

No. 631,155.

Patented Aug. 15, 1899.

J. M. CRAMER.

CARRIAGE SHIFTER AND LINE SPACER FOR TYPE WRITERS.

(Application filed Jan. 4, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1,

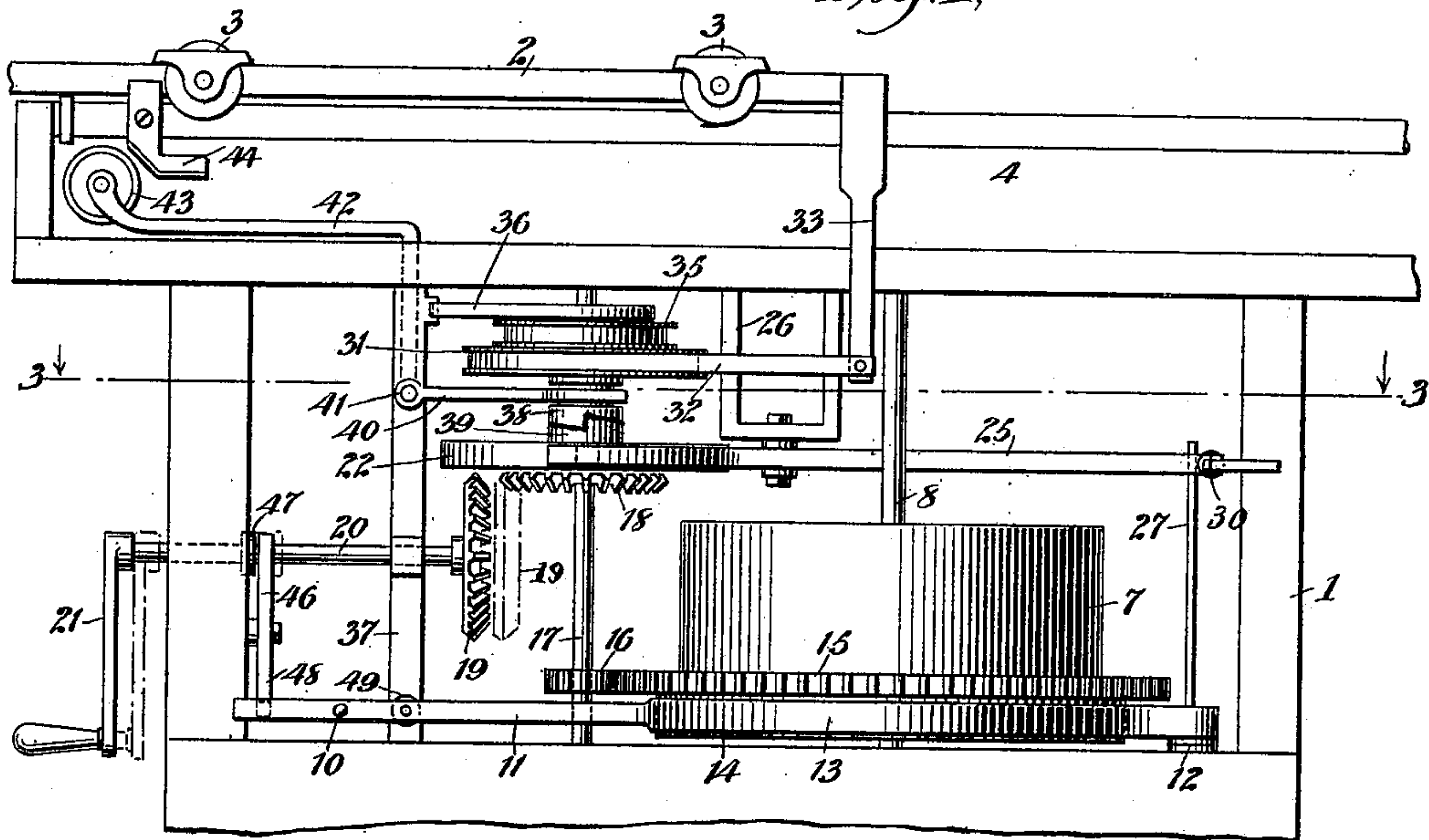
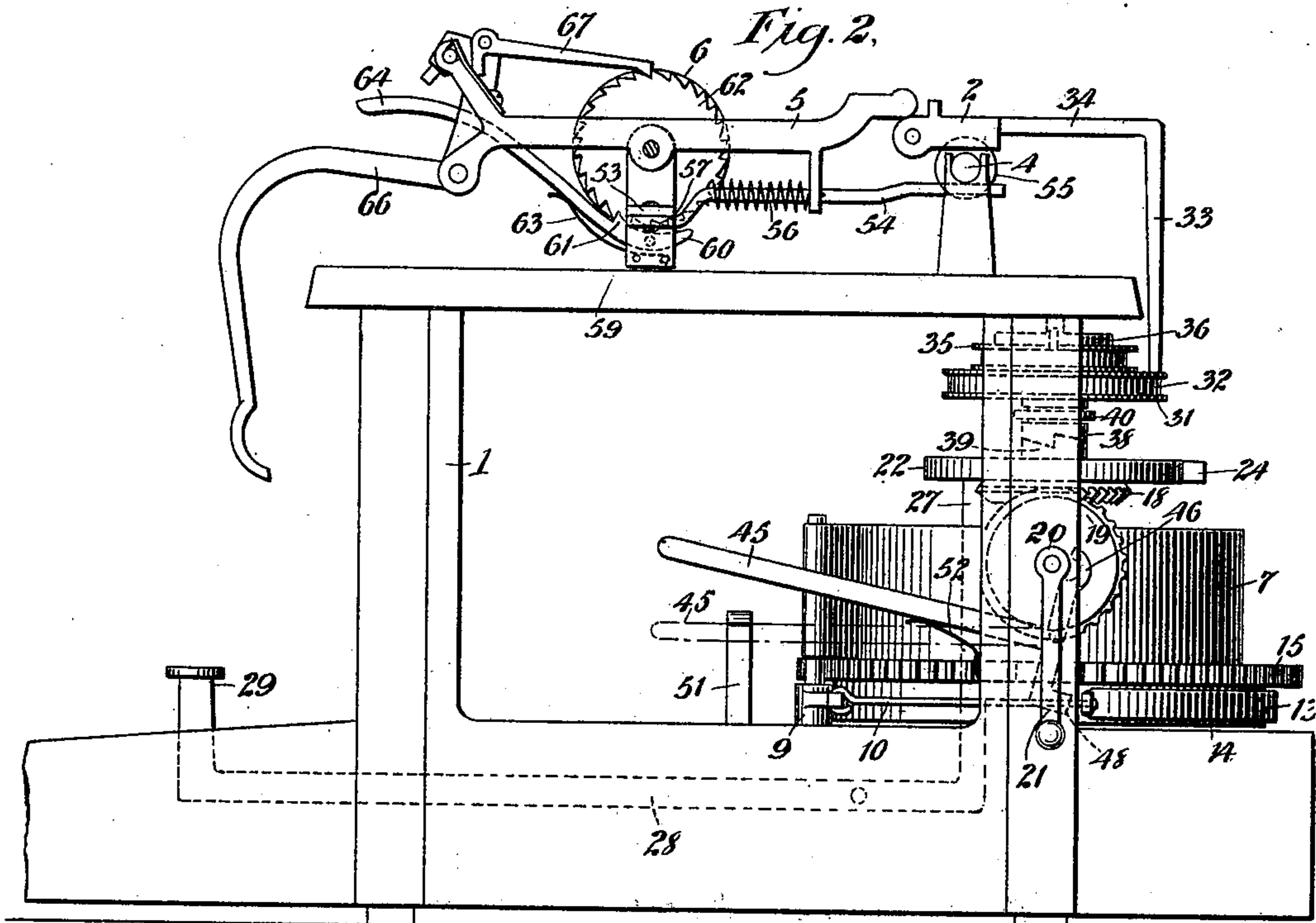


