

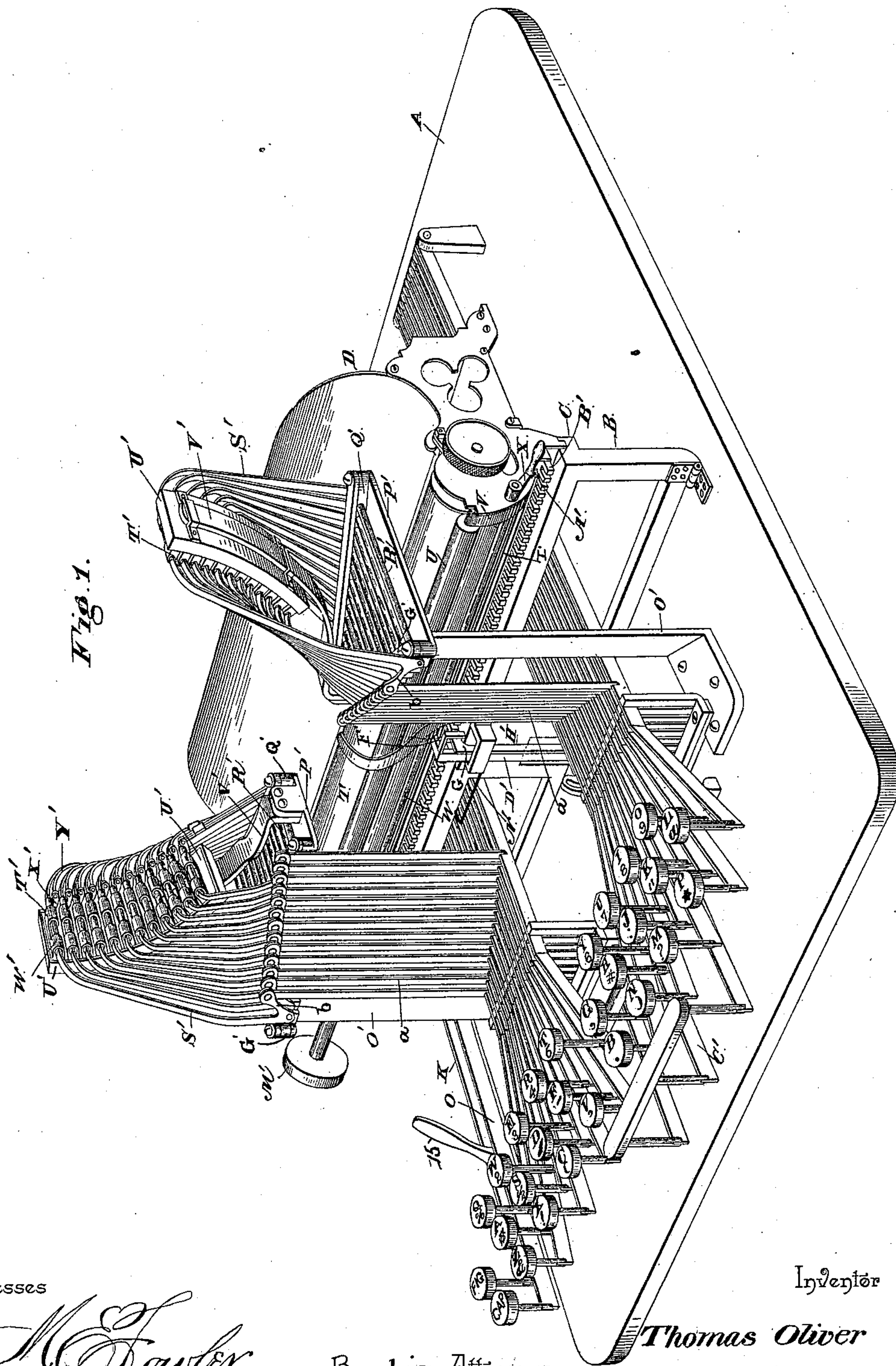
(No Model.)

5 Sheets—Sheet 1.

T. OLIVER.
TYPE WRITING MACHINE.

No. 528,484.

Patented Oct. 30, 1894.



