

FEED MECHANISM FOR TYPE WRITER CARRIAGES.

966,779.

Patented Aug. 9, 1910.

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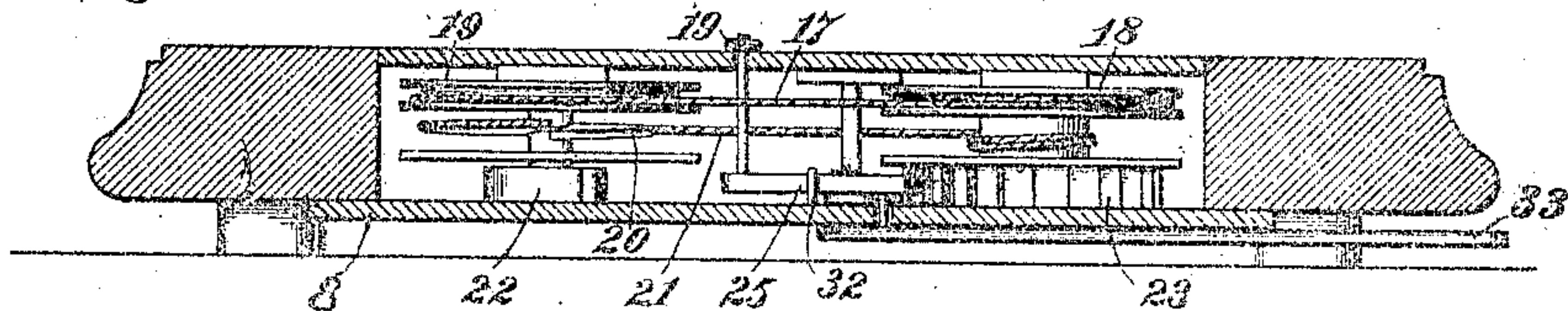
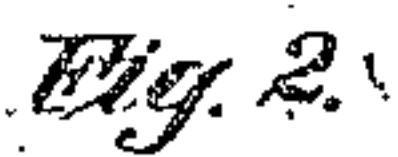
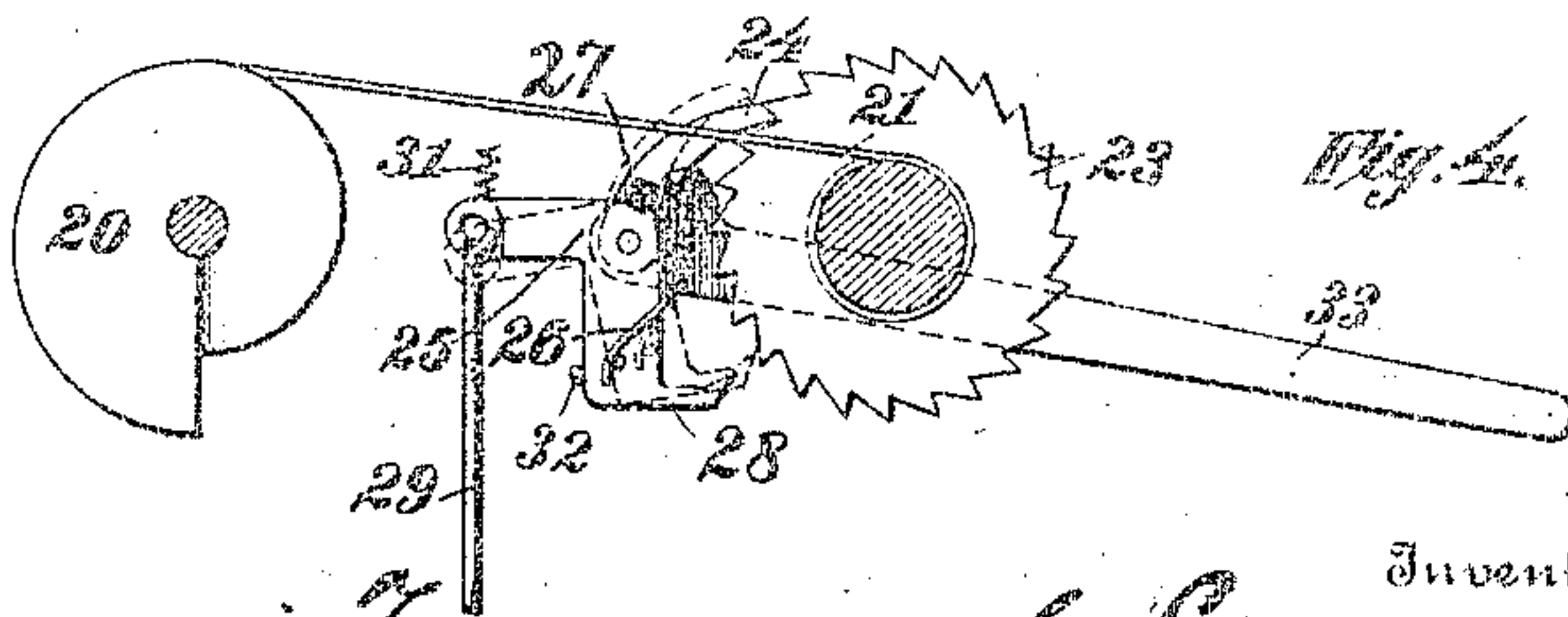
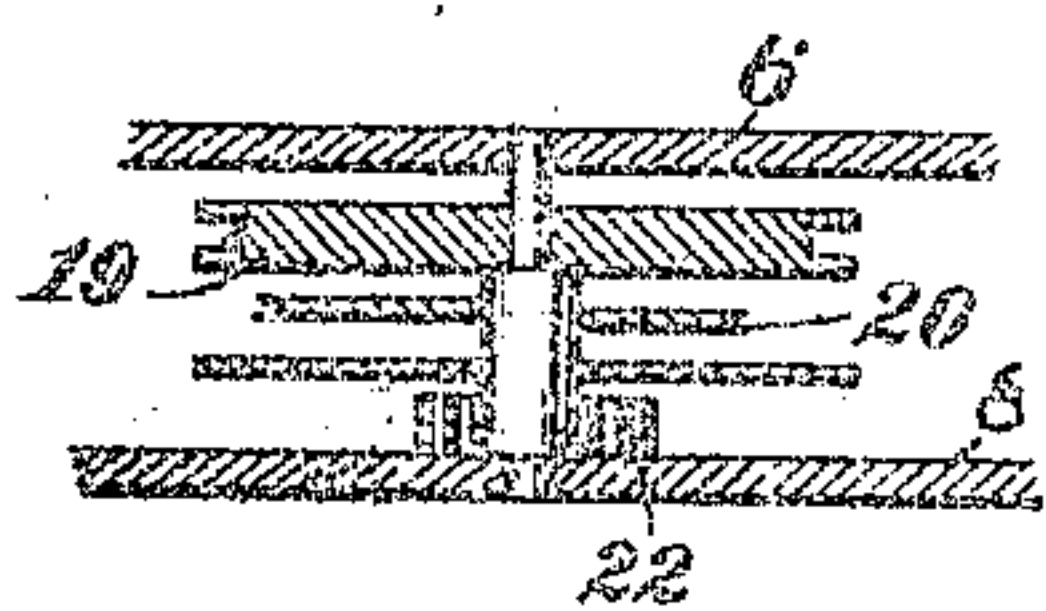


