

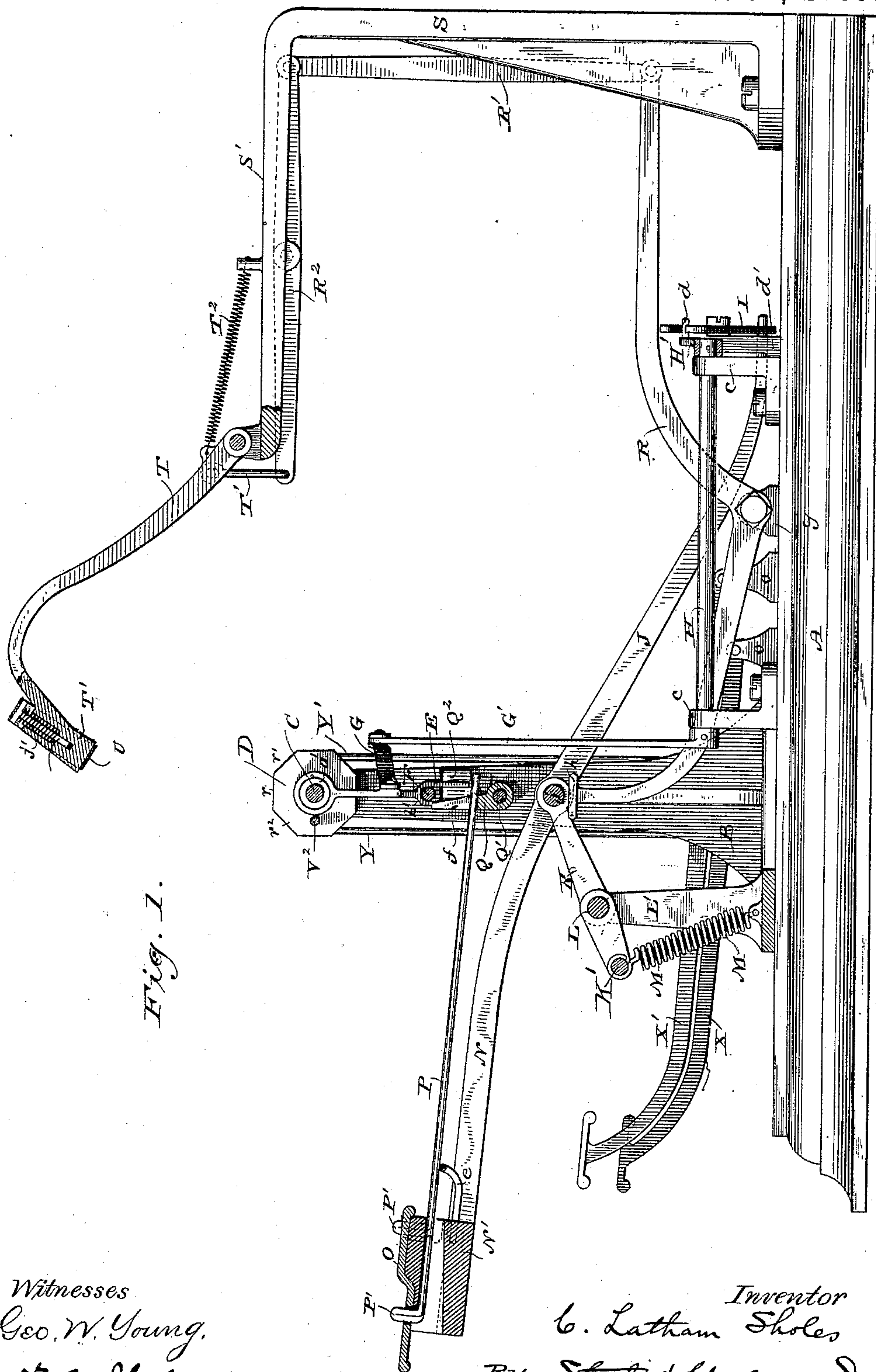
(No Model.)

4 Sheets—Sheet 1.

C. L. SHOLES.  
TYPE WRITING MACHINE.

No. 418,239.

