

No. 624,297.

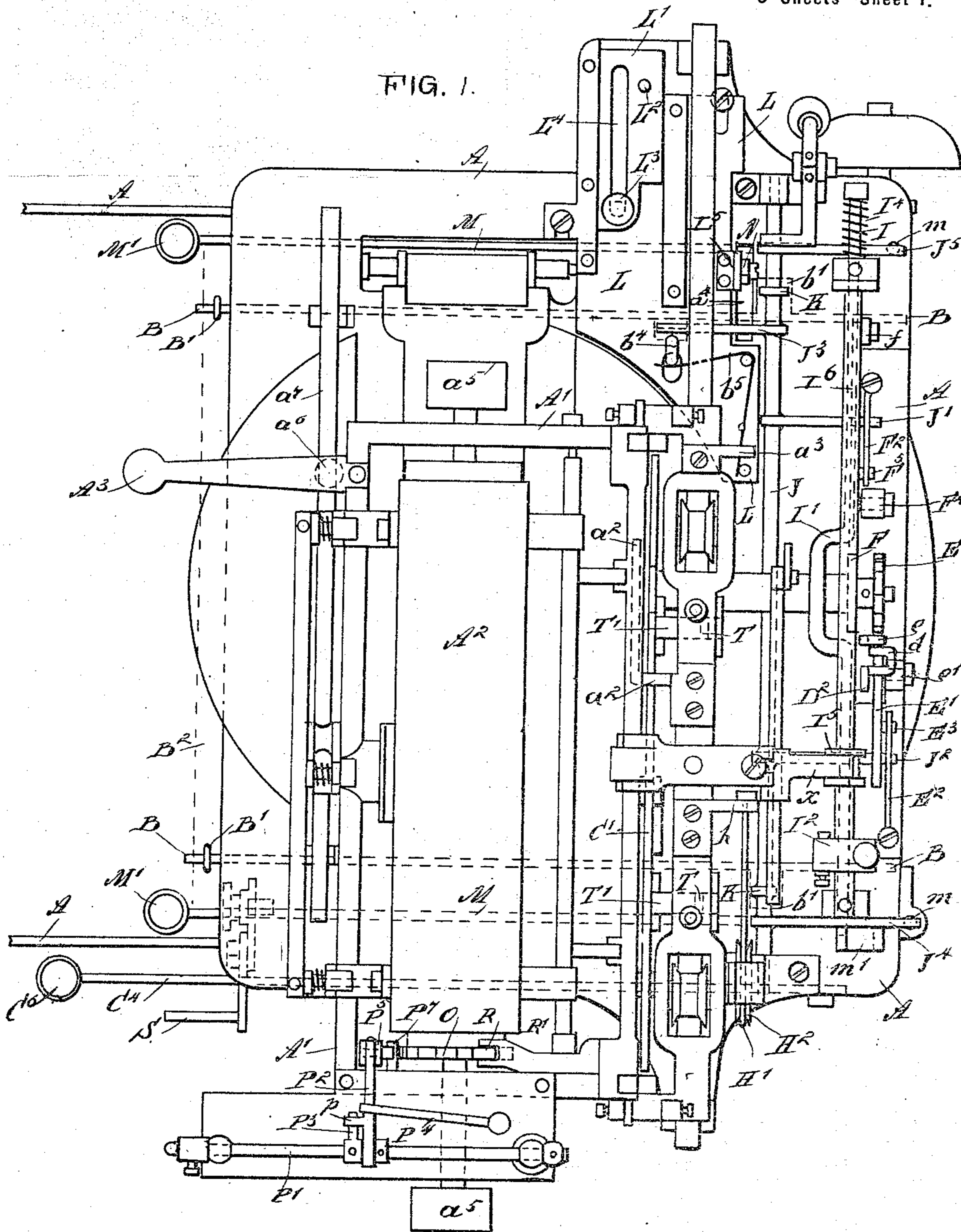
Patented May 2, 1899.

W. C. CHAPMAN.
TYPE WRITER.

(Application filed Apr. 19, 1897.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

Donn Twitchell
H. Reynolds.

INVENTOR

W. C. Chapman

BY

Wm. W. W.

ATTORNEYS.

No. 624,297.

Patented May 2, 1899.

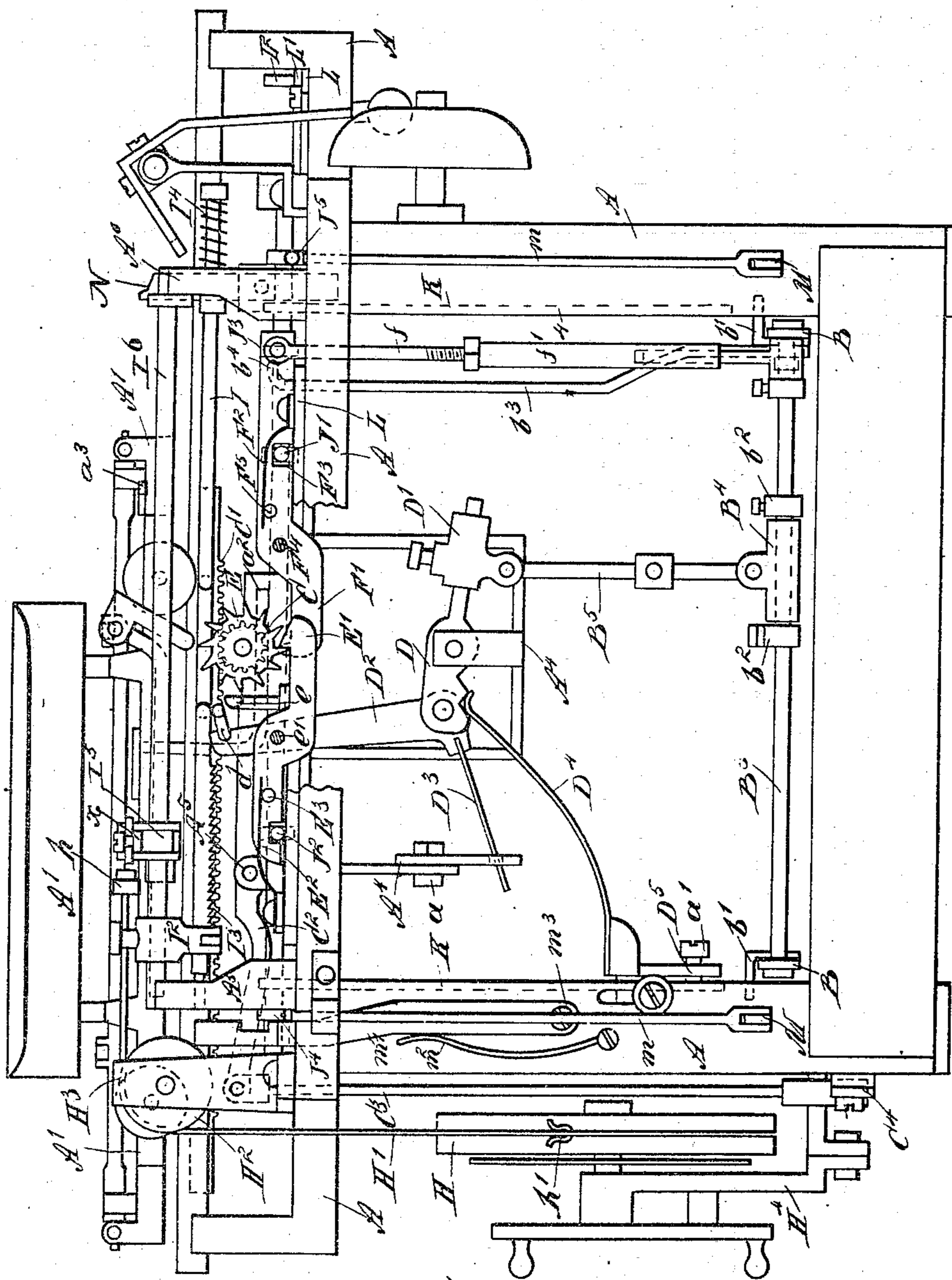
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3 Sheets—Sheet 2.

