

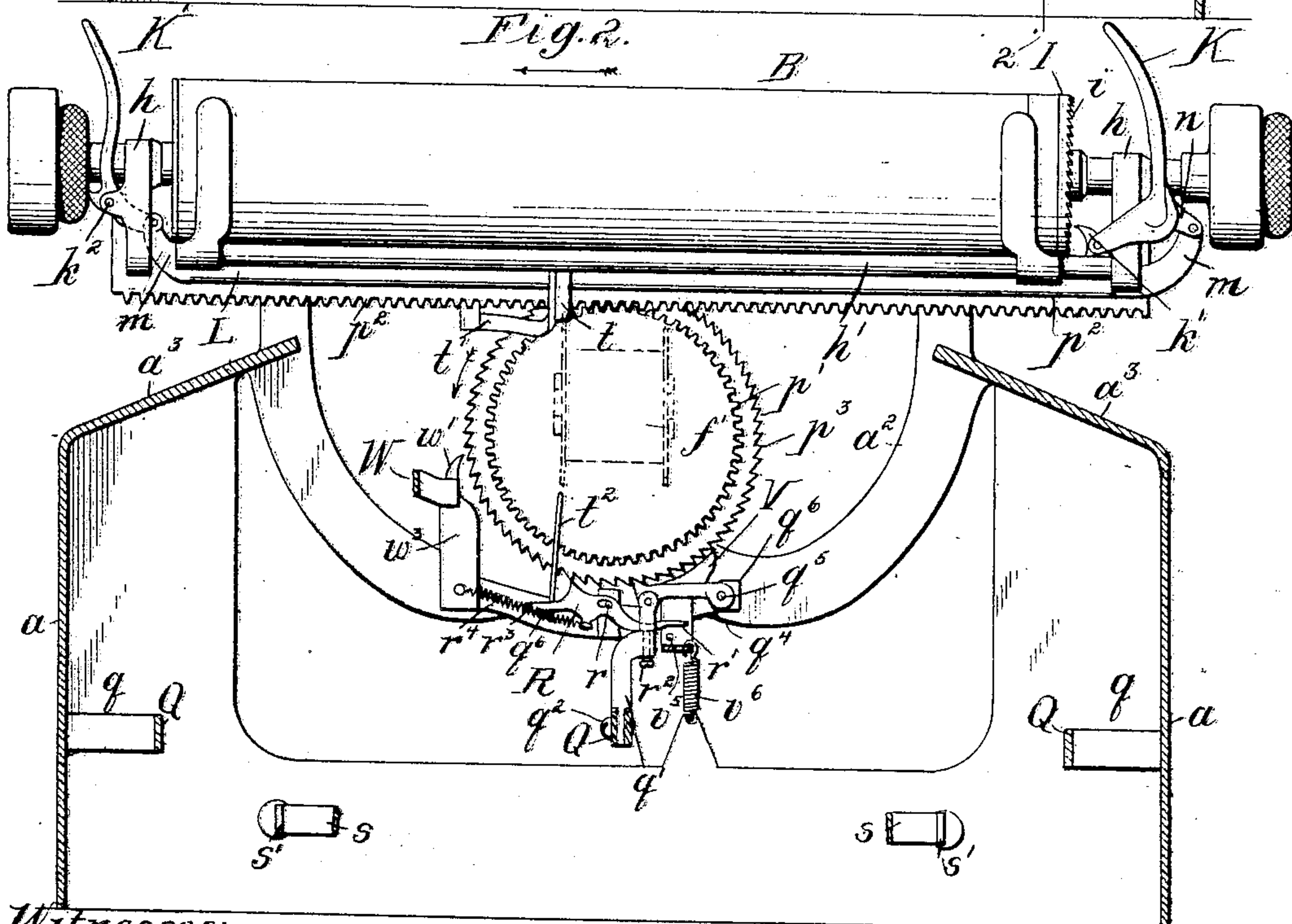
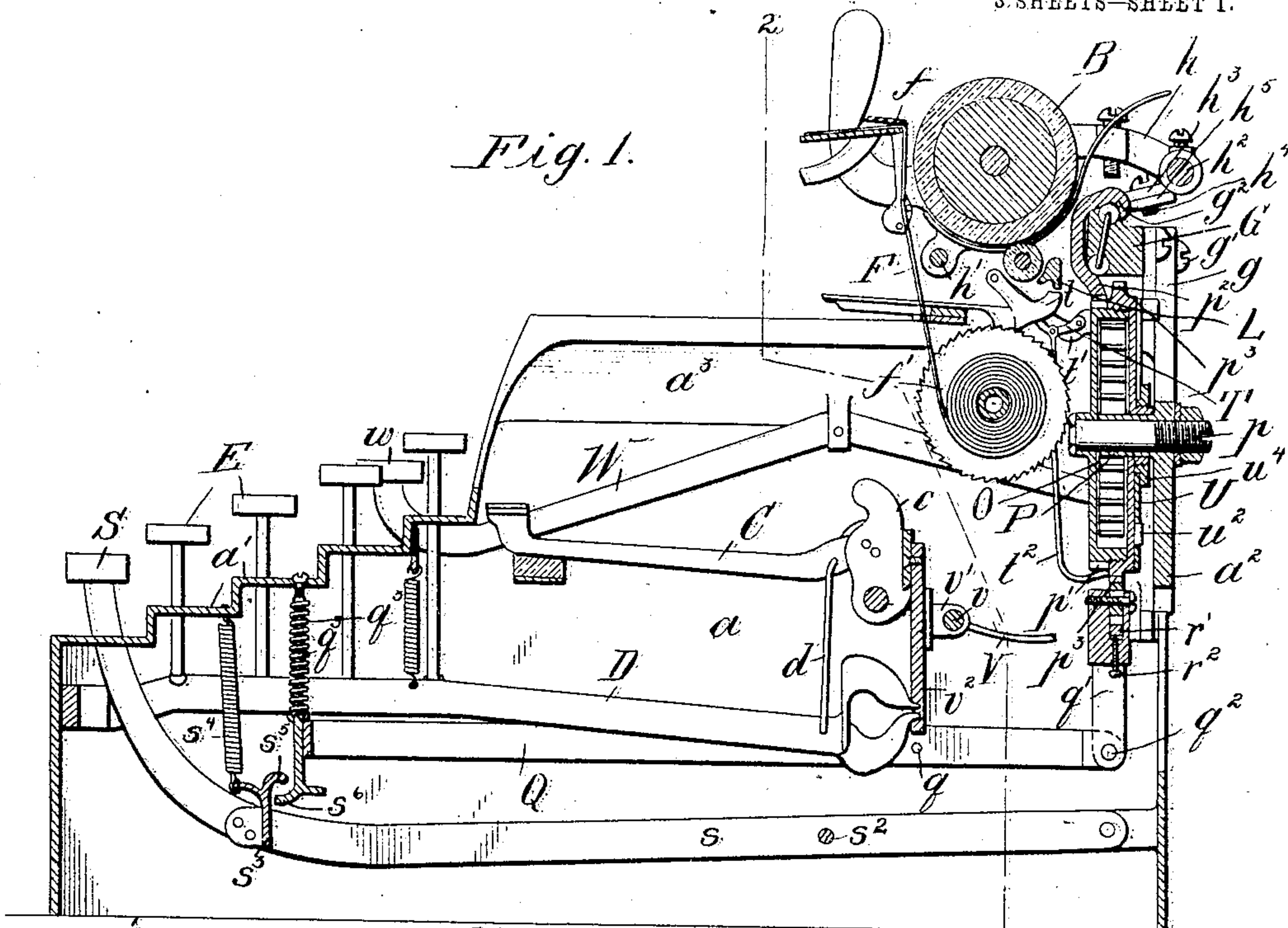
No. 771,781.

