

F. A. YOUNG.
TYPE WRITING MACHINE.
APPLICATION FILED JAN. 25, 1909.

921,779.

Patented May 18, 1909.

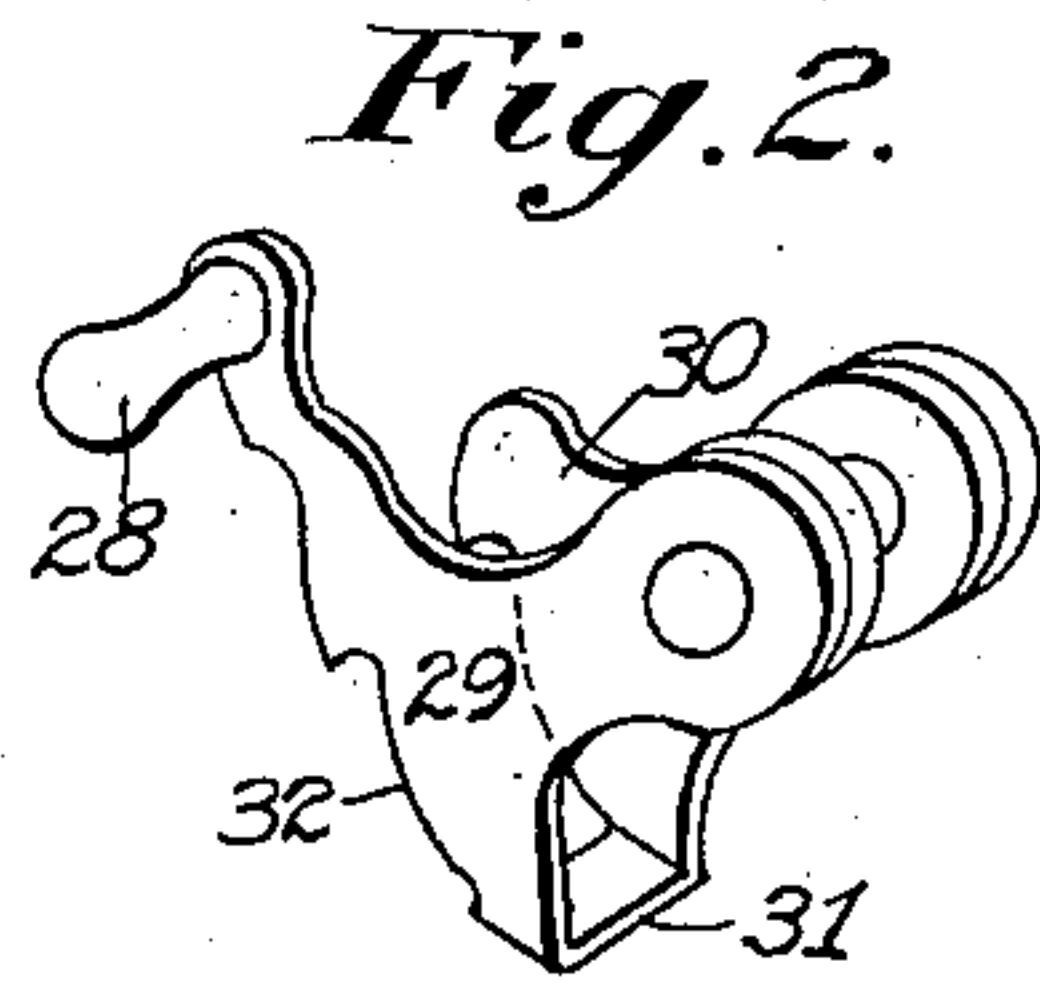
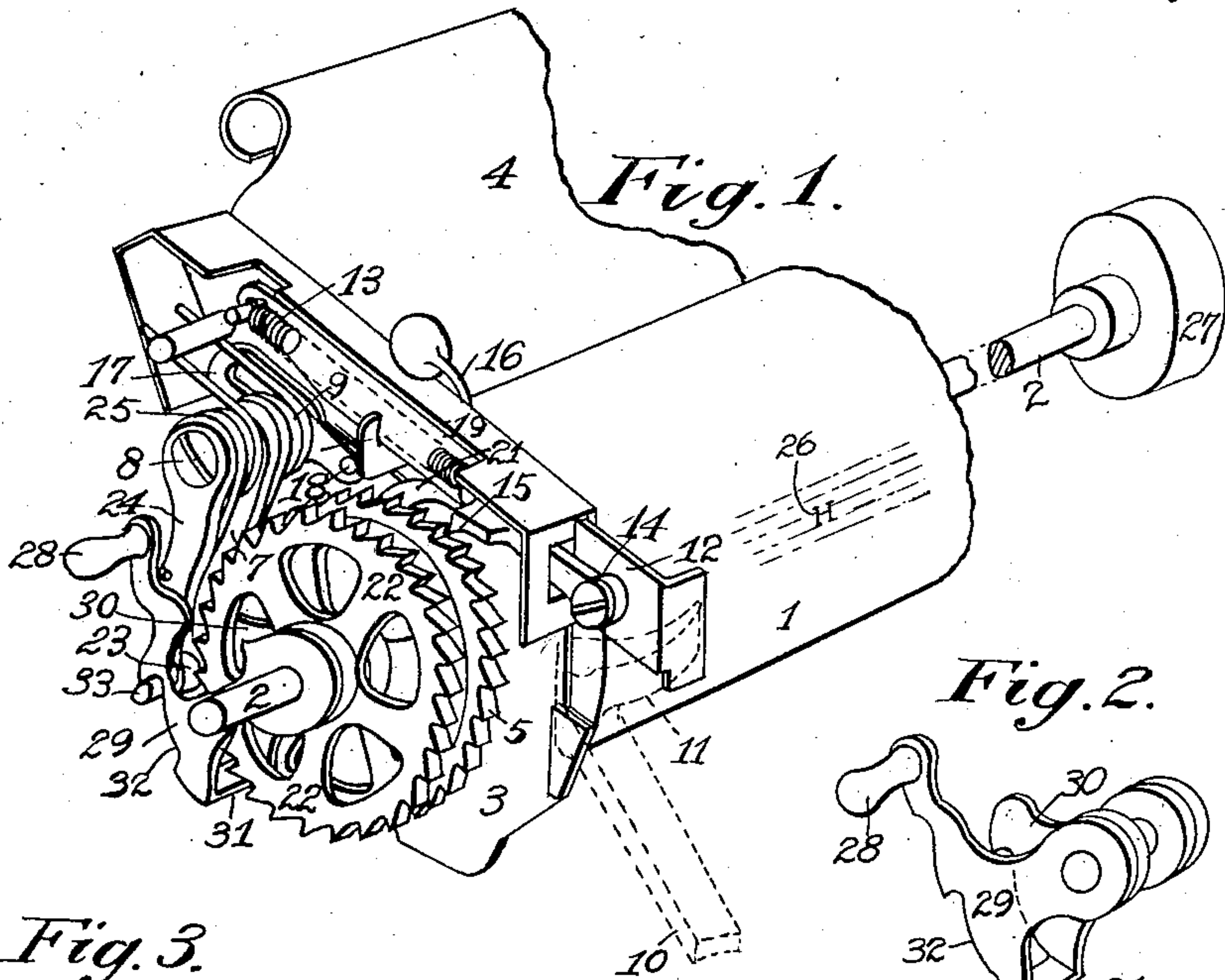


