

(No Model.)

2 Sheets—Sheet 1.

J. C. IVORY.

SOLE TRIMMING AND CHANNELING MACHINE.

No. 361,159.

Patented Apr. 12, 1887.

Fig: 2.

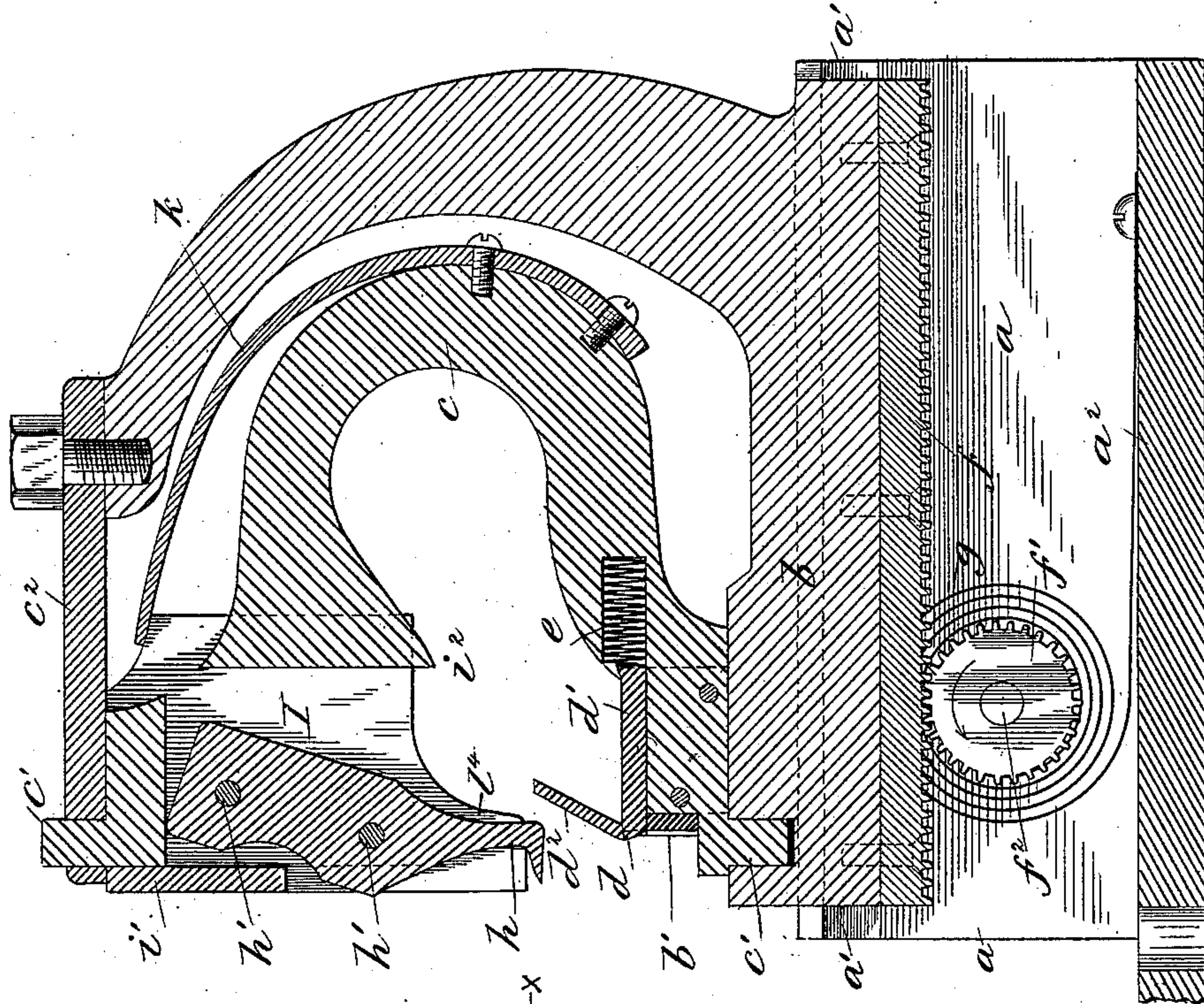
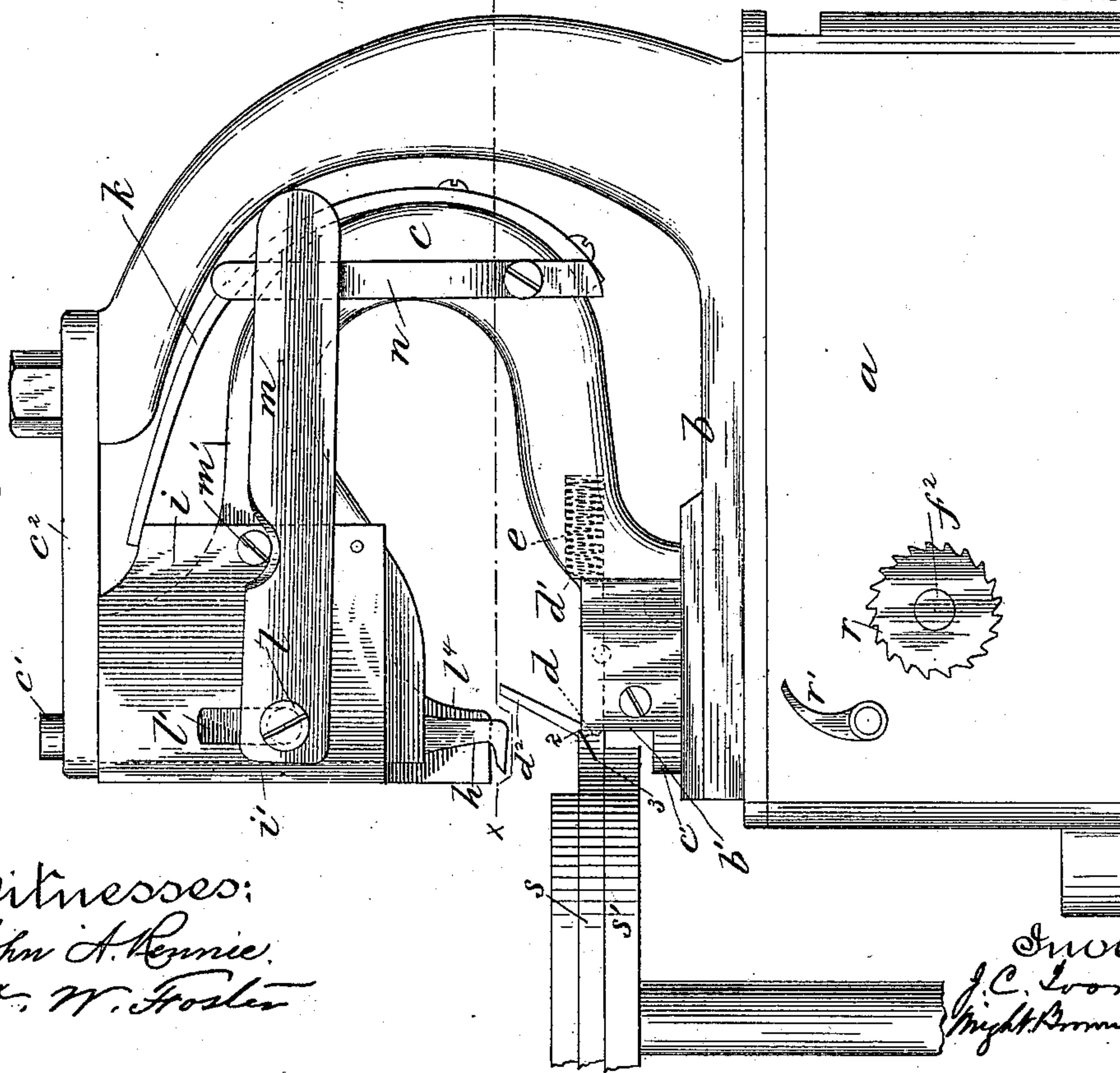