PATENTED OCT. 4, 1904.

E. G. LATTA.
TYPE WRITING MACHINE.
APPLICATION FILED AUG. 4, 1903.

NO. MODEL,

3 SHEETS—SHEET 1.



Witnesses:—
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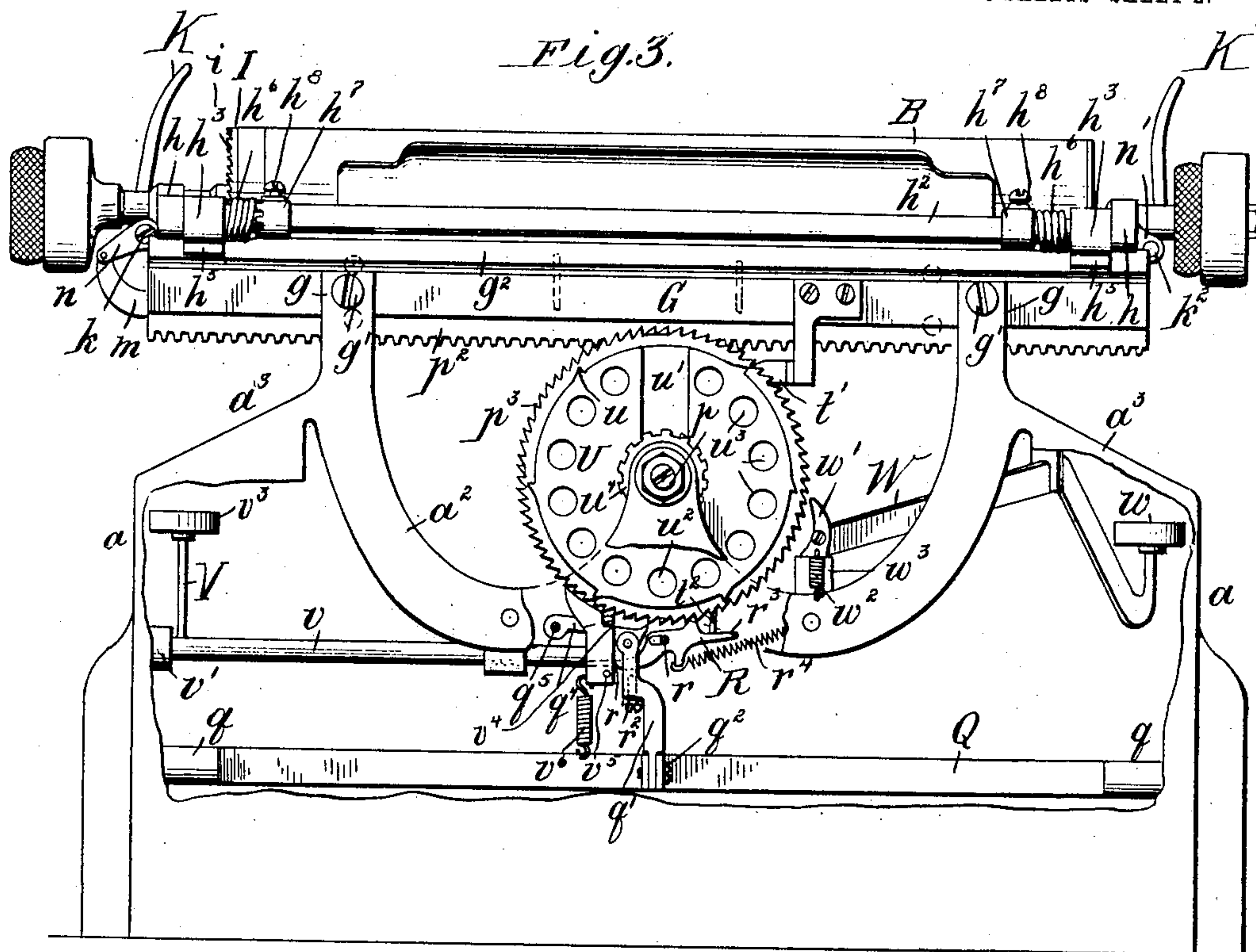


