

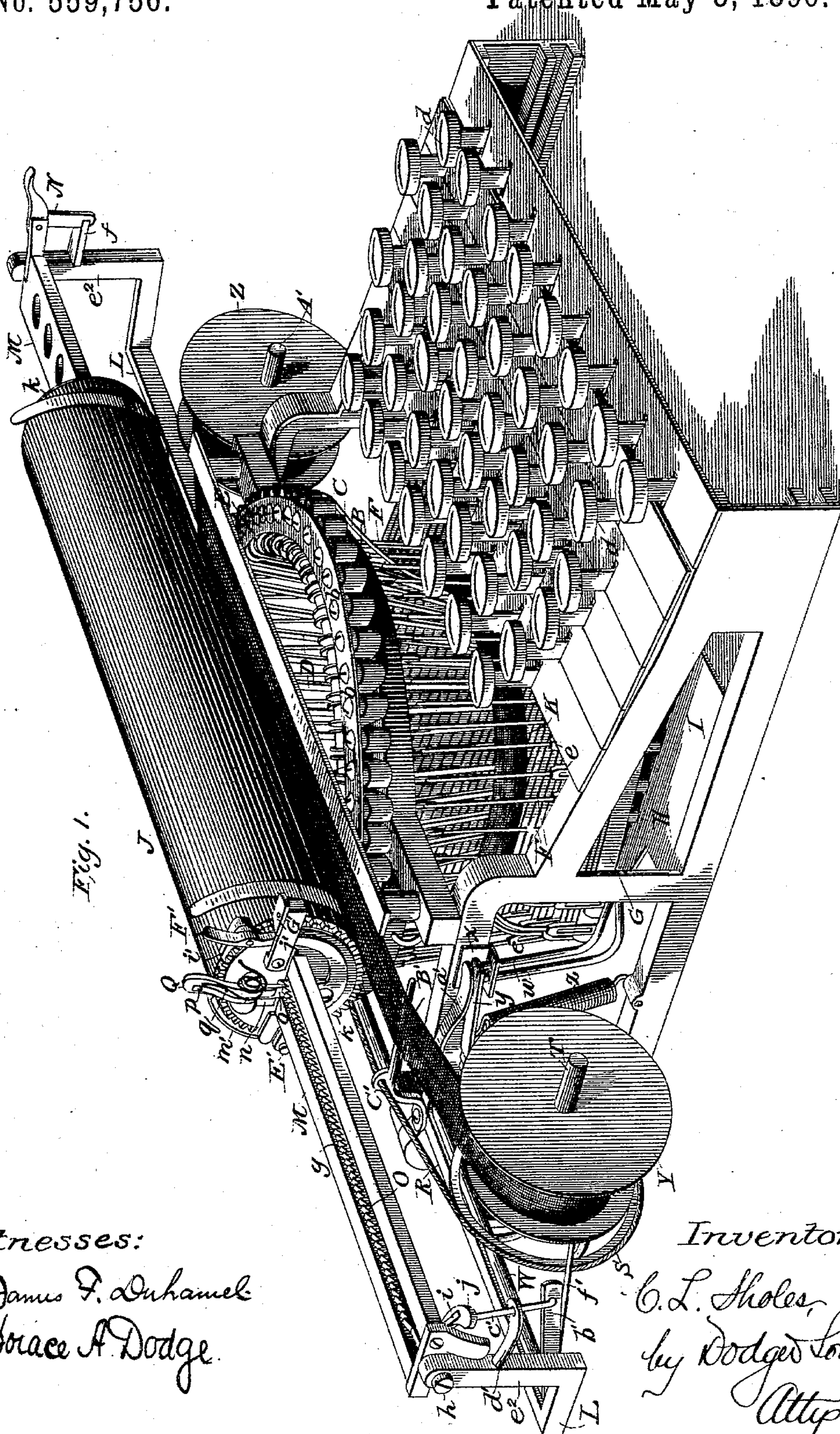
(No Model.)

6 Sheets—Sheet 1.

C. L. SHOLES.
TYPE WRITING MACHINE.

No. 559,756.

Patented May 5, 1896.



Witnesses:

James F. Duhamel
Horace A. Dodge.

Inventor:

