

No. 670,987.

Patented Apr. 2, 1901.

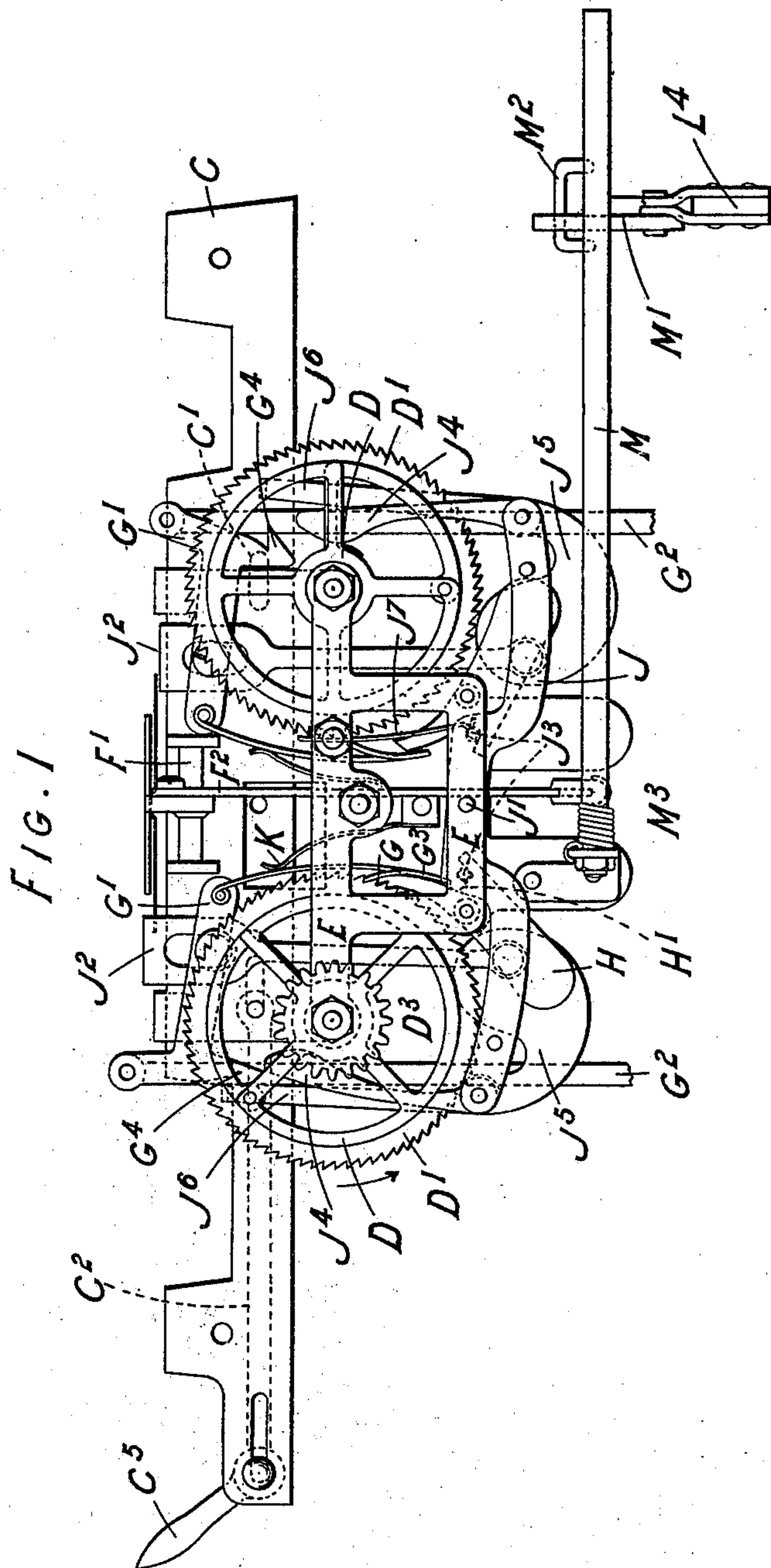
J. S. FOLEY.

RIBBON MECHANISM FOR TYPE WRITERS.

(Application filed June 28, 1900.)

(No Model.)

