

No. 712,538.

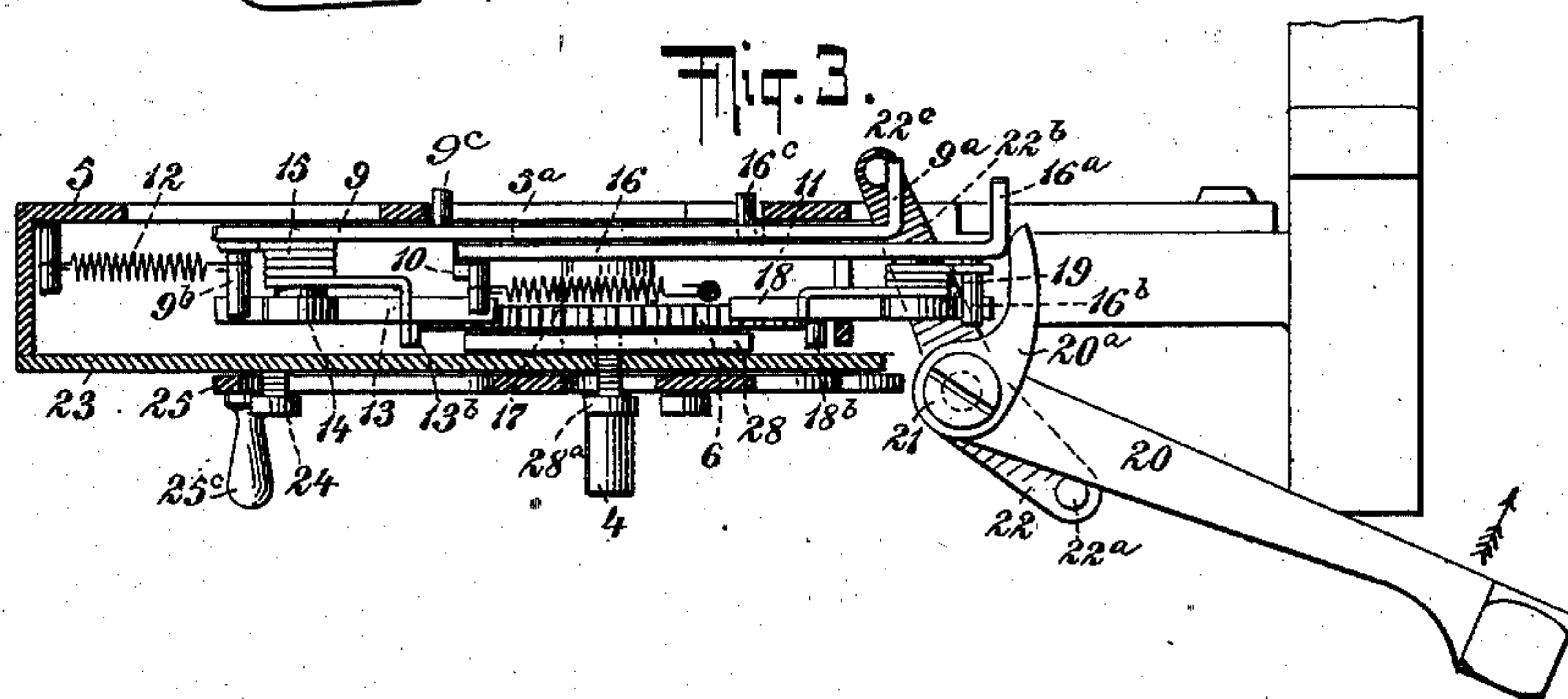
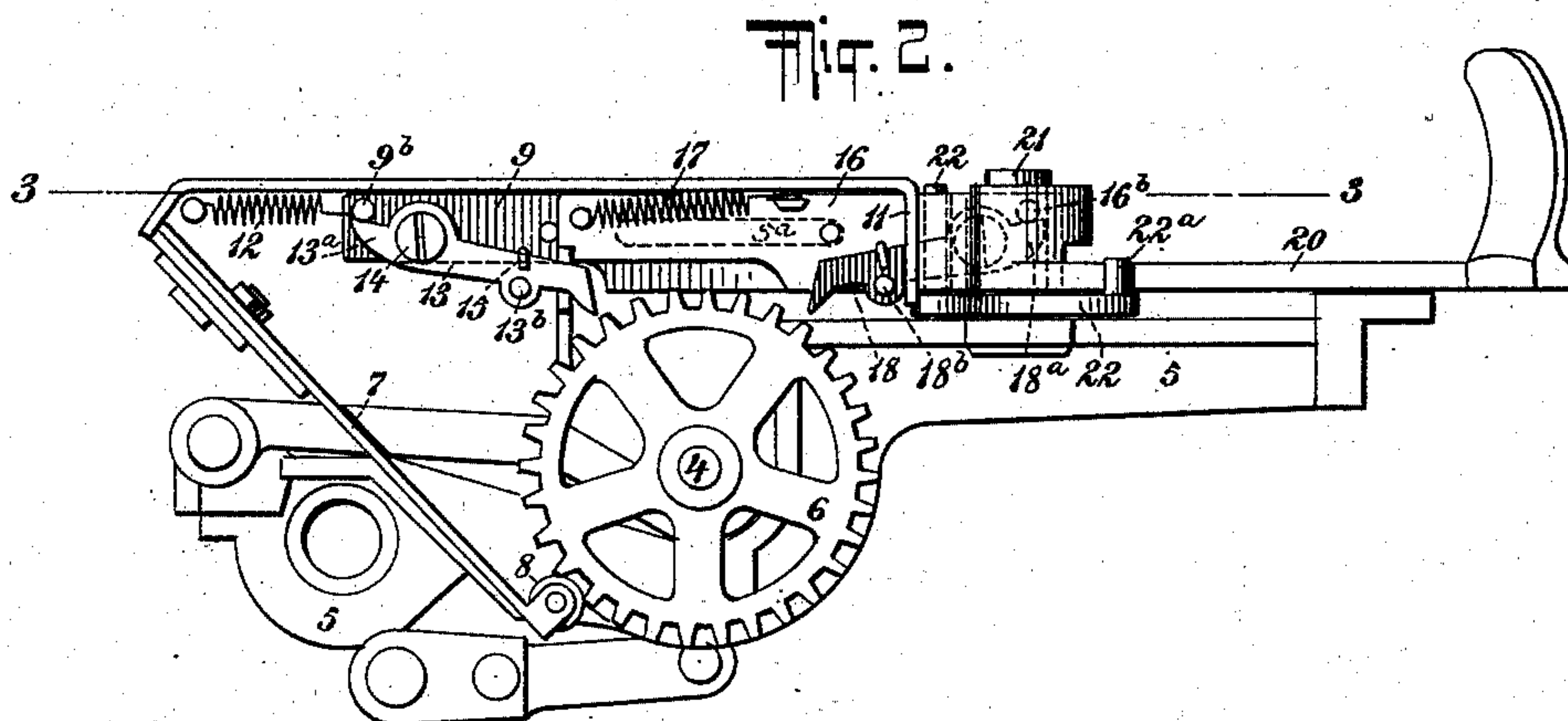