C. L. Sholes,
by Dodge & Sons,
Attys.

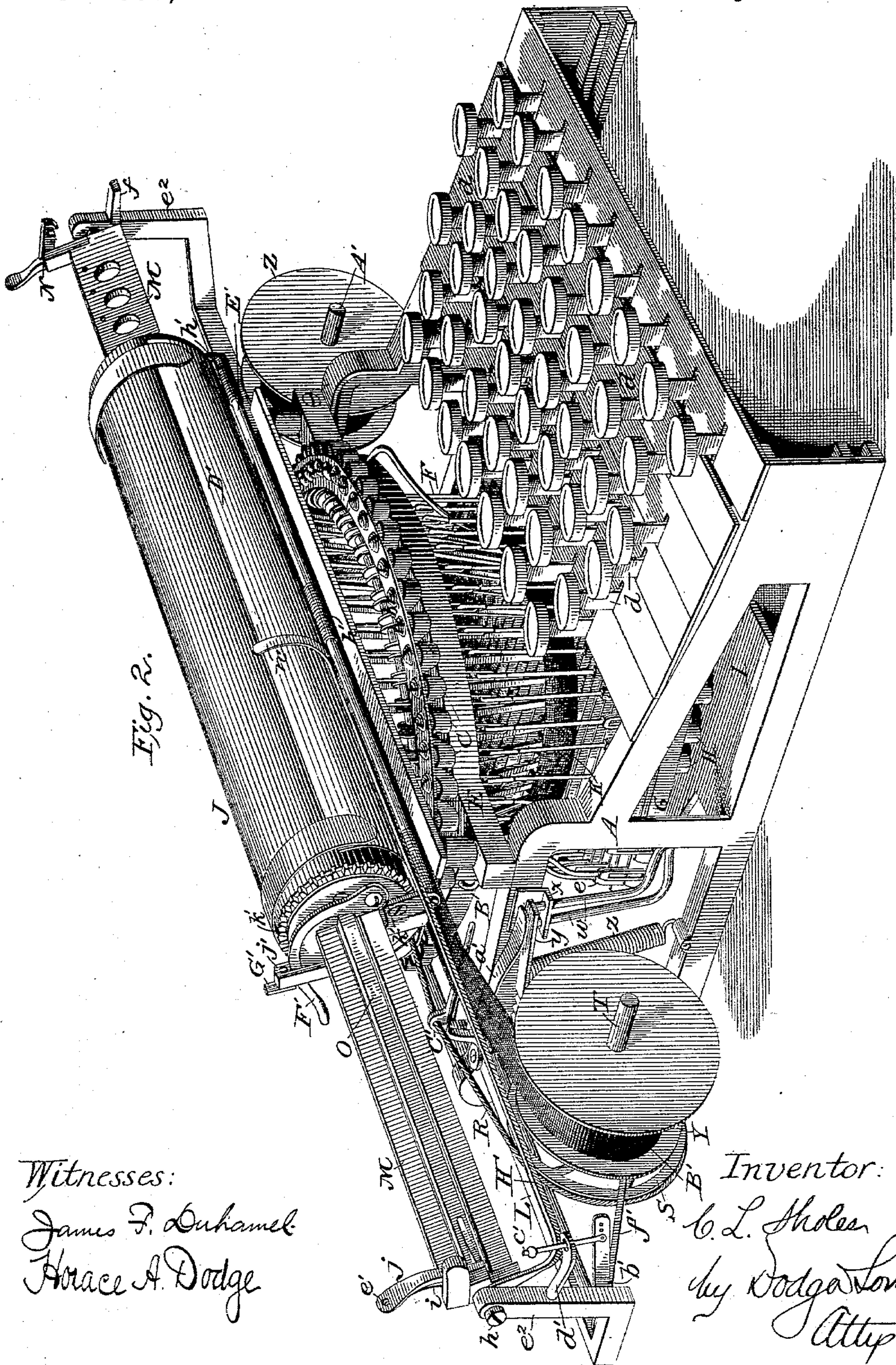
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C. L. SHOLES.
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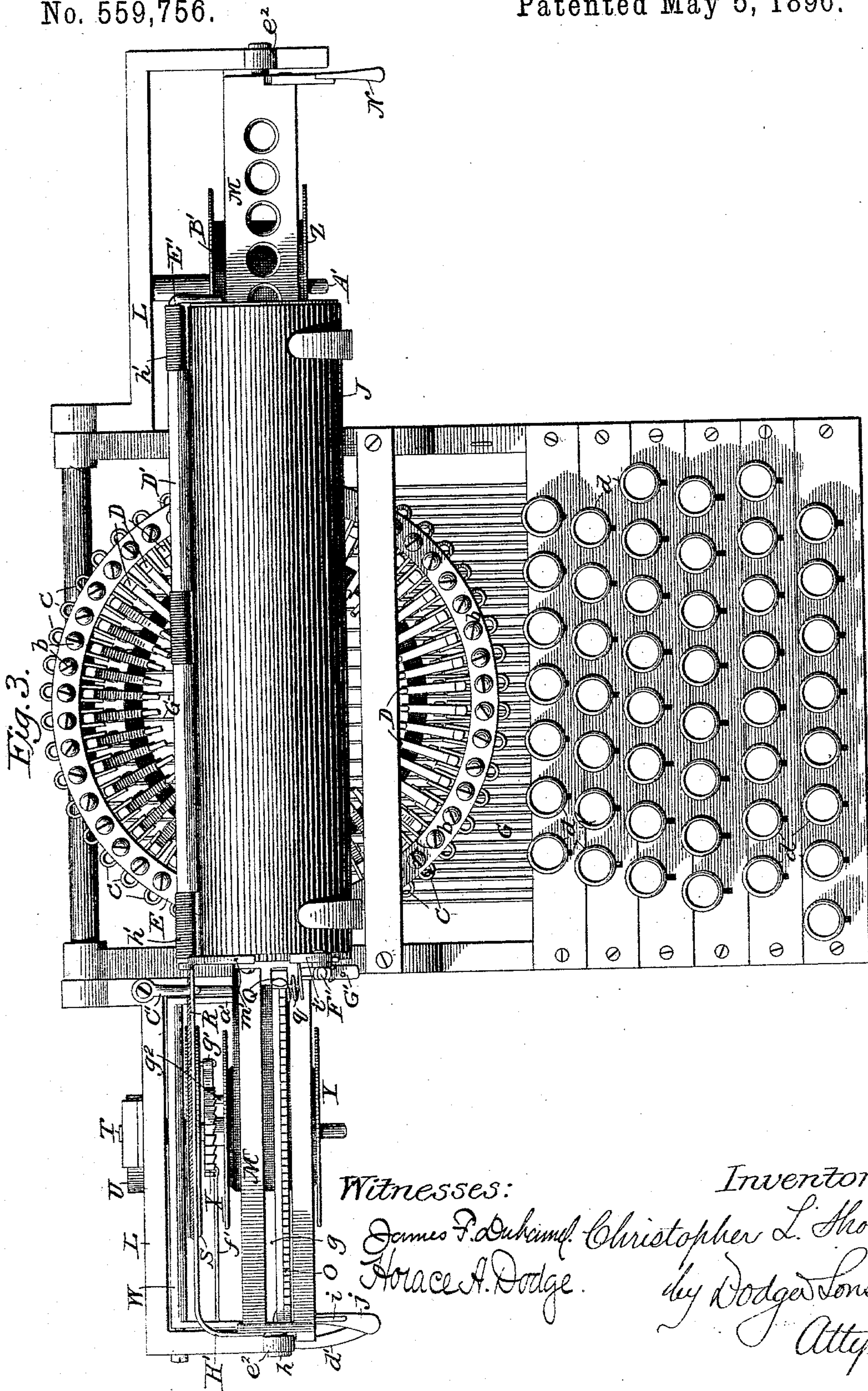
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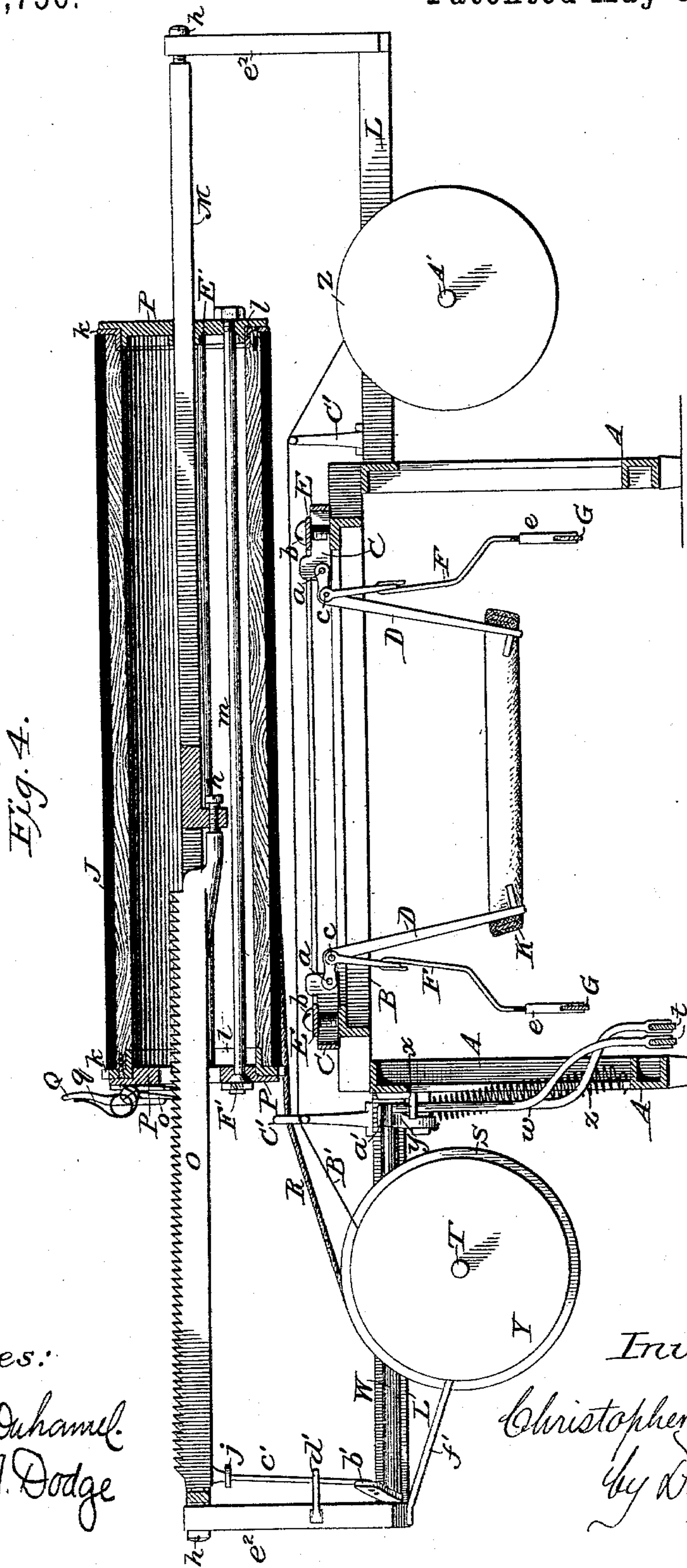
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Inventor:

