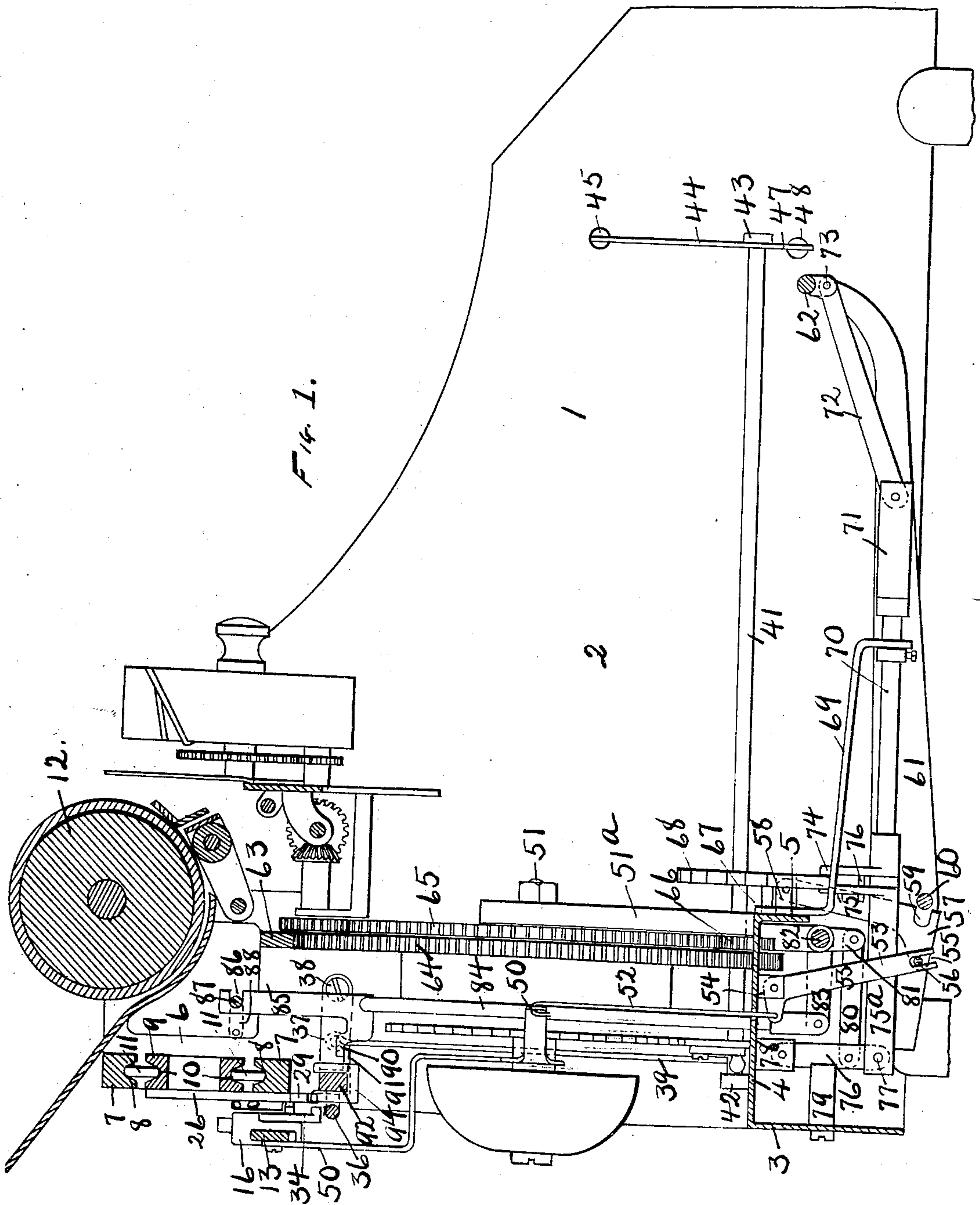


898,676.

J. W. PAUL.  
TYPE WRITING MACHINE.  
APPLICATION FILED MAY 10, 1907.

Patented Sept. 15, 1908.

4 SHEETS—SHEET 1.



Witnesses  
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4 SHEETS—SHEET 2.

