

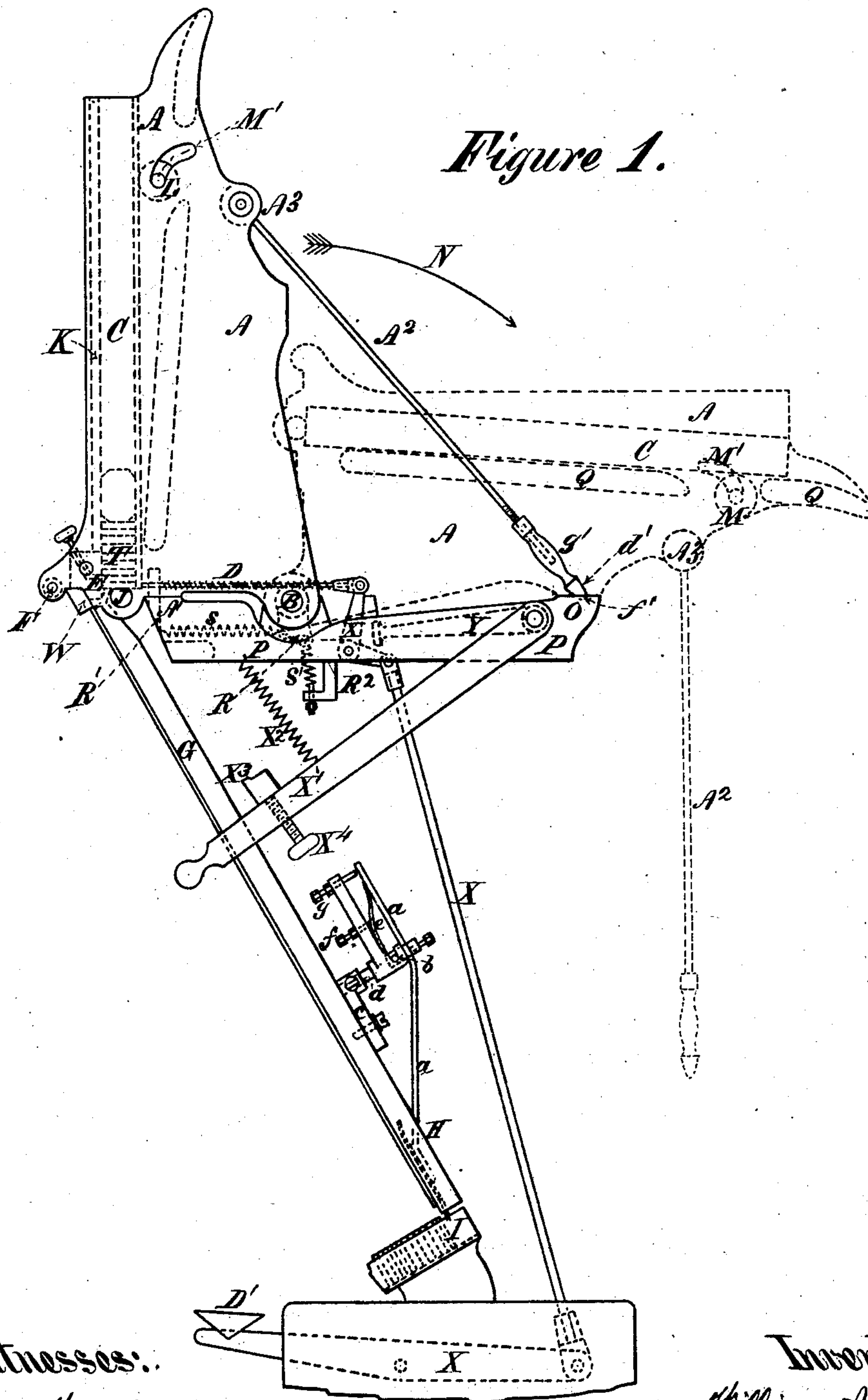
(Model.)

2 Sheets—Sheet 1.

W. A. LORENZ.  
TYPE SETTING MACHINE.

No. 248,047.

Patented Oct. 11, 1881.



Witnesses:

Leo W. Mott,  
Geo. H. Evans.