Fig. 2.



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FEED MECHANISM FOR TYPE WRITER CARRIAGES.

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2 SHEETS—SHEET 2.

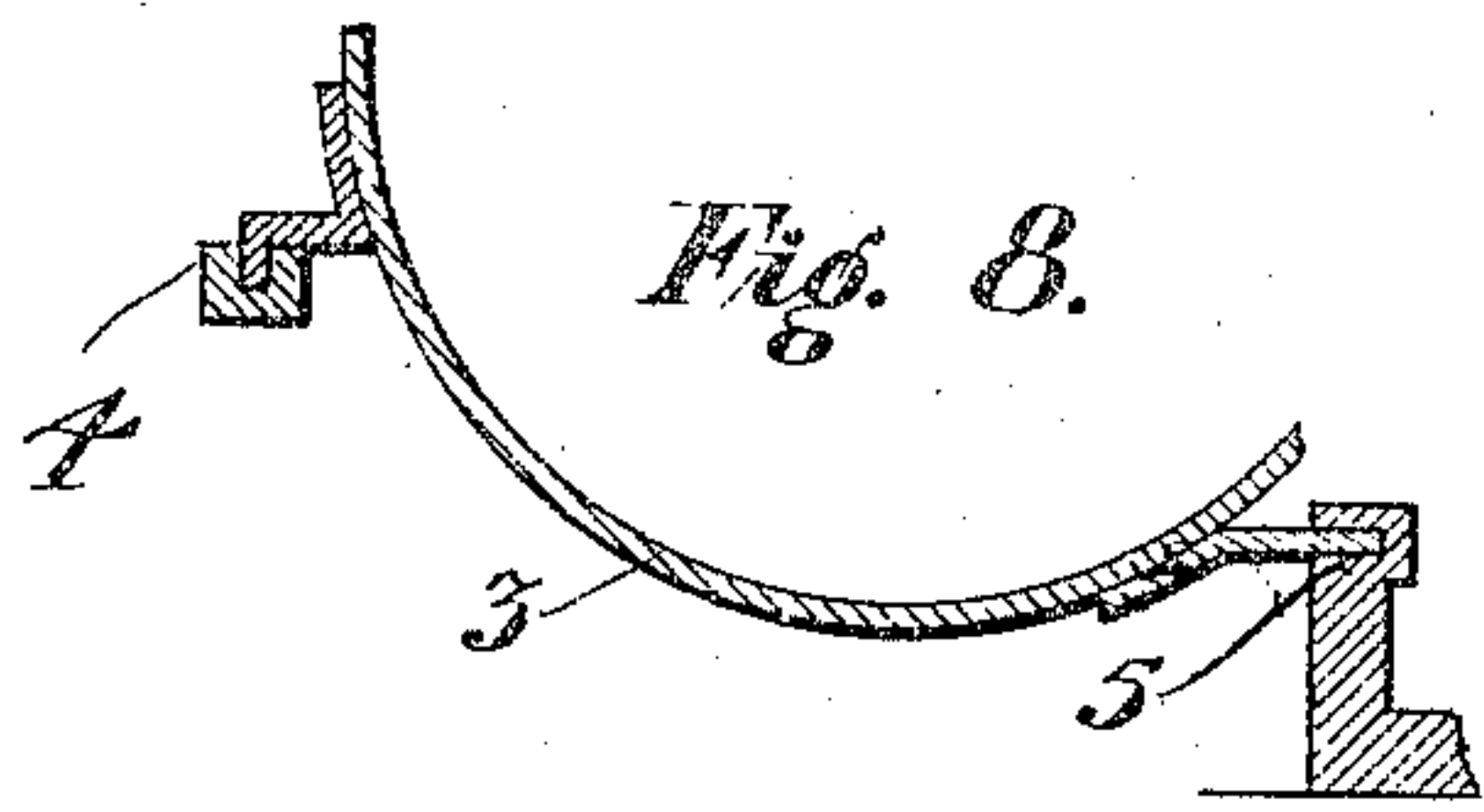


Fig. 8.

Fig. 5.

