

No. 631,413.

Patented Aug. 22, 1899.

C. SPIRO.

RIBBON FEED MECHANISM FOR TYPE WRITERS.

(No Model.)

(Application filed Jan. 31, 1899.)

2 Sheets—Sheet 1.

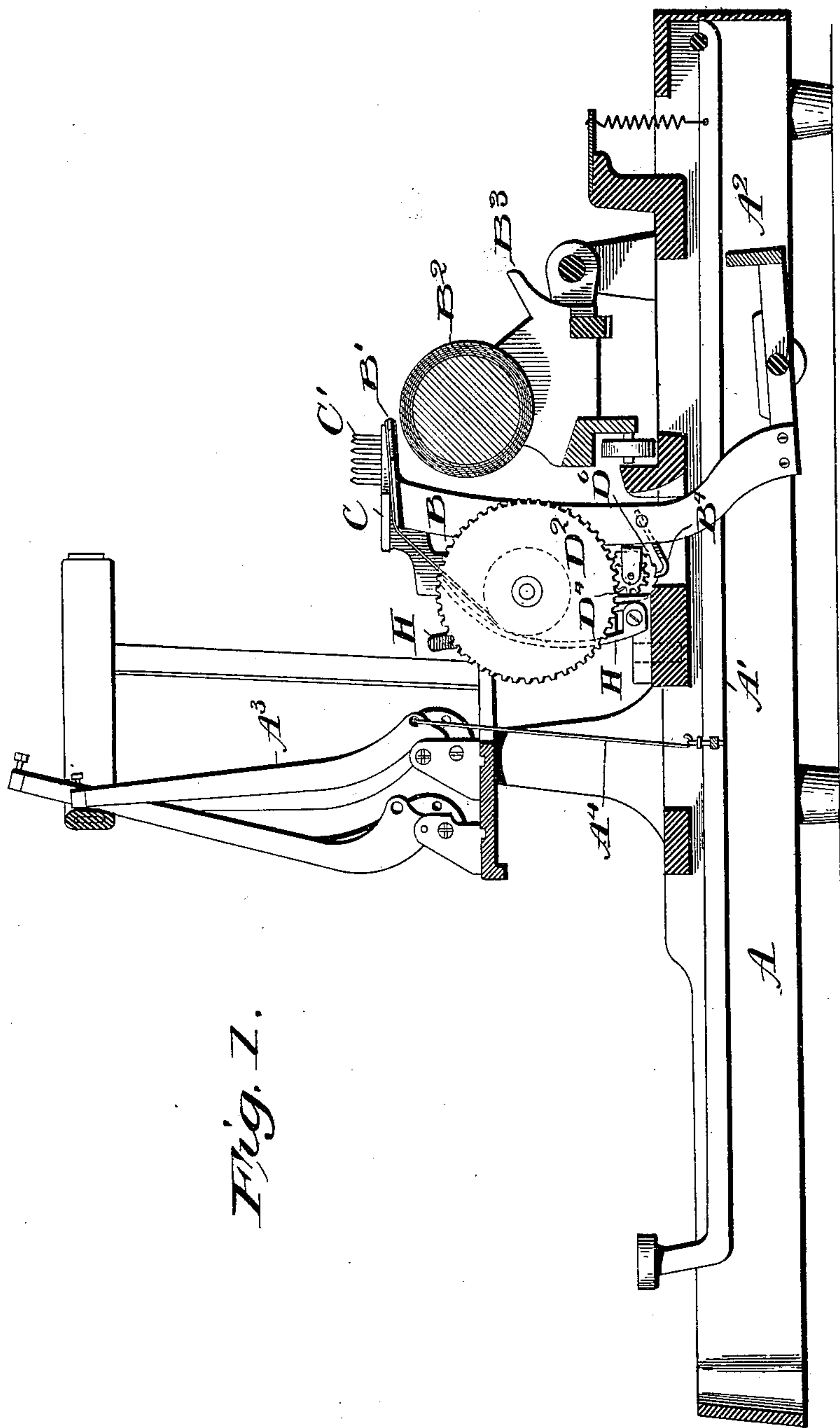


Fig. 1.

