

No. 713,009.

Patented Nov. 4, 1902.

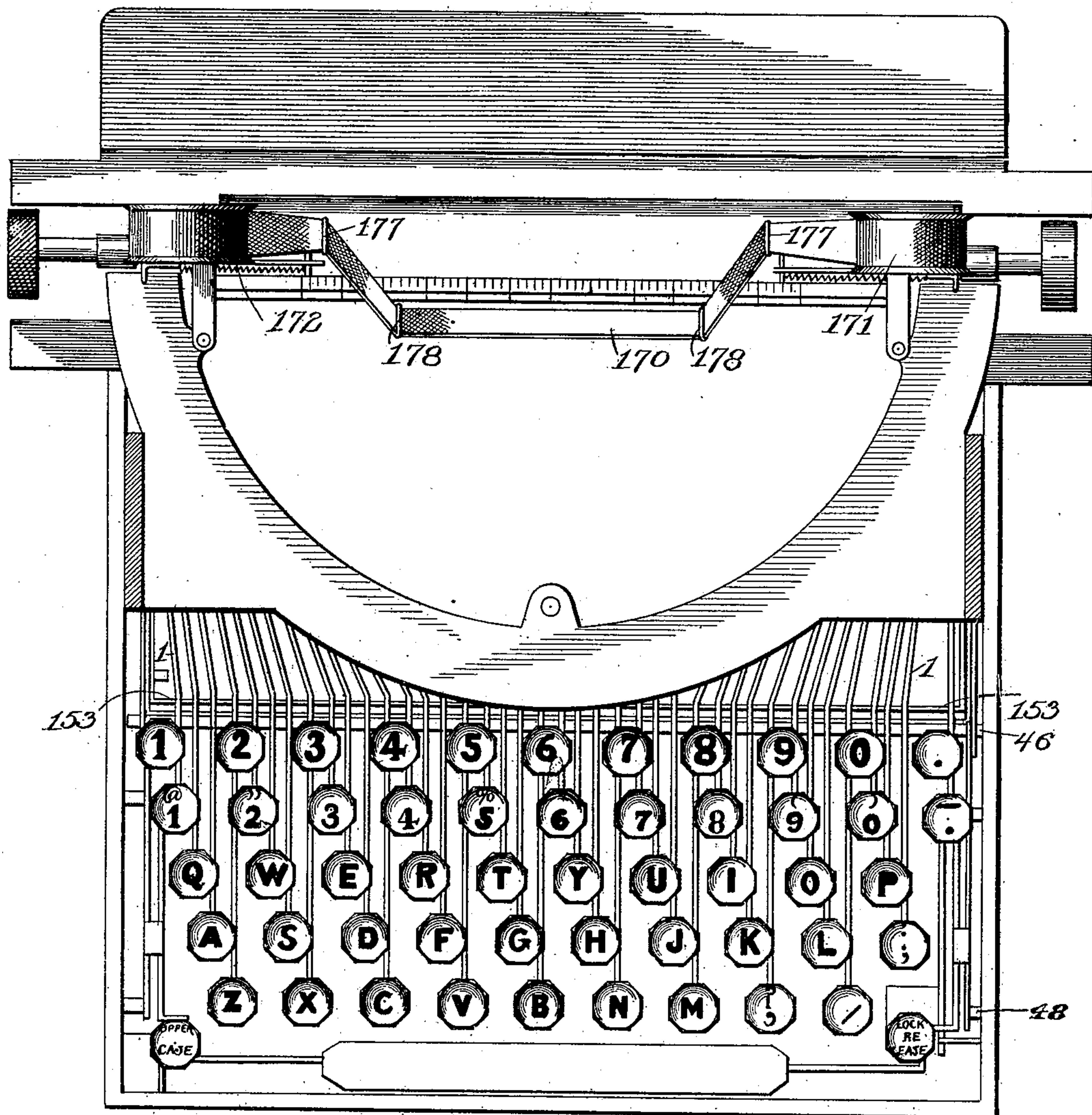
J. C. LOTTERHAND.
TYPE WRITER.

(Application filed July 12, 1901. Renewed July 17, 1902.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