FIG. 2.



F/G/5

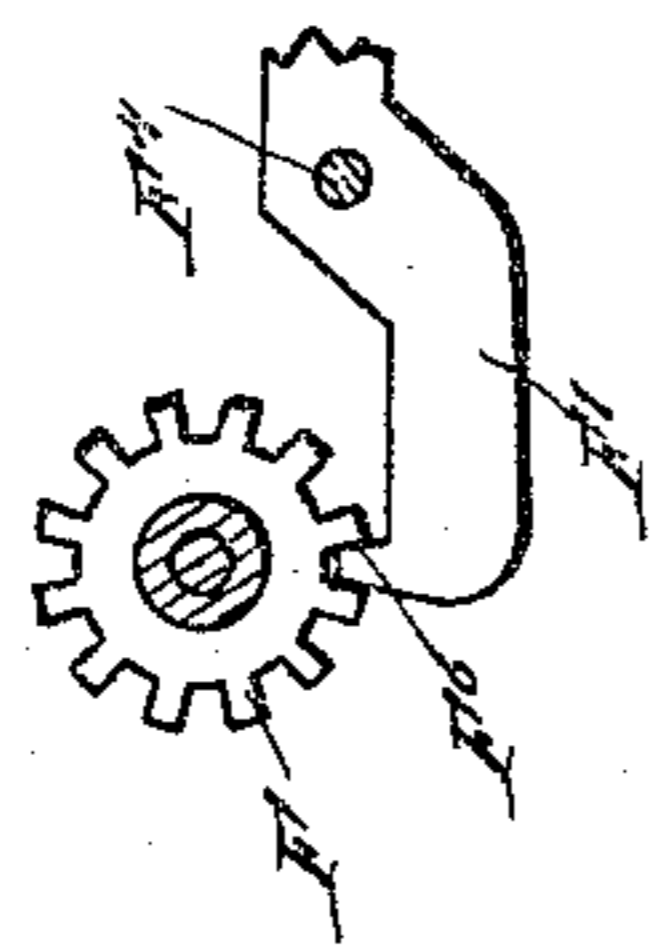
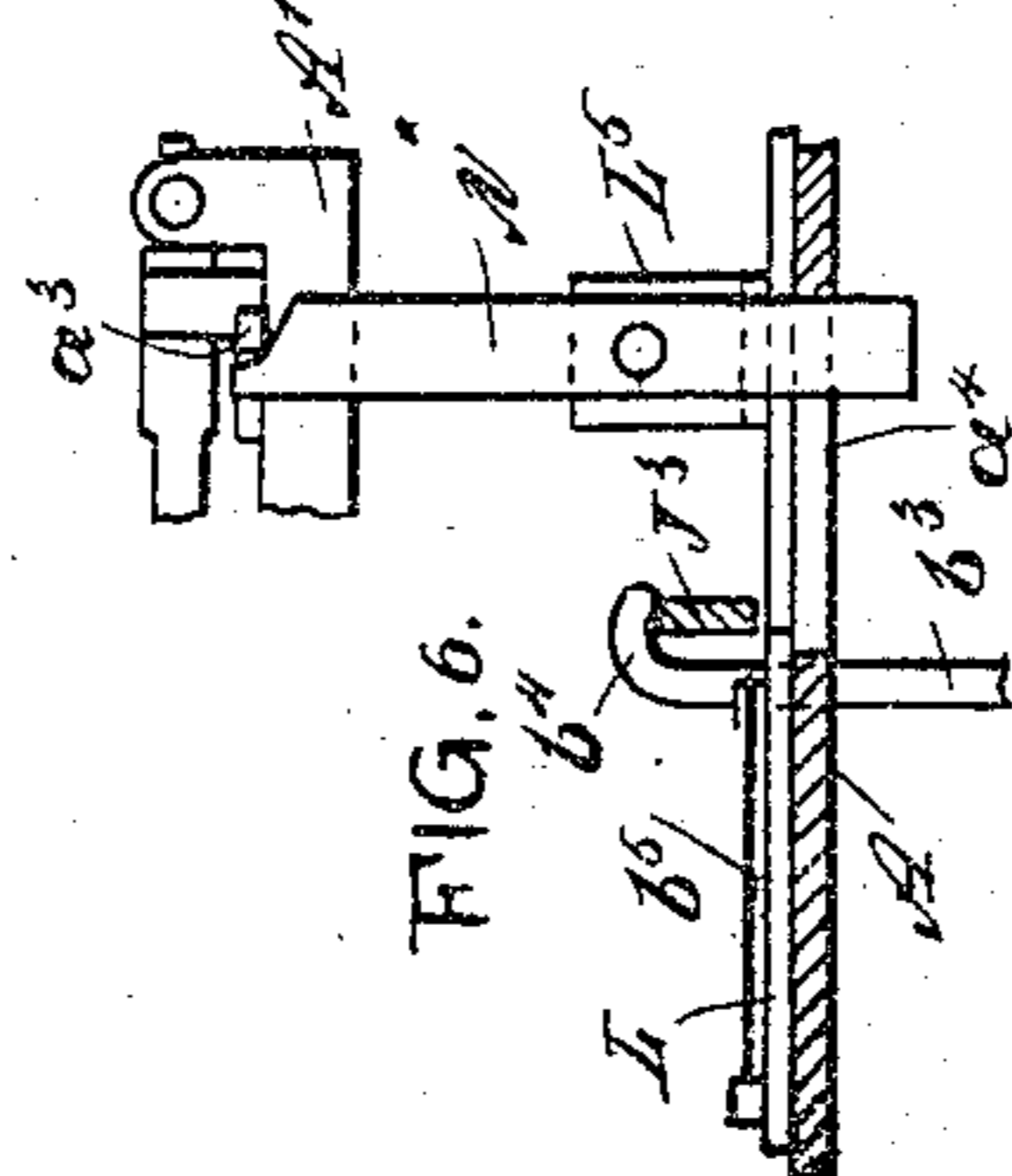


