

No. 702,748.

Patented June 17, 1902.

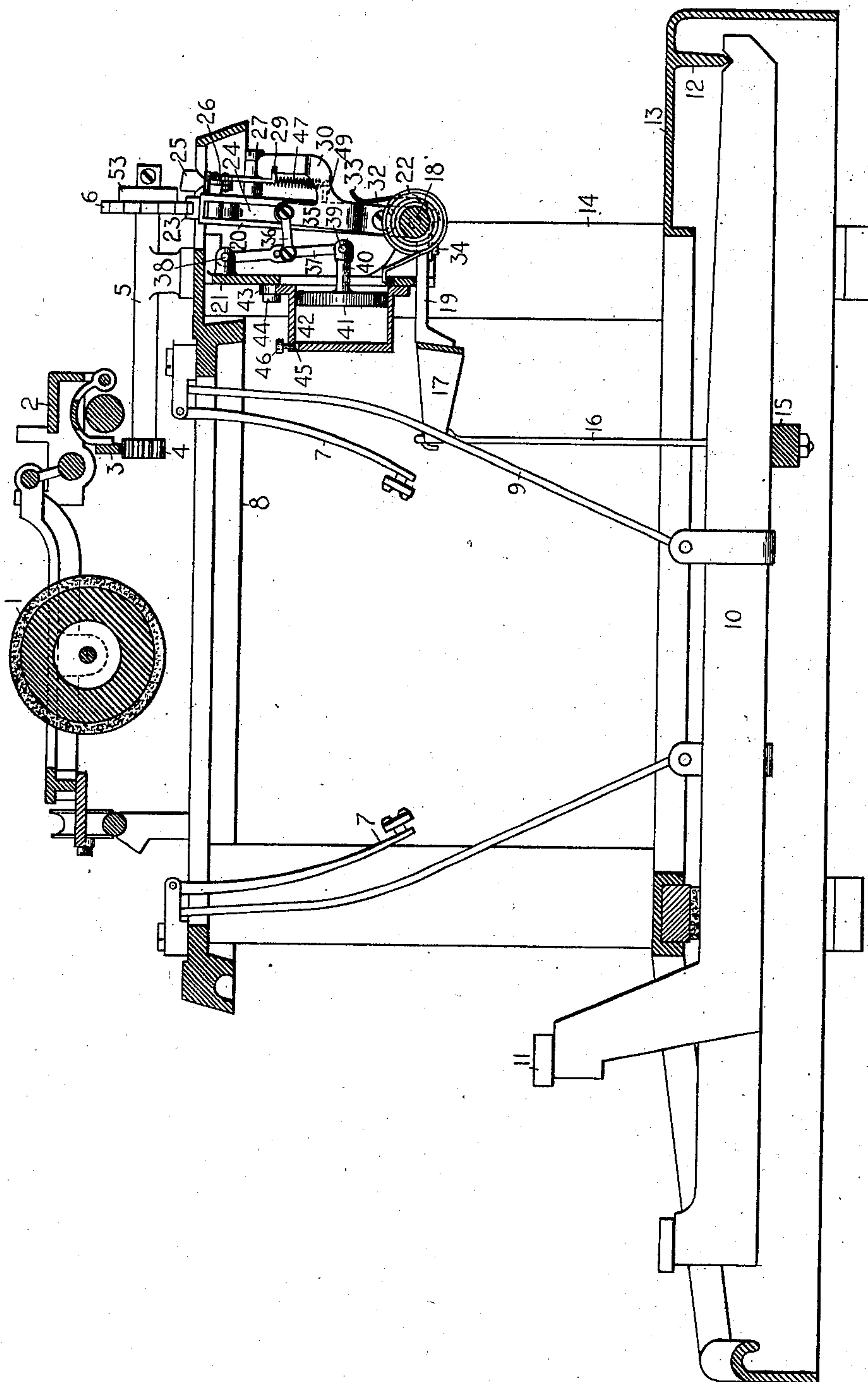
C. H. SHEPARD.
TYPE WRITING MACHINE.

(Application filed Apr. 1, 1901.)

(No Model.)

3 Sheets—Sheet 1.

FIG. 1.



