

(No Model.)

4 Sheets—Sheet 1.

A. KELSEY.

SOLE EDGE SETTING MACHINE.

No. 366,669.

Patented July 19, 1887.

Fig. 8.

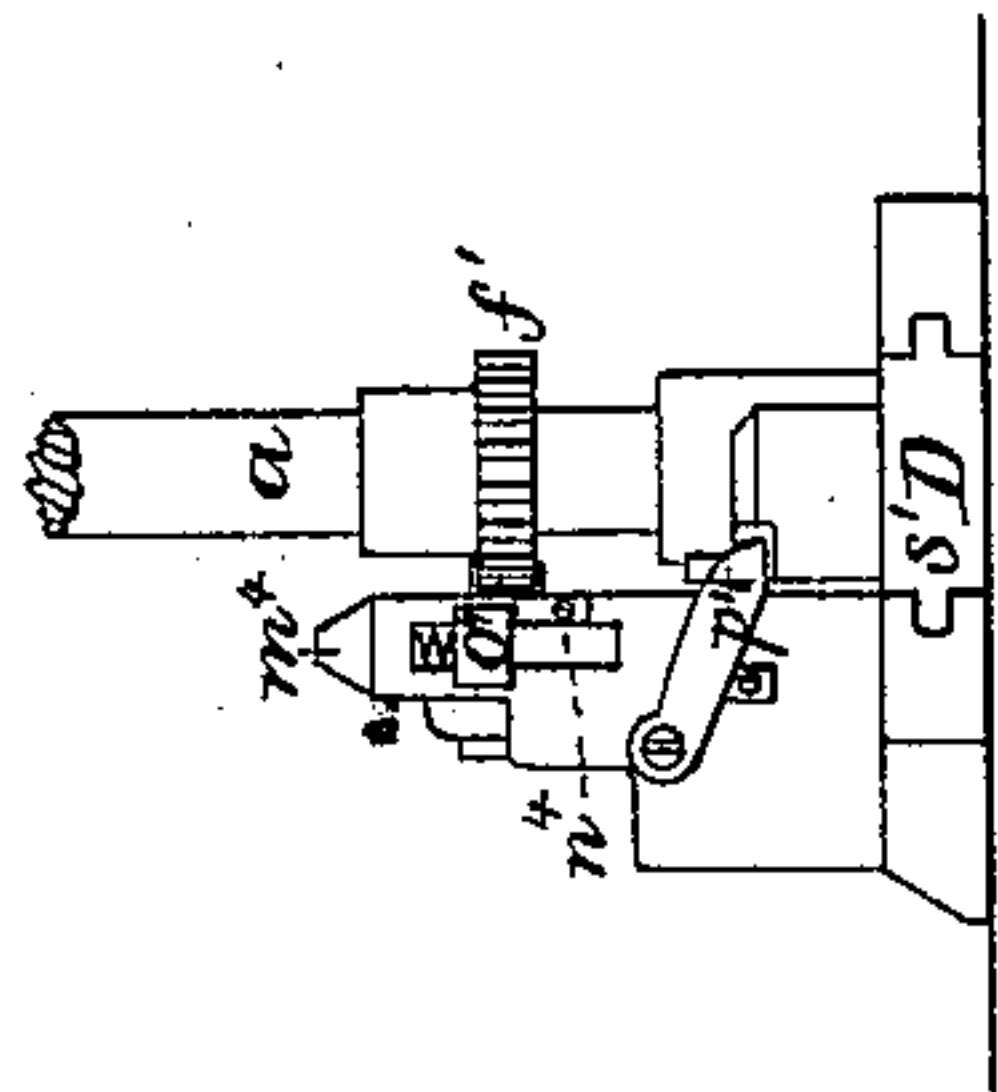


Fig. 7.