Fig. 5.

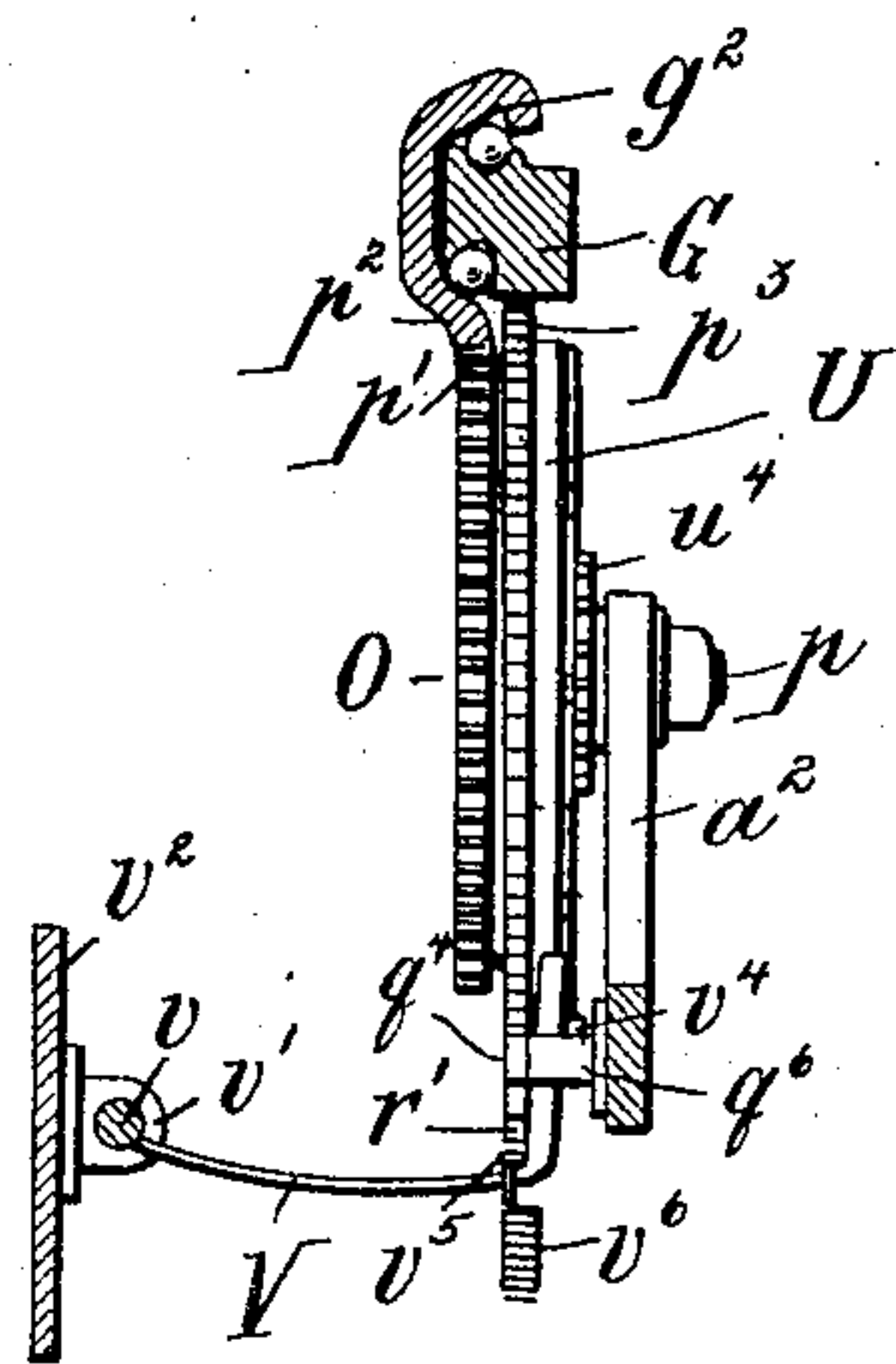
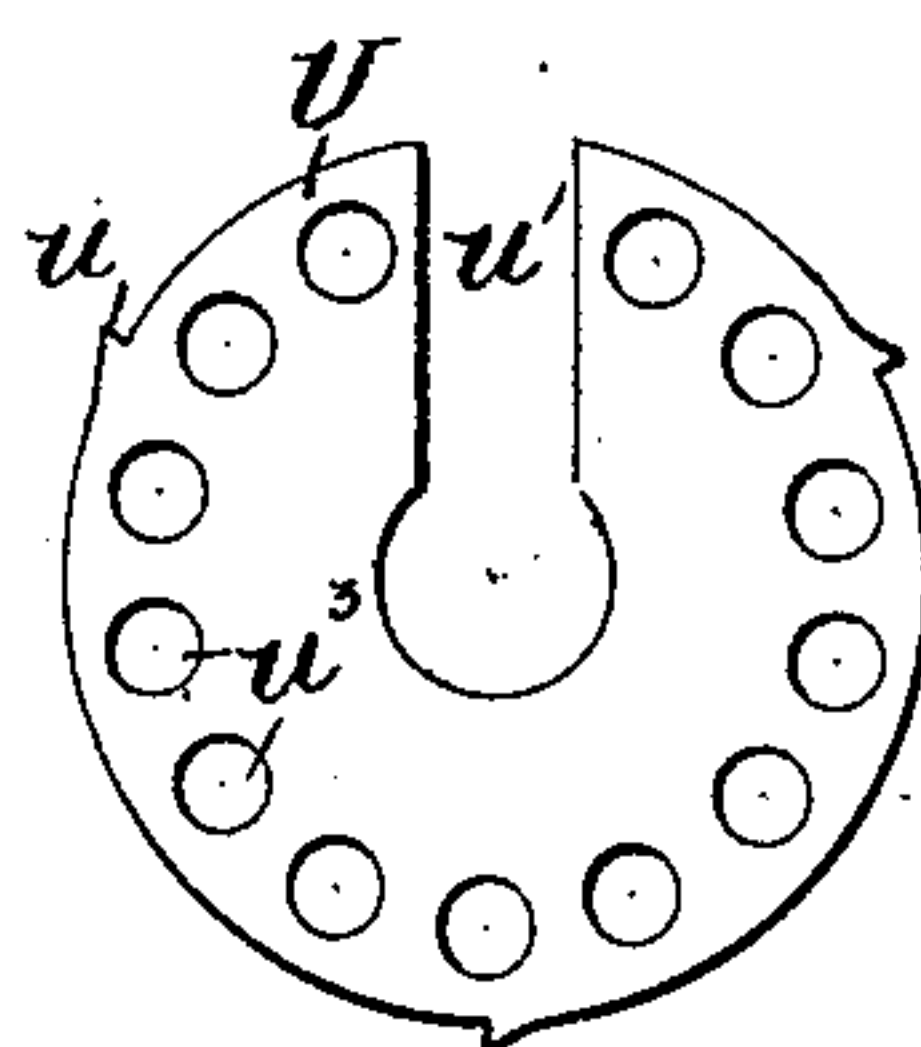