Patented Dec. 31, 1889.



Witnesses  
Geo. W. Young.  
N. E. Oliphant

Inventor  
C. Latham Sholes  
By Stout & Underwood  
Attorneys

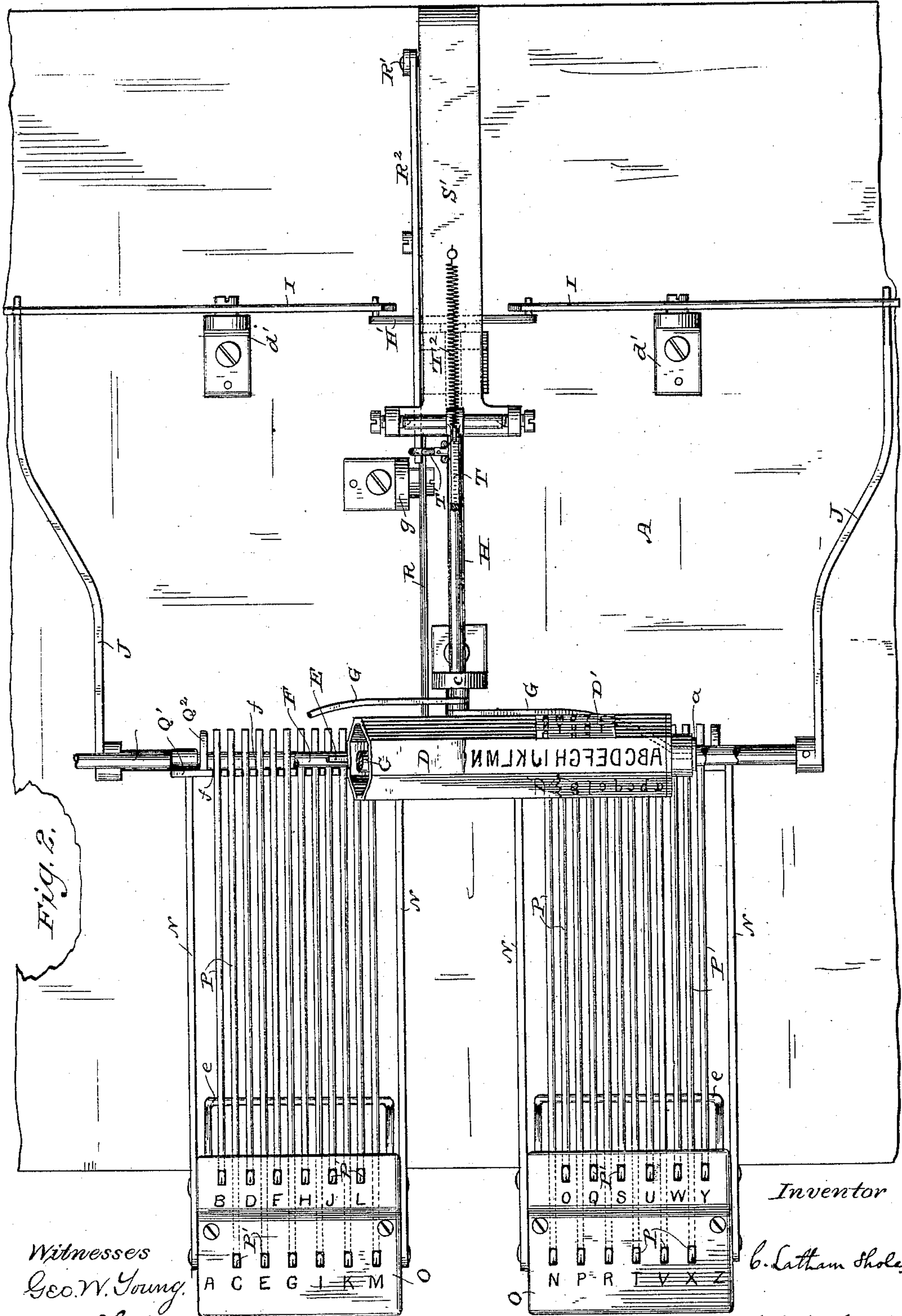
