

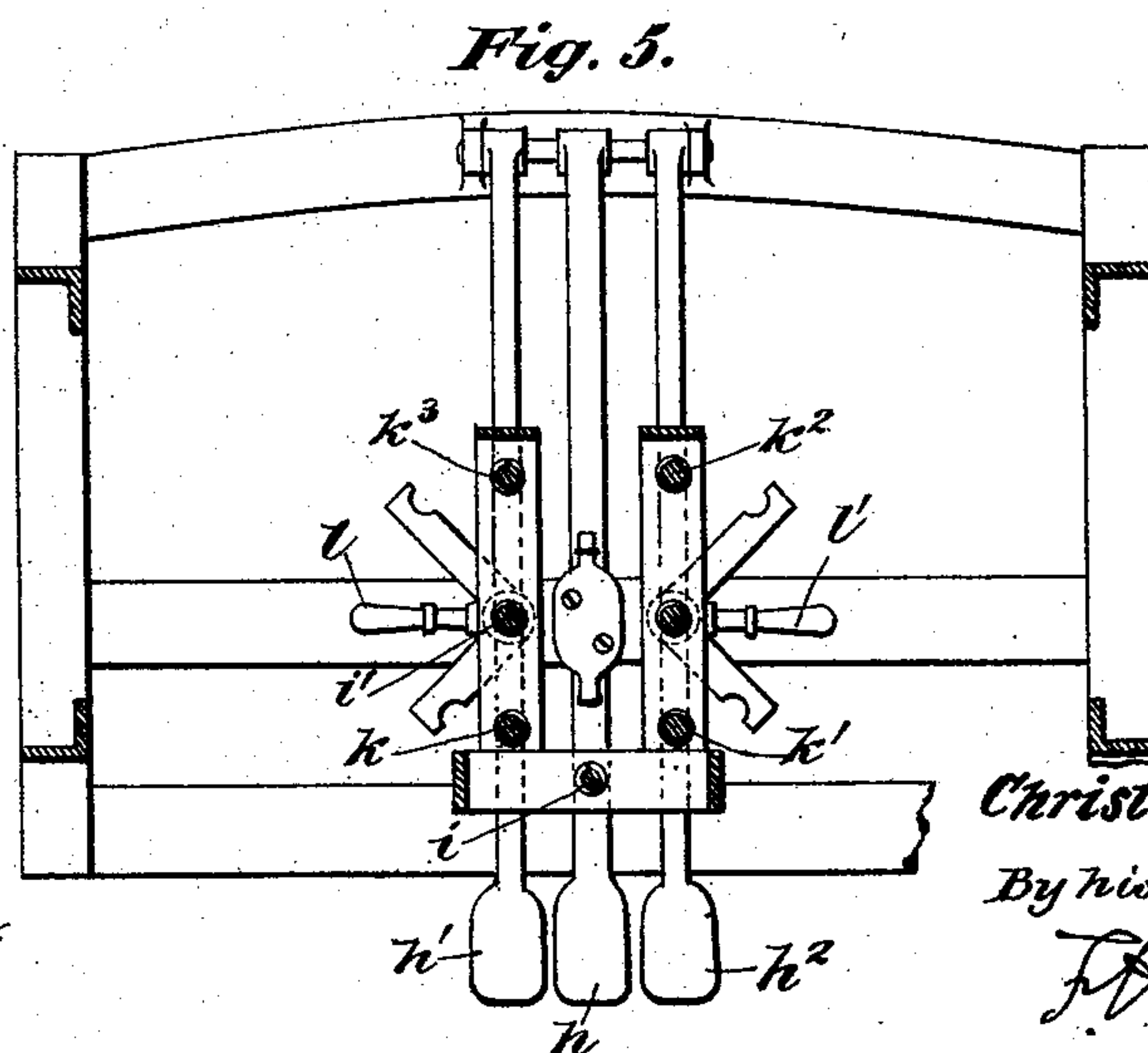
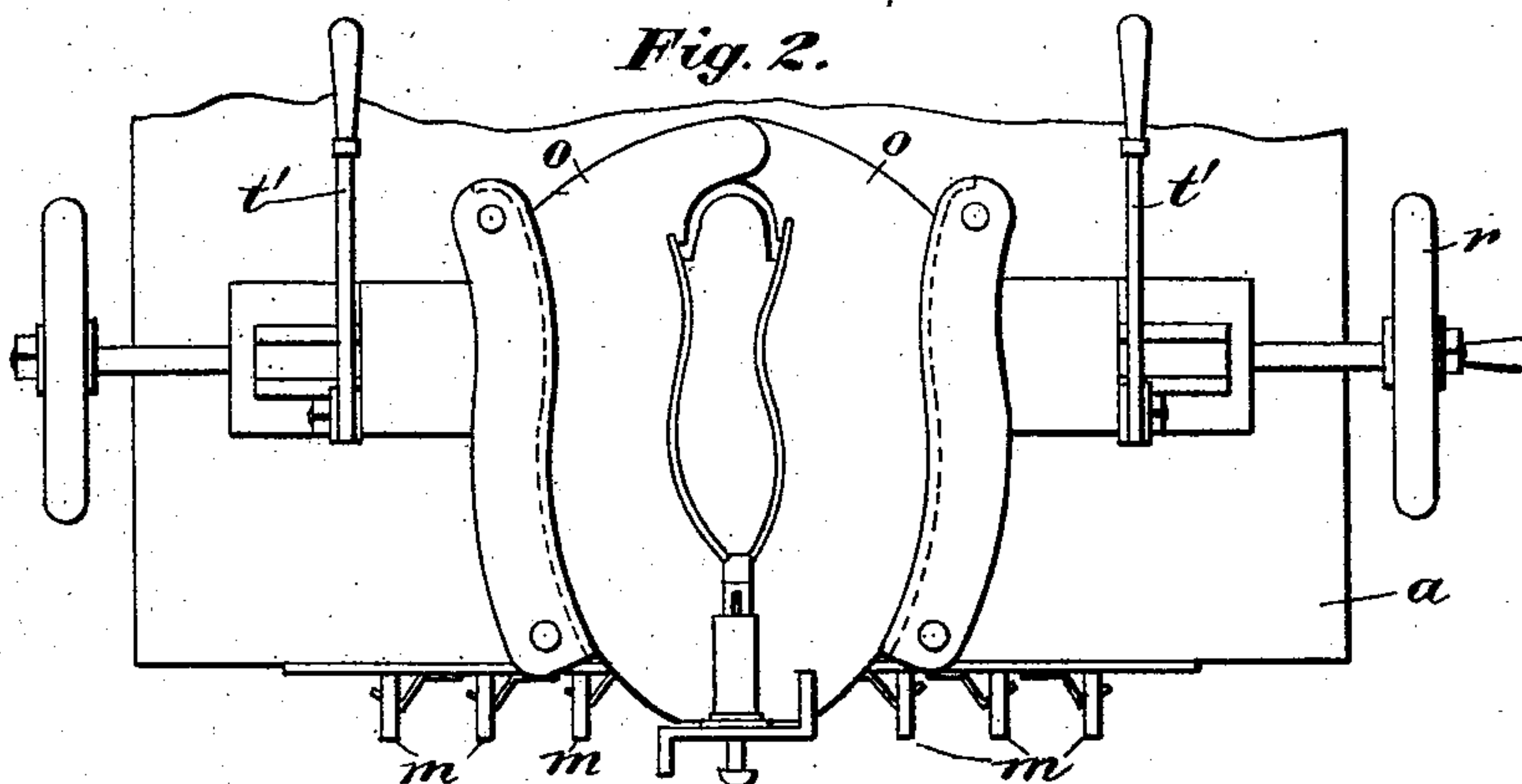
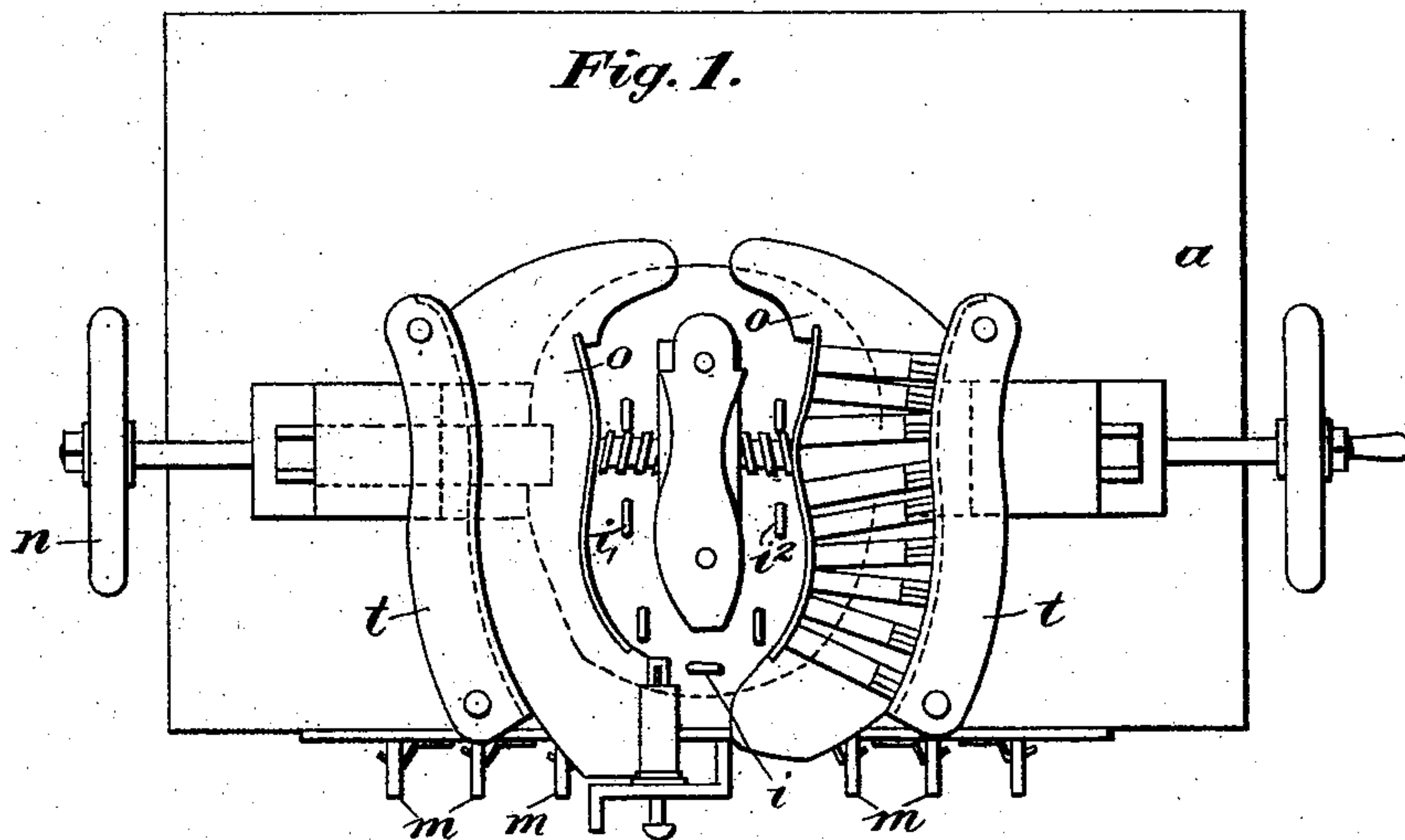
(No Model.)