Inventor:  
William A. Lorenz.  
By his Attorney,  
E. N. Dickerson & Co.

(Model.)

2 Sheets—Sheet 2.

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Figure 2.

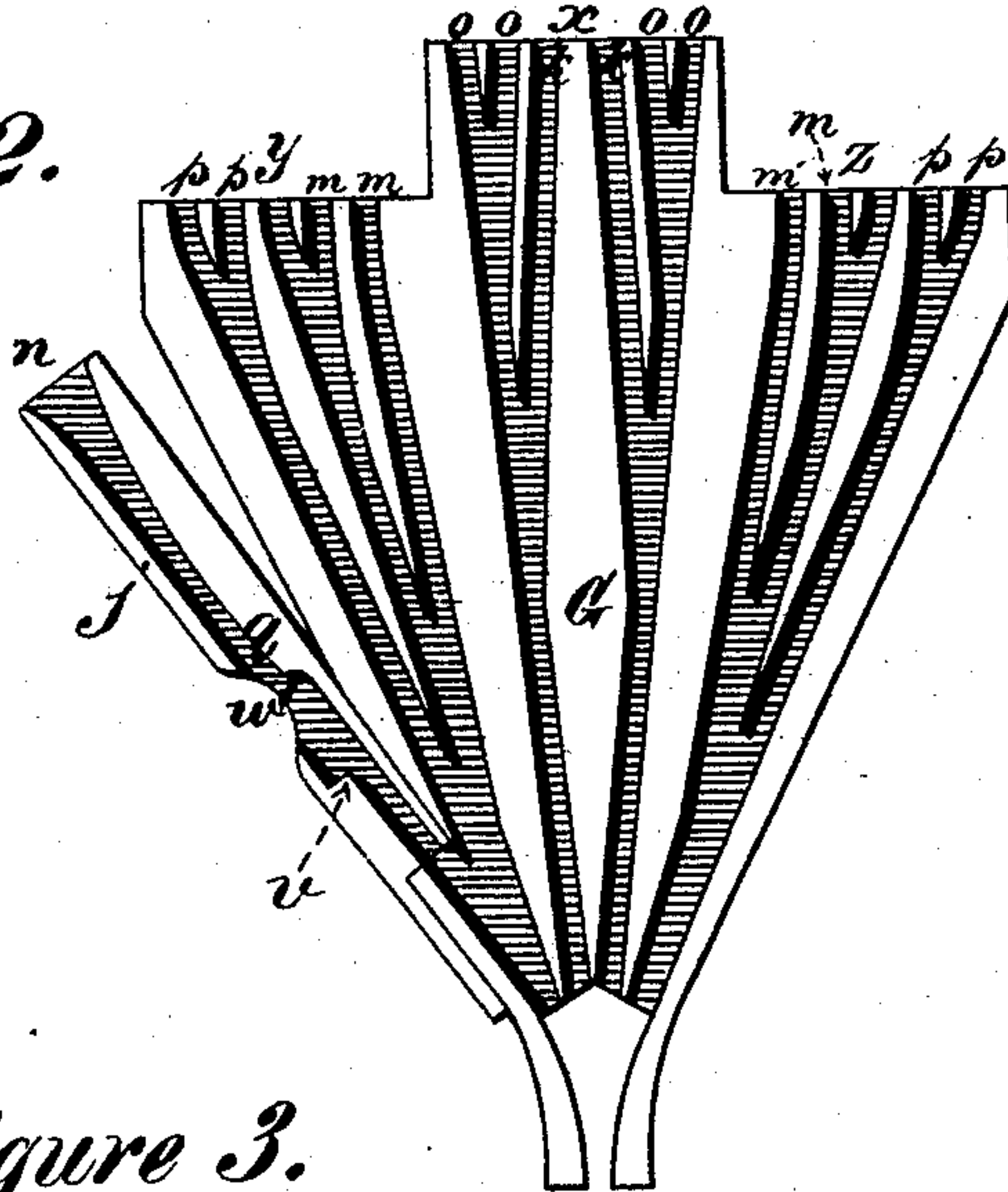


Figure 3.