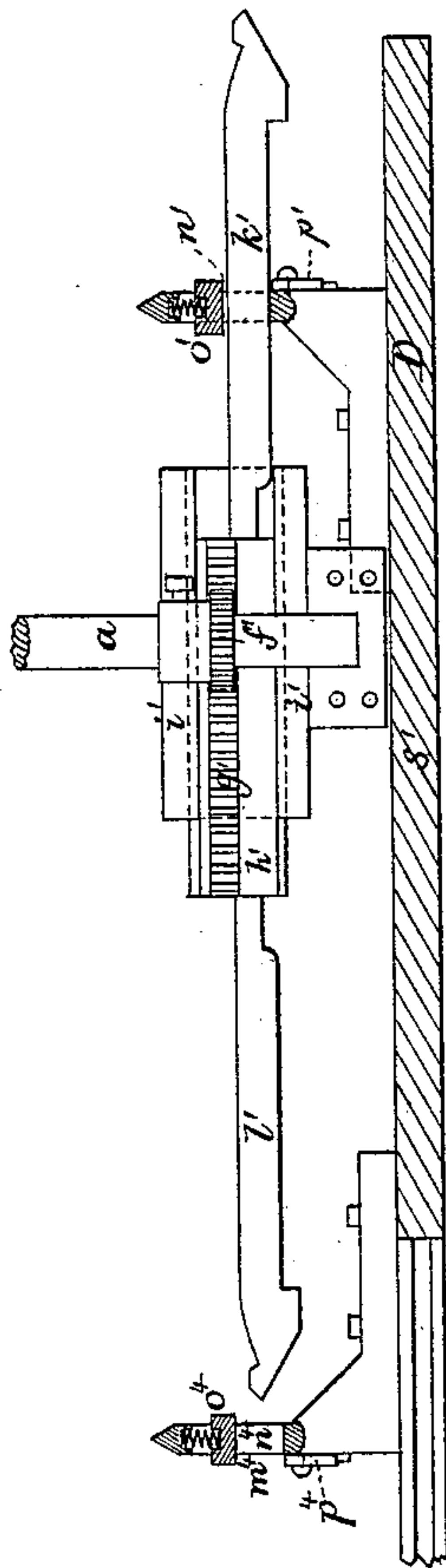
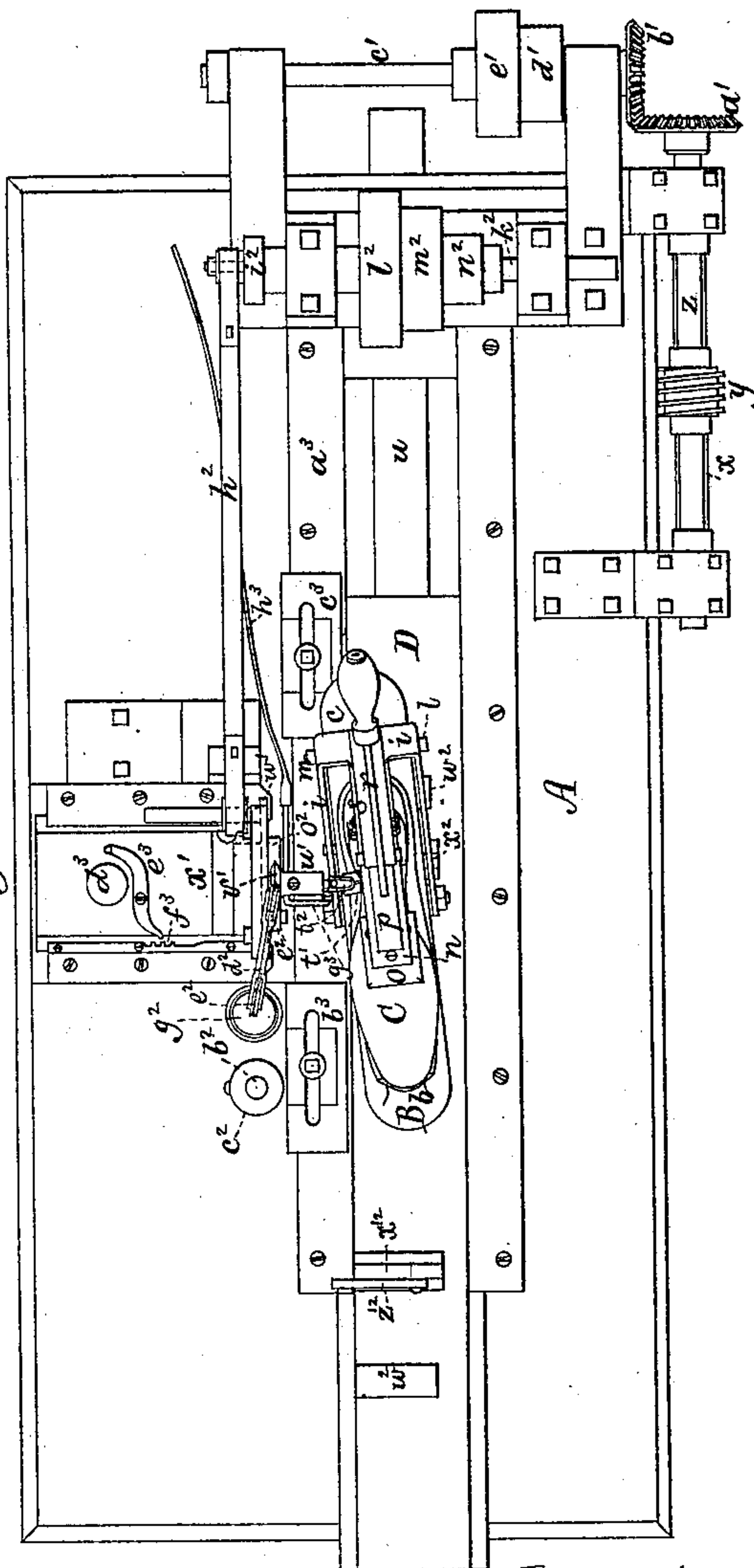


Fig. 1.



Witnesses.

*S. N. Piper,*

*W. B. Ferry.*

Inventor.

*Albert Kelsey.*

*by R. H. Day atty.*

(No Model.)