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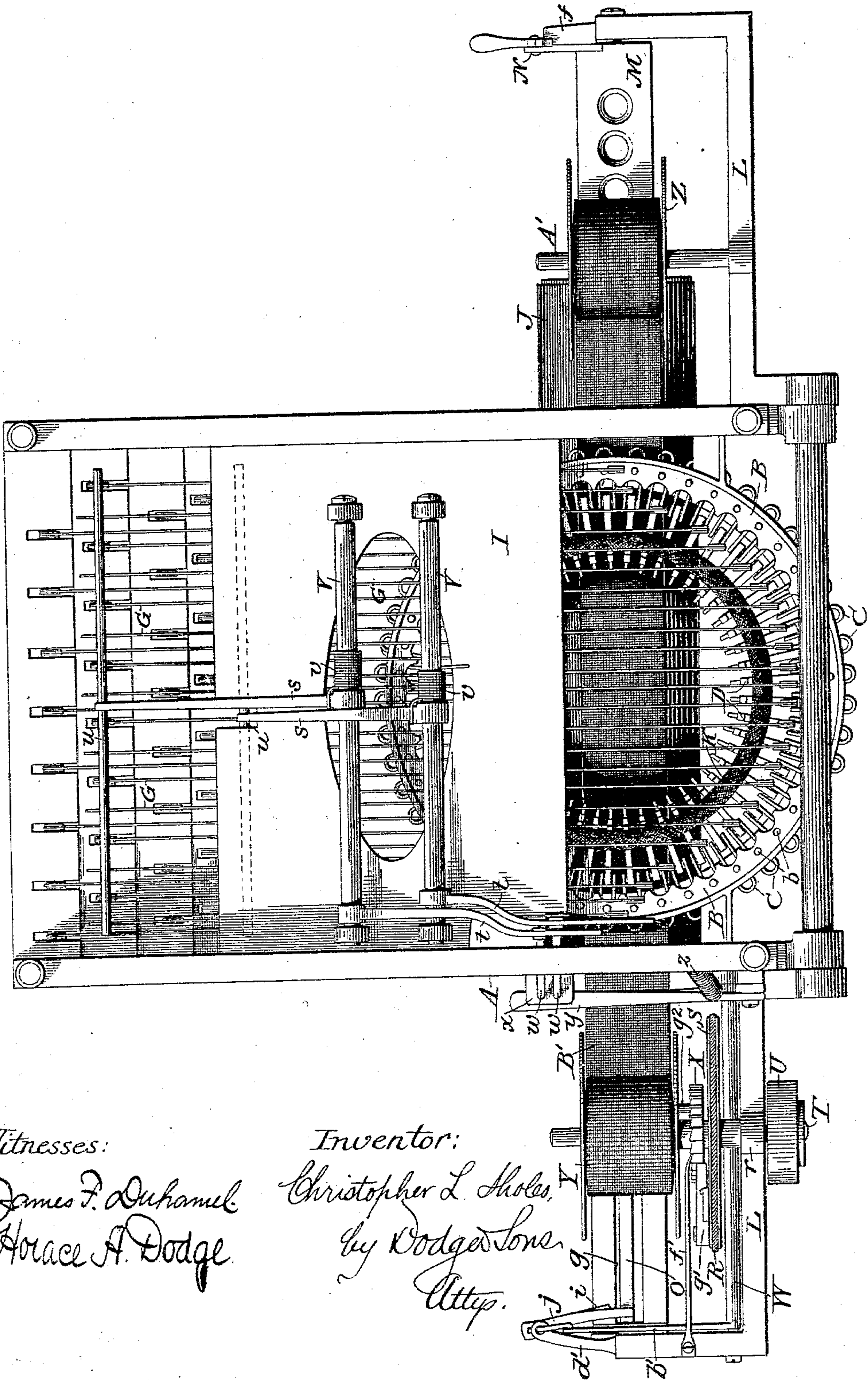
6 Sheets—Sheet 5.

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Fig. 5.



Witnesses:

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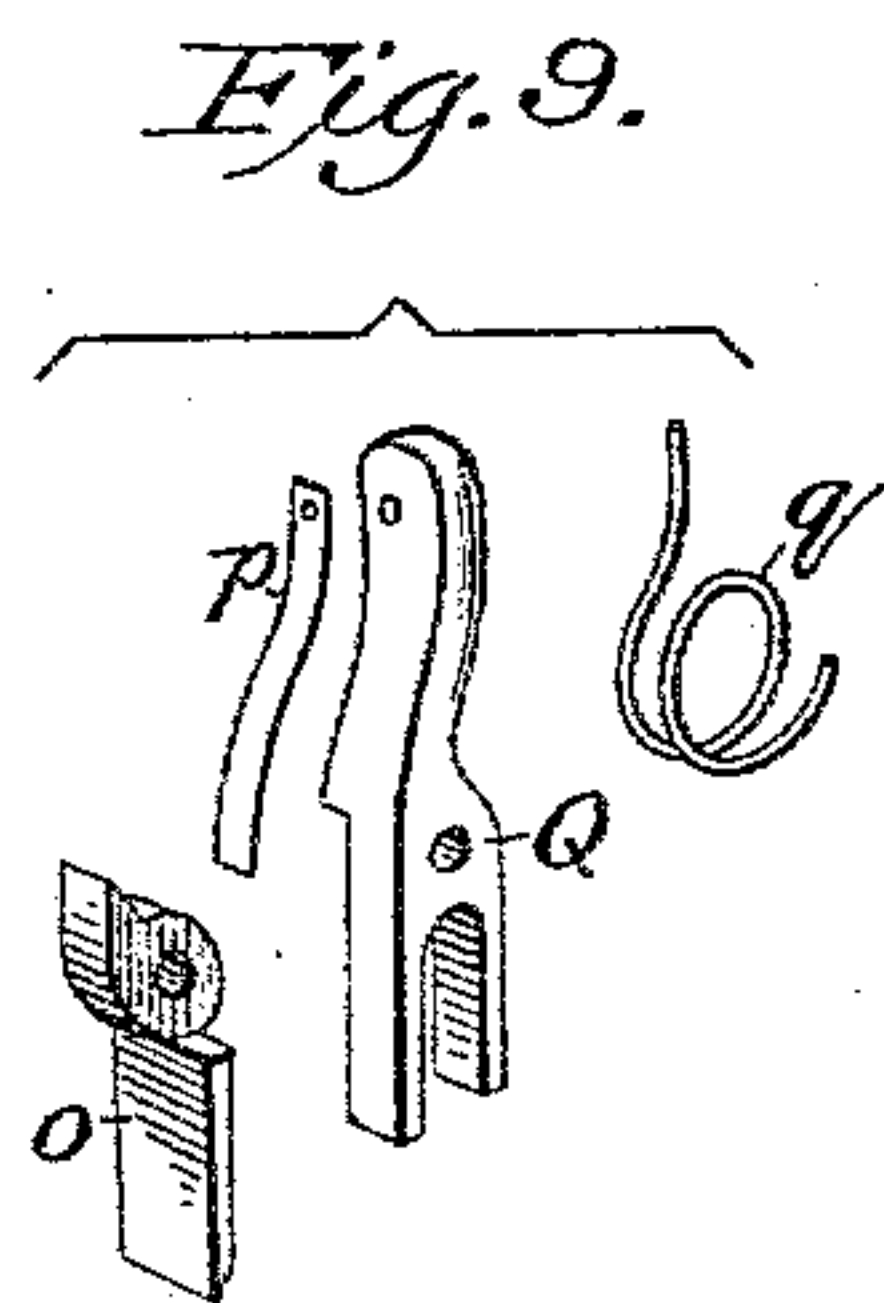
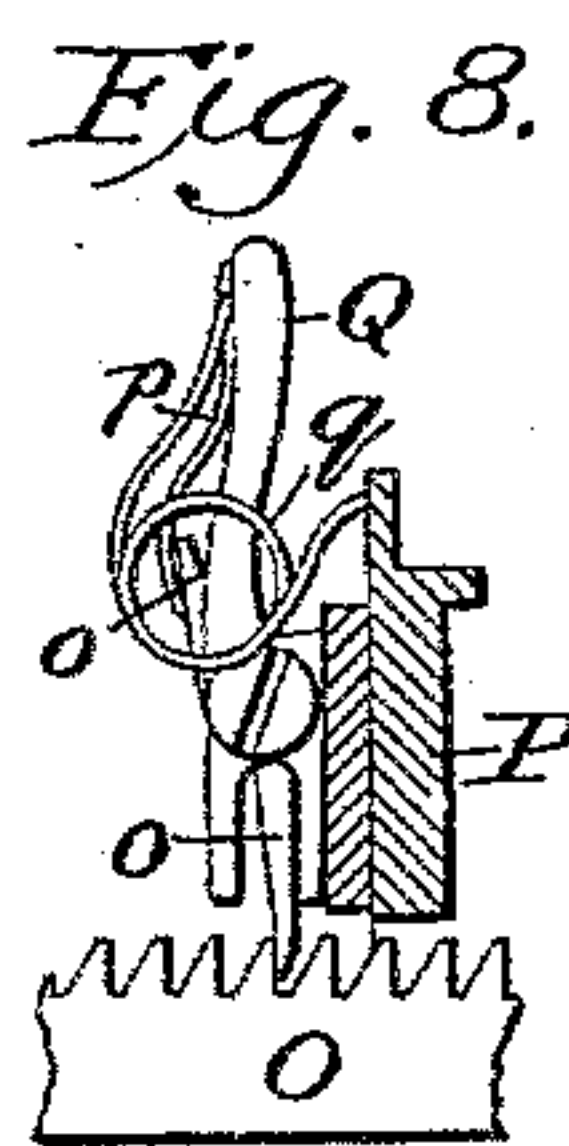
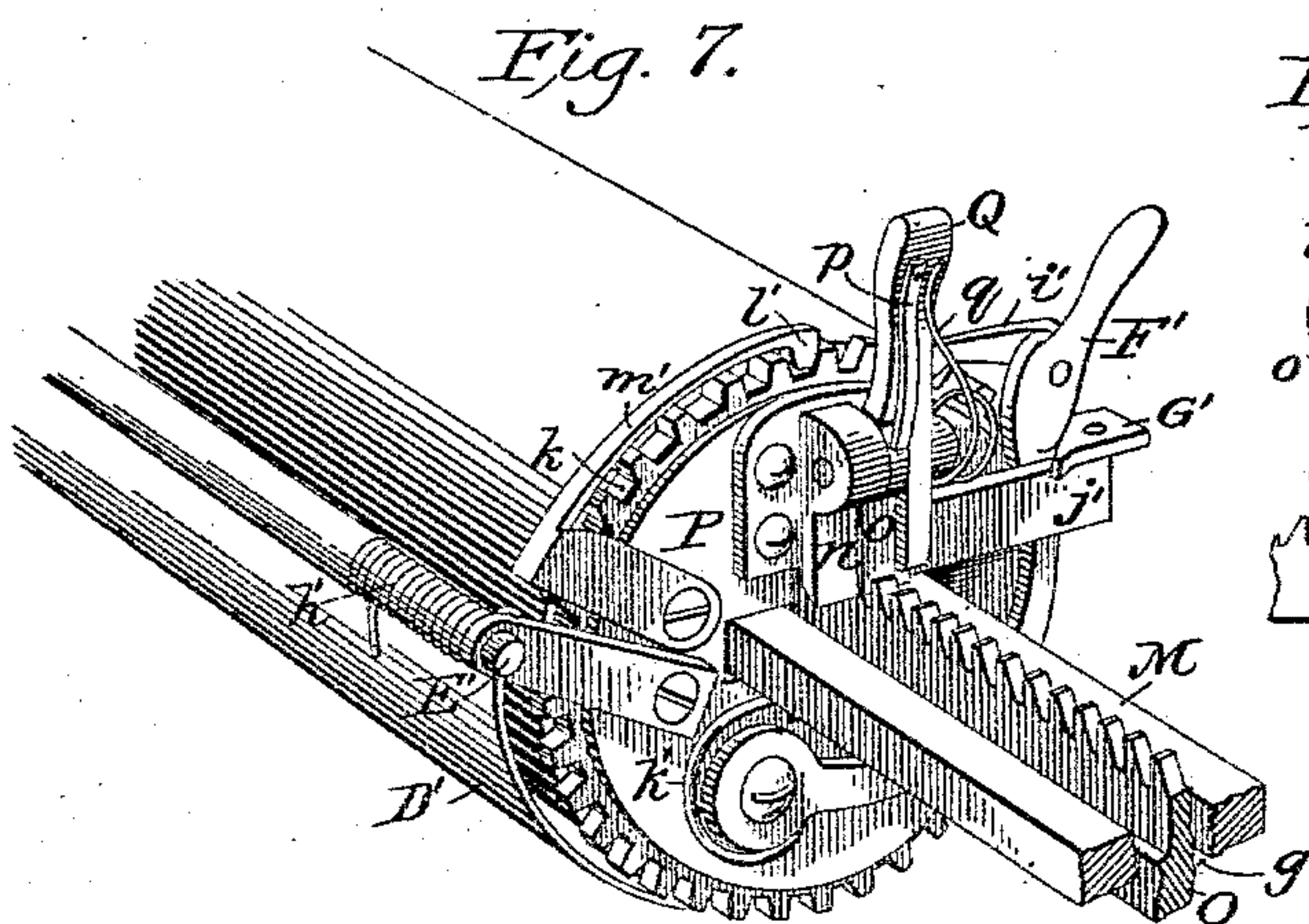
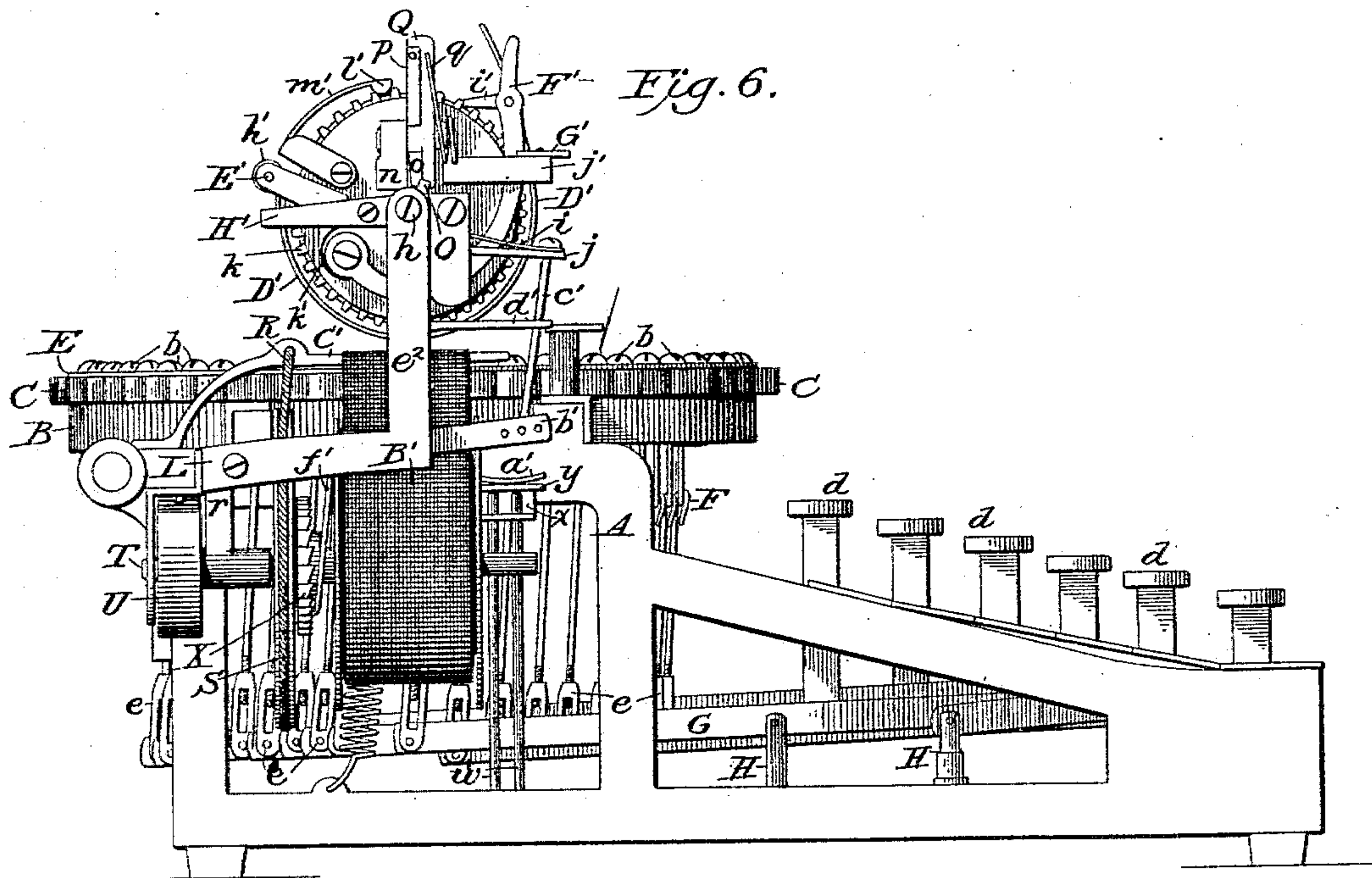
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Inventor:

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Attys.

UNITED STATES PATENT OFFICE.

CHRISTOPHER LATHAM SHOLES, OF MILWAUKEE, WISCONSIN, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO THE WYCKOFF, SEAMANS & BENEDICT, OF NEW
YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 559,756, dated May 5, 1896.

Application filed February 18, 1890. Serial No. 340,921. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOPHER LATHAM SHOLES, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to that class of type-writers in which a platen or paper roll is caused to travel past a printing-point at which all the characters are printed; and it consists in a variety of novel features and in various new combinations of parts hereinafter fully set forth.

Prominent among the new features of the machine may be mentioned a platen or paper roll carried by a guiding and supporting bar, which passes longitudinally through the platen, and which, with the platen, may be rocked or partially rotated, so as to carry to a convenient position for inspection the line being printed; in means for holding the roll in its normal position and for throwing it therefrom to the position for inspection of the work; in spacing-dogs carried by the platen, and in a pointer or indicator, which points to and locates the spot at which a character will print when the platen is thrown back to its normal position. Various other features and details of greater or less importance will be explained in the following description.

Figures 1 and 2 are perspective views of my improved machine, the former showing the platen in its normal or working position and the latter showing it turned back for inspection or correction of the work; Fig. 3, a top plan view of the machine; Fig. 4, a vertical section in the plane of the axis of the platen or paper roll; Fig. 5, a bottom plan view of the machine; Fig. 6, an end elevation; Figs. 7 to 9, views showing details.

The framework A of the machine is somewhat similar to that of the "Caligraph" now well known in the trade, but may be varied as desired.

At the top of the frame A, at the rear part thereof, is a circular hoop B, provided with arms or extensions which reach to and rest

upon the side bars of the frame, as shown in Figs. 1, 2, and 4. This hoop or ring forms a base or support for a series of clips or yokes C, in which the type-bars are pivoted, the clips being arranged radially to the center of the hoop. Each clip or yoke C consists of a piece of thin elastic metal, preferably sheet-steel, bent into U form, and formed with eyes or cavities in the free or separated ends to receive pivots or gudgeons of the type-bars D. In actual construction I prefer to employ pivot-pins *a*, passing through the arms of the clip and through the type-bar, the flat faces of the type-bars bearing against the inner faces of the clips and being thereby prevented from moving laterally.

E indicates a flat hoop or ring, which may be in one piece or in sections, and which is perforated to permit the passage through it of a series of screws *b*, which pass between the two arms of the respective clips and enter holes tapped in the supporting hoop or ring B.

The U form of the clips C permits them to be adjusted forward or backward or to be turned laterally to any extent required to bring the type or printing-characters of the type-bars D to the precise point required for printing, the fastening-screw of the particular clip requiring adjustment being loosened before and tightened after such adjustment.

The flat hoop E, being held in place by a number of screws, permits individual clips to be loosened and adjusted with ease and facility and without liability of displacement.

The type-bars D are of the form shown in Fig. 4—that is to say, each consists of a straight body or stem, tapering somewhat toward its free end, and formed with a backwardly-bent rear end or tail portion, the rear extremity of which is perforated and attached to the clip C by pivot-pin *a*, as above mentioned. At the bend connecting the tail and the body or stem of each bar D is another perforation to receive a joint-pin *c*, by which is connected to the bar the upper end of a push-rod F, the lower end of which is suitably connected with an actuating-lever or key-bar G. In Figs. 1 to 5 these key-bars are represented as thin flat strips or bars of metal, arranged with their width in vertical planes, each bar

being pivoted in a post H, rising from a bed or platform I in the base of frame A. The forward or outer end of each key-bar is bent or extended upward and terminates in a finger key or button *d*, bearing a letter or character corresponding with the character of the type-bar which such key-bar actuates.

The push-rods F are each threaded at the lower end and screwed into a stirrup *e*, the lower end of which straddles its key-lever and is pin-jointed, riveted, or otherwise secured thereto, the threaded connection permitting proper adjustment of the connecting push-rods.

The leverage of the key-bars is or may be such that they tend to drop at the rear and rise at the forward or outer ends, and this tendency is slightly enhanced by reason of the weight and leverage of the type-bars. It will thus be apparent that the type-bars will normally hang down in the position indicated in Fig. 4 and that the key-levers will be normally elevated at their forward ends, thereby elevating the finger-buttons. To render this action more prompt and certain, I employ springs, as hereinafter explained.

The extent of rise of the type-bars and the consequent descent of the key-levers are determined by the platen or roller J, against which or against the paper upon which the printing-characters strike.

The descent of the type-bars and consequent elevation of the finger-buttons are determined by a ring or basket K, against which the type-bars fall and by which their descent is arrested.

By giving each key-lever precisely the same leverage, or, in other words, by preserving a fixed relation between the lengths of those portions of the key-levers, respectively, in front and in rear of the posts H, I am enabled to secure for each type-bar and each key-lever precisely the same movement—that is to say, the same throw and force of blow for the type-bars and the same rise and fall of key-levers and the finger-buttons. This is an important result to attain in type-writing machines and one which requires only the proper placing of the posts H.