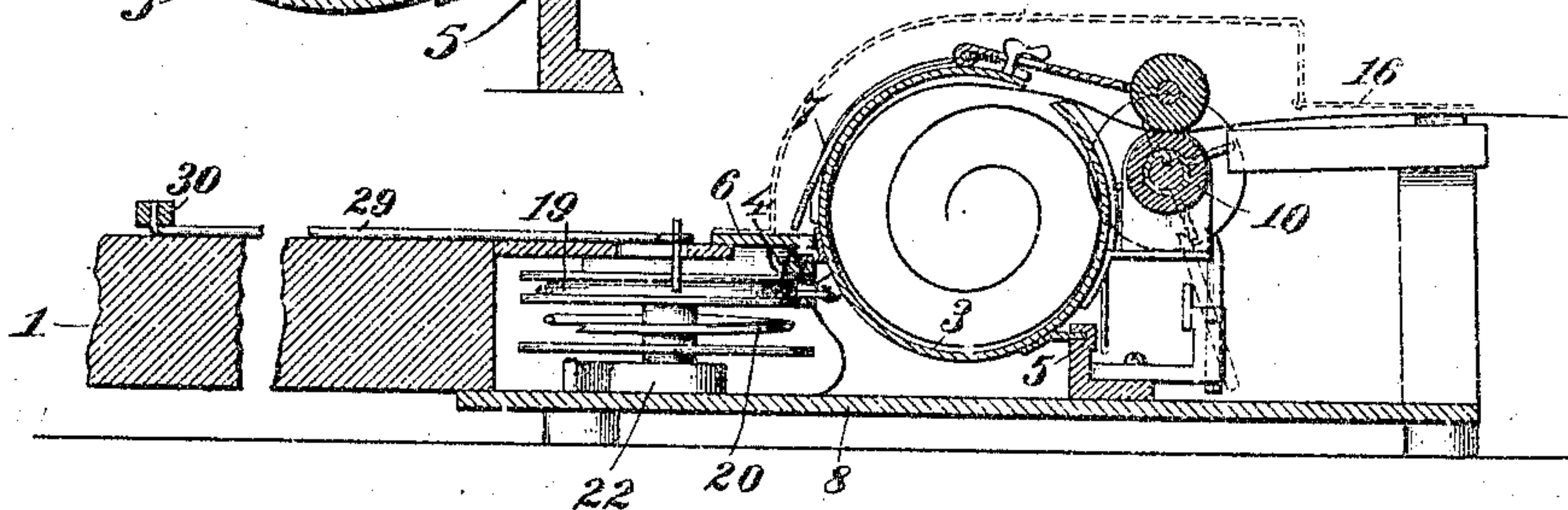


Fig. 6.