FIG. 6.



WITNESSES :

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W. C. Chapman

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No. 624,297.

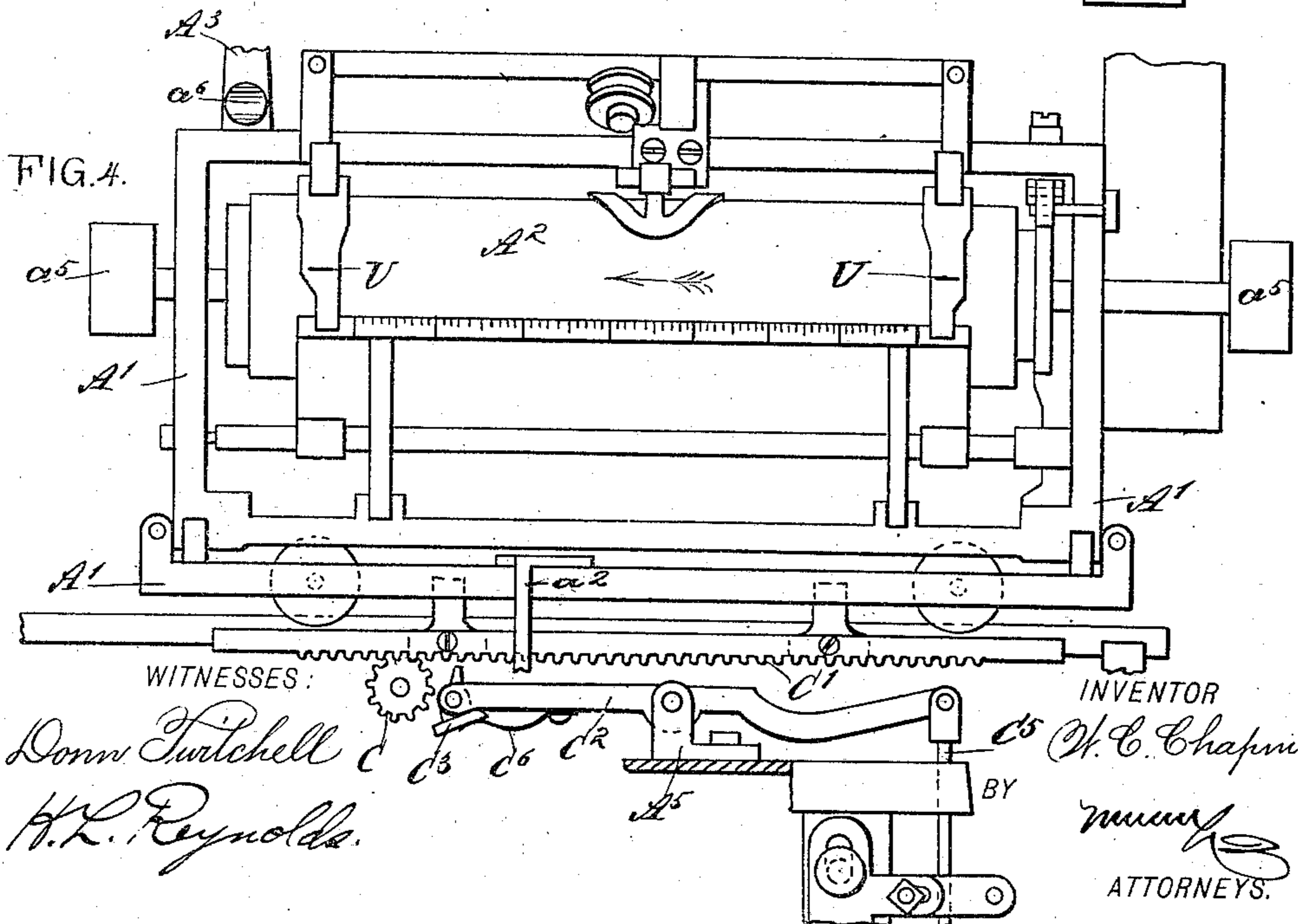
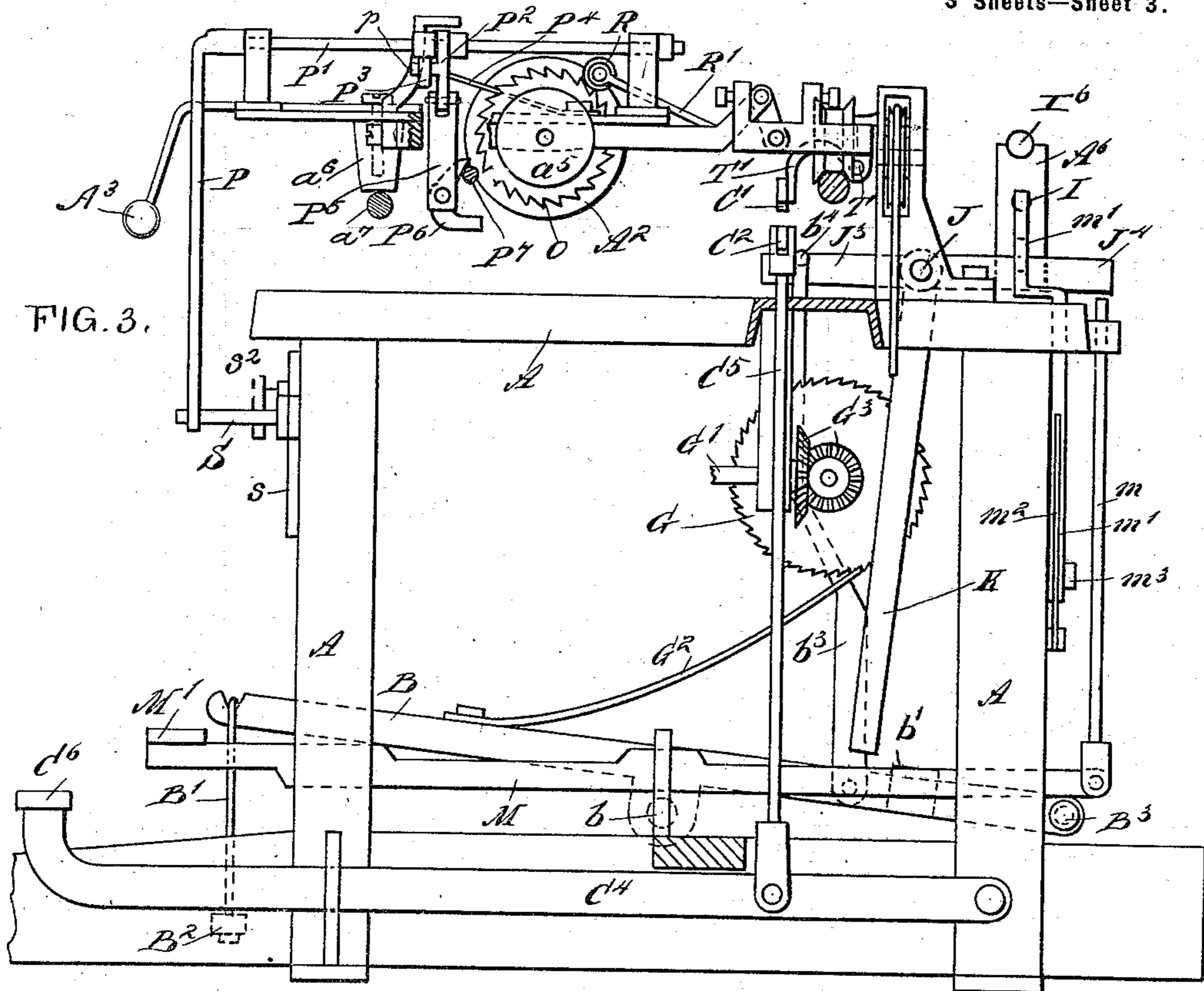
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(No Model.)