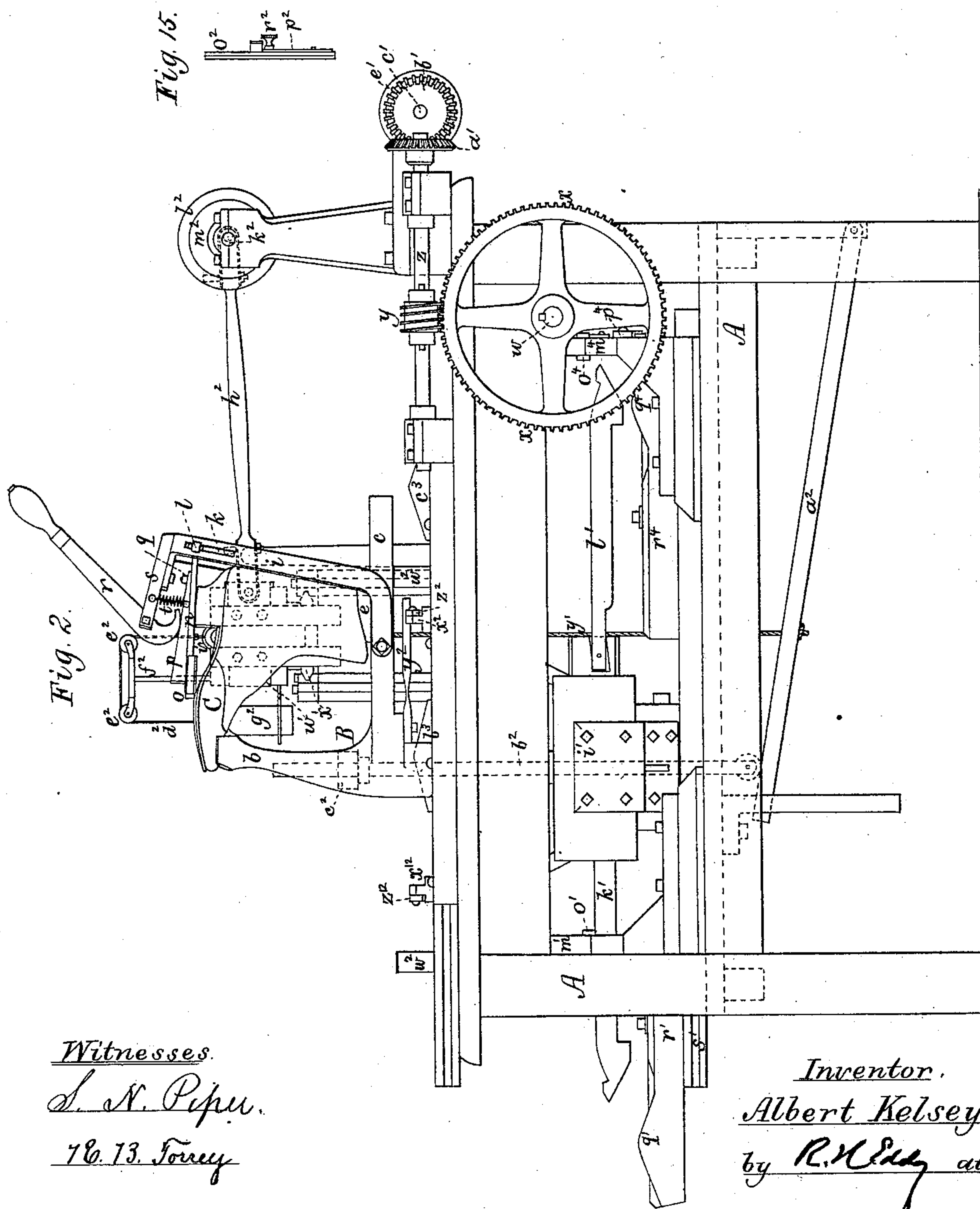
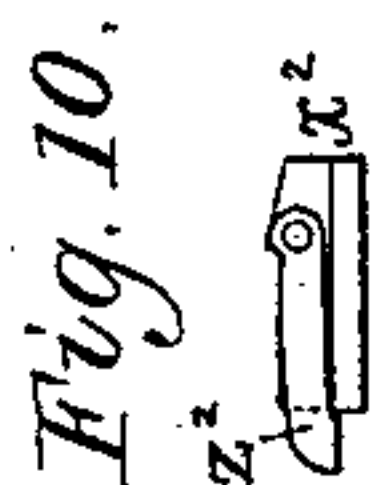
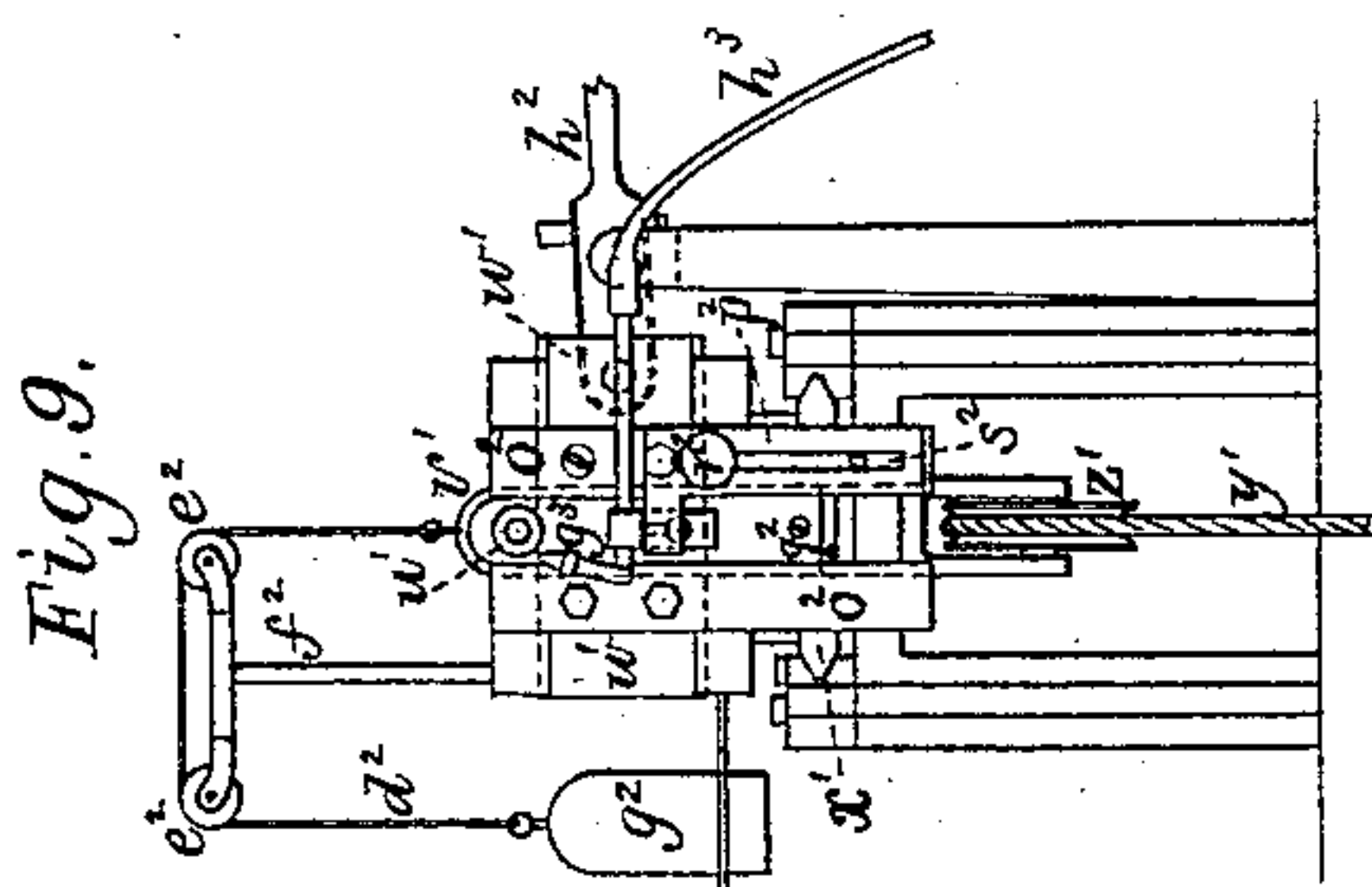
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A. KELSEY.