4 Sheets—Sheet 1.



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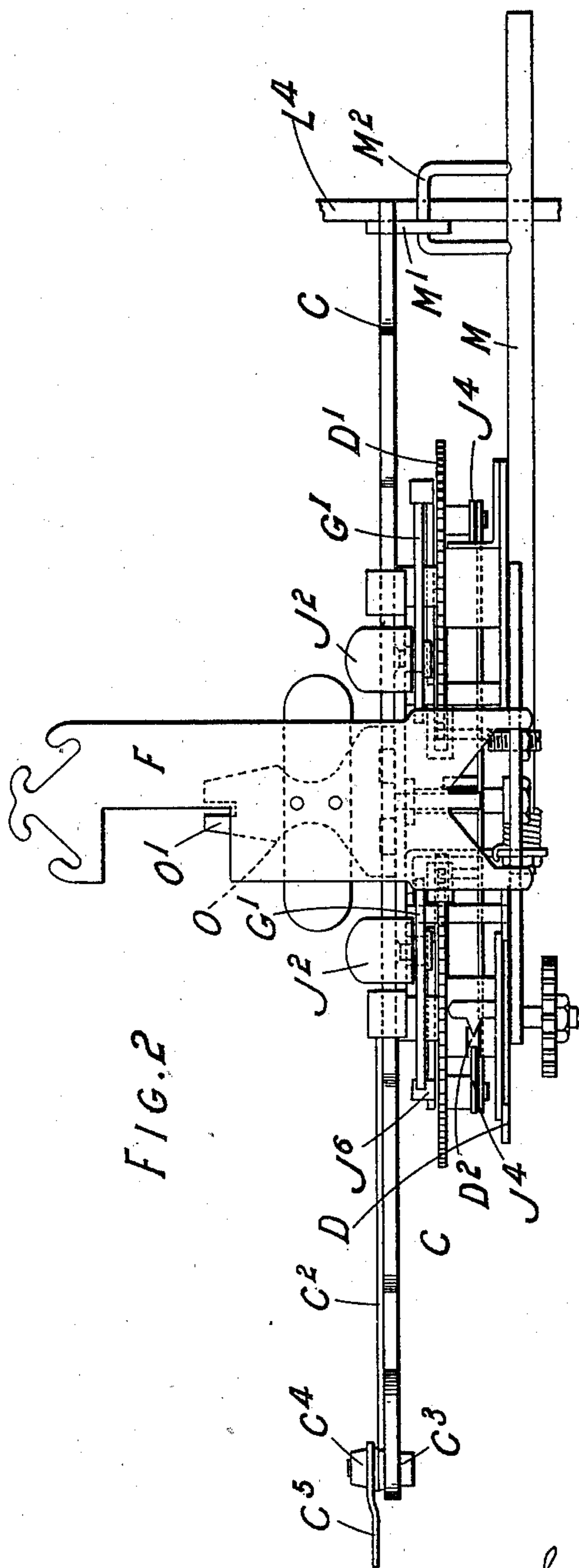


