

J. J. ROSS.
 Heel-Trimming Machine.
 No. 226,199. Patented April 6, 1880.

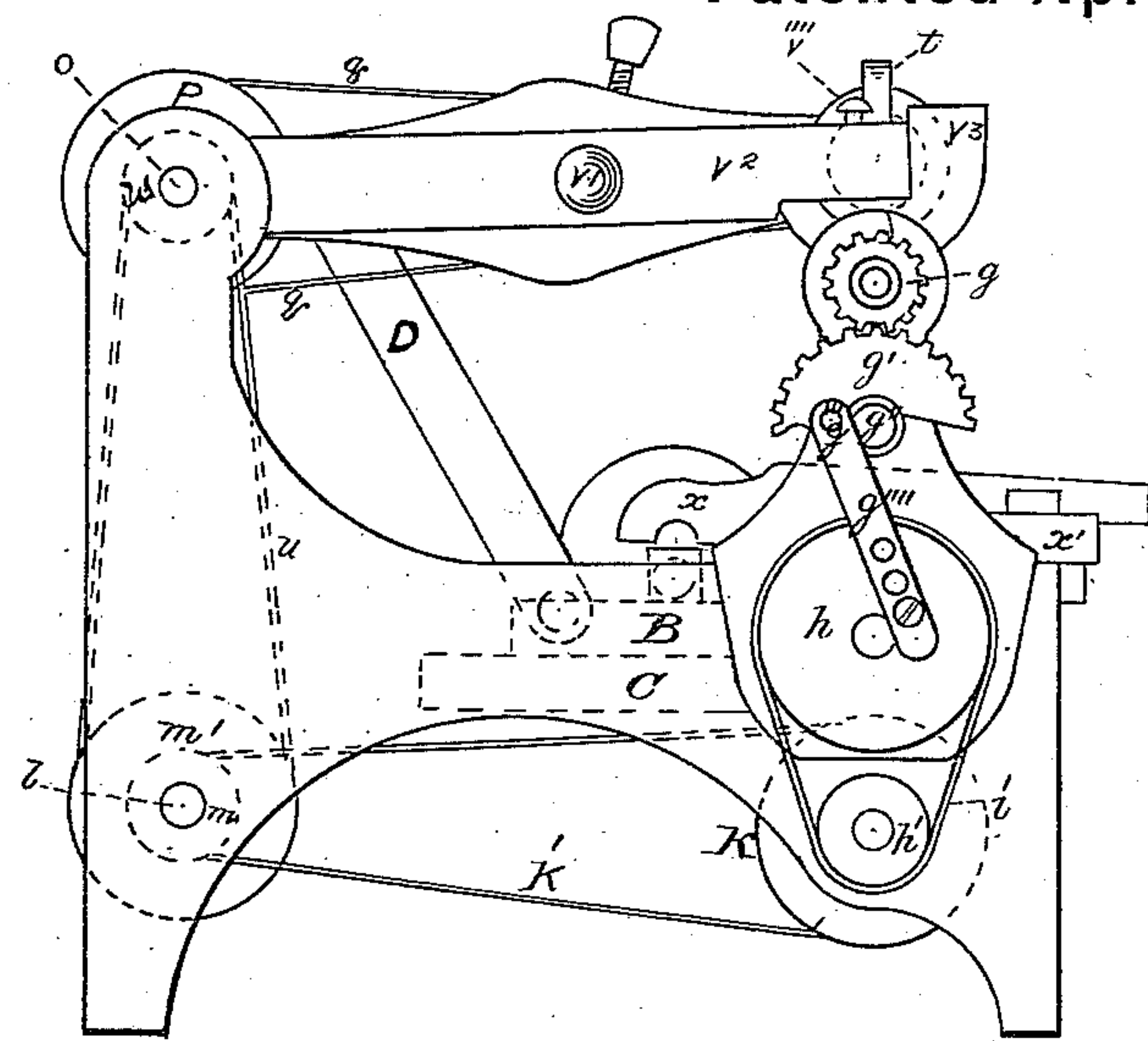


Fig. 3.