Witnesses

W. Fowler
A. D. Hoff

By his Attorneys,

C. A. Snow & Co.

Inventor

Thomas Oliver

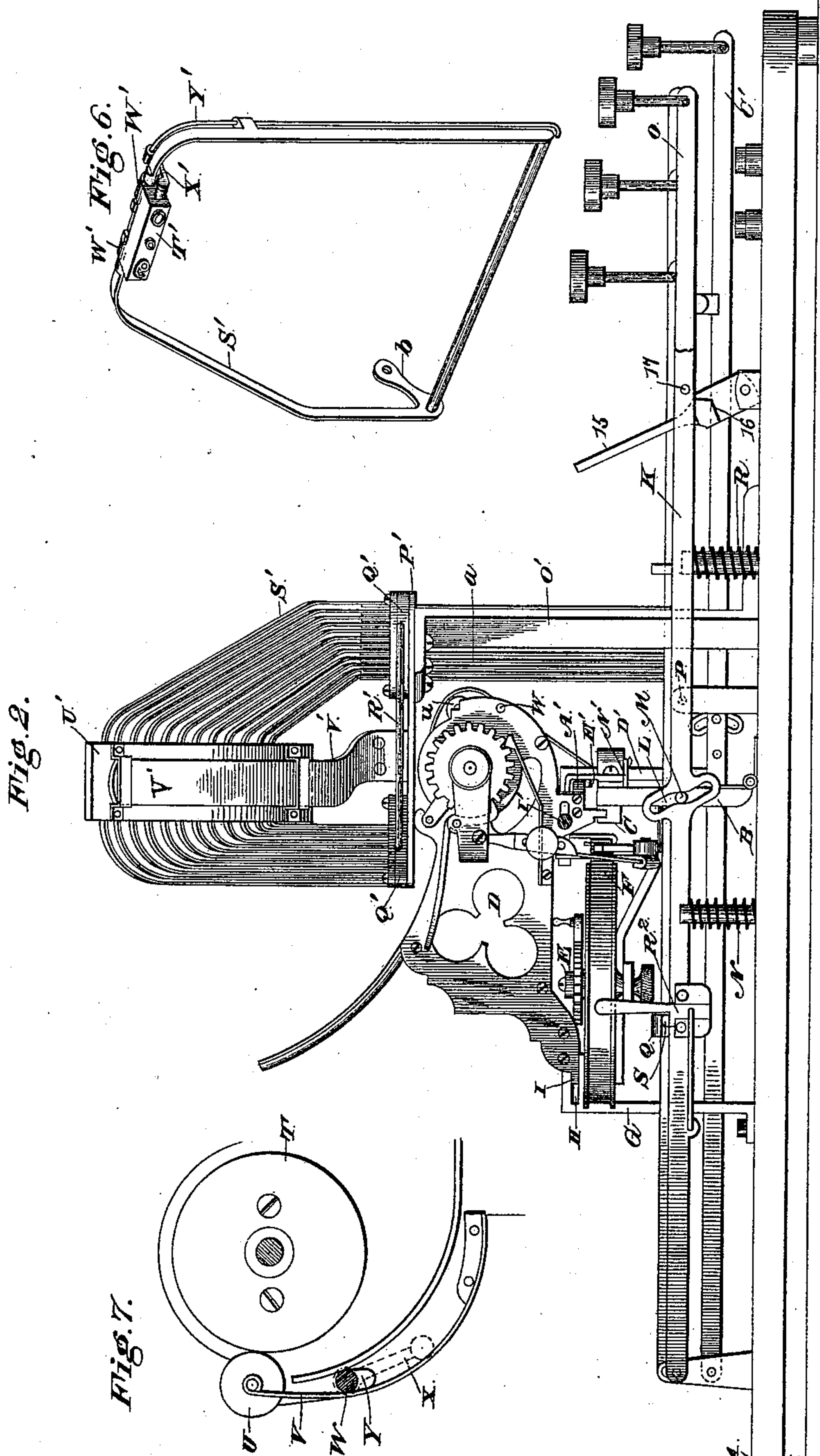
(No Model.)

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Witnesses

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(No Model.)

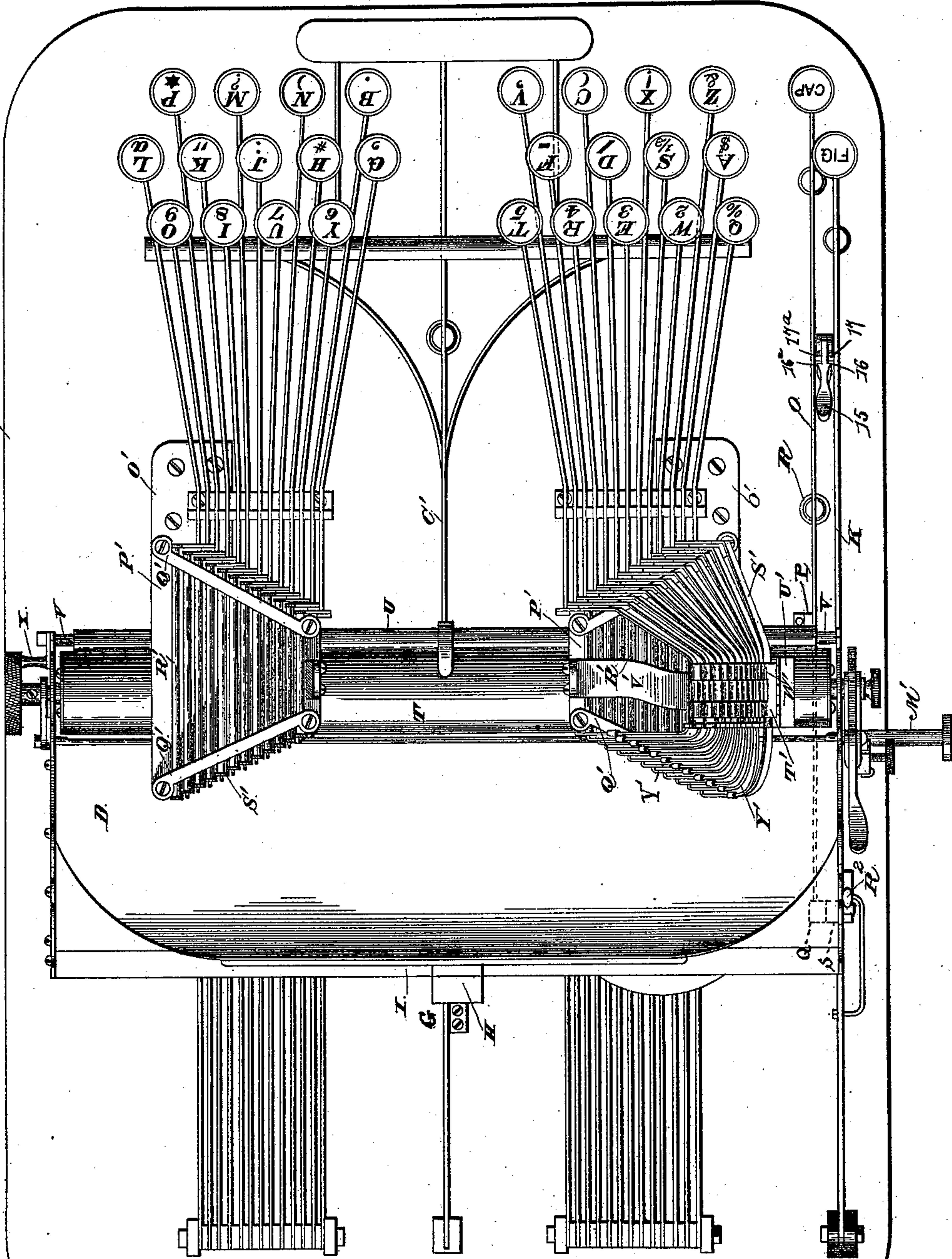
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Fig. 3.