Fig. 3.

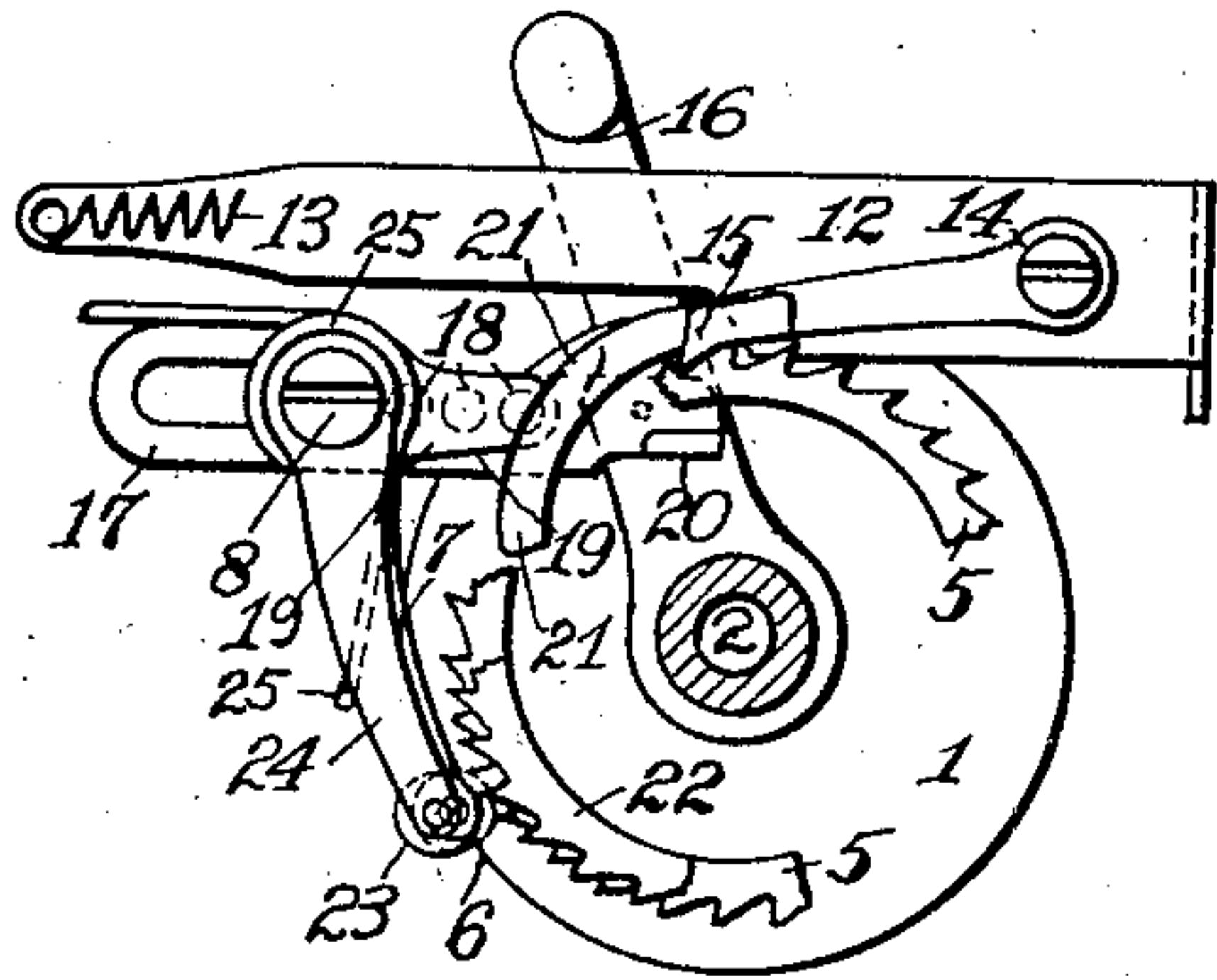


Fig. 4.