Fig. 6.



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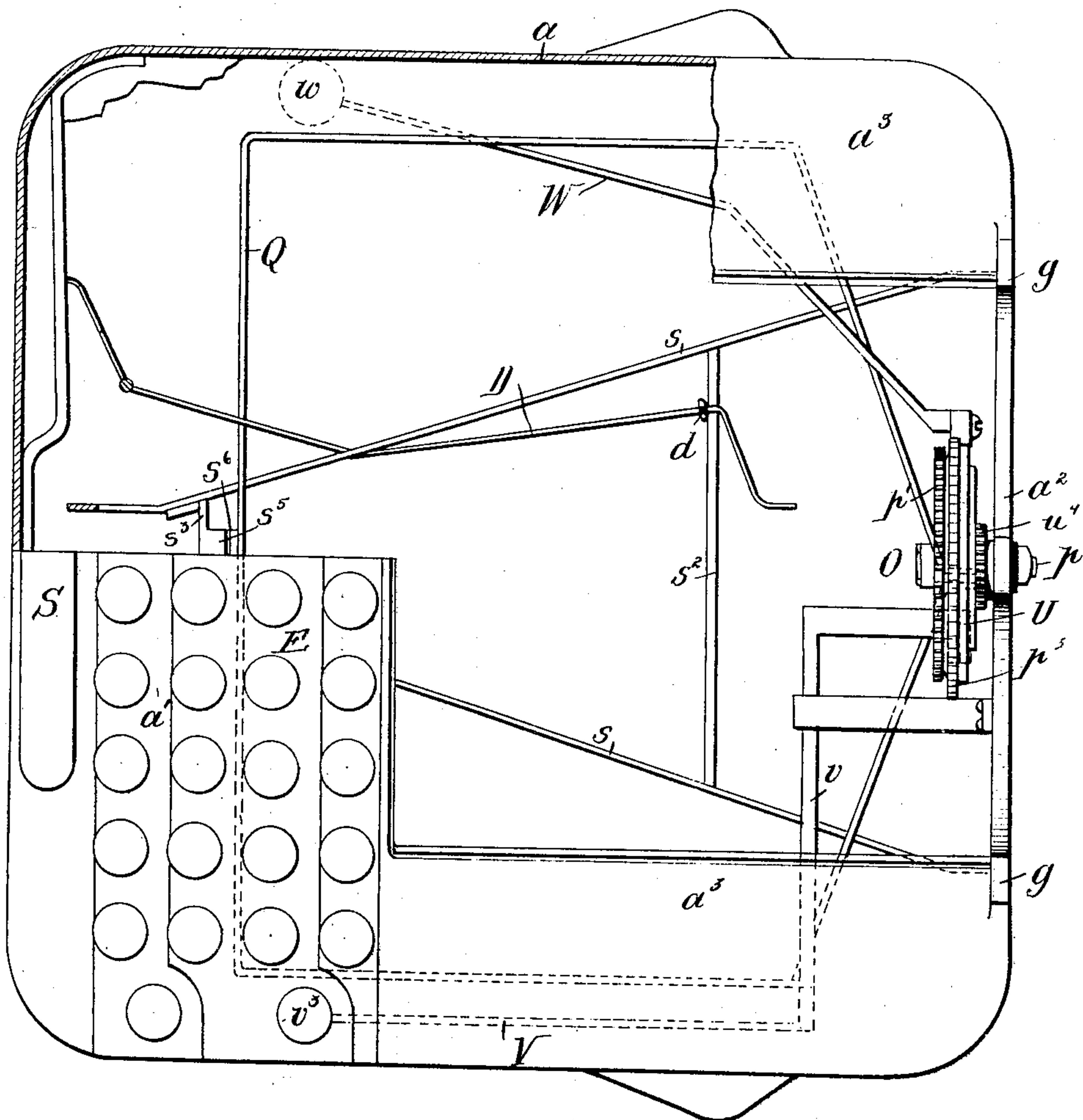
E. G. LATTA.
TYPE WRITING MACHINE.