Witnesses

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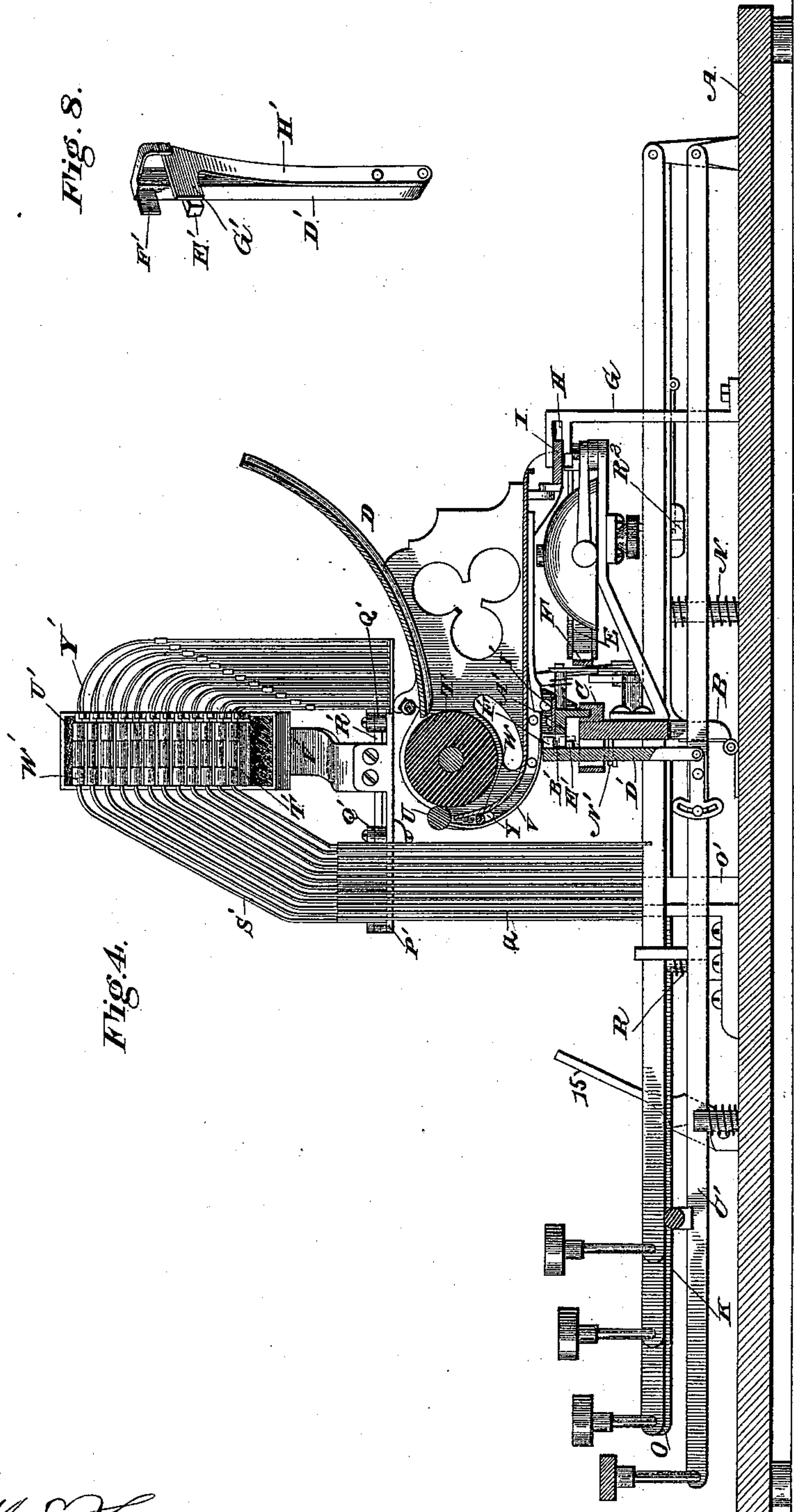
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Thomas Oliver

(No Model.)

