

E. G. LATTA.
RIBBON MECHANISM.

APPLICATION FILED SEPT. 5, 1905.

Patented Sept. 21, 1909.

6 SHEETS—SHEET 2.

934,677.

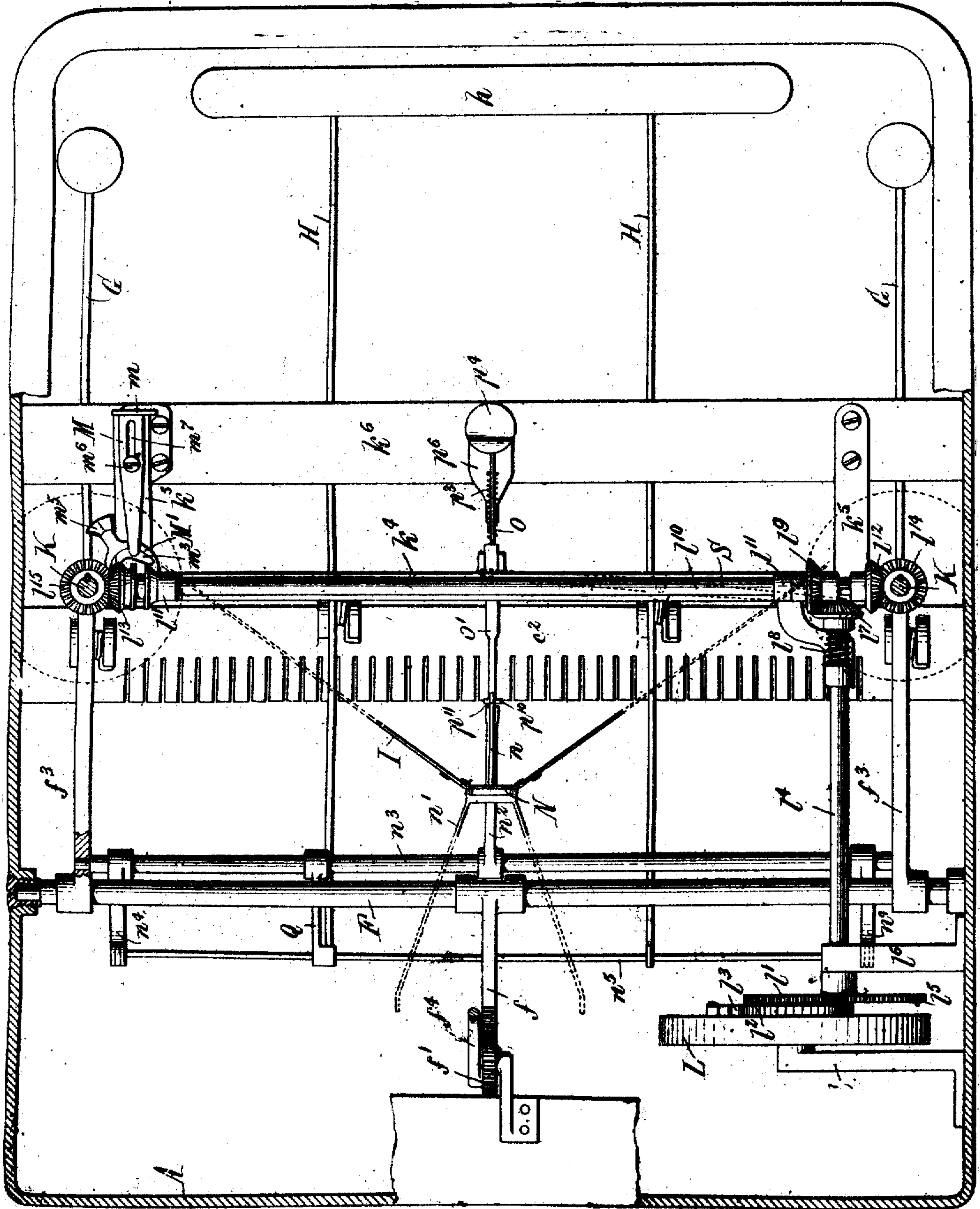


Fig. 2

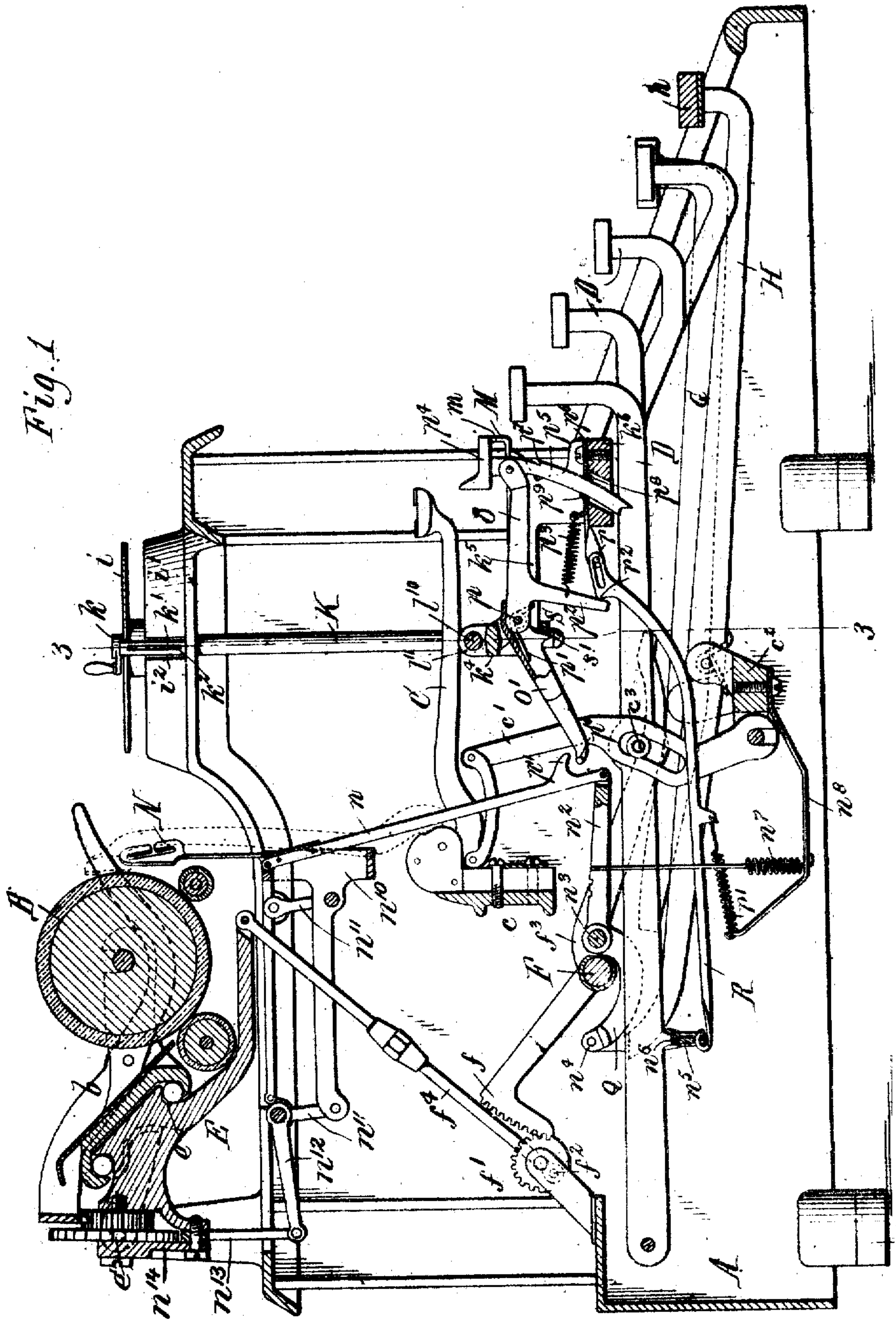
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6 SHEETS-SHEET 1



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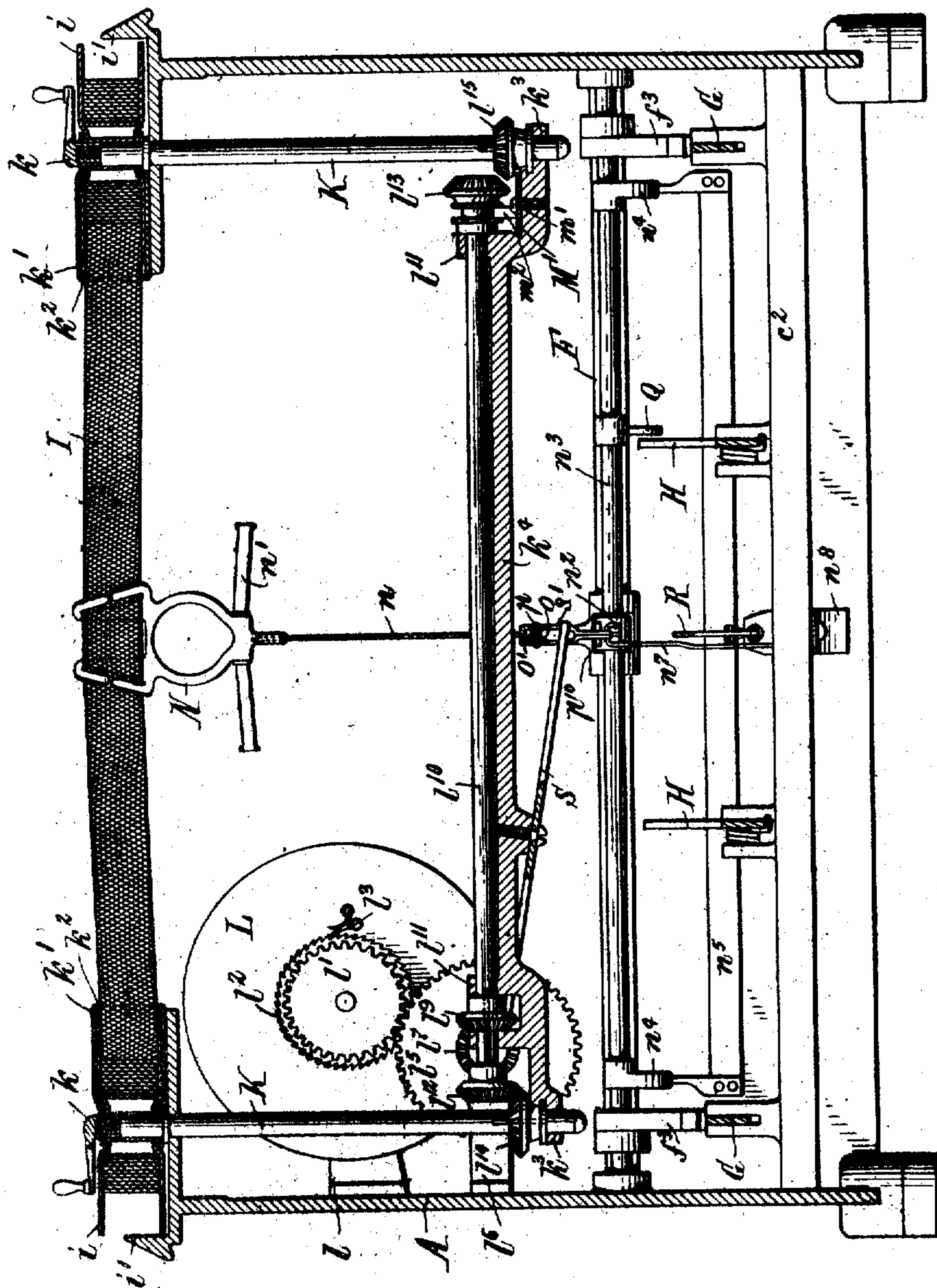
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8 SHEETS—SHEET 3.