FIG. 2

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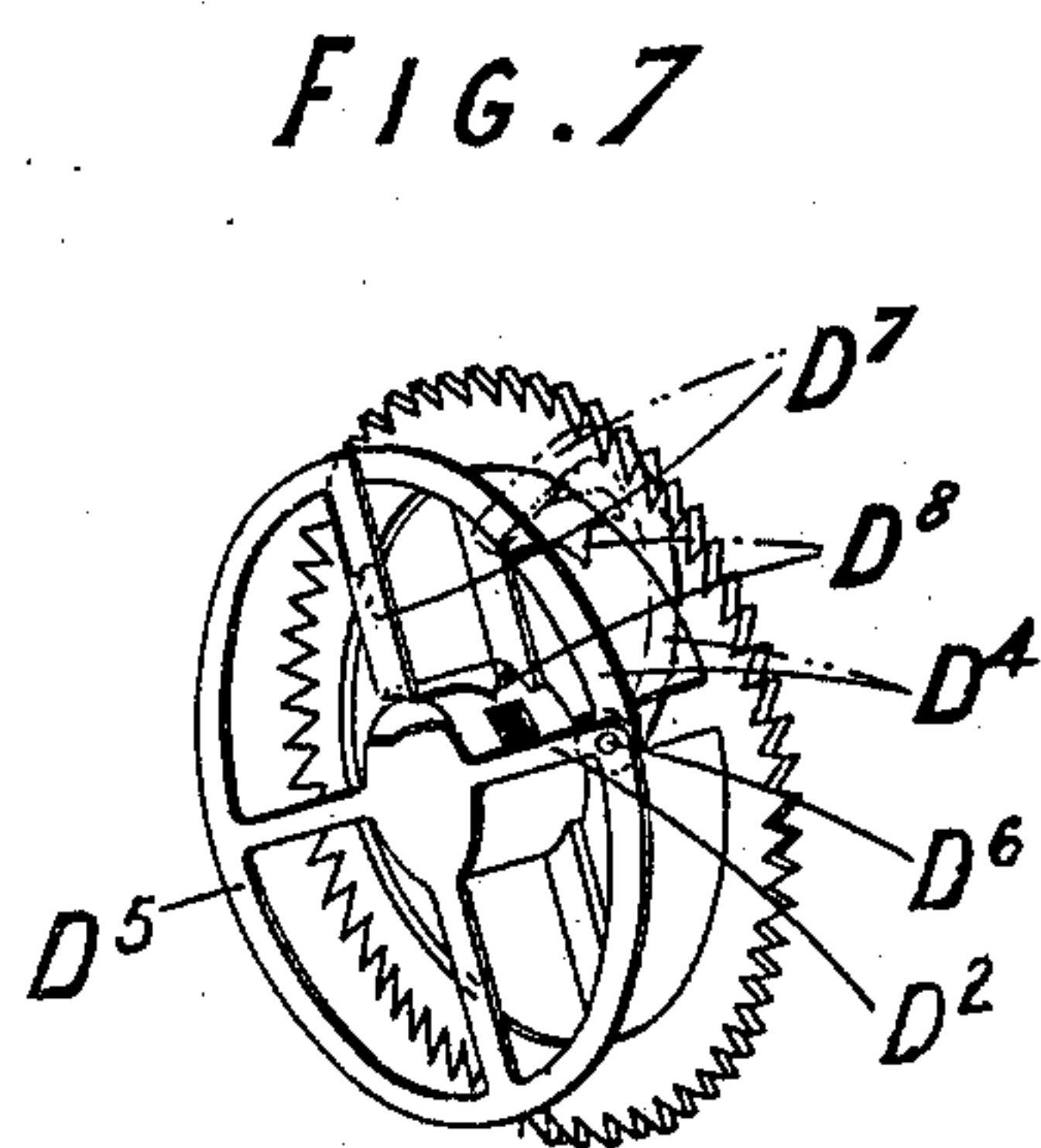
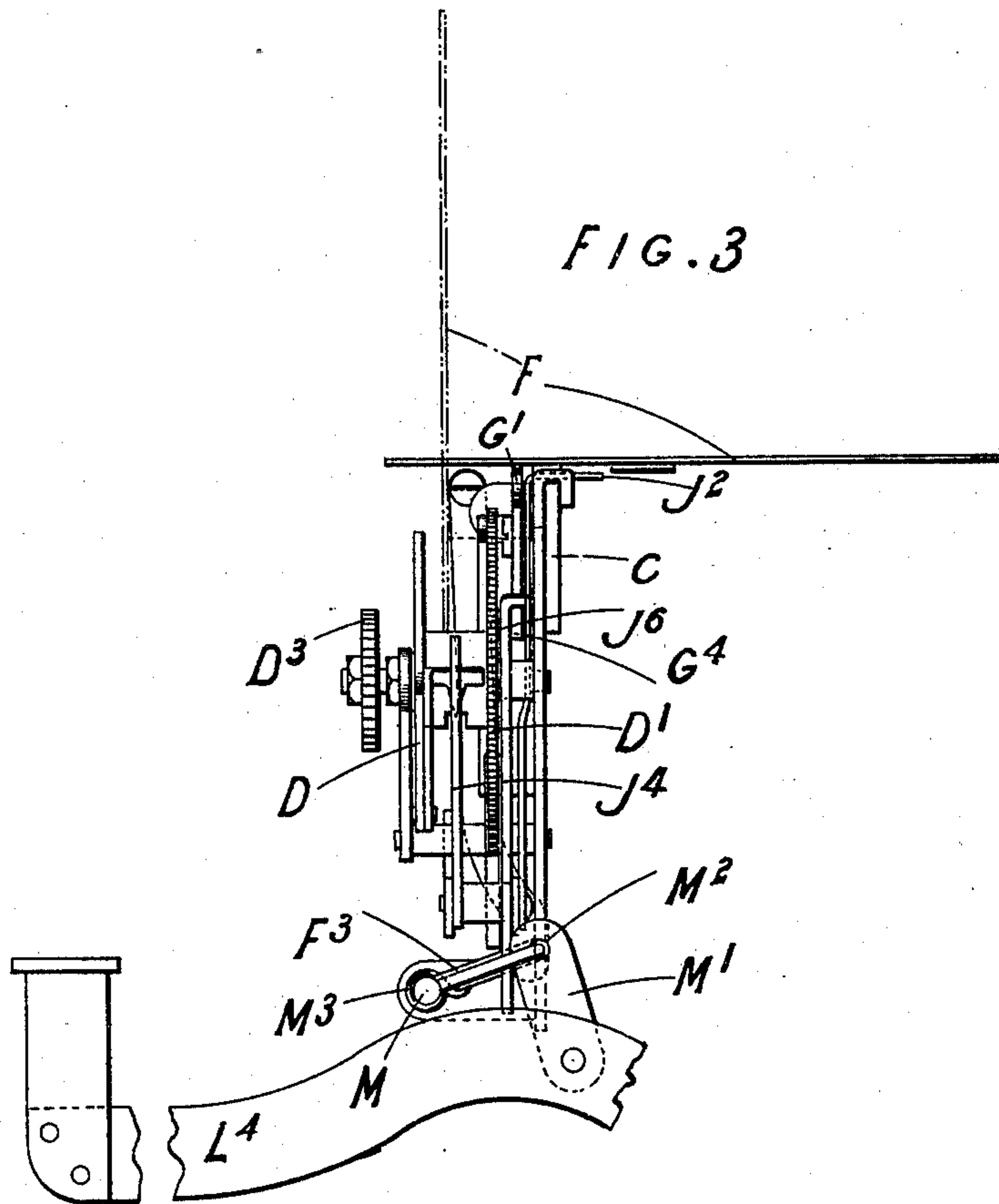
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4 Sheets—Sheet 3.