The thrust or pushing action of the key-levers and connecting-rods gives to the type-bars a directness and force of stroke that cannot be secured by pulling down the rear end of the type-bar and causing its front end to rise in consequence, and this firm and direct stroke is advantageous in giving a clear and sharp impression, and especially so for manifolding, where the force of the blow has to be transmitted through a number of sheets of paper.

Projecting from the sides or ends of the main frame A are two arms L L, which at their outer ends extend forward and upward, as shown in Figs. 1 and 2. Reaching from one of the upturned ends or standards *e*² to the other and journaled or pivoted therein is a flat bar M, bifurcated for about one-half

its length, and advisably perforated or skeletonized throughout its remaining portion to render it light. At one end, preferably the right-hand end, the bar M is furnished with a locking-dog or catch N, which engages with a lug *f* on the post or standard *e*² and holds the bar normally in a horizontal plane and against rocking or turning upon its pivots or journals. Pivoted in the slot or space *g*, between the two parallel members of the bifurcated end of bar M, is ratchet-bar O, which stands normally in a vertical plane, but which is carried at its ends upon center screws or pivots *h*, upon which it may be rocked or tipped laterally. A spring *i*, bearing upon a projecting arm *j* of the ratchet-bar, serves to hold it in and return it to its normal position, but is made quite light and elastic to permit the bar to be easily rocked and with very slight expenditure of force. By making arm *j* sufficiently heavy the spring *i* may be dispensed with; but the action will not in that case be so quick as with the spring, which it is therefore deemed best to employ.

J indicates a roller or platen, which supports the paper to be printed upon and sustains it against the strokes or blows of the type. Its construction is illustrated in Fig. 4, where it will be seen to consist of a hollow wooden cylinder, covered on the exterior with rubber to afford an elastic or yielding backing for the paper and a frictional surface to facilitate the feeding of the paper for line-spacing. Each end of the cylinder is furnished with a bushing-ring *k* and is mounted upon a circular rim or flange *l*, projecting inward from a head or disk P. Both the disks P are cut out at the center to permit the passage through them of the bar M and its ratchet-bar O, with space sufficient to permit the lateral play of said ratchet-bar. The two heads or disks are connected by longitudinal rods *m* and *E'*, or otherwise, and cannot turn upon or about bar M, owing to its flattened form and the corresponding shape of the openings in the disks or heads. Secured to the head or disk P at the left-hand or forward end of the platen, as shown in Fig. 7, is a rigid dog *n* just back of the vertical plane, in which ratchet-bar O normally stands, and of a size and shape to fit into the notches or between the teeth of said bar when the latter is thrown backward.

Hung upon the front side of the fixed dog *n* is a swinging dog *o*, Figs. 7, 8, and 9, of the same form at its lower end as the dog *n* and designed to engage with the teeth of the ratchet-bar O to prevent its forward movement, except to the extent to which the dog *o* swings about its pivot. The upper end of dog *o* is formed with a projection, against which bears a light spring *p*, serving to throw the dog forward or out of alignment with the dog *n* when the force of the spring is not counteracted or overcome by the force which propels the carriage, or when the ratchet-bar is thrown back and is engaged by the fixed dog. A

forked lever Q, pivoted to the head or disk P, has its bifurcated end arranged to straddle the swinging dog *o* and the inner arm of the fork held normally against head P by a spring *q*, so that the width of the fork determines the independent throw of dog *o*; but by pressing back the upper end of lever Q the dog *o* may be lifted above the teeth of ratchet-bar O.

The platen is constantly urged or drawn forward by a cord or band R, preferably attached to its rear end and extending thence to the exterior of a grooved wheel or drum S, keyed or otherwise made fast upon a spindle T, which is carried and rotates in hangers or bearings *r* at one end of the frame. Coiled about the spindle T is a spring U, one end of which is made fast to the spindle and the other end of which is secured to the main frame or other fixed part, so that as the spindle turns in one direction it will wind or coil the spring, and so also that in uncoiling the spring shall rotate the spindle and the wheel or drum S secured upon it. From this construction and arrangement it results that upon moving back the platen to the right, preparatory to beginning a new line, the cord or band R, previously wound about the wheel or drum, will unwind therefrom, and in so doing it will rotate said wheel or drum against the resistance of the spring, which will by the same operation be coiled and put under tension sufficient to carry the platen forward as the printing progresses.

The advance of the platen must of course be step by step to correspond with the striking of the respective printing-characters and with the spacing between words, and this is accomplished by means of the spacing-dogs and ratchet-bar, above mentioned, through the medium of connections that will now be explained.

As shown in Figs. 1, 2, 3, and 6, the keys or finger-buttons are advanced in six tiers or rows, the number being variable, however, and, as shown in Fig. 5, there are beneath the platform upon which the key-lever posts are mounted two rock-shafts V, each carried in suitable hangings or bearings and each having a forwardly-extending arm *s* and a rearwardly-extending arm *t*, the arms *s* being each furnished with a cross rod or bar *u*.

Coiled about each rock-shaft V is a spring *v*, one end of which is bent around the arms *s*, and the other end of which bears upon the framing of the machine or other fixture, so that each spring tends to lift the forward end of the arm *s*, with which it is connected, and to keep the cross rod or bar *u* in contact with the lower edges of the key-levers. Each cross-rod passes beneath the key-levers of three tiers of finger keys or buttons, so that any key of either group will, when depressed, carry down before it one or the other cross-rod *u* and arm *s*, and thereby elevate the rearwardly-extending arm *t* of the rock-shaft, from which said arm *s* projects. The particular key-lever depressed will, for the time

being, be subject to the full power of the spring *v*, which will tend to elevate the key end of the lever and thereby to depress its rear end and to carry down the type-bar with which said rear end is connected. From each of the arms *t* rises a rod or stem *w*, Figs. 1, 2, 4, and 6, the upper ends of which rods pass through holes in a guide-plate *x*, secured to the frame of the machine. Bearing upon the upper ends of the rods *w* is a flat bar or lever *y*, which is pivoted at one end to the frame A and is formed with a series of notches in its upper face, as shown in Figs. 1 and 2, in one or another of which is seated the looped upper end of a spiral spring *z*, the lower end of which is made fast to frame A. By shifting the spring from one to another notch of the lever *y* the force with which the lever is caused to bear upon the rods or stems *w* may be varied at will, and this force may be made sufficient, if desired, to render the springs *v* unnecessary.

W indicates a rock-shaft carried upon center screws or pivots in the main frame of the machine and in frame L and provided with two forwardly-extending arms *a'* and *b'*. The arm *a'* rests at its free end upon the lever *y* and rises and falls therewith, the arm *b'* moving in unison with the arm *a'* and lever *y*. Jointed to the free end of arm *b'* is a push-rod *c'*, which extends upward through a guide-arm *d'* and has its upper extremity seated in a cavity or recess *e'* in the arm *j* of ratchet-bar O, as indicated in Figs. 1 and 6.

From this explanation of the construction and arrangement of parts it will be apparent that whenever a key-lever is depressed it will press down the cross-bar and forwardly-extending arm of one or the other rock-shaft V, elevate the rearwardly-extending arm thereof, and with its push rod or stem *w*, which in turn will lift the lever *y*, and the arm *a'* of rock-shaft W, thus causing said rock-shaft to turn and to lift arm *b'*, moving upward the push-rod *c'*, lifting arm *j* of ratchet-bar O, and causing said ratchet-bar to swing from the yielding dog *o* to the fixed dog *n* of the platen-roll.