Witnesses

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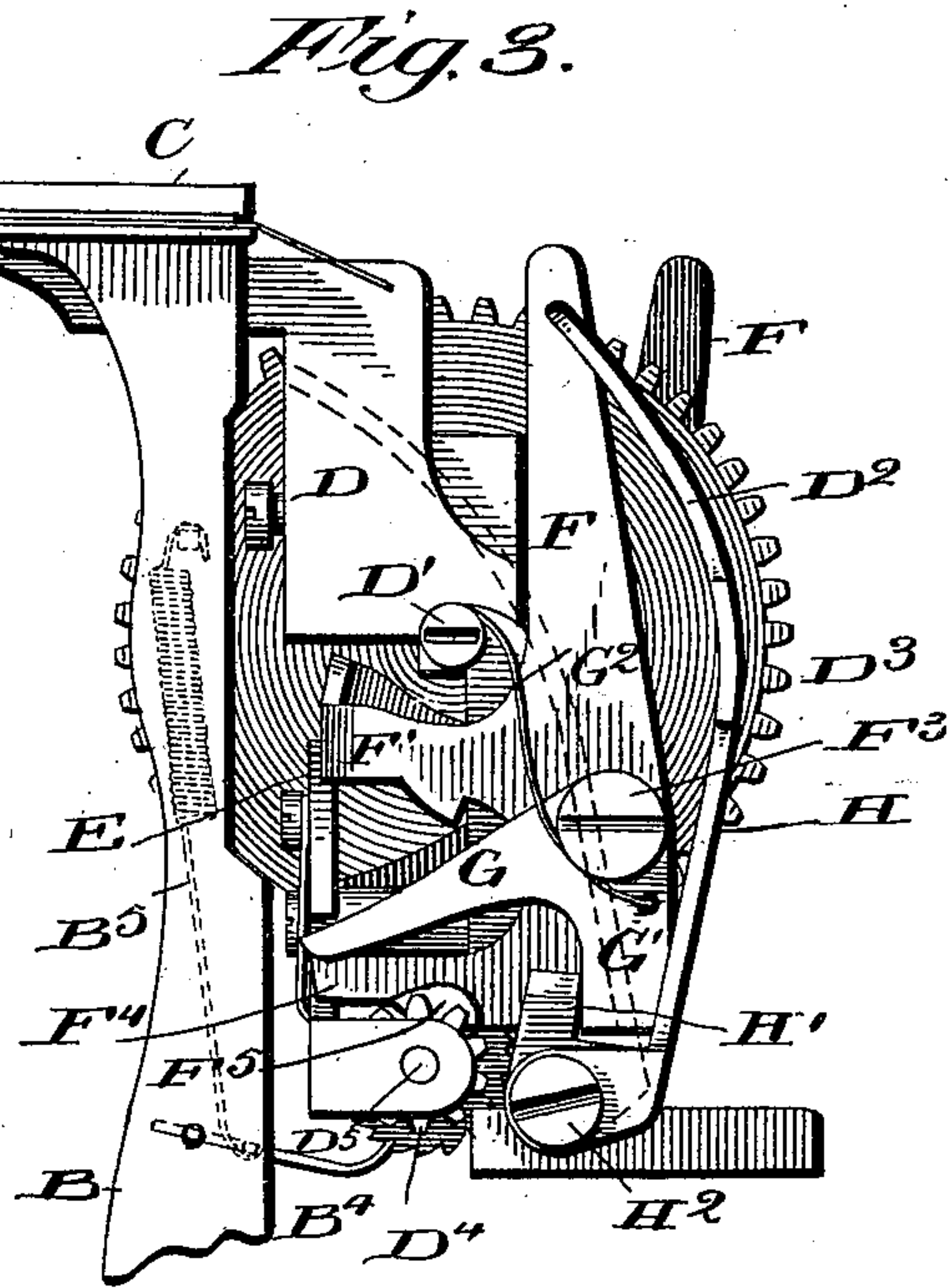
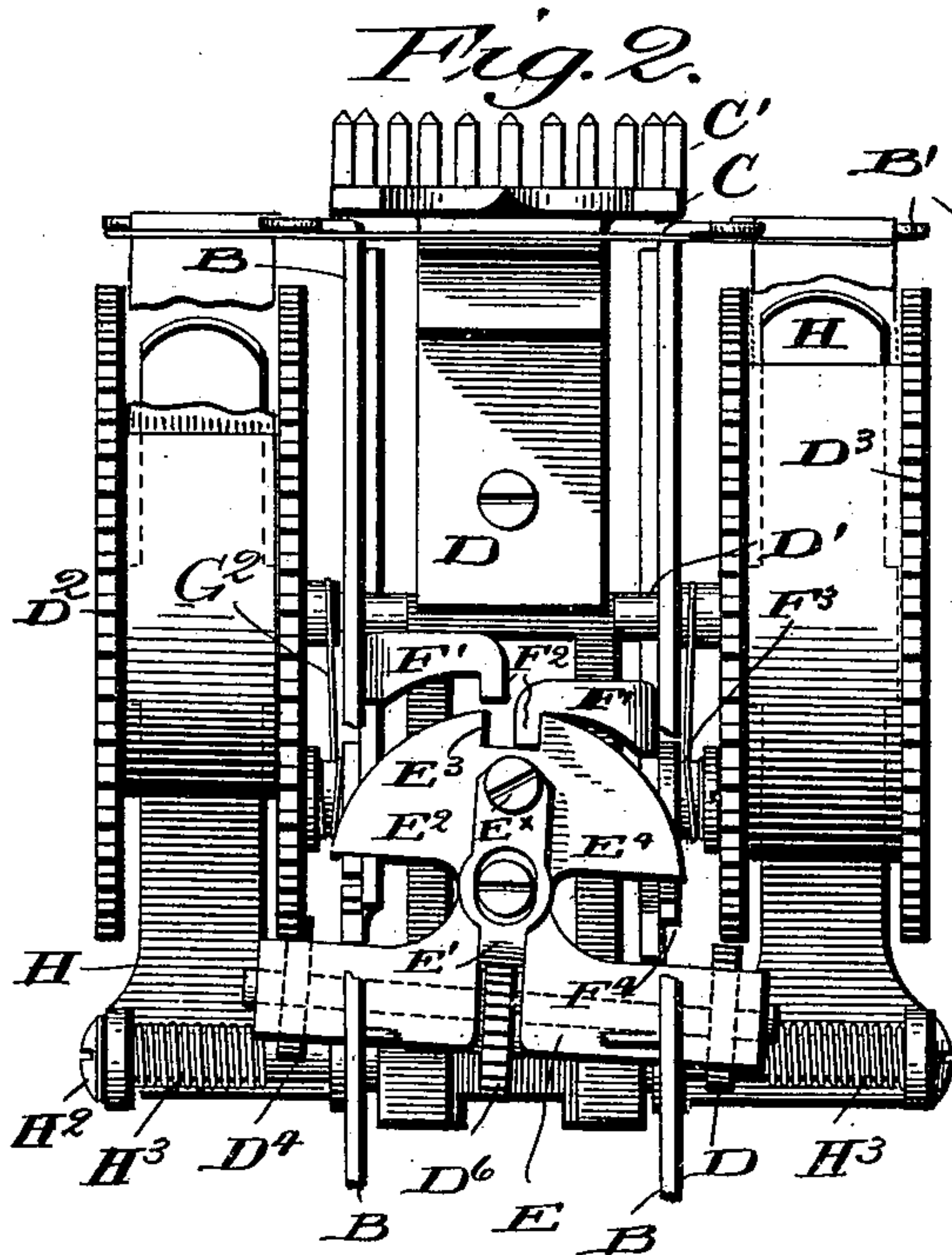
