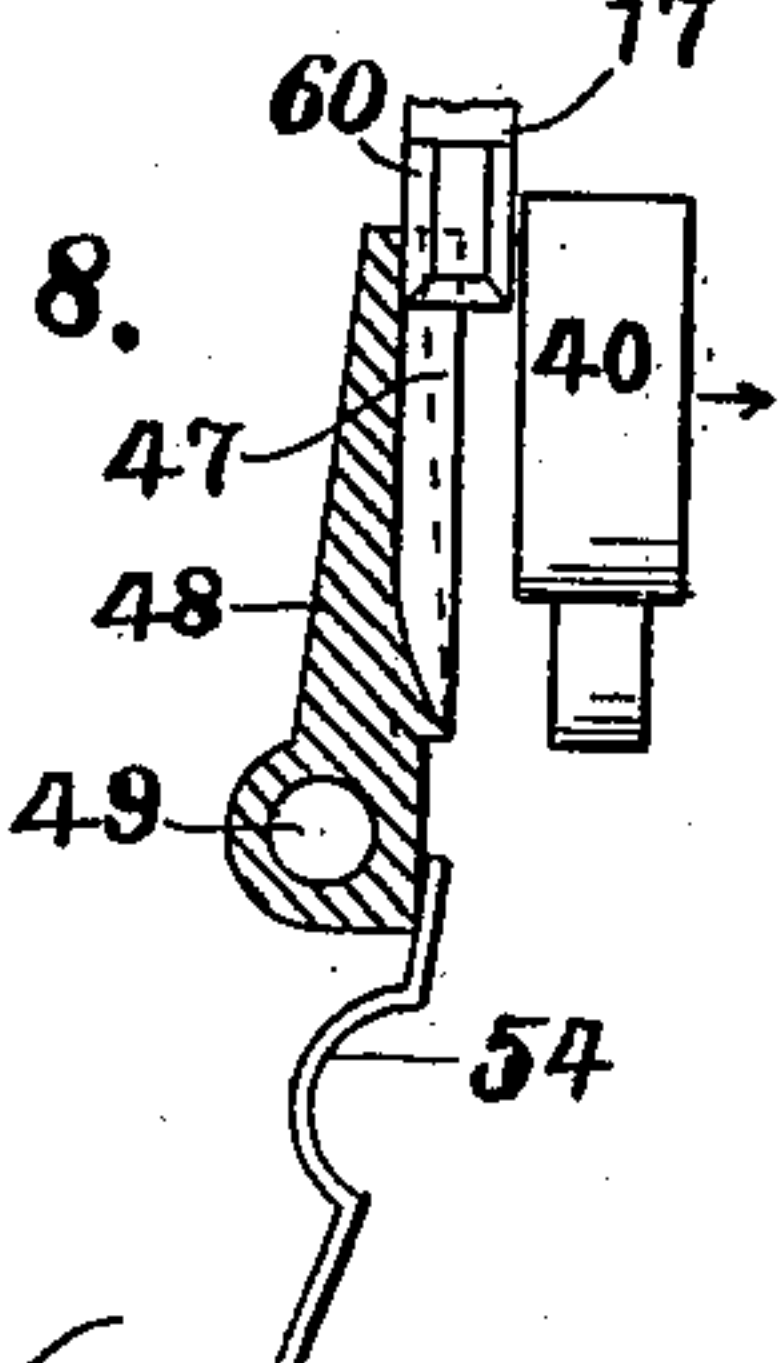
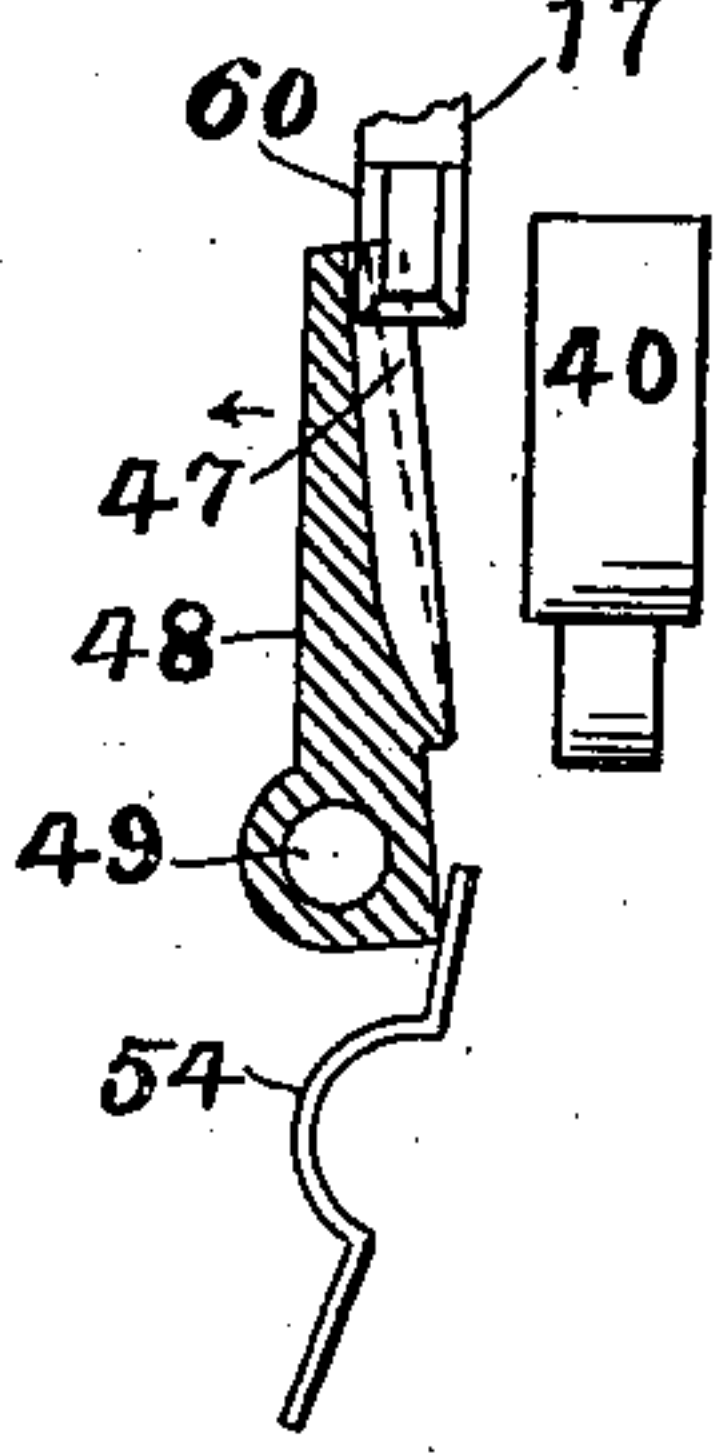