Fig. 2,



WITNESSES:

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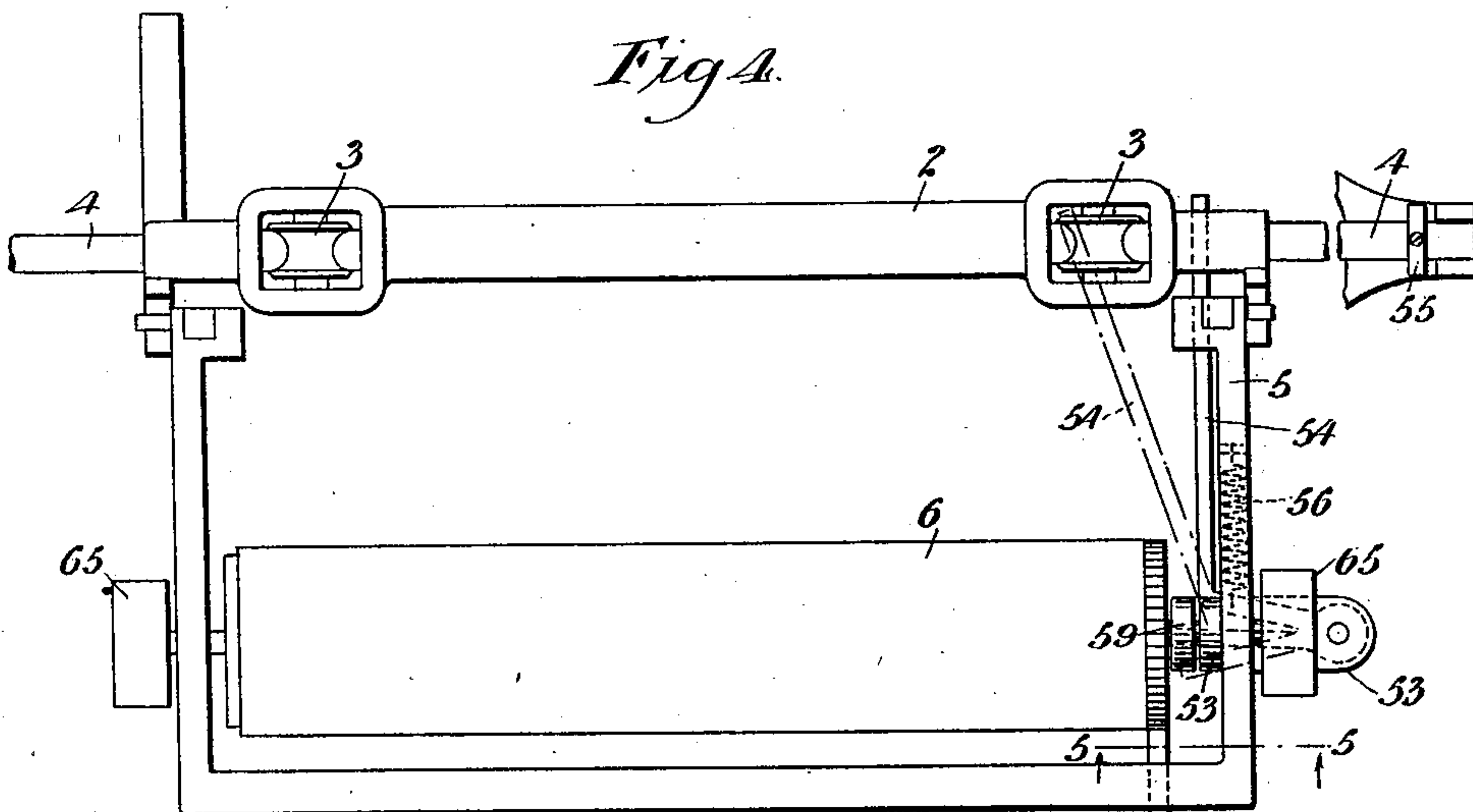
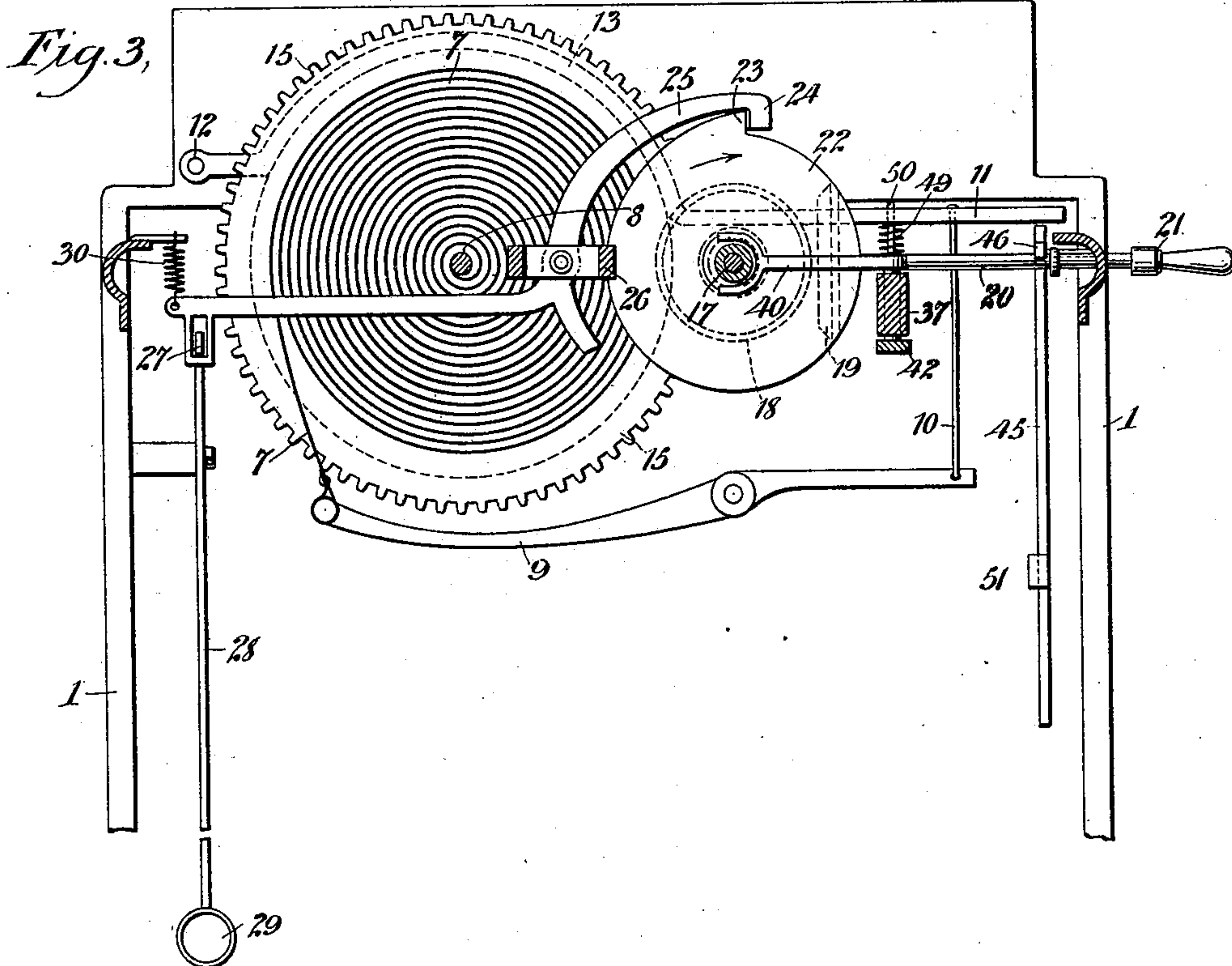
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Fig. 6.