3 Sheets—Sheet 3.



WITNESSES:

Donn Twitchell
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ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM C. CHAPMAN, OF GRACEWOOD, GEORGIA.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 624,297, dated May 2, 1899.

Application filed April 19, 1897. Serial No. 632,841. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. CHAPMAN, of Gracewood, in the county of Richmond and State of Georgia, have invented a new and Improved Type-Writer, of which the following is a full, clear, and exact description.

My invention relates to certain improvements in type-writers having for their object an automatic return of the carriage at the end of the line, whereby the carriage is returned to commence a new line and a certain paper-feeding mechanism is actuated at the return of the carriage to feed the paper forward for a new line.

My invention also consists of certain mechanism by which the carriage may be returned with a step-by-step motion corresponding to the step-by-step forward feeding motion, so that the carriage may be run back to accurately place the carriage for any letter previously struck.

My invention also consists of certain details of construction, which will be more particularly pointed out and described in the following specification.

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 top plan view of my type-writer. Fig. 2 is a rear elevation thereof. Fig. 3 is an end elevation in partial section. Fig. 4 is a front elevation of the carriage raised so as to bring the writing into view and of the mechanism for securing a step-by-step return movement of the carriage. Fig. 5 is a detail view showing the stop-pawl of the feeding mechanism, and Fig. 6 is a detail view showing the mechanism for returning the sliding stop-plate which is engaged by the carriage at the end of its feeding movement.

To secure the backward feed or return movement of the carriage, I have used a spring and band similar to the device ordinarily in use for securing the forward feeding movement of the carriage. This spring, as shown, is mounted upon the end of the frame, its casing being shown at H, Fig. 2. The band or cord H' therefrom extends upward over a pulley H², which is journaled in lugs H³, mounted upon the frame, and is connected to

an arm h of the carriage-frame. The action of this spring and its connections is exactly that of the forward feeding device ordinarily used in type-writers. Its direction of operation is, however, the reverse of the usual type-writer. The forward feeding movement is a positive movement, the power therefor being furnished by the depression of the keys. The mechanism used for securing this is partially the same as that ordinarily used for the forward feeding movement. This consists of a rack-bar C', which is pivotally supported from the frame of the carriage at the point T by arms T', so that it may be raised when desired.

The rack-bar C' is engaged by a pinion C, mounted upon the frame of the machine. Upon the same shaft as the pinion C are ratchet and stop wheels E and F. The ratchet-wheel E is engaged by a pawl-lever E', which is pivoted at e' and is held in engagement therewith by a spring E², acting upon the projecting pin E³. This prevents the rotation of the wheel E in a backward direction while held in engagement by the spring E². The stop-wheel F is engaged by a stop-pawl F'. The notches in this stop-wheel F are square, and the tooth F⁶ upon the stop-pawl fits the same, so that it holds the wheel against rotation in either direction. This pawl is also held in engagement by the spring F², acting upon a pin F³. The outer end of this pawl is connected to the rod f, which is made adjustable in length by the member f' and is operated from the bar B³, which is mounted upon the rear ends of the levers B.

The levers B are located upon each side of the machine and at their forward ends have links or rods B' connecting them to the ends of a bar B², which passes beneath all of the key-levers, so that the depression of any key will depress the levers B, and thus operate the stop-pawl F'. The ratchet-wheel E is engaged by a pawl D², operated from the same source to move the same one tooth for each depression of a key.

The pawl D² is pivoted upon and carried by one end of the lever D, which latter is supported upon arms A⁴, carried from the frame of the machine. The other end of the lever D carries a collar D', which may be adjusted

so as to vary the stroke of the pawl D^2 . This collar D' is connected by a link B^5 with a collar B^4 , mounted upon the rod B^3 and held in place thereon by the collars b^2 . The pawl D^2 has a spring-arm D^3 extending, substantially, in a radial direction from its pivot and approximately at right angles to the direction of its motion at this point. The outer end of this spring-arm passes through a guide in one of the adjustable arms or supports A^4 , carried upon the frame. These two arms are adjustably connected by the bolt a , so that the elevation of the guide for the spring-arm D^3 may be changed. The action of this spring-arm D^3 is to throw the upper end of the pawl toward the ratchet-wheel E during the downward movement of the lever D and to throw the same away from the wheel during the upward movement of said lever.