Fig: 1.



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(No Model.)

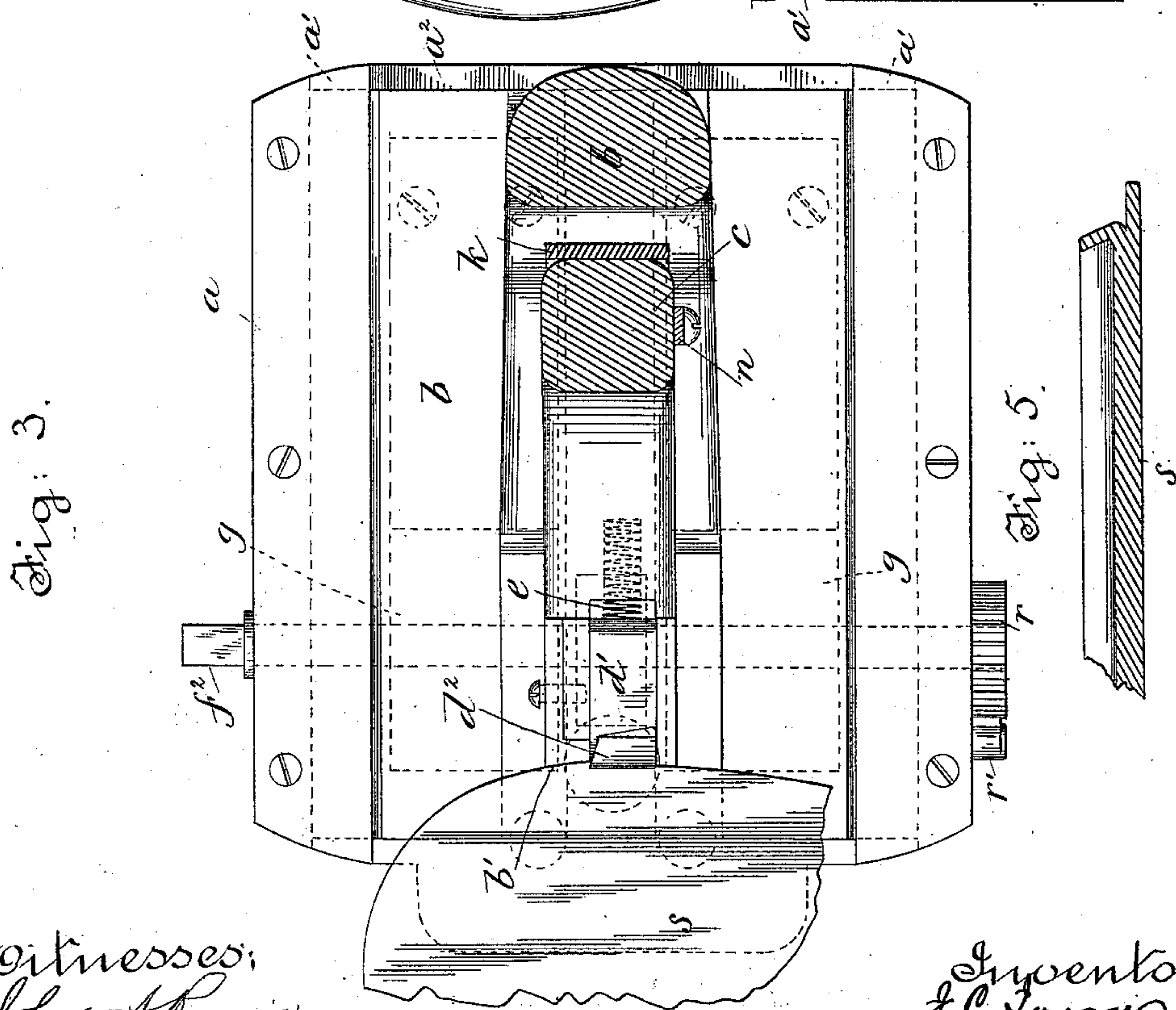