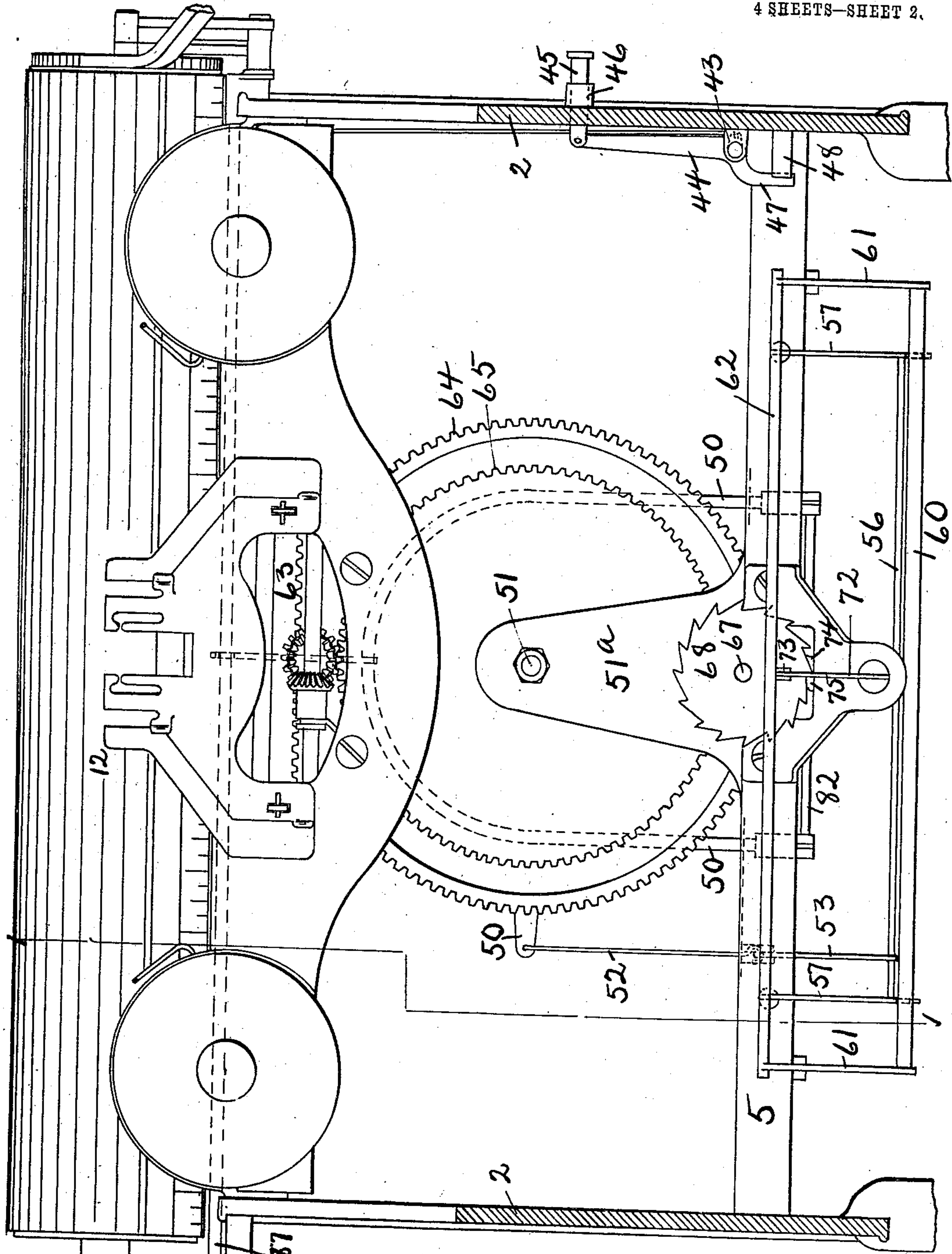


Fig. 2.