5 Sheets—Sheet 5.

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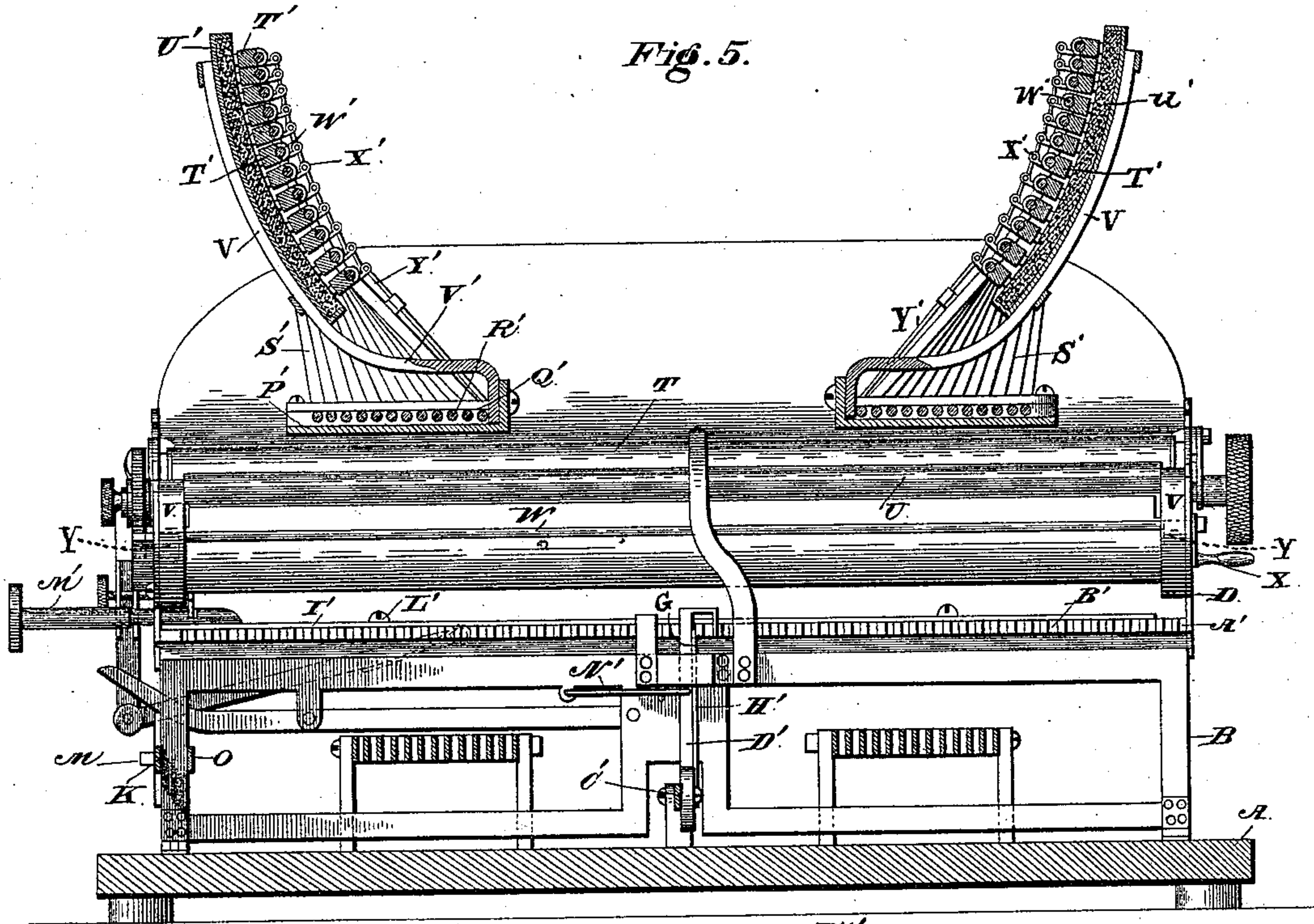


Fig. 9.