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No. 366,669.

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Witnesses.

S. N. Piper.

76. 73. Torrey

Inventor.

Albert Kelsey.

by R. M. Eddy atty

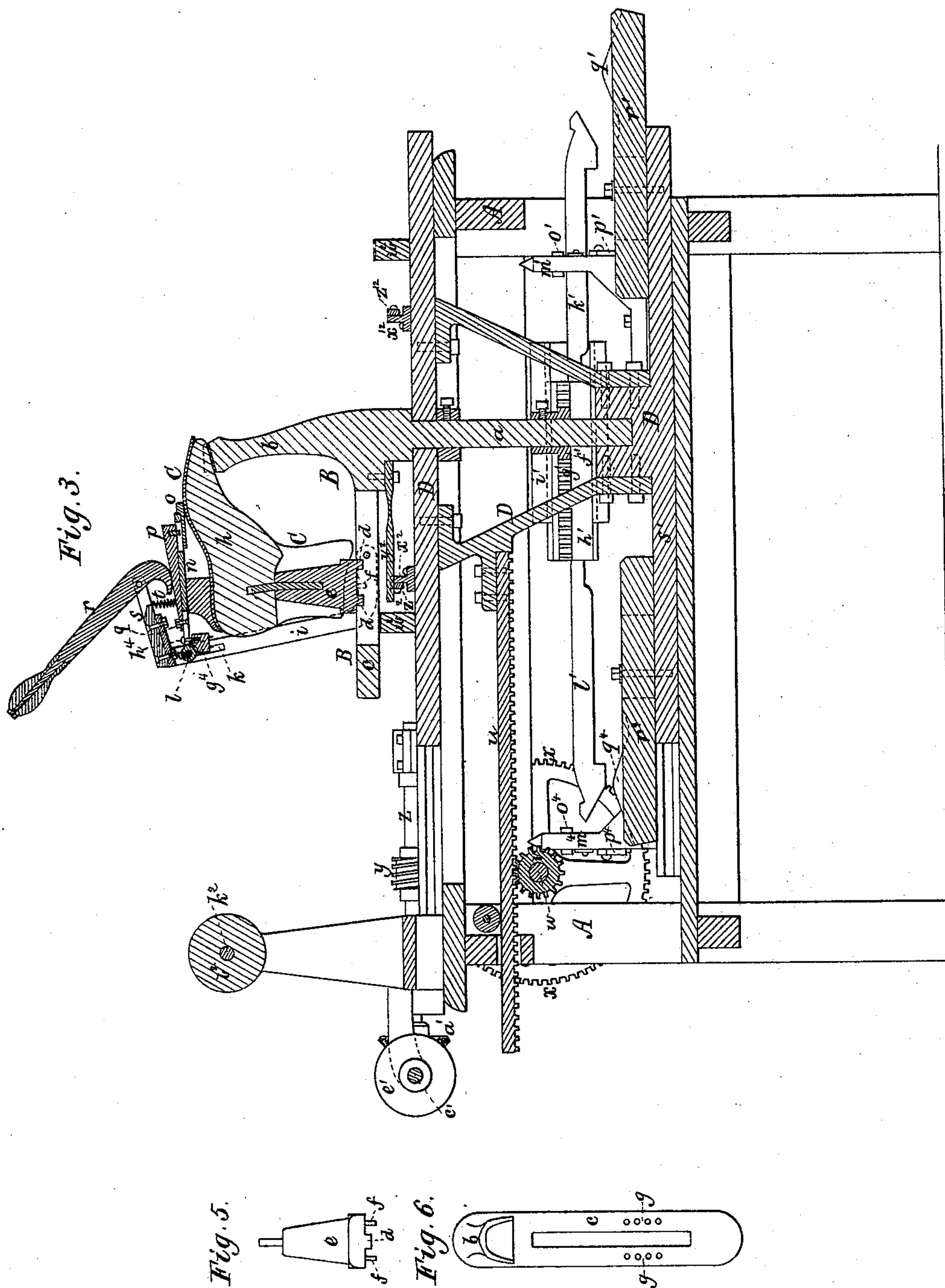
(No Model.)