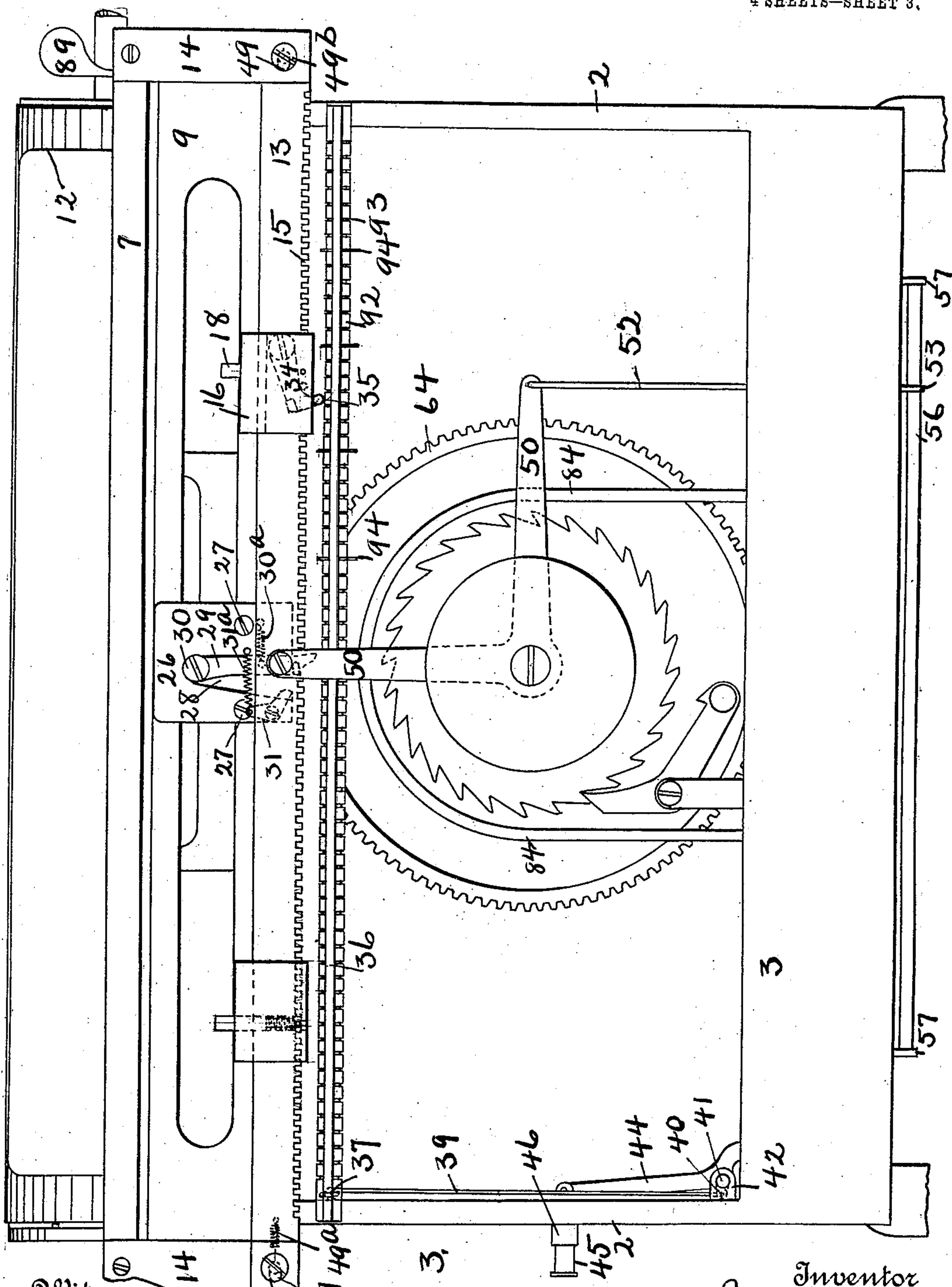
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4 SHEETS—SHEET 3.



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Fig. 3.

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4 SHEETS—SHEET 4.

Fig. 4.