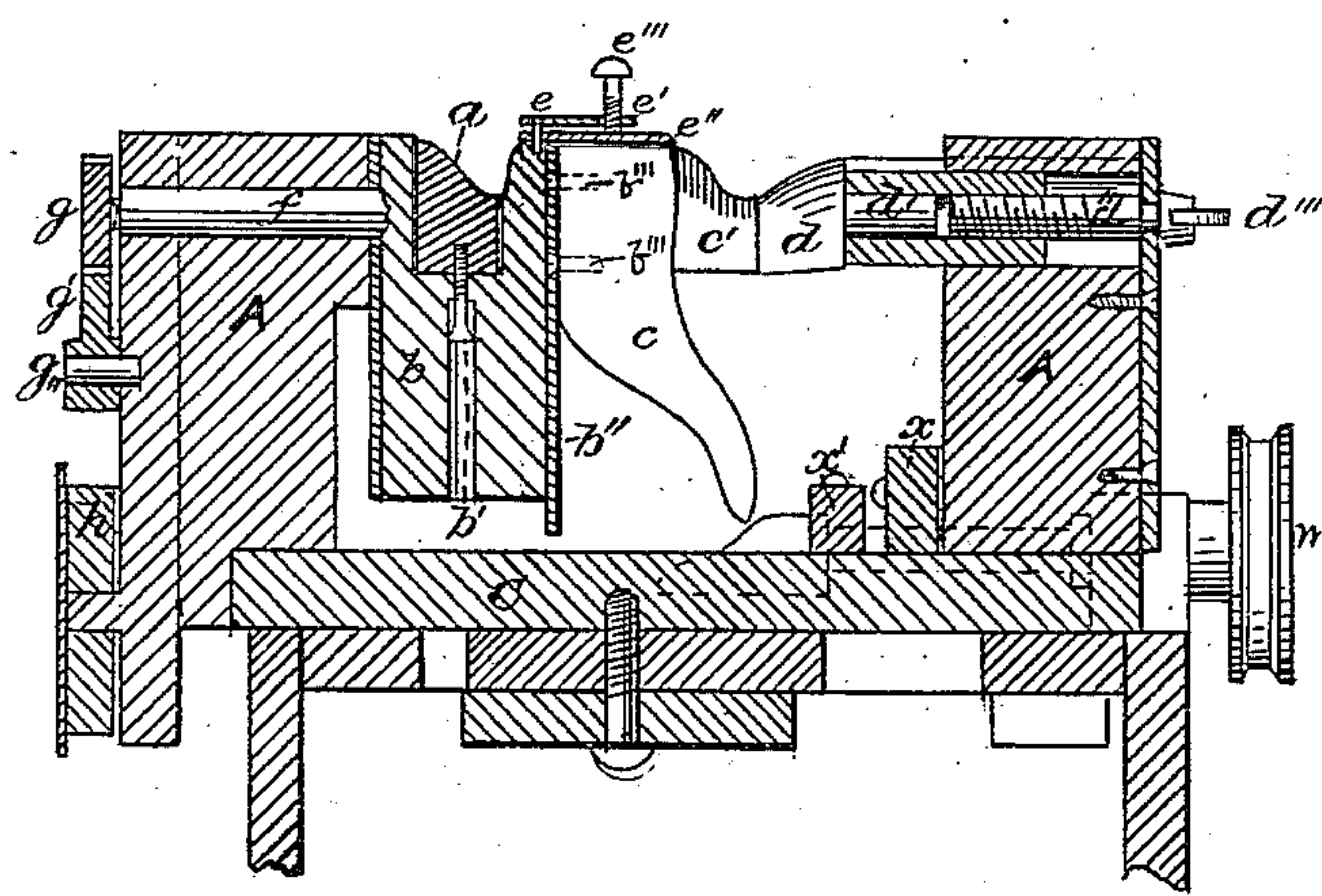


Fig. 4.