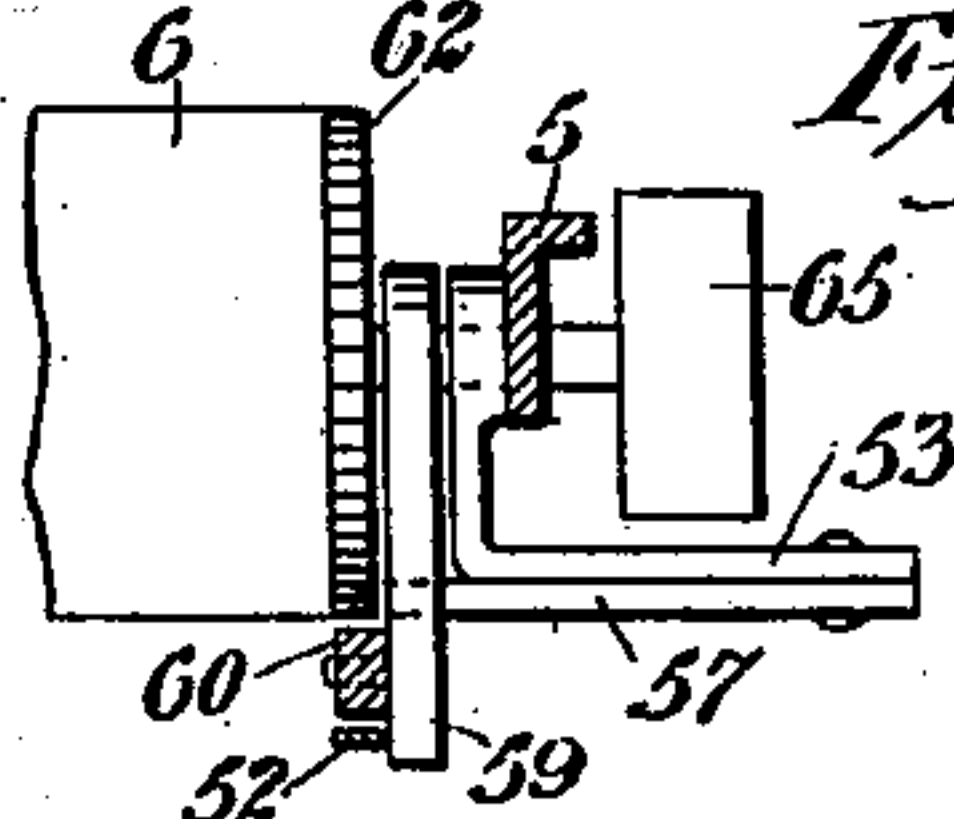
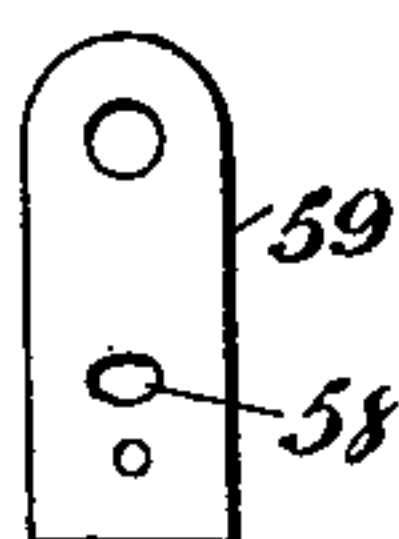