Fig. 3



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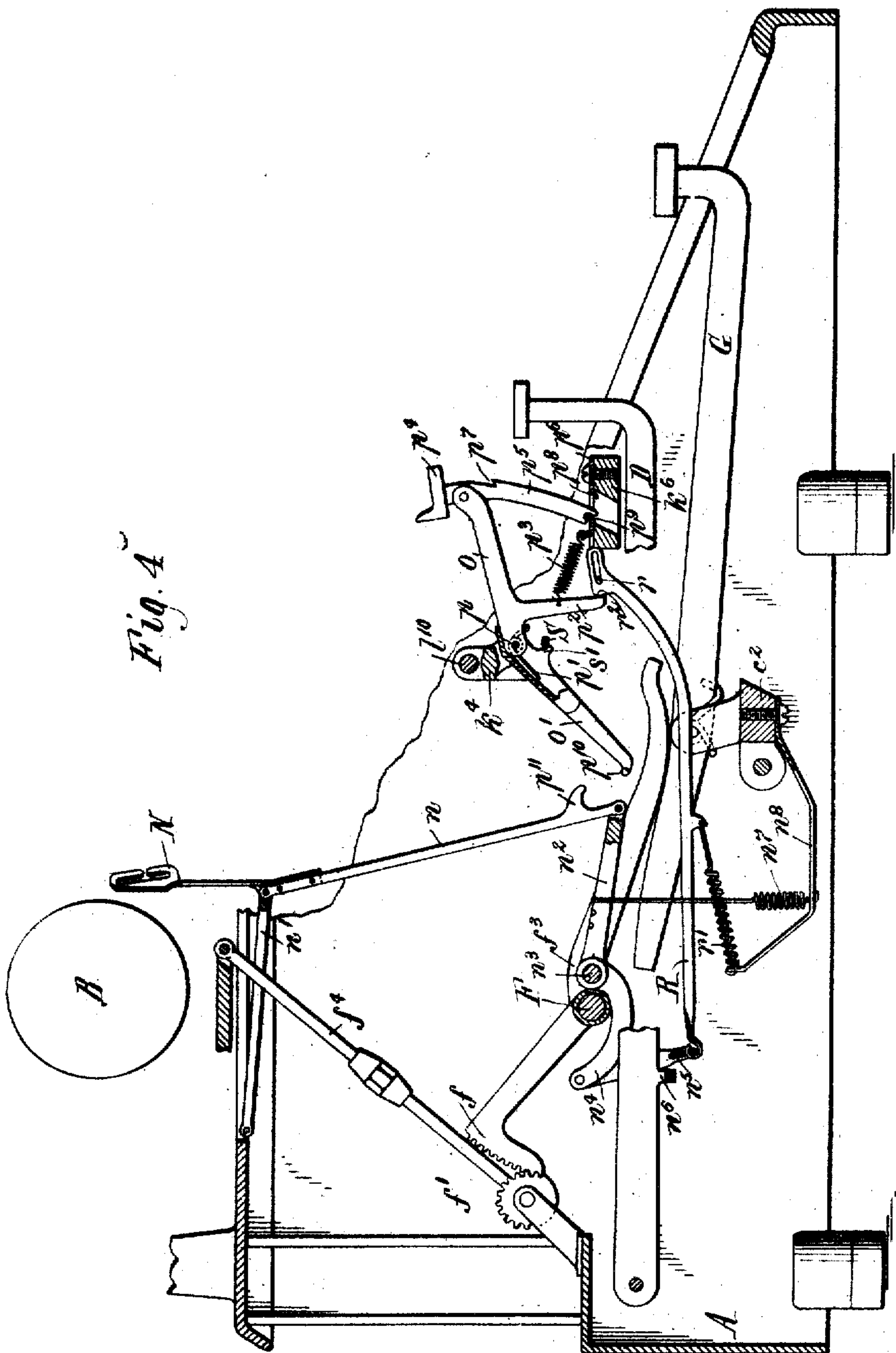
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6 SHEETS—SHEET 4.



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6 SHEETS—SHEET 5.

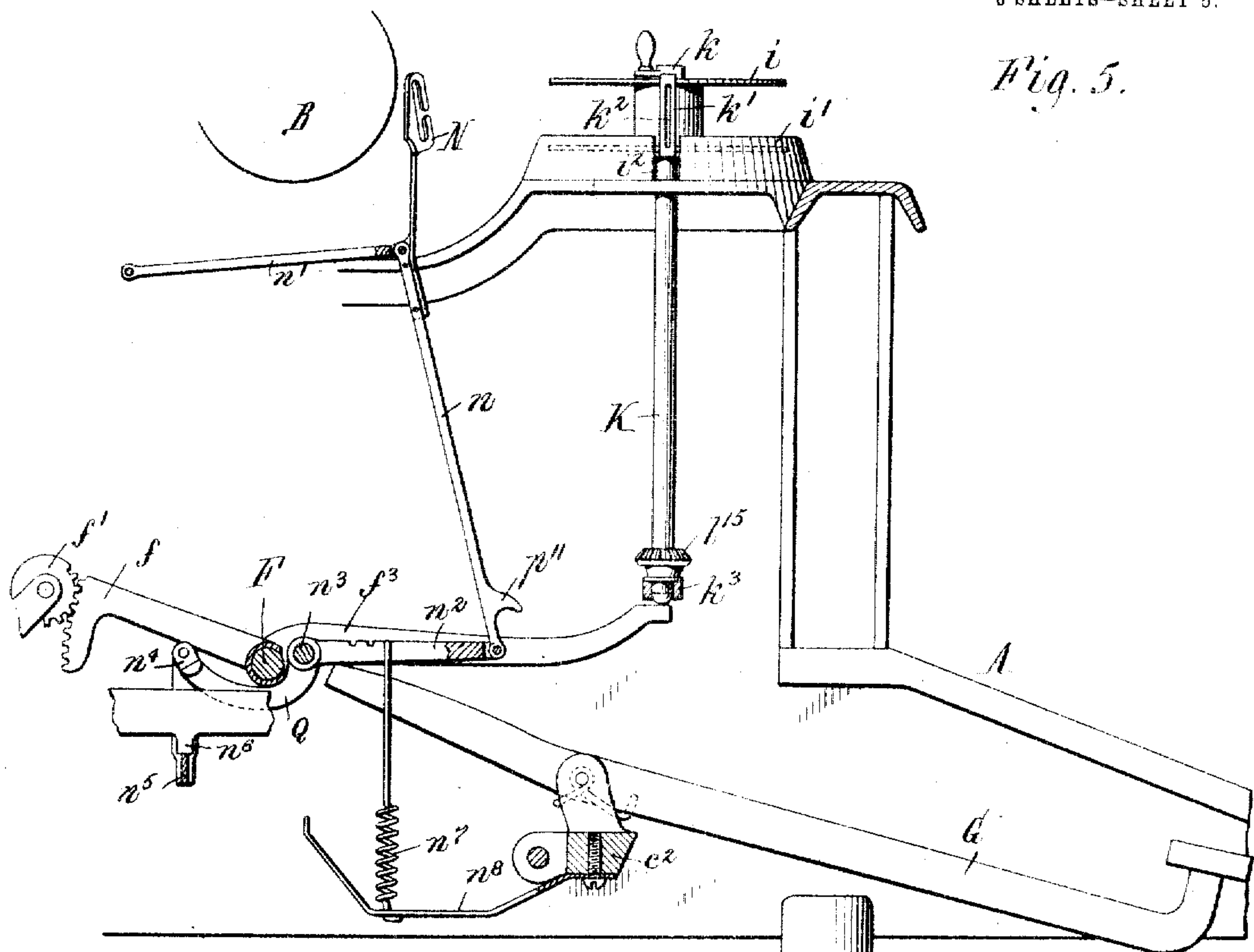


Fig. 5.