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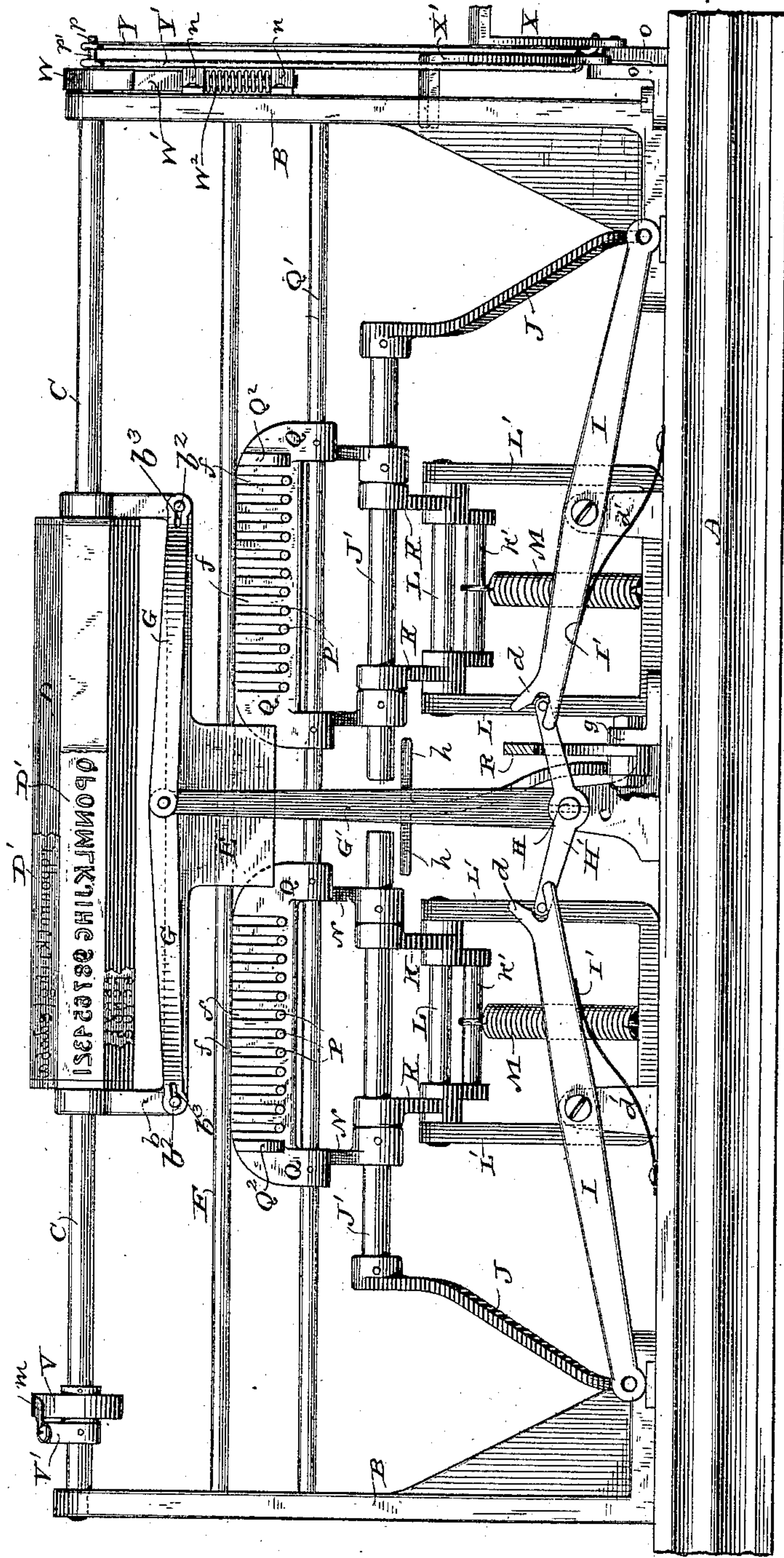
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Fig. 3.