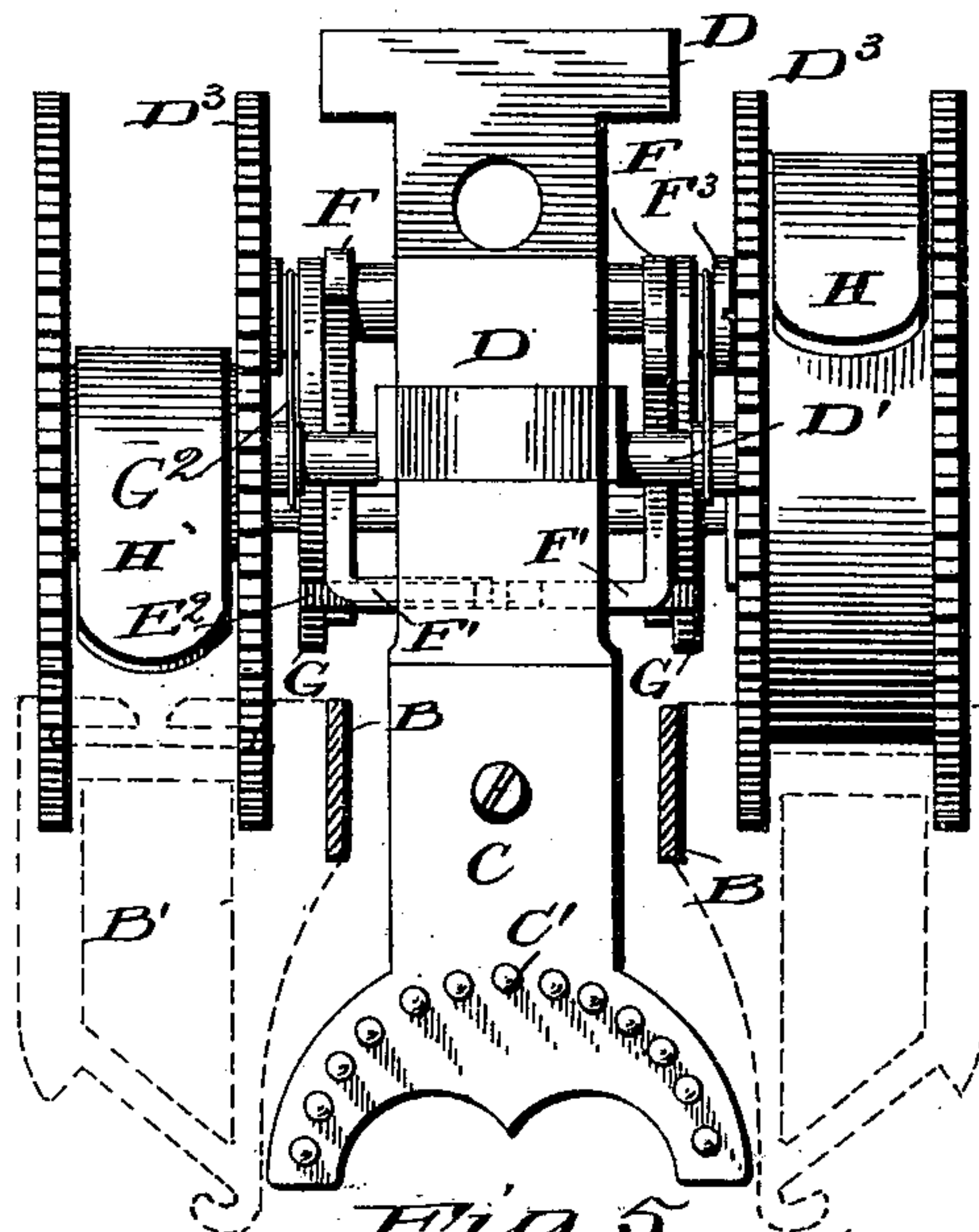