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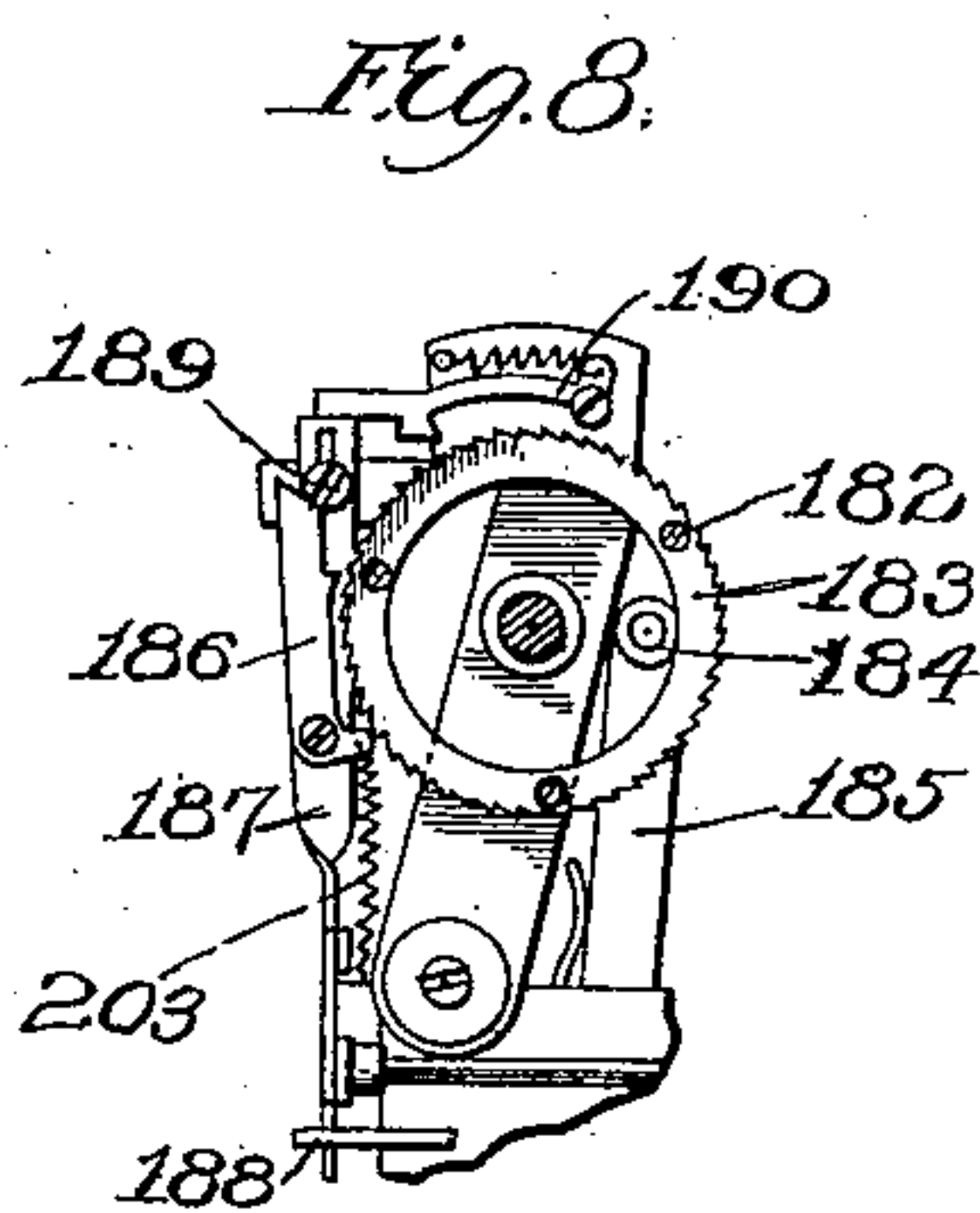