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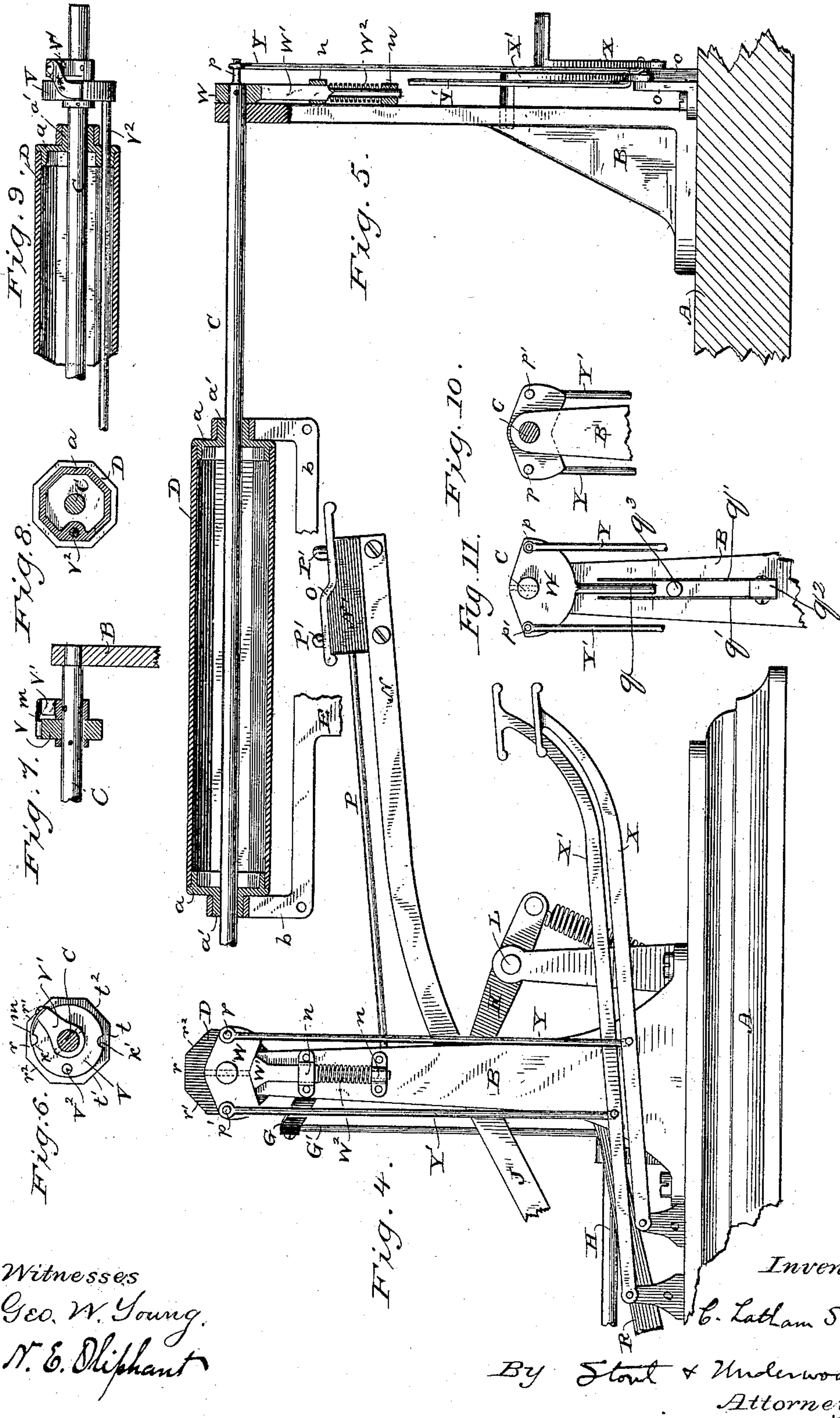
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# UNITED STATES PATENT OFFICE.

CHRISTOPHER LATHAM SHOLES, OF MILWAUKEE, WISCONSIN.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 418,239, dated December 31, 1889.

Application filed July 16, 1887. Serial No. 244,472. (No model.)