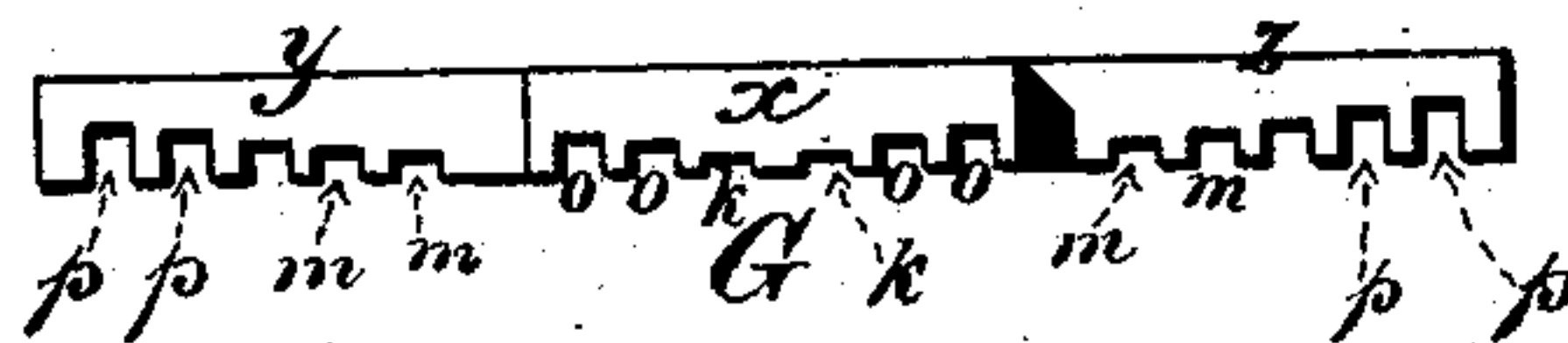


Figure 4.

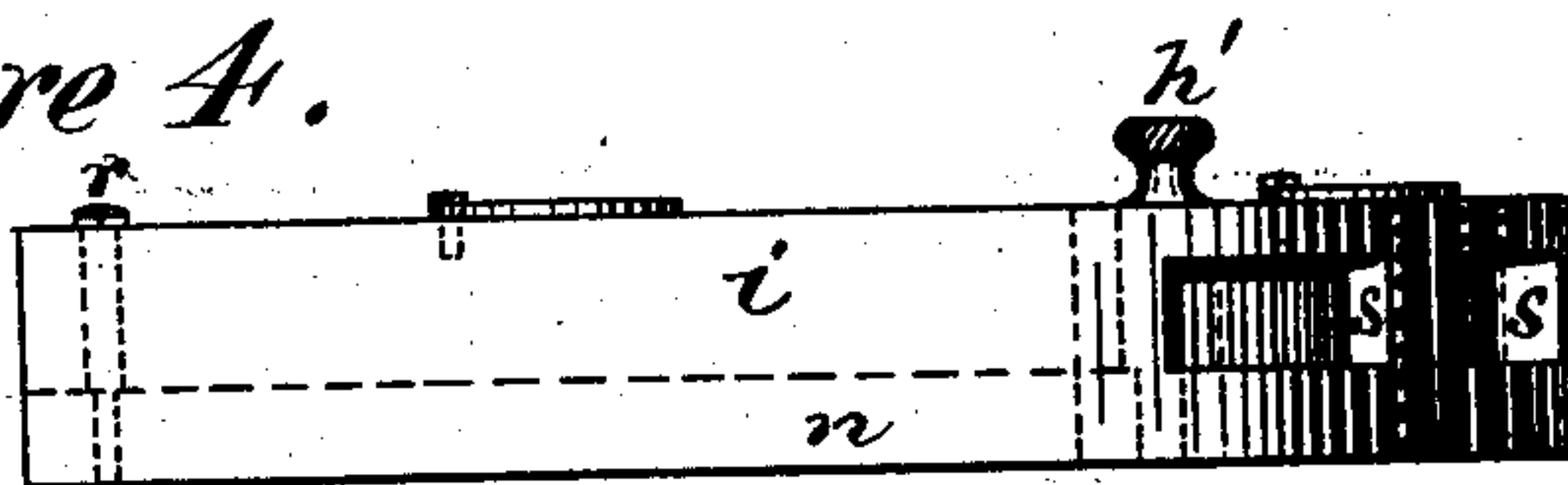


Figure 5.