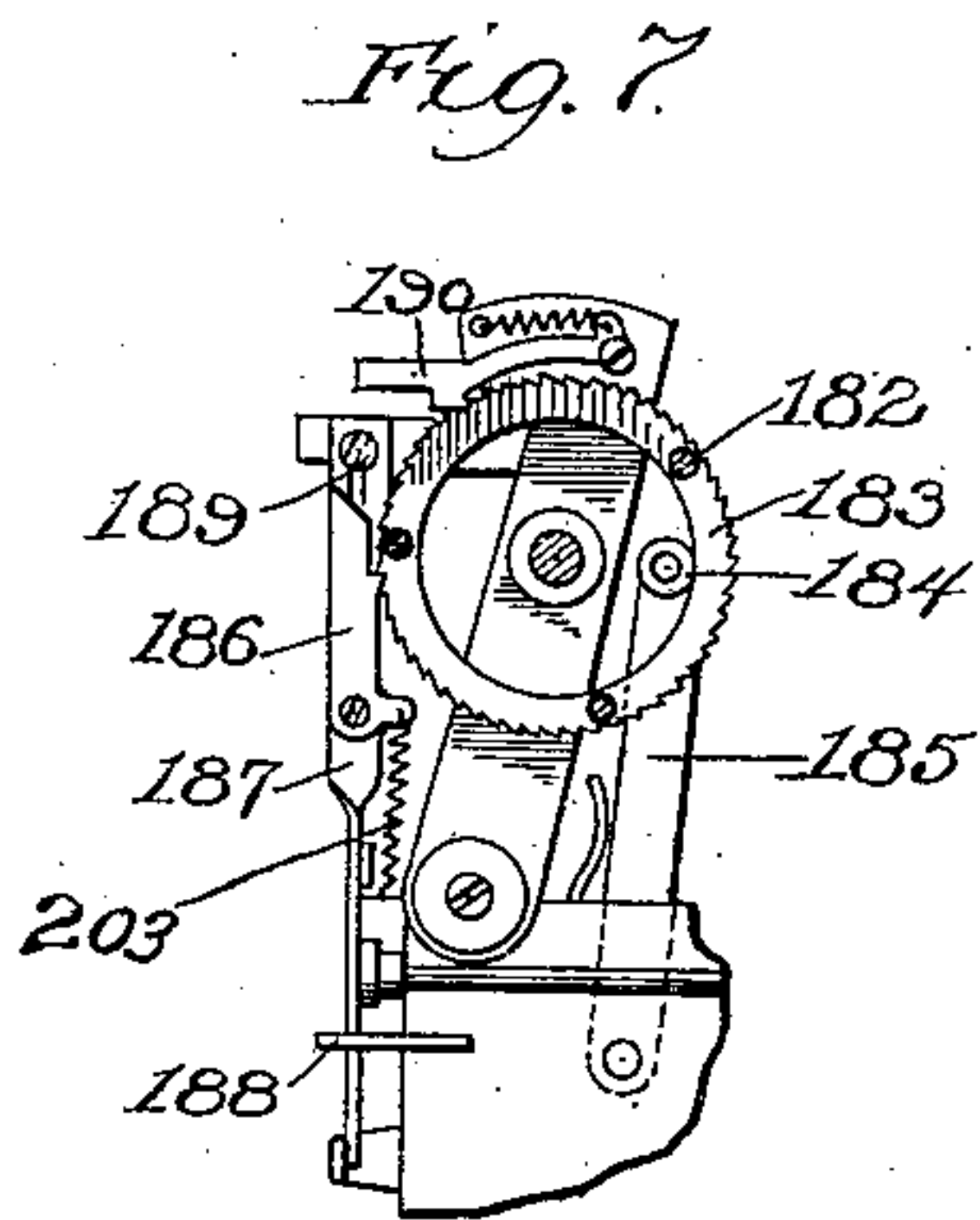
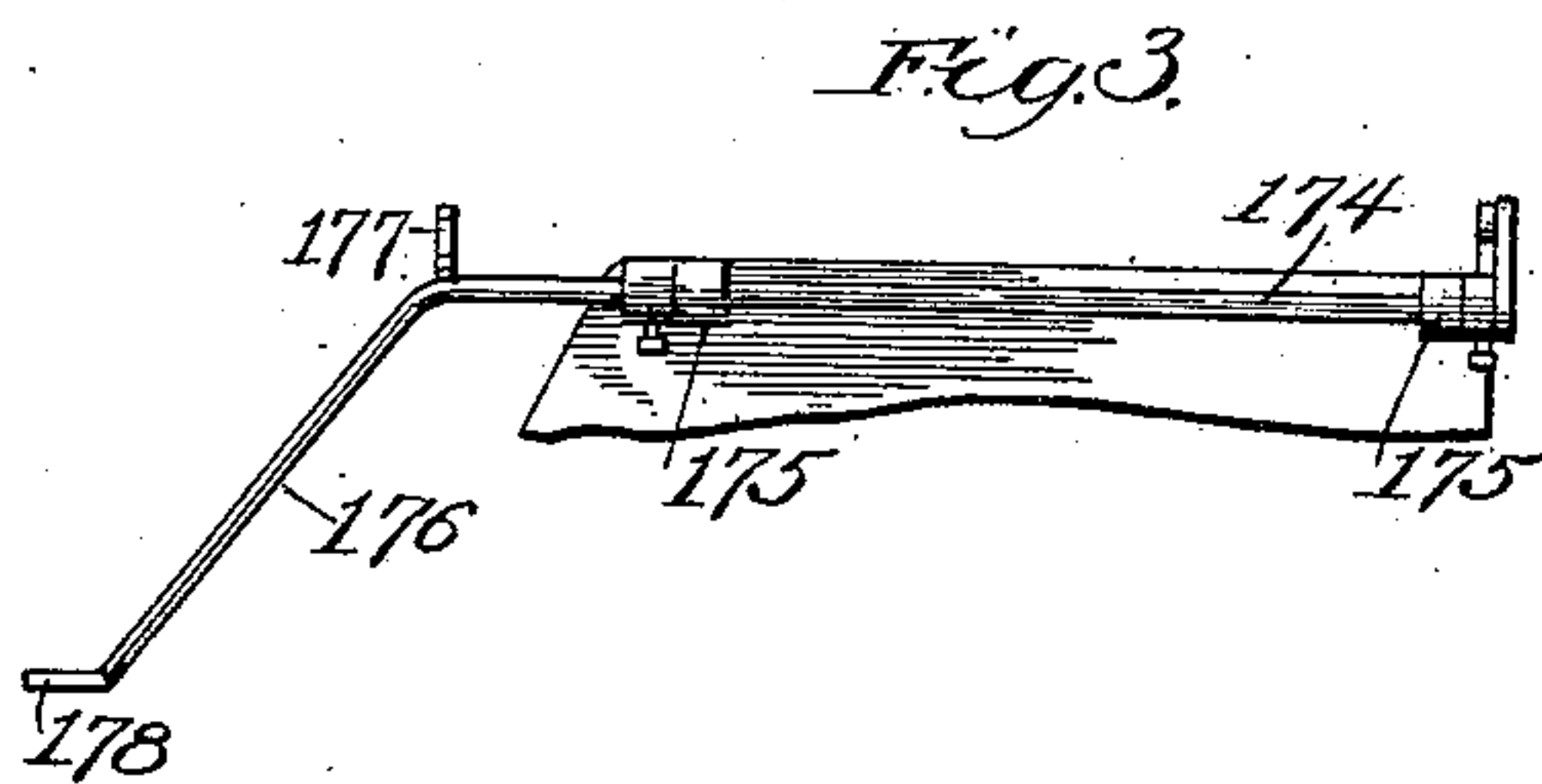