*To all whom it may concern:*

Be it known that I, CHRISTOPHER LATHAM SHOLES, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have  
5 invented certain new and useful Improvements in Type-Writing Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to type-writing machines, and belongs to that class of such machines wherein the type are all set in motion at once to bring the desired character to the printing-point where said character is impacted by a suitable mechanism to produce  
15 an impression, this style of machine being contradistinct to those having the type carried singly or in pairs on separate levers that are independently actuated to produce the above result.

My invention has special reference to simplifying, cheapening, and reducing the size and weight of the machine without in any way impairing the scope of its work or the speed and efficiency of its action. To do this,  
25 I dispense entirely with key-boards composed of separate and numerous key-levers, a single lever on the right and another on the left serving every purpose of the manifold-lever system, and said single levers, unlike those employed where there are but one or two in a machine, having no side motion of any kind, but do their work by a single downward impact, thus affording all the advantage of the separate key without its complication, size, or expense.  
35

In carrying out my invention I employ a peculiar system of stop-rods, operated by a distinct application of the fingers, that actuates either one of the aforesaid levers, and,  
40 the proper stop being touched, the right letter will be held at the printing-point to be struck by the impacting mechanism.

Having set forth the general character of my invention, I will now proceed to describe the same with reference to the accompanying  
45 drawings.

In the drawings, Figure 1 represents a sectional side elevation of my invention; Fig. 2, a plan view of the same, partly broken away;  
50 Fig. 3, a rear elevation with the hammer-standard removed; Fig. 4, a partial elevation

of the side opposite that shown in Fig. 1; Figs. 5, 6, 7, 8, 9, and 10, detail views illustrating a reciprocating type-bed piece and means for actuating the same; and Fig. 11, a modification  
55 tion.

Referring by letter to the drawings, A represents the base of my machine, and extending up from this base, at the sides thereof and in front of its longitudinal center, are standards B, provided at their upper ends with bearings for a horizontal shaft C, that has loosely arranged thereon a polygonal shell D, and to several faces of the latter are suitably  
60 secured strips D', provided with raised letters and other necessary characters, as best illustrated in Figs. 2 and 3.  
65

The strips D' may be of metal, hard rubber, or any other suitable material, and, if found desirable, the letters, &c., may be cast  
70 integral with the shell.

The heads *a* of the shell D are provided with outwardly-extended bosses *a'*, on which are loosely arranged the right-angular arms *b* of a hanger E, the latter being provided  
75 with a bend *b'*, that fits over upon a horizontal guide-rod F, secured at its ends to the vertical standards B. Fitted to the bends of the angular arms *b* of the hanger E are pins or screws *b<sup>2</sup>*, that engage slots *b<sup>3</sup>* in the outer  
80 ends of horizontal arms G, the inner ends of these arms being pivoted to the upper extremity of a vertical lever G', that is fast on a longitudinal shaft H, that has its bearings in brackets *c* on the base A of the machine.  
85

The rear terminal of the shaft H has fast thereon a bell-crank lever H', that engages the bifurcated inner ends *d* of transverse levers I, that are fulcrumed to brackets *d'* on the base A and connected at their outer ends  
90 with the rear extremities of curved longitudinal levers J, fast on horizontal shafts J', the latter having their bearings in the rear ends of other levers K, loosely arranged in pairs on transverse rods L, that are supported  
95 in vertical frames L' on the base A, said levers K being united at their front ends by means of bars K', to which and the bottom of the frames L' are secured the respective ends of spiral springs M, flat springs I' being  
100 arranged on said base beneath the levers I.

Rigidly secured to each shaft J' are two



arms N, and uniting the front ends of each pair of arms is a longitudinally-recessed and vertically-perforated block N', that has secured thereto a hand-plate O, having perforations therein that register with the perforations in said block, and these parts N' O constitute a key-board.

Projecting inward from each block N' is a support or fulcrum *e*, on which rests a series of longitudinal stop-rods P, having upturned outer ends P', that pass through the perforations in said block and those in the plate O. The rods P are of such length that their inner ends extend through and beyond slots *f* in plates Q, rigidly connected to a horizontal rod Q' between the standards B, and thus these inner ends of said rods are arranged in such a position that any one of them may be brought in the path of the hanger E, depending from the polygonal shell above described.