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A. KELSEY.  
SOLE EDGE SETTING MACHINE.

No. 366,669.

Patented July 19, 1887.



Witnesses.  
S. N. Piper.  
76 73 Torrey

Inventor.  
Albert Kelsey.  
by R. M. Kelly atty.



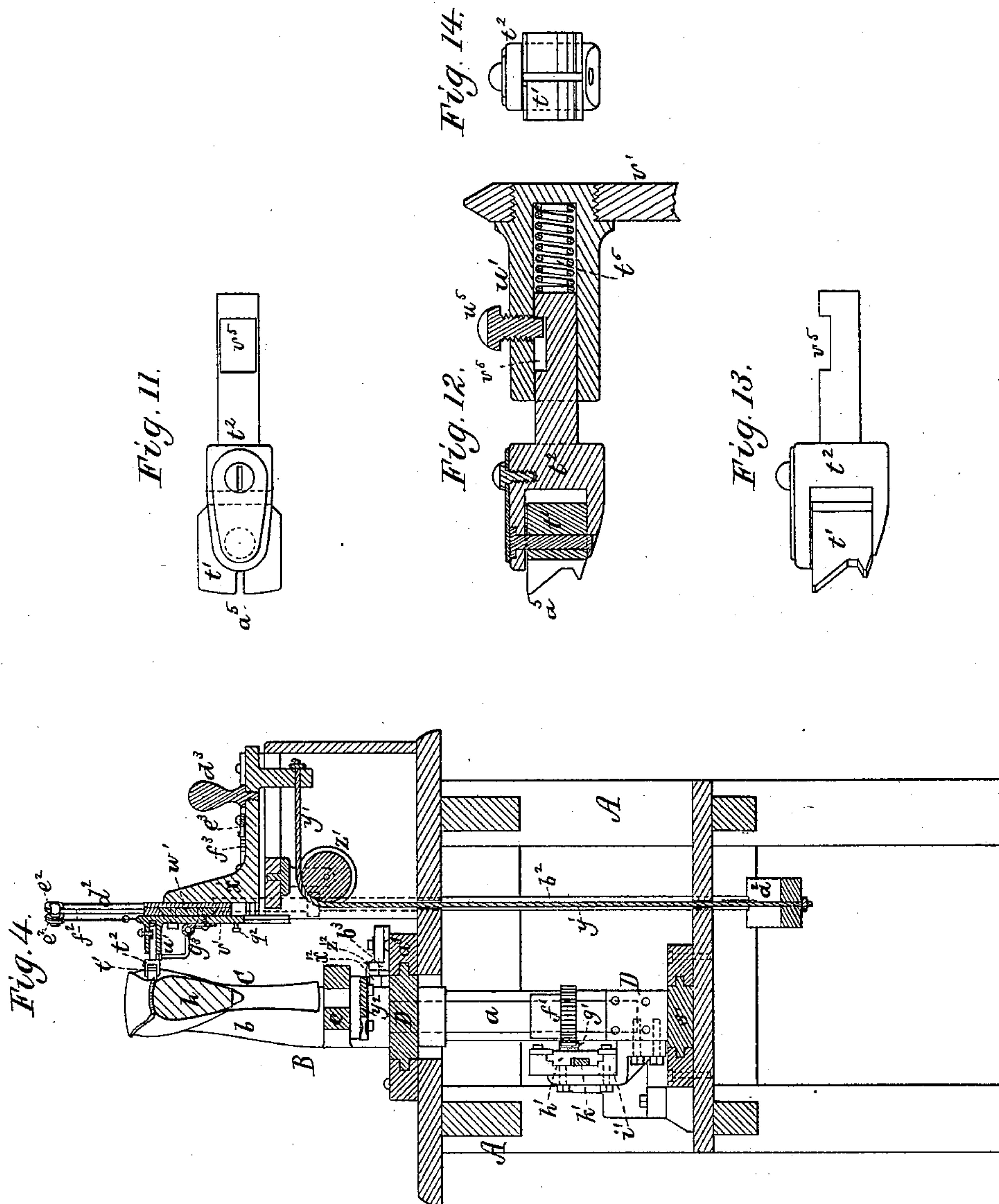
(No Model.)

4 Sheets—Sheet 4.

A. KELSEY.  
SOLE EDGE SETTING MACHINE.

No. 366,669.

Patented July 19, 1887.



Witnesses.  
*S. W. Piper*  
*Chas. B. Torrey*

Inventor.  
*Albert Kelsey*  
*by R. H. Sedy atty.*



# UNITED STATES PATENT OFFICE.

ALBERT KELSEY, OF SWAMPSCOTT, MASSACHUSETTS.

## SOLE-EDGE-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 366,669, dated July 19, 1887.

Application filed December 2, 1886. Serial No. 220,441. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT KELSEY, of Swampscott, in the county of Essex, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Shoe-Sole-Edge-Setting Machines; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a front elevation, and Fig. 3 a longitudinal section, of a machine embodying my invention, the nature of which is defined in the claims hereinafter presented. This section is taken to show the parts in front of the plane of section. Fig. 4 is a transverse section of it, taken through the setting-tool. Fig. 5 is a side view of the heel-post of the jack, showing the studs extending down from its base. Fig. 6 is a top view of the arm of the jack, showing its two ranges of holes. Fig. 7 is a back view or elevation, and Fig. 8 an end view, of the mechanism for turning the jack. Fig. 9 is a front elevation of the setting-tool operative mechanism. Fig. 10 is a side view of one of the abutments  $x^2$ , hereinafter described, with its spring-tripper. Fig. 11 is a top view, Fig. 12 a longitudinal section, (with its tubular bearing  $u'$ ,) Fig. 13 a side elevation, and Fig. 14 an end elevation, of the setting-tool, on an enlarged scale. Fig. 15 is an edge view of the gage  $p^2$  and guide  $o^2$ , to which it is applied.