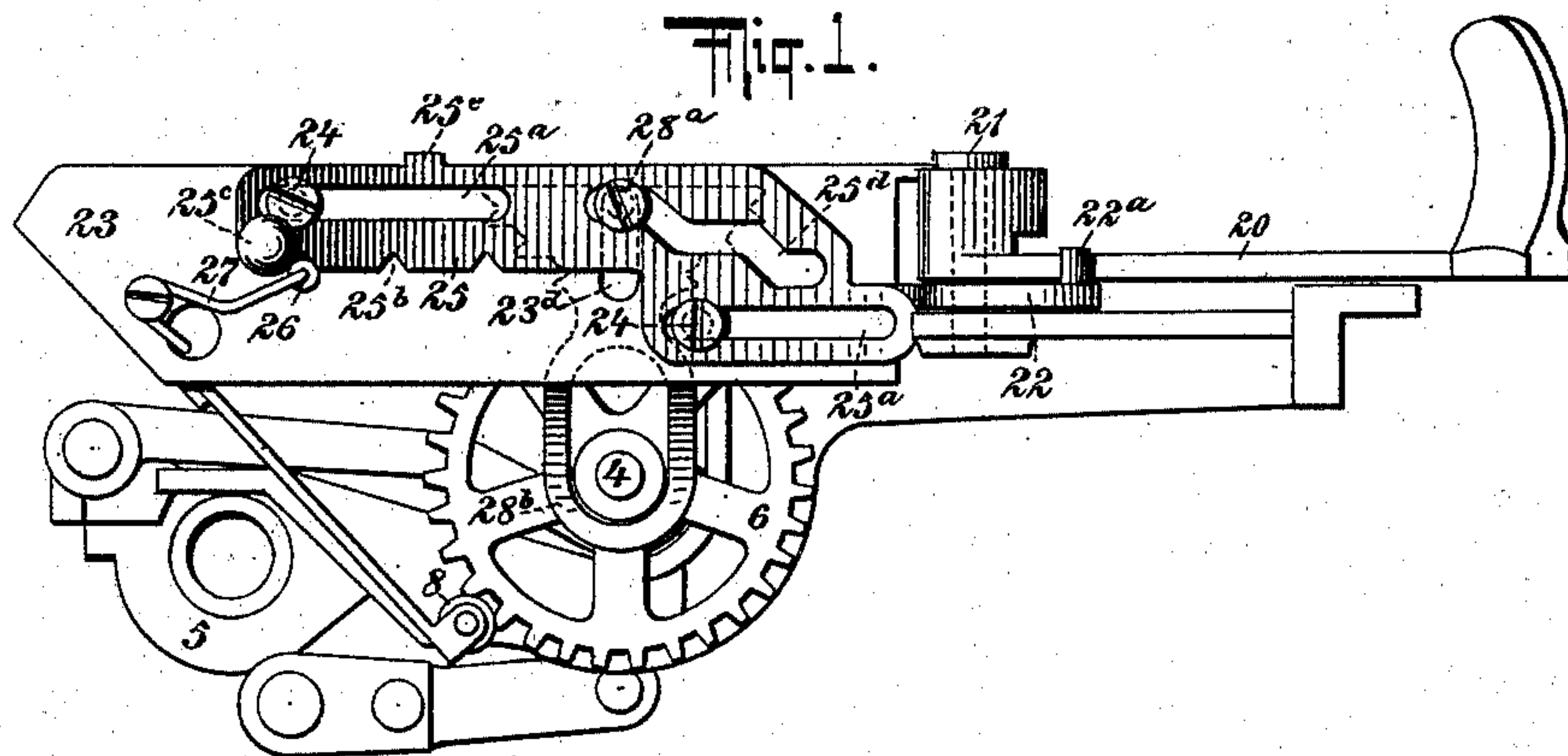
Patented Nov. 4, 1902.