A pin e is fixed to the frame of the machine, and its upper end projects horizontally in front of and close to the outer ends of the teeth of the ratchet-wheel E . This forms a guard to prevent the engaging end of the pawl D^2 from being thrown away from the ratchet-wheel until it has moved the same the proper distance. The upper end of the pawl D^2 has a pin d , which is U-shaped and projects horizontally toward the rear. When the pawl is drawn downward, this pin d will pass outside of the guard e . As it reaches the lower portion of its stroke the spring-arm D^3 will throw the pin d toward the ratchet-wheel E . As the pin is thrown upon the wheel it will engage with one of the teeth of the ratchet-wheel to rotate the same. The later action of the spring-arm D^3 will be to throw this pin d away from the wheel. It will be, however, restrained by the guard e until it rises above the same, when it will be disengaged from the wheel. The pin d therefore travels around the guard e .

The depression of the type writer keys acts to depress the pawl D^2 . It is necessary that the feeding movement of the carriage be accomplished while the key is being returned. This is secured by a spring D^4 , which acts upon the lower end of the pawl D^2 or the corresponding end of the lever D , upon which the same is mounted, to force the same upward. This spring is made strong enough to secure the forward feeding movement. It is compressed or placed under tension by the downward stroke of the keys and feeds the carriage by forcing upward the pawl D^2 . The pawl E' will yield by contact of the pivot of the ratchet-wheel against its outer sloping surface. The stop-pawl F' is, however, positively connected to the keys through the link f and is directly operated thereby to release the stop-wheel F when the keys are depressed. The movement is sufficient to permit the wheel F to be slightly rotated before the point F^6 of this pawl moves into engagement therewith. It is therefore brought first into engagement with the outer ends of the teeth and drops into a notch as the wheel ro-

tates, thus preventing overtravel of the carriage. The spring D^4 is attached to a lug D^5 , which is adjustably secured to the frame by the bolt a' , so that its elevation may be varied and its tension regulated.

Upon the upper surface of the frame of the machine is journaled a shaft J , which is provided with rearwardly-extending arms J' and J^2 , the outer end of the former passing through a notch F^3 in the stop-pawl F' and the latter passing through a corresponding notch in the outer end of the pawl-lever E' . This shaft also has a forwardly-extending arm J^3 , which is adapted to be engaged by a hook b^4 upon the upper end of the link b^3 . This link b^3 is connected to one of the levers B and therefore has a reciprocating motion every time a key is depressed. The upper end of this link passes through a hole in a plate L , which is mounted upon the upper surface of the type-writer frame and so as to slide across the same and in the direction of the travel of the carriage. Normally the hook b^4 will be held out of engagement with the arm J^3 , so that its reciprocation will have no effect thereon.

Mounted to slide in guides upon this plate L is an adjustable plate L' , which has an upwardly-projecting pin L^2 . This plate has a slot L^4 , within which is a clamping-bolt L^3 , screwing into the plate L . This permits considerable adjustment of the plate and consequent variation in the point from which the return movement is given. The carriage-frame has a pin or arm a^2 , projecting downward so as to engage the pin L^2 when the carriage is within two letters of the end of its travel. On depressing a key (or the spacer) the forward movement of the carriage will then move the plate L so as to bring the hook b^4 into engagement with the arm J^3 . This hook is held toward the arm J^3 by a small spring b^5 , and when the parts are in this position the end of the hook will be touching the side of the arm J^3 . Upon depressing one of the keys (or spacer) again the hook b^4 will be raised to a point where the spring b^5 will cause the hook to engage over the end of the arm J^3 upon the shaft J . The hand being then removed the hook b^4 will be depressed, carrying with it the arm J^3 upon the shaft J and elevating the arms J' and J^2 , thus releasing the pawls E' and F' from their respective wheels and permitting the carriage-return spring to act upon the carriage and return the same to its point of starting again.

The plate L has an upwardly-projecting lug L^5 , upon which is pivoted a lever N . The lower end of this lever projects through a slot a^4 in the frame and by the side of or through a slot of the plate L . The upper end of the lever is in the path of travel of an arm a^3 , attached to the carriage-frame A' . The view shown in Fig. 6 is taken from the rear of the machine. As the carriage travels toward the end of its stroke, or to the right as shown in Fig. 6, the arm a^3 will engage the upper end

of the lever N and pass over the same without affecting the position of the plate L. The plate L is, however, moved to the right on the return of the carriage by the engagement of the arm a^2 with the pin L^2 . Upon the return of the carriage the arm a^3 will engage the upper end of the lever N, and its lower end will engage one end of the slot a^4 , with the result that the plate L is moved to the left or back to its normal position. The position of the plate L shown in Fig. 6 is the outermost position or that which causes the upper end of the link b^3 to engage the arm J^3 . It sets the plate L in position again and allows the shaft J to be returned to its normal position. The pawls E' and F' may at any time be released from their respective wheels, permitting the carriage to return to its starting-point by means of the rods or links m , which are attached to the rear end of the levers M, which at their forward ends are provided with keys M'. I have shown one of these levers upon each side of the machine. One of these may be omitted, if desired. The upper ends of the rods or bars m pass through holes in the frame and engage the under surface of the arms J^4 and J^5 , which are attached to the shaft J. The depression of the keys M' will oscillate the shaft J, so as to disengage the pawls E' and F', thus permitting the carriage to be returned under the influence of the guard H' and spring H.

When the shaft J is oscillated so as to release these pawls, the arm J^4 is engaged by a notch in the upper end of a link or bar m' , which is pivoted at m^3 to the frame. This bar is pressed toward the center of the machine by a spring m^2 . When the arm J^4 is raised, it will be engaged by the notch in the link or bar m' and held in its raised position until the bar m' has been moved to the left.

A rod I is journaled in the arms A^6 of the frame, so that it may have a slight horizontal movement. A spring I^4 upon one end pulls the rod toward that end. At the other end it is provided with ratchet-teeth I^3 for holding the adjustable stop I^2 , which is mounted on the rod I^6 , arranged above the rod I. The position of the stop I^2 will regulate the position of the beginning of the line. In its center at I' this bar I is given a side bend or offset in order to clear the wheel F. The end of this bar which is at the left in Fig. 2 is so placed as to engage the upper end of the bar m' . When the carriage is returned by the spring H, the arm X thereof, engaging the sliding thimble I^5 on the rod I^6 , moves the said thimble into engagement with the stop I^2 and forces the bar I to the left, at the same time carrying the bar m' therewith and releasing the arm J^4 upon the shaft J. The pawls E' and F' are held from engagement with their respective ratchet-wheels while the arm J^4 is raised. As the arm J^4 cannot be released until the carriage has completed its return, these pawls E' and F' cannot engage their

ratchet-wheels until the stroke of the carriage is completed.