WITNESSES

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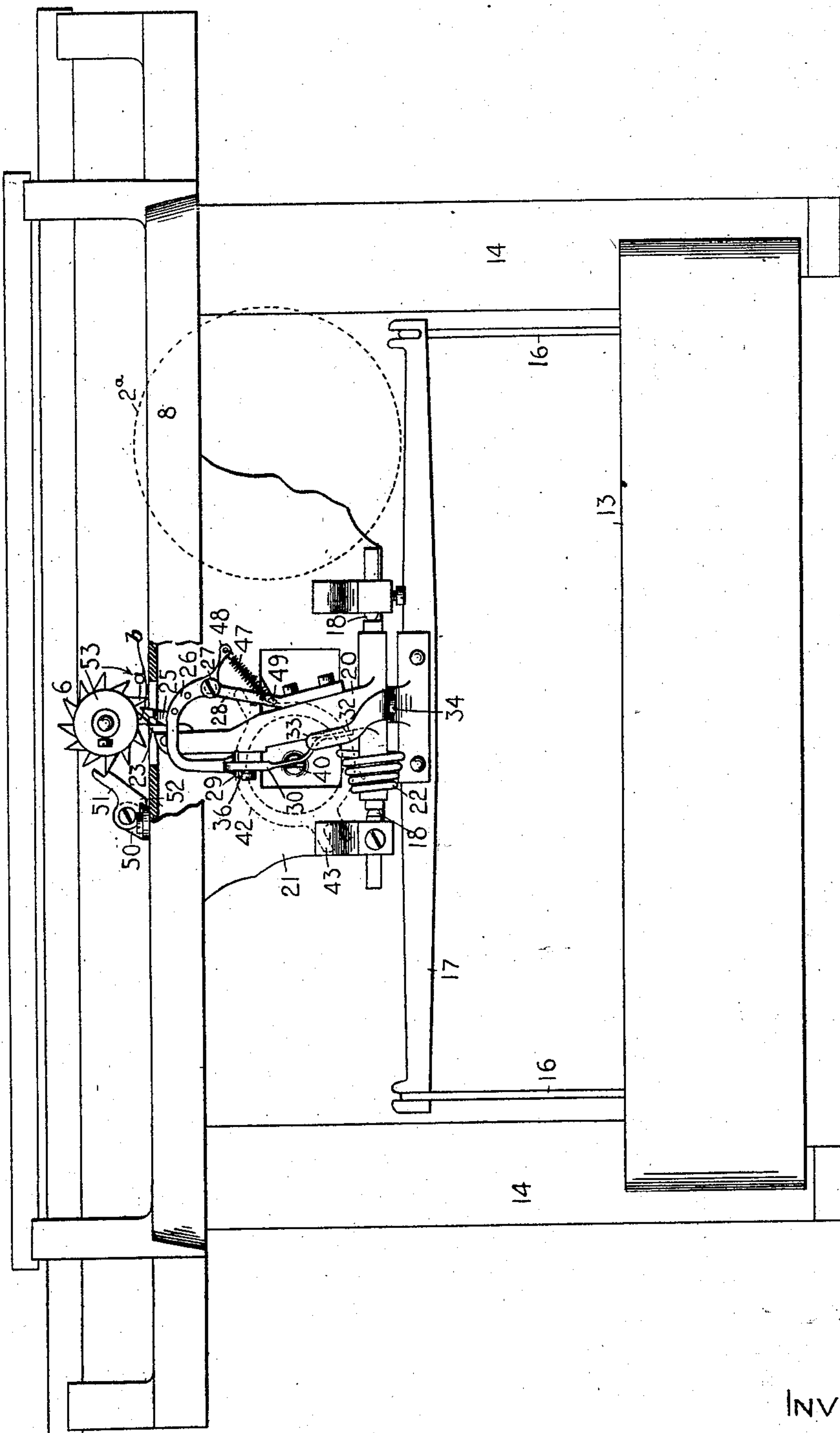
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Fig. 2.