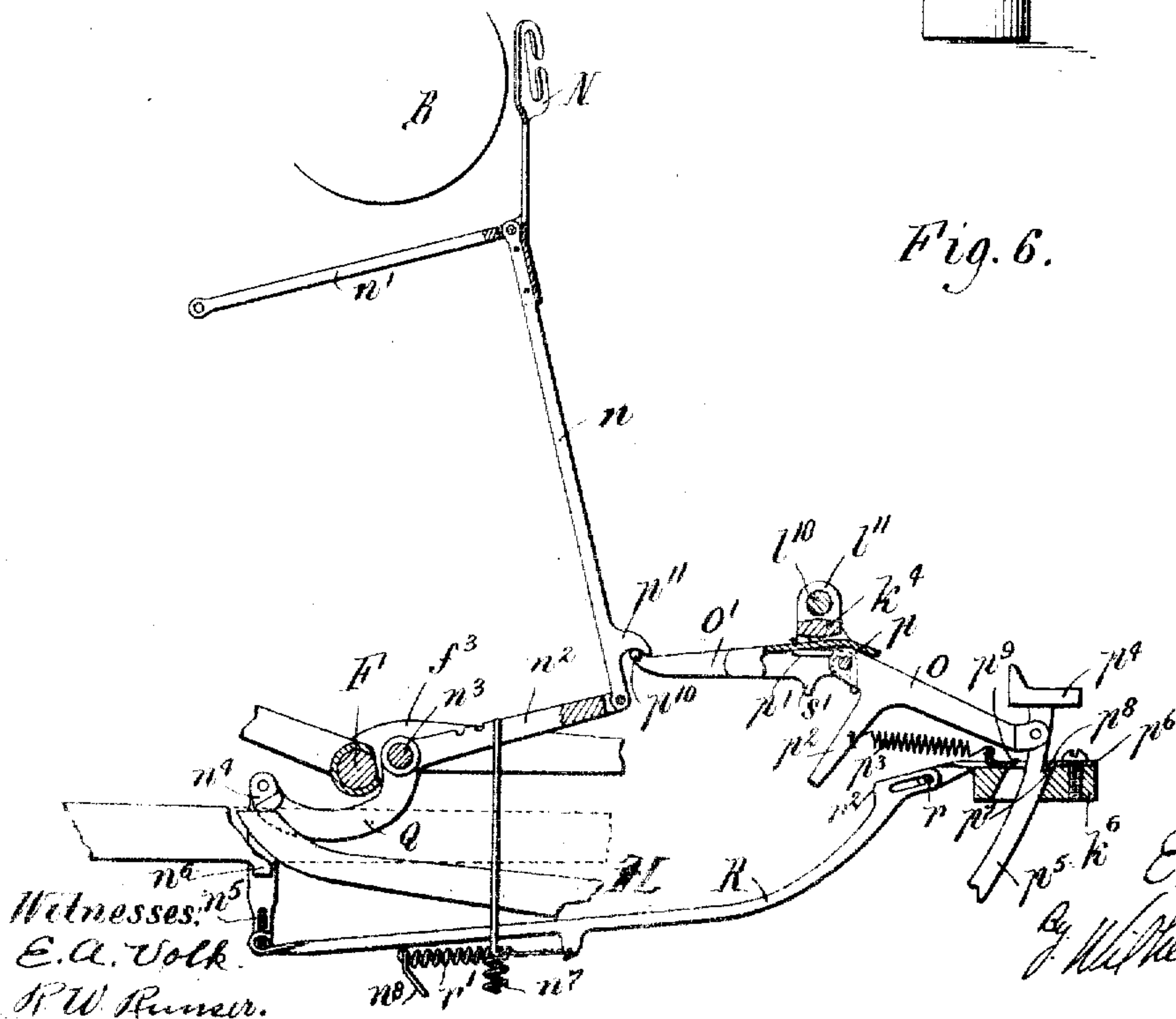


Fig. 6.

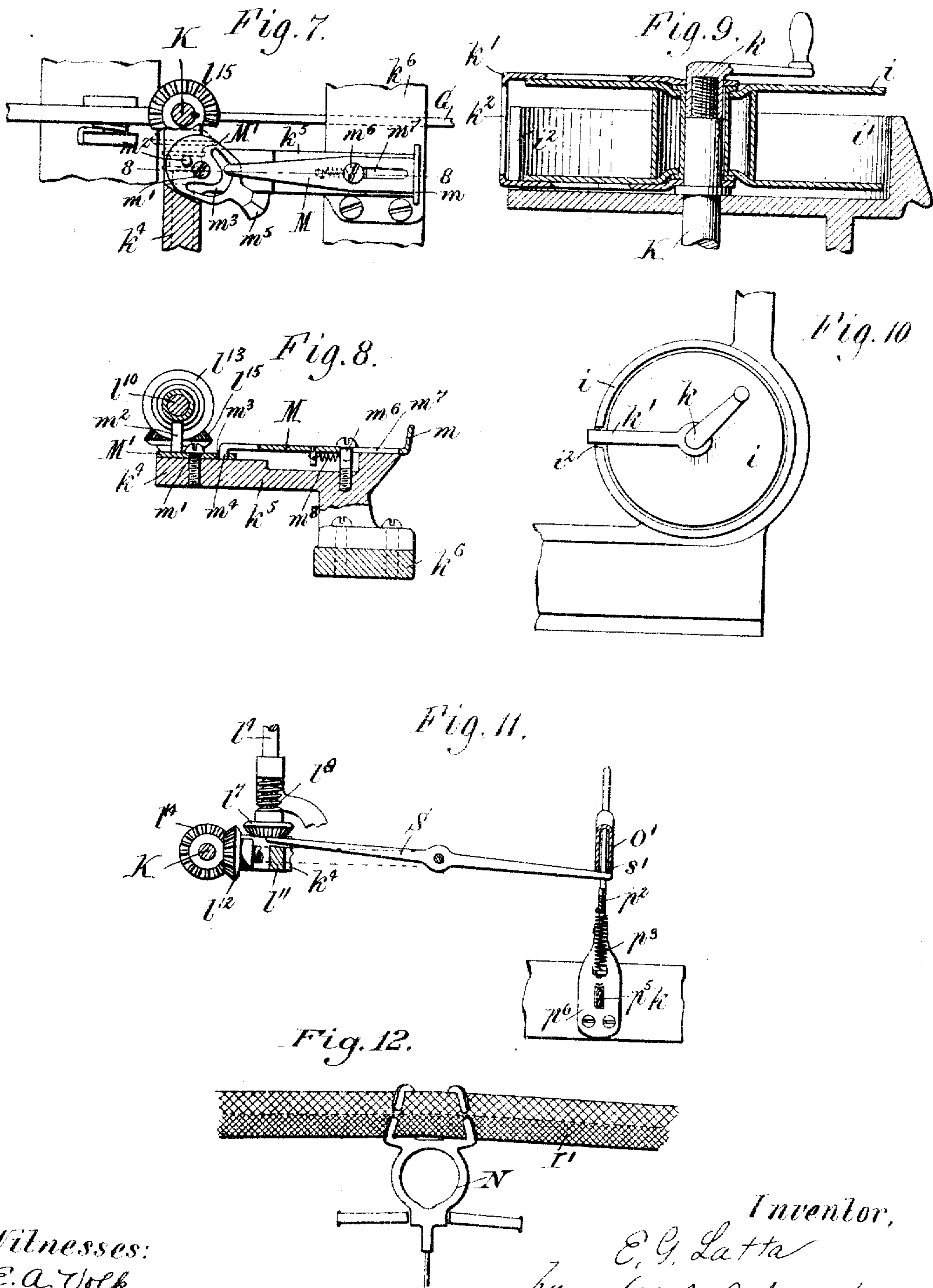
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6 SHEETS—SHEET 6.



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UNITED STATES PATENT OFFICE.

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RIBBON MECHANISM.

934,677.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed September 5, 1905. Serial No. 277,083.

To all whom it may concern:

Be it known that I, EMMIT G. LATTA, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented a new and useful Improvement in Ribbon Mechanisms, of which the following is a specification.

This invention relates to ribbon mechanisms for typewriting machines, and more particularly to ribbon mechanisms for front strike typewriters in which the type bars have two sets of type and the platen is normally in printing relation with one set of type and is shifted to printing relation with the other set of type. Some features of the invention, however, are equally well adapted for machines in which the type-bar segment is shifted instead of the platen, and some of the features are adapted for use with other than front strike machines.

The objects of the invention are to produce a power-driven ribbon feed-mechanism of simple and desirable construction involving the minimum number of parts; to provide simple means for automatically stopping the feed of the ribbon to prevent injury to the ribbon, and for giving audible notice when the ribbon is at the end of its run; to provide a ribbon feed reversing mechanism having an operating key or part which is always moved in the same direction to reverse the ribbon regardless of the direction in which the ribbon is feeding; to provide novel means for guiding the ribbon and for vibrating the same portion of the ribbon to and from the printing point in two different positions of the platen, for holding the ribbon stationary in position for printing and permitting the ribbon to be moved to expose the printing point whenever desired, and for holding the ribbon stationary out of printing position; and to provide means for throwing the ribbon feed out of action when the ribbon is held out of printing relation.

Another object of the invention is to improve the ribbon mechanism of typewriting machines in the respects hereinafter specified and set forth in the claims.

In the accompanying drawings, consisting of six sheets: Figure 1 is a longitudinal sectional elevation of a typewriting machine provided with ribbon mechanism embodying the invention, showing the normal position of the parts. Fig. 2 is a fragmentary horizontal

sectional plan view thereof. Fig. 3 is a transverse sectional elevation thereof in line 3—3, Fig. 1. Fig. 4 is a fragmentary sectional elevation similar to Fig. 1, showing the position of the parts when the ribbon is locked down out of printing position. Fig. 5 is a fragmentary sectional elevation of the vibrating mechanism, showing the position of the parts when the platen is shifted. Fig. 6 is a fragmentary view similar to Fig. 4, showing the position of the parts to hold the lower portion of the ribbon over the printing point. Fig. 7 is a fragmentary sectional plan, on an enlarged scale, of the ribbon feed reversing device, showing the same in a different position from that shown in Fig. 2. Fig. 8 is a sectional elevation of the feed reversing device in line 8—8, Fig. 7. Fig. 9 is a sectional elevation, on an enlarged scale, of one of the ribbon spools and associated parts. Fig. 10 is a plan view of one of the ribbon spools and its seat. Fig. 11 is a horizontal sectional plan of the means for throwing the ribbon feed out of action. Fig. 12 is a fragmentary elevation of the ribbon vibrator with a ribbon having fields of different character.

Like letters of reference refer to like parts in the several figures.