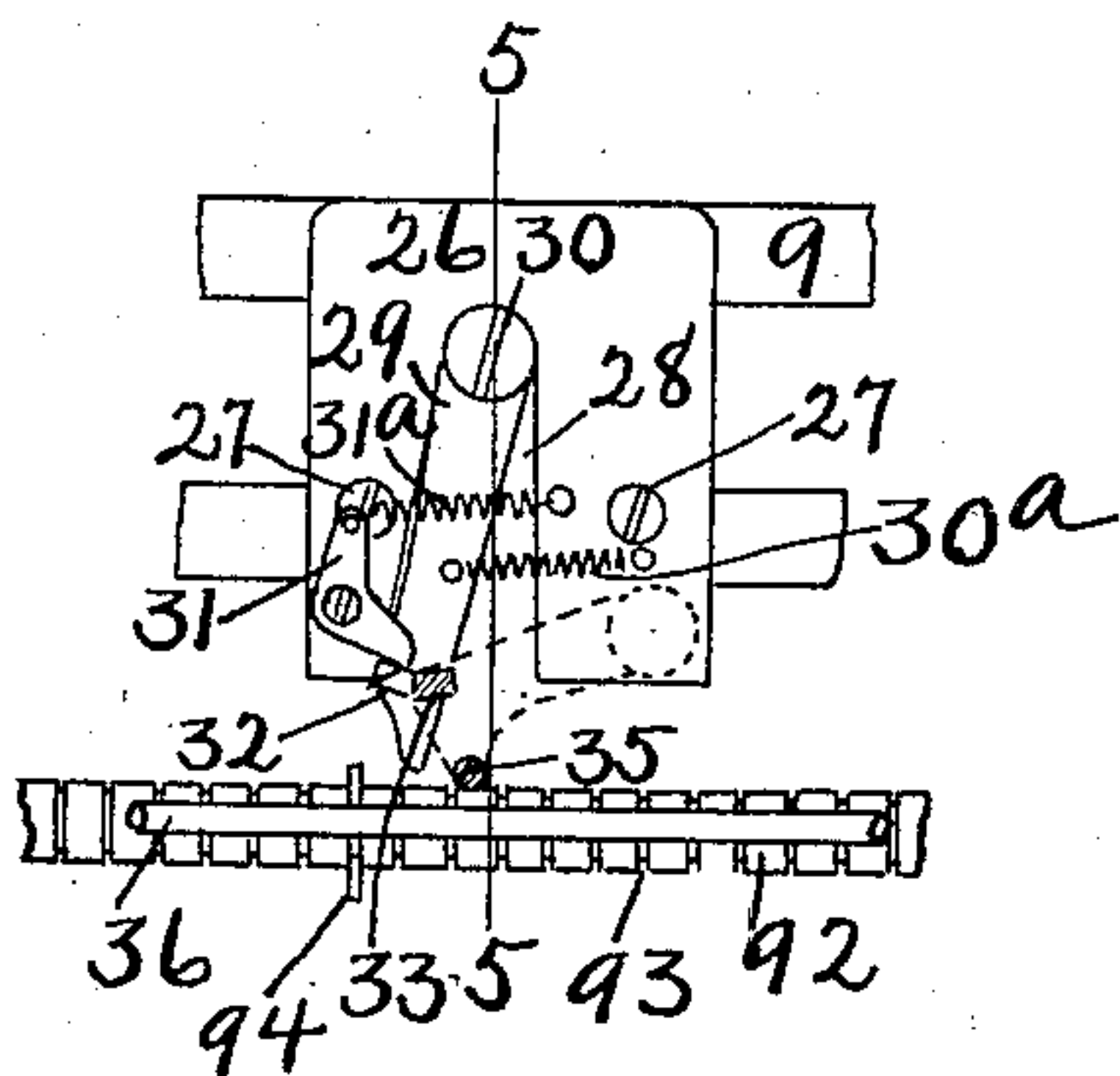


Fig. 5.

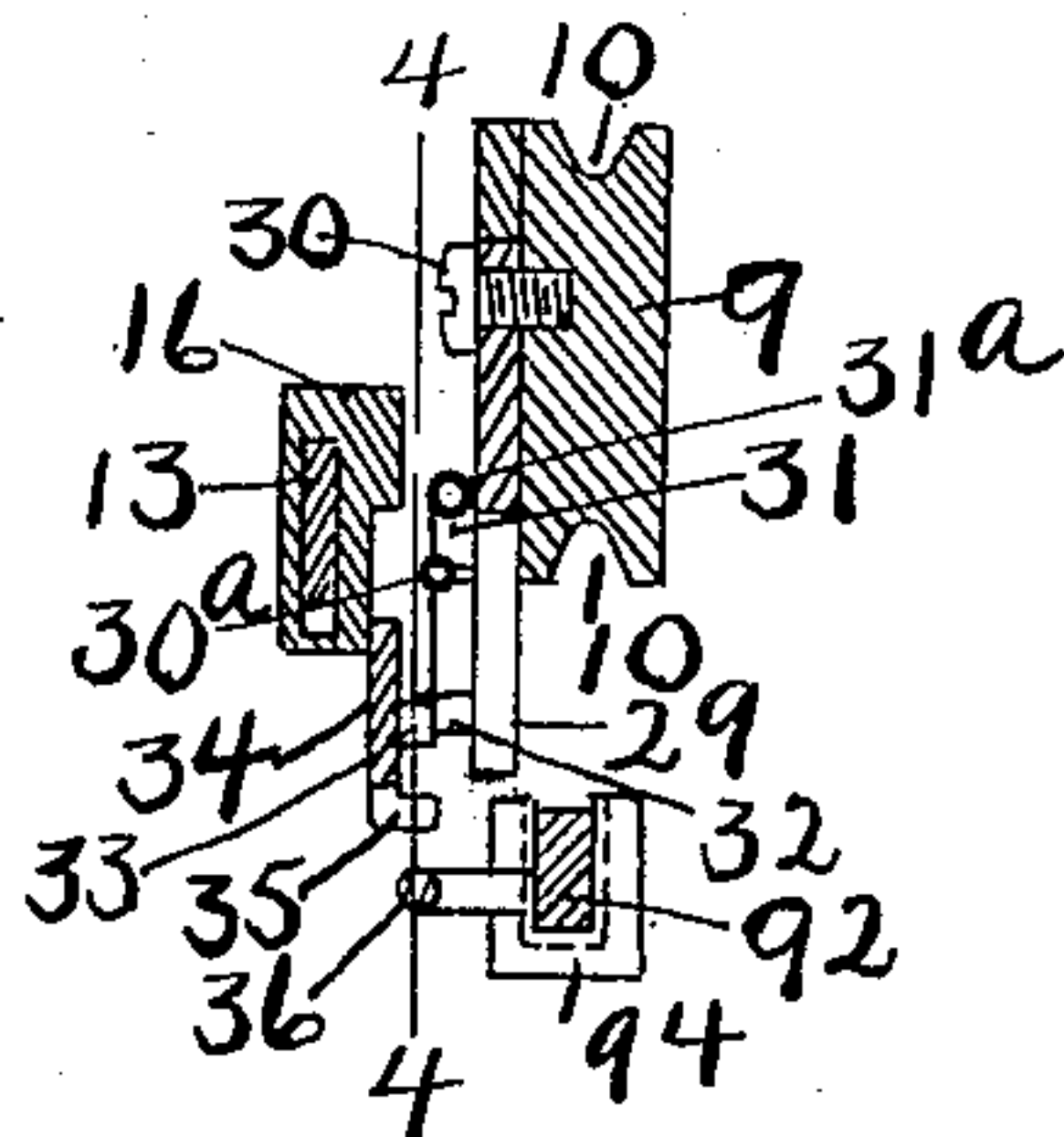
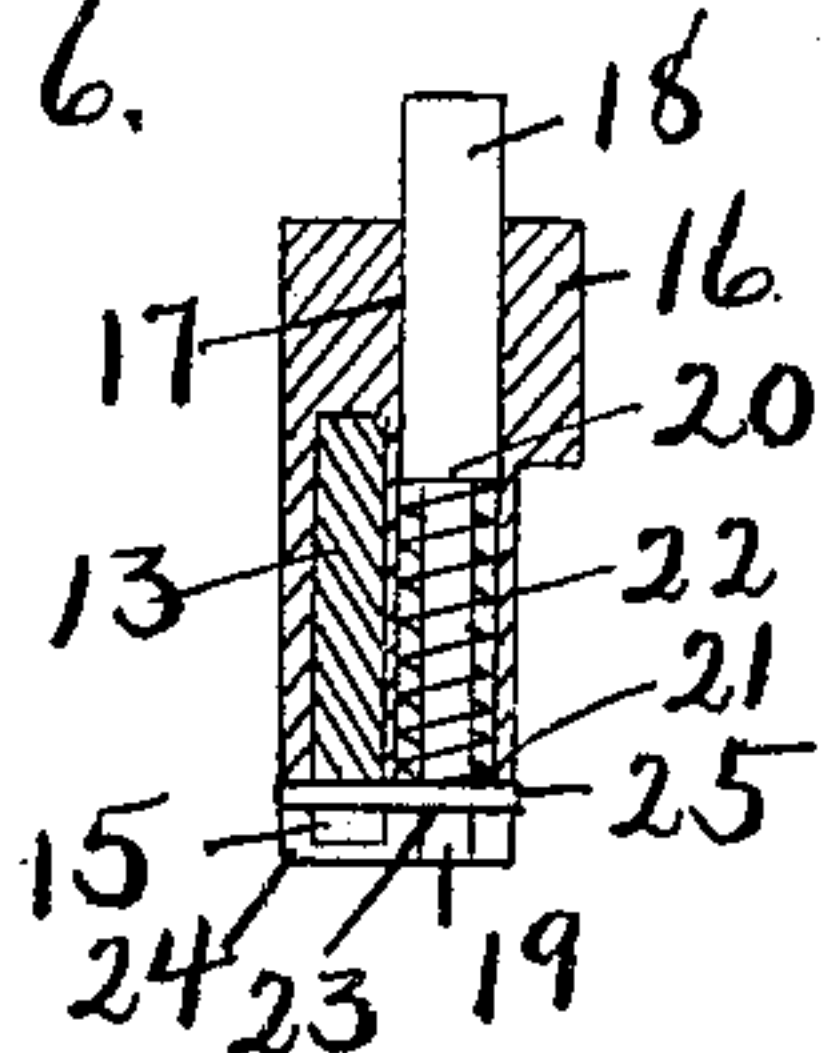


