



**No. 614,216.**

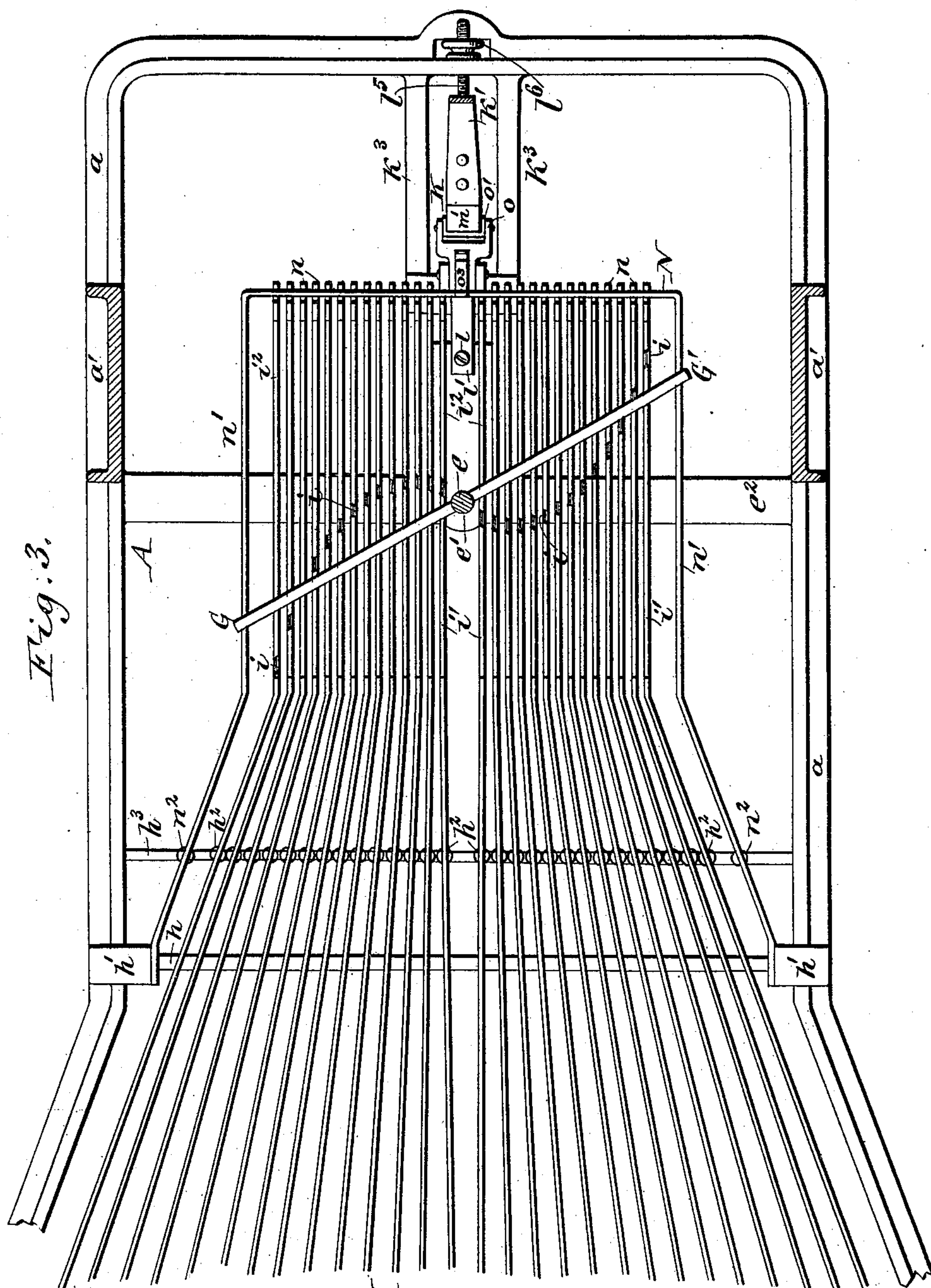
**Patented Nov. 15, 1898.**

**W. H. SLOCUM.**  
**TYPE WRITING MACHINE.**

(Application filed Aug. 13, 1897.)

(No Model.)

**2 Sheets—Sheet 2.**



*Witnesses:-*

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# UNITED STATES PATENT OFFICE.

WILLIAM H. SLOCUM, OF BUFFALO, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO PERCY EATON AND MARGARET M. SLOCUM, OF SAME PLACE.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 614,216, dated November 15, 1898.