A represents the main frame of the machine, B the rotatable platen journaled on the carriage *b* which travels transversely of the machine to produce the letter spacing, C one of the pivoted type-bars, and D the key levers or finger keys for operating the type bars. In the machine shown in the drawings the type bars, which are provided with two sets of type, are pivoted below the platen on a segment *c* to swing upwardly and rearwardly against the front side of the platen and are operated from the key levers through the medium of auxiliary levers *c'* each pivoted at its lower end on a transverse bar or support *c''* connected at its upper end by a link to one of the type bars and having between its ends a sliding or pin and slot connection *c'''* with one of the key levers. When a key lever is depressed the pin *c'''* thereon slides in the slot of the auxiliary lever toward the fulcrum of the latter and this, together with the peculiar shape of the slot, causes the type-bar to approach the platen with an accelerating motion. This type-bar action is fully described in Patent No. 819,365, granted May 1, 1906, to Moyer

and Latta. Any other suitable action could be employed. The platen carriage moves on a suitable track e on a shift frame E which is pivoted at its ends to the main frame at points e' in rear of the platen. The shift frame normally holds the platen in printing relation with one set of type on the type frame normally holds the platen in printing relation with the other set of type by the following mechanism: F represents a rock shaft journaled at its ends on the main frame and having a toothed segment f meshing with a gear pinion f' connected by a crank or eccentric f^2 and rod f^4 with the front portion of the shift frame. The rock shaft F has forwardly projecting rocker arms f^3 which bear on the rear ends of shift levers or keys G which are located near the opposite sides of the machine, are pivoted between their ends conveniently on the transverse bar or support c^2 , and extend forwardly to the key board. By depressing either of the shift keys G the rocker arms f^3 are lifted, thereby rocking the shaft F which, through the toothed segment, pinion crank and rod described lifts the shift frame to place the platen in its upper printing position, which position is indicated in Fig. 5. This platen shifting mechanism is fully described in my application filed June 14, 1905, Serial No. 265,217, and as therein explained, it is possible to shift the type-bar segment instead of the platen by a substantially similar mechanism. In so far as some of the features to be described are concerned, either the platen or the segment could be shifted.

H represents space keys or levers pivoted between their ends on the frame bar c^2 and carrying at their front ends the usual thumb bar h . These space keys or levers are, as usual, connected to the carriage escapement for producing the letter and word spacing, by mechanism which forms no part of the present invention and is not shown in the drawings.

The parts thus far mentioned are all more fully described in said applications and are thus briefly described herein to enable a proper understanding of their relation and cooperation with the ribbon mechanism.

The ribbon feed mechanism is preferably constructed as follows: I represents the ink ribbon which passes in front of the platen, preferably transversely of the machine, and is connected at its opposite ends to spools i which are located at opposite sides of the machine, preferably in raised cups or seats i' formed on the top plate of the frame. The seats have slots i^2 at their inner sides for the passage of the ribbon. The spools, which may be of any ordinary form, are preferably splined on the upper ends of upright spool shaft K and removably retained on the shafts by nuts k screwed on the threaded

upper ends of the shafts. The nuts have crank handles by which they can be screwed on and off of the spool shafts and their threads are oppositely pitched, whereby the cranked nuts serve as handles for turning the spools in the opposite directions necessary to wind the ribbon thereon without unscrewing the nuts from the spool shafts. k' represents ribbon directing devices, preferably in the form of bails which embrace the spools, and have inbent ends which fit in central depressions in the spools and have holes through which the spool shafts pass. The central parts of the bails are seated in the slots i^2 in the spool seats, whereby the bails are held from turning, and are slotted vertically at k^2 to receive and guide the ribbon. The spool shafts K are journaled in upper and lower bearings in which they are adapted to slide endwise, or vertically, the upper bearing being preferably formed in the top of the frame and the lower bearings k^3 on a transverse bracket k^4 secured by forwardly and downwardly extending arms k^5 to a front cross bar k^6 of the frame. The bails move vertically with the spool shafts and spools, which are shifted with the platen, and prevent the ribbon from wear and from twisting or folding where it passes out of the spool seats.

L , Figs. 2 and 3, represents the usual spring driven drum (connected to the carriage by means not shown) for moving the carriage to the left. The spring drum is journaled on a shaft supported by a suitable bracket l or part of the frame.

l' is a gear pinion journaled concentrically with the spring drum and connected thereto by means which cause the pinion l' to turn to the left with the drum but permit the drum to turn independently of the pinion in the opposite direction when the carriage is set back for a new line. In the construction shown, the pinion is loosely mounted on the drum shaft and is provided with integral ratchet teeth l^2 engaged by a spring pressed pawl l^3 pivoted on the spring drum.

l^4 is a horizontal shaft having a gear wheel l^5 fixed to its rear end and meshing with the pinion l' . This shaft l^4 extends forwardly under the left-hand end of the type-bar segment and at the left of the upright auxiliary type-bar levers c' and is journaled in suitable bearings, preferably in the transverse bracket k^4 and in a bracket l^6 at the rear of the frame.

l^7 is a bevel gear wheel which is splined or otherwise connected to the front end of the shaft l^4 so as to turn with the shaft and slide thereon, and which is yieldingly held by a coil spring l^8 surrounding the shaft l^4 in mesh with a bevel gear wheel l^9 splined on a transverse horizontal reversing shaft l^{10} which is journaled to rotate and slide endwise in bearings l^{11} preferably formed in the

transverse bracket k^4 . The bevel gear wheel l^6 is held from endwise movement between two of the bearings for the reversing shaft.

l^{12} l^{13} are two bevel gear wheels which are fixed to the ends of the reversing shaft, are adapted to mesh respectively with bevel gear wheels l^{14} l^{15} splined on the lower ends of the spool shafts K, and are held against endwise movement with said shafts by suitable means, such as flanges on said wheels engaging in slots in the lower bearings for the spool shafts. The reversing shaft is in gear with only one spool shaft at a time.

With the reversing shaft l^{10} in the position shown in Figs. 2 and 3, the feed mechanism just described causes the ribbon to wind slowly on the left-hand spool by the power of the carriage driving spring drum and, when it is desired to reverse the ribbon feed so as to wind the ribbon on the right-hand spool, the reversing shaft l^{10} is simply moved to the right far enough to disengage the bevel gear at its left end from the gear on the left spool shaft and cause the bevel gear at its right end to mesh with the gear on the right-hand spool shaft. The bevel gear l^7 at the front end of the ribbon feed shaft being held in mesh with its companion gear l^8 by the spring l^9 , can slip in the gear l^9 when the ribbon is completely unwound from either spool and the strain on the feed gearing is thereby increased. As the wheel slips a tooth it gives audible notice that the ribbon feed should be reversed, and this notice is repeated with each succeeding tooth that slips and the operator will soon notice it. This arrangement of the gears also prevents the ribbon from being torn loose from the exhausted spool and enables the ribbon feed to be thrown out of action, as hereinafter described.

It will be observed that by the described arrangement of the reversing shaft adjacent to the spool shafts, only one forwardly extending shaft is necessary, thereby saving one shaft and one pair of gears over an arrangement in which the transverse shaft is located at the rear of the machine and connected to the spool shafts by two forwardly extending shafts. The reversing shaft is moved to reverse the ribbon feed by means having an operating part which is always moved in the same direction, regardless of which way the ribbon happens to be feeding.

The ribbon feed reversing mechanism shown in the drawings is constructed as follows, see Figs. 2, 3, 7 and 8: M represents a slidable operating lever or push key preferably located near the right side of the key board and having an upturned front end or button m , and M' represents a plate which is oscillated by said push key. The plate M' is pivoted centrally at m' on one of the arms k^4 of the transverse bracket k^4 and has a stud m^1 in rear of its pivot projecting up into a

groove in the hub of the bevel gear at the right end of the reversing shaft l^{10} . The plate is provided with an angle shaped slot m^3 in which engages a depending lug or part m^4 at the rear end of the push key, and has a forwardly projecting portion provided with a head m^5 of V-cross section that is adapted to snap downwardly over each side of the supporting arm k^5 to releasably hold the plate in either of the inclined positions shown in Figs. 2 and 7. The push key is mounted to slide and swing laterally on the supporting arm k^5 , as by a screw or pivot m^6 passing through an elongated slot m^7 in the push key, and is normally held in the central forward position and returned to such position after movement by a suitable spring m^8 located in a slot in the supporting arm and connected to the pivot and the push key. When the ribbon is being wound on the left-hand spool the reversing plate M' will be in the position shown in Fig. 2, with the depending lug at the rear end of the push key engaging in the left-hand inclined portion of the slot in the reversing plate M'. To reverse the feed the push key is forced rearwardly until its depending rear end, which is led to the left by the slot in the reversing plate, strikes the end of said slot and oscillates said plate on its pivot to the position shown in Fig. 7, in which position the plate is held by the engagement of its V-shaped head with the left side of the supporting arm k^5 . The movement of the plate moves the reversing shaft l^{10} to the right, throwing it out of gear with the left-hand spool shaft and into gear with the right-hand spool shaft. The return of the push key to the normal forward position by its spring m^8 , will throw its depending rear end into the inclined right end of the slot in the reversing plate, so that the next time the push key is forced rearwardly it will oscillate the plate in the opposite direction and move the reversing shaft again to the left into gear with the left-hand spool shaft. This reversing mechanism is located where it can be reached without removing the hand from the key board and it is especially desirable for the reason that the movement of the same part in one and the same direction always effects the reversal of the ribbon feed regardless of which way the ribbon is feeding. It is positive in its action and relieves the operator from the necessity of looking to see which ribbon spool requires to be thrown out of action, thus saving time. The ribbon feed and reversing mechanism are not necessarily limited in application to a front strike machine of the kind illustrated.

The ribbon is led, as usual, from one spool to the other through a guide or support located centrally in front of the platen, by which the ribbon is supported and vibrated to and from printing position over the print-

ing point. The guide N, Figs. 1 to 6, is preferably formed of a single piece of sheet metal having its lower end folded around and riveted to a vibrator rod n which is arranged substantially upright between the central type bars and is pivoted at its ends to upper and lower vibrating supports n' n'' . The upper support preferably consists of two horizontal diverging arms pivoted at their rear ends to the top of the frame, while the lower support consists of a rigid arm projecting forwardly from a rock shaft n^3 having end bearings in the rocker arms f^3 of the platen shifting mechanism. The rock shaft n^3 has two rigid arms n^4 near its ends which project rearwardly beneath the rock shaft f' and are pivoted to the upturned ends of a pendent bail n^5 , the cross-bar of which passes beneath the key levers and forms a universal bar. The rock shaft n^3 and its forwardly and rearwardly projecting arms constitute in effect a vibrator lever, and the rocker arms f^3 afford a movable fulcrum support for this lever. As the key levers are of four different lengths, they are provided over the universal bar with depending lugs n^6 of four different lengths, the lugs of the longest levers resting on the universal bar and the other lugs being differently spaced from the universal bar according to the lengths of their respective levers so that each lever will depress the universal bar the same distance. The ribbon vibrator is normally held down, with the ribbon below the printing point, as shown in Fig. 1, by a suitable spring n^7 connecting the front arm of the vibrator lever with a suitable part of the machine, such as a bracket n^8 projecting from the cross-bar c^2 of the frame. The upper end of the spring is adapted to be secured to the vibrator lever nearer to or farther from its fulcrum to regulate the action of the spring. When a key lever is depressed the universal bar will be lowered, thereby rocking the vibrator lever and lifting the ribbon vibrator to locate the upper portion of the ribbon over the printing point in time for the type to strike the ribbon. With the return of the key levers the spring n^7 restores the universal bar and vibrator to normal position. When the platen is shifted by means of either of the shift keys G acting through one of the rocker arms f^3 , the rock shaft n^3 or fulcrum of the vibrator lever, is raised, as shown in Fig. 5, enough to lift the vibrator and ribbon an equal distance with the platen. This lifting of the vibrator is due to the universal bar and rear end of the vibrator lever being held from upward movement by the key levers, while the front end of the vibrator lever swings upwardly with its supporting rocker arms f^3 . The ribbon is thus given a new normal position just under the printing point on the shifted platen, and this position it assumes automatically each time the platen

is shifted and retains so long as the platen is held in the shifted position. The ribbon vibrates to and from this new position just as from its lower normal position. The shifting of the platen does not alter its relation to the ribbon. 70