The machine, when having mechanism for reciprocating its jack carriage or slide, is automatic, it, after a shoe may have been properly applied to the jack, performing the operation of "setting" the entire edge of the sole of such shoe, except the heel part of such edge.

In the drawings, A denotes the frame for sustaining the principal operative parts of the machine. B is the jack for supporting a shoe, C, while in the act of having the edge of its outer sole finished or "set." The said jack is pivoted to a carriage or slide, D, so as to be capable of being revolved horizontally, the said carriage being adapted to the frame A, so as to be movable lengthwise and rectilinearly therein. The pivotal shaft or spindle of the jack is shown at  $a$  as arranged immediately under the post  $b$ , on which the shoe near its toe rests. The lower part of the jack is an arm,  $c$ , which, arranged horizontally, is slotted

lengthwise to receive a projection,  $d$ , from a heel-post,  $e$ , such post resting on the top of the arm and being movable along such. From the base of the post two studs,  $f$ , project and enter holes in two ranges of holes,  $g$ , made in the arm and disposed lengthwise thereof, such studs and holes being for determining the distance of the heel-post from the toe post as the size of the last  $h$  may require.

The last, with the shoe C on it, is shown in position, such shoe and last being held in place on the heel and toe posts by a peculiar mechanism, which may be thus described: To the arm  $c$  there is a furcated yoke,  $i$ , which is pivoted to the arm, so as to be capable of being turned from an upright down into a horizontal or nearly horizontal position. Each leg of the yoke  $i$  has a slot,  $k$ , in its upper part. Through these slots a headed screw-bolt,  $l$ , extends horizontally, and has a nut,  $m$ , screwed upon it to hold it at any desirable altitude in the slots. A flat arm,  $n$ , pivoted at one end on the bolt, rests upon the heel of the shoe, and is furnished with a cushioned bearing,  $o$ , to bear upon the sole. On the said arm, which is slotted lengthwise, there is an inclined plane,  $p$ , that, adjustable longitudinally of the arm, is held to it by a clamp-screw and nut, (shown at  $q$ ,) the screw going through the slot in the arm. A cammed lever,  $r$ , shaped as shown, and fulcrumed to a projection,  $s$ , extending from the yoke  $i$ , bears at its lower or cammed part on the top of the said inclined plane  $p$ , and serves to depress the arm  $n$  and its bearing  $o$  upon the shoe, in order to secure the latter firmly within the jack. Springs  $t$ , attached to the inclined plane and to the projection  $s$ , serve to raise the arm  $n$  while the longer arm of the lever  $r$  is being so depressed as to relieve the said arm from the pressure of the cam. The adjustable wedge or inclined plane  $p$ , by being movable lengthwise on the clamping-arm, can be adjusted thereon as the size of a shoe may require to enable the cammed lever to work to advantage in pressing the clamping-arm downward for properly securing the shoe within the jack.

The carriage or slide D is provided with a toothed rack,  $u$ , for moving it rectilinearly. Such rack engages with a pinion,  $v$ , carried by a cross-shaft,  $w$ , arranged as represented, and having on its front end a worm-gear,  $x$ , which



in turn engages with a worm,  $y$ , fixed on another shaft,  $z$ , that by bevel-gears  $a'$  and  $b'$  receives motion from a driving-shaft,  $c'$ , provided with pulleys  $d'$   $e'$ , as shown.

5 On the pivotal shaft or spindle  $a$  of the jack there is fastened a pinion,  $f'$ , that engages with a rack,  $g'$ , fixed horizontally to a slide or carriage,  $h'$ . The said slide or carriage  $h'$  is supported and movable lengthwise within an extension,  $i'$ , from the carriage D, and there is  
10 pivoted to the carriage  $h'$  two hooked arms,  $k'$  and  $l'$ , which extend from it in opposite directions, there being in advance of each of such arms a stationary post,  $m'$  or  $m^4$ , having an  
15 opening,  $n'$  or  $n^4$ , in it for the arm to pass through, such posts being arranged as shown.

In the upper part of each post  $m'$  or  $m^4$  there is a spring-presser,  $o'$  or  $o^4$ , for depressing the arm, to cause it to hook upon the post at the  
20 proper time. Furthermore, there is pivoted to each post a short lever,  $p'$  or  $p^4$ , that extends under the hooked arm, and is for forcing it upward out of engagement with the post, such lever at the proper time being moved upward  
25 by a cam,  $q'$  or  $q^4$ , extending upward from a slide,  $r'$  or  $r^4$ . The two slides  $r'$   $r^4$  are adapted to an auxiliary slide or carriage,  $s'$ , fixed to the carriage D, before mentioned, and movable rectilinearly and lengthwise of the machine  
30 by and with the said carriage or slide D.

The edge-setting tool  $t'$  is arranged within, and so pivoted to a furcated carrier,  $t^2$ , as to be capable of turning horizontally or laterally therein, such carrier being journaled in a tubular bearing,  $u'$ , projecting from a slide,  $v'$ ,  
35 adapted to play vertically within another carriage,  $w'$ , that is adapted to slide horizontally in a third carriage,  $x'$ , supported by ways, so as to be movable transversely of the machine and rectilinearly toward and from the shoe.  
40 The end of the journal of the carrier  $t^2$  rests against a spring,  $t^5$ , in the bearing  $u'$ , and the said carrier is so held in connection with the said bearing by a screw,  $u^5$ , and a notch  $v^5$ , in the shank of the carrier, as to admit of its  
45 moving endwise against the spring, and also of turning axially sufficiently to allow the setting-tool to accommodate itself to the upward and downward curves in the edge of the sole.