C. W. HOWELL, JR.

LINE SPACING MECHANISM FOR TYPE WRITERS.

(Application filed Dec. 30, 1901.)

(No Model.)





# UNITED STATES PATENT OFFICE.

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## LINE-SPACING MECHANISM FOR TYPE-WRITERS.

SPECIFICATION forming part of Letters Patent No. 712,538, dated November 4, 1902.

Application filed December 30, 1901. Serial No. 87,667. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. HOWELL, Jr., a citizen of the United States, and a resident of the city of Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Line-Spacing Mechanisms for Type-Writers, of which the following is a specification.

My invention relates to type-writing machines, and particularly to that mechanism for moving the platen which is known as a "line-spacer"—that is, mechanism by means of which the platen can be given a partial rotation of a predetermined extent corresponding to the distance between two succeeding lines.

The object of my present invention is to improve devices of this character in such a manner that the platen may be turned backward as readily as forward and to further provide means for expeditiously varying the extent of the platen's movement, so that the space between two lines may be made large or small, as desired. To accomplish this object, I provide certain novel instrumentalities, the distinguishing features of which are pointed out in the appendant claims.

In the description following hereinafter I have disclosed one form of my invention; but I desire it to be understood that this embodiment is to be taken as an example only, and that I do not restrict myself to the special details of construction shown.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a side elevation of a type-writer carriage, showing my improved line-spacing mechanism applied thereto. Fig. 2 is a side elevation of the same mechanism with certain parts taken away to expose the interior mechanism, and Fig. 3 is a sectional plan taken substantially on line 3-3 of Fig. 2.

On one of the platen-trunnions 4, which is journaled in the carriage-frame 5, is secured the customary ratchet-wheel 6, which is normally held stationary, together with the platen, by means of a spring-arm 7, secured to the frame 5 and preferably provided at its free end with a roller 8, engaging the teeth of the ratchet-wheel. It will be understood

that while this spring-arm and roller prevent any accidental movement of the ratchet-wheel and of the platen they do not interfere with the feed movement of the platen by the action of the feed-pawls, which will be described presently.