3 Sheets—Sheet 1.

C. EISENBERG.
LASTING MACHINE.

No. 605,091.

Patented June 7, 1898.



Witnesses
Ch. Schmelz
Fred. J. Gole.

Inventor
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By his Attorney
J. H. Richards.

(No Model.)

3 Sheets—Sheet 2.

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Fig. 4.

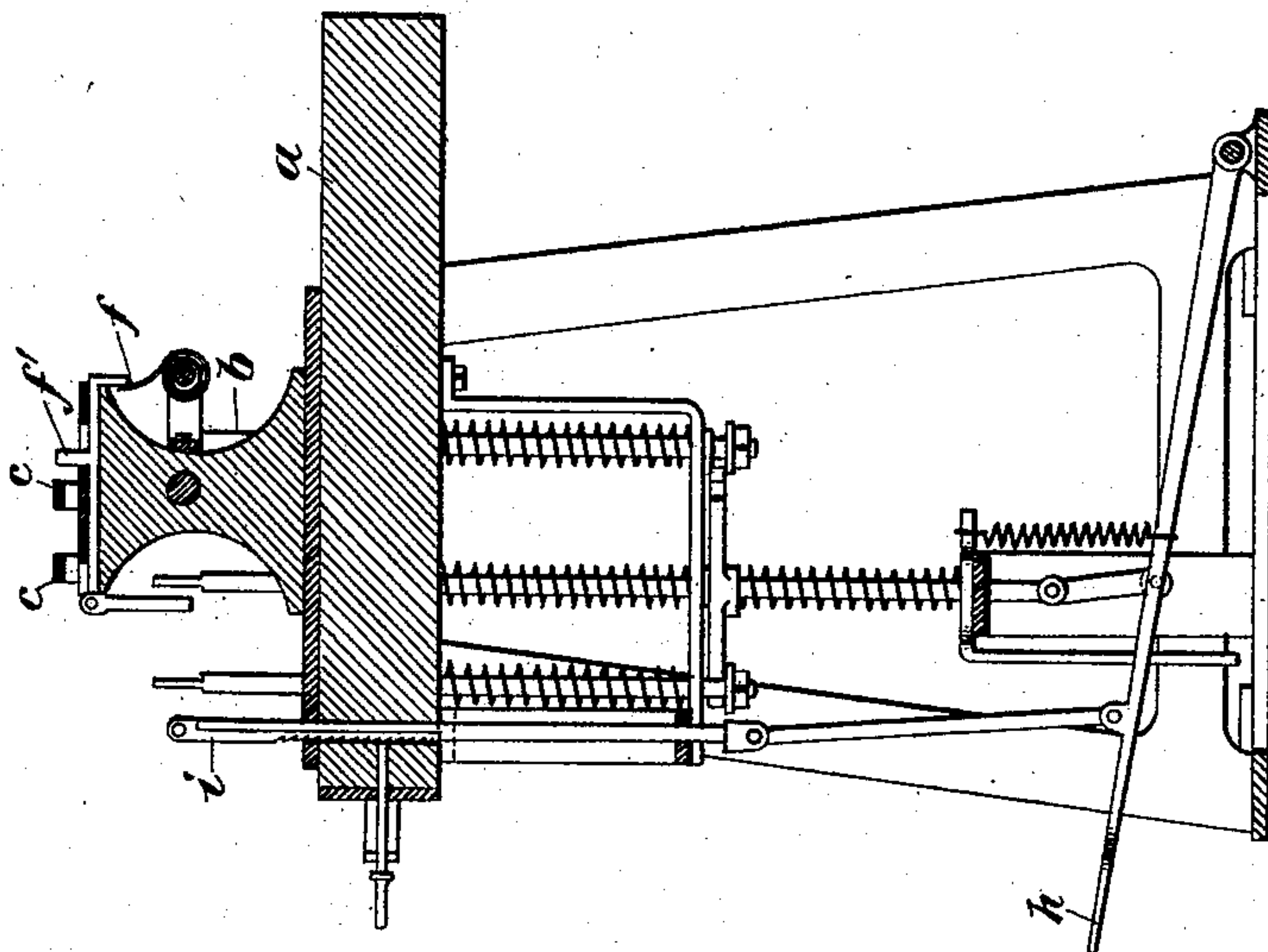
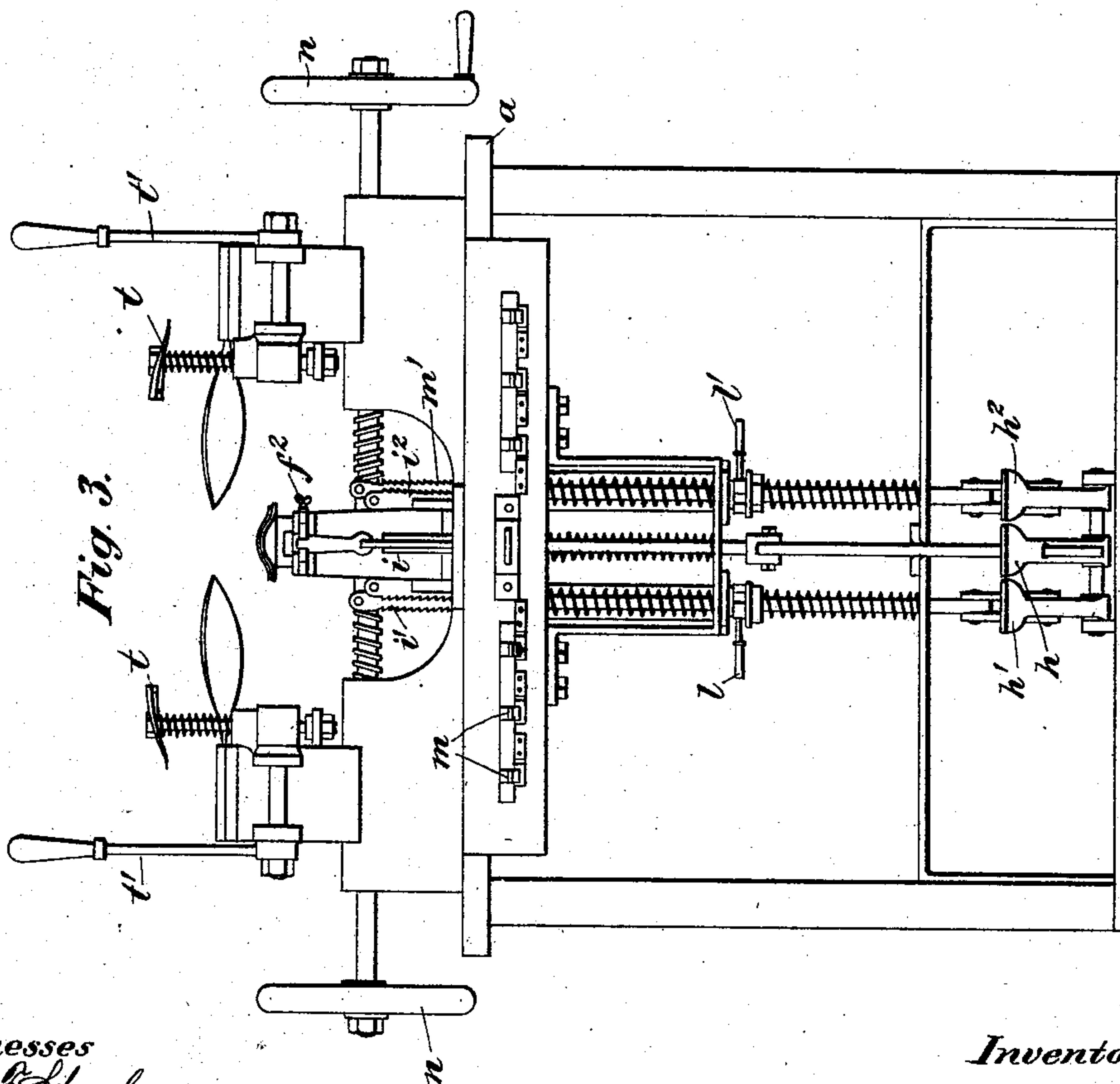