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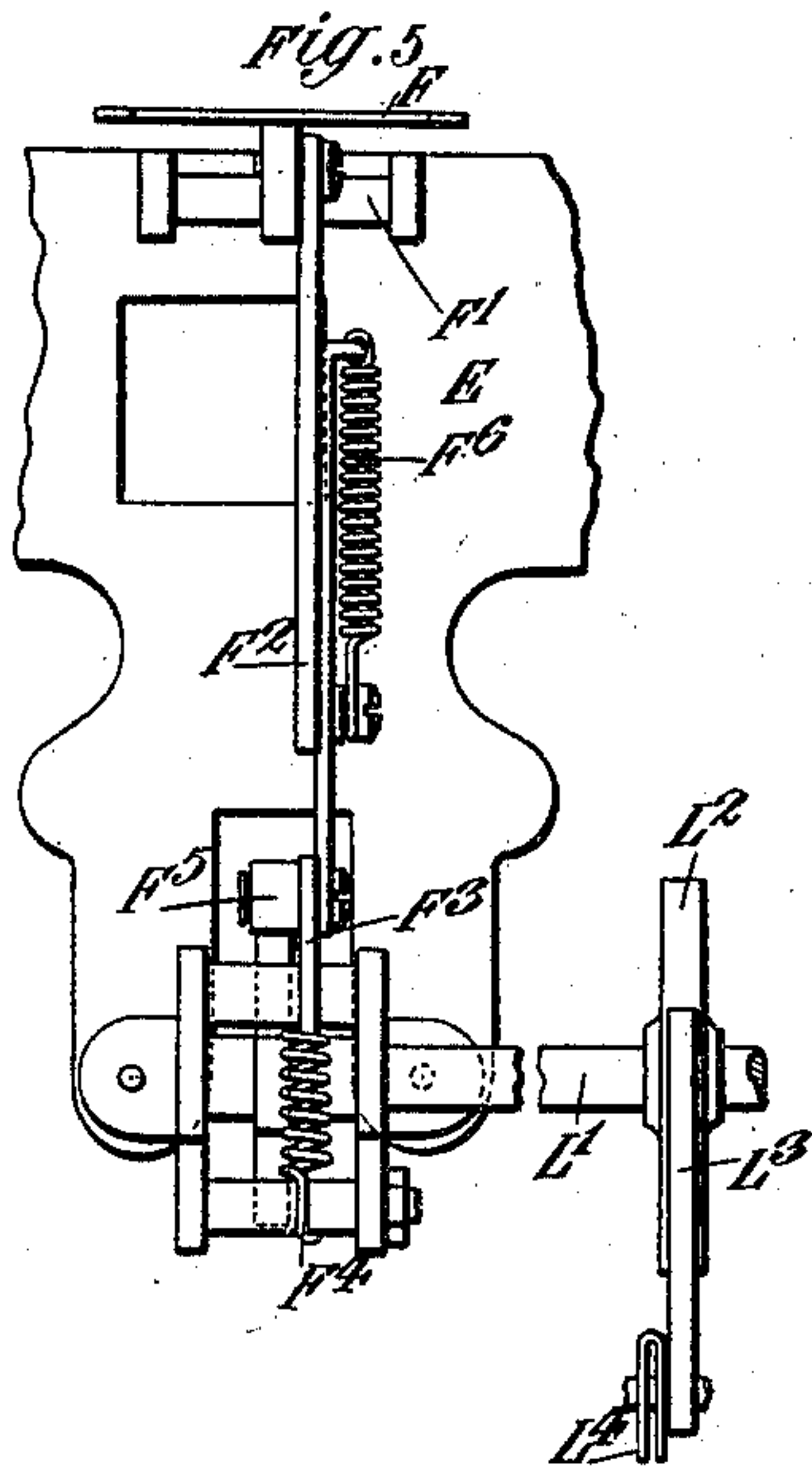
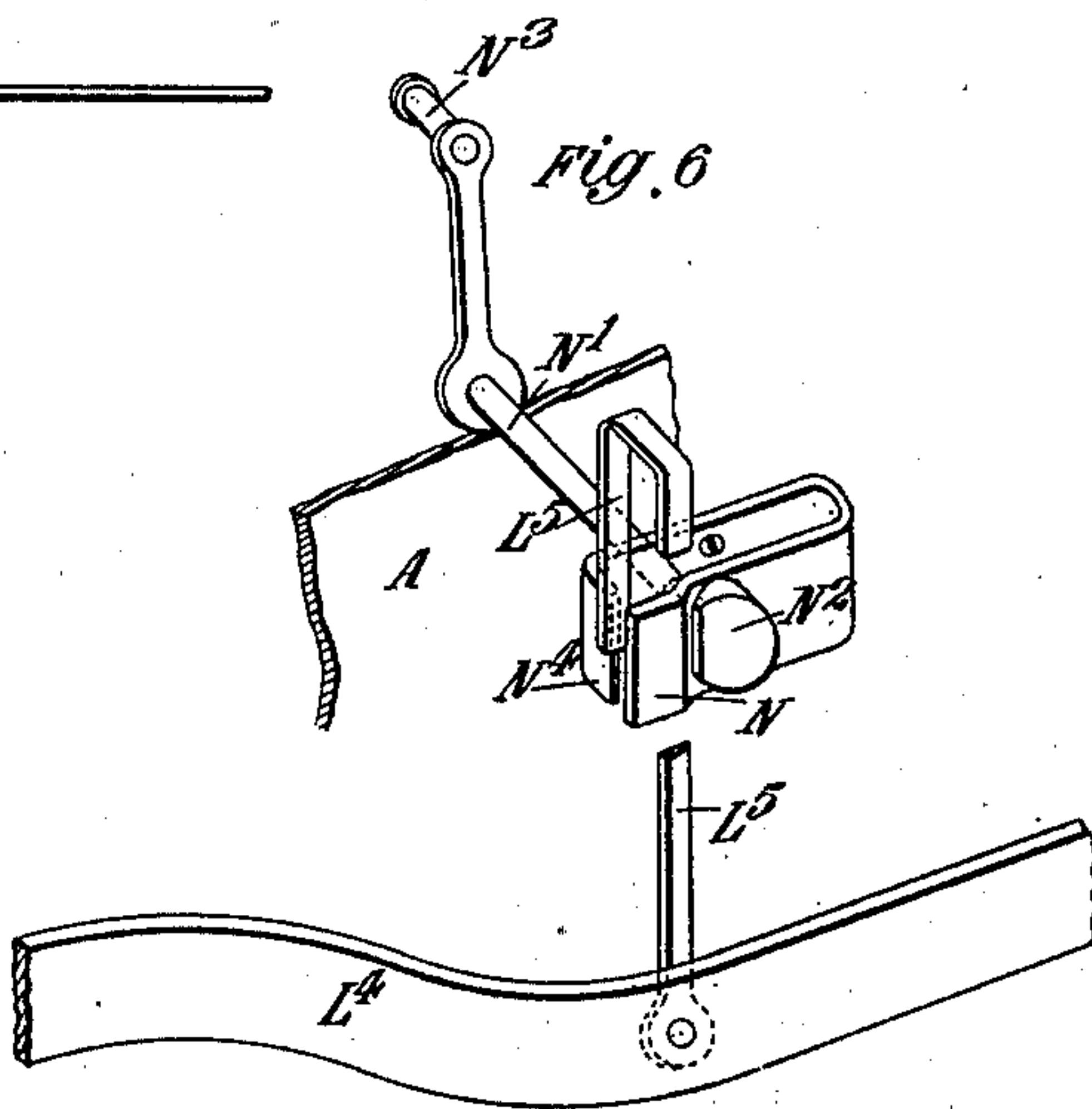