Upon the frame 5 is arranged to slide at a right angle to the axis of the platen a carrier 9, engaging guides 10 and 11 of the frame 5, so that it may be guided in a straight line. This carrier is provided at one end with a projection 9<sup>a</sup>, against which bears an operating-pin, referred to hereinafter. At its other end the carrier 9 has a pin 9<sup>b</sup>, with which is connected one end of a spring 12, the other end of which is attached to a relatively stationary part, as to a pin projecting to the frame 5. It will therefore be understood that the spring 12 has a tendency to draw the carrier 9 back toward the stationary end of the spring—that is, toward the left in the construction as shown in the drawings. On this carrier 9 is pivoted a pawl 13, as indicated at 14, this pawl being provided with a tailpiece 13<sup>a</sup>, arranged to be pressed against the pin 9<sup>b</sup> by the action of a spring 15. The free end of the pawl 13 is adapted for engagement with the ratchet-wheel 6, but is preferably out of engagement therewith in the normal position. (Shown in Fig. 2.)

In the guides 10 and 11 is adapted to reciprocate parallel with the carrier 9 another carrier 16, provided with a projection 16<sup>a</sup>, against which acts the operating member referred to hereinafter. This carrier is under the influence of a spring 17, which tends to draw in the direction opposite to that in which the carrier 9 is drawn by its spring 12. To the carrier 16 is pivoted a pawl 18, having a tailpiece 18<sup>a</sup>, arranged to engage a pin 16<sup>b</sup>, projecting from the carrier 16. This pawl is similar to the pawl 13 and is pressed downward by a spring 19. It will be observed that the two pawls extend in opposite directions from their pivots—namely, toward each other.

The carrier 16 is provided with a pin 16<sup>c</sup>, which passes through a slot 5<sup>a</sup> in the carrier 9 and abuts against the frame 5, so as to limit the forward movement of the carrier 16. In its backward movement the carrier 16 will



contact with the pivot 14 of the pawl 13, and its movement will be thereby arrested. The carrier 9 is provided with a pin 9<sup>c</sup>, which limits its backward movement by coming in contact with a portion of the frame 5. In its forward movement the pivot 14 will come in contact with the carrier 16, and the carrier 9 will be thereby arrested. It will of course be understood that the carriers 9 and 16 when at rest will be prevented the one from displacement backward and the other from displacement forward, respectively, by the engagement of their respective pins 9<sup>c</sup> and 16<sup>c</sup> with the frame 5.

On the frame 5 is pivoted to swing about a vertical axis an operating-lever 20, having its fulcrum at 21 and provided with an operating member 20<sup>a</sup>, which is adapted to engage the projection 16<sup>a</sup> of the carrier 16. On the same pivot 21 is mounted an arm 22, independent to a certain extent of the lever 20 and provided with a pin 22<sup>a</sup>, adapted to engage such lever, while the portion 22<sup>b</sup> on the other side of the pivot is provided with an operating-pin 22<sup>c</sup> in engagement with the projection 9<sup>a</sup> of the carrier 9. It will be understood that as the springs 12 and 17 have a tendency to move the carriers 9 and 16 in opposite directions they will also, through the medium of the extensions 9<sup>a</sup> 16<sup>a</sup> and of the arm 22, with its pin 22<sup>a</sup>, operate to hold the lever 20 in a predetermined normal position and to restore it to such position.

From the foregoing it will be readily understood that upon swinging the lever 20 in the direction indicated by the arrow in Fig. 3 the pawl 18 alone will become operative and the platen will be turned so as to feed the paper forward, while if the lever 20 is swung in the opposite direction only the pawl 13 will come in engagement with the ratchet-wheel 6, and the platen will be turned so as to feed the paper backward. In the normal position, (shown in Fig. 2,) where neither of the pawls is in engagement with the ratchet-wheel 6, the latter may be turned freely either forward or backward by means of the customary milled head at the end of the platen, it being understood that the resistance opposed by the spring-arm 7 and the roller 8 is not such as to absolutely hold the ratchet-wheel 6 against any movement.

It remains for me to describe the particular mechanism employed for limiting the movement of the pawls so that they may turn the platen to a predetermined extent and the means for varying this movement. For this purpose each pawl is provided near its free end with a lug or pin 13<sup>b</sup> or 18<sup>b</sup>, respectively, and these pins are adapted to abut against a stop-plate 28, the shape of which is indicated best in Fig. 1—that is, this stop-plate has a series of stops to vary the throw of each pawl. The stop-plate is guided vertically by means of a pin 28<sup>a</sup>, engaging a slot 23<sup>b</sup> of a cover 23, and by means of extension 28<sup>b</sup>, guided upon the platen-trunnion 4. The pin 28<sup>a</sup> is rigidly