Fig. 4.



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UNITED STATES PATENT OFFICE.

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RIBBON-FEED MECHANISM FOR TYPE-WRITERS.

SPECIFICATION forming part of Letters Patent No. 631,413, dated August 22, 1899.

Application filed January 31, 1899. Serial No. 704,056. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SPIRO, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Type-Writer-Ribbon-Feed Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to improvements in type-writers, and particularly to mechanism for automatically actuating alternately the spools carrying the ribbon, whereby the same will be fed in opposite directions in the use of
15 the machine.

The invention has for its object to provide means for automatically and positively shifting the driving mechanism of the ribbon-spools, means for holding such driving mechanism in operative relation to the driven spool until it is filled with ribbon drawn from the non-driven spool, and means for releasing the latches and reversing the direction of feed of the ribbon by hand at any time regardless of
25 the amount of ribbon on either spool.

It has for a further object to provide a ribbon-following brake-lever adapted to exert a constant tension upon the ribbon, retain the spool in position on its spindle, and to actuate
30 the driving-mechanism-shifting devices.

Other objects and advantages and novel details of construction producing improved results in a machine of this character will be described in the following specification and particularly pointed out in the appended claims.

35 In the drawings, Figure 1 is a vertical section through a type-writing machine embodying my invention. Fig. 2 is a rear elevation of the ribbon-feed-shifting mechanism. Fig. 3 is a side view of the same with one of the ribbon-spools removed. Fig. 4 is a plan showing the ribbon-guides in dotted lines, and Fig. 5 is a detail section of a specific form of pivot.

45 Like letters of reference indicate like parts throughout the several figures of the drawings.

A designates the frame of a type-writing machine, which may be of any desired character and in the present instance is illustrated as provided with pivoted key-levers A' and a pivotally-mounted universal bail A², having a vertically-extending ribbon-carrier

B, which projects at opposite sides of the bar-lock mechanism C, provided with pins C'. The upper end of the oscillating ribbon-carrier B is provided with suitable horizontal guide-plates B', adapted to receive and carry the ribbon over the printing-point of the platen B², which is supported upon the movable carriage B³, as usual in this class of machines. The several type-bars A³ are suitably mounted upon the machine and operatively connected, as at A⁴, with the key-levers A' to operate in the usual manner.

The ribbon-feed-shifting mechanism is mounted upon a frame or standard D secured to or it may be formed as a part of the main frame of the machine, and at the upper portion of the standard D the bar-lock C is suitably mounted. From opposite sides of the standard D extend spindles or journals D' for the ribbon-spools D². The periphery of each head of each of the spools is provided with suitable gear-teeth D³, adapted to be engaged by a driving-pinion D⁴. One head of each spool provided with such teeth is sufficient; but where both heads are thus formed no particular attention is required in placing the spools, as either head of either spool will present gear-teeth for coöperation with said pinion. The pinions D⁴ are rigidly secured to a shaft D⁵, rotatably mounted in a shifting plate E, and said shaft is rotated by a pawl B⁴, projecting from the oscillating ribbon-carrier B and held in yielding contact with a ratchet D⁶ on shaft D⁵ by means of a suitable spring B⁵, as shown by dotted lines in Fig. 3.

The shifting plate E is provided with a detent-pawl E' to prevent backward movement of the ratchet D⁶, and is at its upper portion or head E² provided with a locking-notch E³, adapted to receive a latch or latches, as hereinafter described, so that either pinion D⁴ may be brought to and held in mesh with either spool, whereby either spool may act as a winding or reversing spool and the direction of feed of the ribbon reversed, as desired.

The plate E is shifted and locked in a shifted position by means of a lever F, provided with an angular extension F', having a depending hook or latch F², adapted to seat in the recess E³ of said plate. The lever F is pivotally mounted upon a suitable stud F³.

and is provided with a shifting extension or arm F^4 at its lower portion, which is adapted to engage a part E^4 of the shifting plate E at one side of the pivot E^x . The arm F^4 is provided with a projection or lug F^5 , which is engaged and operated by an arm H' , extending from a brake or lever H , to lift the latch from the recess E^3 . The angle-lever G is pivotally mounted upon the stud F^3 and independently of the latch F , mounted on said stud. The arm G of said lever is constantly but yieldingly forced upward by means of a spring G^2 , extending from a point on its arm G' at one side of its pivot to any adjacent fixed part of the mechanism—for example, the spool-spindle D' . The pivot or stud F^3 upon which the latch and angle-lever are both mounted may be of any desired form; but better results are secured by the particular construction illustrated in detail in Fig. 5, which prevents frictional contact of said pivoted members with each other. The portion of the stud F^3 upon which the lever F is mounted consists of a screw f , having a threaded shank seated in the frame D , and a body f' , on which the lever oscillates. This body portion is interiorly threaded to receive a second screw f^2 , provided with a bearing-surface f^3 , upon which the angle-lever G is mounted. The head of the screw f serves as a spacing-washer between the levers F and G , and each screw-head retains the lever in operative position.