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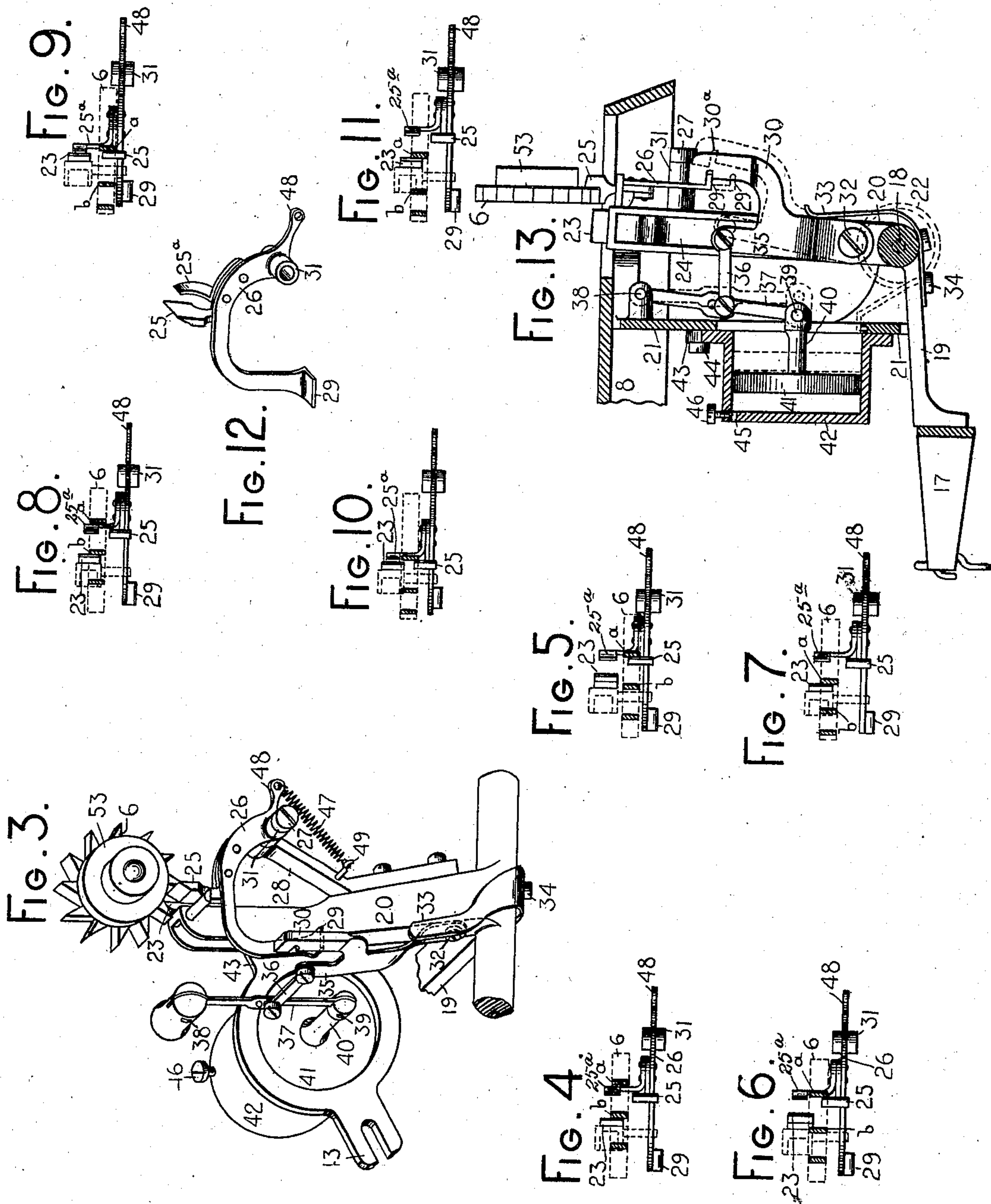
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

CHARLES H. SHEPARD, OF BROOKLYN, NEW YORK, ASSIGNOR TO WYCKOFF, SEAMANS & BENEDICT, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 702,748, dated June 17, 1902.

Application filed April 1, 1901. Serial No. 53,849. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. SHEPARD, 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.

This invention relates to the carriage-feeding mechanism of type-writing machines.