The action of the dogs *n* and *o* will be readily understood. When the ratchet-bar is in its normal position, the platen moves forward until the rigid dog *n* is carried into alinement with the yielding dog *o*, which is by the same advance straightened up into a vertical position. When the ratchet-bar is swung back, it engages the fixed dog and prevents the carriage from advancing, this backward movement of the ratchet-bar being simultaneous with the striking of a printing-character against the platen or the paper thereon. As soon as the ratchet-bar swings clear of the pivoted dog *o*, its lower end swings forward the distance permitted by the forked lever Q, which is equal to the length of one tooth of the ratchet-bar. The roll then moves forward again, its propelling-spring overcoming the resistance of spring *p*, as before explained, and in this manner the ratchet-bar is swung

back and forth, the dogs move into and out of alinement, and the platen advances step by step.

Whenever it is desired to recede the platen, it may be done without regard to the spacing-dogs, because the forked lever Q and dog o are free to swing outward from disk P and to ride over the ratchet-teeth; but by throwing back the upper end of lever Q the dog o may be lifted entirely clear of the teeth.

Loosely mounted upon the spindle T, which carries the propelling-spring U, is a ratchet-wheel X, having ratchet-teeth both on its side face and on its periphery. A dog or detent f' , secured to the frame A, engages the teeth on the side face of the ratchet-wheel and prevents its backward rotation. A dog or pawl g' , carried by the drum or wheel S, engages with the peripheral teeth of the ratchet-wheel X when the drum or wheel is being turned by the spring U and causes the ratchet-wheel to turn in unison with it; but when the drum or wheel is turned backward to put the spring under tension or compression, as occurs when the platen is receded, the dog rides back over the teeth of the ratchet, and which is at that time held at rest by the detent f' . Projecting from the face of the ratchet-wheel X, parallel with its axis, is a stem g^2 , which enters a socket in a ribbon-spool Y, slipped loosely upon the spindle T and gives motion to the spool during the advance of the platen. A similar spool Z carries the other end or portion of the ribbon and is mounted upon a rigid spindle A' at the opposite side or end of the machine. When one spool becomes filled or the other becomes empty, the two spools are merely transposed, and the operation continues as before. A nut or a rubber washer or like device may be applied to the end of each of the spindles to prevent the accidental displacement of the spools. The ribbon B' passes upward from one spool to and over a guide-arm or support C', made fast upon frame A, thence across the circular hoop or ring upon which the type-bars are mounted to a second guide or support C', and finally to the second spool, passing directly over the printing-point and beneath the platen.

The ribbon-support C' at the left-hand side of the machine is formed with an eye to guide the cord or band R and insure its retention upon the wheel or drum S.

For the purpose of holding the paper upon and in contact with the platen there is provided a clamping plate or shield D', which is curved to conform pretty closely to the circumference of the platen and is hinged or hung upon a rod E', which connects the two heads or disks P P. Coiled about the rod E', attached at one end thereto, and bearing at the opposite end against the clamping-plate D' are springs h' , which serve to press the clamping-plate toward the roller and to hold its free edge close against the same or against

the paper thereon. Being thus held in contact with the platen or roller the paper will move therewith whenever the latter is turned.

For the purpose of turning the platen or roller for advancing the paper or for line-spacing one of the bushings, preferably the one at the left-hand end, is made with teeth on its periphery, as shown in Fig. 7, and a thumb-lever F' is pivoted to the disk P at that end and provided with a dog or pawl i' , which, when the lever F' is pressed forward or inward, engages with a tooth of the platen-bushing and advances the roller one or two teeth, according to the adjustment of a two-faced stop G', pivotally applied to an arm j' , projecting from the disk P, a spring k' returning the thumb-lever to its first position. The platen is held against backward rotation and against turning too far by a detent l' , beveled both ways from a median line and carried by a spring-arm m' , secured to disk P. This detent permits the platen to be turned in either direction upon the exercise of slight force.

It is frequently desirable to bring the line which is being written into position to be conveniently read or corrected, and it is important to be able to determine the precise point at which a character will print when the platen is restored to its working position. To attain these ends, the bar M is journaled or pivoted at its ends, as already explained, and said bar is furnished with a catch or locking device by which it may be secured in its normal position or released and permitted to turn back, thereby carrying with it the platen and bringing into view the line in process of printing. To indicate the precise point at which a character will print, or, in other words, to bring a given spot in the line exactly to the printing-point for the purpose of printing an omitted letter or substituting one letter for another, as often happens in correcting work, I attach to the bar M a rod, wire, or stem h' , the free end of which extends toward the center of the circle formed by the group of key-bars, and the extremity of which is bent laterally and extends to within a very short distance of the printing-point. This stem or rod h' , being attached to bar M, will of course turn with the latter, and its end n' , which constitutes a pointer or index, will maintain a fixed relation to the printing-point on the platen or the sheet upon the platen and will indicate the point at which a character will be printed with the platen at any point in its travel. If, therefore, it be desired to print a character at a given point in the line, it is only necessary to release bar M and turn the platen back, then move the platen longitudinally until the point at which the character is to be printed comes opposite the pointer n' , whereupon the platen and bar M will be restored to and locked in position, and the proper character will be thrown up and will print at the point desired. This provision enables

the operator to make corrections with great facility and with certainty of printing the desired character at the precise point intended.

It will be seen that it is not essential that the bar M be carried centrally through the heads or disks P P, though such is the preferred construction; and it will also be apparent that it is not essential that the bar M be pivoted concentrically with the axis, though a more compact machine results from such arrangement, and there is no occasion to lift the platen and return it to its place, the mere rotation of the platen with the bar M being sufficient. So, too, I deem a transposition of the ratchet-bar and the spacing-dogs an obvious modification of my arrangement and within the scope of my invention. In like manner the employment of a continuous internal cylinder to support the platen, instead of the heads or disks, would be an obvious change involving no departure from what is herein described and shown.

I do not in this application make broad claim to the combination, in a type-writing machine, of a carriage, a shaft mounted therein, and a platen or paper roll encircling said shaft and adapted to be rotated independently of the shaft at the completion of a line; nor, in fact, do I mean to claim anything in the present application pertaining to the construction of the platen, except the combinations recited in the claims, as the broader claims are embraced in an application, Serial No. 340,922, of even date herewith.

Having thus described my invention, what I claim is—

1. In combination with a normally-fixed supporting or guiding bar provided at its ends with pivots or journals upon which it may be rocked, a platen encircling said bar and adapted to move longitudinally upon and to be guided by said bar, substantially as and for the purpose explained.

2. In combination with a supporting and guiding bar having pivots or journals upon which it may be rocked, a platen encircling said bar and movable lengthwise thereof, the platen having its axis concentric with that of the pivots or journals of the supporting-bar, whereby the platen and bar may be jointly turned to bring the printing-point to view without moving the platen bodily from its normal position.

3. In combination with a platen adapted to move longitudinally during the printing of a line, a guiding and supporting bar passing longitudinally through the same, a ratchet-bar carried by one of said parts, dogs carried by the other of said parts, and adapted to alternately engage with successive teeth of the ratchet-bar, and a connecting device substantially such as described, between the keys of the machine and the ratchet-bar, whereby the alternate engagement of the dogs therewith is effected.

4. In combination with a platen, a supporting-bar therefor passing longitudinally

through the platen, a ratchet-bar carried by one of said parts, and a rigid and a yielding dog carried by the other of said parts.

5. In combination with a platen, a supporting-bar passing longitudinally through the same, a ratchet-bar carried by said supporting-bar and provided with teeth corresponding to letter-spaces, and letter-spacing dogs carried by the platen and serving to engage with the ratchet-bar alternately.