Fig. 3.



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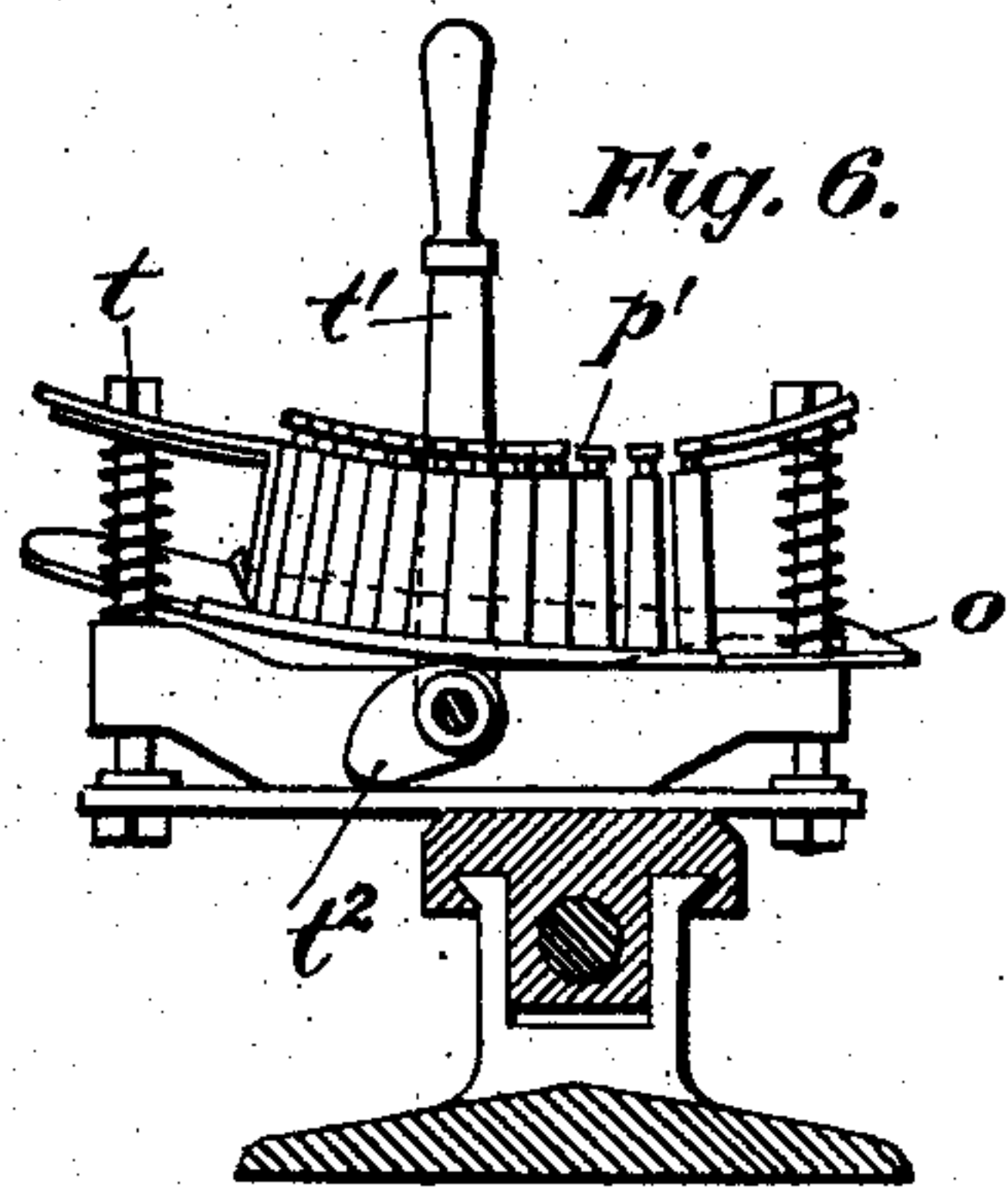


Fig. 8.