Each of the rods P corresponds with a character on any one or more of the faces of the shell D, and each of the slotted plates has a stop Q<sup>2</sup> at its outer end, that corresponds with the most remote character on said face or faces.

Fulcrumed to a bracket *g* on the base A is a lever R, provided at its front end with lateral projections *h*, arranged directly under the inner extremities of the shafts J', its rear end being pivotally connected to a link R', that in turn is pivoted to another lever R<sup>2</sup>, fulcrumed at its center to the horizontal arm S' of a right-angular standard S, projecting up from the transverse center and rear of the base A. Pivotaly connected to the front end of the arm S' of the standard S is a hammer T, united by means of a link T' to the lever R<sup>2</sup>, and a spiral spring T<sup>2</sup> has its ends respectively secured to said arm and hanger, as illustrated in Figs. 1 and 2.

The head of the hammer T comes directly over the axial center of the shell D, and is provided with a socket to receive a T-shaped stem *j*, that has a spiral spring *j'* arranged thereon, and over this stem and hammer-head is arranged a band U, of rubber or other flexible material. Loose on the shaft C is a disk V, provided with recesses *k k'*, that are diametrically opposed to each other and adapted for engagement with a spring-detent *m*, belonging to an arm V', that is fast on said shaft, and extending from the disk a sufficient distance into the shell D is a guide-rod V<sup>2</sup>, the latter being clearly illustrated in Figs. 6, 8, and 9.

Fast on one end of the shaft C is a cam-plate W, and arranged in guides *n* on the adjacent standard B is a dog W', that is kept up against the cam-plate by means of a spring W<sup>2</sup>, as best illustrated in Figs. 4 and 5.

Fulcrumed to brackets *o o* on the base A are levers X X', that are connected by means of rods Y Y' with pins *p p'* at the ends of the cam-plate W.

Instead of employing the spring-dog W', I

may provide the cam-plate W with a depending stem *q* and arrange the latter between two flat springs *q'*, secured at their lower ends in a lug *q<sup>2</sup>* on the standard B, and the latter is also provided with a pin *q<sup>3</sup>*, to hold said springs apart, this modification being illustrated by Fig. 11.

In the drawings I have purposely omitted a paper-carriage, inking mechanism, and spacer, as the construction and operation of these devices are so generally well known and form no part of my invention.

When the operator touches upon the upturned end P' of a rod P, the inner end of the latter is raised up in the path of the hanger E on the type-shell D, and then by pressing down on the adjacent key-board the arms N are operated to actuate the shaft J', to which said arms are connected, thereby causing the levers J and I to swing the bell-crank H' toward that side of the machine corresponding to said hand-plate. This operation causes a partial rotation of the longitudinal shaft H and actuates the lever G' and arms G, the slots *b<sup>3</sup>* in the arms affording the requisite give to slide the shell D on the horizontal shaft C until the hanger E comes in contact with the stop-rod P, that is in the meantime held up in its path. The desired character on said shell will then be in the center of the machine under the head of the hammer T. The arms N being still further depressed against the resistance of the spring M, the shaft J' is brought down upon the lever R, and this lever, through the medium of the link R' and lever R<sup>2</sup>, linked to the hammer, will actuate the latter and cause it to strike upon the character that has already been brought under its head, paper and ink-ribbon (not shown) being interposed between said character and hammer-head. The flexible band V on the hammer-heads soften the stroke of the hammer and is kept taut by the expansive force of the spring *j'* against the T-shaped stem *j*, and as this band becomes worn it may be shifted on said hammer-head to present a new contact-surface. When the key-board is released, the spring M, acting on the levers K, brings the shaft J' up away from the lever R, the spring T<sup>2</sup> draws the hammer T back to its normal position, and thus the lever R<sup>2</sup> and link R' are actuated to raise said lever R to its normal position, after which the flat spring I' actuates the levers I J to bring the hand-plate back to its first position, and at the same time release the bell-crank H' to permit the return of the type-shell to the position shown in Fig. 3.