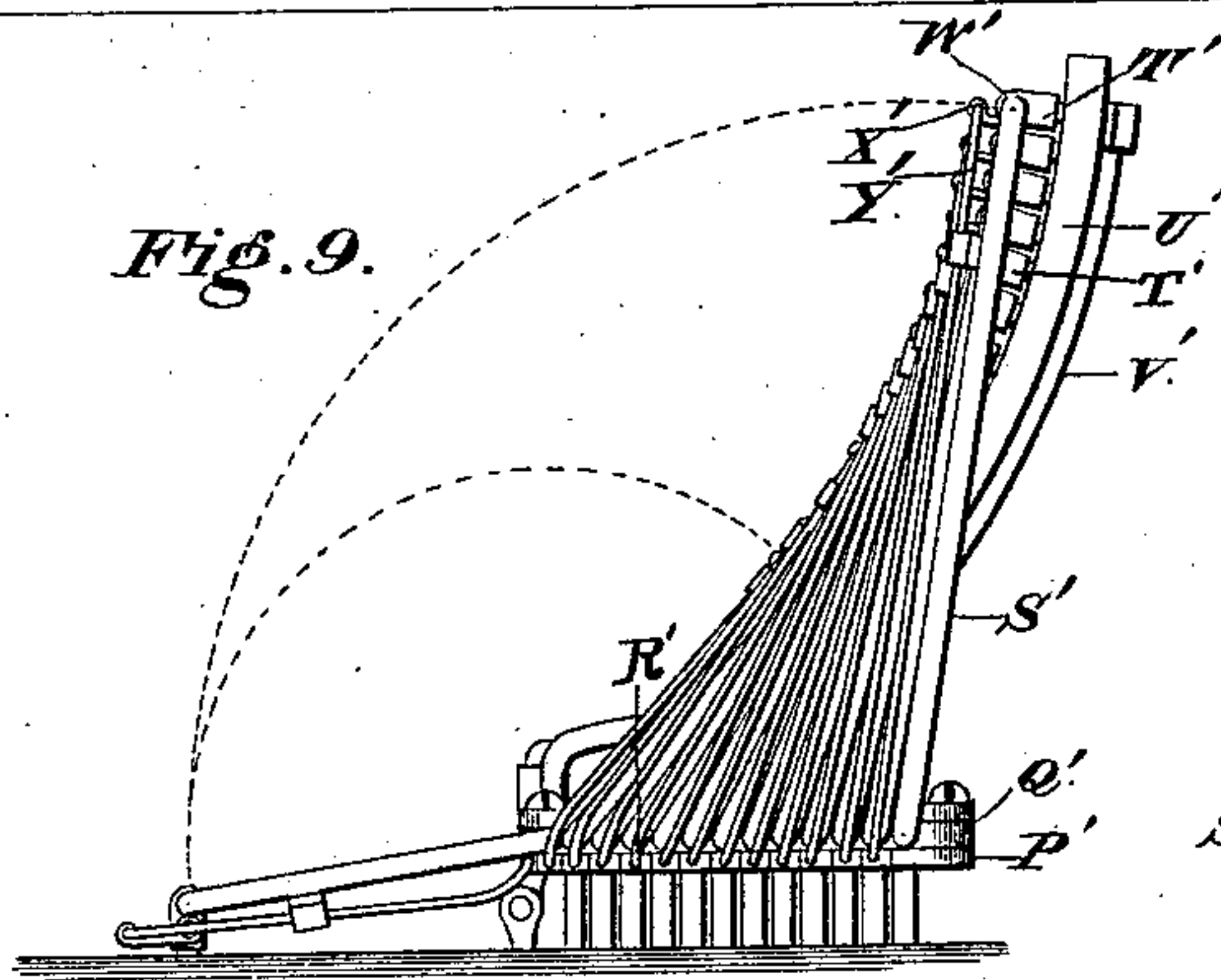


Fig. 11.

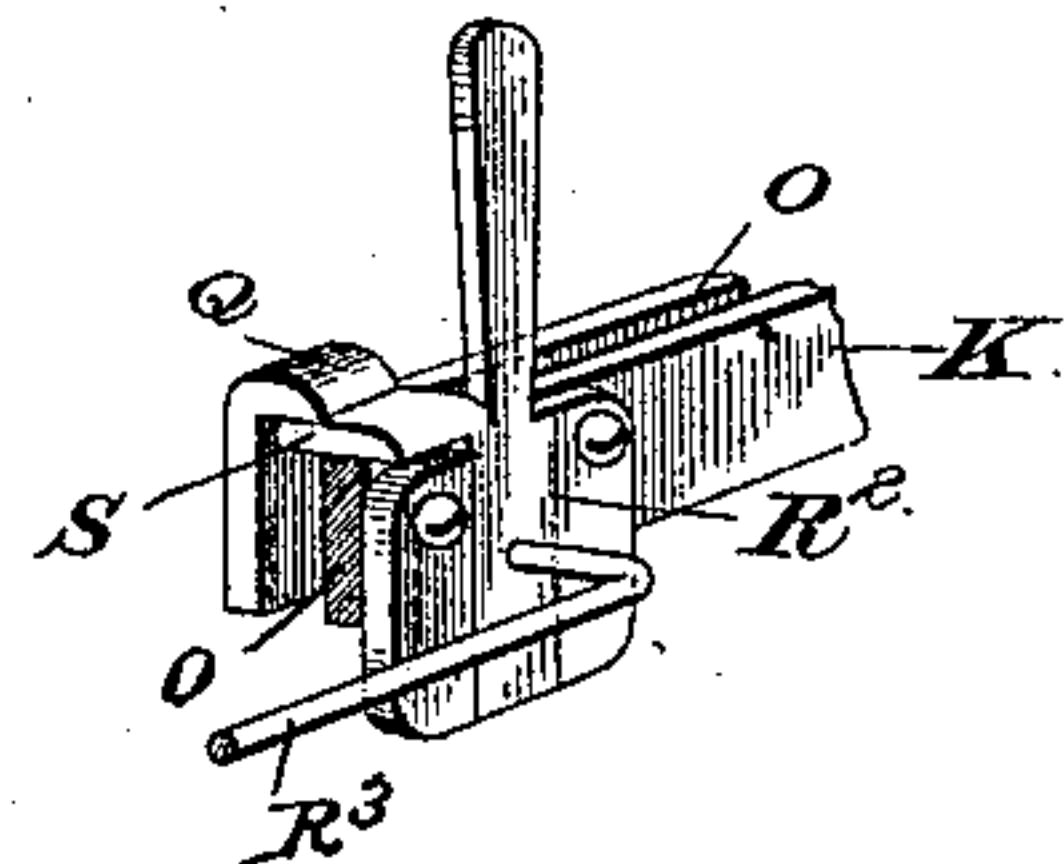
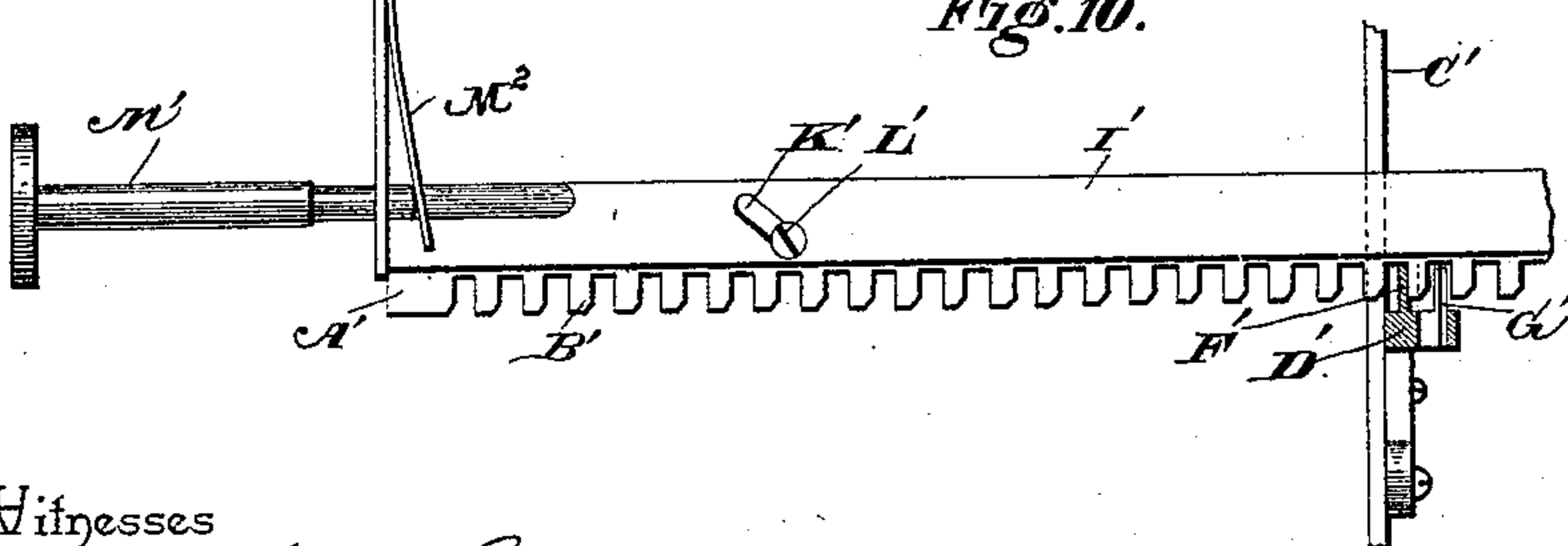