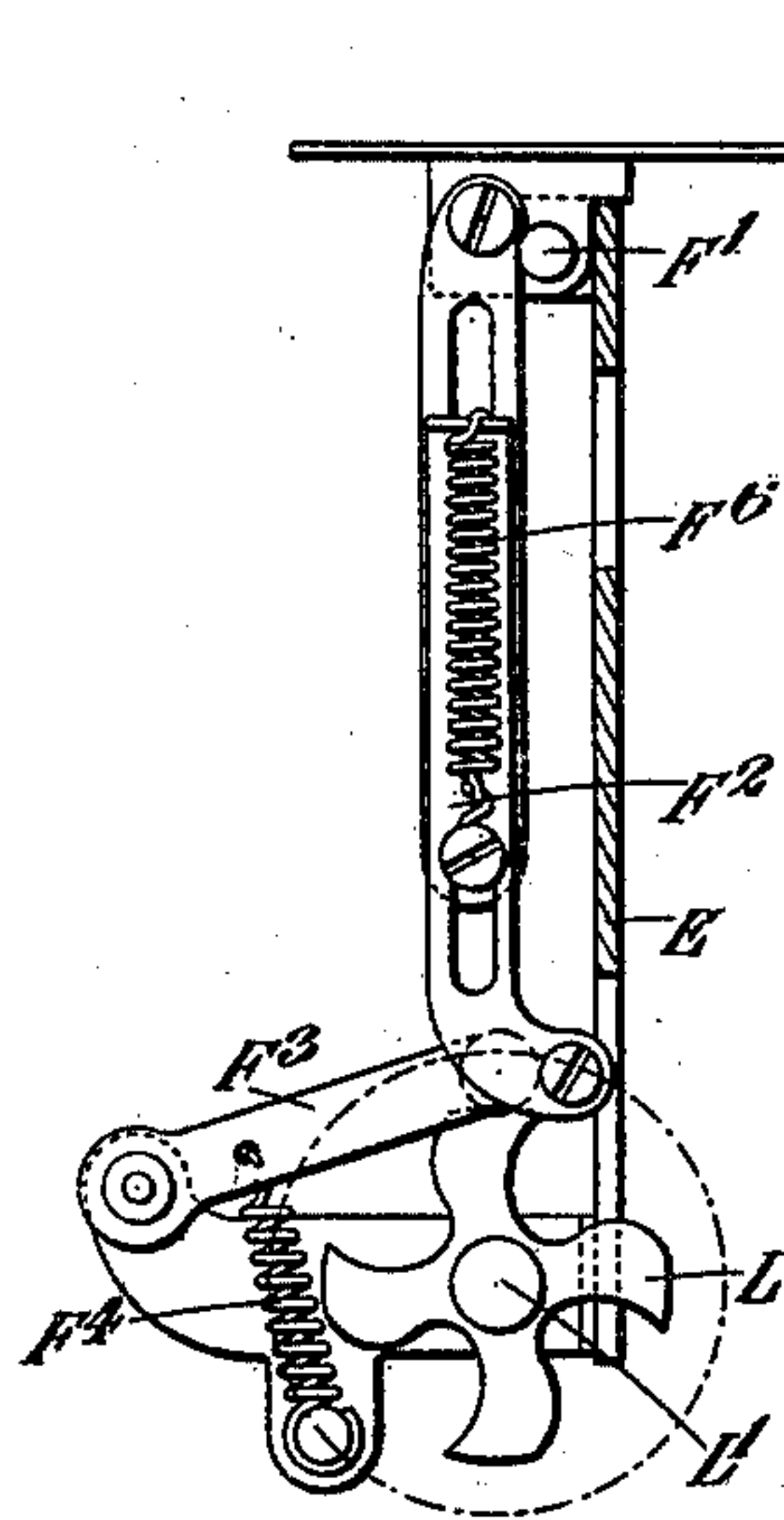
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(No Model.)