The type bars, as before stated, have an accelerating motion in approaching the printing point, but it is desirable for the ribbon vibrator to have a uniform motion, 75 and this is accomplished by the universal bar and connections described. Preferably this universal bar is employed only for operating the vibrator and is not connected to the carriage escapement, the latter being 80 operated by an independent universal bar shown in Fig. 1. Where the separate universal bar for the vibrator is employed its retracting spring can be made so light that when the machine is operated at considerable speed it will not return the universal bar as rapidly as the key levers are returned, thus leaving the vibrator elevated between the impressions during the time a word is being printed and permitting the vibrator 90 to expose the writing when the finger keys are at rest, or when the speed of the machine is lessened. This action of the vibrator can be secured by adjusting the upper end of the retracting spring n^7 near to the 95 fulcrum of the vibrator lever, thereby giving the effect of a lighter spring. By the described construction of the ribbon vibrating mechanism entirely independent of the shift frame and carriage, these parts may 100 be removed and replaced without disturbing any part of the ribbon mechanism. The independent universal bar for actuating the escapement is indicated at n^{10} , Fig. 1. This bar is segmental in shape and may be mov- 105 ably supported by swinging links n^{11} over the type-bar segment in position to be struck by the type-bars C when they approach the platen. The rear supporting links are secured to a rock shaft connected by a rock 110 arm n^{12} to a rod n^{13} which is connected to the dog of the carriage escapement n^{14} . The ribbon spools are also lifted when the platen and the vibrator are shifted, as above explained, thereby avoiding the twisting or 115 curling of its edges. This is accomplished by the rocker arms f^3 , the upturned front ends of which, when raised by the depression of either shift key G, strike the lower 120 ends of the spool shafts and lift them vertically, as shown in Fig. 5. The spools and their shafts return to normal position by gravity when the platen is permitted to return to its normal lower position. 125

Means are provided for holding the vibrator stationary, either in an elevated position with the ribbon in printing relation, or in a depressed position with the ribbon below the printing point. The means shown 130

in the drawings for doing this are constructed as follows, see Figs. 1 4 and 6: O O' represent the front and rear arms of a jointed key or lever, the two arms being pivoted together and to the transverse bracket k^4 at p . A spring p' coiled about the pivot p and bearing against the two arms of the key or lever permits the lever to be flexed one way while overlapping parts of the arms cause the two arms to act as a rigid one-piece lever the other way. The lever is normally held in the position shown in Fig. 1 by a spring p^3 connecting a depending leg p^2 on the front arm of the lever with the cross-bar k^a of the frame. The lever is provided at its front end with a key p^4 preferably pivoted thereto and having a depending curved shank p^5 that passes downwardly through a slotted plate p^6 secured on the cross-bar k^a of the frame. The key shank is provided near its upper end with a shoulder p^7 adapted to be engaged under a cooperating hook or part p^8 of the slotted plate p^6 by pressing rearwardly on the key when depressed for locking the key in its lower position, and the notched lower end of the key shank is adapted to be engaged over another hook or part p^9 on the slotted plate p^6 by lifting the key and pressing it forwardly to lock the key in a raised position. The rear portion of the ribbon shift lever O O' passes between the central auxiliary type-bar levers and ends in a cross head p^{10} located in front of the vibrator rod beneath a forwardly projecting lug p^{11} thereon. The spring p' is of greater strength than the retracting spring n^7 for the vibrator, so that when the front end of ribbon shift lever is depressed to the limit of its movement the rear end of the lever acting on the lug of the vibrator raises the latter so as to locate the lower part of the ribbon in printing position. By locking the ribbon shift lever in its depressed position, as explained and as shown in Fig. 6, the lower part of the ribbon is retained over the printing point, and as the raising of the vibrator n lowers the universal bar out of reach of the key levers, the ribbon is not vibrated while in the elevated position. This adjustment of the parts enables the use of the machine with a non-vibrating ribbon, which is preferred by some operators, and it also makes it possible to write with two colors by using a ribbon having different colored ink on its upper and lower portions, as indicated at I', Fig. 12.

By the simple depression of the ribbon shift lever the ribbon can be changed for a single impression of different color, and by locking the lever down the lower color can be used continuously. This upward movement of the vibrator is arrested at the proper point by an arm Q, Figs. 1, 2, 3 and 6, which projects rearwardly from the shaft n^3 of the vibrator lever and strikes the rear end

of one of the space keys H. The ribbon shift lever is flexed somewhat in thus raising the vibrator and consequently if the platen is shifted and the vibrator lever raised as before explained, when the ribbon is in this raised position, the spring p' connecting the two arms of the ribbon shift lever will assert itself and raise the ribbon a distance corresponding with the upward movement of the platen. Thus the lower part of the ribbon is maintained in printing relation with the platen whether the latter is shifted from its normal position or not. The ribbon can be lowered from its raised position just described to expose the printing point whenever desired, by depressing the space key H, which depresses the front end of the vibrator lever by pressing upwardly on the arm Q thereof. The spring p' of the ribbon shift must be compressed to do this.

R represents a rod which is pivoted at its rear end to the universal bar and extends forwardly between the auxiliary type-bar levers, and is slidably supported at its front end as by a pin r on the plate p^6 passing through a slot in the rod. A spring r' connecting the rod and the bracket n^8 normally forces the rod R rearwardly and holds the universal bar beneath the operating lugs on the finger keys, as shown in Fig. 1. When it is desired to hold the ribbon down below the printing point, as when the machine is to be used for stencil work, the ribbon shift lever O O' is raised above its normal position and locked as before explained, see Fig. 2. When thus raised the depending leg p^2 of the lever strikes a shoulder r^2 on the front end of the rod R and pushes the rod forwardly, thereby withdrawing the universal bar from beneath the operating lugs on the key-levers, and permitting the vibrator to fall and carry the ribbon below the printing point far enough to be cleared by the type. In the forward position of the universal bar it is not actuated by the key-levers and the ribbon remains stationary below the printing point. The vibrator is prevented from falling too far by the engagement of the rear arms of the vibrator lever against the platen-shifting rock shaft F. When the ribbon is held down out of use, as just explained, it is desirable to throw the ribbon feed mechanism out of action to save the ribbon and feed mechanism from wear when not in use. The following means are shown for this purpose, see Figs. 3 and 11: S represents a lever pivoted centrally to the lower side of the transverse bracket k^4 , with its inner end in front of a depending lug s' on the rear arm O' of the ribbon shift lever. The outer end of the lever S is curved upwardly in rear of the bracket k^4 and terminates in front of the sliding bevel gear l' on the ribbon feed shaft l^4 . When the rib-

bon shifting lever is raised to lower the ribbon for stencil work, the lug s' thereof pushes the inner end of the lever S forwardly, causing the outer end of the lever to slide the bevel gear l' out of mesh with its companion gear and throw the ribbon feed out of action. When it is desired to again use the ribbon, the key of the lever $O-O'$ is disengaged from its holding hook on the plate p^6 . The spring r' will then draw the rod R rearwardly, returning the universal bar to its normal position and causing its shoulder r^2 to strike the leg p^2 of the ribbon shifting lever $O-O'$ and return said lever to its normal position. The spring r' is enabled to do this notwithstanding the opposition of the spring p^3 on account of being stronger than said spring p^3 . The lug s' is thus withdrawn from the lever S and the bevel gear l' is again thrown into mesh with its companion gear by its spring, thereby restoring the ribbon feed.

The universal bar n^5 could be utilized to operate the carriage escapement, but this is not so desirable, as in that case the rod R for throwing the universal bar out of action for stencil cutting would have to be omitted and the ribbon could not be locked in its raised position with the lower part over the printing point.

By the mechanism described, the ribbon is fed lengthwise by the carriage driving spring with fewer parts than usual, requiring less power; the ribbon feed gear can slip to avoid injury to the ribbon; audible notice is given when the ribbon should be reversed; simple means are provided for securing the ribbon spools to their shafts and turning them manually and for preventing the ribbon from folding as it passes to the spools; the ribbon feed can be reversed by the actuation of a single part in the same direction, no matter which way the ribbon is feeding, thereby saving time and avoiding confusion; the ribbon is vibrated with uniform motion; the ribbon is maintained in the same relation to the platen in the normal and shifted positions thereof; the ribbon can be held stationary over the printing point, and lowered to expose the writing and again returned by means of the space key; a composite ribbon can be used; and the ribbon can be lowered out of the way and its feed thrown out of action for stencil work without disconnecting the ribbon or any part of the machine.