APPLICATION FILED AUG. 4, 1903.

NO MODEL.

3 SHEETS--SHEET 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

EMMIT G. LATTA, OF FRIENDSHIP, NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 771,781, dated October 4, 1904.

Application filed August 4, 1903. Serial No. 168,190. (No model.)

To all whom it may concern:

Be it known that I, EMMIT G. LATTA, a citizen of the United States, residing at Friendship, in the county of Allegany and State of New York, have invented new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to the operating mechanisms for the carriages of type-writing machines, and is more particularly directed to improvements in a front-strike or visible-writing machine of that kind in which the type-bars are pivoted on a segment arranged below the platen and are swung upwardly and rearwardly to make the impression at the front side of the platen, where the writing can be seen by the operator without moving the carriage or platen; but the improvements are also applicable to other forms of type-writing machines.

One object of the invention is to provide a type-writing machine with an improved carriage feed or escapement which produces the usual step-by-step movements of the carriage for ordinary writing and enables the carriage to be moved irregular distances by the operation of a key to produce special work, such as tabulated or column work.

Another object of the invention is to provide a set-back device by the operation of which the carriage can be moved back a single space at a time to facilitate the reprinting, correcting, or insertion of a character.

In the accompanying drawings, consisting of three sheets, Figure 1 is a longitudinal vertical sectional elevation of a type-writing machine embodying the invention, portions of the machine which are not necessary to an understanding of the invention being omitted. Fig. 2 is a fragmentary transverse sectional elevation thereof in line 2 2, Fig. 1, seen from the front. Fig. 3 is a rear elevation thereof, partly broken away, showing parts of the carriage-escapement in a different position from that shown in Fig. 2. Fig. 4 is a plan view of the lower portion of the machine, partly broken away, showing one of the key-levers, but omitting the type-bars and other parts for the sake of clearness. Fig. 5 is a detail

sectional elevation of the driving-drum for the carriage and associated parts. Fig. 6 is an elevation of one of the tabulator-disks.

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

The main frame of the machine upon which the several operative parts are mounted may be of any suitable construction and preferably consists of upright sides a , which are connected at the front by a stepped plate or portion a' , constituting the base of the keyboard, and at the back by an upright rear portion of bracket a'' , which is joined at its opposite ends to inwardly-extending overhanging portions a''' of the sides of the frame.

B represents the platen; C, one of the type-bars, which are arranged below and in front of the platen and are pivoted at their rear ends on a curved segment c , located below the plane of the platen; D, one of the key-levers, which are arranged below the type-bars and connected to the latter by rods d ; E, the keys connected to the key-levers and supported in suitable bearings on the keyboard-base, and F the ribbon, the front end of which is connected to a spool (not shown) and which passes down in front of the platen through a suitable guide device f and is connected at its rear end to a spool f' , arranged below the platen.

The type-bars, the type-bar segment, the key-levers, and ribbon mechanism are arranged and constructed, preferably, as described in other applications about to be filed. These parts may, however, be of any suitable construction and arrangement and are shown herein simply to give a better understanding of the general arrangement of the parts.

The platen B, as usual, is supported by a carriage which is movable laterally or crosswise of the machine. The carriage is supported and movable on a stationary horizontal supporting rail or track G, Figs. 1 and 3, which extends across the rear portion of the main frame and is secured to upright lugs g thereon by screws g' or otherwise.

g'' represents a horizontal sliding bearing bar or rail for the carriage. This bearing-bar is preferably made in the form shown in Figs. 1 and 5, of sheet metal, having its rear

side ground to form a wide rearwardly-opening groove of the shape shown. The upper portion of the bearing-bar overhangs the stationary track and incloses and bears on an upper set of balls in a ball-race in the track, while the lower portion of the rear face thereof is plain and bears against the exposed portions of a lower set of balls in a second ball-race in the track.

The carriage proper consists of four parts, or two end pieces or bars h and front and rear transverse horizontal connecting rods or bars h' h^2 , which are preferably round steel rods. The rear rod h^2 passes loosely through bearing-brackets h^3 , secured by screws h^4 or otherwise to ears h^5 , which project rearwardly from the end portions of the sliding bearing-bar.

h^6 , Fig. 3, represents springs which are coiled around the rear rod of the carriage, each having one end hooked over the adjacent bearing-bracket and the other end inserted in one of a series of holes in a collar h^7 , which surrounds the rear rod of the carriage and is adjustably held thereon by a set-screw h^8 . These springs act to normally hold the carriage up in the position shown in full lines.