The object of my invention is to provide a feeding mechanism in which the spring-propelled carriage shall be released for its feeding movements during the up key-strokes in the usual manner when the keys are operated at moderate speed, but which shall be released during the down key-strokes when the keys are operated at high speed, so as to insure in the latter case a quick release of the carriage, and hence avoid overlapping of the type-impressions. In other words, the object is to provide a feeding mechanism which shall afford either the "natural feed" or the "reverse feed" of the carriage, according to the rate of speed at which the keys are operated, the determination between the reverse feed and the natural feed being made automatically at each key-stroke.

My invention consists in certain features of construction, combinations of devices, and arrangements of parts, all as will be hereinafter fully set forth, and particularly pointed out in the concluding claims.

Certain features shown and described herein are made the subject-matter of my pending application, Serial No. 4,847, filed February 12, 1900.

In the accompanying drawings, Figure 1 is a vertical section taken longitudinally of a Remington No. 6 type-writing machine, showing my improvements applied thereto, the parts being shown in normal position. Fig. 2 is a rear view showing the carriage-feeding devices in normal position. Fig. 3 is a perspective view showing the position of the carriage-feeding devices after a key has been quickly depressed. Figs. 4, 5, 6, and 7 are diagrammatic plan views of the feeding-dogs, showing their successive positions at successive points in the operation of the keys, the views also showing in section the teeth of the

escapement-wheel. By these figures is illustrated the manner of producing the natural feed. Figs. 8, 9, 10, and 11 are views similar to views 4, 5, 6, and 7, but showing the successive positions of the parts during the reverse-feed action. Fig. 12 is a perspective view of a detaining-dog. Fig. 13 is an enlarged side view of the feeding devices shown at Fig. 1, the dog-rocker being shown in its forward position.

In the several views similar parts are designated by similar numerals of reference, and portions of the machine not connected with the invention are omitted.

1 designates a platen which is mounted upon a longitudinally-traveling carriage 2, propelled by a spring 2^a and having a rack 3, which meshes with a pinion 4, supported upon a bracket 5 and connected to an escapement wheel or rack 6 by the usual shaft-and-ratchet mechanism. Type-bars 7 are mounted upon a top plate 8 and connected by rods 9 to levers 10, having at their forward ends keys 11 and fulcrumed at their rear ends on a bar 12. Said bar is formed integrally with a base 13, from which rise corner-posts 14, surmounted by the top plate 8. The key-levers operate a universal bar 15, which is hung by hooks 16 upon branches 17 of a dog-rocker, the latter comprising a forwardly-extending arm 19 and an upwardly-extending arm 20 and being pivoted at 18 upon a bracket 21 and having a returning-spring 22. Projecting from the upper end of the rocker-arm 20, which vibrates transversely of the rack 6, is a pivoted feeding-dog 23, which is pressed by a flat spring 24 toward the right at Fig. 2 or in a direction opposite to the movement of the rack-teeth. All of the parts above described are common in use in said Remington machine.

An upwardly-projecting detaining-dog 25, which stands behind the feeding-dog 23 and is normally out of engagement with the escapement-wheel, is fixed upon the upper portion of an arm or lever 26, which is pivoted upon a shoulder-screw 27, the latter being tapped into an arm 28, fixed upon the rocker 20, and the axis of the screw being transverse to the rocker-axis 18. Said pivoted arm 26 is bent into the shape of an inverted U and

has at its free end a tooth 29. This tooth normally engages a catch 30, so as to maintain the arm 26 and the detent-dog 25 in a fixed position relatively to the rocker 20.

5 The hub 31 of said arm 26 is of sufficient length to prevent lateral displacement thereof during the operation of the rocker. Normally the detent 25 stands a trifle to the left when viewed from the rear of the escape-
10 ment-wheel tooth *a*, the next tooth in advance, *b*, being engaged by the feeding-dog 23.

When the dog-rocker is moved forward by reason of the depression of a key 11, the feeding-dog 23 escapes from the tooth *b* and
15 springs opposite the notch between the teeth *a* and *b*, while the detent-dog 25 swings into the same notch—that is, to a position in advance of the tooth *a*, as at Fig. 5, thereby detaining the rack or wheel 6 while the type
20 impression is being made. During the return movement of the rocker, which takes place upon the upstroke of the key 11, the feeding-dog 23 moves into said notch, as at Fig. 6, while the detent 25 moves out, thereby
25 releasing the tooth *a* and enabling the carriage to advance a letter-space or until the tooth *a* is arrested by the feeding-dog 23, which, it will be understood, yields to a limited extent under the rack-tooth pressure
30 caused by the carriage-propelling spring. The operation just described is well known and affords the ordinary or natural feed of the carriage.