Fig. 6.



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# UNITED STATES PATENT OFFICE.

JOHN W. PAUL, OF KITTANNING, PENNSYLVANIA.

## TYPE-WRITING MACHINE.

No. 898,676.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed May 10, 1907. Serial No. 372,842.

To all whom it may concern:

Be it known that I, JOHN W. PAUL, a citizen of the United States, residing at Kittanning, in the county of Armstrong and State of Pennsylvania, have invented new and useful Improvements in Type-Writing Machines of which the following is a specification.

This invention relates to typewriting machines and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

More particularly the invention relates to improvements in line locks and tabulating devices. In the preferred construction both the line lock and tabulating devices are operated with the same actuator.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 shows a section on the line 1—1 in Fig. 2. Fig. 2, a vertical section, the section being taken in front of the universal bar. Fig. 3 a rear view of the machine. Fig. 4, a section on the line 4—4 in Fig. 5, showing details of construction of the dog mechanism of the line lock and tabulating devices. Fig. 5 is a section on the line 5—5 in Fig. 4. Fig. 6 is a section through the adjustable stop of the line lock.

1 marks the frame as a whole; 2 the sides of the frame; 3 the rear cross bar of the frame; 4 a plate or platform extending toward the front of the machine from the cross bar 3; and 5 a downwardly extending lip or flange at the front of the plate 4.

6 marks the carriage which may be of any desired construction. The rails 7 are secured to the frame in any desired manner. These rails have the grooves 8 therein (see Fig. 1). The carriage also has a rail 9 formed with the grooves 10 therein and the rollers 11 are arranged in the grooves 8 and 10, forming a roller bearing for the carriage. A platen 12 is arranged in the carriage and is provided with the usual paper feeding mechanism.