I claim as my invention:

1. The combination in a typewriting machine having a ribbon, and means for feeding the ribbon in opposite directions, of feed reversing means having a normally inactive manually-actuated operating part which when operated in one and the same way acts to reverse the feed of the ribbon

regardless of the direction of movement thereof, substantially as set forth. 65

2. The combination in a typewriting machine having a pair of ribbon spools, a ribbon, and means for feeding the ribbon from one spool to the other, of feed reversing means having a push key acting when moved in the same direction to reverse the ribbon feed regardless of the direction of movement of the ribbon, substantially as set forth. 70 75

3. The combination in a typewriting machine having a ribbon, and means for feeding the ribbon in opposite directions, of feed reversing means having a reciprocatory operating part acting upon successive movements in the same direction to reverse the ribbon feed regardless of the direction of movement of the ribbon, substantially as set forth. 80

4. The combination in a typewriting machine having a pair of ribbon spools, a ribbon, a power-driven carriage, and connections by which the carriage driving power feeds the ribbon from one spool to the other, of feed reversing means having an operating part which is movable to actuate the reversing means at any time during the run of the ribbon from spool to spool and which acts when moved in the same direction to always reverse the ribbon feed regardless of the direction of movement of the ribbon, substantially as set forth. 85 90 95

5. The combination in a typewriting machine having a pair of ribbon spools, a ribbon, and means for feeding the ribbon from one spool to the other, of feed reversing means having an operating part movable manually at will and acting when moved in the same direction to reverse the ribbon feed from either one of the spools to the other, and means to restore said operative part to the same normal position, substantially as set forth. 100 105

6. The combination in a typewriting machine having a pair of ribbon spools, a ribbon, and means for feeding the ribbon from one spool to the other, of feed reversing means comprising a pivoted plate connected to the ribbon feed means and provided with an angle slot, and a movable operating part engaging in said angle slot and acting upon successive movements to swing said pivoted plate alternately in opposite directions, substantially as set forth. 110 115

7. The combination in a typewriting machine having a pair of ribbon spools, a ribbon, and means for feeding the ribbon from one spool to the other, of feed reversing means comprising a pivoted plate connected to the ribbon feed means and provided with an angle slot, a slidable and oscillatory operating key having a part engaging in said angle slot, and a spring for returning 120 125

said key to a normal central position, said key acting upon successive movements to swing said pivoted plate alternately in opposite directions, substantially as set forth.

8. The combination in a typewriting machine having a platen, a series of type-bars arranged in a segment below the platen, and a ribbon arranged to feed laterally in front of the platen, of a substantially upright ribbon vibrator passing between the type-bars, an upper support for said vibrator that extends rearwardly under the platen and is pivotally connected at its rear to the frame, and a vibratory support for the lower end of said vibrator, substantially as set forth.

9. The combination in a typewriting machine having a platen, a series of type-bars arranged in a segment below the platen, a series of key levers, and a universal bar, of a ribbon arranged to feed laterally in front of the platen, a substantially upright vibrator for the ribbon, and pivoted supporting arms for the upper and lower ends of said vibrator, one of said arms being connected to the universal bar, substantially as set forth.

10. The combination in a front strike typewriting machine having a platen, a ribbon arranged to feed laterally in front of the platen, a guide for the ribbon below and in front of the printing point, and a series of key levers, of a rock-shaft adjacent to the key levers and actuated thereby, an arm on the rock-shaft, and a vibrator rod extending upwardly from said arm directly to the ribbon guide, substantially as set forth.

11. The combination in a front strike typewriting machine having a platen, a ribbon arranged to feed laterally in front of the platen, a guide for the ribbon adjacent to the printing point, and a series of key levers, of a rock arm arranged above the key levers and actuated thereby, and an upright vibrator rod supported by said rock arm and supporting said ribbon guide at its upper end, substantially as set forth.

12. The combination in a front strike typewriting machine having a platen, a ribbon arranged to feed laterally in front of the platen, and a guide for the ribbon below and in front of the printing point, of a vibrator for the ribbon guide consisting of a rigid rod, a support pivoted to the upper part of said vibrator and to the frame of the machine in the rear of and below the printing point, and a vibrating part of the machine pivoted to the lower part of said vibrator, the two pivoted parts acting to hold said vibrator in a substantially upright position, substantially as set forth.

13. The combination in a typewriting machine having a platen, a series of type-bars arranged in a segment to swing upwardly and rearwardly, and a laterally movable ribbon, of a rigid or one-part ribbon guide and

vibrator passing downwardly between the type-bars, substantially as set forth.

14. The combination in a front-strike typewriting machine having a shift platen, a ribbon, and a ribbon vibrator for moving the ribbon to and from the printing point, of a rock-shaft having a rigid arm pivoted to said ribbon vibrator for vibrating it, and means for moving said rock-shaft to different positions whereby the vibrator can be vibrated to and from two different positions, substantially as set forth.

15. The combination in a front strike typewriting machine, of a shift platen, a ribbon, type-bars arranged below the platen, a ribbon vibrator, platen shifting mechanism including a rock-shaft located on a plane below the type-bars, a vibrator lever adjacent to and pivotally supported by said rock-shaft and having an arm which supports said ribbon vibrator whereby the ribbon vibrator is shifted with the platen, substantially as set forth.

16. The combination in a typewriting machine, of a shift platen, key levers, platen shifting mechanism including a rock-shaft located over and adjacent to said key levers, a vibrator lever having a movable fulcrum support on said rock-shaft, a universal bar connected to said lever and arranged to be engaged by said key levers, and a ribbon vibrator connected to and actuated by said vibrator lever, substantially as set forth.

17. The combination in a typewriting machine, of a shift platen, key levers, platen shifting mechanism including a rock-shaft located over and adjacent to said key levers and having rock arms at its ends, a vibrator rock-shaft journaled in said rock arms, a universal bar connected to said vibrator rock-shaft arranged to be engaged by said key levers, an arm on said vibrator rock-shaft, and a ribbon vibrator connected to said last mentioned arm, substantially as set forth.

18. The combination in a typewriting machine having a shift platen, a ribbon, and a rock-shaft and actuating means for shifting the platen, of a ribbon vibrator, and an auxiliary rock-shaft for actuating said vibrator supported by the platen shift rock-shaft, whereby the ribbon vibrator is shifted with the platen, substantially as set forth.

19. The combination in a typewriting machine having a shift platen, of a series of key-levers, a rock-shaft actuated by the key-levers, a ribbon vibrator actuated by said rock-shaft, and a platen shift mechanism acting to change the position of said rock-shaft with the same movement that shifts the platen, substantially as set forth.

20. The combination in a front strike typewriting machine having a ribbon arranged to feed in front of the platen, of a ribbon vibrator and actuating means therefor

erated when the type-bars are operated for vibrating the ribbon relative to the printing point, a spring-pressed device for shifting the ribbon vibrator to hold the ribbon in front of the printing point, and a key acting to compress the spring and depress the ribbon below the printing point, substantially as set forth.

21. The combination in a typewriting machine, of a ribbon, a ribbon support and actuating means therefor normally acting to vibrate the ribbon crosswise to move one portion thereof to and from the printing point with each printing operation, and a ribbon shift key lever pivoted adjacent to the type-operating keys to swing vertically, and cooperating parts between the rear end of said key lever and the ribbon support operating when the front end of said key lever is depressed to move the ribbon support to shift the ribbon crosswise to hold another portion of the ribbon stationary opposite the printing point, substantially as set forth.

22. The combination in a typewriting machine, of a ribbon, a ribbon support, means for shifting said support to place the ribbon in different printing relations to the platen, and two independent devices, one for vibrating said support with the ribbon in each of said different relations, substantially as set forth.

23. The combination in a typewriting machine, of a ribbon, a ribbon support, means for vibrating said support at the type strokes, and two additional devices for vibrating said ribbon support to differently operate the ribbon, substantially as set forth.

24. The combination in a typewriting machine having a ribbon arranged to feed past the printing point on the platen, type-operating keys, and a space key, of a ribbon support, mechanism for vibrating said support by the movement of either the type-operating keys or the space key, and an auxiliary key also for vibrating said support, substantially as set forth.

25. The combination in a front strike typewriting machine having a shift platen and a ribbon arranged to feed in front of the platen, of means for vibrating the ribbon, and spring pressed means for supporting the ribbon over the printing point and acting to cause the ribbon to move up and down with the platen, when the platen is shifted, substantially as set forth.

26. The combination in a front strike typewriting machine having a shift platen, and a ribbon arranged to feed in front of the platen, of a ribbon support and vibrating means constructed to normally vibrate the ribbon so that the upper part of the ribbon is moved to and from the printing point when the platen is in either position, and means constructed to shift the ribbon support

so as to retain the lower part of the ribbon over the printing point when the platen is in either position, substantially as set forth.

27. The combination in a typewriting machine having a platen, and a ribbon arranged to feed past the printing point of the platen, of a ribbon support, means for moving said support to place the ribbon either above or below a normal intermediate position and returning the ribbon to said intermediate position, and means for retaining said support with the ribbon either in such high or low position, substantially as set forth.

28. The combination in a typewriting machine having a platen, a ribbon arranged to feed past the printing point of the platen, a ribbon support, and means for vibrating said ribbon support, of a device for moving said support to place the ribbon at one side or the other of its normal position, and means cooperating with said device to hold said support stationary in either position to which it is moved by said device, substantially as set forth.

29. The combination in a typewriting machine having a platen, platen shifting means, a series of key levers, a universal bar, and a ribbon arranged to feed past the printing point, of a ribbon support actuated by the universal bar to vibrate one portion of the ribbon to and from the printing point in either position of the platen, and means for disengaging the universal bar from the key levers and holding another portion of the ribbon opposite the printing point in either position of the platen, substantially as set forth.

30. The combination in a typewriting machine having a platen, platen shifting means, a series of key-levers, a universal bar, and a ribbon arranged to feed in front of the platen, of a ribbon support actuated by the universal bar to vibrate the upper portion of the ribbon over the printing point with the platen in either position, and means acting to disengage the universal bar from the key-levers and hold the lower portion of the ribbon over the printing point with the platen in either position, substantially as set forth.

31. The combination in a typewriting machine having a platen, and a ribbon arranged to feed past the printing point of the platen, of a ribbon support and actuating means constructed to vibrate the ribbon to and from the printing point, means for moving and holding the ribbon support to retain the ribbon opposite to the printing point, and additional means for operating the ribbon support to withdraw the ribbon from and return it to said position opposite to the printing point, substantially as set forth.

32. The combination in a typewriting machine, of a shift platen, a ribbon, ribbon spools movably supported independently of

the platen support, a ribbon guide supported adjacent to the printing point independently of the platen support, and mechanism for shifting the platen, ribbon spools and ribbon support together, substantially as set forth.

33. The combination in a front strike typewriting machine having a shift platen, of a ribbon, a ribbon support arranged in front of the platen, a pair of movably supported ribbon spools, and a rock-shaft and connections constructed to shift the platen together with the ribbon support and the spools, substantially as set forth.

34. The combination in a front strike typewriting machine having a shift platen, and a ribbon arranged in front of the platen, of a pair of ribbon spools having supporting shafts journaled in the frame of the machine, a rock-shaft and actuating means for shifting the platen, and a pair of arms connected to said rock-shaft and acting to shift the spool shafts when the platen is shifted, substantially as set forth.