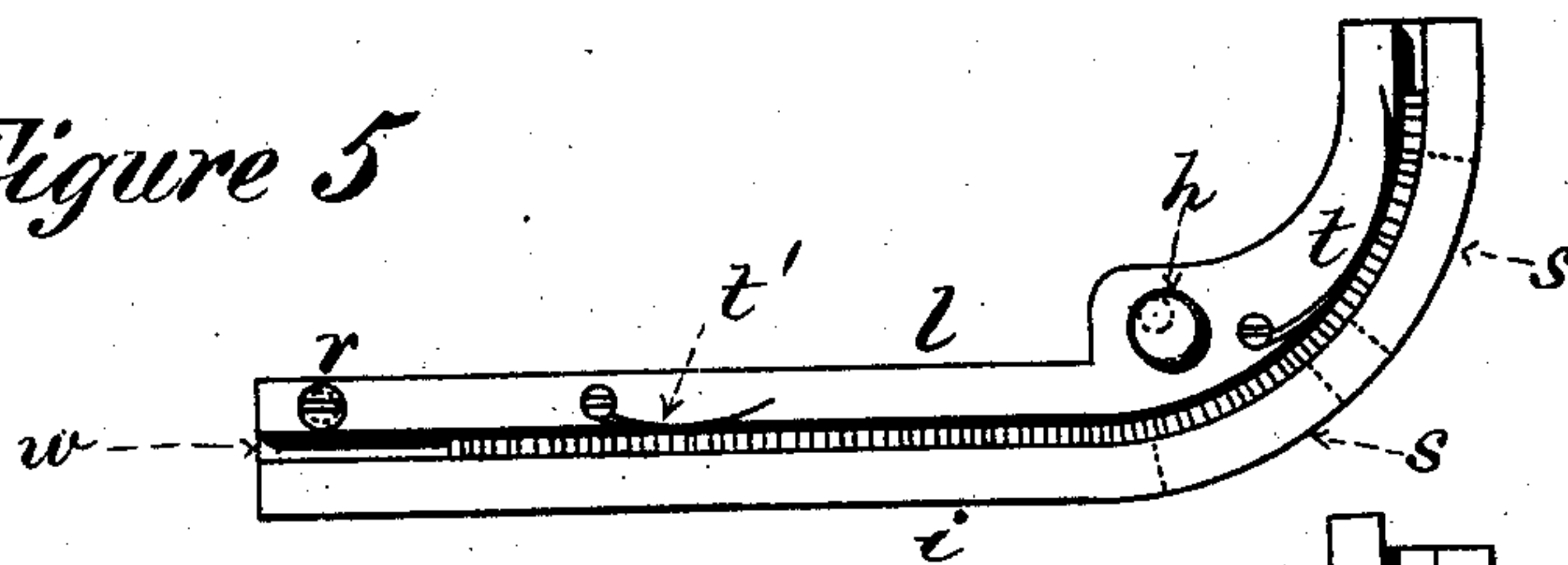
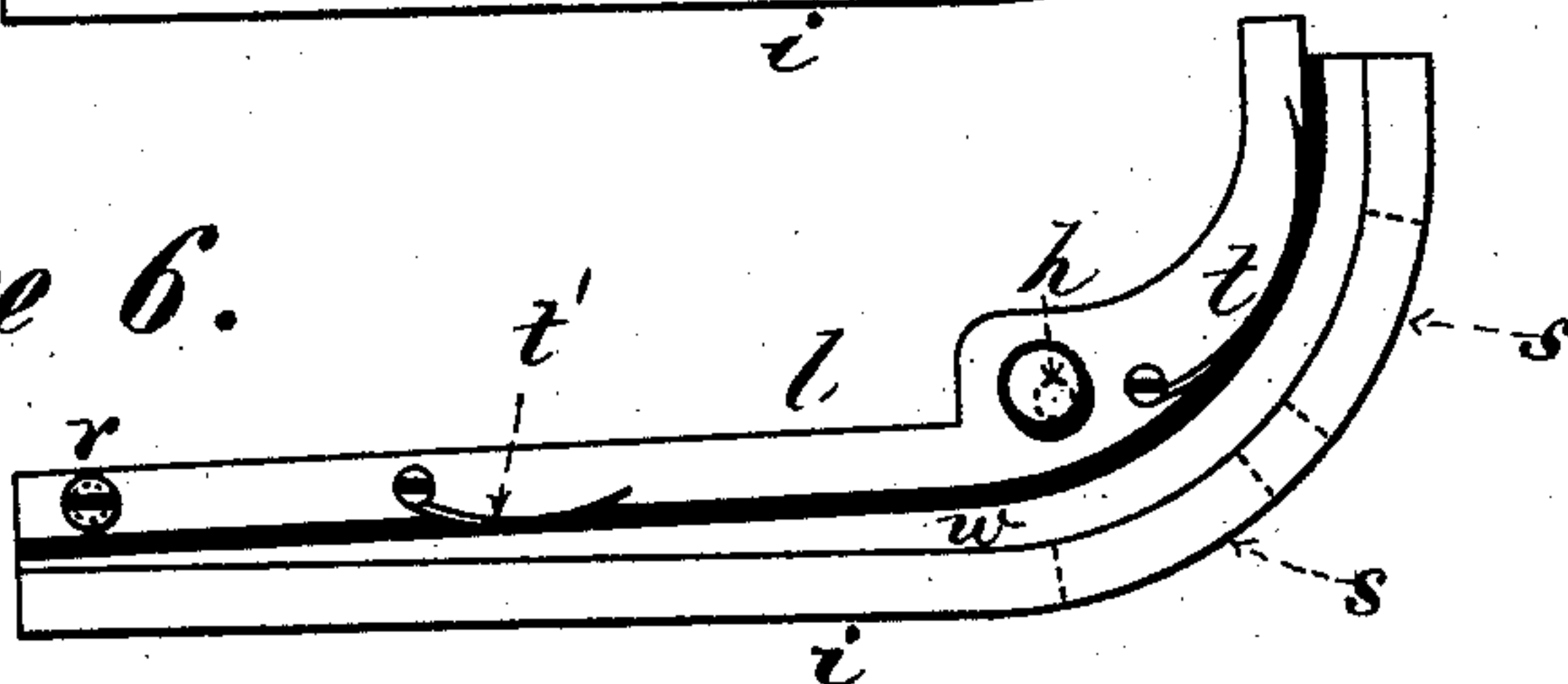