Fig. 5.

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UNITED STATES PATENT OFFICE.

JAMES MILO CRAMER, OF SANTA MARGARITA, CALIFORNIA.

CARRIAGE-SHIFTER AND LINE-SPACER FOR TYPE-WRITERS.

SPECIFICATION forming part of Letters Patent No. 631,155, dated August 15, 1899.

Application filed January 4, 1899. Serial No. 701,109. (No model.)

To all whom it may concern:

Be it known that I, JAMES MILO CRAMER, of Santa Margarita, in the county of San Luis Obispo and State of California, have invented a new and Improved Carriage-Shifter and Line-Spacer for Type-Writers, of which the following is a full, clear, and exact description.

This invention relates to improvements in carriage-shifting and line-spacing devices for type-writers; and the objects are, first, to provide a shifting device of simple construction that will quickly return the type-writer carriage to its initial or starting position after being released by pressing upon a key, and, further, to so place the device that it will not interfere with the ordinary working of the type-writer or materially change its appearance, and, second, to provide a simple means operated by the carriage for line-spacing.

I will describe a carriage-shifter and line-spacer for type-writers embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a rear elevation of a portion of a type-writer, showing my invention as applied thereto. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional plan view substantially on the line 3 3 of Fig. 1. Fig. 4 is a plan view showing a line-spacing mechanism. Fig. 5 is a section on the line 5 5 of Fig. 4, and Fig. 6 shows a shifter employed.

Referring to the drawings, 1 designates the frame of a type-writer of the usual or ordinary construction—such, for instance, as of the Remington type. The carriage comprises the rear bar 2, having rollers 3, which move upon the track 4, and extended forward from this rear bar is a frame 5, in the end members of which the impression-roller 6 has its shaft-bearings.

A motor is arranged in the rear portion of the frame and between its lower portion and the top. This motor comprises a spring 7, having its inner end secured to a shaft 8, extended vertically in the frame and its opposite or outer end connected to one end of a brake-regulating lever 9. The other end of this brake-regulating lever 9 has a link con-

nection 10 with a brake-lever 11, pivoted at its opposite end to a stud 12 on the base of the machine. This brake-lever 11 has a curved portion 13, which bears upon an annular outwardly-extended flange 14 on a gear-wheel 15, secured to the shaft 8. The object in securing one end of the spring 7 to the lever 9 is to cause the said spring to automatically regulate the pressure of the brake-lever on the flange 14 to compensate for the gradually-decreasing strength of the spring power.