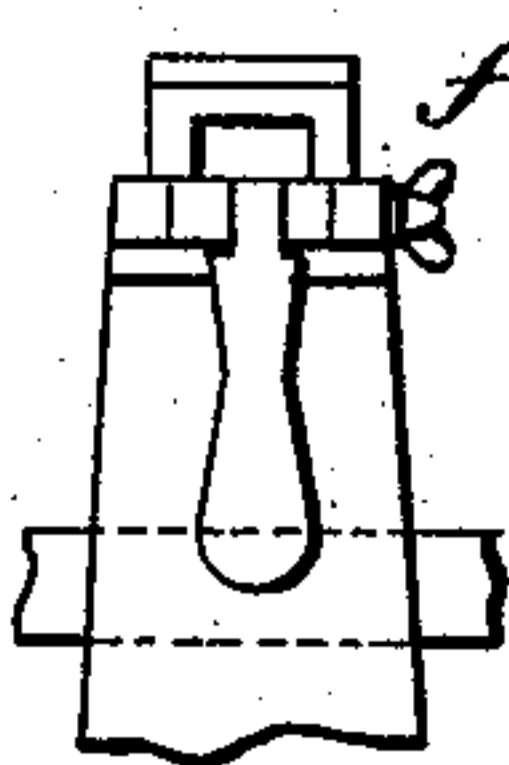


Fig. 7.

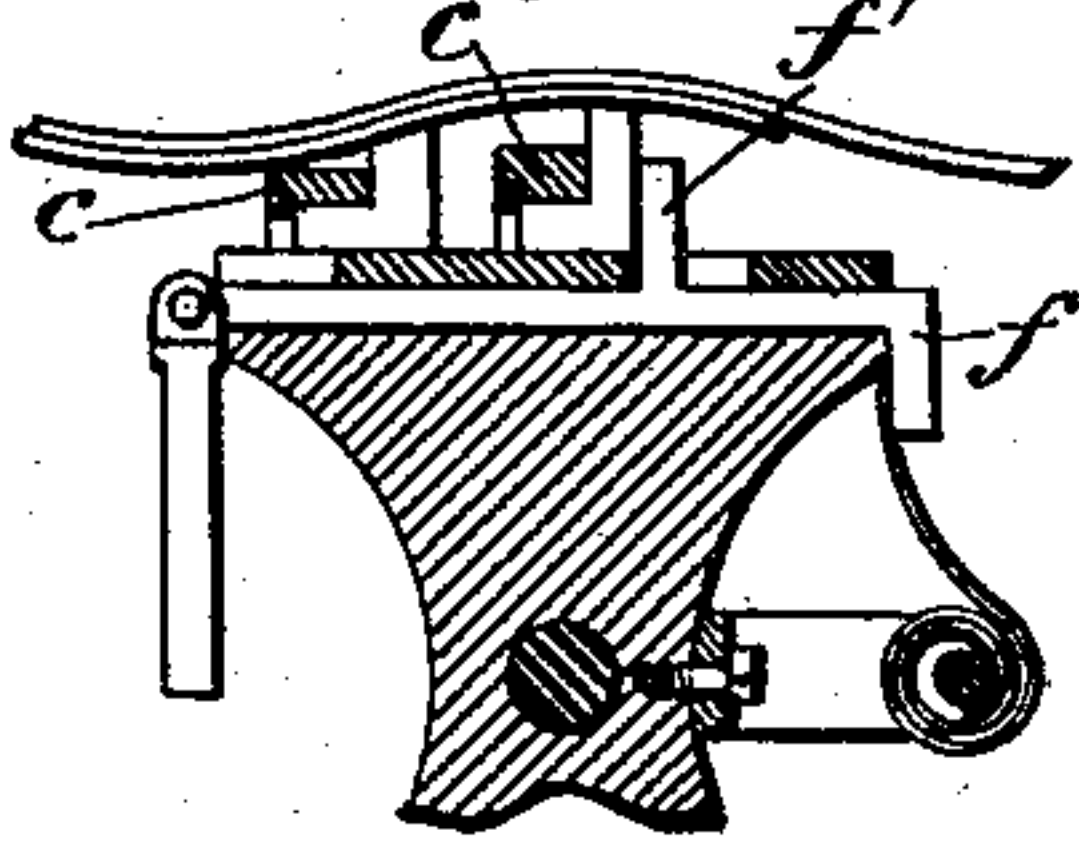


Fig. 15.



Fig. 16.



Fig. 9.

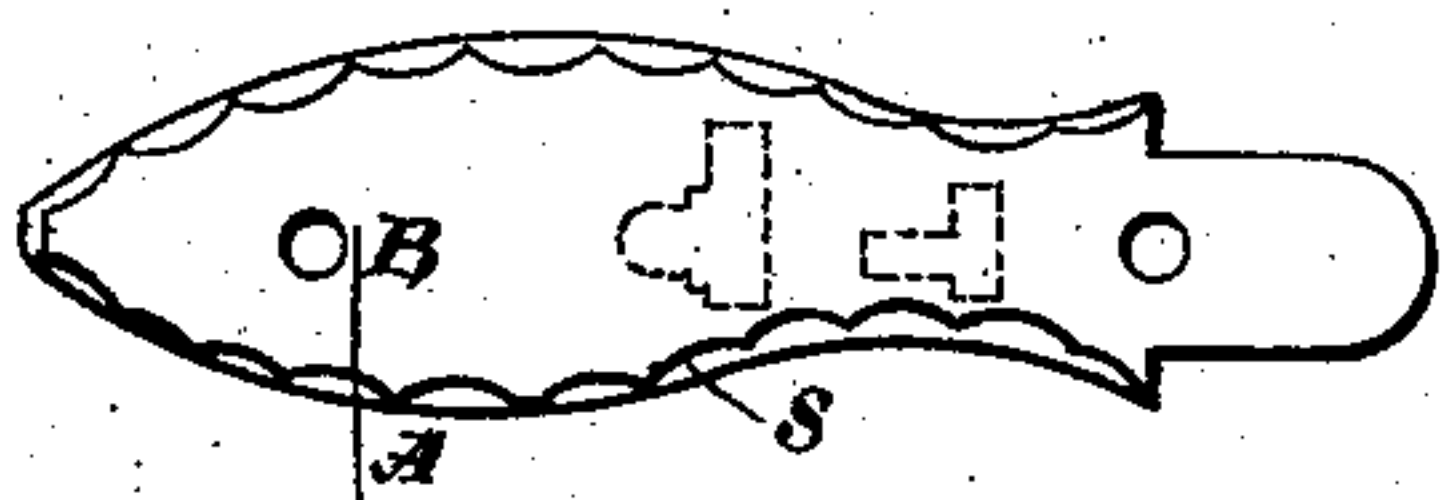


Fig. 10.

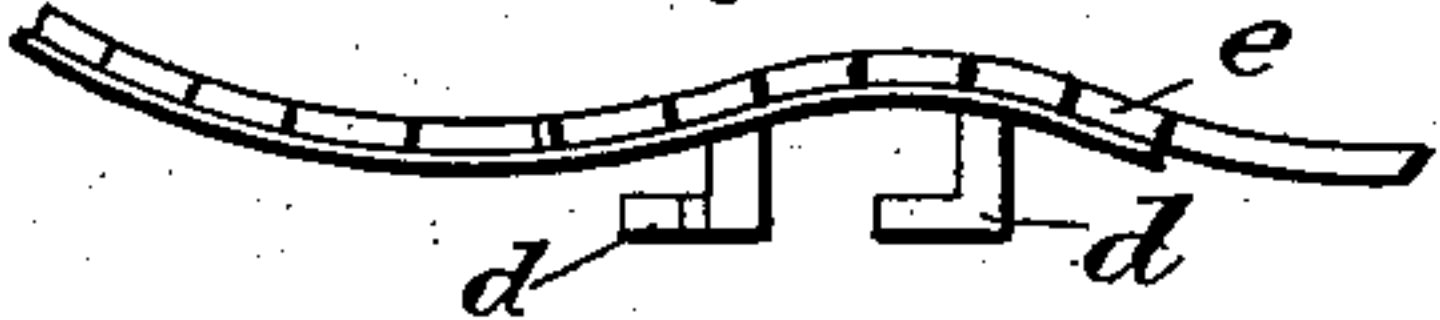


Fig. 9a.



