

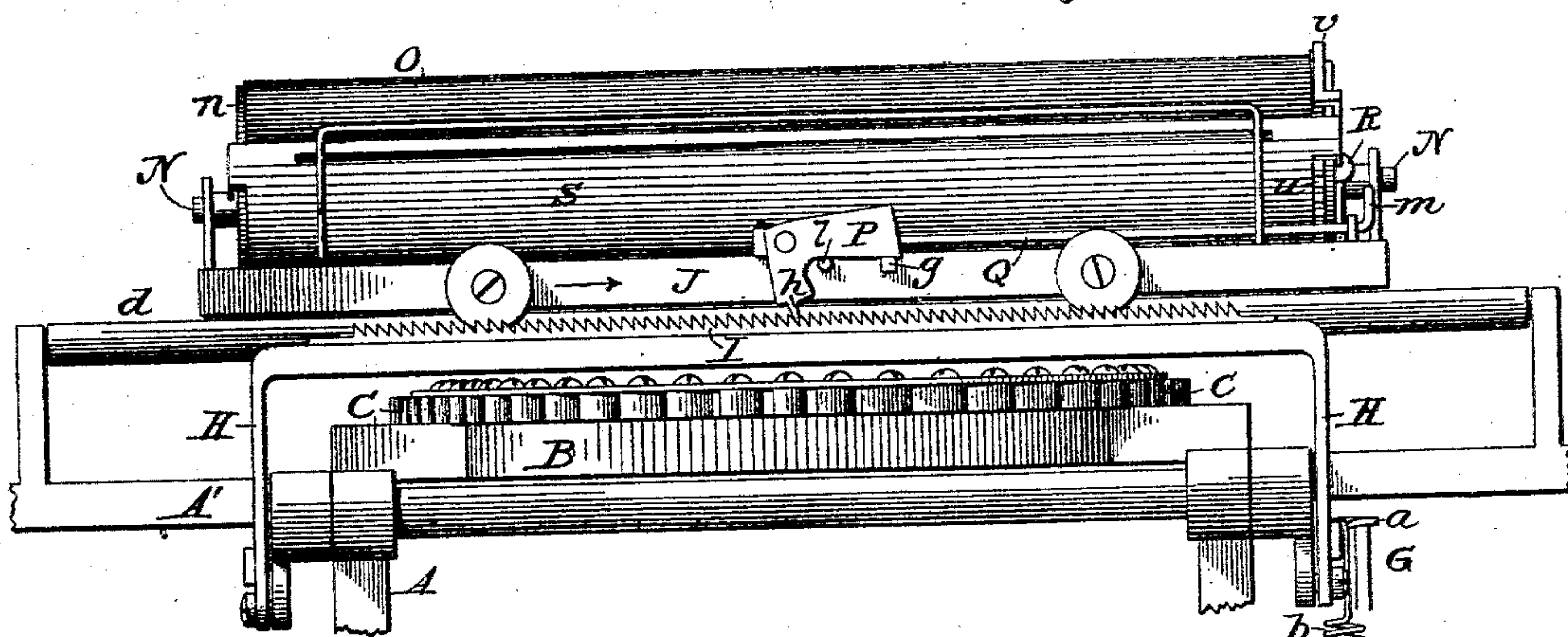