The gear-wheel 15 meshes with a pinion 16 on the vertical shaft 17, and on this shaft 17 is a bevel-gear 18, adapted to be engaged with a bevel-gear 19 on a counter-shaft 20, having bearings in the frame and movable longitudinally therein. This gear mechanism and the shaft 20 are designed to wind the spring, as will be hereinafter described, and for convenience in turning the shaft 20 I provide its outer end with a crank 21. Also secured to the shaft 17 is a stop disk or wheel 22, having a shoulder 23 formed in its periphery and adapted to be engaged by the hook end 24 of a lever 25, fulcrumed on a hanger 26 and having its opposite end apertured and therein engaged by a vertical member 27 of a key-lever 28, pivoted in the base of the machine and having a finger-piece 29 extended upward through the keyboard. The lever 25 is held yieldingly in engagement with the disk 22 by means of a spring 30, secured to the end of said lever and also secured to a pin extended in the frame of the type-writer.

Mounted to move longitudinally of the shaft 17, but adapted to rotate therewith, as will be hereinafter described, is a carriage-shifting pulley 31, which has a circumference substantially equal to the length of movement required for the carriage in an ordinary length of line to be printed, so that one complete revolution of said pulley will return the carriage to its initial or starting position. One end of a strap 32 is attached to this pulley 31, and the other end is attached to a depending portion 33 of an arm 34, extended outward from the rear bar 2 of the carriage. As before stated, this pulley 31 is of a size sufficient to move the carriage the desired distance in the ordinary length of a line of printing. For shorter lines, however, the band 32 may be extended from the arm portion 33 to

a smaller pulley 35, which is connected to the pulley 31.

In order to rotate the pulleys to take up the slack of the strap 32 should it be desired to
 5 move the carriage manually to its initial or starting position, I employ a ribbon-spring 36, secured at one end to the hub of the pulley 35 and at the other end to the frame of the type-writer or to an upright 37 thereof.
 10 This spring 36 will be so light as not to interfere with the ordinary movement of the carriage toward the left.

Attached to the pulley 31 is a clutch-section 38, adapted to engage with a clutch-section 39, secured to the shaft 17 or to the disk 22. Each clutch-section has a single tooth adapted to engage one with the other, and the outer surfaces of the clutch-sections are spirally disposed from the teeth. The clutch-section 38 is provided with an annular channel, in which a yoke on the end of a shifting-lever 40 engages. The said shifting-lever 40 is connected to a short rock-shaft 41, mounted in the upright 37, and connected to this rock-shaft 41 is an angle-arm 42, the horizontally-disposed portion of which is above the frame of the type-writer and has a roller 43 journaled in its end and adapted to be engaged by a shoe 44, extended downward from the rear rail or bar 2 of the carriage and adjustable thereon.

A lever 45 is pivoted to the frame of the type-writer and has an upwardly-extended member 46, having a notched end adapted to engage around or partly around the counter-shaft 20 to hold said shaft 20 in either of its adjusted positions—that is, the shaft 20 may be held in its inner position to engage the gear-wheel 19 with the gear-wheel 18 by pressing down the lever and causing the said portion 46 of the lever to engage with the outer side of a collar 47, attached to the shaft, and the shaft may be held in its outer position, as indicated in full lines in Fig. 1, by engaging the said portion 46 of the lever with the shaft and against the inner side of said collar 47. The lever 45 also has a downwardly-extended portion 48, adapted to engage with the free end of the brake-lever 11.

Arranged between the upright 37 and the lever 11 is a spring 49, the said spring being coiled around a pin 50, which extends from said upright 37 loosely through an opening in the lever 11. This spring 49 is an expansion-spring, and its tendency is to relieve the pressure of the brake-lever 11 on the flange 14 as the motor-spring 7 becomes weakened by use.