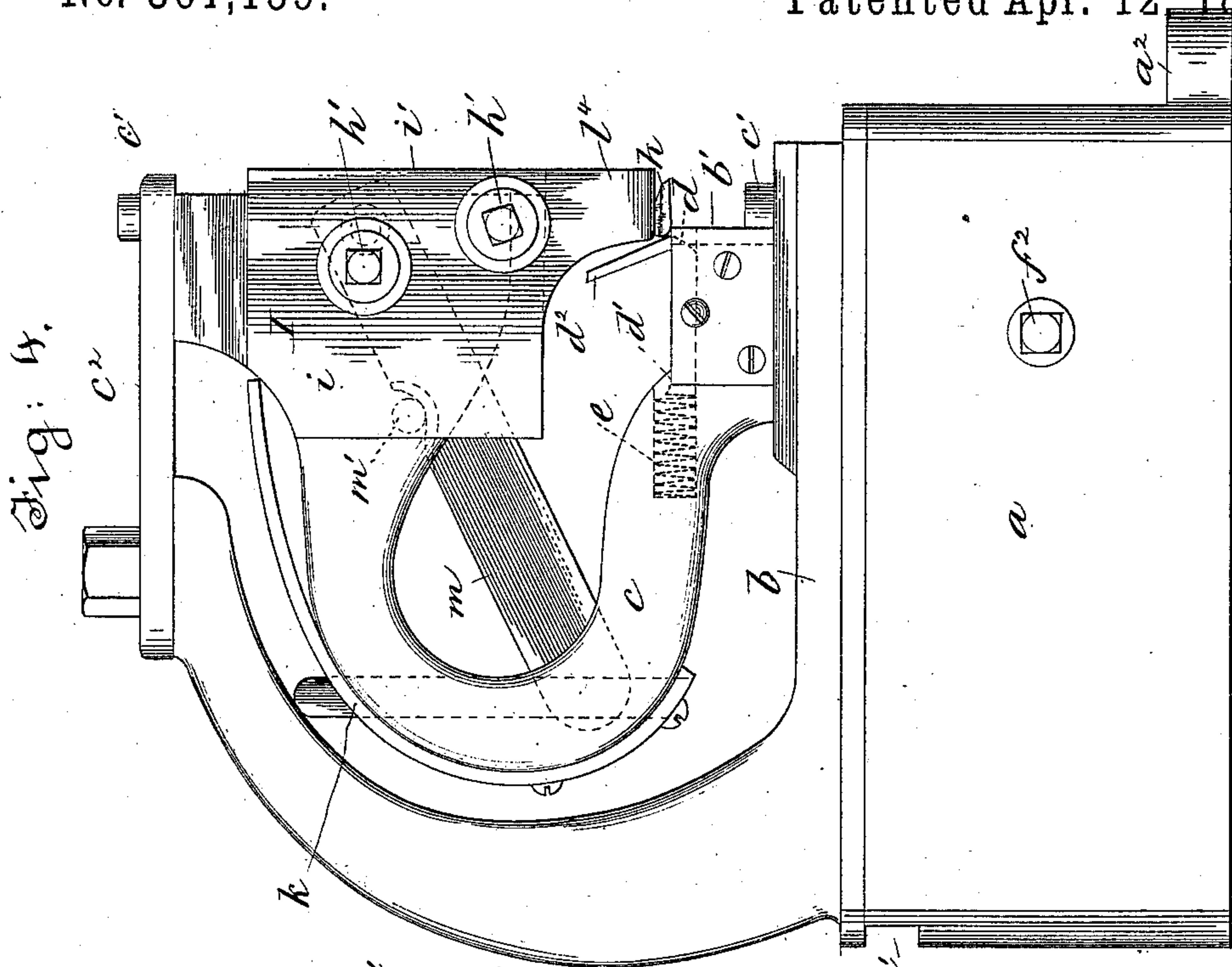
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UNITED STATES PATENT OFFICE.