A rack plate 13 is secured to the plate 14 which is supported by the bars 7. The rack plate is provided with the teeth 15 so graduated as to correspond to the spacing of the machine. The stop 16 is arranged on the rack plate 13. This stop is shown in detail in Fig. 6. It is provided with a vertical perforation 17 in which is arranged a

pin 18. A lower portion 19 of the pin is of reduced diameter, forming a shoulder 20. The perforation 17 does not extend in its full diameter quite through the stop 16, but forms a shoulder 21 near the bottom of the stop. A spring 22 is arranged around the reduced portion 19, resting on the shoulder 21 and against the shoulder 20. The pin 18 has the perforation 23 and the stop has a transverse slot 24 extending through the bottom of it of a depth sufficient to permit a pin 25 arranged in the perforation 23 to engage the serrations 15 on the rack bar. By pushing down on the pin 18 the pin 25 is moved out of the notches in the rack bar so as to release the stop. The stop may then be moved to any desired position and locked by permitting the pin to reënter one of the notches of the rack bar.

A plate 26 is secured to the bar 9 of the carriage by means of screws 27. It is provided with a notch 28 extending upwardly from the bottom of the plate and a lever 29 is pivoted on the screw 30. The screw 30 extends into the bar 9. The notch 28 is somewhat wider than the dog 29 so that the dog 29 may swing in the notch. (See Figs. 4 and 5). A spring 30<sup>a</sup> tends to hold the dog 29 toward the right as viewed in Fig. 4. An auxiliary dog 31 is pivoted on the plate 26. It is maintained normally in the position shown in Fig. 4 by a spring 31<sup>a</sup>. A dog lug 32 is arranged on the side of the dog 29 in the path of a stop lug 33 which is carried by a swinging latch 34 on the stop 16. The latch 34 has a protruding finger 35 which extends into the path of a bail 36. The bail 36 is carried by the levers 37. The levers 37 are pivoted at 38 on the sides of the machine. A link 39 extends from the lever 37 to a rock lever 40. The rock lever 40 is fixed on a shaft 41 extending from the front toward the rear of the machine. The rod 41 is journaled on the lugs 42 and 43 extending from the side frame 2. A rock lever 44 is secured to the rod 41 and its upper end is engaged by and preferably pivotally connected to a push pin 45. The push pin 45 extends through a face 46 on the side of the machine. An arm 47 extends from the rock lever 44 below the rod 41 and extends into a spring socket 48, which is arranged to yieldingly press the arm 47 inwardly on the rock arm 44 outwardly.

It will be noted that when the latch lug 33



is in contact with the dog lug 32 as shown in Fig. 4, a further movement of the carriage is blocked by this engagement. The feeding spring of the carriage, however, is sufficiently strong to carry the dog 29 to the left against the tension of the spring 30<sup>a</sup>. It has also carried the rack bar on which the stop 16 is mounted toward the right a distance of one half space, the effect of which will be hereafter described. When the line lock reaches the position shown in Fig. 4, and it is desired to release it for further operation the pin 45 is pushed in carrying with it the rock arm 44 turning the rod 41 and swinging the arm 40 upwardly. This pushes up the link 39 and lifts the bail 36. The bail 36 contacting the finger 35 lifts the latch 34 so as to move the latch lug 33 above the path of the dog lug 32.

This movement, however, brings the latch lug 33 into the path of the end of the auxiliary dog 31 so that a further movement of the carriage is prevented. While in this position the dog 29 acting under the influence of the spring 30<sup>a</sup> swings toward the right, the dog lug 32 passing under the latch lug 33. Upon the release of the push pin, the bail drops down to its normal position allowing the latch 34 to drop down so as to clear the auxiliary dog 31. The pivotal arrangement of the auxiliary dog permits the return of the carriage past the latch lug 33, even though the latch lug may be in the elevated position through manipulation of the push pin. The beveled edge at the left of the dog lug 32 also provides for the clearing of the latch lug on the return movement, the latch lug riding up this beveled surface so as to prevent locking.

The rack bar as before stated, has endwise movement. To accomplish this it is provided with the slots 49 which are of sufficient length to allow a movement of one half a space on the screws 49<sup>b</sup>, the said screws extending through said slots and acting to secure the rack. The rack is held in normal position by the spring 49<sup>a</sup>.

A rock lever 50 is preferably secured to the rack plate 13. This is pivoted on the shaft 51 extending from front to rear of the operating mechanism, the shaft being secured to a post 51<sup>a</sup> extending upwardly from the cross plate 4. A link 52 extends from the opposite end of the rock lever from that secured to the rack plate and is preferably connected with a bell crank lever 53. The lever 53 is pivotally mounted on a stud 54 extending downwardly from the plate 4. The bell crank lever has the slots 55 at its lower end which engage a rod 56 extending between the swinging arms 57, the rod being fixed on the said arms and maintaining them in parallel relation. The arms are pivotally mounted on the lugs 58 extending forwardly from the lip 5, the arms 57 having the slots 59 arranged in their front edges and in position to

engage a rod 60 extending across the machine from side to side, it being secured to the lever 61, and the lever 61 carrying the universal bar 62.