Fig. 11.



Fig. 12.

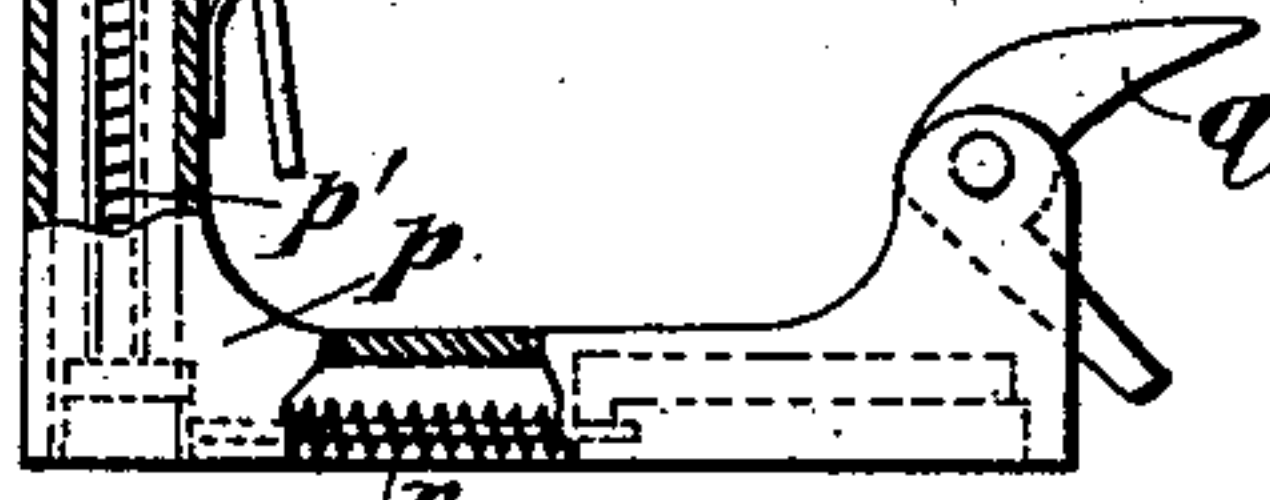


Fig. 17.

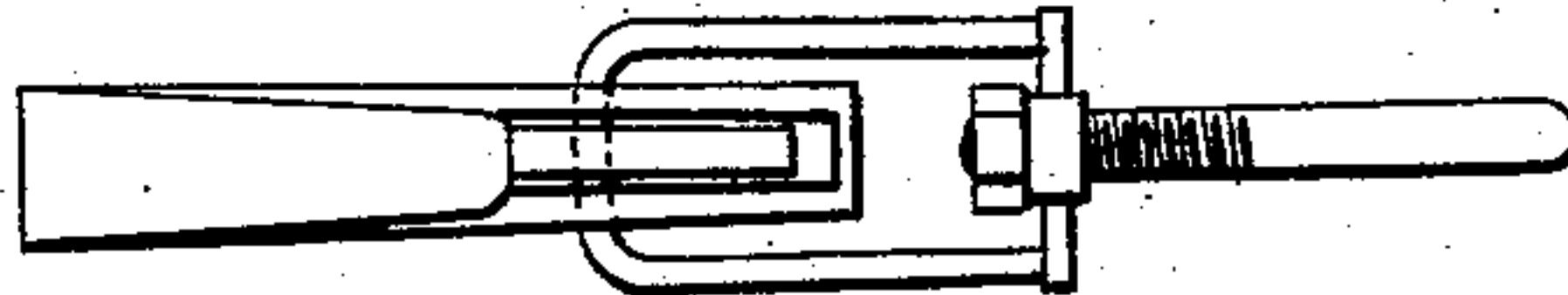


Fig. 18.



Fig. 13.

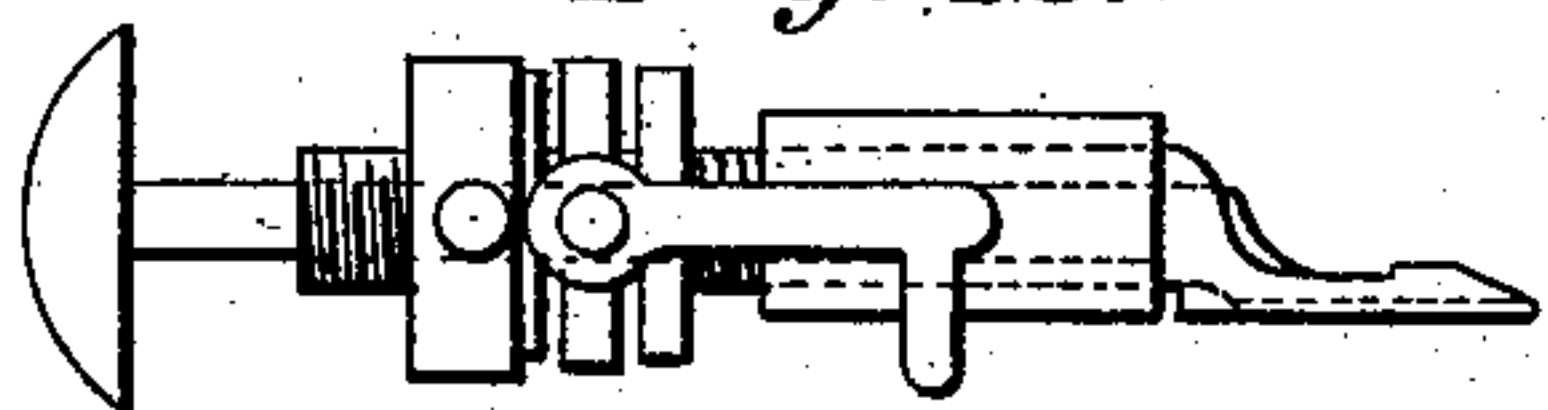


Fig. 14.