JOHN C. IVORY, OF SOMERVILLE, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF PART TO JAMES N. MOULTON, OF HAVERHILL, AND EDWARD P. THAYER, OF BOSTON, MASSACHUSETTS.

SOLE TRIMMING AND CHANNELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 361,159, dated April 12, 1887.

Application filed August 23, 1886. Serial No. 211,624. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. IVORY, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain
5 new and useful Improvements in Sole Trimming and Channeling Machines, of which the following is a specification.

This invention relates to that class of machines for trimming or "rounding" boot or shoe soles and channeling the same in which
10 the sole to be trimmed and channeled is clamped upon a stationary sole-shaped pattern, and the trimming and channeling knives are caused to move around the said pattern,
15 said knives being mounted on a frame swiveled to swing on a vertical axis on a slide or carriage that is capable of reciprocating horizontally, so that the knives can turn so as to present themselves at any desired angle to the
20 sole-edge in their circuit around the shoe-pattern, and can also move back and forth to conform to the contour of the pattern, said slide being pressed toward the pattern by springs which permit the slide to yield as may be re-
25 quired by the pattern.

The invention consists in the several improvements in machines of the class above named, which I will now proceed to describe and claim.

30 Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of my improved machine. Fig. 2 represents a vertical section of the same. Fig. 3 represents a top plan view of the part of
35 the machine below the line *x x*, Fig. 1. Fig. 4 represents a side elevation. Fig. 5 represents a cross-section of a sole.

The same letters of reference indicate the same parts in all the figures of the accompanying drawings.

40 In the drawings, *a* represents a movable frame or casing having on its upper portion horizontal guides *a' a'*, between which is a slide, *b*, fitted to reciprocate in said guides.

45 *c* represents a curved frame or goose-neck having vertically-arranged trunnions *c' c'*, which are journaled, respectively, in a bearing in the outer end of the slide *b* and in a bearing formed in the end of an overhanging

arm, *c²*, affixed to said slide *b*, the frame *c* 50 being capable of rotating as on a vertical axis.

d represents a cutting-blade formed on the end of a shank, *d'*, which is fitted to slide horizontally in dovetail guides in the lower portion of the swinging frame *c*, and is pressed
55 forward by a spring, *e*, located in a cavity in said frame. The cutting-edge of the blade *d* is formed to trim the edge of a sole, *S*, said sole being clamped upon a stationary pattern, *S'*, located upon the bed or table of the machine, 60 and around which pattern the blade *d* is caused to travel by the means usual in this class of machines.

To the under side of the slide *b* is affixed a rack, *f*, which meshes with a cog-wheel, *f'*, 65 on a shaft, *f²*, journaled in the base or casing. To said shaft are affixed the inner ends of two coiled springs, *g g*, the outer ends of said springs being attached to the base *a²* of the casing or frame *a*, and the springs being so
70 arranged that they have a constant tendency to rotate the wheel *f'* in the direction indicated by the arrow in Fig. 2, and to thereby move the slide *b* outwardly so as to cause the shoulder *b'* to bear with a constant yielding
75 pressure against the pattern *s*.

The shoulder *b'* is slightly concave, as shown in Fig. 3, so that it has an extended bearing on the edge of the pattern *s*, the convex portions of the pattern approximately fitting the
80 concavity of the shoulder.

It will be seen that as the frame or casing *a* and its connected parts are being carried around the pattern and the sole clamped to the pattern the knife is presented at the proper
85 operative angle to the edge of the sole by the bearing of the shoulder *b'* on the edge of the pattern. The knife therefore trims the sole in conformity to the pattern, its cutting-edge being pressed continuously against the pattern
90 by the means described.

h represents the channeling-knife, which is attached by bolts *h' h'* to a holder, *I*, adapted to slide vertically on the upper end of the swinging frame *c*. Said holder *I* is in this case
95 composed of two side plates, *i i²*, at opposite sides of the frame, and a front plate, *i'*, connecting said side plates, *i i²*, the channeling-

knife being attached by the said bolts h' h' to the side plate, i^2 . A spring, k , attached to the rear portion of the swinging frame c , presses downwardly upon the holder I , and, when the latter is not supported in the raised position shown in Figs. 1 and 2 by the latch devices, hereinafter described, forces said holder and the channeling-knife downwardly upon the sole. The holder I is guided in its upward and downward movements by a stud, l , affixed to the swinging frame c , and a vertical slot, l' , in the plate i , through which said stud projects.

A lever, m , is pivoted on the stud l and extends backwardly under a stud, m' , on the knife-holder I . When said lever is moved upwardly to the position shown in Fig. 1, it engages the stud m' , and thereby raises the holder I and its knife h . A spring-latch, n , attached to one side of the swinging frame c , engages the rear end of the lever m when the latter is raised, and holds it and the holder and knife in the raised position shown. When the latch n is disengaged from the lever m , the latter drops, and the holder I is forced downwardly by the spring k until the knife h bears upon the upper surface of the sole S .

The edge-trimming knife d has an inclined arm, d^2 , which extends upwardly and backwardly from its cutting-edge. When the channeling-knife h is forced downwardly, as above described, it strikes said inclined arm and forces the edge-trimming knife backwardly out of the way, as shown in Fig. 4.