Figure 6.



Witnesses:

Geo. W. Miatt,  
Geo. H. Evans.

Inventor:

William A. Lorenz.  
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E. N. Dickerson, Jr.



# UNITED STATES PATENT OFFICE.

WILLIAM A. LORENZ, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENT, TO EDWARD N. DICKERSON, TRUSTEE.

## TYPE-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 248,047, dated October 11, 1881.

Application filed May 28, 1881. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. LORENZ, of the city of Brooklyn, State of New York, have invented a new and useful Improvement in Type-Setting Machines, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

It has been found to be a matter of the utmost importance, in the practical working of type setting and distributing machines, to diminish as much as possible the losses of time which occur in the necessary transferring of the type-cases from the distributing-machine back to the setter, and vice versa.

One of the objects of my invention is to enable a full case to be substituted for one which has been emptied in the shortest possible time and with the least possible exertion.

Heretofore, in substituting a full case for one which has been emptied, it has been necessary to raise such case above the frame in which it rests, and to drop it therein from above. This has been found to be a difficult operation, owing to the great weight of the full cases, and there has been a liability to "pi" the type by carelessly removing the case from the supporting-frame. I avoid these difficulties by pivoting the cradle in which the type-case rests, so that it can be rocked down within reach of the operator, and subsequently raised to its position of operation in the machine.

My improvement has a special relation to that class of type-setting machines in which the type are held in combined cases, and is shown as applied to one invented by C. W. Dickinson and myself.

It is very desirable in this class of machines that the cases should be easily removed without disturbing the relations of the type, for the reason previously mentioned, and it is also desirable that these cases should be as large as possible, in order to supply the setter with the fewest possible changes of the cases.

In making the cases large they become heavy and less easily managed.