Fig. 9.



WITNESSES:

H. H. Stebbins.

K. V. Donovan.

INVENTOR

Walter J. Barron

by Jacob Felbel

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

WALTER J. BARRON, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE
DENSMORE TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A
CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 708,792, dated September 9, 1902.

Application filed June 30, 1899. Serial No. 722,354. (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, in the 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.

10 The present invention relates to escapement mechanisms for type-writing and similar machines, and has for one object the avoidance of shock to the fingers of the operator and for another object the avoidance of blurred impressions, and other objects, as will hereinafter more fully appear.

In a well-known class of type-writing machines the escapement mechanism includes a rack (straight, segmental, or circular) and feed-dogs coacting therewith. Ordinarily the dogs are mounted upon a vibrator or rocker arm and the rack is connected with the carriage of the machine and the motion of the vibrator is limited in at least one direction by means of a positive or fixed stop commonly provided with a leather buffer. The said stop is arranged to act at about the moment of impact of the type upon the platen, and the shock due to the sudden stoppage of the vibrator or rocker arm is transmitted to the fingers of the operator through the connecting mechanism and in some cases becomes painful during the continued use of the machine. In many type-writing machines the escapement mechanism is so arranged that there is a slight "drop" of a rack-tooth from the feeding to the holding dog (when the rack is the escapement member that is connected with the carriage and the dogs the escapement member connected with the keys) upon the depression of a key, the purpose of the drop being to permit a slight advance movement of the carriage at the printing stroke of the type bar or key, whereby the speed of operation is increased, and as the parts are commonly adjusted and timed so that the impact of the type is nearly coincident with the said drop it frequently happens that under a comparatively slow depres-

sion of the keys there is a blurring of the imprint, due to the fact that the carriage rebounds at a time practically coincident with the time of said impact. The above-stated objects of the invention are to overcome these defects or objections to the prior constructions.

In the preferred practice of my invention I employ a rack (straight or segmental or circular) and two dogs coacting therewith. One of said dogs is normally engaged with the rack and is pivoted to the dog-carrier to have independent motion in a plane parallel with the rack and is spring-pressed to move when disengaged from the rack to a position opposite the space between the tooth with which it was last engaged and the succeeding rack-tooth, while the other dog, which is normally disengaged from the rack, is pivoted to the carrier so as to be capable of independent motion transversely of the rack and is spring-pressed toward the rack. Means are provided for arresting the last-named dog in its motion transversely of the rack and for preventing rebound of the rack and for retaining the dog in engagement with the rack, while the carrier has further relative forward motion, thus putting the dog-spring under greater tension and providing an elastic stop for the depressed key and also preventing movement of the carriage at the moment of impact of the type.