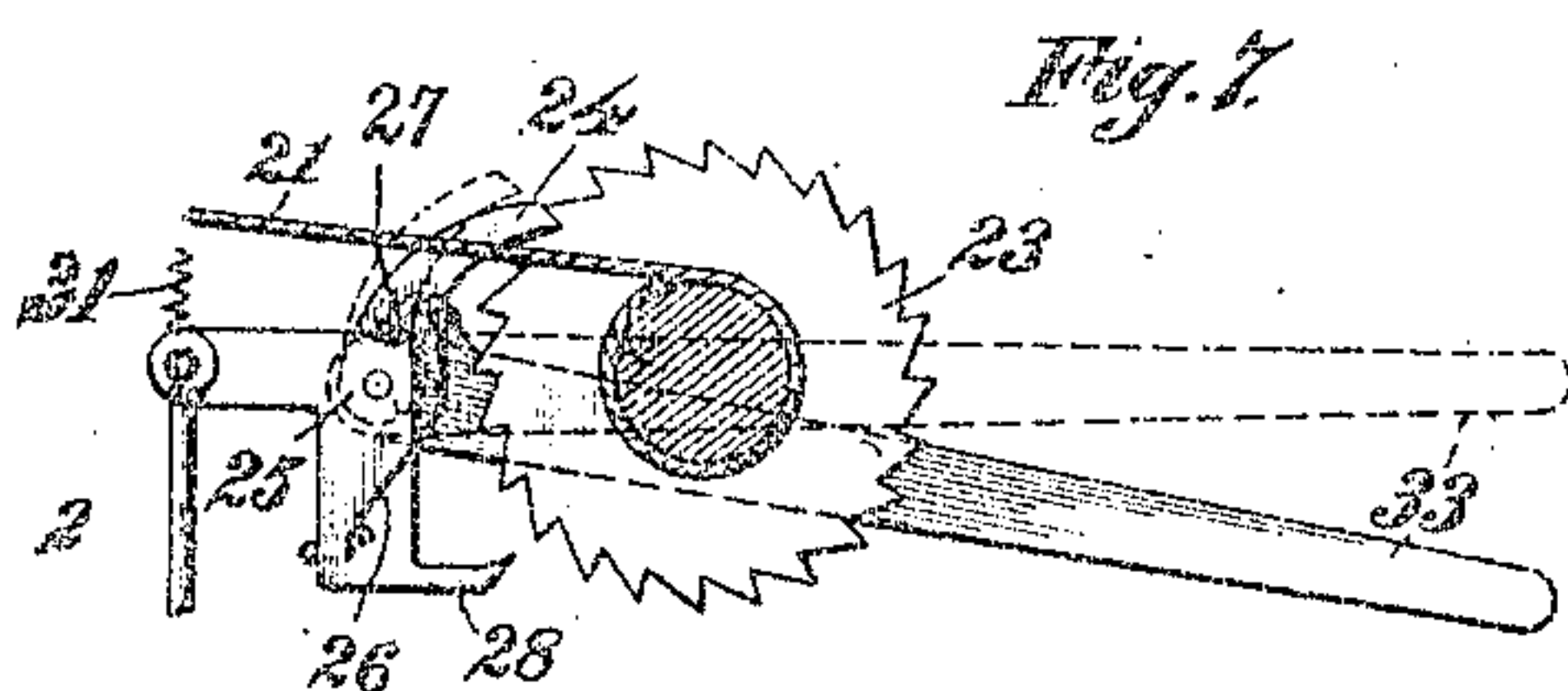
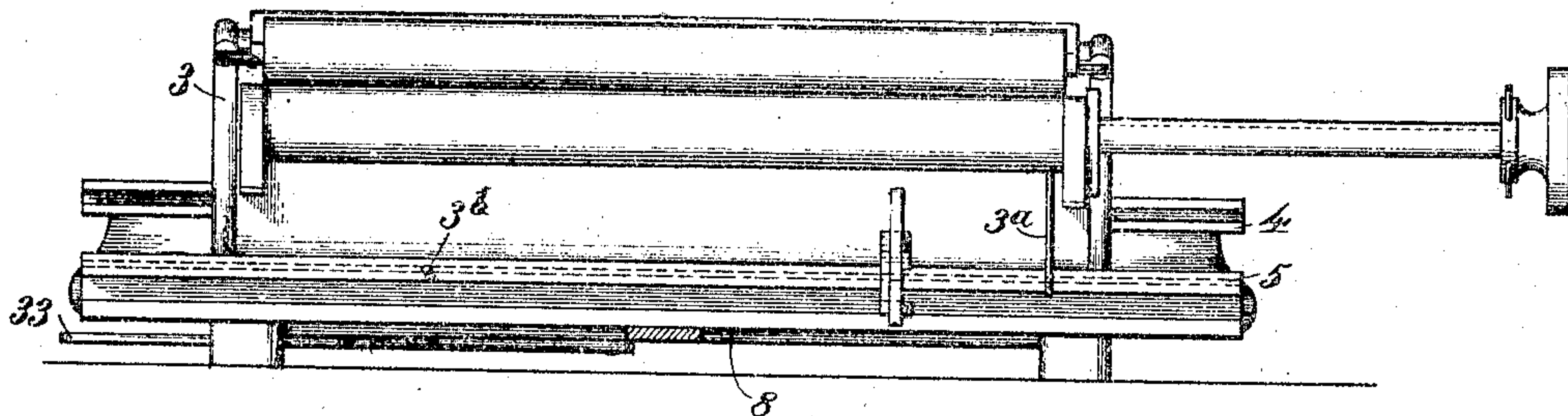