The platen is turned to produce ordinary line-spaces or feed the paper by the following mechanism: I, Fig. 2, represents a ratchet wheel or plate which is secured to one end of the platen, preferably the right end, and is provided near its outer edge with ratchet-teeth i . K, Figs. 2 and 3, represents the regular line-space or paper-feed lever for turning the platen. The lever is located at the right end of the carriage and pivoted to the adjacent side piece of the carriage by a screw or pin k . The line-space lever is provided at its front end with an arm which projects toward the ratchet-plate and carries a pivoted pawl k' , Fig. 2, the upper free end of which is adapted to engage with the teeth of the ratchet-wheel I to turn the platen. K', Figs. 2 and 3, represents a lever similar to the line-space lever K, arranged at the opposite end of the carriage and pivoted thereto by a suitable screw or pin k^2 . The construction, arrangement, and operation of the line-space levers K K' is more fully shown and described in my application for United States Letters Patent Serial No. 179,119, filed October 30, 1903. L, Figs. 1 and 3, is a bar of angular shape in cross-section, which is arranged longitudinally beneath the platen and is provided with upturned ends m , which are pivoted to arms n n' on the line-space levers K K', respectively. This bar connects the two levers, so that when the lever K' at the left end of the carriage is operated power is transmitted therefrom to the other lever, K, at the right end of the carriage and the platen is turned by the pawl and ratchet-plate, as above described. The two levers and their connecting-rod thus afford means for turning the

platen from either end thereof. The connecting-rod L also constitutes the means for releasing the carriage feed or escapement, as hereinafter explained.

The carriage feed or escapement mechanism is constructed as follows, (see Figs. 1, 2, and 3:) O represents the carriage-driving drum or barrel, which is journaled beneath the carriage-supporting track on a hollow stud or axle P, projecting from the upright rear portion of the main frame, on which the drum is held by a suitable bolt p , passing through the axle. The drum incloses an ordinary spiral spring connected at its inner end to the supporting-axle and at its outer end to the drum or barrel in any suitable manner. The peripheral face of the drum is provided with gear-teeth p' , which mesh with a toothed rack p^2 , formed on or secured to the lower edge of the sliding bearing-bar of the carriage. The spring tends to turn the drum to the left, as indicated by the arrow in Fig. 2, and moves the carriage to the left, as usual. The tension of the driving-spring may be readily increased or decreased by disconnecting the rack-bar from the teeth of the drum and turning the drum on its axle. p^3 indicates ratchet-teeth, which in the construction shown are formed on a wheel or plate constituting the back of the driving-drum. The latter, however, may be independent of the ratchet-wheel and controlled thereby in any suitable manner.

Q, Figs. 1, 3, and 4, represents the universal bar, which, as usual, is arranged transversely beneath the several key-levers, so as to be depressed when any key is depressed to print a character. The universal bar preferably has rearwardly-extending side portions pivoted near the rear of the machine on pivots q , projecting inwardly from the sides of the main frame. The rear ends of the side portions of the universal bar approach each other at the rear of the machine beneath the driving-drum and support an upright dog-post q' , pivoted thereto by a screw or bolt q^2 . The universal bar is normally held up by one or more coil-springs q^3 , connected thereto and to the base-plate of the keyboard. The dog-post q' is offset, as shown in Figs. 2 and 3, and the upper portion thereof is bifurcated or branched.

q^4 is a holding-dog, which is pivoted on a pin or stud q^5 , projecting from a bracket q^6 , secured to the rear portion of the main frame. The free end of the holding-dog extends between and is pivoted to the branches of the dog-post, and is provided with a tooth or nose adapted to engage with the teeth of the escapement ratchet-wheel.

R represents an escapement-pawl, which is supported by a pivot r , passing through an elongated slot in the pawl and secured to lugs projecting from the bracket q^6 . The pawl R is provided with a tooth or portion adapted

to engage the ratchet-teeth of the driving-drum, and on one side of its pivot with a tail-piece r' , which passes between the branches of the dog-post above a set-screw r^2 , which
 5 passes through the offset portion of the dog-post. The pawl R is provided at the opposite side of its pivot with an arm r^3 , and has a depending projection, which is connected to the rear portion of the main frame by a
 10 coiled spring r^4 . The set-screw r^2 , carried by the dog-post, is adjusted to release the pawl R after the nose of the dog q^4 has been raised to engage one of the teeth of the escapement ratchet-wheel. When a type-key is
 15 depressed to make an impression, the universal bar is also depressed and the dog-post raised to carry the holding-dog q^4 into engagement with one of the teeth of the ratchet-wheel. The set-screw r^2 then strikes the tail
 20 of the escapement-pawl, disengaging its nose from the tooth of the escapement ratchet-wheel, and the nose of the pawl R is moved by its spring r^4 rearwardly and upwardly into engagement with the next tooth of the ratchet-
 25 wheel. When the type has made the impression and the key is released, the dog q^4 is lowered by the downward movement of the dog-post, and the ratchet-wheel turns forwardly one tooth, carrying the pawl R with it
 30 until the latter is stopped by the engagement of the end of its slot with its pivot-pin r , and the ratchet-wheel is arrested.

S, Figs. 1 and 4, represents the space key or bar, which is supported at the front ends
 35 of forwardly-converging levers s , pivoted at their rear ends to lugs s' on the rear portion of the main frame and connected at their front ends by a rod s^2 and bar or strip s^3 . The space-key is held up by one or more suitable
 40 spring s^4 , connecting it with the base-plate of the keyboard, and the strip s^3 is provided with a hook or projection s^5 , which overhangs a cooperating hook or projection s^6 , secured to the universal bar. When the space-key is
 45 depressed, the hook s^5 thereon engages the hook on the universal bar, so that the latter is depressed by the depression of the space-key. The universal bar is depressed by the depression of the type-keys independently of
 50 the space-lever in the ordinary manner and is also moved by the depression of the space-key. The carriage is thus moved laterally step by step to produce the ordinary letter-spacing in the usual operation of the machine
 55 by depressing either the type-bars or the space-key.