Application filed August 13, 1897. Serial No. 648,099. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. SLOCUM, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Type - Writing Machines, of which the following is a specification.

This invention relates to that class of type-writing machines in which the type are mounted on a pivoted segment and the paper is pressed against the type by a hammer.

The object of my invention is the production of a type-writing machine of this character which is extremely simple and durable in construction and reliable in operation and which can be constructed at comparatively small cost.

In the accompanying drawings, consisting of two sheets, Figure 1 is a fragmentary vertical longitudinal section of my improved type-writing machine. Fig. 2 is a fragmentary top plan view of the same. Fig. 3 is a horizontal section in line 3 3, Fig. 1. Fig. 4 is a fragmentary vertical longitudinal section showing a modified construction of the impression device.

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

A represents the main frame of the machine, which may be of any suitable construction and which consists, essentially, of an open base  $a$ , two standards  $a'$   $a'$ , arranged on opposite sides of the base, and two transverse supporting-bars  $a^2$   $a^3$ , connecting the upper ends of the standards.

B represents the transversely-movable paper-carriage, which may be constructed and operated in any well-known and suitable manner. As shown in the drawings, this carriage consists, essentially, of a transverse plate  $b$ , arranged above the cross-bars  $a^2$   $a^3$ , and a number of paper-holding guide-arms  $b'$   $b'$ , which are secured to the rear edge of the plate and extend downwardly, rearwardly, and upwardly in a scroll. The carriage is movably supported by means of lower rollers  $c$   $c$ , pivoted on the cross-bars  $a^2$   $a^3$  and engaging with grooves in the under side of the plate  $b$ . The carriage is held in place on

the lower rollers  $c$   $c$  by means of upper rollers  $c'$   $c'$ , which engage with a groove formed in the upper side of the carriage-plate along its front edge and which are pivoted in brackets  $c^2$ , formed on the front cross-bar  $a^2$  and overhanging the carriage-plate.

D D' represent front and rear paper-feed rollers which are arranged above and on opposite sides of the throat or space formed between the front and rear ends of the scroll-guide arms. The front feed-roller is journaled with its ends in bearings  $d$ , arranged on the carriage-plate, and a rear feed-roller is journaled in bearings  $d'$ , arranged on the free ends of the outermost paper-guide arms  $b'$ . The paper is placed in the guide-arms and between the feed-rollers and is fed upwardly by the latter past the printing devices.

E represents the horizontally - swinging type-carrier or printing-segment, which is arranged with its type-face above the front feed-roller and in front of the path of the paper. This segment is secured with its front portion to the upper end of a vertical rock-shaft  $e$ , journaled with its lower end in a bearing  $e'$ , which is formed in a cross-bar  $e^2$  of the main frame and with its upper end in a bearing  $e^3$ , formed in a bracket  $e^4$ , which rises from the front supporting-bar  $a^2$ . Upon turning the rock-shaft the different type on the face of the printing-wheel may be brought to the printing-point of the paper.

F represents the ink-ribbon, which is directed by guides  $f$   $f$  between the face of the type - segment and the sheet of paper and which is wound with its ends upon spools  $f'$   $f'$ , pivoted on vertical spindles  $f^2$   $f^2$ . The latter, together with the guides  $f$   $f$ , are supported on the brackets  $c^2$ , which carry the upper carriage-rollers  $c'$ . Upon pressing the paper forwardly against the ink-ribbon and the latter against the type on the segment an impression of the respective type on the segment is produced on the front side of the paper in a well-known manner. After each impression of the printing-segment on the paper the ink-ribbon is shifted slightly from one spool to the other by any suitable mechanism.



The mechanism whereby the type-segment is turned so as to present the different type on its face to the printing-point is constructed as follows:

- 5 G G' represent two horizontal shifting bars or arms, which are secured with their inner ends to the central portion of the rock-shaft *e* and project radially from diametrically opposite sides thereof.
- 10 H represents the key-levers, whereby the type-segment is turned and which are arranged lengthwise in the frame. The rear portions of the keys are close together and arranged in two groups on opposite sides of the
- 15 printing-segment shaft below the shifting arms G G', while the front portions of the keys are separated and pivoted to a cross-rod *h*, which is secured to lugs *h'* *h'* on the base of the frame. The key-levers are normally
- 20 held with their front arms in an elevated position and their rear arms in a depressed position by means of springs *h<sup>2</sup>*, connecting the rear arms with a cross-bar *h<sup>3</sup>*, secured to the
- 25 of sheet metal and is arranged with its side in a vertical plane. The upper edge of the rear arm of each key-lever is provided below the adjacent shifting arm with a notch or seat *i* and front and rear inclines *i'* *i<sup>2</sup>*, extending
- 30 from the upper portion of the lever downwardly to opposite sides of said recess. Upon depressing the front arm of a key-lever its rear arm rises and one or the other of its in-
- 35 clines *i'* *i<sup>2</sup>* on the rear arm engages with the adjacent shifting arm and turns the same, together with the rock-shaft and printing-segment, until the shifting arm engages with the notch of the key-lever. When the shifting
- 40 arm engages with the notch of the key-lever, the upward movement of the rear arm of the key-lever is arrested and the type-segment is locked in position while the particular type on its face which is at the printing-point at
- 45 this time is producing an impression on the paper. Upon releasing the key-lever its rear arm is disengaged from the shifting arm and leaves the type-segment stand with that type at the printing-point which made the last im-
- 50 pression. This permits of printing the same letter successively without shifting the printing-segment, thereby reducing the wear on the machine.

The key-levers on one side of the rock-shaft engage with one of the shifting arms and the

- 55 key-levers on the opposite side of the rock-shaft engage with the other shifting arm. The notches in the several key-levers are all arranged at different distances from the fulcrum of the key-levers and the angle of the inclines
- 60 extending from each notch is greater or less. This causes each key-lever to shift the printing-segment to a point different from that to which it can be shifted by any other key-lever. The extent of the inclines leading in
- 65 opposite directions from the notches of the different key-levers is such that upon depressing any one of the key-levers one of its in-

clines will come into engagement with a shifting arm and turn the same until it reaches the notch in the lever.

After the printing-segment has been turned and carried the desired letter to the printing-point the impression of this letter is made on the front side of the paper by the following mechanism:

J represents an impression-hammer whereby the paper is pressed against the ink-ribbon and the latter is pressed against the type of the printing-segment. This hammer is arranged above the rear feed-roller in line with the printing-point and back of the path of the paper.

K represents a rock-arm supporting the hammer and consisting of an elastic upper section *k'*, which carries the hammer at its upper end and curves backwardly around the paper-holder and a lower rigid section *k<sup>2</sup>*, which has secured at its upper end the lower end of the elastic section and is pivoted at its lower end to central longitudinal bars *k<sup>3</sup>* of the main frame. The forward movement of the lower section of the rock-arm is regulated by an adjusting-screw *l*, which is arranged in a forwardly-projecting lug *l'* on the lower section of the rock-arm and which bears against a stop *l<sup>2</sup>*, formed on the lower portion of the frame. The rock-arm is yieldingly held in its forward position by a spring *l<sup>3</sup>*, secured at its front end to a depending lug *l<sup>4</sup>* on the lower rock-arm section and adjustably connected with the frame by a screw-stem *l<sup>5</sup>*, connected with the rear end of the spring and passing through the rear portion of the frame, and a screw-nut *l<sup>6</sup>*, engaging with said screw-stem and bearing against the rear side of the frame. The rock-arm K is arranged centrally in rear of the key-levers and the front side of its lower section is provided with an inclined or cam face *m*, which extends upwardly and forwardly from its pivot, and an abrupt face *m'*, which extends rearwardly from the upper end of the cam-face. N represents a universal cross-bar which rests upon lugs *n*, projecting rearwardly from the key-levers and which is connected at its ends with the rear ends of rock-arms *n'* *n'*. The latter are arranged lengthwise adjacent to the outermost key-levers and are pivoted at their front ends on the transverse rod *h*, on which the key-levers are pivoted. The universal bar is normally held in a depressed position by springs *n<sup>2</sup>*, connecting its supporting-arms with the cross-bar *h<sup>3</sup>*.

O is a horizontal trip-arm which is pivoted with its front end to the rear side of the universal bar and which is provided at its rear end with a trip-roller *o'*, bearing against the cam-face of the hammer rock-arm. The trip-arm is free to swing upwardly, but its downward movement is limited by a depending stop or lug *o<sup>2</sup>*, arranged on the trip-arm adjacent to its pivot and bearing against the rear side of the universal bar. The trip-arm is yieldingly held in a depressed position by



a spring  $o^3$ , secured to the universal bar and bearing against the upper side of the trip-arm.