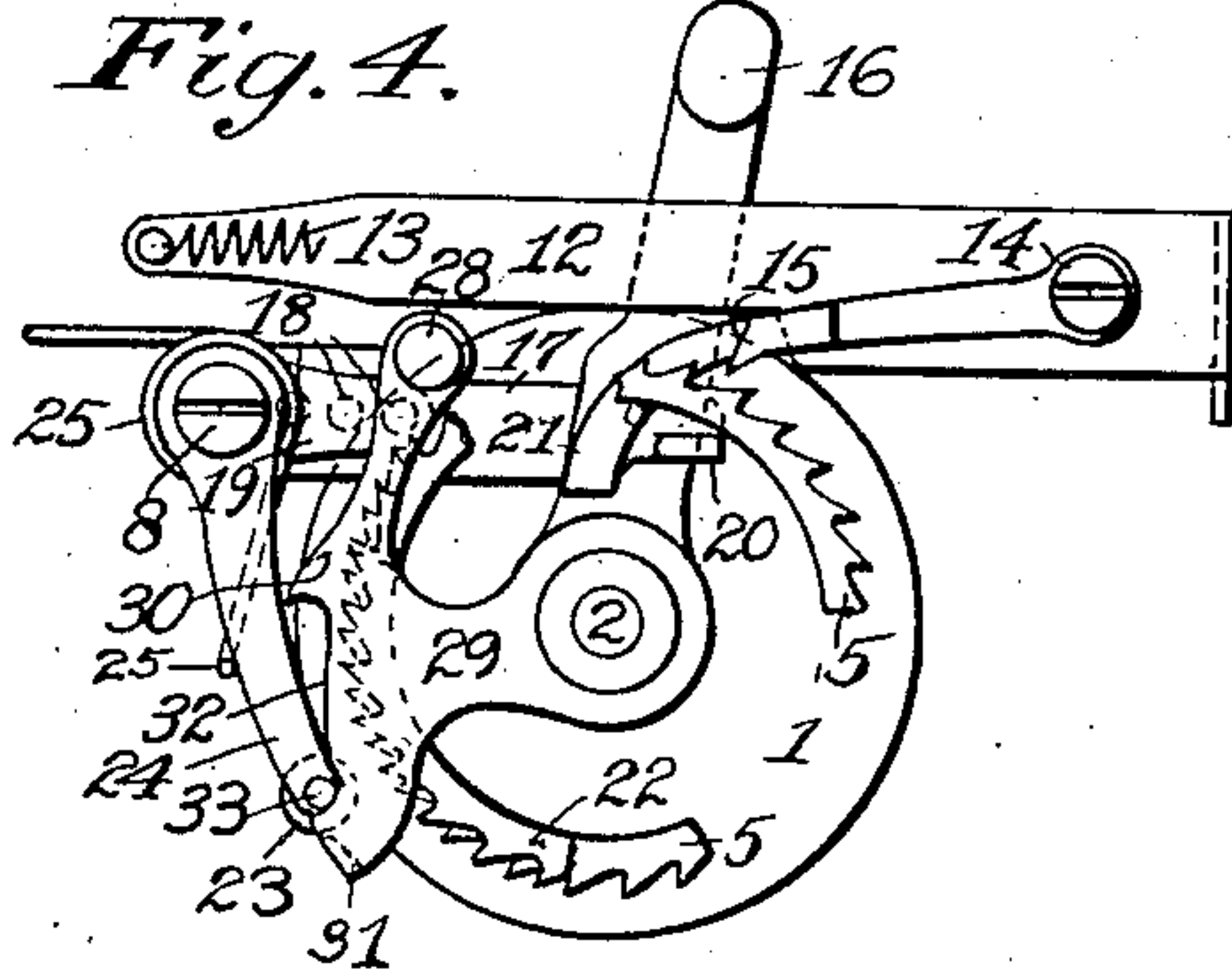


Fig. 5.