It is obvious that any other preferred form of stud may be used; but the construction just described has been found convenient in assembling and dismounting the parts, in reducing friction between the moving parts, and providing such a space between the same that dust or particles from erasures may not lodge between the parts, and thus clog or impair their proper and prompt operation.

The contact-brake H is mounted upon a suitable spindle H^2 , projecting from the frame D below the center of the ribbon-spool, and is normally forced yieldingly toward the spindle D' of the ribbon-spool by means of a coil-spring H^3 , surrounding the spindle H^2 and connected at one end to the brake H and at the other to any adjacent fixed part—in this instance to the frame D . The brake is provided with a contact-face concentric to the spindle of the spool to produce a resistance or drag tension upon the ribbon. The spring H^3 holds the contact-brake under constant tension upon the ribbon, and therefore prevents any further rotation of the ribbon-spool than the feed given by the pawl B^4 on the ratchet D^6 , thus obviating any slack in the ribbon and insuring a tight winding upon the spool and also an even and smooth feed through the ribbon-carrier. This result is aided by the drag of the companion brake upon the surface of the ribbon as it is drawn from the opposite spool. Furthermore, the contact-brakes H rest between the flanges or heads D^3 of the ribbon-spools, and thus retain the same in position upon their spindles D' ,

rendering it unnecessary to provide any other or further means for this purpose. By pressing the brake clearly away from the spool the latter can readily be removed and replaced. There are a brake H and a shifting-lever F for each spool, and each of said levers F may be oscillated by hand at their upper ends to manually shift the ribbon-feed mechanism independently of automatic shifting operations of the brakes. This advantage is apparent when a multicolor ribbon or any other ribbon having different qualities at different lengthwise sections thereof is used.

The automatic shifting of the ribbon-feed is accomplished by the inward movement of the contact-brake H as the bulk of ribbon is removed from beneath the same. As the brake moves nearly toward the center of the spool the arm H' thereof moves away from the arm G' of the independently-pivoted angle-lever G , thus permitting the spring G^2 , which gives the necessary propelling power, to act upon said lever and throw the arm G thereof upward into contact with the shifting plate E . In a further advance of the brake the arm H' contacts with the lug F^5 of latch-releasing arm F^4 and lifts the hook F^2 of the lever F out of the notch E^3 of the shifting plate. The movement of the arm H' away from the axis of the spool causes said arm to engage the angle-lever G' and relieves the tension of the shifting-arm on the plate E .

While the hook F^2 is moving out of the notch E^3 the action of the spring G^2 is checked, so that when the hook clears the notch the spring acts quickly to shift the plate E , thus insuring a meshing of the adjacent pinion D^4 with the geared edge of the head of the empty spool.

In hand-shifting the lever F is moved to the right, Fig. 3, causing an upward or releasing movement of the hook F^2 and then brings the arm F^4 against the part E^4 of the shifting plate, throwing it over and bringing the adjacent pinion D^4 into mesh with the spool-head which is adjacent to that lever F which is operated. The opposite hook F^2 drops into the notch E^3 by gravity, thus locking the parts in the shifted position. Either lever may be thus operated at any time regardless of the amount of ribbon on either spool, while the automatic shifting is dependent upon the absence of any material amount of ribbon on the spool. This structure permits the use of substantially the entire length of the ribbon and effectually controls the feed of the same prior to the shifting operation, when it is automatically accomplished, as heretofore explained.

It is obvious that numerous changes may be made in the details of construction of the several parts without departing from the spirit of this invention as defined by the appended claims.