Fig. 10.



Witnesses

M. C. Fowler
D. B. [Signature]

Inventor

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UNITED STATES PATENT OFFICE.

THOMAS OLIVER, OF STATE CENTRE, ASSIGNOR OF ONE-THIRD TO CHARLES J. PETERSON, OF DUBUQUE, IOWA.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 528,484, dated October 30, 1894.

Application filed September 12, 1892. Serial No. 445,685. (No model.)

To all whom it may concern:

Be it known that I, THOMAS OLIVER, a citizen of the United States, residing at State Centre, in the county of Marshall and State of Iowa, have invented a new and useful Type-Writing Machine, of which the following is a specification.

My invention relates to type writing machines of the class in which type bars are employed and refers particularly to that style of machine in which the impression is produced upon the upper side of the platen whereby it is constantly exposed for the inspection of the operator.

The primary objects in view are to provide a compact arrangement of the type bars; to provide type bars in which lateral play is avoided; to provide type bars carrying a plurality of type in which the strength or force of impact is equal for all of the type; to provide type bars having revoluble type heads whereby the ink pads may be arranged opposite the point of impact; to provide means whereby the connections of the several type bars to their key levers are at approximately the same distances from the pivotal points of the latter and to provide means whereby the ink pads may be readily detached.

Further objects of my invention are to provide a shifting mechanism in which the platen is moved horizontally by a positive throw of the shifting lever and to provide simple, and direct means of feed for the carriage whereby the beveled or ratchet toothed bar may be avoided.

Further objects and advantages of my invention will appear in the following description and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings:—Figure 1 is a perspective view. Fig. 2 is a side view. Fig. 3 is a plan view. Fig. 4 is a central longitudinal section. Fig. 5 is a transverse section taken in front of the feed bar and looking toward the rear. Fig. 6 is a detail view of one of the type bars with its revoluble head. Fig. 7 is a detail view showing the means of operating the feed roll. Fig. 8 is a detail view of the feed pawl. Fig. 9 is a detail front view of one series of type-bars, showing one of the bars in its depressed or operating position and indicating

in dotted lines the movements of the type-bars. Fig. 10 is a detail plan view of the feed-rack and means for disengaging the pawl therefrom. Fig. 11 is a detail view, in perspective, of the locking device for connecting the shifting and supplementary levers.

A represents the base plate to which near its center is pivotally connected the tilting frame B, said frame being provided with the transverse guide bar C upon which is mounted the carriage D.

E represents the spring mechanism of the ordinary construction connected by a ribbon F to the carriage so as to cause the latter to feed in one direction.

In rear of the tilting frame and secured to the base plate is an upright G provided at its upper end with a horizontal guide H in which the rear edge of the horizontal plate I of the carriage fits to slide horizontally, whereby as the tilting frame is swung forward and backward at its upper edge, the carriage is carried in a horizontal plane in the same directions.

The shifting lever K is fulcrumed at its rear end to the base plate and is provided at an intermediate point with a cam-slot L in the form of a compound curve, said slot inclining rearwardly toward its upper end and receiving a lateral pin M upon the end of the tilting frame. The cam or compound curved slot being arranged between the fulcrum point and the free end of the lever, and being inclined rearwardly toward its upper end, a downward movement of the free end of the lever will produce a rearward pressure upon the pin M and hence upon the tilting frame, to swing the latter toward the rear, whereas an upward movement of the free end of said shifting lever causes a forward pressure upon the pin M and hence swings the tilting frame toward the front.

A spring N is arranged beneath the shifting lever at an intermediate point to return said lever to its initial position after depression below such position, said spring being adapted, furthermore, to elevate the shifting lever when released from a restraining device hereinafter described, the initial or normal position of the lever being such as to maintain the pin M at the center of the slot.