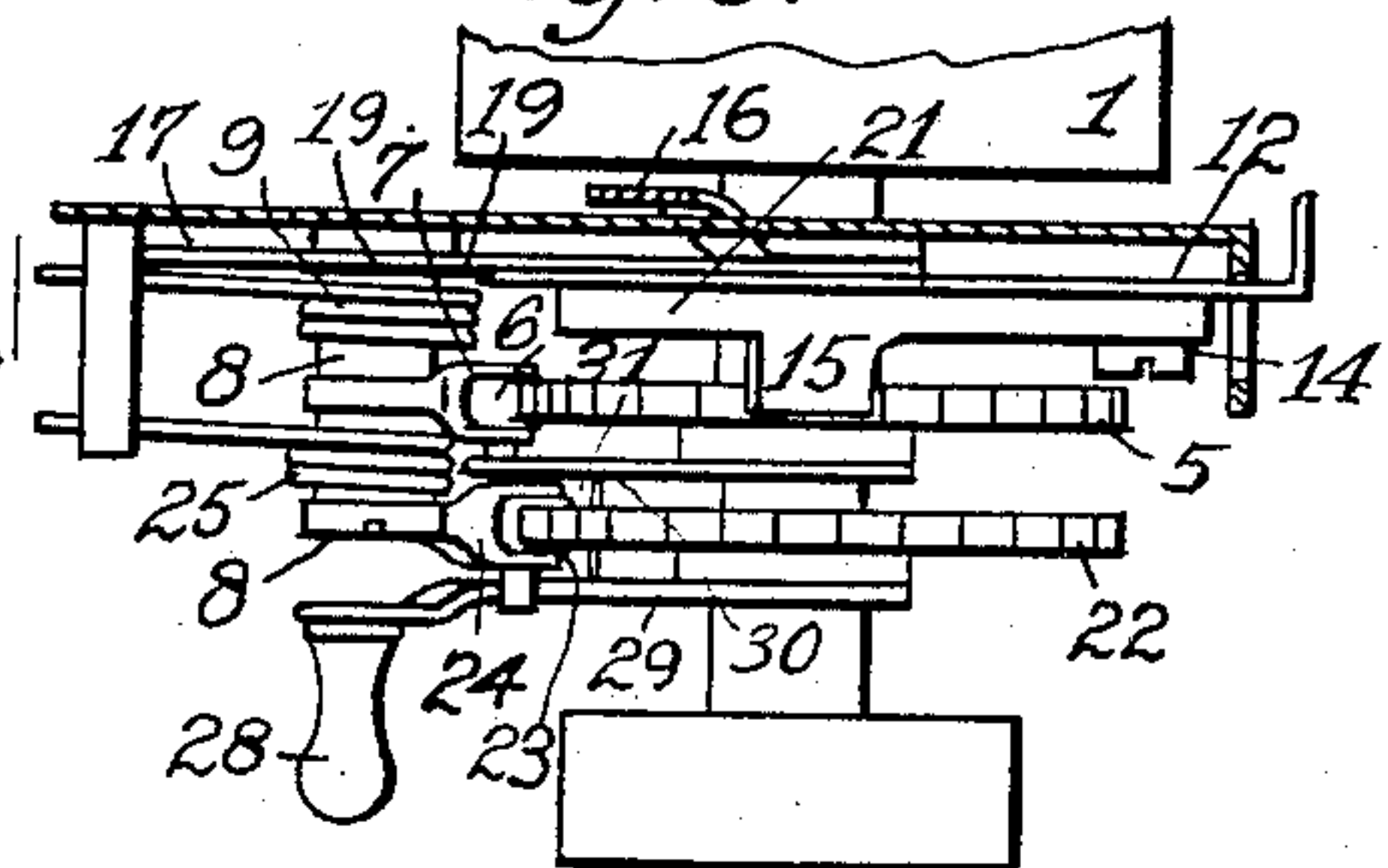
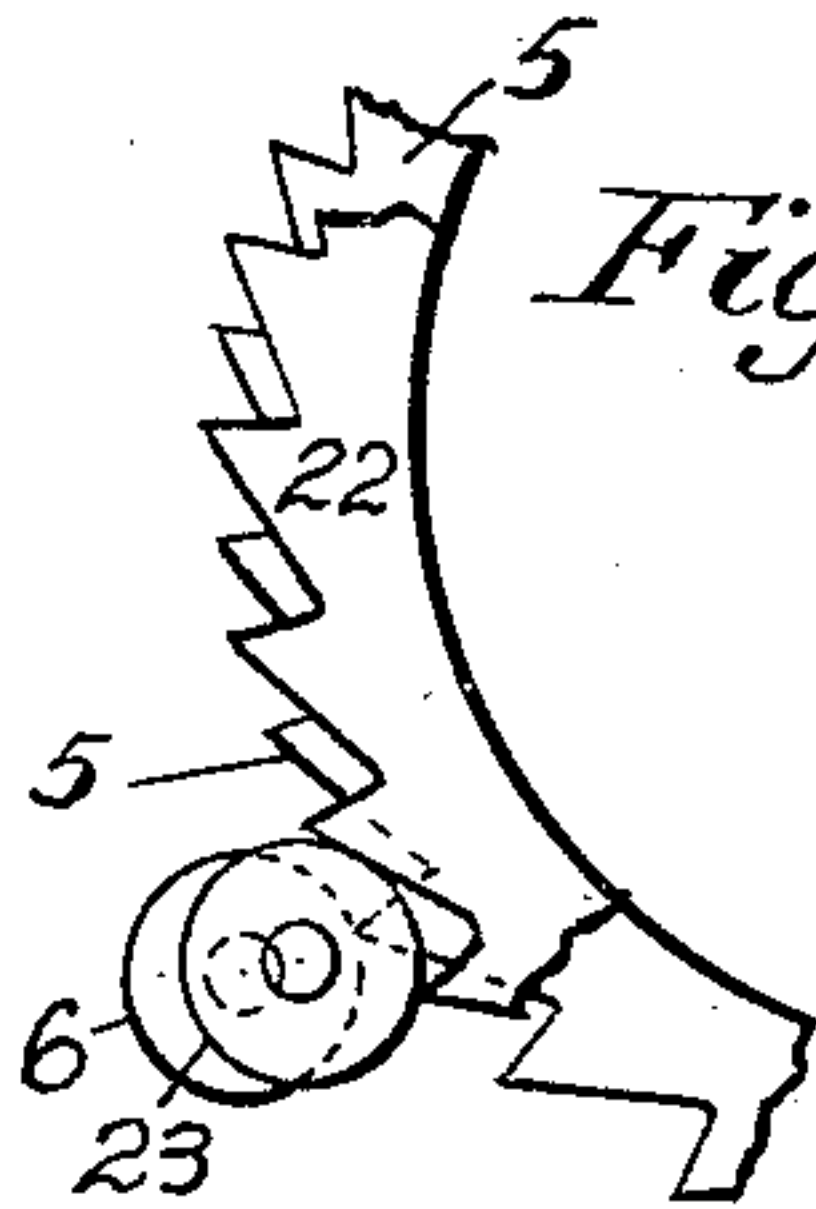


Fig. 6.