4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

JAMES SAMUEL FOLEY, OF WEST BROMWICH, ENGLAND, ASSIGNOR OF
ONE-HALF TO JOHN HENRY BIRCH, OF SAME PLACE.

RIBBON MECHANISM FOR TYPE-WRITERS.

SPECIFICATION forming part of Letters Patent No. 670,987, dated April 2, 1901.

Application filed June 28, 1900. Serial No. 21,954. (No model.)

To all whom it may concern:

Be it known that I, JAMES SAMUEL FOLEY, a subject of the Queen of England, residing at West Bromwich, England, have invented certain new and useful Improvements in or Relating to Ribbon Mechanism for Type-Writers, (for which I have made application for Letters Patent in Great Britain under No. 24,045, dated December 2, 1899,) of which the following is a specification.

This invention relates to ribbon mechanism for type-writers, its object being to provide a simplified means for driving the spools in order to cause the ribbon to be gradually transferred from one spool to the other while using the machine. According to this invention also means are provided for automatically reversing the direction of travel of the ribbon as soon as one spool has been emptied. The ribbon passes from one spool to the other by way of a hinged ribbon-shield in such a manner that the part of the ribbon on which the type-blocks act is situated transversely to the platen. In order to inspect the character just written, the ribbon-shield is hinged and means are provided for raising it into an upright position by depressing a lever.

In the accompanying drawings, Figure 1 is an elevation, Fig. 2 a plan, and Fig. 3 an end view, of ribbon mechanism constructed according to this invention. Figs. 4 and 5 illustrate a modification of the ribbon-shield-operating mechanism shown in Figs. 1, 2, and 3. Figs. 6 and 7 are views of details herein- after referred to.

Like letters indicate like parts throughout the drawings.

The ribbon mechanism is movably mounted on the frame A, so as to slide longitudinally in relation to the platen B. This is preferably effected by securing the ribbon mechanism to the bar C by means of screws passing through slots C' in the bar C. A rod or similar extension C² is connected to the ribbon mechanism at some convenient point and is adapted to be locked against the bar C by means of a device which consists of a non-rotatable bolt C³ and a nut C⁴, provided with a handle C⁵.

The ribbon mechanism comprises two rib-

bon-spools D, mounted upon a frame E. The ribbon is primarily placed upon one of the spools D, whence it passes through the ribbon-shield F to the other spool D. Ratchet-teeth D' are secured to each ribbon-spool D and are driven by a pawl G. The pawls G are operated from the space-bar by means of pivoted levers G' and links G². The pawls G are provided with an extension G³ for the purpose hereinafter described. Below the pawls G detents H are pivoted on the frame E, the extensions G³ of the pawls bearing against the detents. A frame or the like J is pivoted to the frame E at J' and is allowed a limited movement by means of flanges or the like J², which come into contact with the top of the frame E. These flanges also serve as handles to allow the operator to cant the frame over into either of its extreme positions. The frame is also provided with stops J³, which engage with recesses H', formed on the detents H. When the pivoted frame J is in one of its two extreme positions, one of the pawls G and detents H will be in gear with the ratchet-teeth D' of their spool D, the detent of the other spool being held out of engagement therewith by the stop J³, acting on the recess in the detent. It will be seen that the detent will itself hold the pawl G out of engagement with the ratchet-teeth by bearing against the extension G³. A spring K is provided upon the frame E, bearing against both the pawls G and tending to press them into engagement with the ratchet-teeth on their respective spools.

In order to reverse the movement of the ribbon, the frame J is canted over, so that the pawl and detent which were engaging with one set of ratchet-teeth are disengaged and those that were disengaged are thrown into gear with the other set.

A lever J⁴ is pivoted at each end of the frame J and is provided with a counterweight J⁵, which keeps the upper part of the lever J⁴ in contact with the ribbon on the spool or with its drum. If desired, of course the counterweight J⁵ may be replaced by a spring. A projection J⁶ is connected to the lever J⁴ and is adapted to engage with a catch G⁴, formed on the driving-lever G'. If desired,

the projections J^6 may be formed on the lever J^4 or be an extension thereof. A spring J^7 is secured to any convenient portion of the frame E and bears against the pivoted frame J in order to hold it in either of its two extreme positions. The drums of the spools D are provided with a circumferential slot D^2 , and the levers J^4 tend to enter these slots by reason of the counterweights J^5 .

In operation the ribbon is wound upon one of the spools D , passed over the ribbon-shield F , and is secured to the drum of the other spool. On the depression of any type-bar key the driving-levers G' are both operated and impart an oscillating motion to the driving-pawls G . As the stops J^3 on the pivoted frame J only allow one driving-pawl and dent to be in gear with the ratchet-teeth on their spool at one time it will follow that the ribbon will gradually be transferred from one spool to the other, the spool upon which the ribbon is being wound being rotated by its driving-pawl G , while the other spool will be operated by the ribbon. When the latter spool is empty, the lever J^4 will be forced to enter the slot D^2 in the drum of the spool by reason of its counterweight J^5 and will thereby bring the projection J^6 into engagement with the catch G^4 upon the driving-lever corresponding to that spool. As the lever G' rises it will carry with it the projection J^6 , which, being connected to the frame J , will cause the latter to be canted over into its other extreme position and will thus automatically effect the reversal of the ribbon movement.

The ribbon-shield F is hinged at F' to the frame E , Figs. 4 and 5, and is connected by a link F^2 to a rocking arm F^3 , pivoted to some convenient part of the frame E . A spring F^4 acts on the arm F^3 and tends to maintain the shield in an upright position, as shown in dotted lines in Fig. 3. A roller or the like F^5 is situated on the rocking arm F^3 and bears against a cam-wheel K , mounted on the frame E in proximity thereto. The cam-wheel is secured to a shaft L' . A ratchet-wheel L^2 is also secured to this shaft and is operated by a pawl L^3 , carried upon a lever L^4 . The cam-wheel L consists of alternate projections and recesses, which on the rotation of the shaft L' successively bear against the roller F^5 and, with the spring F^4 , cause the ribbon-shield to be depressed over the platen or lifted into the position shown in dotted lines in Fig. 3. The number of teeth of the ratchet-wheel L^2 are preferably some multiple of the number of projections or recesses in the cam-wheel, and the length of travel of the pawl L^3 is so arranged that one depression of the lever L^4 will cause the ribbon-shield to be lowered by bringing a projection of the cam-wheel into contact with the roller F^5 , while the next depression of the lever will allow the spring F^4 to raise the ribbon-shield by bringing a recess of the cam-wheel into engagement with the roller F^5 . The link F^2 is preferably made

in two pieces, as shown in Figs. 4 and 5, which are capable of sliding in relation to one another and are connected by a spring F^6 .