35. The combination in a front strike typewriting machine having a shift platen, and a ribbon arranged in front of the platen, of spools movably supported by the frame of the machine, a pair of independent platen shift levers, a rock-shaft actuated by either shift lever and connected to the platen to shift the platen, and means connected to said rock-shaft for shifting the ribbon spools, substantially as set forth.

36. The combination in a front strike typewriting machine having a shift platen, of a ribbon supported in front of the platen, a pair of ribbon spools having shafts journaled in the frame of the machine, a pair of independent shift levers, a rock-shaft acting to shift the platen, and a pair of arms acting to vibrate the spool shafts and transmit power from the shift levers to the rock-shaft, substantially as set forth.

37. The combination in a typewriting machine having a series of vibrating key-levers, of a ribbon vibrator, a universal bar operated by said key-levers for actuating the vibrator, and means for disconnecting the universal bar from the key-levers to throw said vibrator out of action, substantially as set forth.

38. The combination in a typewriting machine having a series of vibrating keys, of a ribbon vibrator, connections for moving the vibrator with the depression of any one of said keys, and a vertically movable key adjacent to said vibrating keys for releasing the vibrator from said vibrating keys whereby said vibrator is permitted to descend and remain stationary below the printing point, substantially as set forth.

39. The combination in a typewriting machine having a series of vibrating key levers, of a universal bar normally actuated by the key-levers, a vibrating ribbon support con-

nected to the universal bar, a key adjacent to the key board, and means acting when the key is moved in one direction to disconnect the universal bar from the key-levers and locate the ribbon over the printing point, and when moved in another direction to disconnect the universal bar from the key-levers and locate the ribbon below the printing point, substantially as set forth.

40. The combination in a front strike typewriting machine having a platen, and a series of key-levers, of a vibrating ribbon support actuated by the key-levers, a key adjacent to the key board, and connections between said key and the ribbon support acting normally to permit the key-levers to vibrate the ribbon support and constructed to shift the ribbon support to hold the ribbon stationary either over the printing point or below the same, substantially as set forth.

41. The combination in a typewriting machine having a ribbon, and a power-driven ribbon mechanism, of a vibrating ribbon support, a key and means actuated thereby arranged to disconnect both the ribbon driving mechanism and the ribbon vibrator when the ribbon is not required for use, substantially as set forth.

42. The combination in a typewriting machine having a ribbon, a power-driven ribbon feed mechanism, and a series of vibrating key-levers, of a universal bar actuated by the key-levers and connected to said ribbon for vibrating it, of a key acting to disconnect the ribbon mechanism and to disconnect the universal bar from the key-levers, substantially as set forth.

43. The combination in a typewriting machine having a power-driven ribbon feed mechanism, of a ribbon support acting normally to support the ribbon below the printing point, of a key and means actuated thereby constructed to disconnect the ribbon feed and change the normal position of the ribbon support, substantially as set forth.

44. The combination in a typewriting machine, of a power-driven feed mechanism including a yielding part which is normally held in driving position and will yield to automatically disconnect the ribbon feed mechanism from the driving element when the feed mechanism is subjected to abnormal strain, and means for moving said yielding part and securing it in an inactive position when the ribbon is not required for use, substantially as set forth.

45. The combination in a typewriting machine, of a ribbon spool, a seat for the same having a slotted wall surrounding the spool, a slotted guide bail for the ribbon pivotally connected to the center of the spool and held from rotation in said slot in the spool seat, substantially as set forth.

46. The combination in a typewriting machine, of a rotating ribbon spool, a slotted

seat for the same, a slotted bail having its ends pivotally connected to the center of the spool and its center resting in the slot in the spool seat, whereby the bail is held from rotation, substantially as set forth.

47. In a typewriting machine, the combination of a ribbon divided into fields of different characteristics, a universal bar controlling said ribbon and capable of being disposed in different ways, and means controlled by the disposition of the universal bar for determining which field of the ribbon shall be presented in operative position.

48. In a typewriting machine, the combination of a ribbon divided into fields of different characteristics, a universal bar controlling said ribbon and capable of being disposed in different ways, and means controlled by the disposition of the universal bar for determining which field of the ribbon shall be presented in operative position or for throwing and maintaining the ribbon out of the operative position as may be desired.

49. In a typewriting machine, the combination of a ribbon, a universal bar, means for moving the ribbon to operative position, and means controlled by the disposition of the universal bar for rendering the mechanism inoperative to move the ribbon to the operative position.

50. In a typewriting machine, the combination of a ribbon, a universal bar, and means controlled by the disposition of the universal bar for maintaining the ribbon out of operative position during the printing operations.

51. In a typewriting machine, the combination of a ribbon, a ribbon vibrator, a universal bar, means for connecting said ribbon vibrator and universal bar, key-actuated means for operating the universal bar, and means for changing the position of the universal bar relatively to said key-actuated means to determine the operation of said key-actuated means on said vibrator.

52. In a typewriting machine, the combination of a universal bar for the carriage escapement mechanism, a ribbon vibrator, a ribbon capable of use along either of a plurality of longitudinal fields, a separate universal bar connected with said vibrator for actuating it, and means for changing the relation of said last mentioned universal bar to its actuating means and thereby determining which field of the ribbon shall be presented in operative position or for rendering the mechanism inoperative to move the ribbon to the operative position as may be desired.

53. In a typewriting machine, the combination of a ribbon having fields of different characteristics, pivoted arms, a universal bar pivoted to said arms, and connections between said universal bar and the ribbon

whereby a movement of the universal bar on its pivoted arms will change the disposition of the parts connected therewith.

54. In a typewriting machine, the combination of a ribbon having fields of different characteristics, pivoted arms, a universal bar movable in bearings in said arms, and connections between said universal bar and the ribbon, the construction and arrangement of the parts being such that the movement of the universal bar in its bearings determines which field of the ribbon shall be presented in the operative position or renders the mechanism inoperative to move the ribbon to the operative position as may be desired.

55. In a typewriting machine, the combination of a ribbon, pivoted arms, a universal bar pivoted to said arms, connections between said universal bar and the ribbon, and means for maintaining the universal bar against accidental displacement from the position to which it is turned on its pivots.

56. In a typewriting machine, the combination of a ribbon, and ribbon vibrating mechanism comprising a universal bar movable to different positions relative to its actuating means and which in one of said positions renders the vibrating mechanism inoperative to move the ribbon to the printing point.

57. In a typewriting machine, the combination of a ribbon having fields of different characteristics, and ribbon vibrating mechanism comprising a universal bar movable to different positions relative to its actuating means and the change of position of which determines which field of the ribbon shall be presented to operative position.

58. In a typewriting machine, the combination of a ribbon having fields of different characteristics, and ribbon vibrating mechanism comprising a universal bar movable to different positions relative to its actuating means and the change of position of which determines which field of the ribbon shall be presented to operative position or renders the mechanism inoperative to vibrate the ribbon to operative position.

59. In a typewriting machine, the combination of a carriage, escapement therefor, a ribbon having fields of different characteristics, and ribbon vibrating mechanism comprising a universal bar independent of the escapement mechanism and movable to different positions relative to its actuating means and the change of position of which determines which field of the ribbon shall be presented to operative position.

60. In a typewriting machine, the combination of a ribbon having fields of different characteristics, and ribbon vibrating mechanism comprising a universal bar independent of the carriage escapement mechanism and adjustable to different positions rela-

tive to its actuating means and the change of position of which determines which field of the ribbon shall be presented to operative position or renders the mechanism inoperative to vibrate the ribbon to operative position.

61. In a typewriting machine, the combination of a ribbon, a universal bar operatively connected to said ribbon, key-actuated means for operating said universal bar, and means for adjusting said universal bar relatively to its said operating means and for thereby rendering the key-actuated means inoperative to move the universal bar.

62. In a typewriting machine, the combination of a ribbon, a universal bar for the escapement, a second universal bar operatively connected to said ribbon, and means for throwing said second universal bar into and out of operation at will.

63. In a typewriting machine, the combination of a ribbon having fields of different characteristics, and a universal bar operatively connected to said ribbon and adjustable to any one of three positions, the position to which the universal bar is adjusted determining which field of the ribbon shall be moved to operative position or whether or not the universal bar shall be rendered inoperative.

64. In a typewriting machine, the combination of a ribbon, ribbon vibrating mechanism comprising a universal bar, means controlled by the disposition of the universal bar for rendering the ribbon vibrating mechanism inoperative to move the ribbon to the operative position, means for feeding the ribbon, and means for automatically rendering the ribbon feeding means inoperative when the mechanism is inoperative to move the ribbon to the operative position.

65. In a typewriting machine, the combination of a ribbon, ribbon vibrating mechanism comprising a universal bar movable to different positions relative to its actuating means and which in one of said positions is out of cooperation with its actuating means, ribbon feed mechanism, and means controlled by the adjustment of the universal bar for throwing the ribbon feed mechanism out of operation.

66. In a typewriting machine, the combination of a ribbon, a key-actuated universal bar, permanently maintained connections between said universal bar and ribbon, whereby said universal bar may move said ribbon to operative position, means for shifting said connections at the universal bar for rendering the universal bar inoperative to move the ribbon to operative position, ribbon feed mechanism, and means for automatically rendering the ribbon feed mechanism inoperative when the universal bar is inoperative to move the ribbon to operative position.

67. In a typewriting machine, the com-

bination of a ribbon, a universal bar operatively connected to said ribbon, key-actuated means for operating said universal bar, means for adjusting said universal bar relatively to its said operating means and for thereby rendering the key-actuated means inoperative to move the universal bar, means for automatically effecting a longitudinal feed of the ribbon at each printing operation, and means controlled by the adjustment of said universal bar for automatically throwing the ribbon feeding means out of operation when the key-actuated means are rendered inoperative to move the universal bar and for automatically throwing the ribbon feeding means into operation when the key-actuated means are operative to move the universal bar.

68. In a typewriting machine, the combination of a ribbon, a universal bar and connections for vibrating said ribbon, key-actuated means for actuating said universal bar and with relation to which said universal bar has a relative adjustment, one position of the bar relatively to its said actuating means affording a vibrating movement of the ribbon and another position of the bar relatively to said actuating means rendering the actuating means inoperative to actuate the vibrator, ribbon feed mechanism, and means controlled by the adjustment of the universal bar for throwing the ribbon feed mechanism into and out of operation.