The carriage rack 63 is secured to the carriage in any convenient manner and is in mesh with the gear 64, journaled on the shaft 51. A gear 65 is secured to the gear 64 and meshes with the gear 66. The gear 66 is fixed on a shaft 67 extending toward the front of the machine. The wheel 68 of the escapement is fixed on the shaft 67.

An arm 69 is secured to the plate 5 and extends forwardly and forms a bearing for the rod 70. A head 71 is secured to the rod 70 and a link 72 extends from this head to the universal bar and is connected with the universal bar by a pivotal joint 73. It will readily be seen that as the universal bar is depressed the rod 70 is moved forward through the action of the lever or link 72 on the head 71. A dog 74 is fixed on the rod 70 and is in position when the rod is pushed back to engage the ratchet teeth on the ratchet wheel 68. A second dog 75 is carried by the sleeve 75<sup>a</sup>, the sleeve being slidably mounted on the rod 70. The dog 75 is locked against rotation on the rod 70 by a pin 76 and it is so spaced with relation to the dog 74 as to permit the dog 74 to clear the teeth on the forward movement of the rod 70, allowing the ratchet wheel to move one half space and the dog 75 will clear the tooth just disengaged on the forward movement of the rod 70, allowing a second movement of the ratchet wheel one half space.

When the dog 29 engages the stop 16, it moves the rack plate 13 edgewise a distance of one half space, that is the space which the forward movement of the rods 70 permit. This movement of the rack plate 13 one half space, acting through the bell crank lever 50, link 52, bell crank lever 53 upon the arm 57 swings the arm 57 so as to bring the notch 59 on to the rod 60, thus locking the universal bar and locking the machine. Upon the releasing movement incident to the lifting of the bail 36 heretofore described, no forward movement of the carriage is permitted because the auxiliary dog 31 engages the lug 33. When, however, the bail resumes its normal position allowing the latch 34 to drop, the other one half space is completed bringing the dog 75 in position on the ratchet.

The releasing mechanism which operates with the tabulator is as follows: A lever 76 is pivotally connected at 77 with the sleeve 75<sup>a</sup>. It swings from a stud 78 arranged on the bottom of the plate 4. This lever also passes into a spring socket 79 so that it is normally kept in its forward position. A link 80 connects the lever 76 with a rock arm 81. The rock arm is fixed on the shaft 82. Rock arms 83 extend rearwardly from the rock shaft 82 and are connected with the releasing



bail 84. An extension 85 is fixed on the upper end of the releasing bail and has a slot 86 near its upper end. This slot engages a rod 87 which extends lengthwise of the carriage and is at all times in engagement with the slot. The rod 87 is fixed on the rock arms 88 so that it is maintained in parallel relation. The rod 86 is connected with a release lever 89 mounted on a pin 89<sup>a</sup> on the carriage, which operates as a bell crank lever on the rod 87 to lift the same. The movement of the rod carries with it the extension 85, bail 84 and the bail acting through the intermediate mechanism formed by the rock arms 83, shaft 82, arm 81, link 80 and lever 70, moves the sleeve 75<sup>a</sup> toward the rear and this carries the dog 75 out of the path of the teeth of the ratchet wheel 68, thus releasing the carriage. The extension 85 is provided with a rearwardly extending hook 90 which extends over a finger 91 on the tabulating bar 92 so that the extension is raised with the tabulating bar, although the raising of the extension does not necessarily lift the tabulating bar.

The tabulating bar 92 extends across the rear of the machine and is fixed on the lever 37 and oscillates with these levers and with the bail 36. It has a series of notches 93 one preferably for each space of the machine and the U shaped stop plates 94 are secured in these notches. They may be shifted at pleasure so as to give the desired tabulating stops. The stops 94 are so arranged that when the lever 37 and bail 36 are raised it carries the stops 94 into the path of the dog 29 so that the carriage will be stopped through the engagement of the dog with the stop. This lifting of the stops into the path of the dog, however, releases the carriage so that no matter where the carriage may be, the lifting of the tabulator bar releases the carriage and permits it to move to the next tabulating stop. The release of the push pin allows the tabulator bar to return to normal position permitting the normal operation of the machine until the next tabulating stop is desired when another operation of the push pin operates the release mechanism and brings another stop into the path of the dog 29.

It will be noted that the same actuator, that is the push pin, operates both the tabulator and the line lock. It will also be noted that the same dog 29 is engaged by the line lock stop and the tabulator stops. It will also be noted that the member carried by the levers 37 releases the line lock stops and actuates the tabulator stops.

What I claim as new is:

1. In a typewriting machine the combination of a frame; a carriage movable on the frame; a dog carried by the carriage; a tabulator bar having stops thereon; devices carrying the tabulator bar arranged to

guide its movement to throw the stops thereon into and out of the path of the dog on the carriage; a line lock stop carried by the frame; and means carried by the tabulator bar for releasing the line lock stop.