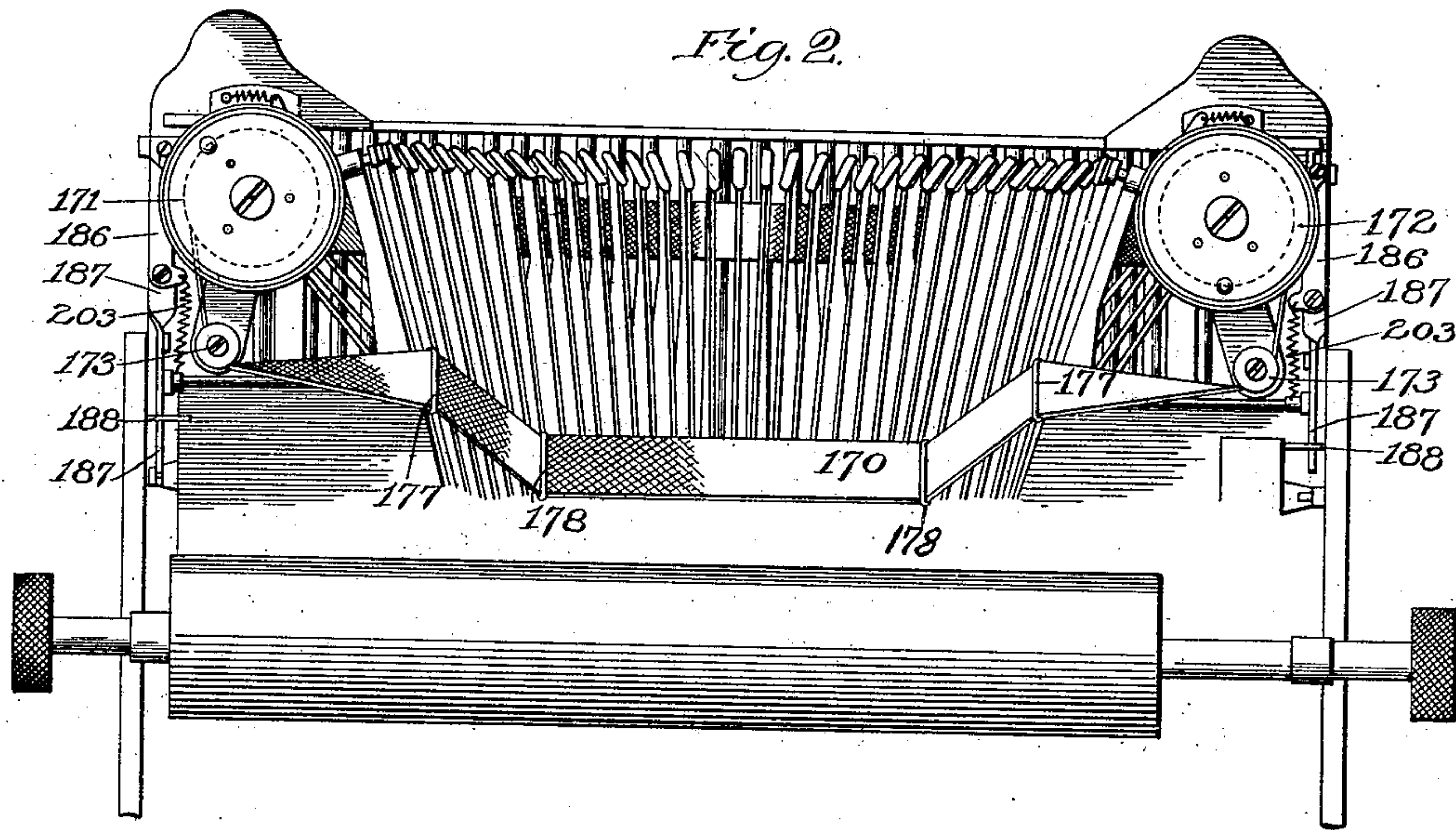
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(No Model.)