Upon depressing the front arm of any one of the key-levers the lug  $n$  on its rear arm raises the universal bar and the roller on the trip-arm rides upwardly over the cam-face of the hammer rock-arm. During the upward movement of the trip-roller over the cam-face the hammer rock-arm is deflected or swung rearwardly, and the instant the trip-roller clears the cam-face the hammer rock-arm is quickly swung forwardly, this forward movement of the rock-arm being permitted by the abrupt face  $m'$  of the hammer rock-arm. During the subsequent downward movement of the trip-arm it engages with the abrupt face of the hammer rock-arm and is deflected and held in a deflected position until it has reached the end of its downward movement and engages with the lowest portion of the cam-face, when it again assumes its normal straightened position preparatory to deflecting the hammer rock-arm upon operating the next key-lever. In the normal forward position of the hammer it does not press against the rear side of the paper; but when the hammer-arm is retracted rearwardly and then released the upper and lower sections of the arm turn together until the lower section is arrested by the stop, after which the hammer, owing to its momentum, bends the upper section and delivers a blow against the back side of the paper, whereby the same and the ink-ribbon are pressed against the type on the printing-segment and an impression is produced on the front side of the paper. After the hammer has delivered a blow it springs backwardly into its normal position.

The relative movement of the parts is so timed that the retracted hammer-arm is released for producing the impression the instant the notch of a key-lever engages with one of the shifting arms and the printing-segment has carried the proper type to the printing-point.

When two or more key-levers are depressed at the same time, not one of them can be turned its full extent owing to the notches in the levers being out of register and preventing the shifting arm from engaging with any one of the notches, thereby rendering it impossible to trip the hammer and produce an impression.

In the construction of the machine shown in Figs. 1 and 2 the impression is produced by the hammer swinging in an arc. If desired, the hammer mechanism may be so organized that the hammer has a rectilinear movement toward and from the paper, as shown in Fig. 4. In this figure  $P$  represents a reciprocating stem or horizontal rod which is supported in front and rear stationary guides  $p p'$  and which is provided at its front end with a main hammer  $Q$ , adapted to bear against the back of the paper. The main

hammer is yieldingly held in a retracted position by means of a spring  $q$ , which bears with its ends against the front guide and a stop or shoulder  $q'$  on the stem. The upper elastic section of the hammer-arm is provided with an auxiliary hammer  $R$ , which is adapted to strike the rear end of the stem and move the main hammer against the paper and which in its normal position is out of engagement with said stem.

I claim as my invention—

1. The combination with a vertical rock-shaft provided with a type-segment and with a horizontal shifting arm, of key-levers provided with inclines which are adapted to engage with said arm and turn the same in a horizontal plane for carrying different type on the segment to the printing-point, substantially as set forth.

2. The combination with the vertical rock-shaft provided with a type-segment and two shifting arms on opposite sides of its center, of key-levers arranged on opposite sides of the shaft and provided adjacent to said arms with notches and inclines leading to opposite sides of the notches, the notch and inclines of each lever being out of register with the notches and inclines of the other levers and adapted to engage with said shifting arms, substantially as set forth.

3. The combination with the type-carrier, of key-levers provided with differential notches and inclines leading to said notches, a shifting arm connected with said carrier and adapted to be engaged by said inclines and notches, an impression-hammer having a movement toward and from the type-carrier, a rock-arm provided with a cam-face and an abrupt face, a movable cross-bar engaging with the key-levers, a trip-arm engaging with said cam-face and pivoted on said cross-bar, a spring whereby the trip-arm is yieldingly held against movement in one direction, and a stop whereby the trip-arm is positively held against movement in the opposite direction, substantially as set forth.

4. The combination with the type-carrier, of key-levers provided with differential notches and inclines leading to said notches, a shifting arm connected with said carrier and adapted to be engaged by said inclines and notches, an impression-hammer having a movement toward and from the type-carrier, a rock-arm carrying said hammer and adapted to be moved backwardly by said key-levers, an adjustable spring whereby the rock-arm is moved forward, and an adjustable stop whereby the forward movement of the rock-arm is limited, substantially as set forth.

Witness my hand this 17th day of July, 1897.

WILLIAM H. SLOCUM.

Witnesses:

THEO. L. POPP,

KATHRYN ELMORE.