The catch 30 above referred to is pivoted
35 at 32 upon the lower end of the rocker 20 and is maintained in its normal position with relation to the rocker by a forwardly-pressing spring 33, which is attached to the rocker by screws 34. The latch and rocker move to-
40 gether as one piece when the machine is operated at moderate speed, so that the detent-dog 25 is maintained in a fixed relation to the rocker, thus causing the parts to operate as a natural feed, as above described.

45 To an arm 35, formed upon the catch 30, is pivoted the rear end of a link 36, which connects the catch to a lever 37, whose upper end is pivoted at 38 to a lug on the fixed bracket 21 and whose lower end is pivotally
50 attached at 39 to the rear end of a rod 40, which projects from a piston or plunger 41, working in an air-cylinder 42 and acting as a retarding device for the catch under certain conditions. Said cylinder is secured by
55 forked ears 43 and screws 44 upon the forward vertical face of the bracket 21, and is provided with a vent 45, the size or capacity of which may be regulated by a screw 46.

During the forward vibration of the dog-
60 rocker the piston is moved by the link 36 and lever 37 from normal position, as at Fig. 1, forwardly to the full-line position at Fig. 13. When the rocker is operated at moderate speed, the air contained in the cylinder has
65 time to escape through the vent 45, and hence the piston does not react to disturb the relation of the catch 30 to the rocker 20 and dog

25, so that the piston reciprocates idly in the cylinder. When, however, a key is struck sharply and the dog-rocker is hence vibrated
70 suddenly, the air confined in the cylinder checks the piston, so that the latter is not able to keep pace with the quick movement of the dog-rocker, and hence the spring 33
75 yields and the lever 37, link 36, and catch 30 are moved either slightly or not at all from their normal positions, as illustrated in dotted lines at Fig. 13. Owing to this failure of
80 the latch 30 to move with the dog-rocker the tooth 29, which normally affords a support or lock for the detent-dog, is withdrawn from its notch 30^a in the catch 30, thus leaving the
85 arm 26 free to vibrate independently. As soon as the dog 23 escapes the tooth *a* of the wheel contacts with the detent-dog 25 and
90 vibrates the latter upon its pivot 27, as at Figs. 3 and 9. Thus the carriage is released for a forward movement during the downstroke of the key. Upon relief of the key
95 from pressure the dog-rocker returns to normal position, the feeding-dog 23 entering the notch between the teeth *a* and *b* in the escapement-wheel, as illustrated at Fig. 10, and the
100 detent-dog 25 finally escaping from the tooth *a* and being swung by a spring 47 to a position opposite the next notch in the wheel, as at Fig. 11. The detent 25 is provided with
105 an ear 25^a, which extends beneath the path of movement of the teeth of the escapement-wheel and up on the forward side thereof, where it projects in the plane of vibration of
110 the feed-dog 23 in the movement of the latter transversely of the machine and engages the feeding-dog 23 and forces it to move in unison with the detent 25 when the latter is vibrated
115 by the carriage, as at Fig. 9, thus insuring that the feeding-dog 23 shall enter the notch in the wheel from which the detent-dog 25 escapes, as at Figs. 10 and 11. One end of
120 the spring 47 is attached to an arm 48, formed upon the detent-arm 26, and the other end thereof is attached to a pin 49, fixed upon the dog-rocker. During the movement of the
125 arm 26 the tooth 29 thereon is brought upwardly into register with the notch 30^a in the latch 30 and thereupon is reengaged to the latter. Thus it will be seen that during moderately-fast operation of the machine the piston 41 reciprocates idly and the carriage is released for an advance movement at each
130 upstroke of the key, while during a rapid operation of the machine the release of the carriage is effected during the down or printing stroke of the key, and hence the carriage is enabled to complete its feeding movement by the time the succeeding type impression is made. Thus the mechanism determines automatically whether the carriage is to be released before or after the type impression, and hence is well adapted to both low-speed and
135 high-speed work. On the one hand the carriage is not released during the printing stroke of the type-bar when the latter is moved slowly, and hence there is no danger of blur-

ring, and, on the other hand, the carriage is not unduly held back when the keys are operated at high speed, as in natural-feed machines, and ample time is afforded for the feeding movements of the carriage, while owing to the speed of key operation there is little or no danger of types being held against the paper for such a length of time as to cause blurring or ghosting.