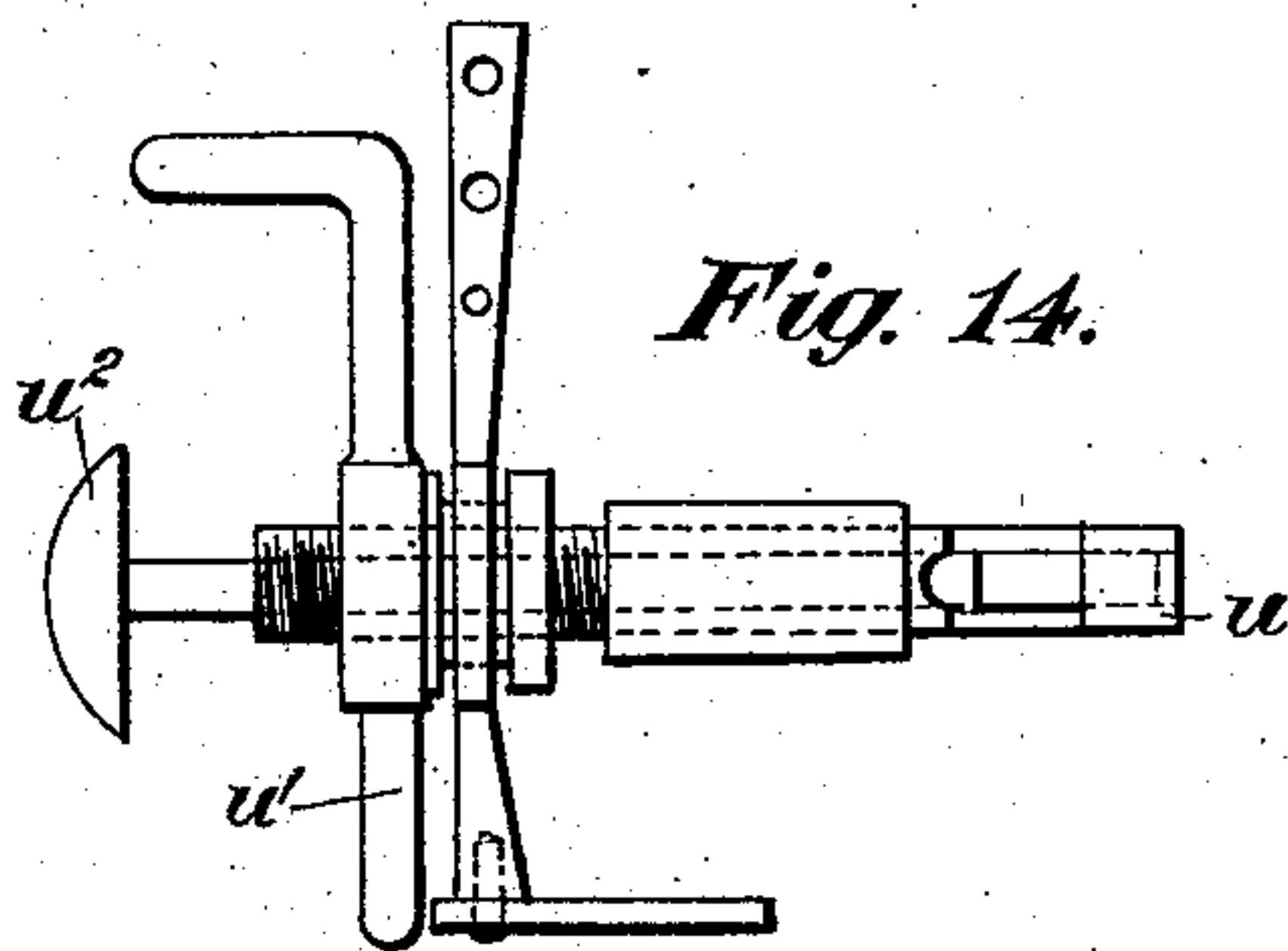


Fig. 20.

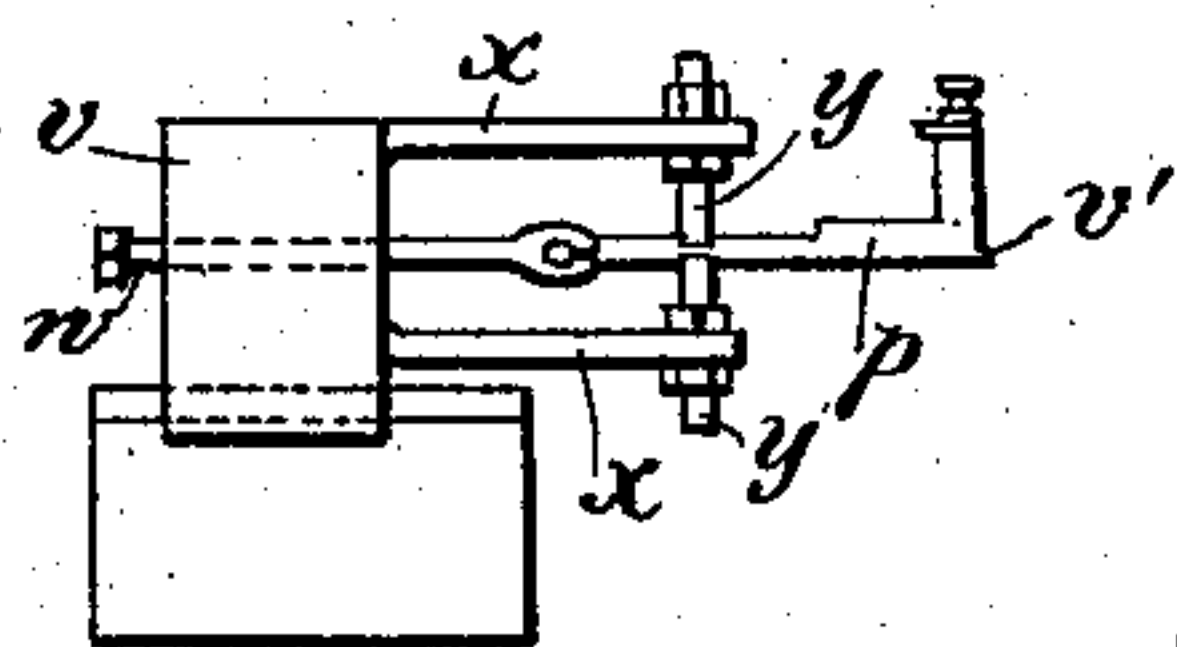
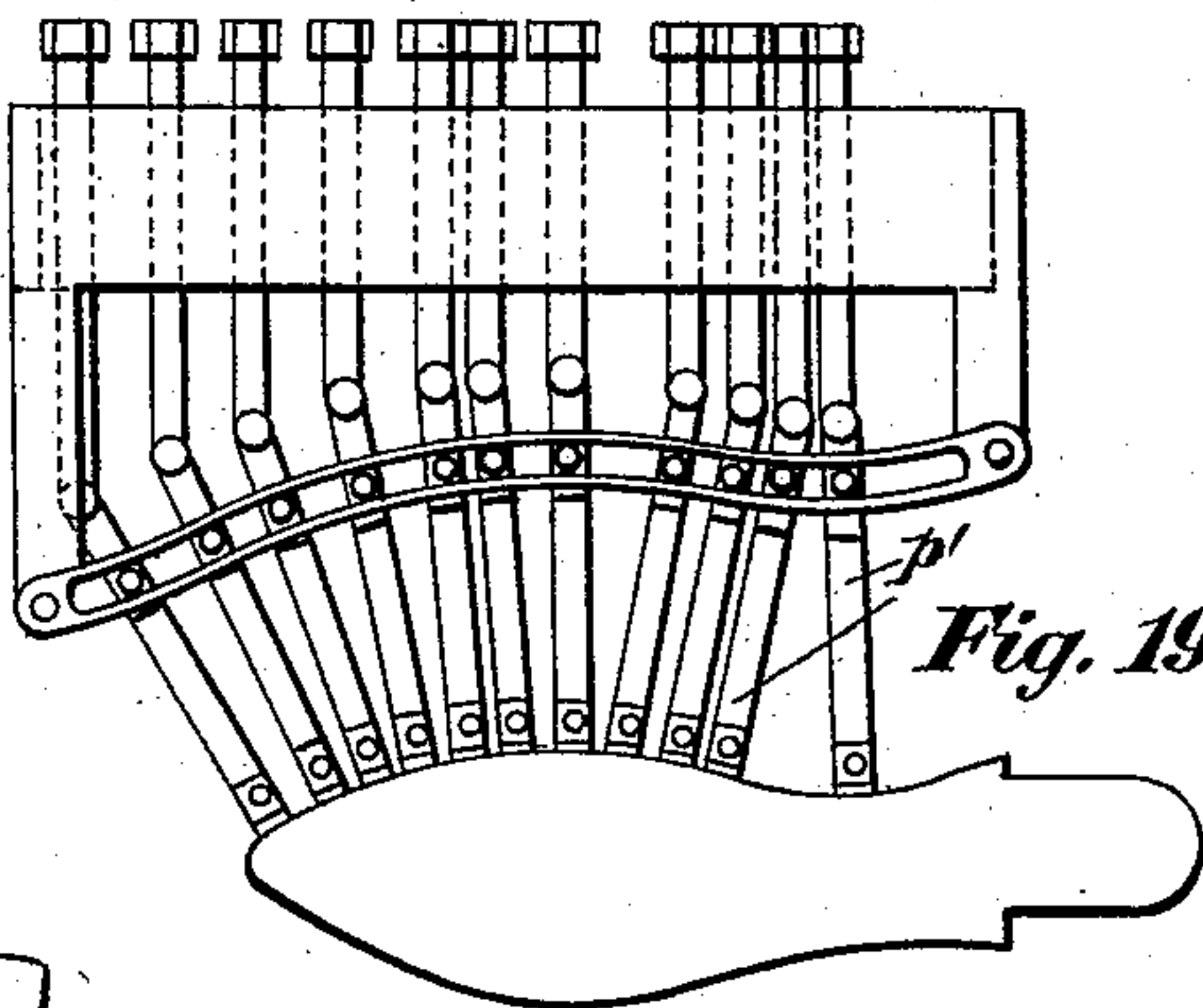


Fig. 19.