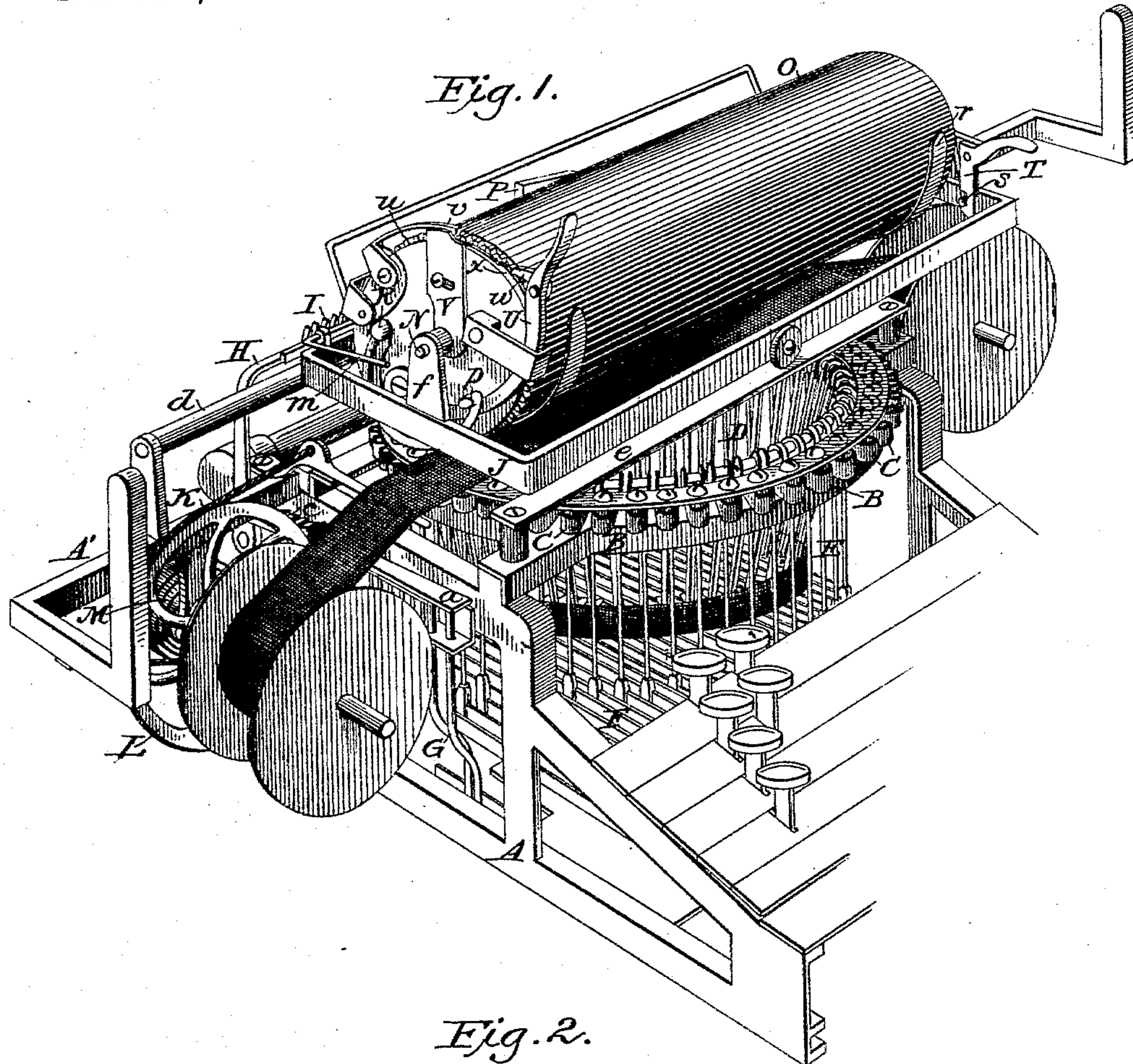
(No Model.)