The restraining device, above referred to,

consists of a supplementary lever O pivoted at a point P in front of the tilting frame and provided with a lateral ear Q adapted to engage a lug or projection carried by the shifting lever K; and a spring R arranged under the portion of the lever O in front of its pivot point. The upward pressure of the spring R upon the front portion of the lever O resists the upward tendency of the shifting lever which is actuated by the spring N, said ear Q of the supplementary lever being extended over a lug or projection S carried by the shifting lever. It is clearly obvious that the depression of the front end of the lever O will release the shifting lever, and allow the front end of the latter to rise and thus swing the tilting frame toward the front.

It is desirable under certain conditions to release the shifting lever permanently from the restraint of the lever O, and therefore I have provided a pivotal spring-actuated catch R², mounted upon the shifting lever and carrying the said lug or projection S, said catch being normally held in position, to cause the engagement of the ear Q and lug or projection S, by means of the spring R³.

It will be understood that the above described means for releasing the lever K from the restraint of the lever O enables the operator to write continuously in the characters which are brought into use when the carriage is in the adjusted position.

It is also desirable at times to print continuously in the characters which are produced when the lever K is depressed, with the tilting frame swung to the rear, and to provide for locking said lever K in its depressed position I employ a thumb lever 15, pivotally connected to the base A and having a shoulder 16 for engagement with a pin 17 on the lever. In the construction illustrated in the drawings I have shown this thumb lever 15 provided upon the opposite side with a duplicate shoulder 16^a for engagement with a pin 17^a carried by the lever O, thus providing for the locking of the lever O in its depressed position, to allow the lever K to assume its elevated position, whereby the desired characters may be printed. When the lever 15 is in the inclined position shown clearly in Figs. 1, 2, 3, and 4, the pin 17 is free to move vertically without interfering with the operation of the lever K, and when it is desired to secure said lever in its depressed position it must be depressed sufficiently to carry the pin 17 below the plane of the shoulder 16, when the lever 15 may be swung toward the front of the machine to bring said shoulder in the path of the pin. It will be understood that the same description of operation applies to the construction in which the lever 15 is provided with duplicate shoulders to engage a pin carried by either the shifting lever or the supplementary lever.

The platen T is of the ordinary construction and is mounted in bearings at the opposite ends of the carriage, suitable line spacing de-

vices being provided to rotate the same. The feed roll U which is used in connection with the platen is mounted in the upper free ends of the plate springs V and is held by the latter in contact with the platen. A transverse rod W mounted at its ends in the carriage and provided at one end with the crank X is fitted at points opposite said plate springs with cams Y, whereby by rotating the rod by means of its crank, said plate springs may be depressed to remove the feed roll from contact with the platen.

The feed bar which I prefer to employ in connection with my invention is shown at A' and is provided with perpendicular parallel sided teeth B', the outer ends of said teeth being slightly beveled to avoid sharp angles, and the feed dog which is carried by the key-lever C' is arranged in front of the line of the feed bar at its center.

The feed dog D' is provided with a rearwardly extending stop E' to engage or bear against the under side of the feed bar and a stationary rectangular rearwardly extending tooth F' which is normally out of engagement with the teeth of the feed bar. The swinging or movable tooth G' is carried by a spring arm H' secured to the side of the dog and normally in engagement with the teeth of the feed bar.

When the front end of the space key lever is depressed thereby drawing the feed dog downward, the movable tooth engages the tooth of the rack to the right of that engaged by the stationary tooth of the dog, and when the latter has been depressed sufficiently to disengage it from the rack, the latter moves to the left by the force of the spring mechanism and carries the movable tooth to the left against the shank of the feed dog. It will thus be seen that the action of the feed dog with its stationary and movable teeth is positive, the movement of said teeth in engaging and releasing the rack being vertical. Furthermore the teeth of the dog do not slide upon the teeth of the rack, but pass between the same, the one being positively engaged with the rack before the other is released.

I' represents a sliding trip-bar provided with inclined guide slots K' fitting over guide pins L' upon the upper side of the rack and adapted when pressed to the right by means of its handle M' to throw the upper end of the feed dog forwardly and thus disengage the same from the rack to allow the carriage to be moved freely in either direction. The feed dog is pivotally connected to the space key lever and is normally held in its engaging position by a spring N', and the trip-bar I' is normally held out of engagement with the feed-dog, and is returned to its normal position after having been advanced to disengage said dog from the rack-teeth, by means of a spring M².

O' represents uprights secured to the base plate in front of the carriage and provided at their upper ends with horizontal supporting

frames P', having the outwardly diverging horizontal bars Q', in bearings in which are mounted the horizontal spindles R' of the type bars S'.

5 The type bars are of U-shape, their upper closed ends being straight and forming the spindles for the revoluble type heads T'. The arms of the U-shaped type bars are separated as shown and are connected to the opposite ends of their respective spindles or
10 axes, those type bars which are connected to the outer spindles being longer and having their arms separated so as to swing outside of those type bars which are nearer the center of the machine. In other words, the type
15 bars, which are arranged in two opposite series increase gradually in size from the center of the machine outward, whereby they are caused to telescope, their upper ends upon
20 which the type heads are mounted being arranged in a substantially vertical plane.

The ink pads U' are arranged outside the upper ends of the type bars, facing inward and are attached removably to the curved
25 supporting arms V', which are secured at their lower ends to the supporting frames.