Beneath the rack-bar C' is pivoted a lever C^2 upon a lug A^5 , attached to the frame. This lever at its outer end is provided with a pivoted arm or dog C^3 , which is controlled by a spring C^6 , attached to the lever C^2 . The other end of the lever is connected by a link C^5 with a lever C^4 , which extends to the front of the machine and is provided with a key C^6 by which it may be operated. When the key C^6 is depressed, the end of the lever C^2 carrying the dog C^3 is raised, so that the upper end of the dog will engage the lower surface of the rack-bar C'. The upper end of this dog is adapted to enter the space between the teeth of the rack-bar. The rack-bar, as previously described, is pivoted to the frame so that it may rise slightly. The dog will thus raise the bar until it clears the pinion C. The spring H will then return the carriage as far as the dog C^3 will permit. This is so proportioned that the dog will oscillate a distance sufficient to permit the carriage to return one space. As the key C^6 is permitted to rise the bar C' will drop into engagement with the pinion C. This operation may be repeated as many times as desired, the carriage returning one space for each depression of the key, thus permitting the carriage to be fed backward accurately and quickly, so that a letter which has been incorrectly struck or skipped may be inserted, with a certainty that the insertion is in the proper place. In case it is desired to make the impression very strong, the letter may be struck more than once, with a certainty that the impression will be upon exactly the same spot as the first one.

The shaft J is provided with depending arms K. The levers B are also provided with lugs b' . The normal position of the arm K is one in which its lower end is slightly in front of the lug b' and so that the two will not engage when the levers B are operated. When the shaft J is oscillated either by the depression of the keys M' or in any of the methods provided, the arms K being attached to said shaft J and depending from it are swung back so that their lower ends are immediately over the lugs b' of the levers B. This results in locking the levers B, so that they cannot be depressed, and consequently, owing to the connection between the said levers B and the key-levers, all the key-levers of the machine will be locked, so that they cannot be operated. The arms K will be thrown to their normal positions—that is, in front of the lugs b' of the levers B—so that the said levers will be released as soon as the carriage has returned to its starting-point. This prevents striking any of the keys until the carriage is in proper position. I have shown the arms K as upon each side of the machine. One of these may be omitted, if desired.

The ribbon-feed consists of a spring-pawl G^2 , mounted upon the lever B and engaging

the teeth of a ratchet-wheel G. This ratchet-wheel is connected by a pair of bevel-gears G⁸ with the shaft G', which carries the ribbon-spool.

5 In Fig. 4 the carriage is shown elevated, so that the line being written upon is visible. Upon the paper-clamping bars at each end of the roller A² are formed marks "V," which
10 serve as guides or indicator-marks for indicating where the line of writing will appear—that is to say, will show the line upon which the writing will appear on blank paper. This location may be indicated, if desired, by projecting points instead of by marks. The latter, however, are thought to be more readily
15 provided and are capable of insertion without cost upon machines already constructed. By means of these marks it will be possible to insert letters in a line already written
20 without striking the same above or below the lines.

I have provided an arm A³, attached to one end of the carriage, by which it may be moved by hand when desired. This arm is
25 provided with a lug a⁶, resting upon the guide-bar a⁷. This prevents twisting or racking of the carriage when the same is moved by hand.

I have provided an automatic device for
30 feeding the paper, which is shown in Figs. 1 and 3. The roller A², about which the paper is held, is provided with the ratchet-wheel O upon one end. Mounted in journals upon the carriage and extending from front to rear
35 is a bar P', having an arm P depending in front of the machine. This bar has an arm P³ fixed thereon and an arm P² mounted loosely thereon. The latter is provided with a pin p, projecting to one side, so as to be
40 engaged by the arm P³. The arm P² is held down by a spring P⁴, attached to the carriage-frame. The outer end of the arm P² carries a bar P⁵, to the lower end of which is pivoted a pawl P⁶. A pin P⁷ is attached to the frame
45 and projects in front of the teeth on the ratchet-wheel, so as to engage the pawl P⁶ and hold the same normally out of engagement with the ratchet-wheel. The pawl P⁶ has an angular extension which serves as a
50 weight to hold it in proper position. This enables the roller A² to be turned at any time by engaging the hand-wheels a^{5x} at either end.

Upon the front of the frame is a projecting
55 pin S, so placed as to engage the lower end of the depending arm P and oscillate the bar P'. When the carriage is moving toward the right, the depending arm P, coming in contact with the pin S, will be swung toward the
60 left, raising the arm P³, and said arm, by its engagement with the pin p of the arm P², raises the said arm and the bar P⁵, connected therewith, so as to bring the pawl P⁶ into engagement with the ratchet-wheel O to turn the same, and thereby the roller A², so as to
65 feed the paper the space of a line. When, however, the carriage is moving toward the

left, the arm P, upon coming in contact with the pin S, will be swung to the right, depressing or moving the arm P³ away from the
70 pin p of the arm P², so that the said arm P² will remain stationary, and consequently the roller A² will not be turned. The depending arm P having passed the pin S resumes its normal position. A brake consisting of a
75 roller R, mounted upon the spring-arm R', is provided for holding the roller in the position to which it is moved by the feeding mechanism. The pin S is attached to a plate s,
80 said plate being arranged by a thumb-screw s² so as to allow of adjustment of position of the pin S, by which a space of one, two, or more lines of the paper will be fed at will on each return of the carriage.

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

1. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a pivoted
90 pawl and means for reciprocating it, a spring-arm projecting from the pivot substantially at right angles to its direction of reciprocation, and a fixed guide for the outer end of the spring-arm, substantially as described.

2. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a pivoted
95 pawl and means for reciprocating it, a spring-arm projecting from the pivot substantially at right angles to its direction of reciprocation and on the side opposite the ratchet-wheel, and a stationary guide for the outer
100 end of the spring-arm, substantially as described.

3. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a pivoted
105 pawl having a side projecting pin engaging the wheel and means for reciprocating it, a spring-arm projecting from the pivot substantially at right angles to its direction of reciprocation, a stationary guide for the outer
110 end of the spring-arm, and a guard projecting across the face of the ratchet-wheel and just outside of the teeth thereof, substantially as described.

4. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a pivoted
115 pawl and means for reciprocating it, a spring-arm projecting from the pivot substantially at right angles to its direction of reciprocation, a guide for the outer end of the spring-arm, and means for adjusting its position,
120 substantially as described.

5. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a pawl
125 and means for withdrawing it by the depression of the type-keys, a spring acting upon the pawl to advance it to rotate the ratchet-wheel, a spring-arm projecting from the pivot substantially at right angles to its direction
130 of reciprocation, and a guide for the outer end of this arm, substantially as described.

6. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a pawl
and means for withdrawing it by the depres-

sion of the type-keys, a spring acting upon the pawl to advance it to rotate the ratchet-wheel, a spring-arm projecting from the pivot substantially at right angles to its direction of reciprocation, a guide for the outer end of this arm, and means for adjusting the position thereof, substantially as described.

7. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a pawl and means for withdrawing it by the depression of the type-keys, a spring acting upon the pawl to advance it to rotate the ratchet-wheel, a spring-arm projecting from the pivot substantially at right angles to its direction of reciprocation and on the side opposite the ratchet-wheel, and a stationary guide or holder for the outer end of this arm, substantially as described.

8. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a pawl and means for withdrawing it by the depression of the type-keys, a spring acting upon the pawl to advance it to rotate the ratchet-wheel, a spring-arm projecting from the pivot substantially at right angles to its direction of reciprocation, a guide for the outer end of this arm, and a guard engaging the outer end of the pawl to hold it in engagement with the wheel during the middle of its stroke, substantially as described.

9. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a pivoted pawl having a side projecting pin engaging the wheel-teeth and means for withdrawing it by the depression of the type-keys, a spring acting upon the pawl to advance it, and a guard projecting across the face of the ratchet-wheel and just outside the teeth thereof, substantially as described.

10. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a pivoted pawl and means for reciprocating it, a spring-arm projecting from the pivot substantially at right angles to its direction of reciprocation, a fixed guide for the outer end of the spring-arm, a return-spring connected to the carriage, and means for freeing the forward feeding mechanism and permitting the carriage to return, substantially as described.

11. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a holding-dog therefor, a pivoted pawl and means for withdrawing it by the depression of the type-keys, a spring acting upon the pawl to advance it, a spring-arm projecting from the pawl substantially at right angles to its direction of reciprocation, and a stationary guard for the outer end of this arm, substantially as described.

12. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a holding-dog therefor, a pawl, and means for withdrawing it by the depression of the type-keys, a spring acting upon the pawl to advance it, a spring projecting from the pawl substantially at right angles to its direction of reciprocation and on the side opposite the ratchet-

wheel and a stationary guide or holder for the outer end of this arm, substantially as described.

13. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a pivoted lever operated by the key-levers, a pawl pivoted to the lever, a spring for throwing the pawl toward and from the ratchet-wheel when the lever is swung on its pivot, and a spring for advancing the pawl to rotate the ratchet-wheel, substantially as described.

14. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a holding-dog for the ratchet-wheel, a pivoted lever operated by the key-levers, a pawl pivoted to the lever, a spring for throwing the pawl toward and from the ratchet-wheel when the lever is swung upon its pivot and a spring for advancing the pawl to rotate the ratchet-wheel, substantially as described.

15. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a holding-dog for the ratchet-wheel, a releasing mechanism for said dog, a pivoted lever, a pawl pivoted to the lever, a spring for throwing the pawl toward and from the ratchet-wheel when the lever is swung upon its pivot, a spring for advancing the pawl to operate the ratchet-wheel, and means for operating the said lever from the key-levers, substantially as described.

16. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, positive connections therefrom to the carriage to feed it, a pawl engaging said ratchet-wheel, a spring-arm projecting from the pivot thereof, a stationary guide or holder for said spring-arm, a pivoted lever carrying said pawl, a link adjustably connected with said lever, a bar actuated by the depression of the key-levers, and connections therefrom to the said link, substantially as described.

17. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, a pinion attached thereto, a rack-bar upon the carriage meshing therewith, a pawl engaging said ratchet-wheel, a spring-arm projecting from the pivot thereof, a stationary guide or holder for said spring-arm, a pivoted lever carrying said pawl, a link adjustably connected with said lever, a bar actuated by the depression of the key-levers and connections therefrom to the said link, substantially as described.

18. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, positive connections therefrom to the carriage to feed it, a pawl engaging said ratchet-wheel, a spring-arm projecting from the pivot thereof, a stationary guide or holder for said spring-arm, and a guard for retaining the pawl in engagement with the ratchet-wheel during its upward stroke, substantially as described.

19. A carriage-feeding mechanism for typewriters, comprising a ratchet-wheel, and connections therefrom to the carriage for moving the same by rotation of the ratchet-wheel, a spring connected to the carriage to return

the same when the ratchet-wheel is freed, a holding-dog for the ratchet-wheel, positive means actuated by the depression of the keys for rotating the ratchet-wheel and feeding the carriage, a shaft pivoted upon the frame adjacent the holding-dog, an arm thereon engaging the holding-dog, a releasing-lever, and a link connecting said lever and shaft for releasing the dog, substantially as described.

20. A carriage-feeding mechanism for typewriters, comprising a rack-bar upon the carriage, a shaft having a pinion engaging therewith, a stop-wheel, and a ratchet-wheel upon the same shaft, spring-held dogs engaging both of said wheels, an actuating-pawl engaging the ratchet-wheel, a bar actuated by the depression of any of the type-keys, and connections from said bar to the stop-dogs and to the actuating-pawl, whereby the stop-dog is freed at the depression of a key and the actuating-pawl is advanced to rotate the ratchet-wheel at the rising of the key, substantially as described.

21. A carriage-feeding mechanism for typewriters, comprising a rack-bar upon the carriage, a shaft having a pinion engaging therewith, a stop-wheel and a ratchet-wheel upon the same shaft, spring-held dogs engaging both of said wheels, an actuating-pawl engaging the ratchet-wheel, a bar actuated by the depression of any of the type-keys, and connections from said bar to the stop-dogs and to the actuating-pawl, whereby the stop-dog is freed at the depression of a key and the actuating-pawl is advanced to rotate the ratchet-wheel at the rising of the key, and a spring acting upon the actuating-pawl in opposition to the downward movement of the keys, substantially as described.