50 To such carriage  $x'$  there is fastened a rope,  $y'$ , that goes over a guide-pulley,  $z'$ , and thence to and is fastened to a lever,  $a^2$ , arranged as represented. From this lever a rod,  $b^2$ , extends upward through the top of the frame A, such rod being to receive one or more weights,  
55  $c^2$ , to aid in moving the carriage  $x'$  forward, in order to keep the setting-tool with a suitable pressure against the sole-edge. To the upper part of the slide  $v'$  a rope or cord,  $d^2$ , is fastened, such rope being led over and in grooved guide-pulleys  $e^2$ , supported in a standard,  $f^2$ .  
60 The rope has a weight,  $g^2$ , fixed to it, such rope and weight serving to lift the carrier  $t^2$  upward, as occasion may require, to cause the edge-setting tool to conform to the sole-edge.  
65 Furthermore, the carriage  $w'$  has mechanism for reciprocating it horizontally, such mech-

anism consisting of a connecting-rod,  $h^2$ , pivoted to the carriage and to a crank,  $i^2$ , on the end of a shaft,  $k^2$ , such shaft being arranged  
70 as shown and provided with pulleys  $l^2$ ,  $m^2$ ,  $n^2$ , for revolving it by a belt from a prime motor.

There is applied to the front of one of the stationary vertical and parallel guides  $o^2$  of the slide  $v'$  an adjustable gage,  $p^2$ , to limit,  
75 with a screw,  $q^2$ , screwed into the slide  $v'$ , the extent of upward movement of such slide, in order to bring the edge-setting tool to its proper altitude to engage with the shoe-sole. This gage is slotted vertically, and is confined  
80 to the guide  $o^2$  by a set-screw,  $r^2$ , (see Figs. 9 and 15,) going through the slot  $s^2$  and screwed into the guide.

The slide D is furnished with two piers,  $w^2$ , to support the jack-arm  $c$  when in either of its  
85 extreme positions. Between the said piers there is extended up from the slide two abutments,  $x^2$   $x^{12}$ , against one of which a spring,  $y^2$ , fixed to the arm, butts or brings up, in order to hold the jack stationary in one of its extreme  
90 positions, such spring in like manner bringing up against the other abutment when the jack is in the other extreme position. There is pivoted to each abutment an arm or tripper,  $z^2$  or  $z^{12}$ , that extends transversely under the  
95 said spring, and there are fixed on one of the guideways  $a^3$  of the slide D two adjustable cams,  $b^3$   $c^3$ , which, as the tripper  $z^2$  or  $z^{12}$  by the slide D is carried lengthwise over and upon either of such cams, will be forced up-  
100 ward, so as to press the spring high enough above the abutment for the jacks to be revolved in proper time, and without obstruction from such abutment and spring.

In order to hold the edge setting tool back  
105 out of contact with the shoe when necessary, there is extended up from the carriage or slide  $x'$  a knob,  $d^3$ , and in advance of such there is a lever-catch,  $e^3$ , which, fulcrumed to the slide  $x'$ , is to operate or engage with a toothed rack,  
110  $f^3$ , fixed on one of the guideways of such slide  $x'$ , all being as represented.

For heating the edge-setting tool there is arranged under it a gas-burner,  $g^3$ , provided with a flexible pipe or hose,  $h^3$ , for conducting  
115 combustible gas to such burner as occasion may require.

The flat arm  $n$  of the jack, slotted lengthwise, as hereinbefore stated, has applied to it a block,  $g^4$ , having spurs or points extending  
120 down from it. This block is connected with the arm by a set-screw,  $h^4$ , which goes down through the slot in the arm and screws into the block. Such block is to be used when a shoe to be operated on has no heel projecting  
125 from its outer sole, the block under such circumstances being moved directly over the heel portion of the outer sole, which, when the arm  $n$  is forced down by the cammed lever  $r$ , will be held down firmly upon the last by the said  
130 block.

The setting-tool is slotted down its front face inwardly, as shown at  $a^5$  in the drawings, the slot causing it not only to turn or vibrate to



advantage against the sole-edge, but to remove the surplus blacking or coloring-matter from such edge while the tool may be in action thereon.