To these ends the invention includes features of construction and combinations of devices hereinafter described, and more particularly pointed out in the appended claims. It is observed, however, that the principle of the invention may be embodied in many ways to secure some or all of the objects of the invention.

The preferred form of the invention is illustrated in the accompanying drawings, forming part of this specification, in which—

Figure 1 is a central vertical longitudinal sectional view of a Remington No. 6 type-writing machine in which my invention is embodied. Fig. 2 is a perspective view of the escapement mechanism illustrated in Fig. 1. Fig. 3 is a perspective view of the holding-

dog stop and rack-catch shown in Figs. 1 and 2. Figs. 4, 5, 6, and 7 are diagrammatic plan views, partly in section, illustrative of the mode of operation of the mechanism. Figs. 8 and 9 are diagrammatic side views, partly in section, also illustrative of the mode of operation of the invention and correspond, respectively, with Figs. 5 and 6. Fig. 10 is a perspective view of a form of the invention in which a straight rack is employed. Fig. 11 is a vertical sectional view taken transversely of the rocker and showing a feeding-dog and its operating-spring and illustrating the action of the parts in connection with the straight rack when the carriage is moved or returned toward the right or in a direction the reverse of its letter-space feed movement.

The same numeral of reference will be used to designate the same part in the various views of the drawings.

1 designates the base-frame, 2 uprights, and 3 a top plate or type-ring secured to the uprights, the whole forming a framework for supporting the moving and other parts of the machine.

4 and 5 are two guide-rods upon which a carriage 6 is mounted to move transversely of the machine, the said rods 4 and 5 being supported from the top plate 3.

7 is a platen-carrier connected in any suitable or usual way with the carriage 4.

8 is a platen, and 9 is a guide-roller at the front of the platen-carrier 7 and running upon the guide and shift rail 10.

11 is a rack supported by arms 12, pivoted at 13 to the carriage 4, and 14 is a toothed wheel with which the rack 11 meshes normally, the said wheel 14 being fast upon a shaft 15, which is journaled in a bearing 16 and is provided at its rear end with a ratchet-wheel or circular rack 17, connected to the shaft in any suitable or usual way, as by a backing ratchet in a casing 18.

19 designates type-blocks connected with type-bars 20, as usual, and 21 designates type-bar hangers secured to the top plate 3.

22 represents connecting-rods joining the type-bars with the key-levers 23, which key-levers are provided with finger-pieces at their forward ends and are formed with notches in their upper edges near their rear ends, which notches engage underneath a rib 24 on the base 1. Springs 25 hold the notched ends of the key-levers 23 in engagement with the rib 24.

26 is a space-bar carried by space-levers 27, fulcrumed upon the rib 24.

28 is a universal bar underlying the key and space levers and carried by rods 29, whose upper ends hook over a transverse bar 30, which is fast to a forwardly-projecting arm 31, rigid with a rock-shaft 32, the shaft 32 being journaled in the framework of the machine in any usual or suitable manner. A spring 33, having one end connected with the shaft 32 and the other hooking over the bracket 34, projecting downwardly from the