22. A carriage-feeding mechanism for typewriters, comprising a rack upon the carriage, a pinion engaging the rack, a stop-wheel and ratchet-wheel on the shaft of the pinion, a spring-pressed stop-dog engaging each of the said wheels, a spring-pressed actuating-pawl engaging the ratchet-wheel, and means for disengaging the stop-dogs from the stop-wheels and operating the actuating-pawl to rotate the ratchet-wheel from the type-keys, substantially as described.

23. A carriage-feeding mechanism for typewriters, comprising a rack upon the carriage, a pinion engaging the rack, a stop-wheel and ratchet-wheel on the shaft of the pinion, a stop-dog engaging each of the said wheels, a pivoted lever, a pivoted and spring-pressed pawl engaging the ratchet-wheel, levers, a bar connected with the levers and actuated by the type-keys, and a connection between the said levers and the lever carrying the said pawl and the dog of the stop-wheel, substantially as described.

24. A type-writer carriage having a rack-bar capable of swinging, position-controlling mechanism engaging therewith when in its normal position, a carriage-return mechanism in constant action, and a pivoted lever hav-

ing at its free end a swinging arm capable of limited motion and adapted to engage the rack-bar to lift it, whereby the carriage may be returned one letter-space at a time, substantially as described.

25. A type-writer carriage having a rack-bar capable of swinging, position-controlling mechanism engaging therewith when in its normal position, a carriage-return mechanism in constant action, a pivoted lever having at its free end a swinging arm capable of limited motion and adapted to engage the rack-bar to lift it, a returning or dog-feeding lever, and key and connections therefrom to the former lever, substantially as described.

26. In a type-writer, the combination with a carriage, and means for automatically returning the carriage, of a rack pivotally mounted upon the carriage, a pinion meshing with the rack for imparting forward movement to the carriage, a pivoted lever, and a pivoted and spring-pressed dog mounted upon the free end of the lever, said dog engaging the rack to lift it out of engagement with the pinion and permit the carriage to be moved backward the space of a letter, substantially as described.

27. In a type-writer, the combination with a carriage, and a spring for returning the carriage, of a pivoted rack on the carriage, a pinion meshing with the rack for imparting forward movement to the carriage, a pivoted lever, a pivoted and spring-pressed dog at one end of the lever, said dog having limited movement and engaging the rack to swing it on its pivot and lift it out of engagement with the pinion to permit the spring to move the carriage backward the space of a letter, and a key connected with said lever for operating it, substantially as described.

28. A paper-feeding mechanism for typewriters, comprising a roller, a ratchet-wheel thereon, a bar mounted on the carriage to rock and having a depending arm, a fixed pin in the path of the said arm, a jointed arm fixed on the said bar, and a pawl pivoted to said arm and adapted to engage the ratchet-wheel, substantially as described.

29. A paper-feeder mechanism for typewriters, comprising a roller, a ratchet-wheel thereon, a bar mounted to rock on the carriage and having a depending arm, a fixed pin in the path of the said arm, a jointed arm fixed on the said bar, a pawl pivoted to the said arm, and a fixed pin in front of the ratchet-wheel and upon which the pawl normally rests to hold it out of engagement with the ratchet-wheel, substantially as described.

30. A paper-feeding mechanism for typewriters, comprising a roller, a ratchet-wheel thereon, a bar pivoted on the carriage and having a depending arm, a fixed pin in the path of said arm, a jointed arm fixed on said bar, a link pivoted to said arm, and a pawl on said link adapted to engage the ratchet-wheel, substantially as described.

31. A paper-feeding mechanism for type-

writers, comprising a roller, a ratchet-wheel thereon, a bar pivoted on the carriage and having a depending arm, a fixed pin in the path of said arm, a jointed arm fixed on said bar, a link pivoted to said arm, a pawl on said link, and a pin fixed outside of the ratchet-teeth and adapted to engage the pawl to hold it normally out of engagement, substantially as described.

32. A type-writer feeding mechanism, comprising a carriage-return mechanism constantly active, positive forward feeding mechanism, a feed-releasing lever, a link and connections whereby it is reciprocated by the depression of any key, and means actuated by the forward travel of the carriage for connecting said link with the feed-releasing lever, substantially as described.

33. A type-writer feeding mechanism, comprising a carriage-return mechanism constantly active, positive forward feeding mechanism, a feed-releasing lever, a link and connections whereby it is reciprocated by the depression of any key, means actuated by the forward travel of the carriage for connecting said link with the feed-releasing lever, a plate mounted to slide, having a guide for said link, a member adapted to engage the slide and carriage at the end of the feeding movement, and means for returning the slide by the return of the carriage, substantially as described.

34. A type-writer feeding mechanism, comprising a carriage-return mechanism, constantly active, positive forward-feeding mechanism, a feed-releasing lever, a link and connections whereby it is reciprocated by the depression of any key, means actuated by the forward travel of the carriage for connecting said link with the feed-releasing lever, a plate mounted to slide, having an adjustable guide for said link, a member adapted to engage the slide and carriage at the end of the feeding movement, and means for returning the slide by the return of the carriage, substantially as described.

35. A type-writer feeding mechanism, comprising a carriage-return mechanism con-

stantly active, positive forward-feeding mechanism, a feed-releasing lever, a link and connections whereby it is reciprocated by the depression of any key, a plate mounted to slide upon the frame, having a guide for said link, and an adjustable member upon said sliding plate, having a projection adapted to be engaged by the carriage at the end of its travel, substantially as described.

36. A type-writer feeding mechanism, comprising a carriage-return mechanism constantly active, positive forward-feeding mechanism, a feed-releasing lever, a link and connections whereby it is reciprocated by the depression of any key, a plate mounted to slide upon the frame, and having an opening through which the link projects, an adjustable member upon said sliding plate, having a projection adapted to be engaged by the carriage at the end of its travel, and means for returning said sliding plate by the return of the carriage, substantially as described.

37. In a type-writer, the combination with a carriage, mechanism for positively feeding the carriage forward, and means for automatically returning the carriage, of a pivoted lever, and an arm carried by said lever, said arm having limited movement and adapted to engage the mechanism for feeding the carriage forward to throw it out of operation, whereby the carriage will be automatically returned the distance of one space, as set forth.

38. In a type-writer, the combination with a carriage, mechanism for positively feeding the carriage forward, and a spring for returning the carriage, of a pivoted lever, and an arm pivoted to said lever to have a limited movement, said lever being adapted to engage the mechanism for feeding the carriage forward to throw it out of operation, whereby the carriage will be returned by the spring the distance of one space, substantially as described.

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Witnesses:

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