Witnesses

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Fig. 22.

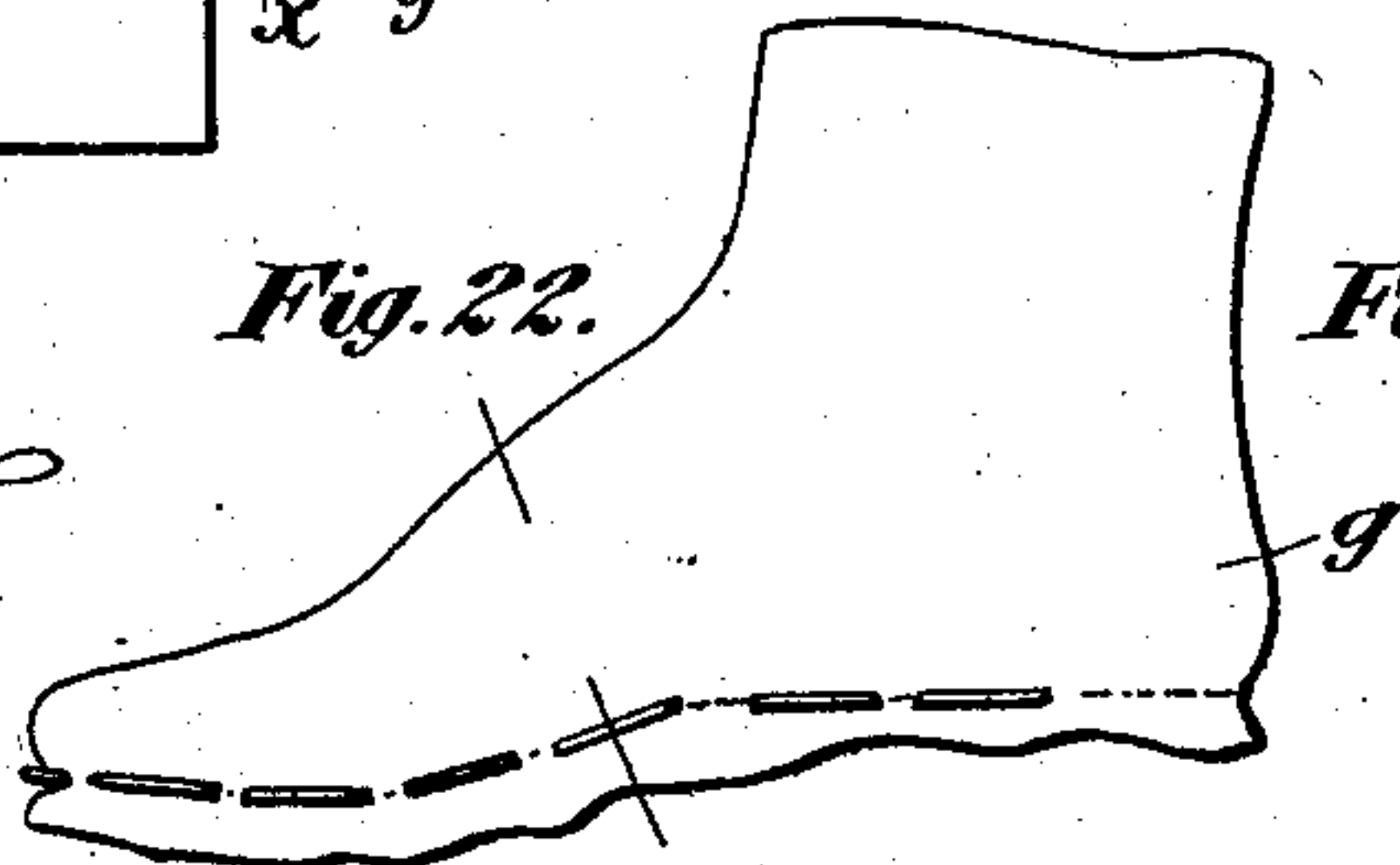
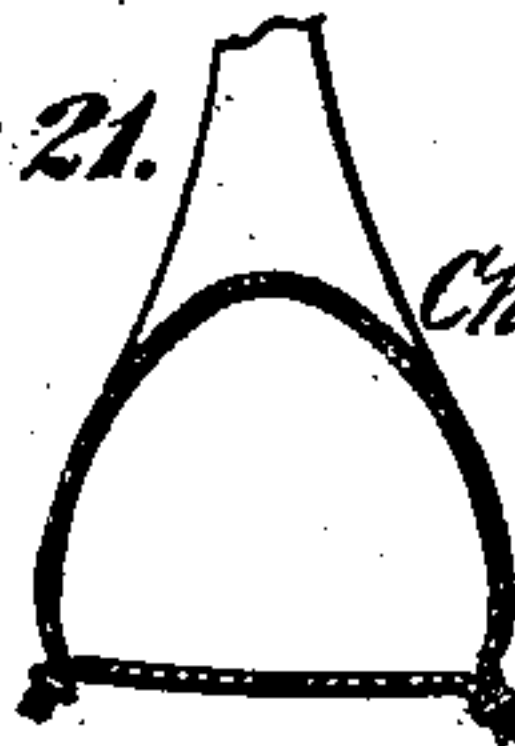


Fig. 21.



Inventor

Christian Eisenberg,

By his Attorney

F. H. Richards

UNITED STATES PATENT OFFICE.

CHRISTIAN EISENBERG, OF BERLIN, GERMANY, ASSIGNOR TO SCHINDLERS BROTHERS, OF SAME PLACE.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 605,091, dated June 7, 1898.

Application filed October 3, 1896. Serial No. 607,771. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN EISENBERG, a subject of the Emperor of Germany, residing in Berlin, Kingdom of Prussia, Empire of Germany, have invented certain new and useful Improvements in Pulling-Over and Fastening Machines for Shoes, of which the following is a specification.

This invention consists in a machine which takes the place of the pegging-machine used in shoemaking; and its object is to unite the innersole provisionally with the upper, which for this purpose is provided with an outwardly-extending rim. The inner sole is united with this upper by drawing pins or pegs, which after the sewing of the sole is completed can be withdrawn.

In the accompanying drawings, illustrating the machine which forms the subject of my invention, Figure 1 is a top view of the machine, some of the parts being broken away to make the construction clearer. Fig. 2 is a similar view to Fig. 1, the parts, however, being shown in the operating position, while in Fig. 1 they are in a non-operating position. Fig. 3 is a front elevation of the machine. Fig. 4 is a vertical section through the machine. Fig. 5 shows in plan view the pedal-work of the machine, the table above same being removed. Fig. 6 shows a pressing device used in the machine. Figs. 7 and 8 show the fastening devices for the last-holder. Figs. 9 and 10 show the last-holder in top and side views. Fig. 9^a shows a section of a part of the last-holder. Figs. 11 and 12 show further details of the pressing device. Figs. 13 and 14 show the pressing and driving device for the toe of the shoe. Figs. 15 and 16 show the fastening nails or pins. Figs. 17 and 18 show a stretching-clamp in top and side views. Figs. 19 and 20 show details of a modified form of pressing device. Figs. 21 and 22 show a shoe as produced by the machine in vertical section and side view.

The operation of the machine takes the place of the usual pegging up, and consists in first stretching the upper on the last and then binding it to the inner sole.