69. In a typewriting machine, the combination of a ribbon, a universal bar operatively connected to said ribbon, means for throwing said universal bar into and out of operation at will, ribbon feed mechanism, and means for throwing the ribbon feed mechanism out of operation when said universal bar is out of operation and for throwing the ribbon feed mechanism into operation when the universal bar is thrown into operation.

70. In a typewriting machine, the combination of a ribbon divided into fields of different characteristics, means for determining which field of the ribbon shall be presented to the printing point, controlling means for preventing the ribbon from moving to the printing point during the operation of the machine, ribbon feed mechanism, and means actuated by said controlling means for rendering the ribbon feed mechanism inoperative.

71. In a typewriting machine, the combination of a ribbon divided into fields of different characteristics, a universal bar capable of being differently disposed, means controlled by the disposition of the universal bar for determining which field of the ribbon shall be presented in operative position or for maintaining the ribbon out of the operative position as may be desired, ribbon feed mechanism, and means for rendering the

ribbon feed mechanism inoperative when the ribbon is maintained out of the operative position.

72. In a typewriting machine, the combination of a universal bar for the carriage escapement mechanism, a ribbon vibrator, a ribbon having fields of different characteristics, a separate universal bar connected with said vibrator for actuating it, means for changing the relation of said last mentioned universal bar to its actuating means and thereby determining which field of the ribbon shall be presented in operative position or for rendering the mechanism inoperative to move the ribbon to the operative position as may be desired, ribbon feed mechanism, and means for rendering the ribbon feed mechanism inoperative when the mechanism is inoperative to move the ribbon to operative position.

73. In a typewriting machine, the combination of a ribbon having fields of different characteristics, pivoted arms, a universal bar movable in bearings in said arms, connections between said universal bar and the ribbon, the construction and arrangement of the parts being such that the movement of the universal bar in its bearings determines which field of the ribbon shall be presented in the operative position or renders the mechanism inoperative to move the ribbon to the operative position as may be desired, ribbon feed mechanism, and means controlled by an adjustment of said universal bar for rendering the ribbon feed mechanism operative or inoperative.

74. In a typewriting machine, the combination of a ribbon, ribbon vibrating mechanism comprising a universal bar movable to different positions relative to its actuating means and which in one of said positions is out of cooperation with its actuating means, ribbon feed mechanism, and automatically actuated means for rendering the ribbon feed mechanism inoperative when said universal bar is out of cooperation with its actuating means.

75. In a typewriting machine, the combination of a ribbon having fields of different characteristics, ribbon vibrating mechanism comprising a universal bar movable to different positions relative to its actuating means and the change of position of which determines which field of the ribbon shall be presented to operative position or renders the mechanism inoperative to vibrate the ribbon to operative position, ribbon feed mechanism, and means for rendering said ribbon feed mechanism inoperative when said ribbon vibrating mechanism is inoperative to move the ribbon to operative position.

76. In a typewriting machine, the combination of a ribbon having fields of different characteristics, ribbon vibrating mechanism comprising a universal bar independent

of the carriage escapement mechanism and adjustable to different positions relative to its actuating means and the change of position of which determines which field of the ribbon shall be presented to operative position or renders the mechanism inoperative to vibrate the ribbon to operative position, ribbon feed mechanism, and means controlled by an adjustment of the universal bar of said ribbon vibrating mechanism for throwing said ribbon feed mechanism into and out of operation.

77. In a typewriting machine, the combination of a ribbon having a plurality of fields of different characteristics, a key-actuated universal bar, permanently maintained connections between said universal bar and ribbon, means for shifting said connections at the universal bar for determining which field of the ribbon shall be presented to operative position or for rendering the universal bar inoperative to move the ribbon to operative position as may be desired, ribbon feed mechanism, and means controlled by the adjustment of said connections for throwing the ribbon feed mechanism into and out of operation.

78. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, positive and constantly maintained connections between the universal bar and vibrator, means for effecting a relative adjustment of the parts to position the ribbon vibrator in any one of three normal positions, ribbon feed mechanism, and means for throwing said feed mechanism out of operation when the vibrator is positioned in one of the three normal positions.

79. In a typewriting machine, the combination of a ribbon having different fields, a universal bar operatively connected to said ribbon and adjustable to any one of three positions, the position to which the universal bar is adjusted determining which field of the ribbon shall be moved to operative position or whether or not the universal bar shall be rendered inoperative, ribbon feed mechanism, and means for throwing the feed mechanism out of operation when said universal bar is rendered inoperative.

80. In a typewriting machine, the combination of a ribbon vibrator, means for changing the normal position of the vibrator, ribbon feed mechanism, and means for rendering the ribbon feed mechanism inoperative when the vibrator is moved to one of its normal positions.

81. In a typewriting machine, the combination of an escapement, a ribbon vibrator, a universal bar for the escapement, a second universal bar, intermediate connections between said second universal bar and vibrator, key-actuated devices operative on said universal bars, and means for enabling the key actuated devices to operate the universal bar

for the escapement without actuating the vibrator, the second universal bar or said intermediate connections.

82. In a typewriting machine, the combination of a ribbon vibrator, a universal bar, intermediate connections between said universal bar and vibrator, key actuated devices operative on said universal bar, and means for enabling the key-actuated devices to be actuated without actuating the vibrator, the universal bar or said intermediate connections, ribbon feed mechanism, and means for rendering the ribbon feed mechanism inoperative when said vibrator, intermediate connections and universal bar are rendered inoperative.

83. In a typewriting machine, the combination of a ribbon having fields of different characteristics, a ribbon vibrator, finger keys, a universal bar which actuates said vibrator and which is actuated by said finger keys, and means for enabling said finger keys to be actuated without actuating said universal bar and for determining the point to which the vibrator shall be moved to bring any desired field of the ribbon to operative position.

84. In a typewriting machine, the combination of means for actuating a carriage escapement, a ribbon vibrator, printing keys, means intermediate said printing keys and vibrator for actuating the vibrator, said intermediate means including a universal bar, and means for enabling the printing keys to operate the carriage escapement actuating means without imparting movement to said universal bar.

85. In a typewriting machine, the combination of a ribbon having fields of different characteristics, a ribbon vibrator, finger keys, means intermediate said finger keys and vibrator for actuating the vibrator, and means for enabling the finger keys to be actuated without imparting movement to any of the intermediate means and for causing the vibrator to be moved to different points to bring any desired field of the ribbon to the operative position.

86. In a typewriting machine, the combination of a ribbon vibrator, finger keys, means intermediate said finger keys and vibrator for actuating the vibrator, means for enabling the finger keys to be actuated without imparting movement to any of the intermediate means, ribbon feed mechanism, and means for locking the ribbon feed mechanism out of operation when said intermediate means are rendered inoperative.

87. In a typewriting machine, the combination of a ribbon having fields of different characteristics, a ribbon vibrator, finger keys, means intermediate said finger keys and vibrator for actuating the vibrator, means for enabling the finger keys to be

actuated without imparting movement to any of the intermediate means and for causing the vibrator to be moved to different points to bring any desired field of the ribbon to the operative position, ribbon feed mechanism, and means for locking the ribbon feed mechanism out of operation when said intermediate means are rendered inoperative.

88. In a typewriting machine, the combination of a power-driven carriage, ribbon feed mechanism actuated by the power employed to move said carriage, two universal bars, carriage feed mechanism actuated by one of said universal bars and a ribbon vibrator actuated by the other, means for rendering the vibrator actuating universal bar inoperative to move the ribbon to the printing point, and means for automatically throwing the ribbon feed mechanism into and out of operation when said last mentioned means are actuated.

89. In a typewriting machine, the combination of a ribbon having fields of different characteristics, a power-driven carriage, ribbon feed mechanism actuated by the power employed to move said carriage, two universal bars, carriage feed mechanism actuated by one of said universal bars and a ribbon vibrator actuated by the other, means for regulating the mechanism to bring any desired field of the ribbon to the printing point and for rendering the vibrator actuating universal bar inoperative to bring the ribbon to the printing point, and means controlled by said regulating means for throwing the ribbon feed mechanism out of operation when the vibrator actuating universal bar is rendered inoperative to move the ribbon to the printing point.

90. In a typewriting machine, the combination of two independently operable universal bars, a ribbon vibrator operated by one and an escapement mechanism operated by the other, and means for throwing said universal bar which operates the vibrator out of operation at will.

91. In a typewriting machine, the combination of two independently operable universal bars, a ribbon vibrator operated by one and an escapement mechanism operated by the other, and means operable at will for changing the universal bar for the vibrator relatively to its actuating means.

92. In a typewriting machine, the combination of a ribbon having fields of different characteristics, two independently operable universal bars, a ribbon vibrator actuated by one of said universal bars, and an escapement mechanism operated by the other, and means for changing the universal bar for the vibrator relatively to its actuating means and for throwing it out of operation at will, whereby any desired field may

be presented at the printing point or the vibrator may be rendered inoperative as may be desired.

93. In a typewriting machine, a carriage, a movable shift frame forming the sole support for the carriage, a ribbon having two fields and driving and vibrating mechanism therefor supported independently of the carriage and shift frame, and instrumentalities for operating the ribbon to move

either field thereof to and from the printing point with the shift frame in either its normal or shifted position, substantially as set forth.

Witness my hand, this 31st day of August 15 1905.

EMMIT G. LATTA.

Witnesses:

CHESTER W. REID,
FRANK E. REID.

Correction in Letters Patent No. 934,677

It is hereby certified that in Letters Patent No. 934,677, granted September 21, 1909, upon the application of Emmit G. Latta, of Syracuse, N. Y., for an improvement in "Ribbon Mechanisms," an error appears in the printed specification requiring correction as follows: Page 2, line 8, the words "frame normally holds the platen in" should be stricken out and the words *bars and is shifted vertically into* be inserted instead, and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 19th day of October, A. D., 1909.

[SEAL.]

C. C. BILLINGS,
Acting Commissioner of Patents.

be presented at the printing point or the vibrator may be rendered inoperative as may be desired.

93. In a typewriting machine, a carriage, a movable shift frame forming the sole support for the carriage, a ribbon having two fields and driving and vibrating mechanism therefor supported independently of the carriage and shift frame, and instrumentalities for operating the ribbon to move

either field thereof to and from the printing point with the shift frame in either its normal or shifted position, substantially as set forth.

Witness my hand, this 31st day of August 15 1905.

EMMIT G. LATTA.

Witnesses:

CHESTER W. REID,
FRANK E. REID.

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