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

1. A ribbon mechanism comprising ribbon-spools, driving mechanism therefor, a shifting device cooperating with driving means for either spool, independently-pivoted spring-pressed arms to shift said device, contact-brakes having a face concentric to the spindle of the spool, and means for releasing said arms as said brakes approach the axis of the spool and placing said arms under tension in the movement of the brakes from the axis of the spool; substantially as specified.

2. A ribbon-feed mechanism comprising ribbon-spools, driving mechanism therefor, a shifting device cooperating with driving means for either spool, independently-pivoted spring-pressed arms to shift said device, and contact-brakes adapted in their movement from the axis of the spools to place said arms under tension and to release said arms in their movement toward the axis of the spools to permit the shifting of the actuating device by said arms; substantially as specified.

3. The combination with a ribbon-spool, of a contact-brake continuously bearing upon the body of ribbon carried by said spool, means for exerting a yielding tension upon said brake toward the spindle of the spool, an independently-pivoted spring-pressed arm released in the movement of said brake, and a shifting plate adapted to be engaged by said arm and carrying spool-driving mechanism; substantially as specified.

4. The combination with a ribbon-spool, of a contact-brake lying between the heads of the spool to retain the spool in position, a shifting plate carrying ribbon-feed mechanism engaging one head of said spool, and means engaging with said plate for disengaging said feed mechanism in the movement of the brake toward the center of the spool; substantially as specified.

5. The combination of a ribbon-spool, gearing for rotating the same, a ribbon contact-brake having an arm, a spring for normally drawing said brake toward the center of said spool, a pivoted lever having a latch, and a shifting plate having a notch to receive said latch and carrying a pinion adapted to mesh with the gearing for rotating said spool; substantially as specified.

6. The combination with a ribbon-spool, of a ribbon contact-brake, a spring for normally drawing said brake toward the center of said spool, a lever having a latch, a shifting plate constructed to receive said latch and carrying spool-rotating mechanism, and an angle-lever controlled by said contact-brake and adapted to impart motion in one direction to said shifting plate; substantially as specified.

7. The combination with a ribbon-spool, of a ribbon contact-brake provided with an arm, a spring to draw said brake toward the axis of the spool, a shifting plate provided with a driving-pinion, a lever having a latch to engage said plate and having a lifting-arm for the plate, a projection from said lever adapt-

ed to be engaged by the brake-arm to move the latch upward, and an angle-lever under tension adapted to engage said plate to shift the same and its power-conveying devices; substantially as specified.

8. A ribbon-feed mechanism comprising oppositely-located spools, driving mechanism therefor carried by a shifting plate, independent devices acting directly upon said shifting plate and controlled by the body of ribbon upon each spool, one of which operates means to release and shift said plate, and the other means to lock the plate in its shifted position; substantially as specified.

9. In a ribbon-feed mechanism, the combination with oppositely-disposed ribbon-spools, a shifting plate provided with driving mechanism for each of said spools, independent latches for said plate, independent contact-brakes held under tension against the ribbon upon said spools and constructed and adapted to permit the connection of said latches with said plate in the outward movement of said brakes and to release said latches and permit the shifting of the plate during the inward movement of said brakes; substantially as specified.

10. The combination with a ribbon-spool, of a shifting plate provided with driving mechanism therefor, a pivoted lever having a latch to lock said shifting plate and having a lifting-arm adapted to engage and oscillate said plate; substantially as specified.

11. The combination with a ribbon-spool, of a shifting plate provided with driving mechanism therefor, a pivoted lever having a latch to lock said shifting plate and having a lifting-arm to engage and oscillate said plate, and means for actuating said lever; substantially as specified.

12. The combination with a ribbon-spool, of a ribbon contact-brake, a spring for normally drawing said brake toward the center of said spool, an arm carried by said brake and adapted to operate a latch, a shifting plate cooperating with said latch and carrying driving mechanism for said spool, an oscillating ribbon-carrier actuated by a universal bail, and means upon said carrier for actuating the driving mechanism carried by the shifting plate; substantially as specified.