It will be seen that if the vent 45 should be entirely closed by the screw 46 there could be but very slight, if any, movement of the piston 41, and as a result the mechanism would always afford a reverse feed, no matter how slowly the keys were operated. If, on the contrary, said screw were to be unscrewed sufficiently the piston 45 would reciprocate idly without ever causing the latch 30 to release the tooth 29, and hence the natural feed would always be afforded. It will also be perceived that the screw may be adjusted between these extremes to constrict the vent 45 more or less, so as to have the reverse feed occur at lower or higher speed of operation, according to the exigencies of different classes of work or different methods of operating the keys. Thus it will be seen that the machine can be adjusted to afford either reverse feed at all speeds or natural feed at all speeds and that it may also be adjusted to secure an automatically-convertible feed—that is, one in which the mechanism determines automatically at each key-stroke whether a natural feed or a reverse feed shall take place—and it will further be understood that the rate or standard of speed at which the mechanism will give a reverse feed may be determined by the degree of adjustment of the screw 46.

Referring to Fig. 2, it will be seen that pivoted upon a fixed bracket 50 is a gravity-pawl 51, which has a stop-lug 52 normally contacting with the bracket. This pawl is adapted to engage the rear faces of the teeth of the escapement-wheel 6, so as to prevent backward movement thereof when the carriage is being pushed back to begin a new line.

Various changes in details of construction and arrangement may be made within the scope of my invention.

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

1. In a type-writing machine, the combination of a carriage, an escapement-rack, a yielding dog normally disengaged from the rack, means for moving said dog into engagement with the rack, means for preventing said dog from yielding under the pressure of the rack, and an air-check for releasing said dog.

2. In a type-writing machine, the combination of a carriage, an escapement-rack, a yielding dog normally disengaged from the rack, means for moving said dog into engagement with the rack, a catch for preventing said dog from yielding under the pressure of the rack, and a retarding device connected with said catch and which may operate automati-

cally to withdraw said catch so that the dog may yield under the rack-pressure.

3. In a type-writing machine, the combination of a carriage, an escapement-rack, a yielding dog normally disengaged from the rack, a catch for preventing said dog from yielding under the pressure of the rack, and an air-check connected to said catch so as to cause it to release said dog during a quick movement of the latter into engagement with the rack.

4. In a type-writing machine, the combination of a carriage, an escapement-rack, a key-controlled rocker, a yielding dog carried by said rocker and normally disengaged from the rack, a catch upon said rocker for preventing the dog from yielding under the pressure of the rack, and an air-check for releasing said catch.

5. In a type-writing machine, the combination of a carriage, an escapement-rack, a key-controlled rocker, a yielding dog carried by said rocker and normally disengaged from the rack, a catch upon said rocker for preventing said dog from yielding under the pressure of the rack, and an air-check mounted upon the framework of the machine and connected to said catch so as to cause the latter to release the dog when said rocker is quickly actuated.

6. In a type-writing machine, the combination of a carriage, an escapement-rack, a key-controlled rocker which vibrates transversely of the rack, a dog independently movable upon said rocker and normally disengaged from the rack, means for preventing independent movement of said dog, and an air-check for releasing said dog.

7. In a type-writing machine, the combination of a carriage, an escapement-rack, a rocker which vibrates transversely of said rack, two yielding dogs mounted upon said rocker, means for preventing one of said dogs from yielding under the pressure of the rack, and an air-check for releasing said dog.

8. In a type-writing machine, the combination of a carriage, an escapement-rack, a rocker which vibrates transversely of the rack, a dog pivoted upon an axis transversely to the rocker-axis and normally disengaged from the rack, a catch, controlled by an air-check, for both supporting said dog during a slow movement of the rocker and releasing said dog during a quick movement of the rocker, and a spring for returning said dog to normal position upon said rocker.