The operation of this portion of my device is as follows: The spring 7 must be first wound. In order to do this, the lever 45 is rocked to the position indicated in full lines in Fig. 2. Then the counter-shaft 20 is to be moved inward to engage the gear-wheel 19 with the gear-wheel 18. When the parts are in this position, the lever 45 is to be moved downward and engaged with a spring-keeper

51, mounted on the base of the machine. This movement of the lever will cause the portion 46 to engage with the shaft 20 and also to engage against the outer side of the collar 47, as indicated in dotted lines in Fig. 1, and the member 48 of said lever will engage with the brake-lever 11 and force it outward to relieve its pressure against the flange 14. Now by turning the shaft 20 by means of the crank 21 it is obvious that the shaft 17 will be rotated and the motor-spring 7 will be wound and at this time the clutch-section 39 will ride over the surface of the clutch-section 38 without imparting motion thereto. After winding the spring as described the lever 45 is to be released from the device 51, so that it may be moved upward by means of a spring 52 to release the member 46 from the shaft 20 and the member 48 from the lever 11. Then the shaft 20 is to be moved outward to disengage the gears 19 and 18. After completing a line or a portion of a line and it is desired to move the carriage to its position at the right pressure applied upon the finger-piece 29 will rock the lever 28 downward, so that the upwardly-extended portion 27 thereof will draw the hook portion 24 of the lever 25 out of engagement with the shoulder 23 on the disk 22. The motor-spring 7 will then act to rotate the shaft 17, and consequently rotate the pulley 31, and through the medium of the band or strap 32 will draw the carriage to its right hand position. As it reaches its right-hand position the shoe 44, carried by the carriage, will engage with the roller 43 and cause the lever 42 to rock, and this rocking of the lever will cause the portion 40 to move the clutch-section 38 and the pulleys upward on the shaft 17 until the tooth of the said clutch-section 38 just clears the tooth of the clutch-section 39. Then a very slight movement will cause the end of the tooth on the section 38 to engage against the curved surface of the clutch-section 39 at the rear of its tooth, and then the type-writer may be operated in the usual manner to print a line. In other words, when the point of the tooth on the clutch-section 38 engages with the spirally-disposed surface of the clutch-section 39 the tooth will move around on said surface until the two teeth are again in engagement, which will be at the time the carriage reaches its extreme left-hand position and ready to be returned to its right-hand position. Of course at the completion of the right-hand movement of the carriage the disk 22 will have been rotated sufficiently to bring its shoulder 23 in line with the hook 24, so that the spring 30 may draw said hook into engagement with the shoulder and lock the spring 7 from further operation. Obviously the disk 22 is of sufficient circumference to allow for the movement of the carriage to the full length of the ordinary line before its shoulder 23 will be engaged with the hook 24. In order to prevent the motor from running down should the finger-piece 29 be inadvertently held

down, I provide the lever 25 with a finger 25^a, that will come in line with shoulder 23 and stop the disk.

I will now describe the means for rotating the impression-roller 6 for line-spacing. Suspended from an end piece of the carriage-frame 5 is a bracket having a horizontally-disposed portion 53, to which a rearwardly-extended lever 54 is pivoted, the free or rear end of said lever 54 being extended underneath the track 4 and adapted to engage with a stop 55 on said track. The lever 54 is held normally in the position indicated in full lines in Fig. 4 by means of a spring 56, secured at one end to the frame 5 and at the other end to an outwardly-disposed portion of said lever 54. Extended from the lever 54 at a point near its pivot is a finger 57, adapted to engage with its end in a slot 58, formed in a shifter, here shown as a plate 59, loosely mounted on and depending from the shaft of the roller 6 between the end of said roller and the bracket 53. Pivotaly connected to the plate 59 is a dog 60, having a tooth 61, adapted to engage with the teeth of a ratchet-wheel 62 on the end of the roller, and it is held yieldingly in engagement with said ratchet-wheel by means of a spring 63. The dog 60 has a forwardly-extended arm 64, by means of which it may be moved downward out of engagement with the ratchet-wheel when it is desired to rotate the roller backward, as is sometimes necessary. In the operation of this device as the carriage nears its extreme right-hand position the lever 54 will engage with the part 55 on the track 4, and then as the carriage continues moving to the right the lever 54 will be rocked, so that its finger 57 will rock the plate 59, and this rocking of the plate 59 will move the dog 60 to rotate the roller 6 the distance of the space between lines. Of course as the carriage moves toward the left during the operation of the type-writer the spring 56 will return the lever 54 and the parts operated thereby to their normal positions. The ordinary finger-pieces 65 are attached to the ends of the roller-shaft, so that said roller-shaft may be rotated backward when desired and the said roller may be rotated independently of the mechanism for automatically doing the same by means of the ordinary lever 66, operating the ordinary dog 67.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a type-writer, a carriage-shifter, comprising a spring-motor, a shaft to which the inner end of said spring is attached, a gear-wheel on said shaft, a pinion meshing with the gear-wheel, a shaft on which said pinion is mounted, a disk mounted on said pinion-shaft and having a tooth or shoulder, a pulley on said pinion-shaft, a connection between said pulley and an arm depending from the type-writer carriage, a lever for engaging with the shoulder of the disk, a key-lever for mov-