5 The operation of setting the edge of a boot or shoe sole by the hereinbefore-described machine may be thus described: A shoe or boot having been applied to a last and clamped to the jack, as shown in Figs. 1, 2, and 3 of the  
10 drawings, and motion being imparted to the shaft  $k^2$  by a belt running from a suitable motor around one of its pulleys, a short rapid reciprocating movement will be given to the setting-tool  $t$  by means of the crank  $i^2$ , connecting-rod  $h^2$ , and slide  $w'$ . The carriage  $x'$   
15 is next to be advanced toward the shoe by the hand of the attendant applied to the knob  $d^3$ , and the carriage D is to be in a position to admit of the tool commencing at the front end of the heel to set the edge of the sole. (See Fig. 1.) The shaft  $c'$  is next to be set in motion by  
20 power applied to one of its pulleys by means of a belt from a driving-pulley, and the carriage D will be moved to the right by means of the gears  $b' a'$ , shaft  $z$ , worm  $g$ , worm-gear  $x$ , shaft  $w$ , pinion  $v$ , and rack  $u$ . As the carriage D advances, the hooked arm  $l'$  will enter the opening  $n^4$  in its post  $m^4$ , and will elevate its presser  $o^4$ , and as soon as its hook has  
30 passed through the said opening the presser will force the hook down below the bottom of said opening. When this takes place, the hook of the arm  $k'$  will reach its post  $m'$ , and, as the carriage D still continues to move in the same direction, the hook of the arm  $k'$  will hold the carriage  $h'$  and its rack  $g'$  from moving. While  
35 this movement of the carriage D and the parts carried by it has been going on, the tripper  $z^2$  of the abutment  $x^2$  (against which abutment the spring  $y^2$  has borne and has held the jack from turning on its axis against the pressure of the setting-tool) has been raised by the cam  $c^2$ , and the spring  $y^2$  set free from the abutment  $x^2$  at the time when the hook of the arm  $k'$   
40 reached its post  $m'$ . The pinion  $f'$  will now, on account of the continued movement of the carriage D, be caused by the rack  $g'$  to turn the jack B on its axis. During the turning movement of the jack the toe of the sole will  
50 be set, and when the jack shall have turned one hundred and eighty degrees of a circle, or thereabout, the spring  $y^2$  will catch on the other abutment,  $x^{12}$ , and the other edge of the sole will now be in the proper position to be  
55 operated upon by the setting-tool. While the jack has been turning on its axis, the carriage D has been still moving to the right, and has carried the cam  $q'$  of the slide  $r'$  under and against the lever  $p'$  and caused it to raise the  
60 hook of the arm  $k'$  sufficiently to release it from its post and allow it to pass through the opening  $n'$ , and from under its presser  $o'$  during the further movement of the carriage D to the right, which movement ceases when the  
65 setting-tool reaches the front end of the heel

on the opposite edge of the sole from which it started.

In practice I apply to the rack  $u$  mechanism that will so operate the shipper of the driving-belt of the shaft  $c'$  as to cause the movement of the carriage D to cease at the moment the setting of the edge of the sole has been completed.

The setting of the edge of the boot-sole having been finished, as described, it, with its last, is to be removed from the jack, and its mate, with its last, substituted, the edge of the sole of which will be set in precisely the same manner as hereinbefore described, during the return movement of the carriage D.

Having thus described my said machine for setting the edge of the sole of a shoe, I claim—

1. The combination of the furcated yoke  $i$ , the arm  $n$ , adjustable on and pivoted to such yoke, as described, the inclined plane  $p$ , arranged and adjustable on the arm, as explained, and the cammed lever  $r$ , pivoted to a projection,  $s$ , from the said yoke, such yoke being pivoted to the arm of the jack, and all being to operate substantially as set forth.

2. The combination for moving the jack rectilinearly forward and backward in the machine and partially revolving such jack in each of its rectilinear movements, such combination consisting of the jack-carriage D and its rack  $u$  and pinion  $v$ , a mechanism for reciprocating such carriage rectilinearly, the pinion  $f'$  on the jack-spindle, the rack  $g'$ , auxiliary slide  $h'$  and its two hooked arms,  $k' l'$ , the stationary posts  $m' m^4$ , the pressers  $o' o^4$ , and the levers  $p' p^4$ , applied to the said posts, and the cams  $q' q^4$ , fixed to the slide  $r' r^4$ , connected with the jack-carriages.

3. The combination for supporting and operating the edge-setting tool, such combination consisting of the furcated carrier  $t^2$ , the vertical slide  $v'$ , with its rope  $d^2$  and weight  $g^2$ , the carriage  $w'$ , provided with mechanism for reciprocating it, as specified, and the carriage  $x'$ , having mechanism, as described, for pressing it forward toward the shoe, all being arranged and to operate substantially as set forth.

4. The combination of the adjustable gage  $p^2$  with the stationary guide  $o^2$ , and the movable slide  $v'$ , and its screw  $q^2$ , and lifting mechanism, as described, such slide  $v'$  having the edge-setting tool applied to it, as represented.

5. The combination, with the reversible jack and the jack-carrying slide D, of the cams  $b^3 c^3$ , applied to one of the guideways  $a^3$ , the abutments  $x^2 x^{12}$ , applied to the slide, the tripper pivoted to the abutments, and the spring  $y^2$ , carried by the jack.

6. The sole-edge-setting machine, substantially as described, consisting of the revoluble jack, its supporting-slide, and mechanism for reciprocating such jack-slide lengthwise in the machine, mechanisms for partially revolving the jack at the termination of each rectilinear movement of it, and the edge-setting tool pro-



vided with mechanism for reciprocating it, and other mechanism for supporting it, pressing it up to a sole edge and enabling it to adapt itself thereto, all being essentially as set forth.

7. The combination of the adjustable block  $g^4$ , as described, with the jack B, substantially as represented, consisting of the toe-rest post  $b$ , the arm  $c$ , extending therefrom, the heel-post  $e$ , the furcated yoke  $i$ , the arm  $n$ , pivoted to such yoke, the adjustable inclined plane  $p$ , applied to the arm  $n$ , and the cammed lever  $r$ , fulcrumed to the projection  $s$ , extending from the yoke  $i$ , all being essentially as set forth.

8. The combination, with the edge-setting tool  $t'$ , of the furcated carrier  $t^2$ , having the notch  $v^5$ , the tubular bearing  $u'$ , having the screw  $w^5$ , and spring  $t^5$ , the tool  $t'$  being pivoted to such carrier, and all arranged and to operate as described.

9. The setting-tool  $t'$ , provided with the slot  $a^5$ , extending down the middle of its operative face and inwardly therefrom, as represented.

ALBERT KELSEY.

Witnesses:

R. H. EDDY,  
R. B. TORREY.