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UNITED STATES PATENT OFFICE.

FRANK A. YOUNG, OF NEW YORK, N. Y., ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY,
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TYPE-WRITING MACHINE.

No. 921,779.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed January 25, 1909. Serial No. 474,080.

To all whom it may concern:

Be it known that I, FRANK A. YOUNG, a citizen of the United States, residing in New York, in the county of New York 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 line-spacing devices of typewriting machines, and particularly to means for facilitating the writing of exponents, fractions, etc.; although the invention is not limited to this particular use.

The principal object of the invention is to provide simple and effective means, which may readily be applied to existing typewriting machines, for enabling the platen to be accurately positioned for writing above or below the line of writing.

According to the preferred form of the invention, there is provided, in addition to the usual line-space wheel, which is commonly formed with say thirty teeth or notches, to enable thirty uniformly spaced lines to be written at each revolution of the platen, an auxiliary line-space wheel similar to the main wheel, but having its teeth in staggering or alternative relation to the teeth in the main wheel. Each wheel is provided with a detent, so that the wheels are alternately effective to check or hold the platen; and hence the latter can be detained in any one of sixty different rotative positions. The platen is of such size that one-sixtieth of its periphery is less than the height of a typewritten letter; and one of the principal purposes of the invention is to enable the platen to be set a half space either above or below its usual position, for writing exponents, fractions, etc. The platen is given full line spaces by the usual means in the usual manner, so that the writing proceeds down the page as customary; but at any time the operator may grasp the platen knob and turn the platen a half space up or down, and one of the detents will hold it there during the writing of one or more characters; whereupon the operator may

again grasp the platen knob and return the platen to proper position to continue the main line of writing.

In the accompanying drawings, Figure 1 is a perspective view of a platen and platen frame of an Underwood front strike writing machine, provided with the present improvements. Fig. 2 is a perspective view of a double releasing lever. Fig. 3 is a part sectional end view of the line-spacing mechanism, showing the same set for ordinary single line-spacing. Fig. 4 is a similar view to Fig. 3, but diagrammatically showing the parts set for ordinary triple line spacing. At this view the detents are shown as released from the line-space wheels, to permit the platen to be turned independently for irregular line-spacing. Fig. 5 is a plan of the mechanism. Fig. 6 is a fragmentary elevation on a larger scale, to illustrate the alternative action of the spring-pressed detent rolls.

A platen 1 is fixed to an axle 2, whereby it is revolvably mounted in a platen frame comprising a pair of ends 3 and a connecting paper shelf 4. Fixed upon the axle 2 of the end 3 is a main or ordinary notched or toothed line-space wheel 5, which is engaged by a roll 6 pivoted upon the lower end of an arm 7, the latter pivoted at its upper end on a stud 8 projecting outwardly from the platen frame end. A spring 9 bearing upon the arm 7 causes the roll 6 to press into the notches of the wheel 5, said notches being formed at the usual line-space intervals.

The platen may be rotated a distance equal either one, two or three of the notches in the wheel 5 by means of the usual lever mounted upon a carriage, (not shown), and having an arm 11 to press rearwardly a slide 12 mounted in the platen frame end and having a returning spring 13. Pivoted to this slide at 14 is a pawl 15 to engage the teeth of the wheel 5 and advance the platen.