The channeling-knife is inclined downwardly on its under side from its back to its cutting-edge, so that when it is moved to bear against the upper surface of the sole the cutting-edge of the knife will move downwardly into the sole until its downward motion is arrested by the contact of a lip, l^4 , on the knife-holder with the upper surface of the sole, the knife being thus caused to cut downwardly from 2 to 3, Fig. 1, into the sole from its upper surface, and then, after its downward motion is stopped, to cut a channel in the edge of the sole between and parallel with the upper and lower surfaces thereof, said channel extending entirely around the sole S and forming a lip or flap which may be turned upwardly, as shown in Fig. 5, so that the upper may be stitched to said flap in making a turned shoe.

The shaft to which the springs g g and wheel f' are attached is squared at one end, so that it may be turned by a key, and has at its other end a ratchet, r , with which engages a pawl, r' . This ratchet r and pawl r' serve not only to prevent the springs g g from unwinding and the slide b from moving from a forced position, when so desired, but also to regulate the pressure of the shoulder of the slide b upon the edge of the sole-pattern, as by operating the arbor f^2 , so as to more tightly wind upon it the springs g g , the greater will be the pressure against the edge of the sole-pattern when the pawl r' has been released from the ratchet r , and the

slide allowed to be impelled forward by the action of the springs thus released. In like manner, by operating the arbor so as to unwind the springs g g , will the pressure upon the edge of the sole be lessened. The operator is thus enabled to regulate the pressure against the edge of the sole, and also to entirely withdraw the slide back from the pattern when such movement is desirable.

The operation, as a whole, is as follows: The sole to be trimmed is clamped to the pattern, and the channeling-knife being raised so that the trimming-knife is held forward by its spring in position to act on the sole-edge, the pawl is raised, motion is given to the frame or casing, and the trimming-knife is thus caused to pass around the edge of the sole and trim it. When the sole has thus been trimmed, the operator moves the latch n to release the knife-holder and its channeling-knife, and the latter drops, displaces the trimming-knife, and enters and channels the sole, as already described. After the channeling operation, the operator raises the channeling-knife by means of the lever m until the latter is engaged and held by the latch.

If desired, the trimming-knife may be formed to cut a differently-shaped channel and flap. I claim—

1. The combination of a stationary pattern, the rotary base or casing, the slide fitted to move in guides on said base, a coiled spring or springs within said base attached to the actuating-shaft, and devices actuated by said springs to press the slide forward against the pattern, a frame mounted to swing or turn on a substantially vertical axis on said slide, and the trimming and channeling knives carried by said swinging frame, and mechanism to give motion to the said knife-supporting frame, as set forth.

2. The combination of a stationary pattern, the movable base or casing, the spring-impelled slide adapted to reciprocate in said base and normally pressed against the pattern, the frame adapted to swing on said slide, the trimming-knife adapted to slide in the swinging frame and pressed forward by a spring, and means to move the base or casing, as set forth.

3. The combination of the pattern, the spring-pressed slide, the swinging frame on said slide, the spring-pressed trimming-knife having an inclined arm, the vertically-movable channeling-knife, a spring to depress said knife and cause it to displace the trimming-knife, and means for raising and locking the channeling-knife, as set forth.

4. The combination of the pattern, the spring-pressed slide, the swinging frame, the spring-pressed sliding trimming-knife, the channeling-knife, the knife-holder adapted to move vertically on the swinging frame, means to limit the vertical movements of said holder, the spring to depress the holder, and the lever and latch whereby said holder may be held in an elevated position.

5. The combination of the pattern, the
spring-pressed slide, and the swinging frame
mounted on said slide and provided with the
trimming-knife and with the concave shoulder
5 formed to bear on the edge of the pattern, as
set forth.

6. The combination of the base, the slide
movable thereon and provided with the swing-
ing frame and trimming and channeling
10 knives, the shaft journaled in said frame and
adapted to be turned by a key, the springs
whereby said shaft is impelled, the ratchet and

pawl whereby the springs may be held, and
the cog-wheel on said shaft engaging with a
rack on said slide, as set forth.

In testimony whereof I have signed my name
to this specification, in the presence of two
subscribing witnesses, this 18th day of August,
A. D. 1886.

JOHN C. IVORY.

Witnesses:

C. F. BROWN,
A. D. HARRISON.

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