In the above-described operation I have only specified one key-board and the several parts immediately or incidentally connected thereto; but it will be understood that the other key-board and system of levers are operated in a like manner to produce the same result, it being intended that the operator shall have hold of both key-boards at the same



time, so as to readily bring to the center and cause to be struck any one of the characters that may be indicated on said plates.

One of the advantages of my machine lies in the fact that when a stop-rod P corresponding to the character desired is touched on the right key-board the other stop-rods to the right, if accidentally thrown up, will not affect the successful operation of the machine, as the type-shell D will stop when its hanger E comes in contact with the first-named key. When working with the left key-board, the result is the same, only that, the direction being changed, it is the stop-rods on the left of the one first touched that, if accidentally raised, will not affect the successful operation of the machine.

The type-shell D, as shown, has eight faces, six of them being provided with letters or other characters; but I do not wish to be understood as limiting myself to this construction, for the reason that the number of faces on said shell may be increased or diminished without departing from the spirit of my invention.

When the shell is in the position shown by Figs. 4 and 6, the uppermost face  $r$  has thereon the characters most frequently used, and the levers  $X X'$  are operated to bring either one of the two adjacent faces  $r' r^2$  of said shell into the present position of the one first named. When the lever  $X$  is depressed, the cam-plate  $W$  will be actuated by means of the rod-connection  $Y$  against the resistance of the spring-dog  $W'$ , and the face  $r'$  of the shell will be brought into the position normally occupied by the face  $r$ , and thus held as long as said lever is kept down, the pin  $p$  coming against the standard  $B$  to limit the movement of said shell. When the lever  $X'$  is operated, a movement reverse to that just described takes place and the face  $r^2$  of the shell is brought uppermost. On release of either lever, the spring-dog  $W'$  or its equivalent causes a return of the shell to its normal position.

To reverse the type-shell and thus bring the faces  $t t' t^2$  thereof uppermost, the detent  $m$  is disengaged from the recess  $k$  and said shell rotated on the shaft  $C$  until the detent automatically engages the recess  $k'$ , diametrically opposite the one first named.

In Figs. 2 and 3 I have shown one face of the type-shell provided with a series of arbitrarily-selected words with a view to facilitate writing by the machine, said words being arranged to read vertically, and each one thereof is brought to the center by the same movement as for a letter or other character and then printed by a single stroke of the hammer.

Although the mechanism shown and described for actuating the type-shell and hammer is the one preferred, it is obvious that this mechanism may be varied to some degree to produce the same result.

Having thus fully described my invention,

what I claim as new, and desire to secure by Letters Patent, is—

1. In a type-writer, the combination of a reciprocative type-shell provided with a hanger, a lever mechanism, substantially as described, perforated key-boards carried by the lever mechanism, fulcrumed stop-rods having their outer ends passed through the perforations in said key-boards and their inner ends arranged to be brought into the path of said hanger, a hammer arranged to strike the shell, and mechanism, substantially as described, operated by a movement of said lever mechanism to actuate said shell and hammer, as set forth.

2. In a type-writer, the combination of a reciprocative type-shell provided with a hanger, right-hand and left-hand levers, longitudinally-slotted and vertically-perforated key-boards secured to the levers and having inwardly-extended supports, a series of stop-rods rested upon the supports and having upturned outer ends that pass through the perforated key-boards, slotted plates arranged to support the inner ends of the stop-rods below the path of said hanger, a hammer arranged to strike the shell, and a mechanism, substantially as described, actuated by a movement of either lever to operate said shell and hammer, as set forth.

3. In a type-writer, the combination of a reciprocative type-shell provided with a hanger, longitudinally-slotted and vertically-perforated key-boards having inwardly-extended supports a series of stop-rods rested upon the supports and having upturned ends that pass through the perforations in said plates, slotted key-boards arranged to support the inner ends of the stop-rods below the path of said hanger and provided at their outer ends with a stop, a hammer arranged to strike the shell, and a mechanism, substantially as described, actuated by a movement of the perforated key-boards to operate said shell and hammer, as set forth.