13. The combination with a ribbon-spool, of a shifting plate provided with driving mechanism therefor, a pivoted lever having a locking device adapted to engage said plate, a ribbon contact-brake adapted to move said lever, and an independently-pivoted spring-actuated arm adapted to shift said plate when the latch is released therefrom; substantially as specified.

14. The combination with a shifting plate supporting a shaft carrying pinions at opposite ends, of oppositely-disposed ribbon-spools having gears, contact-brakes pivoted below the centers of said spools, latches at opposite sides of said shifting plate adapted to engage said plate, and means cooperating

with said contact-brakes for oscillating said plate as one of the brakes approaches the axis of its ribbon-spool; substantially as specified.

15. The combination with a shifting plate
5 supporting a shaft carrying gears at opposite ends, of ribbon-spools having gears, contact-brakes pivoted below the centers of said spools, levers having latches at opposite sides of said plate provided with depending hooks
10 adapted to engage a recess in said plate, means cooperating with said contact-brakes for oscillating said plate as one of the brakes approaches the axis of its ribbon-spool and the other recedes therefrom, and angle-levers
15 pivoted independently of said latch-lever and under spring tension to shift said plate; substantially as specified.

16. The combination with a ribbon-spool, of a shifting plate provided with driving
20 mechanism therefor and having a latching-recess and opposite contact portions for shifting devices, latches adapted to seat in said recess, shifting devices adapted to engage said contact portions, and means for actuat-
25 ing said latches; substantially as specified.

17. The combination with a ribbon-spool, of a shifting plate provided with driving mechanism therefor, a lever provided with a locking-hook, a lifting-arm and a projection,
30 an independently-pivoted angle-lever under spring tension, a ribbon contact-brake provided with a rock-arm adapted to engage one arm of said angle-lever in its movement away from the axis of the spool and to engage said
35 projection in its movement toward the axis of the spool, and means for normally drawing said contact-brake toward the axis of the spool; substantially as specified.

18. In a ribbon-feed-shifting mechanism,
40 the combination with means for rotating either spool, of a lever having a shifting-arm and a locking-arm each arm being adapted to engage said means; substantially as specified.

19. In a ribbon-feed-shifting mechanism,
45 a pivoted lever having a shifting-arm and a locking-arm in combination with a shifting plate adapted to be engaged by each arm to connect either spool of a pair with rotating mechanism; substantially as specified.

50 20. In a ribbon-feed-shifting mechanism, the combination with a pair of spools, means

for rotating either spool and a shifting plate, of a pair of duplicate levers each having a shifting-arm and a locking-arm each adapted to engage said plate; substantially as speci- 55 fied.

21. In a ribbon-feed-shifting mechanism, the combination with a pair of spools and means for rotating either spool of the pair, of independently-pivoted levers having each a
60 shifting and locking arm, independent spring-pressed shifting-levers, and brakes having each a rock-arm; substantially as specified.

22. In a ribbon-feed mechanism, the combination with a ribbon-spool and means for
65 rotating the same, of a compound pivot comprising a primary stud and a secondary stud mounted thereon, a lever pivoted upon said primary stud and having a shifting and a locking arm, an independent spring-actuated
70 shifting-lever upon said secondary stud, and means for controlling the movement of said levers; substantially as specified.

23. In a ribbon-feed-shifting mechanism, the combination with a ribbon-spool having
75 gear-teeth formed in the periphery of one of its heads, of means for rotating said spool provided with a gear meshing with said head, a pivoted lever provided with a shifting and a locking arm, an independent spring-actu-
80 ated shifting-lever, and means for controlling the movement of said levers; substantially as specified.

24. A shifting plate for ribbon-feed mechanism having means for operatively support-
85 ing a gear-shaft, a recess for plate-locking devices, and portions for the coaction of plate-shifting devices ribbon-holders cooperating with said gear-shaft, and means for shifting said plate; substantially as specified. 90

25. A shifting plate having a curved recessed upper edge, recesses at opposite sides, and bearings at its lower portions for a gear-shaft ribbon-holders cooperating with said gear-shaft, and means for shifting said plate; 95 substantially as specified.

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

CHARLES SPIRO.

Witnesses:

J. ROSENTHAL,
M. P. CONIGAN.