3 Sheets—Sheet 2.



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3 Sheets—Sheet 3.

Fig. 4.

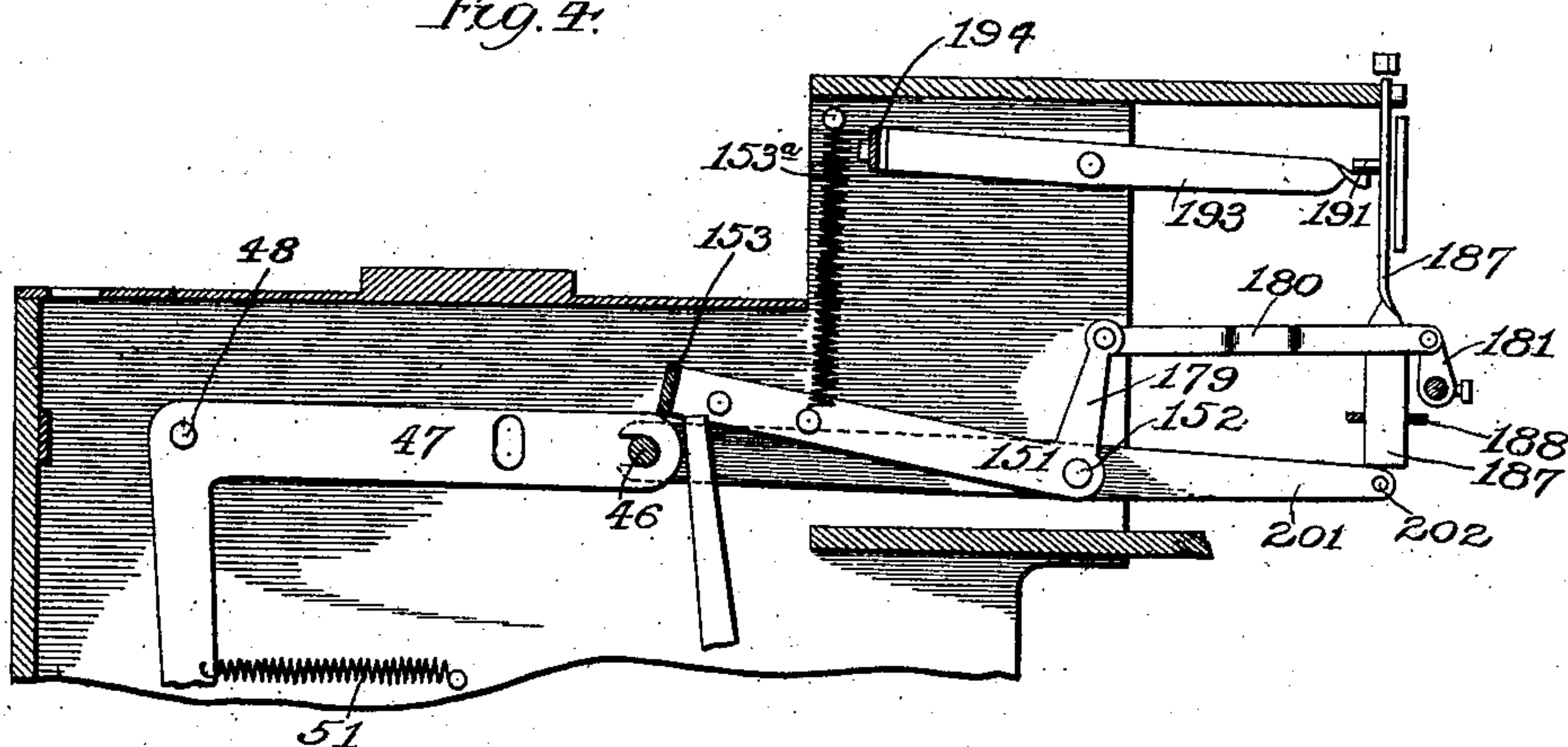


Fig. 5.

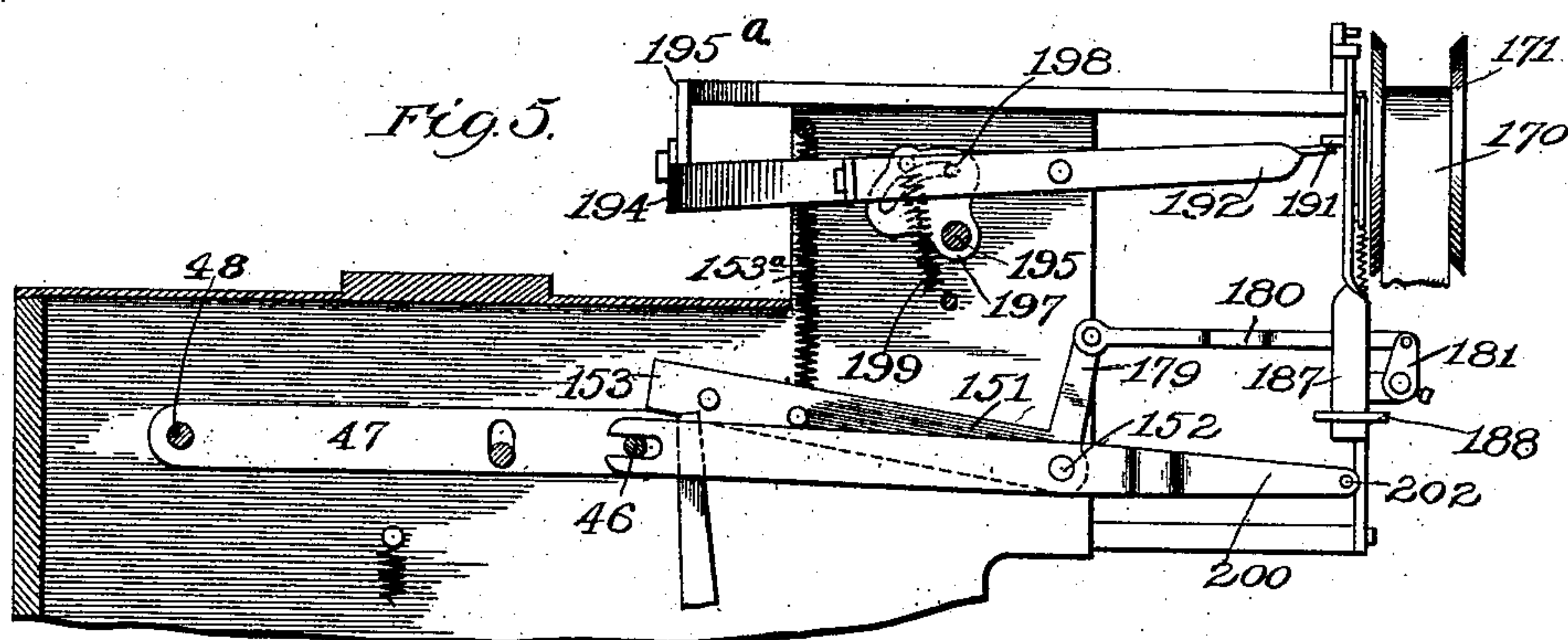
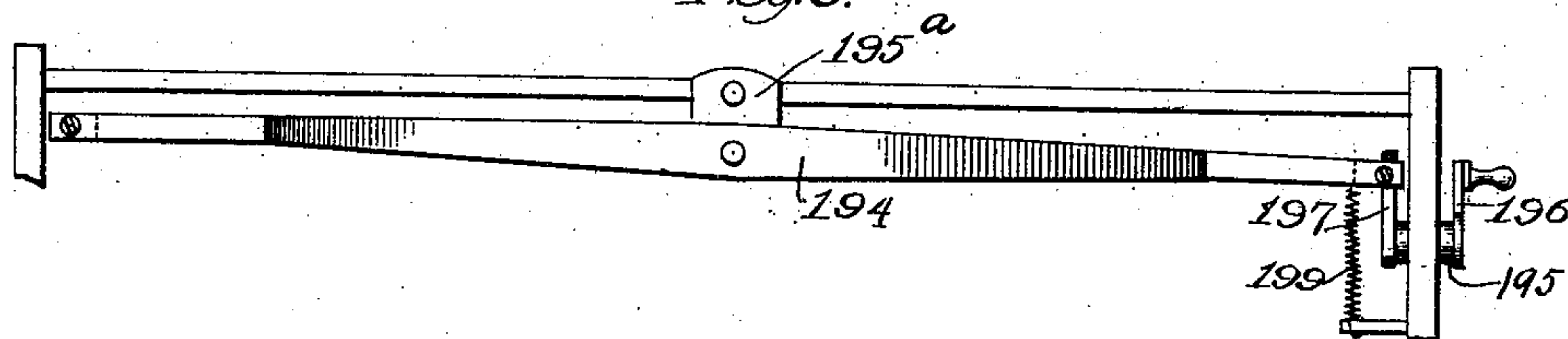


Fig. 6.