T, Figs. 1 and 2, represents a carriage-release lever, which, together with a ribbon-feed lever t , is pivoted on a bracket t' , secured
 60 to the carriage-track and extending forwardly beneath the platen. The release-lever is arranged with its free end beneath the free end of the ribbon-feed lever, which in turn is beneath the horizontal bar L connecting the
 65 paper-feed levers K K', so that when said bar

is depressed by the operation of either of the paper-feed levers the ribbon-feed lever t is depressed and striking the release-lever T depresses the latter. The carriage-release lever is connected to the upper end of a rod t^2 , the
 70 lower end of which has a rearward extension which projects over the arm r^2 of the escapement-pawl R.

The actuation of either paper-feed lever operates through the ribbon-feed lever, release-
 75 lever, and rod t^2 to disengage the escapement-pawl from the ratchet-wheel, thereby avoiding the noise and wear of the parts of the carriage-escapement when the platen is turned
 80 and the carriage set back for a new line. The parts are so adjusted that a slight movement of either paper-feed lever will release the escapement-pawl and free the carriage, and a further movement of the lever will turn the
 85 platen and feed the ribbon, as explained in my application for the ribbon mechanism.

The irregular movement of the carriage for the production of special work, such as tabulated and column matter, is effected by the
 90 following mechanism: U represents a ratchet-disk which is secured to the rear side of the escapement ratchet-wheel P and is of smaller diameter than the latter. The teeth or stops
 95 u on the tabulator ratchet-disk are spaced at intervals greater than the teeth on the regular escapement ratchet-wheel—for instance, they may be separated distances such that
 100 when the tabulator ratchet-disk is turned from one tooth to the next the carriage will be moved by the driving-drum a distance equal to ten letter spaces. The tabulator ratchet-disk is
 105 provided with a radial slot u' , whereby it is slipped over the hub of the escapement ratchet-wheel, on which it is held from turning by a stud u^2 on the escapement ratchet-wheel engaging in one of a circular series of holes u^3
 110 in the tabulator-disk. The disk is held in place on the ratchet-wheel by a nut u^4 , screwed on the threaded hub of the ratchet-wheel. V represents a tabulator-lever which, in the form
 115 shown in the drawings, is made in one piece, with a transverse rock-shaft v , pivoted in bearings v' on one side of the main frame and on a fixed transverse bar or plate v^2 , secured to the main frame. The lever has a forwardly-
 120 projecting arm provided with a key v^3 and a rearwardly-projecting arm, the rear end of which extends upwardly and is provided at its top with a curved face adapted to engage a smooth circular face on the escapement
 125 ratchet-wheel and with a tooth or projection v^4 , adapted to engage the teeth or stops on the tabulator ratchet-disk. The upright rear portion of the tabulator-key is provided with a horizontal pin or projection v^5 , Fig. 3, which
 130 extends beneath the tail of the escapement-pawl R. The tabulator-key is held up by a coil-spring v^6 , Figs. 2 and 3, connected to the rear end of the tabulator-lever and to the rear portion of the main frame. When the tabu-

lator-key is depressed, the rear end of the lever is raised, with its curved face in engagement with the cylindrical face of the escapement ratchet-wheel and its tooth in the path of the teeth of the tabulator-disk. The pin v^5 engages the tail of the escapement-pawl R and moves the later to release the escapement ratchet-wheel, which is turned by the driving-drum until a tooth on the tabulator-disk strikes the tooth on the tabulator-lever and is arrested. Thus the tabulator-lever releases the escapement ratchet-wheel when it is depressed and permits a movement of the driving-drum and carriage equal to the distance between the teeth or stops of the tabulator-disk. In this movement of the carriage the curved face of the tabulator-lever, bearing against the cylindrical face of the escapement-wheel, acts as a friction-brake to retard the movement of the escapement-wheel and prevent shock and injury to the parts. This movement can be varied to suit any character of work by providing different ratchet-disks on which the teeth are differently spaced. Fig. 6 shows a tabulator-disk provided with teeth or stops spaced farther apart and adapted to stop the carriage after a fifteen-letter-space movement of the same. The tabulator-disks are interchangeable. To detach a disk, the carriage is moved to one side of its run, which turns the tabulator-disk with its slot extending downwardly from the hub of the driving-drum. The upper portion of the disk is then disengaged from the stud on the escapement ratchet-wheel and the disk slipped off of the hub of the escapement ratchet-wheel. Tabulator-disks can be supplied for various purposes—that is, to permit different movements of the carriage—and when in place do not interfere with the regular step-by-step movements of the carriage except when the tabulator-key is depressed. The stud on the escapement ratchet-wheel can be engaged in any one of the holes in the tabulator-disk, which are preferably spaced apart a distance equal to five letter-spaces, in order to enable the carriage to be stopped at any desired point. The tabulator ratchet-disks are flat steel stampings, made at small expense by stringing a number of them on a mandrel and milling their outer edges to produce the desired number and position of teeth.

Instead of providing separate tabulator-disks the driving-drum or escapement ratchet-wheel could be provided with stops, or separate stops could be adjustably attached to the drum. Neither of these constructions, however, is considered as desirable as that explained above.