The extent to which the platen is advanced by the lever 10 is determined by a regulator 16 mounted to turn about the platen axis and connected to a slide 17, which has three depressions 18, in any one of which may en-

gage a spring-check 19, to hold said slide 17 in any of three positions. Said slide carries a lip 20 to be engaged by a curved extension or nose 21 provided upon the pawl 15. When the slide 12 is returned forwardly by the spring 13, the nose 21 rides up over the lip 20 and lifts the pawl 15 out of engagement with the wheel 5. The position of the nose 20 determines the point at which the pawl 15 shall be again let into engagement with the wheel during the advance stroke of the slide 12, and hence determines the number of lines that the platen shall be spaced, whether one, two or three of the notches in the wheel 5. As so far described, the parts are in common use on said Underwood typewriting machine; with the exception that the stud 8 is longer than the ordinary stud. Also fixed upon the platen axle 2, outside of the wheel 5, is an auxiliary notched or toothed wheel 22, having the same number of uniformly spaced teeth as the wheel 5. A detent roll 23, to engage wheel 22, is carried upon the lower end of an arm 24 pivoted upon the same stud 8 as the arm 7 and having a spring 25 similar to the spring 9 to press the roll 23 into the notches in the wheel 22.

Preferably the rolls 6 and 23 are in line, that is, equally distant from the stud 8, and the wheels 5 and 22 are set so that their teeth alternate, as seen best at Fig. 6. In consequence, when detent roll 23 presses into a notch in the wheel 22, the other detent 6 rests upon the point of a tooth in the wheel 5, as at Fig. 6. If the platen be now advanced a distance equal to half of an ordinary line space, the detent wheel 6 will sink into the adjoining notch in the wheel 5, while the detent roll 23 will rise to bear against the point of the adjacent tooth on the wheel 22. Thus said detents are constantly effective in alternation to hold the platen steady, at intervals equal to less than the height of a typewriter letter 26, Fig. 1, and equal to half of the usual line-spacing intervals, or, in other words, to half of the pitch of the teeth on the usual or main line-spacing wheel 5.

During ordinary writing, the auxiliary detent roll 23 commonly rests upon the tip of the teeth of the auxiliary line-space wheel 22, as at Fig. 3; the main detent 6 commonly governing the position of the platen; but when it is desired to write characters either above or below the line of writing, the usual platen knob 27 is turned to rotate the platen either forwardly or backwardly half a line space to bring the detent 23 into the Fig. 6 position.

To release the platen from the control of the detents, a handle 28 is pulled upwardly from the Fig. 1 to the Fig. 4 position; said handle connected to a pair of levers 29, 30 rigidly connected together by a union 31,

and having similar cams 32, to engage pins 33 on the detent arms 7 and 24, to throw the detents simultaneously backward away from the notched wheels, as at Fig. 4, and lock them there; thus leaving the platen free to be turned to any extent by means of the knob 27. Upon depressing the handle 28, the levers 29 and 30 drop, and the detents 7 and 24 come again into action.

Wide variations may be resorted to within the scope of the invention, the gist of which may be said to reside in providing for the line-spacing of the platen through arcs or intervals each equal to one-half or a fraction of the pitch of the teeth of the usual line-spacing wheel, or in other words, to a fraction of the shortest intervals through which the platen can be turned by the usual reciprocatory line-spacing devices.

Certain features of the invention may be used for other purposes; and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriting machine, the combination with a platen, of two notched or toothed members connected thereto, and spring-pressed check or detent rolls, one for each notched member; the notches in one member alternating with those in the other, and the detent rolls positioned to bring one on the point of a tooth when the other is seated in a notch.

2. In a typewriting machine, the combination with a platen, of two notched or toothed members connected thereto, spring-pressed check or detent rolls, one for each notched member; the notches in one member alternating with those in the other, and the detent rolls positioned to bring one on the point of a tooth when the other is seated in a notch, and a line-spacing mechanism connected to one of said notched members.

3. In a typewriting machine, the combination with a revoluble platen, of yielding means for constantly arresting and holding the platen at minor regular rotative intervals, each less than the height of a typewritten letter, and a reciprocatory pawl and driver coöperating with means to effect regular line-spacing of the platen through major intervals equal to at least two of said minor intervals.

4. In a typewriting machine, the combination with a revoluble platen, of yielding means for constantly arresting and holding the platen at minor regular rotative intervals, each less than the height of a typewritten letter, and a reciprocatory pawl and driver coöperating with means to effect regular line-spacing of the platen through major intervals equal to either two, four or six of said minor intervals.

5. The combination with a revoluble platen, of a toothed line-space wheel con-

5 nected thereto, a spring detent for said line-space wheel, a pawl to drive said line-space wheel, an actuator for said pawl, and an auxiliary line-space wheel having the same number of teeth as the main line-space wheel and provided with a spring detent or roll; said wheels having a staggering relation to each other.