Fig. 7.

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FEED MECHANISM FOR TYPE-WRITER CARRIAGES.

966,779.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Original application filed October 22, 1903, Serial No. 178,102. Divided and this application filed November 23, 1903, Serial No. 182,308. Renewed July 2, 1908: Serial No. 441,714.

To all whom it may concern:

Be it known that I, FERDINAND G. STALLMAN, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Feed Mechanism for Type-Writer Carriages; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to provide simple and improved mechanism for feeding the carriage or paper-holder of a typewriter step-by-step across the machine, by manipulation of the key-board or space-bar in the usual way.

While susceptible of general application, the invention is admirably adapted for use in a typewriting machine of the character illustrated and described in my pending application for patent filed October 22, 1903, Serial No. 178,102, of which the present application is a division.

The invention will first be fully described with reference to the accompanying drawings, which are to be taken as a part of this specification, and will then be pointed out more particularly in the annexed claims.

In said drawings: Figure 1 is a top plan view of a portion of the base or bed-plate of a typewriting machine, the carriage of which is equipped with feed mechanism embodying my invention. Fig. 2 is a vertical cross-section taken through the feed mechanism, showing said mechanism in elevation. Fig. 3 is a detail vertical section through the left-hand pulley shown in Fig. 2. Fig. 4 is a detail top plan view of a part of the feed mechanism showing the escapement-wheel engaged by a holding dog or detent, with the dotted lines indicating said detent released to permit turning of the escapement wheel the distance of one tooth. Fig. 5 is a central longitudinal vertical section through the parts illustrated in Fig. 1. Fig. 6 is a back view of the illustrated carriage. Fig. 7 is a detail view similar to Fig. 4, showing the escapement wheel engaged by its holding detent, with the dotted lines indicating said detent held out of engagement to permit a considerable movement of the carriage to the left instead of simply a step-by-step

movement. Fig. 8 is a detail cross-sectional view of a portion of the cylinder and its guides.