fixed to the stop-plate 28. The cover 23 has two stationary pins 24, forming guides for a horizontally-movable adjusting-plate 25, provided with slots 25<sup>a</sup>, in which said pins 24 are received. This adjusting-plate is further provided with a slot 25<sup>d</sup>, provided with steps the distance between which corresponds to the distance between the steps of the stop-plate 28. These steps of the slot 25<sup>b</sup> are connected by inclined portions, so that upon moving the plate 25 lengthwise upon the pins 24 the pin 28<sup>a</sup>, and with it the stop-plate 28, will be raised or lowered to bring one or the other set of steps into the path of the lugs 13<sup>b</sup> 18<sup>b</sup>. A handle 25<sup>c</sup> is provided for the purpose of moving the adjusting-plate 25, and notches 25<sup>b</sup> may be cut in one edge of said plate to cooperate with a rod or roller 26 at the end of a spring 27 to hold the adjusting-plate against accidental movement. On said plate may also be arranged a pointer 25<sup>e</sup>, adapted to indicate on a suitable scale which may have the numerals 1 2 3, indicating the position of the adjusting-plate which corresponds to single, double, or triple feed of the platen.

On Fig. 2 I have, for the sake of clearness, omitted the cover 23 and the parts carried thereby directly—that is, the stop-plate 28, the adjusting-plate 25, and the holding-spring 27.

It will be understood that when the stop-plate 28 is in its highest position, as indicated in Fig. 1, the motion or throw of the pawls will be restricted to the smallest movement. By moving the adjusting-plate 25 one step to the left the stop-plate 28 will be lowered so as to bring the next narrower step into the path of the lugs 13<sup>b</sup> 18<sup>b</sup>, so that the pawls will have a movement of greater extent before they are arrested by contact with the stop-plate 28. Finally, by moving the adjusting-plate 25 fully to the left the stop-plate 28 will be placed in its lowermost position and the movement of the pawls will be increased correspondingly.

I claim as my invention and desire to secure by Letters Patent—

1. The combination with a platen having a ratchet-wheel, of independently-movable pawl-carrying members arranged to turn said ratchet-wheel in opposite directions, and a single operating member movable to and from engagement with either of said pawl-carrying members, and so arranged that upon movement of said operating member in one direction it will engage and actuate one of the pawl-carrying members while moving away from the other pawl-carrying member and leaving the same undisturbed.

2. The combination with a platen having a ratchet-wheel, of independently-movable carriers, pawls located on said carriers and normally out of engagement with the ratchet-wheel, said pawls being adapted to turn the wheel in opposite directions, and a single operating member movable independently of said carriers and adapted to engage and operate only one of them at a time, according



to the direction in which said operating member is moved.

3. The combination with a platen having a ratchet-wheel and means for holding said platen against accidental movement, of two independent pawl-carrying members arranged to turn the platen in opposite directions, and a single operating member movable independently of said pawl-carrying members and arranged to engage either of them so that upon movement of said operating member in one direction, only one of the pawl-carrying members will be actuated.

4. The combination, of the platen having a ratchet-wheel, with slides arranged to move substantially at right angles to the axis of the platen, pawls pivotally carried by said slides and projecting in opposite directions from their pivots, and mechanism for operating one slide or the other to feed the platen forward or backward by the engagement of one of the pawls with the ratchet-wheel.

5. The combination, with a platen having a ratchet-wheel, of two pawl-carriers spring-pressed in opposite directions, pawls carried by said carriers and arranged to engage the ratchet-wheel, and mechanism for operating either one of the carriers.

6. The combination, with the platen having a ratchet-wheel, of carriers arranged to move in opposite directions, pawls secured to said carriers and arranged to engage the ratchet-wheel, and operating mechanism for said

carriers, said mechanism comprising two members pivoted about the same axis, one of said members being arranged to engage one of the carriers, while the other member is connected with the other carrier and is provided with an abutment against which a portion of the first-named member rests when said member is moved in one direction.

7. The combination, with the platen having a ratchet-wheel, of pawls arranged to turn said wheel in opposite directions, means for moving the pawls, a stepped stop arranged centrally with respect to the pawls and adapted to be engaged by them on opposite sides, and means for adjusting said stop in a direction transverse to that in which the pawls move.

8. The combination, with the platen having a ratchet-wheel, carriers mounted to slide substantially at right angles to the platen's axis, pawls pivotally carried by said carriers and adapted to turn the ratchet-wheel in opposite directions, means for operating either one of said carriers, a stop movable transversely of the direction in which the carriers travel, and provided with stepped surfaces for limiting the movement of the carriers and pawls, and means for adjusting said stop.

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Witnesses:

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EUGENE EBLE.