ing said first-named lever out of engagement with the shoulder of the disk, and a brake for the motor-spring, the said brake having connection with the outer end of said motor-spring, substantially as specified. 70

2. In a type-writer, a carriage-shifting mechanism comprising a spring-motor, located in the rear portion of the type-writer frame, a gear-wheel operated by said spring, a pinion meshing with said gear-wheel, a shaft on which the pinion is mounted, a stop-disk attached to said pinion-shaft, a key-actuated lever engaging with said stop-disk, a pulley on the pinion-shaft, a connection between said pulley and an arm depending from the type-writer carriage, a clutch-section carried by said pulley, a clutch-section on the pinion-shaft and adapted to engage with the first-named clutch-section, and means operated by the carriage for moving the first-named clutch-section out of engagement with the other clutch-section, substantially as specified. 75 80 85

3. In a type-writer, a carriage-shifting mechanism comprising a motor-spring, a shaft to which the inner end of said spring is attached, a gear-wheel on said shaft and having a downwardly-extended annular flange, a brake-lever engaging with said flange, another lever pivoted to the type-writer frame and having a link connection at one end with the brake-lever and having its opposite end connected to the outer end of the motor-spring, a pinion engaging with the gear-wheel operated by the motor-spring, a pulley on the shaft of said pinion, a connection between said pulley and a part extended from the type-writer carriage, a stop-disk secured to said pinion-shaft, and a key-actuated lever having spring-yielding engagement with said disk, substantially as specified. 90 95 100 105

4. In a type-writer, a carriage-shifting device, comprising a spring, a shaft operated by said spring, a stop-disk on said shaft, a key-actuated lever yieldingly engaging with said disk, a pulley on said shaft, a flexible connection between said pulley and a part extended from the type-writer carriage, and a take-up spring secured at one end to the type-writer frame and at the other to the hub of the pulley, substantially as specified. 110 115

5. In a type-writer, a carriage-shifting device, comprising a spring-motor, a brake-lever for said motor, a shaft driven by said motor and having connection with the type-writer carriage, a bevel-gear on said shaft, a horizontally-movable counter-shaft, a bevel-gear on said counter-shaft adapted for engagement with the first-named bevel-gear and a lever having an upwardly-extended portion for engaging with a collar on said counter-shaft and a downwardly-extended portion for engaging with the brake-lever, to relieve its pressure on the motor, substantially as specified. 120 125 130

6. In a type-writer, a mechanism for shifting the carriage thereof, comprising a spring-motor, a shaft driven by said spring-motor, a holding-disk on said shaft, a key-actuated le-

ver engaging with said disk, a clutch-section
attached to the shaft, a pulley loosely mounted
on the shaft, a clutch-section on said pulley
for engaging with the first-named clutch-section,
5 a rock-shaft, an arm extended from said
rock-shaft and engaging with the movable
section of the clutch, an angle-lever on said
rock-shaft, a pulley carried in the free end of
said angle-lever, a shoe on the carriage adapted
10 to engage with said pulley to move the movable
clutch-section, and a connection between
the pulley and a part extended from the carriage,
substantially as specified.

7. In a type-writer, the combination with the
15 impression-roller and the carriage therefor, of
a shifting-plate mounted on and depending

from a shaft portion of the roller, a horizontally-swinging lever, a finger on said lever adapted to engage in an opening in said shifting-plate, a dog carried by said shifting-plate and having spring-yielding engagement with the ratchet-wheel on the impression-roller, an arm extended forward from the dog and a projection on the track for the carriage, with which the horizontally-swinging lever is adapted to engage and operate the dog, substantially as specified.

JAMES MILO CRAMER.

Witnesses:

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J. M. HENRY.