Part of my improvement is intended to aid the operator in handling heavy cases, and in leaving undisturbed the relations of the type in the cases when removed.

My invention can be readily understood from the accompanying drawings, in which—

Figure 1 represents a general elevation of my apparatus; Fig. 2, the front elevation of my back plate; Fig. 3, the plan of the same; Figs. 4, 5, and 6, views of my adjustable race.

The frame or cradle A, Fig. 1, is pivoted on the shaft B, fixed to the cradle-stand P, on which it can be rocked by the handle A<sup>2</sup>, pivoted at A<sup>3</sup> into a vertical position resting on the bearing A', or into a horizontal position resting on the bearing O. Fast to this cradle are the glass plate K, the guide-bar E, the roller F, and the rest-bar W. A machine type-case, C, is shown in the cradle A in its vertical position standing upon the support-bar J, behind the glass K, against which it is held by the wedge-roller L. When the case is in place the lowest letter in each channel of the case, as at T, is in front of its plunger D, which the depression of the key D' will, through X X X, force against that letter, pushing it forward until it rests against the roller F, when gravity, acting upon its free foot, drops it into its channel in the back plate, G, down which it slides to the race I. When the case A is rocked backward into the horizontal position shown in the dotted lines any letter that may have been accidentally left in the guide-bar falls back into the case, the roller L drops from M' to M, and the case is easily withdrawn from the cradle, sliding on the shelves Q and the roller at M. The end of the full case is then lifted upon the shelf Q and the case slid into its place, the cradle is rocked upward, the roller L falls forward behind the case, holding it firmly against the glass K, and the operation of type-setting can again proceed.

Attached to the bottom of the cradle A are two springs, S and S', which have hold of the short lever R, attached to the bottom of said frame, and bear against arms R' and R<sup>2</sup>. The object of these counterbalance-springs, which are made of the desired tension, is to allow the rocking of the cradle into its upright or depressed position without unnecessary jar or shock. This rocking can be readily accomplished by means of the handle A<sup>2</sup>, pivoted at A<sup>3</sup>, the point of which enters a socket at f'.

In order to operate the cradle the handle



$g'$ , having the entering-point  $d'$ , is unscrewed out of the socket  $f'$ , when the handle  $A^2$  can be raised, and by means of it the case  $A$  can be rocked into the position shown by the dotted lines.

$X'$  represents a safety-lever, held in its upright position by a spring,  $X^2$ , against the stop  $X^3$ , which, when moved downward, actuates another lever,  $Y$ , which strikes against the line of bell-cranks  $X$ , and withdraws any of the plungers  $D$  which may have been accidentally detained in the type-cases. By holding this lever  $X'$  down from the stop  $X^3$  by means of the screw  $X^4$ , the keys  $D'$  are locked and the machine cannot be operated. The use of this safety-lever and cradle obviates the danger of injury to the machine from the detention of plungers in the case to be removed, and the danger of throwing into "pi" any column of type whose lowest letter may project into the guide-bar when its case is removed.

$H$  represents my improved gate, which is readily removed from the machine without altering its adjustment or disturbing any of the other parts.

$a$  represent the pendulum with the gate attached;  $b$ , the pivots;  $c$ , the stand;  $d$ , the adjustable stand;  $e$ , the adjusting-spring of the pressure-screw, and  $g$  the stop-screw.

By arranging the adjusting parts away from the throat of the back plate,  $G$ , they are not affected by dust and dirt, as before, and therefore preserve their delicacy intact. This pendulum  $a$  can be removed with its pivot  $b$  from the support-stand  $d$ , cleaned, and returned without interference with its other parts.

Figs. 2 and 3, Sheet 2, represent improvements in the back plate,  $G$ , of the machine. It is desirable that each type, of whatever weight, should occupy, as nearly as possible, the same time in passing from the case through the back plate to the race. To accomplish this I make the back plate of different heights, as shown in Fig. 2. The center division,  $x$ , of grooves is made longer or higher than the wing-divisions  $y$  and  $z$ . I make the center channels,  $k$  and  $k$ , of  $x$  a little longer than the inner channels,  $m$   $m$ , of the wings, and the outer channels,  $o$   $o$ , of  $x$  longer than the outer ones,  $p$   $p$ , of  $y$  and  $z$ . Type of equal weight will pass through these two sets of channels  $p$  and  $o$  in approximately equal times, as the channels near the center impart less friction to the moving type, but being longer give to this faster-moving type a greater distance to traverse.