9. In a type-writing machine, the combination of a carriage, an escapement-rack, a rocker vibrating transversely of said rack, a dog pivoted upon said rocker and normally disengaged from the rack, a catch also mounted upon said rocker for preventing a pivotal movement of said dog, a spring for maintaining the connection of said catch with said dog, and an air-check mounted upon the framework of the machine and connected to said catch.

10. In a type-writing machine, the combination of a carriage, escapement-rack 6, feeding-dog 23 normally engaging said rack, rocker 20 upon which said feeding-dog is mounted, 5 spring-actuated dog 25 normally disengaged from said rack and mounted upon arm 26 which is pivoted upon said dog-rocker, tooth 29 upon said arm, catch 30 pivoted upon said dog-rocker and engaging said tooth, spring 10 33 mounted upon said rocker and actuating said catch, cylinder 42 mounted upon the framework of the machine, and piston 41 connected to said catch and working in said cylinder.

15 11. In a type-writing machine, the combination of a carriage, escapement-rack 6, feeding-dog 23 normally engaging said rack, rocker 20 upon which said feeding-dog is mounted, spring-actuated dog 25 normally disengaged 20 from said rack and mounted upon arm 26 which is pivoted upon said dog-rocker, tooth 29 upon said arm, catch 30 pivoted upon said dog-rocker and engaging said tooth, spring 33 mounted upon said rocker and actuating 25 said catch, cylinder 42 mounted upon the framework of the machine, piston 41 in said cylinder, lever 37 mounted upon the framework of the machine and connected to said piston, and link 36 connecting said lever to 30 said catch.

12. In a type-writing machine, the combination of a spring-propelled carriage, an escapement-rack, a yielding dog normally disengaged from the rack, a cooperating dog normally engaged with the rack, means for moving said yielding dog into engagement with the rack and simultaneously moving the other dog out of engagement with the rack, and adjustable means for causing said normally- 40 disengaged dog either to withstand the rack-pressure, thus affording a natural feed of the carriage, or to yield under the rack-pressure, thus affording a reverse feed of the carriage, the range of adjustment being such as to enable the mechanism to afford either a natural 45 feed at all speeds of operation or a reverse feed at all speeds of operation, or an automatically-convertible feed.

13. In a type-writing machine, the combination of a carriage, an escapement-rack, a key- 50 controlled rocker which vibrates transversely of the rack, cooperating dogs upon said rocker, and adjustable means for causing said dogs to afford either a natural feed at all speeds of operation or a reverse feed at all speeds of operation, or an automatically-convertible feed. 55

14. In a type-writing machine, the combination of a carriage, an escapement-rack, a dog normally engaging the rack, a yielding dog normally disengaged from the rack, means 60 for moving said yielding dog into engagement with the rack and the other dog out of engagement with the rack, a catch for preventing said yielding dog from yielding under the rack-pressure, and adjustable means for 65 releasing said catch, the construction being such that said catch is released or not according to the rate of speed at which the mechanism is operated, and the release being effected at lower or higher speed according to 70 the adjustment.

15. In a type-writing machine, the combination with a carriage, of an escapement-rack, a key-controlled rocker vibrating transversely of said rack, cooperating dogs upon said 75 rocker, one of which is normally in engagement with the rack and the other of which is yielding, a catch for preventing said yielding dog from yielding under the rack-pressure, and adjustable means for releasing the dog 80 from said catch, the construction being such that the dog is released or not according to the speed of operation of the rocker, and the release being effected at lower or higher speed according to the adjustment. 85

16. In a type-writing machine, the combination of a carriage, an escapement-rack, a yielding dog normally disengaged from the rack, means for moving said dog into engagement with the rack, a catch or lock for said dog, 90 an air-check for releasing said dog from the control of said catch or lock, and an adjustable vent for said air-check.

17. In a type-writing machine, the combination of a carriage, an escapement-rack, a key- 95 controlled rocker, a yielding dog carried by said rocker and normally disengaged from the rack, a catch upon said rocker for preventing the dog from yielding under the pressure of the rack, an air-check for releasing 100 said catch, and an adjustable vent for said air-check.

Signed at the borough of Manhattan, city of New York, in the county of New York and State of New York, this 30th day of March, 105 A. D. 1901.

CHARLES H. SHEPARD.

Witnesses:

K. V. DONOVAN,
E. M. WELLS.