top plate 30, is so tensioned as to rock the shaft 32 to lift the arm 31 and its connected parts. The shaft 32 is provided with an upwardly-extending arm 35, forming the vibrator or rocker arm of the escapement mechanism. The arm 35 is provided with a threaded perforation with which a screw 36 engages, and the screw is provided with a jam-nut 37 for locking it in position against accidental displacement. The nut and the screw are provided at 38 with a buffer, as leather, which buffer is adapted to coact with the bracket 34 whenever the rocker-arm 35 shall have been moved forwardly of the machine to a given extent. The upper end of the arm 35 is recessed at 39, and within this recess is pivoted a feed-dog 40 by means of a pin 41. A spring 42 is secured at one end to the rocker 35 by a screw 43, and its extreme end is adapted to bear against a shoulder 44 on the dog 40 above the pivot 41, while a bent portion 45 of the spring is adapted to coact with a shoulder 46 on the dog below the pivot 41 to limit the throw of the dog by the spring. The devices thus far described are or may be of any suitable or usual construction and, in fact, are to be found in the Remington No. 6 machine. The holding-dog 47 herein shown forms part of a block of metal 48, which is provided with a horizontal perforation 49, which fits upon a plain cylindrical portion of a screw-stud 50, the threaded portion of the stud 50 engaging with a threaded hole in a rearwardly-projecting lug 51, integral with or rigidly attached to the rocker 35, and the said axis 50 being parallel with the axis 32 and with the plane of the rack 17. The block 48 is provided with an ear 52, which is provided with a threaded perforation to receive the adjustable stop-screw 53, the end of which screw coacts with the rear face of the rocker 35 and limits the distance or space between the adjacent edges of the holding and feeding dogs. Normally the distance between the holding and feeding dogs is less than the width of a rack-tooth. The block 48 is held in position with the stop 53 against the rocker 35 by means of a spring 54, which is secured at one end to the arm 35 by means of a screw 55 and which bears at its other end against the forward face of the block 48, below the axis of motion thereof. The block 48 is formed with a groove 56 adjacent and in rear of the holding-dog 47, one wall of the groove being formed by the working face of the dog or a continuation thereof and another wall by an inclined face 57 opposite the working face of the dog 47, but not reaching so far toward the dog 40 as the working face of dog 47 does, and these two faces may be joined by a third face, as shown in Fig. 3 and elsewhere, or they may form an angle with each other. The working faces of the dog 47 and of the wall 57 respectively engage with the front or working faces 17^x and the rear faces 17^{xx} (or an edge thereof) of the teeth of the rack 17 whenever the arm 35 has been moved

from the position shown in Fig. 4 to the position shown in Fig. 5 and in the position of the parts shown in Fig. 5 the rack 17 cannot move either forward or backward, and hence there can be no rebound or motion of the carriage. It is noted that the right-hand rack-tooth (shown in Figs. 5 and 6) is not in contact with the block 48, since the curvature of the rack 17 is so great as to cause the point of such right-hand tooth to lie well above the top of the block 48. (See Fig. 2.)

The operation of the parts is as follows: Upon the depression of a key-lever 23 the corresponding type-block 19 is thrown toward the printing-point, the universal bar 28 and arms 30 31 are moved downwardly, and the arm 35 is thrown forwardly of the machine, thus moving the feeding or stepping dog 40 from the position shown in Fig. 4 (in which it is in its normal position) and out of engagement with a tooth of the rack 17. Before the dog 40 is disengaged from the rack-tooth the dog 47 is moved into position in which the rack-tooth will engage therewith and with the face or catch 57 before the release of the tooth from the holding-dog 40, as apparent from Figs. 4 and 5. In action the dog 40 is preferably not released from the rack-tooth until after the rack-tooth has been engaged by the holding-dog 47 and block 48 has abutted or come into engagement with the rack, while the vibrator 35 continues to move forward, as indicated more clearly in Fig. 6. At this time the rack-tooth is caught between the walls 47 and 57 and cannot move in either direction and the dog 47 is held at the limit of its forward movement. The wall 57 performs the function of preventing rebound of the rack from the working face of the dog 47 when the rack-tooth drops from the feeding-dog to the holding-dog 47, thereby preventing any backward movement of the carriage. The spring 54 offers no resistance to the forward motion of the vibrator 35 until the dog 47 is arrested by the rack-tooth and the block on which the dog is mounted or forms a part; but after such arrest the spring 54 of course offers a gradually increasing or yielding resistance to the further forward motion of the rocker 35, the stop 36 38 not being arranged to make contact with the bracket 34 normally. The type and escapement mechanisms are so adjusted, by preference, that the feed-dog 40 releases the rack-tooth, and dog 47 and face 57 respectively engage with the working face and rear edge of the same rack-tooth just before the impact of the type, whence it results that rebound of the carriage at the moment of the impact of the type is prevented. Further, the resistance of the spring 54 to the forward motion of the rocker-arm 35 begins as soon as the motion of dog 47 is arrested at face 57 by the rack, and this resistance tends to arrest the key-lever which has been depressed; but the type-bar actuated by said key-lever will be carried onward by its momentum until arrested by the im-

pact of its type on the platen, the looseness of the joints between the bar and key-lever permitting of such forward motion even if the key-lever be stopped by springs 25 and 54. In this way the usual shock to the fingers of the operator is avoided or is transferred to the spring 54. The stop 38 may be adjusted to come in contact with the bracket 34 after the spring 54 has been put under a given amount of tension upon the depression of a key, so as to prevent overdepression of the key-lever and strain of spring 54. In practice the operator soon becomes accustomed to the soft resistance of the spring 54 and lifts the fingers from the keys immediately on encountering that resistance and before the stop 38 comes into contact with the bracket 34. The spring 42 throws the feeding-dog 40 into the position shown in Figs. 5, 6, and 7 as soon as the said feeding-dog is released from the rack. Upon the release of the depressed key the springs 33 and 54 instantly return the dog 47 and the rocker 35 to normal position and the dog 40 moves in front of the succeeding rack-tooth, as indicated in Fig. 7, and as soon as the rack-tooth escapes from the holding-dog 47 the succeeding rack-tooth instantly is moved forward into engagement with the dog 40 and carries the dog 40 back against a stop 58. (Indicated in full lines in Fig. 11 at the upper end of the rocker-arm 35.)