Fig. 3 represents a top view of this back plate,  $G$ , showing the grooves to increase in depth (for the heavier type) in the  $x$  division from the center outward, while in the wing-divisions they increase in depth outward from the  $x$  division. This construction of the back plate and its grooves equalizes the time occupied by the type in falling, and permits the key-board to be more satisfactorily arranged.

In Fig. 2 is likewise shown an attachment

for the insertion into the line which is passing from the setter of quadrats or longer distinguishing type or spaces for the purpose of indicating to the justifying operator, who justifies the type as they pass from the machine, that a paragraph should be made at that point. The distinguishing type or space usually employed is of a greater length than the type which are being set in the apparatus, whereby the eye of the justifier is readily directed. A series of these quadrats or long spaces rest in the channel  $u$ , (shown on the left side of the back plate,) the lowest one resting against the corner or shoulder  $v$ , each quadrat resting against and supported by the one below it in the line. The last quadrat, having its foot resting against the shoulder  $v$ , has its upper end against the shoulder or guide on the opposite side of the channel. If the finger of the operator be pressed into the hollow  $w'$ , which exposes the quadrat to the action of the finger, it is obvious that the lower end of the quadrat will be raised free of the shoulder  $v$ , since the upper end of the shoulder  $q$  acts as a fulcrum or bearing-point, and the type will then slide down the channel  $u$  into the race.

Figs. 4, 5, and 6 represent improvements in the race whereby the same is made adjustable, while means are provided for sustaining the type as they pass down such race.

$i$  represents the stationary side of the race;  $l$ , the movable side. The side  $i$  is provided with the openings  $s$   $s$ , to allow the escape of any dirt which may pass out with the type, or which might serve to impede its progress in the race. The fixed side  $i$  and the bottom  $n$  of the race are one piece. The side  $l$  is made adjustable on the pivot  $r$  by means of the eccentric pivot  $h$ , having the milled handle  $h'$ . By turning this handle on the eccentric pivot the adjustable side pivoted at  $r$  can be thrown into the position shown in Fig. 6, where the channel is closed. Attached to the adjustable side  $l$  are the pressure-springs  $t$  and  $t'$ , which serve to maintain the type upright in the channel.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a type-setting machine, the combination of a pivoted type-case-supporting frame with a wedge-roller, which serves the double purpose of locking the case within the frame when the frame is elevated, and also serves as a roller for the support and withdrawal of the case, substantially as described.

2. In a type-setting machine, the combination of a series of reciprocating plungers with a hand-moved safety-lever, by means of which the plunger can be certainly withdrawn from the type-cases, substantially as described.

3. In a type-setting machine, the combination of operating-keys and a locking apparatus, substantially as described, whereby the operation of the machine can be prevented, excepting when the keys are unlocked by the operator.



4. In a type-setting machine, the combination of a swinging gate, beneath which the type passes, a springing supporting pendulum, and the varying or adjusting parts of such gate  
5 operating upon the pendulum at a distance from the gate itself, whereby delicacy of adjustment and freedom from dirt in the adjusting parts are obtained, substantially as described.

10 5. In a type-setting machine, an improved back plate, to the channels of which the type are delivered at three different levels, the center being higher than the two wings, the channels of each of these three series deepening  
15 from the center to the outside, substantially as described.

6. In a type-setting machine, an apparatus, substantially as described, by means of which distinguishing quadrats or their equivalent  
20 may be inserted in a line of type issuing from the setter.

7. In a type-setting machine, a race having a variable or adjustable side, substantially as described.

8. In a type-setting machine, a race having  
25 a variable or adjustable side and type-supporting spring, substantially as described.

9. In a type-setting machine, a race having a variable or adjustable side and provided with holes s s for the escape of dirt, substantially  
30 as described.

10. In a type-setting machine, a pivoted counterbalanced type-supporting frame for the purpose of avoiding the jar on the elevation or depression of said frame, substantially as de-  
35 scribed.

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Witnesses:

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WM. J. SAWYER.