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UNITED STATES PATENT OFFICE.

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TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 713,009, dated November 4, 1902.

Original application filed January 17, 1901, Serial No. 43,599. Divided and this application filed July 12, 1901. Renewed July 17, 1902. Serial No. 115,985. (No model.)

To all whom it may concern:

Be it known that I, JASON C. LOTTERHAND, a citizen of the United States, residing in the city of New York, county of New York, and State of New York, have invented certain new and useful Improvements in Type-Writers, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

10 The present application is a division of an application, Serial No. 43,599, filed by me on January 17, 1901, for improvements in type-writing machines and adding attachments therefor.

15 The subject-matter of the present application consists in certain improvements in the ribbon mechanism of the type-writing machine, which will be hereinafter more fully described, and particularly pointed out in the claims.

20 In the accompanying drawings, Figure 1 is a top plan view of the machine, exhibiting such parts thereof as relate to the subject-matter of the present application; Fig. 2, a corresponding rear elevation of the machine; Fig. 3, a detail rear elevation of one-half of the ribbon-throw; Fig. 4, a sectional detail adjacent the left-hand side frame of the machine, showing some of the actuating devices of the ribbon mechanism; Fig. 5, a similar view immediately within the right-hand side of the machine; Fig. 6, a detail front elevation of the reversing-lever and associated parts of the ribbon mechanism, and Figs. 7 and 8 details of the ribbon-feeding device.

The same figures of reference are used to indicate identical parts in all the views.

As shown in Figs. 1 and 2, the inking-ribbon 170 is wound at its opposite ends upon spools 171-172, mounted upon the upper rear part of the machine at its opposite sides, the ribbon passing downward from these spools over guide-rollers 173 and thence inward across the machine through the guide-loops of the vibrating ribbon-throw, by which the ribbon is swung to and from the printing-line. The ribbon-throw is composed of two like halves located on opposite sides of the machine beneath the ribbon-spools and extending inward therefrom, but not connected

with each other at their inner end. As shown in Fig. 3, each half consists of a rock-shaft 174, mounted near the opposite ends of its straight horizontal portion in bearings 175 upon the framework above the platen-roll and having its inner end 176 bent at an angle of about forty-five degrees to its straight horizontal portion. At or near its bend it has secured to it a guide-loop 177, of round wire, for the passage of the ribbon 170 and at its extreme inner end a similar loop 178 for the same purpose. The rock-shafts are so mounted in their bearings and so connected with their operating devices that when in normal position their bent inner ends will not only stand at an angle to the horizontal portions of the rock-shafts, but will stand at about the same angle forward of the vertical plane of said shafts, and consequently hold the ribbon 170 forward of the printing-line and leave the work exposed to view, Fig. 1. At each operation of the machine both shafts 174 are simultaneously rocked in a direction to swing their bent inner ends rearward and carry the middle portion of the ribbon 170 to the printing-point. This rocking movement is given the shafts 174 by means of a bail composed of two side arms 151, pivoted at their rear ends at 152, Figs. 4 and 5, and having their front ends connected by a cross-bar 153, extending transversely beneath the type-keys 1, Fig. 1. A coiled spring 153^a, connected to one of the side arms of this bail, holds its front end and cross-bar 153 upward against or immediately beneath the type-keys 1, so that whenever any one of said keys is depressed the cross-bar 153 and front ends of the side arms 151 will be likewise depressed. The rear ends of the side arms 151 of this bail are provided with upward extensions 179, connected by links 180 to crank-arms 181, fast upon the outer ends of the rock-shaft 174, Figs. 4 and 5. It results from this construction that whenever a type-key is depressed and the bail 151 thereby rocked the links 180 will pull forward upon the upper ends of the crank-arms 181 and rock the shafts 174 in a direction to carry the ribbon 170 over the printing-point, and when the operated key is released and the bail 151 returned to normal

position by the spring 153^a the ribbon-throw will be swung forward and the ribbon withdrawn from the printing-point. The arrangement of the ribbon and the character of the ribbon-throw described obviate the necessity for any sharp turns in the path of the ribbon, and thereby reduce the friction and wear upon its edges to the minimum, while affording an easy swinging movement of the ribbon to and from the printing-line.

Each of the ribbon-spools 172 has secured to its forward side by studs 182, Figs. 7 and 8, a ratchet-toothed ring 183, against whose smooth inner edge rests and travels a friction-roller 184, carried by the upper end of a spring-pressed arm 185, whose purpose is to afford sufficient resistance to the turning of the ribbon-spools to preserve the proper tension upon the ribbon. Engaging the outer side of the ratchet 183 is a spring-pressed actuating-pawl 186, pivoted at its lower end to a vertically-reciprocating slide 187, guided near its lower end in a slot in a horizontal plate 188, Fig. 5, and provided near its middle with a right-angular bend and at its upper end with a vertical slot, through which passes a screw 189, entering the framework and serving to guide the upper end of the slide 187, Figs. 7 and 8. A spring-pressed retaining-pawl 190, pivotally supported at its inner end, engages the top of the ratchet 183 to prevent backward movement of the ratchet and spool while the pawl is engaged with the ratchet and at its outer end is bent to overlie the upper end of the vertically-reciprocating slide 187.