The typeheads consist of sleeves W' mounted upon the spindles formed at the closed ends of the U-shaped type bars and are provided with pivotal arms X' having eyes at
30 their outer ends which are engaged by draw-rods Y' carried severally by the type bars and inserted at their lower ends in sockets in the supporting frame out of alignment respectively with the type bars by which they
35 are carried. Thus, as the key levers are depressed at their front ends they draw vertically downward by means of the connecting rods a upon the angularly disposed cranks b
40 which are secured to the front arms of the type bars, and swing the latter around their axes to the horizontal position shown in dotted lines in the transverse sectional view. As
45 the type bars swing around their axes, the draw rods acting through the medium of the pivotal arms which are connected to the type heads swing the latter around their spindles to assume a position upon the opposite side
50 of the type bar from that which they occupy when at rest. Therefore when the type bars are at rest, the faces of the type are in contact with the ink pads which are disposed upon the opposite sides of the type bars from the point of impact thus enabling the type
55 bars to be arranged in opposite series out of the line of sight of the operator, whereby the impressions of the type may be viewed constantly.

By arranging the type bars to telescope as
60 above described, the type heads may be arranged close together so that ink pads of small area may be employed. Furthermore the arrangement and construction of the type bars as described enable the connecting rods
65 which extend from the cranks upon the type bars to the key-levers to connect with the latter at approximately equal distances from

their pivotal points, whereby the pressure upon the several keys is regulated. Furthermore any number of type may be attached to
70 each type head, either two or more as desired, and it will be understood that by means of the U-shaped or bifurcated type bars, the impressions made by the several types will be the same in force for the reason that lateral or torsional strain is avoided. 75

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a type-writer, the combination with a
80 fixed guide, and a slidable carriage mounted upon said guide, of a tilting frame connected to said carriage, a lateral stud carried by the tilting frame, and a spring-actuated shifting
85 lever capable of movement in opposite directions from a point of rest and provided with a compound curved slot engaging said stud whereby, by opposite movements of said
90 lever the tilting frame may be swung in opposite directions, substantially as specified. 90

2. In a type-writer, the combination with a
95 pivotally mounted tilting frame and a carriage connected thereto of a shifting lever provided with a cam-slot engaging a lateral pin upon the tilting frame and a supplementary lever provided with an actuating-spring,
100 and an ear to engage a lug on the shifting lever, substantially as set forth. 95

3. In a type-writer, the combination with a
105 tilting frame and a carriage loosely connected thereto and provided with horizontal guides, of a shifting lever connected to said tilting
110 frame and carrying a spring-actuated catch as described, and a supplementary lever provided with an ear to engage said catch when
115 the latter is in its normal position, substantially as set forth. 105

4. In a type-writer, the combination with a
120 carriage, and a rack-bar carried thereby and provided with horizontally-projecting parallel-sided teeth, of a pivotal dog capable of both oscillation and rectilinear reciprocation and provided with a fixed tooth arranged to
125 engage the rack-teeth when the dog is moved in one direction and a spring-actuated tooth capable of lateral movement toward and from
130 the plane of the fixed tooth, and arranged to engage the rack-teeth when the dog is moved in the opposite direction, means to reciprocate the dog to cause its teeth to alternately
135 engage the rack-teeth, and a trip device carried by the rack-bar to swing the dog from the rack bar and out of operative relation with the rack-teeth, substantially as specified. 120

5. In a type-writer, the looped or U-shaped
140 type-bars, whose arms are pivoted at their free ends and whose closed or looped ends carry type-heads, and means to operate said type-bars, substantially as specified. 125

6. In a type-writer, the combination with
145 the key levers, of U-shaped type bars having parallel axes arranged in the same horizontal plane, substantially as set forth. 130

7. In a type writer, the combination with

key levers, of U-shaped type bars having their axes arranged in the same horizontal plane and in close proximity, whereby when at rest, the type bars telescope or fit into one another in regular series, substantially as set forth.

8. In a type-writer, a series of U-shaped type bars, of graduated lengths mounted upon parallel axes in the same horizontal plane, substantially as set forth.

9. In a type-writer, the combination with inward-facing ink-pads, of U-shaped type-bars arranged between the ink-pads and the point of impact and provided with parallel spindles arranged in the same plane, and means to operate the type-bars, substantially as specified.

10. In a type-writer, the combination of U-shaped type-bars having their spindles arranged transverse to the line of writing, type-heads connected to the closed or looped ends of the type-bars between their arms, and bearing a plurality of types, substantially as specified.

11. In a type-writer, the combination with U-shaped type bars, of type heads mounted upon spindles at the closed ends of said type bars, pivotal arms connected to said type heads and draw rods connected to said arms and secured near the pivotal points of the type bars and out of alignment respectively therewith, substantially as set forth.

12. In a type-writer, the combination with opposite facing ink pads arranged in approximately vertical planes, of the U-shaped type bars mounted upon parallel spindles and the

revoluble type heads swiveled upon the closed ends of the type bars and adapted to make a half revolution when said type bars are operated, substantially as set forth.

13. In a type-writer, the combination with horizontal supporting frames having outwardly divergent side bars, of the bifurcated type bars carried by parallel spindles arranged in the same horizontal plane and mounted in bearings in said divergent bars, the revoluble type heads swiveled upon the closed ends of said type bars, the key levers and the connecting rods pivotally connected at their upper ends to cranks secured respectively to the type bars and connected at their lower ends to the key levers at approximately the same distances from the pivotal points of the latter, substantially as set forth.

14. In a type-writer, the combination of a tilting-frame capable of a plurality of positions or adjustments, means to shift such frame, a carriage connected to the tilting-frame, U-shaped type-bars having their spindles arranged transverse to the line of writing, type-heads connected to the looped ends of the type-bars between their arms and carrying a plurality of type, and means to operate the type-bars, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

THOS. OLIVER.

Witnesses:

JOHN H. SIGGERS,
BERNICE A. WOOD.