4. In a type-writer, the combination of a hammer having its head provided with a socket, a stem arranged in the socket to project therefrom, a spring arranged to exert an outward pressure on the stem, and a band of flexible material arranged on the hammer-head and stem, substantially as set forth.

5. In a type-writer, the combination of a rock-shaft, a longitudinally-reciprocative type-shell arranged on the shaft to have rotary adjustment independent of said shaft, a clutch mechanism, substantially as described, supported by said rock-shaft, for retaining said shell in its adjusted position with relation to said shaft, a lever mechanism, substantially as described, for rocking the shaft and shell, and spring mechanism, substantially as described, for automatically returning said shaft and shell to their normal position on the release of said lever mechanism, as set forth.



6. In a type-writer, the combination of a rock-shaft, a reciprocative type-shell arranged thereon, a disk loosely arranged on the shaft and having its periphery provided with recesses, a detent fast on said shaft for engagement with the recessed disk, and a rod extended from the disk into said type-shell, substantially as set forth.

7. In a type-writer, the combination of a horizontal shaft journaled in vertical standards, a type-shell loose on the shaft, a guide-rod for the shell, a cam-plate secured to the shaft and having its ends provided with pins, longitudinal levers connected by rods to the cam-plate pins, a spring mechanism for automatically returning said cam-plate to its normal position after being operated by one of the levers, a hammer arranged to strike the type-shell, and mechanism, substantially as described, for reciprocating said shell and actuating the hammer, as set forth.

8. In a type-writer, the combination of a horizontal shaft journaled in vertical standards, a type-shell loose on the shaft, a guide-rod for the shell, a hanger having angular arms arranged on the journals of the shell, a vertical lever connected at one end to the hanger-arms, a longitudinal shaft fast to the other end of the lever, a bell-crank fast on the latter shaft, and a lever mechanism for actuating the bell-crank, substantially as set forth.

9. In a type-writer, the combination of a horizontal shaft journaled in vertical standards, a type-shell loose on the shaft, a guide-rod for the shell, a hanger having angular arms arranged on the journals of the shell, a series of stop-rods arranged to be independently brought in the path of the hanger, a vertical lever connected at one end to the arms of said hanger, a longitudinal shaft fast to the other end of the lever, a bell-crank fast on the latter shaft, and a lever mechanism for actuating the bell-crank, substantially as set forth.

10. In a type-writer, the combination of the base A, vertical standards B, shaft C, sliding type-shell D, hanger E, arms G, lever G', shaft H, bell-crank H', bifurcated levers I, springs I', longitudinal levers J, shafts J', levers K, united in pairs by bars K', rods L, frames L', springs M, arms N, longitudinally-slotted and vertically-perforated plates O, slotted plates Q, provided with stops Q<sup>2</sup>, stop-rods P, lever R, having lateral projections h, link R', lever R<sup>2</sup>, standard S, hammer T, link T', spring T<sup>2</sup>, disk V, having recesses k k', arm V', detent m, guide-rod V<sup>2</sup>, cam-plate W, spring-dog W', rods Y Y', and levers X X', substantially as set forth.

11. In a type-writer, the combination of a reciprocating type-carriage, a lever mechanism, substantially as described, for actuating the type-carriage, a key-board carried by the lever mechanism, and a series of stop-rods fulcrumed to the key-board and arranged to be individually brought into the path of said type-carriage by a touch of the operator's fingers prior to the exertion of sufficient impulse to actuate said lever mechanism, substantially as set forth.

12. In a type-writer, the combination of a reciprocating type-carriage, a hammer mechanism, substantially as described, key-boards, mechanism, substantially as described, connecting the type-carriage, hammer mechanism, and key-boards, and a series of stop-rods fulcrumed to the key-boards to be individually brought into the path of said type-carriage by a touch of the operator's fingers prior to the exertion of sufficient impulse to actuate said lever mechanism.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

C. LATHAM SHOLES.

Witnesses:

MARY J. SHOLES,  
N. E. OLIPHANT.