W, Figs. 3 and 4, represents a setback-lever, which is of any suitable form and is pivoted intermediate of its ends on a lug depending from the inwardly-projecting portion of one side of the main frame. The lever is provided at its front end with a key w and at its

rear end is provided with a pivoted dog w' , which coöperates with the escapement ratchet-wheel and which is connected to the main frame by a coil-spring w^2 . The dog is made with a lateral extension at its lower end, which in the normal position of the lever is held by the spring w^2 on a stud w^3 , secured to the rear portion of the main frame, and prevents the upper free end of the dog from engaging the teeth of the escapement ratchet-wheel. The spring is connected to the dog at one side of its pivot, and when the dog is lifted off of its rest by depressing the setback-key the spring swings its upper end into engagement with the teeth of the escapement ratchet-wheel, which is turned backwardly by a further movement of the setback-lever until the escapement-pawl engages the next tooth of the ratchet. The parts are so proportioned that the depression of the setback-key to its limit forces the carriage back one letter-space, which movement can be repeated, if desired, with great ease and rapidity, causing the carriage to move back a space at a time as far as desired. The spring w^3 acts to return the setback-lever to its normal position.

I do not broadly claim in this application an irregular feed for the carriage, enabling the production of tabulated matter or column work, or a device for setting the carriage back; but

What I claim as my invention is—

1. In a type-writing machine the combination with a carriage having a toothed rack, of a power-driven wheel meshing with said toothed rack, a universal bar, a regular step-by-step feed for the driving-wheel actuated by the universal bar, and an auxiliary irregular feed for said wheel actuated independently of the universal bar, substantially as set forth.

2. In a type-writing machine, the combination with a carriage, of a power-driven drum or barrel having two sets of concentric stops rigidly connected thereto, and two escapements acting with said stops whereby either a regular step-by-step or an irregular feed of the carriage may be had at will, substantially as set forth.

3. In a type-writing machine, the combination with a carriage, of a power-driven drum for actuating the carriage, having two sets of fixed stops thereon, an escapement device coöperating with one of said sets of stops to produce a regular step-by-step feed of the carriage, and an escapement device coöperating with the other set of stops to produce an irregular feed of the carriage, substantially as set forth.

4. In a type-writing machine, the combination with a carriage having a toothed rack, of a power-driven wheel meshing with the toothed rack on the carriage, two sets of concentric ratchet-teeth on said wheel of different pitch, and two independent escapements coöperating with said sets of teeth whereby

either a regular step-by-step or an irregular feed may be had at will, substantially as set forth.

5 In a type-writing machine, the combination with a carriage driving wheel or drum, and a regular step-by-step carriage-feed, of an auxiliary irregular carriage-feed, and a one-piece centrally-pivoted lever having a finger-key at one end and a brake-shoe at the other
10 end acting directly on the driving-wheel whenever the key is depressed, substantially as set forth.

6 In a type-writing machine, the combination of a carriage driving wheel or drum, regular and irregular feed devices, and a one-piece centrally-pivoted lever having a finger-key at one end and an integral stop and brake-shoe at the other end, substantially as set forth.

7 In a type-writing machine, the combination with a carriage driving-wheel, and a regular step-by-step escapement, of an auxiliary escapement of greater pitch than the regular escapement, and a one-piece finger-lever centrally pivoted to the frame of the machine
20 and acting to disengage the regular escapement, form a direct braking contact with the wheel, and a direct stop for the auxiliary escapement, substantially as set forth.

8 In a type-writing machine, the combination of a carriage, a driving-wheel operatively connected thereto and provided with stops, means coöperating with said stops to produce a regular step-by-step feed of the carriage, an auxiliary feed-disk detachably secured to said
30 driving-wheel and having stops, and means coöperating with said stops to produce an irregular feed of the carriage, substantially as set forth.

9 In a type-writing machine, the combination with a power-driven carriage, of a wheel having two sets of stops arranged at different intervals, and two space-keys and connections whereby either key acts independently of the
40 other to feed the carriage, substantially as set forth.

10 In a type-writing machine, the combination with a regular step-by-step carriage-escapement, of an irregular auxiliary escapement including an operatively-connected wheel having stops and a smooth surface, and
50 a lever-actuated part acting to release the regular escapement and acting as a friction-brake on the smooth part of the wheel, substantially as set forth.

11 In a type-writing machine, the combination with the carriage, and a toothed wheel operatively connected therewith, of a finger-lever centrally pivoted to the frame of the machine, and a dog or pawl pivoted to the lever and adapted to automatically engage the
60 toothed wheel with each vibration of the lever, substantially as set forth.

12 In a type-writing machine, the combination with the carriage and a toothed wheel operatively connected with the carriage, of a
65 centrally-pivoted one-part finger-lever having a pivoted dog at one end, and a spring acting with the initial movement of the lever to engage the dog with the toothed wheel, and with the release of the lever to retract the same
70 and disengage the dog, substantially as set forth.

13 In a type-writing machine, the combination with a power-driven carriage, and a toothed wheel operatively connected to the carriage, of a centrally-pivoted finger-lever, a dog pivoted directly thereto, an abutment against which the dog normally rests, and a spring acting to throw the dog in contact with the wheel with the initial movement of the lever,
80 and to withdraw the dog from the wheel and hold it against the abutment after the release of the lever, substantially as set forth.

Witness my hand this 29th day of July, 1903.

EMMIT G. LATTA.

Witnesses:

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CHAS. J. RICE.