A modified form of mechanism for raising and lowering the ribbon-shield is shown in Figs. 1, 2, and 3, in which the cam-wheel L is replaced by a rocking shaft M , which is operated by the lever L^4 , acting through a link M' and an arm M^2 on the rocking shaft M . A spring M^3 is preferably provided on the frame E , bearing on the rocking arm F^3 and tending to maintain the ribbon-shield in its horizontal position over the platen. In order to lock the ribbon-shield, the lever L^4 is provided with a projection L^5 , passing between a spring-surface N and a part N^4 , secured to the main frame A of the machine, Fig. 6. A small shaft N' passes through the spring-surface N and is provided with a cam or wedge-piece N^2 , which on rotating the shaft N' by the handle N^3 causes the spring-surface N to grip the projection L^5 between it and the main frame.

A gear-wheel D^3 is preferably provided on one or both of the ribbon-spools D and by the movement of the ribbon mechanism on the bar C can be thrown into or out of gear with a hand-operated gear-wheel journaled in any convenient manner on the frame of the machine. Thus facilities are provided for enabling the operator to transfer the ribbon from one spool to the other. It will be seen that the movement of the ribbon mechanism upon the bar C can also be utilized for causing the type to act upon any desired portion of the width of the ribbon, inasmuch as the latter is arranged transversely to the platen on the shield F .

In order to secure the ribbon to the spool, a section D^4 of the flange D^5 is pivoted, as shown in Fig. 7, at D^6 . An extension D^7 of the pivoted section D^4 is provided, situated on the latter in such a manner that when the section D^4 is in position as a component part of the flange D^5 it will reach up to the drum of the spool. Preferably the end of the extension D^7 is bent or otherwise arranged so as to come into contact with an appreciable part of the circumference of the drum. A sharpened portion D^8 is also provided on the extension D^7 at about one extremity of the slot D^2 , so as to further secure the ribbon on the spool.

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

1. In ribbon mechanism for type-writers the combination of two ribbon-spools each having a section of one of its flanges pivoted, means for rotating the spools and means for reversing the direction of their rotation, a gear-wheel on one of the spools and a gear-wheel on the frame of the machine, means for laterally moving the ribbon mechanism to cause these two wheels to gear with one another, means for locking the mechanism against such lateral movement, a ribbon passing from one spool to the other by way of a

hinged ribbon-shield, means for raising and lowering the shield and means for locking it substantially as set forth.

2. In ribbon mechanism for type-writers the combination of two ribbon-spools each having a section of one of its flanges pivoted, means for rotating the spools and means for reversing the direction of their rotation, a gear-wheel on one of the spools and a gear-wheel on the frame of the machine, means for laterally moving the ribbon mechanism to cause these two wheels to gear with one another, a ribbon passing from one spool to the other by way of a hinged ribbon-shield and means for raising and lowering the shield, substantially as set forth.

3. In ribbon mechanism for type-writers, a ribbon-spool having a section of one of its flanges pivoted and an extension of the pivoted portion reaching to the drum of the spool in order to secure the ribbon substantially as set forth.

4. In ribbon mechanism for type-writers the combination of two ribbon-spools, a gear-wheel on one of the spools and a gear-wheel on the frame of the machine, means for laterally moving the ribbon mechanism to cause these two wheels to gear with one another and means for locking the mechanism against such lateral movement, substantially as set forth.

5. In ribbon mechanism for type-writers, the combination of two ribbon-spools, a hinged ribbon-shield, a ribbon passing over the said shield, mechanism for raising and lowering the shield, and means for locking it in either position, substantially as set forth.

6. In ribbon mechanism for type-writers the combination of two ribbon-spools each having a section of one of its flanges pivoted, and an extension on these pivoted sections reaching to the drum of the spool, substantially as set forth.

7. In ribbon mechanism for type-writers the combination of two ribbon-spools each having a section of one of its flanges pivoted, an extension on these pivoted sections reaching to the drum of the spool, ratchet-teeth on the spools, a pivoted lever oscillated from the type-levers and a pawl carried on the said lever and gearing with the said ratchet-teeth, substantially as set forth.

8. In ribbon mechanism for type-writers the combination of a spring-surface on the frame of the machine, a hand-rotated shaft passing through the spring-surface, a cam on the end of such shaft and a movable part of the machine extending between the spring-surface and the frame, substantially as set forth.

9. In ribbon mechanism for type-writers the combination of a hinged ribbon-shield, a spring-controlled rocking shaft operated by a key-lever, a connection between the rocking shaft and the ribbon-shield, a spring-surface on the frame of the machine, a hand-rotated shaft passing through the spring-surface, a

cam on the end of said shaft and an extension on the said key-lever passing between the spring-surface and the frame, substantially as set forth.

10. In ribbon mechanism for type-writers the combination of two ribbon-spools, ratchet-teeth on the spools, a pivoted lever oscillated from the type-levers, a pawl carried on the said lever and gearing with the said ratchet-teeth, a gear-wheel on one of the spools, a hand-operated gear-wheel on the frame of the machine, a bar on the machine on which the ribbon mechanism is movably mounted, an extension on the ribbon-mechanism frame, a slot in the bar, a non-rotatable bolt and a nut for locking the said extension to the bar, substantially as set forth.