2 Sheets—Sheet 1.

C. L. SHOLES.
TYPE WRITING MACHINE.

No. 559,621.

Patented May 5, 1896.



Witnesses:

Samuel F. Duhamel
Horace A. Dodge.

Inventor:

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

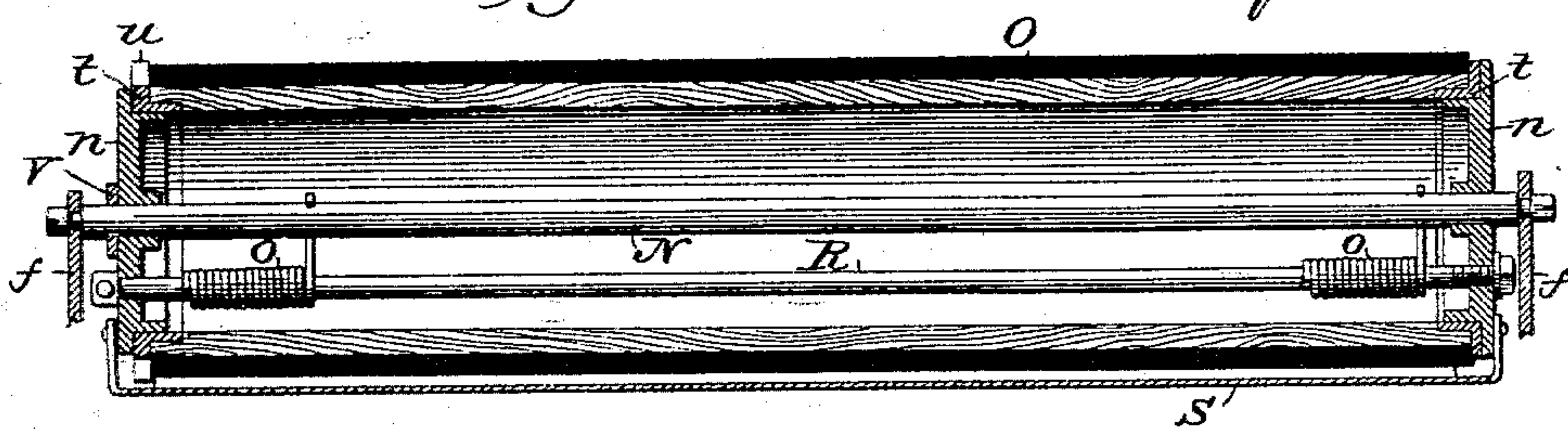
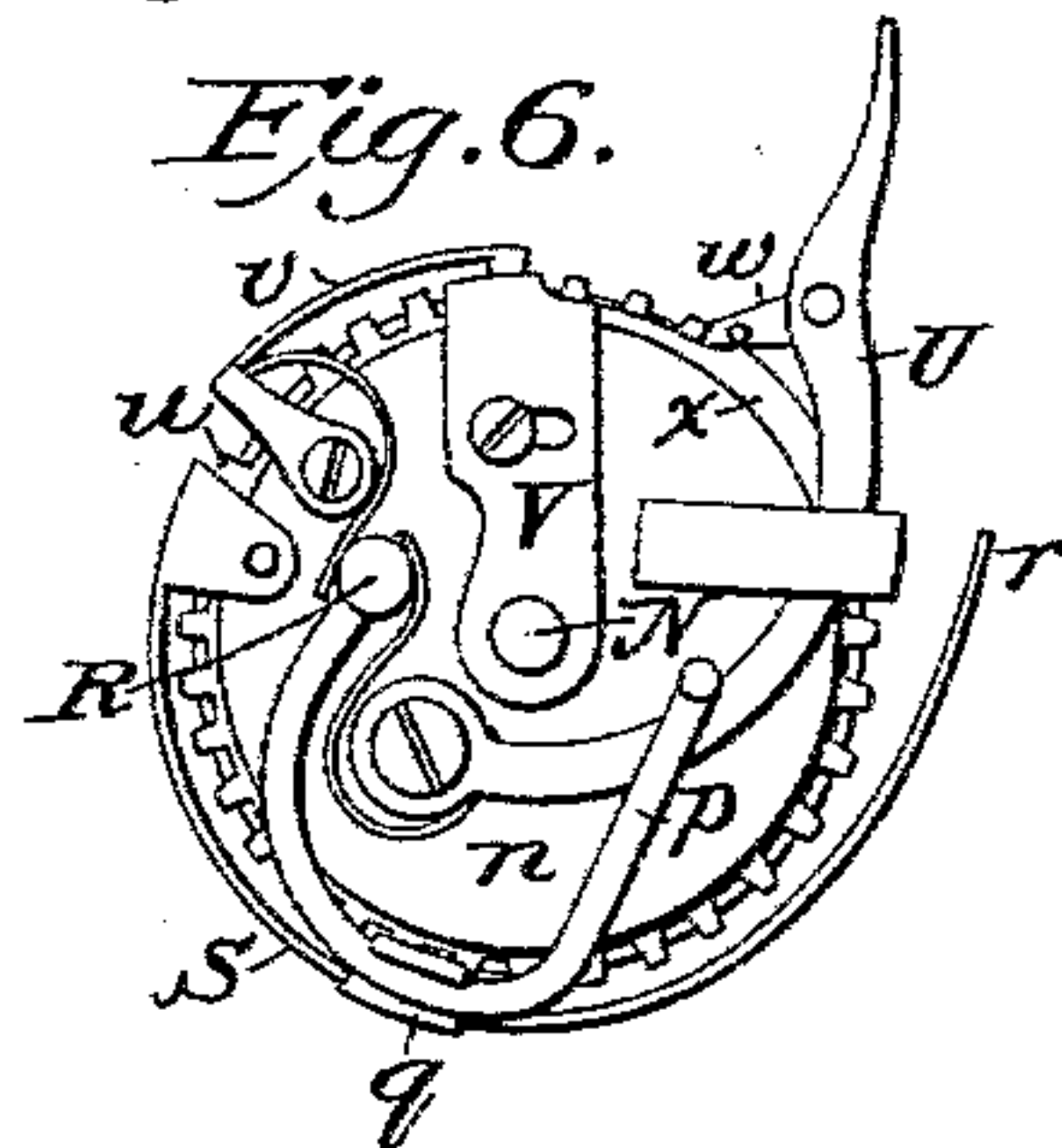
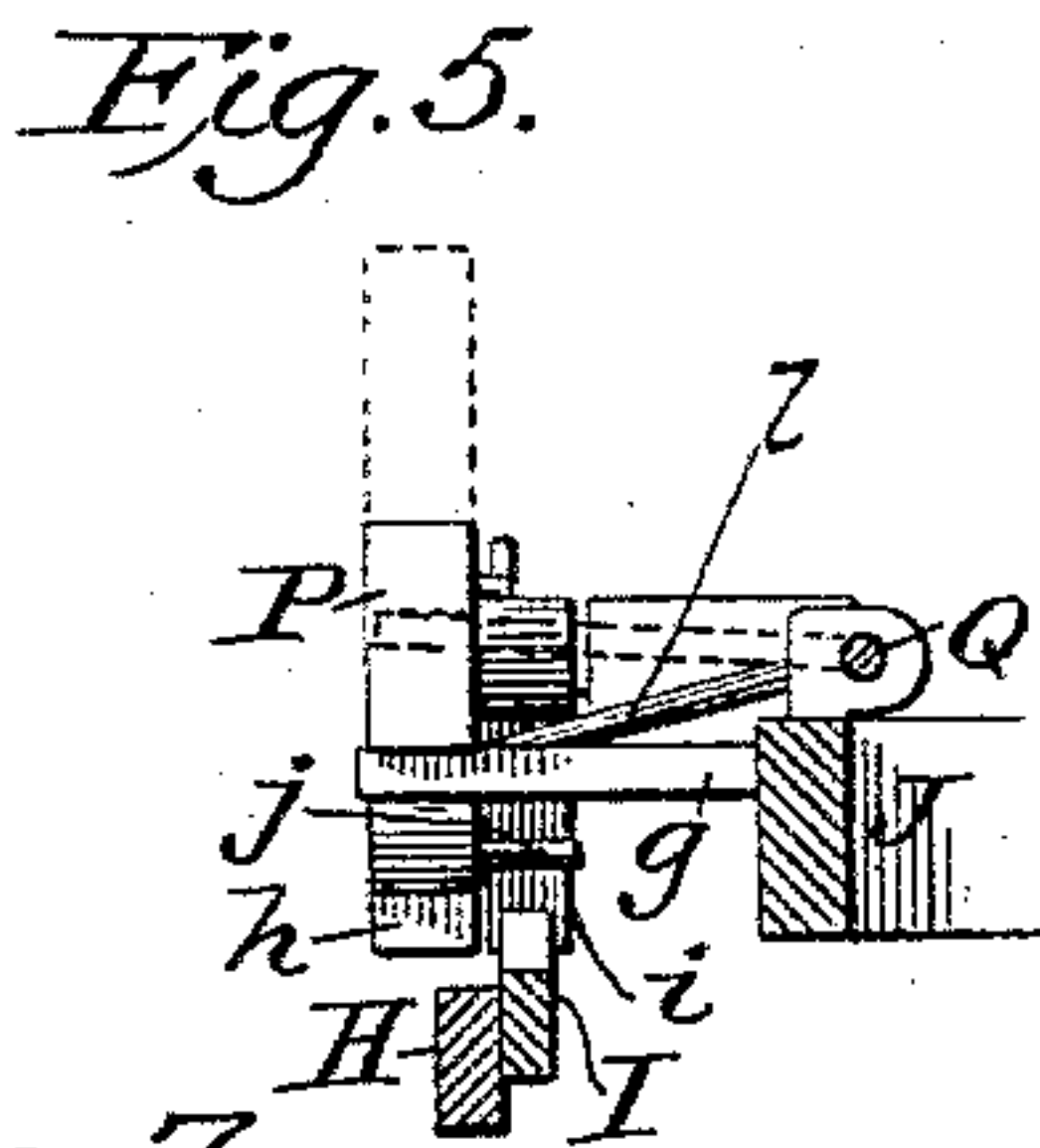