As will be understood from the foregoing description, when the slide 187 is reciprocated, with the parts in the position shown in Fig. 7, the pawl 186 will turn the ratchet 183 and spool 171 step by step and draw the ribbon across the machine from the spool 172 and wind it upon the spool 171, the pawls 186 and 190 which coöperate with the ratchet of the opposite ribbon-spool 172 being at such time disengaged from said ratchet, as presently explained. As shown in Fig. 7, the upper end of the pawl 186 is inclined or beveled in such a way that when the slide 187 is lifted to its extreme limit of movement the contact of the beveled upper end of the pawl with the screw 189 will force the pawl outward and disengage its tooth from the ratchet, as shown in Fig. 8, and the upper end of the slide will at such time likewise lift the outer end of the pawl 190 and disengage its tooth from the ratchet. By lifting the slide 187 to and maintaining it in this position, therefore, both pawls will be held out of engagement with the ratchet and the spool be left free to be turned backward to unwind the ribbon therefrom. Now the actuating devices above described are exactly alike for both of the ribbon-spools, and means is provided for constantly maintaining one or the other of the slides 187 in elevated position, with the pawls disengaged from the ratchet of the corresponding ribbon-spool, as in the case of the

right-hand spool in Fig. 2 and as shown of the left-hand spool in Fig. 8, while the opposite slide 187 is held in its lower and operative position, as in the case of the left-hand spool in Figs. 2 and 7. To this end each slide 187 is provided upon its forward side with a stud 191, which studs coöperate with levers 192 and 193 at the opposite sides of the machine, Figs. 4 and 5. The forward ends of these levers 192 193 are loosely connected to the rearwardly-bent opposite ends of a curved lever 194, fulcrumed at its middle upon a plate 195^a, secured to and depending from the forward side of the top plate of the framework, Figs. 5 and 6. When the lever 194 is rocked upon its fulcrum so as to throw its right-hand end downward, as in Fig. 6, the front end of the lever 192 will be carried downward with it and the rear end of said lever 192 will lift the slide 187, associated with the ribbon-spool 171 at the right side of the machine, as shown in Fig. 5, and the pawls coöperating with the ratchet of such spool will be held out of engagement with said ratchet and the spool left free to be turned backward, while the opposite or left-hand end of the lever 194, being in elevated position, will hold the front end of the lever 193 elevated and its rear end depressed, as in Fig. 4, so that the slide 187 at the opposite side of the machine will be left in its lower and operative position.

For the purpose of reversing the position of the levers 192 and 193 to change the direction of movement of the ribbon I journal a short rock-shaft 195 in the right-hand side plate of the machine, Fig. 5, and secure to its outer end a suitable crank or handle 196, Fig. 6, by which it may be rocked backward and forward, and to its inner end a plate 197, provided with a slot eccentric to the shaft 195 and engaging a stud 198 upon the lever 192. By turning the rock-shaft 195 rearward until the stud 198 upon the lever 192 engages the opposite end of the slot in the plate 197 the forward end of the lever 192 will be thrown upward and its rear end downward, thereby releasing the slide 187 and at the same time rocking the lever 194 and causing its left-hand end to depress the front end of the lever 193, Fig. 4, and lift the slide 187 shown in that figure to elevated position and disengage the pawls from the ratchet of the left-hand ribbon-spool. A coiled spring 199, secured at its lower end to an inwardly-projecting stud upon the side frame of the machine and at its upper end to a stud upon the plate 197 at the middle of its upper edge, serves to hold the plate 197, and consequently the levers operated by said plate, in their opposite positions.

The slides 187 are reciprocated to turn their respective spools by means of levers 200 and 201, fulcrumed upon the studs 152, Figs. 4 and 5, and provided at their forward ends with slots embracing a universal rod 46, which underlies the type-keys 1 and connects the

rear ends of a pair of side arms 47, pivoted to the side frames of the machine at their front ends at 48. One of said side arms 47 has in the present instance a depending extension at its front end, to which is connected a coiled spring 51, which serves to yieldingly hold the universal rod 46 in its normal position, Figs. 4 and 5, and return it thereto after having been depressed by a type-key. The levers 200 and 201 are provided at their rear ends with inwardly-projecting studs 202, which underlie the lower ends of the slides 187 at the opposite sides of the machine, and when these levers are rocked and their rear ends thrown upward at each operation of the machine by the depression of the universal rod 46 beneath the type-keys that slide 187 which is in lower operative position will be lifted by the corresponding lever and its pawl 186 caused to turn the ratchet and ribbon-spool. Under the adjustment of the parts shown in Figs. 4, 5, and 6 the slide 187 at the left-hand side of the machine will be reciprocated by the lever 201, Fig. 4, while the lever 200 at the right side of the machine, Fig. 5, will play idly up and down, since its cooperating slide 187 is held in elevated position by the lever 192. In Fig. 2 the reverse adjustment of the parts is shown, the right-hand slide in that figure being maintained in elevated position and the opposite slide being left in operative position.

The springs 203, connected to the lower ends of the pawls 186, serve the double function of pressing said pawls into engagement with the ratchets of the ribbon-spools and of yieldingly holding the slides 187 in and returning them to their lower positions.

I do not claim herein any features shown and claimed in my application, Serial No. 43,599, filed January 17, 1901, and of which this is a division, nor in my other divisional applications, Serial No. 57,797, filed April 27, 1901, and Serial No. 68,697, filed July 17, 1901. Having thus fully described my invention, I claim—

1. In a type-writer, a ribbon-throw composed of two rock-shafts mounted in bearings above the opposite ends of the platen-roller, approximately parallel therewith and in line with each other, and having their inner ends bent at an angle to their outer horizontal portions, guide-loops for the inking-ribbon secured to said rock-shafts at their bends and at their inner ends, and connections with the keys of the machine for rocking said shafts to swing their inner ends toward and from the platen, to carry the ribbon to and from the printing-point thereon, substantially as described.