The construction of the machine is as follows:

In the center of the work-table *a* is the

block *b*, which carries clips or catches *c*. Into these catches are pushed the fastenings or hooks *d* with which the metal sole-plate or last-holder *e* is provided.

In the block is a draw bar or bolt *f*, provided at its forward end with a folding handle and held by a spring in position to allow the hooks *d* to be pushed freely into the catches *c*. The metal sole-plate *e* having been placed in position on the block, the draw bar or bolt *f* is drawn forward and a nose *f'* thereby brought behind the rear hook *d*, so that the metal sole-plate *e* is thereby fastened rigidly to the block *b*. A set-screw *f*² insures this fastening. On the metal sole-plate *e* a last is now placed carrying the upper or shoe-body *g* and the inner sole. The fastening of same can conveniently be effected by means of screws passing through holes provided in the inner sole, the said holes being afterward closed up.

At the lower part of the machine are the pedals *h h' h*², which are connected with the three bars *i i' i*². There are also (see Fig. 5) four other bars *k k' k*² *k*³ in the machine, which can be connected with the pedals *h' h*² by the following devices: Around the bars *i'* and *i*², belonging to pedals *h'* and *h*², swing angle-arms *l* and *l'*, which by means of appropriate notches can be connected one with either bar *k* or bar *k*³, the other with either bar *k'* or bar *k*². If, as shown in Fig. 5, by throwing the angle-arm *l'* back the bar *k*² is coupled to the bar *i*², then with any downward movement of the pedal *h*² the bars *l*² and *k*², which are normally forced upward by springs, will likewise be moved downward. Each of the bars is pressed upward by a spring and can be held in any given position by means of the arm *m*, Fig. 1, which carries a catch engaging with a toothed rack *m'*. (See Fig. 3.) After the last carrying the upper and the inner sole is fastened on the metal sole-plate *e* the stretching-clamps (shown in Figs. 17 and 18) are placed on appropriate parts of the upper *g*. The shear-like construction of these clamps is such that when they are pulled the leather is tightly gripped, but is readily released on withdrawing the tension. These stretching-clamps, which are connected with bars *i* and *k* in any suitable manner, enable the upper to be drawn tight over the last by the operation of the

pedals h h' h^2 . Binding or clamping frames O O, corresponding in shape to the two sides of the sole, are supported so as to slide cross-wise of the table a and are moved by screw-spindles operated by hand-wheels n . The upper having been pulled tight over the last, as above described, the frames O O are operated in opposite directions by hand-wheels n , so as to be brought up tight against the upper, imparting to it the shape shown in Figs. 21 and 22.

On each frame O stands a row of driving devices or jacks p , (shown in detail in Figs. 11 and 12,) each having a pin-holder or nail-holder p' . In these pin-holders the U-shaped or staple-shaped pins or nails shown in Figs. 15 and 16 are pressed downward by springs. These springs are carried by caps held in place by catches. Each driving device p has at one end a bent lever q , engaging with a slide or bolt working beneath the pin-holder, so that when the upper arm of said lever is depressed its lower arm engages with the bolt r , which takes a pin or nail from the pin-holder and drives it out horizontally. This causes the pin to penetrate the sole and upper in about a horizontal direction (or substantially parallel to the bottom of the shoe) and forces it finally against the metal sole-plate e . By means of round depressions s in the metal sole-plate the inner ends of the U-shaped pins are bent inwardly or toward one another, thus for the time being uniting or binding together the inner sole and upper at those points. When the upper arm of lever q is released, a spring throws back the bolt r and allows another pin to fall into position to be driven out.

In Fig. 6 is shown a device which enables all of the levers q on one side to be operated by a single movement, and thus by means of the two hands to complete the binding together of the shoe by one movement. For this purpose a frame t is placed over all of the levers q , the same being pressed down by the hand-lever t' , acting through the cam t^2 . The cam t^2 is pivoted in the frame of the machine and engages with a cross-bar connected to the frame t , as shown in Fig. 6. The operation is such that as both the frames t move downward the angle-levers q turn on their pivots, the bolts r are all shot out, and a complete set of pins or nails is placed in the shoe except at the toe, where this driving device is not present; but a special arrangement (shown in Figs. 13 and 14) is provided. In this a small pin (shown in Fig. 16) is fixed in a pincers u , carried by a holder sliding in a support on the frame. Then the latter, by means of hand-crank u' , acting on a screw on the holder carrying the pincers, is brought against the shoe, and then through a blow on the press-button u^2 the clip is driven through the shoe-toe and there fastened. The frames O are then withdrawn from the pinned shoe by turning back the hand-wheels n , the last is released by loosening the set-screw f^2 , the bolt f flying back, and the nose f' being re-

moved from the hook d . The last is then removed from the metal sole-plate e , which is then ready to receive a new last. The shoe pinned together in this manner is then sewed in any desired way, whereupon the fastening-pins having become superfluous are withdrawn. The partly-finished product thus obtained is then operated upon in any suitable manner, so as to fasten the under sole and heel to it and put it in merchantable condition.

To enable proper operation of the machine, it must of course be provided that the working surface of the frame O, surrounding the upper, is in strict correspondence to the form of the sole, as the pin-holders p' must stand in such positions that they are always opposite the line of union of inner sole and upper. It is clear from this that in case of any change in the form of the sole the frames O, and as a consequence the frames t , must be changed or else made to fit by the insertion of substitute parts. In Figs. 19 and 20 is shown a device by which this changing over or insertion of fitting-pieces is rendered unnecessary. The frame O is here so far changed that each pin-holder, together with the portion of the frame belonging to it, is separately mounted from the others. All these pin-holders here rest directly on the support v , which is operated by hand-wheel n . The pin-holders p' , which in this case correspond to working sections of the frame O, each carry a little nose v' , that is intended to bend the upper, as shown in Figs. 21 and 22. These pin-holders are supported from supports v by means of adjusting-screws w , to which they are joined by a universal joint, thus enabling their distance from the sole-plate to be changed. A frame x is arranged on the side of support v and carries adjusting-screws y , by which the height of the pin-holders relative to the sole-plate is adjusted. If now a sole of a different form is introduced, the pin-holders p' are first brought up to the sole by means of hand-wheels n and then adjusted by operation of the three adjusting-screws w y exactly to the curves of the sole. If then the two supports v are drawn back, a last with upper and inner sole placed on the sole-plate and the hand-cranks n again operated, each pin-holder will strike exactly on the proper spot and will, by means of the nose v' , bend the upper as desired, the driving of the pins being effected, as before, by a frame and hand-lever.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A machine for manufacturing shoes, comprising a last-holder, stretching-clamps, devices for drawing down said clamps, frames corresponding in shape to the sides of the sole, and devices for bringing said frames up to said sole, and pin-driving devices mounted in said frames and adapted to drive pins through the inner sole and upper in directions substantially parallel to the bottom of the shoe.

2. The combination in a shoe pulling-over and fastening machine, of two stretching-clamps, bars connected thereto, a pedal, and a bar connected to said pedal, and an arm
5 connected to the pedal-bar and engaging with either of the stretching-clamp bars.

3. The combination in a shoe-fastening machine, of pin-holders, pin-driving devices operating in substantial parallelism to the bottom of the shoe, and a frame engaging with
10 a number of said devices and driving the same simultaneously.

4. The combination in a shoe-fastening machine, of a sole-plate having rounded recesses
15 in its side, and pin-drivers operating to drive

pins against the sides of said sole-plate and into said recesses.

5. The combination in a shoe-fastening machine, of a pin-driving device for driving pins in substantial parallelism to the bottom of
20 the shoe, and adjusting devices for said pin-driving device whereby the same can be adjusted vertically and longitudinally.

In witness whereof I hereunto set my hand in presence of two witnesses.

CHRISTIAN EISENBERG.

Witnesses:

EDMUND LEVY,
JOECHIM MORWIT.