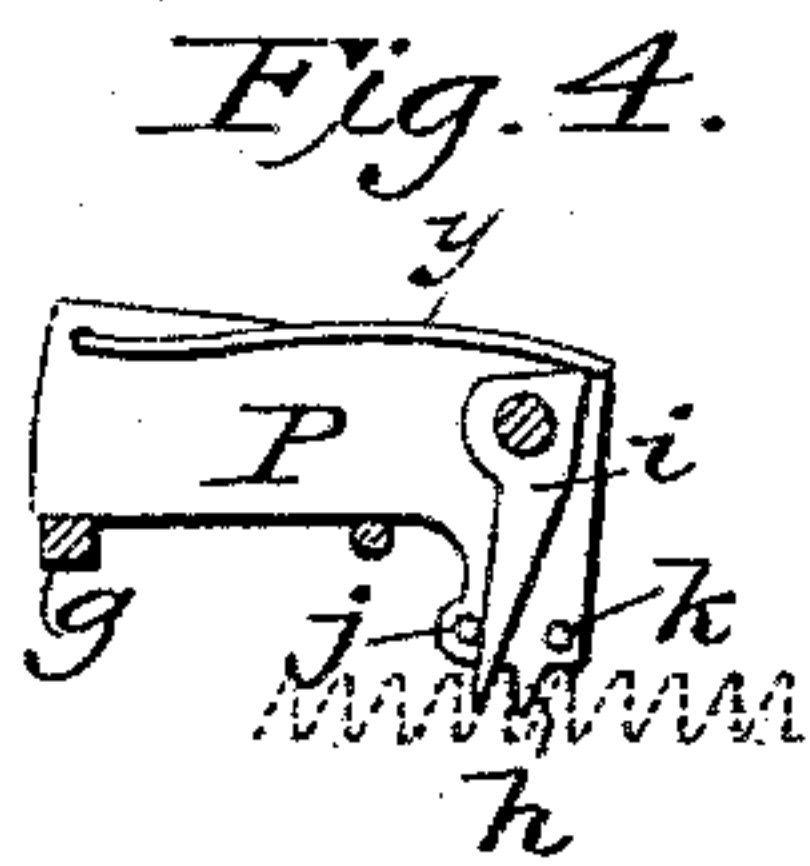
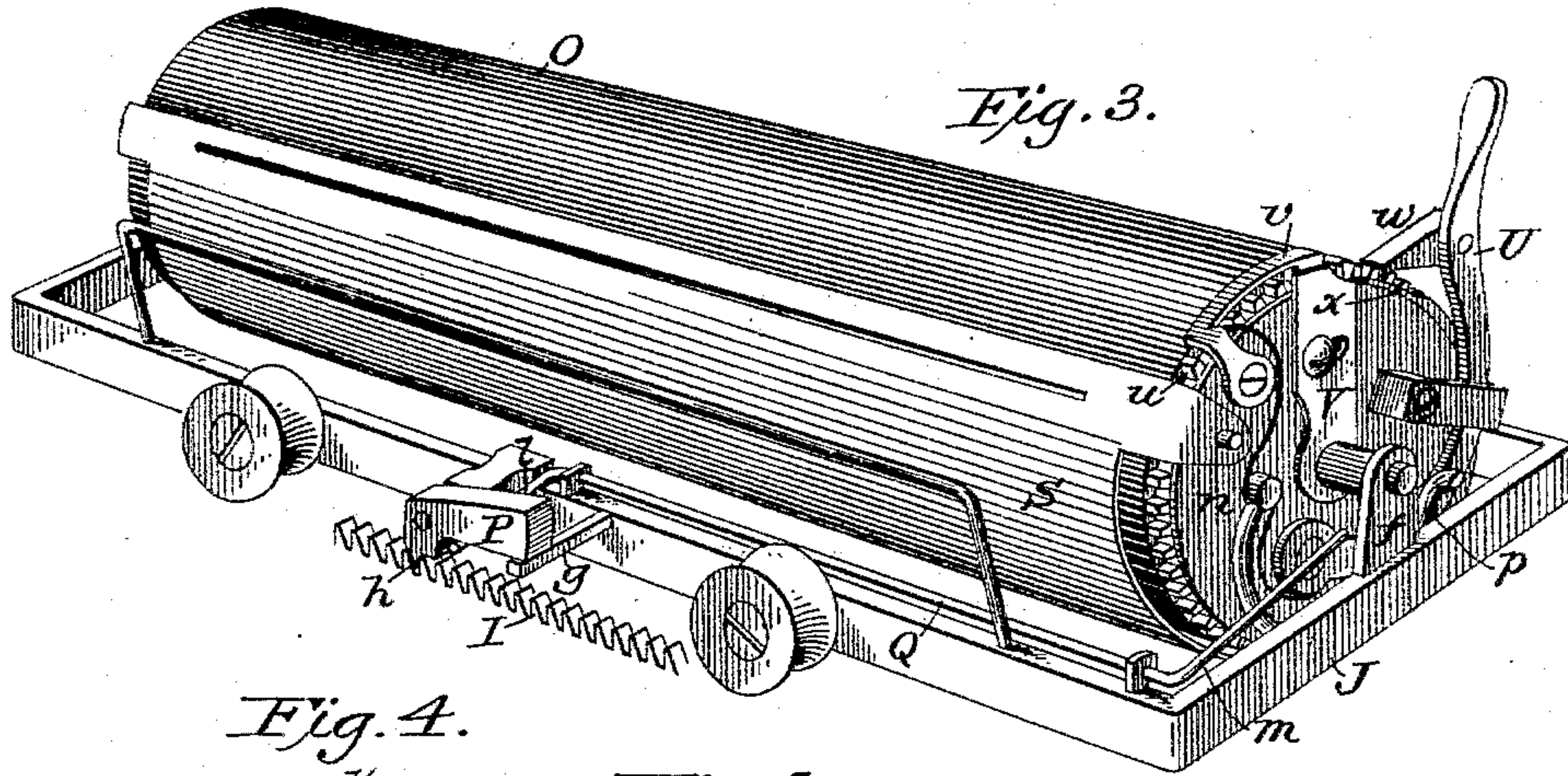
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UNITED STATES PATENT OFFICE.