6. In combination with a platen, and a supporting-bar passing longitudinally through the same, a ratchet-bar pivotally mounted in or upon the supporting-bar, and a rigid dog, and a vibrating dog carried by the platen and adapted to engage alternately with the ratchet-bar as the latter is moved upon its pivots.

7. In combination with a supporting or guiding bar, two connected heads or disks arranged to slide but held against rotation upon said bar, and a platen surrounding said bar and mounted and free to rotate upon the connected heads or disks, substantially as described.

8. In combination with a supporting or guiding bar, disks or heads mounted and free to slide but held against rotation thereon, and a platen encircling the disks or heads, and free to rotate upon the same.

9. In combination with a supporting and guiding bar, disks or heads mounted and free to slide but held against rotation thereon, a platen having its ends mounted and arranged to rotate upon the heads or disks, a toothed ring or bushing secured to one end of the platen, and a lever pivotally attached to one of the heads or disks, and carrying a pawl to engage with and rotate the toothed ring and platen.

10. In combination with a supporting and guiding bar, heads or disks mounted and arranged to slide thereon, a platen supported and free to rotate upon and independently of the disks, a toothed ring secured to the platen, and a dog or detent carried by one of the disks and arranged to engage with the toothed ring to hold the platen against accidental rotation.

11. In combination with a supporting and guiding bar, heads or disks mounted and arranged to slide thereon, a platen mounted and free to rotate upon the heads or disks, and provided with a toothed ring, a dog or detent carried by one of the disks and serving to engage the toothed ring to hold it against accidental rotation, and a lever also carried by the disk and provided with a pawl to engage with and rotate the toothed ring and platen, when the lever is moved.

12. In combination with a guiding-bar, disks or heads mounted and free to slide thereon, a platen mounted and rotatable upon the disks, and a connecting rod or bar extending from one disk or head to the other to prevent their separation and insure unison in travel.

13. In combination with a polygonal supporting and guiding bar, disks or heads mounted thereon and free to slide, and provided with circular flanges, and a platen recessed at its ends to receive said flanges, upon which it is supported and permitted to rotate.

14. In a type-writer, the combination of a platen, a guiding-bar passing longitudinally through the same, and a pointer carried by the guiding-bar and extending close to the point of impact of the printing-characters.

15. In a type-writer, the combination of a platen, a pivoted or rocking supporting-bar passing longitudinally through the same, and a pointer carried by the bar and extending close to the printing-point.

16. In a type-writer, the combination of a platen, a pivoted guiding-bar passing longitudinally through the same, and provided with heads or disks upon which the platen is supported and free to rotate, and a pointer carried by the bar and extending close to the point at which the printing-characters strike; whereby the platen and the bar may be conjointly turned to bring the printing-line and the pointer to view, and whereby also the platen may be rotated to bring any line of the page opposite the pointer.

17. The combination in a type-writer, of a platen, a guiding-bar passing longitudinally through the same; disks or heads mounted and free to slide upon the guiding-bar, and seated in the ends of the platen, and a pointer carried by the bar and extending close to the printing-point; whereby the platen and its guiding-bar may be moved conjointly to bring the printing-line and the pointer to view, and whereby the platen may be moved longitudinally and circumferentially past the pointer to bring to the printing-point indicated thereby, the particular spot at which a character is to be printed.

18. In combination with the frame of a type-writer, a bar pivoted therein at both ends; a longitudinally-movable platen carried by said bar, and a catch or fastening device for locking the bar and frame together and preventing the rocking of the bar about its pivots.

19. In combination with the frame of a type-writer, a platen support and guide pivotally connected at both ends with the frame, a platen adapted to slide thereon, and a hook or catch carried by said support and adapted to engage a stud or lug of the frame.

20. In combination with the frame of a type-writer, a bar pivotally supported therein at both ends, a platen mounted and movable longitudinally upon said bar, and a locking device for locking the bar against movement upon its pivots.

21. In combination with a platen or paper roll, the body of which is capable of rotation independently of its heads or ends, a paper-clamp carried by said heads and movable at its clamping edge toward and from the platen.

22. In combination with the frame of a type-

writer, a bar pivoted therein, disks mounted and arranged to slide upon said bar, a platen or roller mounted and free to rotate upon and independently of the disks, and a paper-clamp supported by the disks, hinged at one edge and arranged to bear at its opposite edge against the roller or against the paper thereon.

23. In combination with a type-writer frame, a bar pivoted therein, heads or disks mounted upon said bar, a platen mounted and rotatable upon said disks, a paper-clamp supported by said disks, hinged at one edge and free at the other, and a spring bearing upon the paper-clamp and serving to throw its free edge toward the platen.

24. In combination with a platen, supporting-disks therefor, and a paper-clamp carried by said disks, conforming to the general curvature of the platen, and provided with upwardly-extending guides to direct the paper upward over the platen.

25. In combination with a vibrating ratchet-bar, a fixed dog, a yielding dog adapted to swing out of line with the fixed dog, and a forked lever straddling the yielding dog and serving to lift its free end out of the path of the ratchet-bar.

26. The herein-described spacing mechanism, consisting of vibratory ratchet-bar *O*, rigid dog *n*, swinging dog *o*, forked lever *Q*, spring *p* carried by said lever and serving to throw dog *o* out of alinement with dog *n*, and spring *q*, acting upon lever *Q* and serving to hold its lower end against the support to which the lever is pivoted.

27. In a type-writer, the combination of a U-shaped clip or bracket, and a type-bar pivoted therein and having its side faces arranged to bear against the inner faces of the clip.

28. In combination with a platen and suitable spacing devices, a series of type-bars, a series of key-levers for actuating the type-bars, a rock-shaft below the key-levers, having forwardly and rearwardly extending arms, a rod connecting the rearwardly-extending arm with the spacing devices, and a cross rod or bar carried by the forwardly-extending arm and bearing against the under sides of the key-levers.

29. In combination with a platen, rigid and yielding dogs for controlling the advance of the platen, an oscillating bar with which said dogs engage alternately, a rock-shaft provided with two forwardly-extending arms, a connection between one of said arms and the oscillating bar, a series of key-levers, a rock-shaft having two arms, the forward one of which is depressed and the rear one of which is elevated by the depression of the key-levers, and a rod extending from said rear arm to the second arm of the first-mentioned rock-shaft.

30. In combination with suitable spacing devices, and with key-levers, an intermediate rock-shaft having two oppositely-extending arms, one connected with the spacing devices and the other bearing against the key-levers, a lever acting upon said rock-shaft to hold

its arm in contact with the key-levers, and provided with a series of notches, and a spring adjustable to one or the other of the notches to vary the pressure of the arm of the rock-shaft upon the key-levers.

31. In combination with the framework of a type-writer, a traveling platen; a spindle journaled in the framework; a spring secured at one end to said framework and attached at the other end to the spindle; a wheel or drum secured firmly upon the spindle connected with the platen, and provided with a pawl or dog; a ratchet-wheel loosely mounted upon the spindle adapted to be engaged by said pawl or dog, and provided with a projecting stem; a detent engaging with the ratchet-wheel to prevent backward rotation, and a

ribbon-spool mounted upon the spindle and having a recess or cavity to receive the stem of the ratchet-wheel.

32. In combination with the spring-drum or propelling-wheel of a type-writer, a dog or pawl carried thereby, a ribbon-spool, and a ratchet-wheel between the propelling-wheel and the ribbon-spool, connected with the latter, and adapted to be engaged by the dog or pawl of the drum when the latter turns to advance the platen.

In witness whereof I hereunto set my hand in the presence of two witnesses.

C. LATHAM SHOLES.

Witnesses:

H. G. UNDERWOOD,

FRED SHOLES.