11. In ribbon mechanism for type-writers the combination of two ribbon-spools, ratchet-teeth on the spools, a pivoted lever oscillated from the type-levers, a pawl carried on the said lever and gearing with the said ratchet-teeth, a ribbon passing from one ribbon-spool to the other by way of the hinged ribbon-shield, a spring-controlled rocking shaft operated by a key-lever and a connection between the rocking shaft and the ribbon-shield, substantially as set forth.

12. In ribbon mechanism for type-writers the combination of two ribbon-spools, ratchet-teeth on the spools, a pivoted lever, an operative connection between the lever and the type-levers, a pawl carried on the said pivoted lever and gearing with the said ratchet-teeth, an extension on the said pawl and a detent also gearing with said ratchet-teeth and operating said extension substantially as set forth.

13. In ribbon mechanism for type-writers the combination of two ribbon-spools, ratchet-teeth on the spools, a pivoted lever, an operative connection between the lever and the type-levers, a pawl carried on the said pivoted lever and gearing with the said ratchet-teeth, an extension on the said pawl, a detent also gearing with the said ratchet-teeth and operating said extension, a pivoted frame and an operative connection between the pivoted frame and the pawl substantially as set forth.

14. In ribbon mechanism for type-writers the combination of two ribbon-spools, ratchet-teeth on the spools, a pivoted lever, an operative connection between the lever and the type-levers, a pawl carried on the said pivoted lever and gearing with the said ratchet-teeth, an extension on the said pawl, a detent also gearing with the said ratchet-teeth and operating said extension, a recess in the detent, a pivoted frame and a stop on the pivoted frame engaging the recess in the detent substantially as set forth.

15. In ribbon mechanism for type-writers the combination of two ribbon-spools, ratchet-teeth on the spools, a pivoted lever oscillated from the type-levers, a pawl carried on the said lever and gearing with the said ratchet-

teeth, an extension on the said pawl, a detent also gearing with said ratchet-teeth and operating said extension, a recess in the detent, a pivoted frame, a stop on the pivoted frame engaging the recess in the detent, a slot in the ribbon-spool drum, a counterweighted lever pivoted to the pivoted frame and tending to enter said slot, a projection on the counterweighted lever, and a catch on the oscillating driving-lever gearing with said projection when the counterweighted lever enters the slot, substantially as set forth.

16. In ribbon mechanism for type-writers the combination of two ribbon-spools, ratchet-teeth on the spools, a pivoted lever oscillated from the type-levers, a pawl carried on the said lever and gearing with the said ratchet-teeth, an extension on the said pawl, a detent also gearing with said ratchet-teeth and operating said extension, a recess in the detent, a pivoted frame, a stop on the pivoted frame engaging the recess in the detent, a slot in the ribbon-spool drum, a counterweighted lever pivoted to the pivoted frame and tending to enter said slot, a projection on the counterweighted lever, a catch on the oscillating driving-lever gearing with said projection when the counterweighted lever enters the slot, a gear-wheel on one of the spools, a hand-operated gear-wheel on the frame of the machine and a bar on the machine on which the ribbon mechanism is movably mounted, substantially as set forth.

17. In ribbon mechanism for type-writers the combination of two ribbon-spools, ratchet-teeth on the spools, a pivoted lever oscillated from the type-levers, a pawl carried on the said lever and gearing with the said ratchet-teeth, an extension on the said pawl, a detent also gearing with said ratchet-teeth and operating said extension, a recess in the detent, a pivoted frame, a stop on the pivoted frame engaging the recess in the detent, a slot in the ribbon-spool drum, a counterweighted lever pivoted to the pivoted frame and tending to enter said slot, a projection on the counterweighted lever, a catch on the oscillating

driving-lever gearing with said projection when the counterweighted lever enters the slot, a gear-wheel on one of the spools, a hand-operated gear-wheel on the frame of the machine, a bar on the machine on which the ribbon mechanism is movably mounted, an extension on the ribbon-mechanism frame, a slot in the bar, a non-rotatable bolt and a nut for locking the said extension to the bar, substantially as set forth.

18. In ribbon mechanism for type-writers the combination of two ribbon-spools, ratchet-teeth on the spools, a pivoted lever oscillated from the type-levers, a pawl carried on the said lever and gearing with the said ratchet-teeth, an extension on the said pawl, a detent also gearing with said ratchet-teeth and operating said extension, a recess in the detent, a pivoted frame, a stop on the pivoted frame engaging the recess in the detent, a slot in the ribbon-spool drum, a counterweighted lever pivoted to the pivoted frame and tending to enter said slot, a projection on the counterweighted lever, a catch on the oscillating driving-lever gearing with said projection when the counterweighted lever enters the slot, a gear-wheel on one of the spools, a hand-operated gear-wheel on the frame of the machine, a bar on the machine on which the ribbon mechanism is movably mounted, an extension on the ribbon-mechanism frame, a slot in the bar, a non-rotatable bolt, a nut for locking the said extension to the bar, a ribbon passing from one ribbon-spool to the other by way of a hinged ribbon-shield a spring-controlled rocking shaft operated by a key-lever, and a connection between the rocking shaft and the ribbon-shield, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES SAMUEL FOLEY.

Witnesses:

ALBERT NEWBY,
THOS. DAVIS.