CHRISTOPHER LATHAM SHOLES, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO
ERNEST R. BARRON, DANIEL C. ROUNDY, AND CLARENCE W. SEAMANS,
EXECUTORS OF JAMES DENSMORE, DECEASED.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 559,621, dated May 5, 1896.

Application filed February 18, 1890. Serial No. 340,922. (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 type-writing machines; and it consists in various features, combinations, and details, hereinafter set forth, among which may be mentioned a novel construction and arrangement of the platen or paper-roll, whereby it is adapted to be turned backward with the paper upon it to expose the printing-line to view; a paper-clamp movable with the platen during such backward rotation, but normally held in a fixed position; means for locking the platen against such backward rotation; novel spacing mechanism and means for throwing the spacing mechanism out of action to permit the carriage to be receded.

Figure 1 is a perspective view of a type-writing machine embodying such features as are involved in the present application; Fig. 2, a rear elevation of the same; Fig. 3, a perspective view of the carriage and platen from the rear side; Figs. 4 and 5, detail views of the spacing-dogs; Fig. 6, an end view of the platen, showing one of the heads and the parts carried thereby; Fig. 7, a longitudinal sectional view of the platen.

In the drawings I have not shown the entire frame of the machine, and have only represented a few of the finger-keys, enough, however, to indicate their arrangement.

Various parts, which are incidentally shown but not described or claimed herein, are embraced in another application of even date herewith, Serial No. 340,921.

A indicates the frame of the machine, which bears at its top a circular hoop or ring B, upon which are secured clips C, in which are hung or pivoted the type-bars D. Each type-bar is pivoted at its rear end and is thrown upward by a push-rod E, actuated by a key-lever F, furnished with a suitable finger-button, of which a few only are shown in the drawings. Each key-lever is arranged to lift

one or another of two rods or stems G in descending to actuate a type-bar, the rod or stem serving to lift the forwardly-extending arm *a* of an oscillating frame H, carrying at its top a ratchet-bar I. The arm *a* is drawn down with whatever degree of force is required by a spring *b*, Figs. 1 and 2, one end of which is made fast to the frame A and the other end of which is bent into a hook or loop and rests in one or another of a series of notches *c*, formed in the upper face of arm *a*.

The play or movement of frame H is limited by stops of any convenient character, its upright arms coming in contact with frame A when swinging forward and its arm *a* striking the under side of the lateral arm A' when swinging backward, under the construction and arrangement illustrated in the drawings.

J indicates a carriage, supported and guided upon ways *d* and *e*, upon which it moves longitudinally, being drawn forward by a cord or band K passing about a spring-impelled drum or wheel L and moved backward manually against the force of the spring M. Rising from the ends of the carriage-frame are uprights *f*, and journaled in these posts is the central shaft or axle N of a platen or paper-roll O, of the peculiar construction hereinafter set forth.

P indicates an L-shaped block pivotally attached to the rear side of carriage J or to a stud projecting rearwardly therefrom.

The long arm of the block P has normally a substantially horizontal position, its free end resting upon a supporting-stud *g*, which limits its descent and thereby restricts the backward movement of its depending shorter arm. Under ordinary conditions the block P retains this position and has no movement upon its pivot.

As shown in Figs. 2, 3, and 4, the lower end of the short arm of block P is provided with a tooth *h* of a form and size to enter readily between and engage with the teeth of the ratchet-bar I.

Pivotally attached to the inner or front face of block P is a yielding tooth or dog *i*, the free lower end of which is of the same form as tooth *h*. The tooth *i* is free to play

between two stops *j* and *k* on the face of block P a distance equal to the distance from the base or the point of one tooth of the ratchet-bar to that of another.

5 When the machine is not in action, or when no key is depressed, the frame H stands in its forward adjustment, with the ratchet-bar I in alinement with the rigid tooth *h* and the latter in engagement with said bar, tooth *i* 10 being thrown forward against stop *j* by a light spring *y*. Being attached to and carried by the carriage J, the block P, itself prevented by its engagement with bar I from moving forward, of course holds the carriage against 15 advance, notwithstanding the strain of its propelling-spring; but whenever the frame H and rack-bar I are moved so as to bring said bar into alinement with yielding tooth *i* said tooth passes into the notch of the rack-bar im- 20 mediately in advance of the one from which the tooth *h* is by the same movement carried, and its spring *y*, yielding to the superior force of the carriage-propelling spring, permits the carriage to advance far enough to carry rigid 25 tooth *h* into alinement with yielding tooth *i*, at which point its advance is arrested by the stop *k* coming against the rear side of tooth *i*. This action is repeated with the depression of each and every key, and the carriage conse- 30 quently advances step by step, the ratchet-teeth being of such length as to give proper space for each letter or character printed.