2. In a type-writer, a ribbon-throw composed of two rock-shafts mounted in bearings above the opposite ends of the platen-roller, approximately parallel therewith and in line with each other, and having their inner ends bent downward and forward at an angle to their outer horizontal portions, guide-loops

for the inking-ribbons secured to said rock-shafts at their bends and at their inner ends, and connections with the keys of the machine for rocking said shafts to swing their lower inner ends rearward to carry the inking-ribbon to the printing-point, substantially as described.

3. In a type-writer, the combination of the rock-shafts 174 mounted in bearings 175 at opposite sides of the machine and having the bent inner ends 176, the guide-loops 177 and 178 secured to said shafts, the crank-arms 181 fast to the outer end of said shafts, the bail 151 underlying the type-keys and provided with the projecting arms 179, and the links 180 connecting said arms with the cranks 181, substantially as described.

4. In a type-writer, the combination of the ribbon-spools 171 172 mounted at the opposite sides of the machine above the ends of the platen-roller, the guide-rollers 173 located below the spools 172 and approximately parallel therewith, the rock-shafts 174 journaled upon the frame of the machine below the spools 171 172 at substantially right angles to the spindles of said spools and having their inner ends bent downward and forward and provided with the guide-loops 177 and 178, the inking-ribbon 170 passing from the spools 171 172 over the guide-rollers 173 and through the loops 177 178, and means for rocking the shafts 174 to carry the middle portion of the ribbon 170 to and from the printing-point on the platen-roller, substantially as described.

5. In a type-writer, the combination of the ribbon-spool provided with the ratchet-toothed ring 183, and the spring-pressed arm 185 carrying the friction-roller 184 bearing against the inner side of said ring, substantially as described.

6. In a type-writer, the combination, with the ribbon-spool provided with a ratchet, and the retaining-pawl 190 cooperating with said ratchet, of the reciprocating slide 187, and the the spring-pressed pawl 186 carried thereby and cooperating with the ratchet to turn the ribbon-spool, and provided with the beveled or cam surface cooperating with the projection 189, whereby upon moving the slide 187 to its extreme limit of movement in one direction both pawls 186 and 190 will be disengaged from the ratchet of the ribbon-spool and the latter left free to be turned backward, substantially as described.

7. In a type-writer, the combination, with the ribbon-spool 171 provided with the ratchet 183 and the retaining-pawl 190 engaging said ratchet, of the vertically-reciprocating slide 187 guided at its upper end by a slot engaging a fixed stud or screw 189, the bell-crank pawl 186 pivoted upon the slide 187 and having the beveled upper end and the tooth cooperating with the ratchet 183, and the spring 203 connected at its lower end to a fixed point and at its upper end to the horizontal arm of the bell-crank pawl 186, substantially as described.

8. In a type-writer, the combination of the

ribbon-spools 171 172 located at opposite sides of the machine and upon which the opposite ends of the inking-ribbon are wound, ratchets 183 carried by said spools, retaining-pawls 190
 5 engaging said ratchets, vertically-reciprocating slides 187 cooperating with said pawls to lift them out of engagement with the ratchets when the slides are given an extreme upward movement, actuating-pawls 186 carried by the
 10 slides 187 and cooperating with the ratchets of the ribbon-spools when the slides are in their lower operative position, but thrown out of engagement with the ratchets when the slides are given an extreme upward move-
 15 ment, and a connection between the slides 187 at the opposite sides of the machine whereby one slide is normally held in its extreme upward and inoperative position, and whereby the positions of the slides may be reversed at
 20 will, substantially as described.

9. In a type-writer, the combination, with the ribbon-spools 171 172 located at opposite sides of the machine and upon which the opposite ends of the inking-ribbon are wound,
 25 the ratchets 183 carried by said spools, the retaining-pawls 190 engaging said ratchets, the vertically-reciprocating slides 187, the spring-pressed actuating-pawls 186 carried by said slides and cooperating with the ratchets when
 30 the slides are in lower operative position, the levers 192 193 cooperating at their rear ends with the slides 187 to lift the latter to extreme upper position when the front ends of said le-
 35 vers are depressed, the transverse lever 194 connected at its opposite ends to the front

ends of the levers 192 and 193, and means for rocking said levers and holding them in their opposite positions for the purpose of lifting and maintaining one of the slides 187 in its upper and inoperative position, with the pawls 40 disengaged from the ratchet of the adjacent ribbon-spool, substantially as described.

10. In a type-writer, the combination, with the ribbon-spools 171 172 located at opposite sides of the machine and upon which the opposite ends of the inking-ribbon are wound,
 45 the ratchets 183 carried by said spools, the retaining-pawls 190, engaging said ratchets, the vertically-reciprocating slides 187, the spring-pressed actuating-pawls 186 carried by said slides and cooperating with the ratchets when
 50 the slides are in lower operative position, the levers 192 193 cooperating at their rear ends with the slides 187 to lift the latter to extreme upper position when the front ends of said
 55 levers are depressed, the transverse lever 194 connected at its opposite ends to the front ends of the levers 192 and 193, the rock-shaft 195 journaled in the frame of the machine, the crank 196 secured to its outer end for rock-
 60 ing it, the plate 197 secured to its inner end and provided with the eccentric slot engaging the stud 198 upon the lever 192, and the spring 199 connected to the plate 197 for holding it in its opposite positions, substantially as de-
 65 scribed.

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