As before stated, my present invention is admirably adapted for use in a typewriter of the character illustrated and described in my pending application Serial No. 178,102, and the form or embodiment selected for illustration in this case is especially suitable for such a machine; though it is to be understood fully that the invention as a whole and also various separate features thereof are capable as well of general application.

For the sake of clearly understanding the functions and relations of the invention as illustrated, it may be stated here that my above-mentioned typewriting machine has an actuating mechanism mounted on a suitable base or bed-plate, such as represented in the drawings fragmentarily and designated by the numeral 1, and has a rotatory type-wheel or segment which after turning to bring the proper type for impression into place impinges or strikes upon the paper, which may rest on a suitable paper-support, such, for example, as indicated at 2, the printing space of which is shown slightly raised above the top surface of the rest of the paper-support to prevent smearing or blurring the paper by the type-wheel or inking ribbon.

The illustrated carriage and adjuncts thereof are shown and described herein only for explanatory purposes, and to disclose a useful application and relation of the feed-mechanism; since such carriage and adjuncts are separately illustrated, described, and claimed in my copending application for patent, Serial No. 189,725, filed January 19, 1904, as a division of my aforesaid application Serial No. 178,102. This carriage, designated by the symbol 3, is shown in the form of a hollow slitted roll or cylinder, having rollers for feeding a sheet or sheets of paper into the roll. The carriage is mounted for transverse travel or reciprocation across the machine, having flanges supported in grooved guideways 4 and 5 (Fig. 5). It will be observed that one of the flanges is L-shaped or has a down-turned lip fitting in a vertically disposed groove in its guide-way, here shown in the guideway 4; which prevents lateral play of the carriage and insures a perfect alinement

in printing. The guide-way 4 is represented at the rear of the base 1. The guide-way 5, together with the paper-support 2, are shown mounted on a T-shaped plate 8 extending from the under side of the base, forming a bottom for a recess in the rear part of the base and serving as a support for the feed-mechanism contained therein. The numeral 6 denotes a scale, used in conjunction with a pointer 7 on the carriage. Movement of the carriage to the right is limited by a lug 3^a on the carriage adapted to abut a stop or pin 3^b.

Referring now to the feed mechanism, the opposite ends of the carriage are shown connected to the opposite ends of a continuous tight cord or flexible connection 17; which crosses itself and passes around pulleys or drums 18 and 19 mounted in the aforesaid recess in the base 1; said cord being preferably fastened to the pulley 18 at a suitable point on the circumference and passed one or more times entirely around said pulley to provide sufficient length. An involute cam 20, which may be conveniently mounted coaxially with the left-hand pulley 19, has its greatest radius connected to a cord or flexible connection 21 passing around the cam and to the hub of the other pulley to which it is also connected; and by means of a spring 22 coiled around and joined to said cam on its hub and connected to the base or rather the plate 8 the pulley 18 is positively impelled to rotate in a direction to move the carriage to the left. On pushing the carriage to the right, the spring 22 winds up and will then exert its energy in feeding the carriage to the left again. The purpose of the involute cam is to compensate for the gradual increase or decrease of tension on the carriage spring, as the latter is wound up or unwinds, by providing a corresponding lengthening or diminishing lever-arm for pulling on the cord 21; thus rendering the strain of the carriage spring and the feed of the carriage substantially uniform across the machine.

In the present case, the step-by-step movement to the left is accomplished by a suitable escapement, specifically represented as follows: Coaxial and rigid with the pulley 18 is a ratchet or escapement wheel 23, normally engaged by a spring-held dog or holding detent 24, which is pivoted independently though desirably coaxially with a bell-crank-lever 25. Said dog or holding detent is shown held in engagement with the teeth of said escapement-wheel by a leaf-spring 26, acting against the detent and one arm of the bell-crank-lever or against suitable pins or abutments on the same so as to press the said detent inwardly or toward the escapement-wheel. Said detent is also shown having a pin or stud 27 held against an abutment or in a fork or notch of the hub

of the bell-crank-lever, so as to furnish an engagement between the bell-crank-lever and the detent when the former is turned or rocked. One arm of the bell-crank-lever carries a dog or detent 28 held normally out of engagement with the escapement-wheel, while the other arm is connected by a link 29 to a space-bar 30 or other part adapted to move the bell-crank-lever by actuation of the type-mechanism. A spiral spring 31 is shown holding the bell-crank-lever in normal position and pulling against the link 29; the movement of the bell-crank-lever under strain of said spring being properly limited by a stop, such as the pin 32.