I have spoken of tooth *h* as a "rigid" tooth, meaning thereby that it is an integral and 35 rigid part of block P and that during the advance of the carriage it is a fixture; but the block being pivoted to the frame of the carriage it is free to move about its pivot, will thus move when the carriage is receded, 40 thereby permitting the tooth *h* to rise and to ride over the teeth of bar I. It is desirable, however, to avoid the noise and wear incident to the backward travel of the tooth *h* over and in engagement with the ratchet-bar, and 45 I have therefore provided a rock-shaft Q, which is supported and free to rock or turn in suitable bearings or supports in the frame of carriage J and which has a rearwardly-projecting arm *l* and forwardly-projecting arm 50 *m*, the former extending beneath the long arm of block P and the latter reaching forward above the frame of carriage J to a point where it may be conveniently reached by the operator. The forwardly-extending arm *m*, 55 as shown in Figs. 1 and 3, stands normally upward from the end bar of frame J and when depressed by the operator turns the rock-shaft, elevates arm *l*, and raises the long arm of the block P sufficiently to carry tooth *h* en- 60 tirely clear of rack-bar I, whereupon the carriage may be moved freely and noiselessly in either direction.

The arm or lever *m* is preferably located at the left-hand end of the platen-carriage, so 65 that the right hand shall be left free to manipulate and control devices at the other end of the platen, but it may be used at either end.

Referring now to Figs. 1, 3, 6, and 7, particularly the last-named figure, the construction of the platen and its attendant parts will 70 be explained.

As shown in Fig. 7, the central shaft or axle N carries at or near each end a flanged disk or head *n*, which disks are fixed in position thereon and are connected not only by 75 the central shaft but also by a rock-shaft R, journaled in the heads or disks and encircled by a coiled spring or springs *c*, one end attached to the rock-shaft and the other end bent to lock upon the central shaft. The 80 springs serve to turn the rock-shaft a limited distance and to hold the curved arm or hanger *p*, with which it is furnished at one end, up against the under side of a lip *q*, projecting from one end of a paper-clamp S, hinged to 85 or hung upon the disks *n n*, as shown in Figs. 1, 2, 3, 6, and 7. In this way the free edge of the clamp S, which clamp is made of sheet metal and curved to conform to the curvature of the roll or platen, is kept against the platen 90 or against the paper thereon.

As shown in Figs. 1 and 6, the clamp is formed with upwardly-extending arms *r*, which serve to guide the paper upward in front of and over the roll. 95

At one end of the platen, preferably the right-hand end, the head or disk *n* is provided with a hook or catch T, which, by engagement with a stud *s* on the frame of carriage J, holds said disk, its shaft, and the other 100 disk against rotation or partial rotation. The disks being thus held fast, it is necessary to provide for the rotation of the tubular roller or platen O upon and independently of them and to guard against accidental turning of 105 said platen. For these purposes one of the bushings *t*, with which the ends of the hollow roller are furnished, is formed with peripheral teeth *u*, as shown in Figs. 1, 2, 3, 6, and 7, and the disk *n*, upon which said bushing 110 turns, is furnished with a spring pawl or detent *v*, which has a V-shaped end to enter between the teeth and hold the roll against accidental rotation, though rising before the teeth under slight force and permitting the 115 roll to be rotated in either direction.

U indicates a lever swinging about a pivot-screw in the head *n* just referred to and carrying a pawl or dog *w*, which, as the lever is thrown inward, engages with the teeth *u* and 120 turns the platen or roller, but which rides freely back over the teeth without acting upon them. The movement of the lever is limited by suitable stops, and the extent to which the platen shall be rotated is determined by 125 a guard *x*, carried by a plate V, which swings a limited distance about the axle or shaft N, said guard conforming to the periphery of the disk *n* and resting thereon, as shown in Figs. 1, 2, and 6. The guard is cut away 130 through a portion of its length, but through another portion is of the same height as the teeth *u*. Hence when the cut-away portion only is beneath the dog or pawl *w* said dog

may remain in engagement with a tooth *u* throughout its entire swing; but if the raised portion be brought beneath the pawl, there can be no engagement with the teeth *u* until such raised portion is passed.

In practice I find it convenient to so proportion the parts that when the guard *x* is in one position the pawl may advance the platen the length of one tooth only, but that when the guard is drawn back the dog may ride back over two teeth and advance the platen to a like extent on its return or inward movement.

Under the construction and arrangement thus set forth the platen is turned a given distance at the completion of each line, through manipulation of lever *U*, to advance the paper for a new line.