2. In a typewriting machine the combination of a frame; a carriage movable on the frame; a dog carried by the carriage; a tabulator bar having stops thereon; devices carrying the tabulator bar arranged to guide its movement to throw the stops thereon into and out of the path of the dog on the carriage; a line lock stop carried by the frame; and a single actuating mechanism for actuating the tabulator bar and releasing the line lock.

3. In a typewriting machine the combination of a frame; a carriage movable on the frame; a dog carried by the carriage; a tabulator bar having stops thereon; devices carrying the tabulator bar arranged to guide its movement to throw the stops thereon into and out of the path of the dog on the carriage; a line lock stop carried by the frame in the path of the said dog on the carriage; a line lock stop carried by the frame; and means carried by the tabulator bar for releasing the line lock stop.

4. In a typewriting machine the combination of a frame; a carriage movable on the frame; a dog carried by the carriage; a tabulator bar having stops thereon; devices carrying the tabulator bar arranged to guide its movement to throw the stops thereon into and out of the path of the dog on the carriage; a line lock stop carried by the frame in the path of the said dog on the carriage; and a bail extending across the machine parallel with the tabulator bar and secured thereto for releasing the line lock.

5. In a typewriting machine the combination in a line lock and tabulator mechanism with their respective stops of a single yielding and spring actuated stop dog adapted to cooperate with both of said stops, said dog yielding initially under the action of the stops and returning to normal position by a movement past the stops when said dog is released.

6. In a typewriting machine the combination in a line lock and tabulator mechanism with their respective stops of a single yielding and spring actuated stop dog swingingly mounted and adapted to cooperate with both of said stops, said dog swinging under the action of said stops and returning to normal position by a movement past said stops as the dog is released.

7. In a typewriting machine the combination with the rack plate 13; a line lock stop comprising the block 16 having the perforation 17 therein, said block being arranged on the plate 13 and the perforations 17 having a shoulder 21; pin 18 having the reduced end 19 forming the shoulder 20; a spring 22 be-



tween the shoulder 20 and the shoulder at the bottom of the perforation 17; a pin 25 extending through the reduced end 19 in position to engage the rack plate 13.

5 8. In a typewriting machine the combination in a line lock mechanism of the dog 29 having the lug 32 extending therefrom and the stop 16 having the latch 34 pivotally mounted thereon; the latch lug 33 on the  
10 latch 34, said latch lug 33 being in the path of the lug 32; an auxiliary dog 31 arranged to be in the path of the lug 33 when the lug 33 is raised above the lug 32; a spring for swinging the dog 29 with the lug 32 under  
15 the lug 33 when the lug 33 is lifted.

9. In a typewriting machine the combination with the carriage bar 9; the notch plate 26 thereon; the pivoted dog 29 arranged to swing in said notch; the spring 30<sup>a</sup> for normally holding said dog against one face of  
20 the notch; a dog lug 32 on the dog 29; a stop carried by part of the frame and having a latch 34 thereon with a latch lug 33 on the latch and arranged in the path of the lug 32;  
25 means for lifting the latch 34 to release the lug 33; a swinging auxiliary dog 31 in the path of the lug 33 adapted to engage the lug 33 and stop the carriage and to be rocked to  
30 the lug 33 when the lug is in the lifted position.

10. In a typewriting machine the combination with the universal bar; a stop plate  
35 slidingly mounted on the frame; a stop on said plate; a locking mechanism for the universal bar; connecting means between the sliding plate and locking means for actuating the locking means upon a movement of the  
40 plate; the latch 34 on the stop; the lug 33 on the latch; the dog 29 mounted on the carriage; the lug 32 on the dog in the path of the lug 33; the auxiliary dog 31; means for

lifting the latch 34 to release the lug 32; and said carriage.

11. In a typewriting machine the combination with the universal bar; a stop plate  
45 slidingly mounted on the frame; a stop on said plate; a locking mechanism for the universal bar; connecting means between the sliding plate and locking means for actuating  
50 the locking means upon a movement of the plate; the latch 34 on the stop; the lug 33 on the latch; the dog 29 mounted on the carriage; the lug 32 on the dog in the path of the lug 33; the auxiliary dog 31; an oscillat-  
55 ing bail arranged in operative relation to said latch; and a connecting means between said bail and the front of the machine for actuating said bail.

12. In a typewriting machine the combination of a line lock mechanism; a bail for  
60 releasing the line lock; a tabulator bar mounted with the bail and movable therewith; and means for actuating the bail and tabulator bar. 65

13. In a typewriting machine the combination of the escapement comprising the actuating dogs; the bail 84 actuating said dogs  
70 to release the escapement; the extension 85 on the bail; the rod 87 on the carriage engaging the extension 85; a release lever for actuating the rod 87; the tabulator bar 92; means for actuating the tabulator bar; a  
75 hook 90 extending from the extension and engaging a moving part of the tabulator bar for the purpose described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN W. PAUL.

Witnesses:

TRACY J. LORD,  
SARAH A. DALEY.