The construction illustrated is especially designed for a type-writing machine such as set forth in my aforesaid pending application for patent. In said machine the space-bar 30 is moved by the operator's finger for spacing between words, while it is automatically engaged and moved for spacing from letter to letter by an arm or device carried by an actuating member moved on pressing upon the letters of the keyboard. When applied to other kinds of machines, the bell-crank-lever may of course be otherwise suitably connected to the actuating mechanism to perform its necessary movements. When the link 29 is pulled forward by the space-bar, the dog or detent 24 is tripped from engagement with the escapement-wheel, thus permitting the latter to turn to the left under strain of the carriage-spring 22; while the dog or detent 28 is moved into position to engage the escapement-wheel and prevent its turning more than one ratchet-tooth, which corresponds to a space on the paper. When the link is released, the detent 24 snaps back into engagement with the next tooth, while the dog 28 is of course moved out of engagement by the bell-crank-lever. The movement of the bell-crank-lever and holding detent to permit this tooth-by-tooth turn of the escapement-wheel is indicated by dotted lines in Fig. 4. For the purpose of permitting a continued movement of the carriage to the left instead of this step-by-step movement, a lever 33 is shown beneath the base, which may conveniently be pivoted coaxially with the bell-crank-lever 25. This lever 33 has a pin or projection adapted when the lever is moved to the position indicated by dotted lines in Fig. 7 to engage and move the holding detent 24 out of engagement with the escapement-wheel; while the position of the bell-crank-lever 25 is not changed.

The invention may be applied to various machines, and is also susceptible of modification in details of structure and arrangement, so that I do not confine myself to the specific construction illustrated.

What I claim as my invention and desire

to secure by Letters Patent of the United States is:

1. In a type-writing machine, the combination with a carriage, of a pair of pulleys, a cord passing around said pulleys and having its opposite ends connected to opposite end-portions of the carriage, an involute cam coaxial with one of said pulleys having a cord attached thereto at its greatest radius and passing around the cam and to the hub of the other pulley to which it is also attached, a spring acting against said cam so as to impel the carriage in one direction, and an escapement connected with the other pulley for permitting a step-by-step movement of the carriage under strain of said spring.

2. In a type-writing machine, the combination with a carriage, of a pulley, a cord passing around said pulley and connected thereto and having its opposite ends connected to the carriage, an involute cam having a cord attached thereto at its greatest radius and passing around the cam and to the hub of said pulley or a part thereof to which it is also attached, a carriage-spring acting against said cam, and an escapement connected with said pulley for permitting a step-by-step movement of the carriage under strain of said spring.

3. In a type-writing machine, a horizontal reciprocatory carriage having suitable longitudinal guides or ribs, guide-ways therefor, one of said ribs being arranged laterally of the carriage and substantially L-shaped, and its way being formed to receive the bent portion thereof, providing a guide transverse to the horizontal plane of reciprocation, to prevent lateral play of the carriage and insure accuracy of alinement in printing.

4. In a type-writing machine, the combination with a reciprocatory carriage, of a

pair of pulleys, a cord passing around said pulleys, attached to the periphery of one of them and crossed and attached at opposite ends to the carriage, a carriage-spring acting against one of said pulleys, and an escapement permitting step-by-step movement of the carriage.

5. In a type-writing machine, a carriage-escapement consisting of a ratchet or escapement-wheel, a pivoted bell-crank-lever one arm of which is connected with the space-actuating mechanism of the machine while the other carries a dog or detent, a coaxially pivoted holding detent having a pin spring-held against a notch or fork in the hub of the bell-crank-lever, said bell-crank-lever being normally in position to permit said holding detent to engage the escapement wheel but adapted to be moved by the spacing mechanism to disengage said detent and move the other detent into engagement with said escapement-wheel, and a manually-operated trip-lever having a pin adapted to engage said holding detent for releasing the escapement-wheel.

6. In a type-writing machine, the combination of a carriage, a spring-actuated pivoted cam, a drum connected to the carriage and having a pawl-held ratchet and having a flexible connection with said cam capable of being wound on and unwound from said drum and the said connection adapted as an equalized carriage resistance, and means for manually disengaging said pawl.

In testimony whereof I affix my signature, in presence of two witnesses.

FERDINAND G. STALLMAN.

Witnesses:

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