10 6. The combination with a revoluble platen, of a toothed line-space wheel connected thereto, a spring detent for said line-space wheel, a pawl to drive said line-space wheel, an actuator for said pawl, an auxiliary line-space wheel having the same number of
15 teeth as the main line-space wheel and provided with a spring detent or roll; said wheels having a staggering relation to each other, and means to lock both detents out of use to permit irregular line-spacing of the platen.

20 7. In a typewriting machine, the combination with a platen, of two notched or toothed members connected thereto, spring-pressed check or detent rolls, one for each notched member; the notches in one member alternating with those in the other, and the detent rolls positioned to bring one on the point of a tooth when the other is seated in a notch, and means to release both notched members
25 concomitantly from the control of the detent rolls and to maintain them mechanically in released condition, to permit irregular line-spacing of the platen.

30 8. The combination with a revoluble platen, of two line-space wheels connected thereto and having a staggering relation to each other, detents for the line-space wheels, and means to withdraw both detents simultaneously and lock them out of use to permit
35 the platen to be rotated through irregular intervals.

40 9. The combination with a revoluble platen, of a pair of similarly toothed line-space wheels connected thereto, yielding means constantly engaging both of said line-space wheels, to check or hold the platen, the
45 teeth in said line-space wheels having a staggering relation, and a reciprocatory line-spacing mechanism engaging only one of said wheels, to advance the platen through intervals equal to either one or more full teeth of the last-mentioned wheel.

50 10. In a typewriting machine, the combination of a revoluble platen having an axle, two notched line-space wheels fixed to said axle and platen, a stud or pivot on the platen frame, two spring-pressed arms pivoted on
55 said stud and having checks to engage the line-space wheels, the teeth in one wheel having a staggering relation to those in the other wheel.

60 11. In a typewriting machine, the combination of a revoluble platen having an axle, two notched line-space wheels fixed to said axle and platen, a stud or pivot on the platen frame, two spring-pressed arms pivoted on

said stud and having checks to engage the line-space wheels, the teeth in one wheel having a staggering relation to those in the other wheel, and a lever hung on the platen axle and having cams to engage said spring-arms
70 to clear them from the wheels and hold them released.

12. The combination with a revoluble platen, of a toothed line-space wheel connected thereto, a spring detent for said line-space
75 wheel, a pawl to drive said line-space wheel, an actuator for said pawl, an auxiliary line-space wheel having the same number of teeth as the main line-space wheel and provided with a spring detent or roll; said wheels
80 having a staggering relation to each other, and a releasing device having cams, one for each of said detents, to move and lock the same away from the line-space wheels.

13. In a typewriting machine, the combination with a platen, of two spring-pressed
85 checks or detent rolls, and notched or toothed means connected to the platen to cooperate with said checks in alternation, the checks constructed so that when one seats in a
90 notch the other presses idly upon the point of a tooth.

14. In a typewriting machine, the combination with a revoluble platen, of main and
95 auxiliary notched or toothed wheels connected thereto, and spring-pressed detents to engage said wheels to cooperate therewith in alternation to arrest the platen at intervals equal in number to the aggregate of the
100 teeth in the wheels; the detents constructed so that when one is in a notch, the other rests idly upon the point of a tooth.

15. In a typewriting machine, the combination with a platen and a pair of notched or
105 toothed members rigidly connected thereto, of a pair of detent members to engage said toothed members to arrest and hold the platen; the members in one of said pairs having a staggering relation to each other.

16. In a typewriting machine, the combination with a platen and a pair of notched or
110 toothed members rigidly connected thereto, of a pair of detent members to engage said toothed members to arrest and hold the platen; the members in one of said pairs having
115 a staggering relation to each other, and means to release said detent members, and lock them in released positions.

17. In a typewriting machine, the combination with a platen, of two spring-pressed
120 checks or detent rolls, notched or toothed means connected to the platen to cooperate with said checks in alternation, the checks constructed so that when one seats in a notch the other presses idly upon the point
125 of a tooth, and means to release said detent members, and lock them in released positions.

18. In a typewriting machine, the combination with a platen, of two spring-pressed
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checks or detent rolls, notched or toothed means connected to the platen to cooperate with said checks in alternation, the checks constructed so that when one seats in a notch the other presses idly upon the point of a tooth, and a reciprocatory line-spacing mechanism to engage said notched or toothed

means to effect line-spacing movements of the platen to an extent equal to one or more full teeth.

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Witnesses:

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