In the modification illustrated in Fig. 10 the straight rack 17^a replaces the circular rack 17, and with the rearrangement of the parts necessary to adapt them to the change the remaining parts are substantially the same as hereinbefore described, except that the corner of block 48 is beveled off at 59, so that the rack-tooth succeeding that one brought into engagement with the dog 47 will not strike the block and are marked with the same reference-numerals. The operation is substantially the same as that hereinbefore described and need not be further enlarged upon. It is understood, of course, that the rack 17^a is connected to and moves with the carriage 6 in any suitable way, as well known in the art.

Figs. 8 and 9 show the bevels of the rack-teeth at 60, which are omitted in other figures for clearness of illustration. The purpose of the bevels 60 is to enable the rack-teeth to cooperate with the notch 56 57 in the holding-dog 48 of the escapement.

The operation illustrated in Fig. 11 occurs when the straight rack-bar is used and the carriage is returned to the right without lifting the rack-bar from contact with the pawl 40. In such case the back or rear faces 17^{xx} of the rack-teeth press upon the back face 61 of the dog 40 and push the dog over into the position shown at dotted lines and against the tension of the spring 42, and the dog snaps from the point of one tooth against the back of the succeeding tooth, and so on until the reverse motion of the rack 17^a is stopped. At such times of course the bend 45 of the

spring coacts with the shoulder 46 of the dog to return the dog toward the position thereof shown in full lines in Fig. 11.

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

1. In a type-writing machine, the combination of a power-driven carriage, a rack, a dog normally out of engagement with the rack and the rack and dog being arranged to provide a "drop" and one of said rack-and-dog elements being connected to and controlling a letter-space movement of the carriage, and means for preventing rebound of the carriage when engagement of the rack and dog occurs; substantially as set forth.

2. In a type-writing machine, the combination of a power-driven carriage, a rack, a dog normally out of engagement with the rack and the two being arranged to provide a "drop" and one of said rack-and-dog elements being connected to and controlling a letter-space movement of the carriage, and a notch adapted to coact with a rack-tooth; substantially as set forth.

3. In a type-writing machine, the combination of a power-driven carriage, a rack, a dog normally out of engagement with the rack and the two being arranged to provide a "drop" and one of said rack-and-dog elements being connected to and controlling a letter-space movement of the carriage, and a notch adjacent the dog and adapted to embrace a rack-tooth; substantially as set forth.

4. In a type-writing machine, the combination of a rack, a carrier, said rack and carrier having relative motion transversely of the rack, a holding-dog moving relatively to said carrier transversely of the rack, a notched block carrying said dog and adapted to arrest and hold said dog in engagement with the rack while the rack and carrier have further relative motion, and a spring offering no resistance to the relative motion of the carrier and the

rack until the dog is arrested by said block and thereafter opposing a gradually-increasing resistance to the said further relative motion; substantially as set forth.

5. In a type-writing machine and in an escapement mechanism, the combination of a power-driven carriage, a rack connected therewith, a dog-carrier movable at right angles to the plane of the rack, and a spring-pressed block provided with an adjacent notch and pivoted directly to said carrier on an axis parallel with the plane of said rack; substantially as set forth.

6. In a type-writing machine and in an escapement mechanism, the combination of a power-driven carriage, a rack, a vibratory dog-carrier, and a dog holder or block pivoted on said carrier and spring-pressed toward the rack, and provided with a notch, one wall of which is inclined to match the shape of the rack-teeth; substantially as set forth.

7. In a type-writing machine and in an escapement mechanism, the combination of a carriage, a rack, a vibratory dog-carrier, a dog block or holder pivoted thereon and spring-pressed toward said rack, whereby the dog may be arrested while the rocker continues its forward movement, and means on said dog-holder for positively grasping the rack-tooth and holding the rack stationary while the dog-carrier is moving forwardly as aforesaid, whereby the carriage is held firmly during the moment of impact of the types and at the same time the finger-key is cushioned; substantially as set forth.

Signed at the borough of Manhattan, in the city of New York, in the county of New York and State of New York, this 21st day of June, A. D. 1899.

WALTER J. BARRON.

Witnesses:

A. C. VAN BLARCOM,
K. V. DONOVAN.