It is desirable to examine the work as it progresses in order to preserve the connection, to avoid repetition, and to make a correction if required, and it is to facilitate such examination that the platen is constructed in the peculiar manner above explained.

By disengaging the catch or fastening *T* from its stud the entire platen, including the disks, the central shaft, and the paper-clamp, is made free to rock or turn in the bearings or upon the journals of said shaft far enough to bring the printing-line or impression-point clearly and conveniently to view, the paper being held by the clamp *S*, and thereby caused to move with the platen both forward and backward. In this way the paper is restored to its original printing position with absolute accuracy and certainty.

I am aware of constructions wherein a tubular platen has been arranged to encircle and to rotate upon or about a central supporting and guiding rod, but in such case the platen has been caused to advance with a screw-like action, or has been arranged to rotate to effect the letter-spacing and advance with a step-by-step action to effect the line-spacing. Such I do not claim.

It is to be noted that the spacing-dogs are under this construction applied directly to the paper-carriage instead of to a lifting-frame hinged to said carriage, and that the lifting-lever acts directly upon the normally fixed dog, thereby lifting it and the yielding dog which is pivoted to it. This arrangement is advantageous in that it avoids the use of a supplemental frame hinged to the carriage, and requires only the dogs themselves to be lifted, thus rendering the machine more compact, lessening the weight to be lifted preparatory to receding, and obviating the noise occasioned by the fall of a comparatively heavy frame.

Having thus described my invention, I claim—

1. In combination with a traveling carriage and with a laterally-moving ratchet-bar, a gravitating L-shaped block pivoted directly to the carriage-frame and provided with a tooth to engage the teeth of the ratchet-bar;

a second tooth pivoted to said block and having a limited play thereon; and a spring bearing upon the pivoted tooth and serving to throw it out of alinement with the tooth of the block.

2. In combination with carriage *J*, provided with stud *g*; gravitating block *P* directly pivoted to the frame of said carriage, provided with tooth *h*, and having one arm arranged to rest upon stud *g*; dog or tooth *i* pivotally attached to block *P*; stops *j*, *k*, to limit the play of tooth *i*; spring *y* acting upon tooth *i* and serving to throw it out of alinement with tooth *h*; and a ratchet-bar movable back and forth from the path of one tooth to that of the other.

3. In combination with a vibratory or oscillating ratchet-bar, a traveling carriage; two spacing-dogs, the first directly pivoted to the carriage and the second pivoted to the first; and a lever mounted upon the carriage and extending directly beneath one of said dogs; whereby it is adapted to lift or move the dogs clear of the ratchet-bar.

4. In combination with carriage *J*, a vibratory rack-bar *I*; spacing-dogs carried directly upon the carriage-frame; and rock-shaft *Q* mounted upon the carriage *J* and having one arm in engagement with one of the spacing-dogs and the other extending forward in convenient position to be actuated by the operator of the machine.

5. In combination with carriage *J*, having stud *g*, and with block *P* and tooth *i*, vibratory ratchet-bar *I*, and rock-shaft *Q*, having arms *l* and *m*, all constructed and arranged to operate substantially as set forth.

6. In a type-writing machine, the combination of a carriage, a shaft mounted therein, heads or disks mounted upon said shaft and secured against rotation thereon, and a platen or paper-roll mounted and free to rotate upon said disks, substantially as and for the purpose set forth.

7. In combination with a traveling carriage, a shaft or axle mounted therein, heads or disks carried by said shaft, a locking device carried by one of said heads and adapted to lock the same against rotation, and a platen encircling the shaft and rotating upon the heads or disks.

8. In combination with a carriage *J*, a shaft or axle mounted therein, heads or disks fixed against movement lengthwise of the shaft, a locking device carried by one of said heads and serving to prevent the same from rotating, a platen mounted and rotatable upon the heads and provided with peripheral teeth, and a lever carried by one of the heads and provided with a dog or pawl to engage with the teeth and to rotate the platen.

9. In combination with head *n* and with platen *O* mounted and rotatable thereon and provided with teeth *u*, lever *U* provided with pawl *w*; and plate *V* provided with guard *x*, substantially as and for the purpose set forth.

10. In combination with a paper-roll or

platen having peripheral teeth; a lever and pawl for actuating the same, and a guard carried by a plate pivoted concentrically with the platen and adapted to pass beneath the pawl and prevent or limit its engagement with the teeth.

11. In combination with a platen and with heads about which the platen rotates, a paper-clamp pivotally attached to said heads, a rock-shaft within the platen, provided with an ex-

ternal arm to engage with the clamp and press its free edge toward the platen and a spring encircling said rock-shaft and serving to turn it in the required direction.

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

CHRISTOPHER LATHAM SHOLES.

Witnesses:

H. G. UNDERWOOD,

FRED SHOLES.