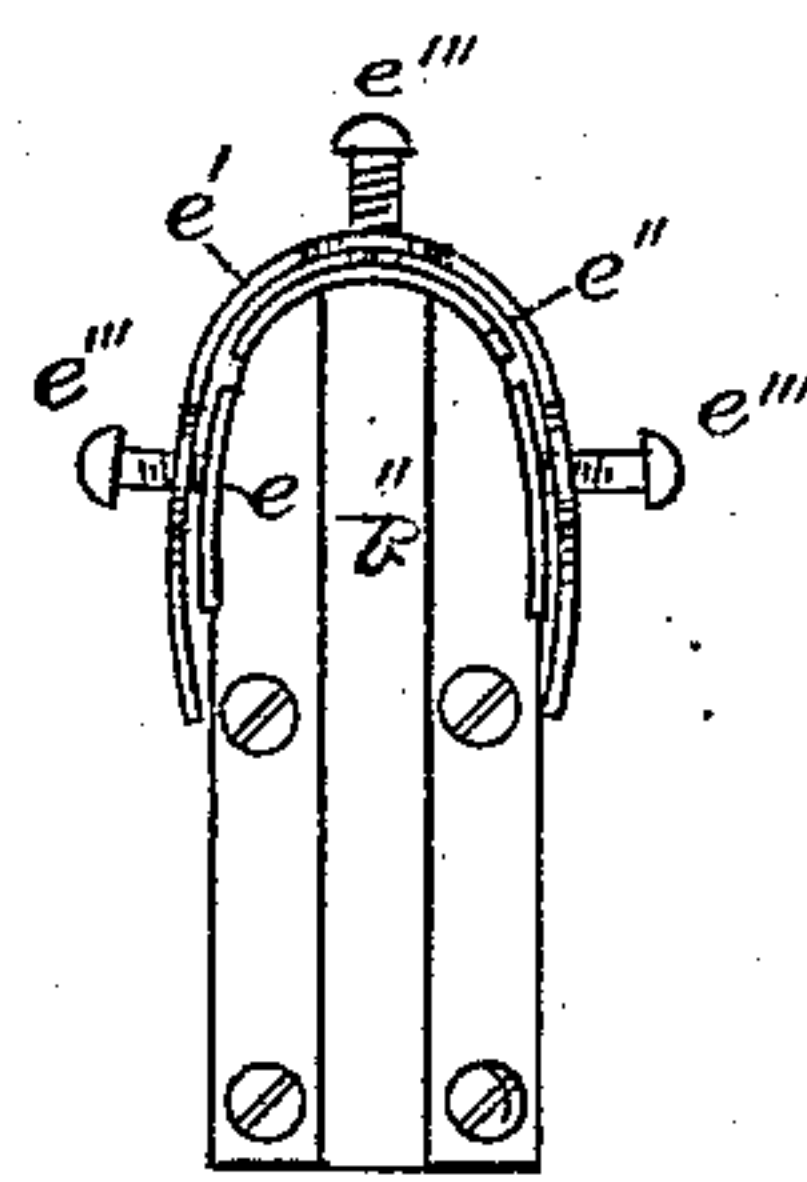


Fig. 5.

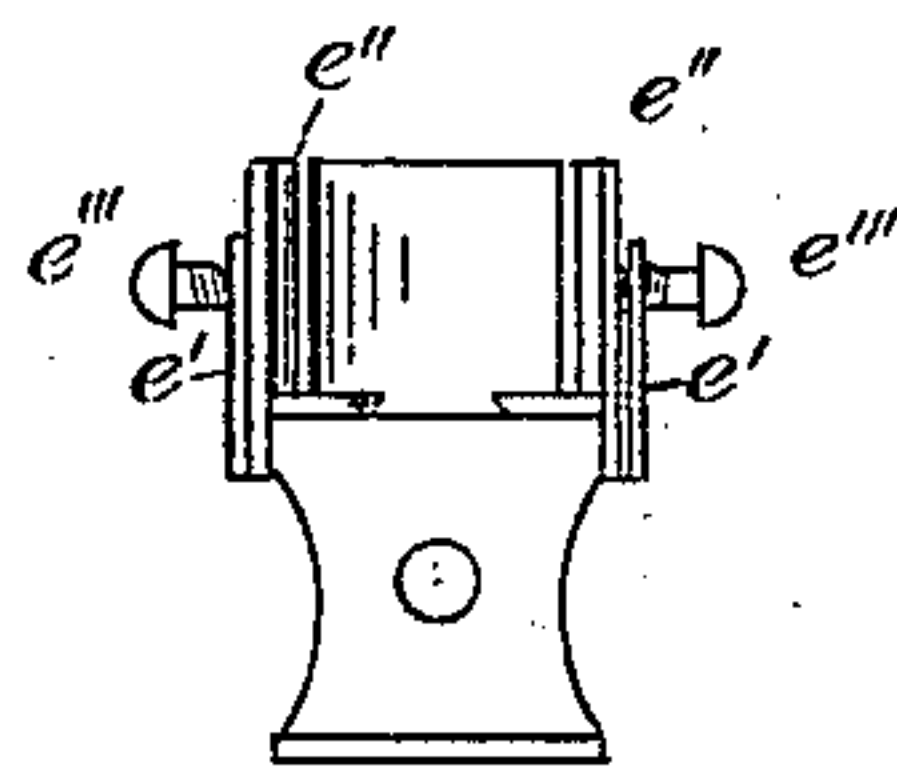


Fig. 6.

WITNESSES

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HEEL-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 226,199, dated April 6, 1880.

Application filed October 6, 1879.

To all whom it may concern :

Be it known that I, JOHN J. ROSS, of Lynn, in the county of Essex and State of Massachusetts, have invented a Heel-Trimming Machine, of which the following is a specification.

In the drawings, Figure 1 is a plan of the heel-trimming machine. Fig. 2 is a front elevation. Fig. 3 is an end elevation. Fig. 4 is a vertical section of a part of Fig. 1. Fig. 5 is an elevation of the jacket or protector of shoe. Fig. 6 is a plan of the same.

The letter *a* represents the form; *b*, the form-holder; *b'*, the screw securing the form to the holder, and *b''* a slide having pegs *b'''*, to which the last is attached; *c*, the shoe, and *c'* its heel; *d*, a revolving clamp securing and steadying the heel while being trimmed; *d'*, its spindle; *d''*, the screw pressing upon the spindle, and *d'''* a nut upon said screw; *e*, a jacket protecting the shoe, which is composed of an outer shield, with tongues *e' e' e'*, plates *e'' e'' e''*, and set-screws *e''' e''' e'''*; *f*, an axle, by which the semi-revolution of the holder, form, and shoe is effected, and it moves in one of the uprights A; *g*, gear on end of the axle *f*, which meshes into the segmental gear *g'*; *g''*, a screw holding the segmental gear to the upright A; *g'''*, a pin on the segmental gear, which is connected by an arm, *g''''*, to a pulley, *h*. *i* is a belt connecting the pulley *h* and the drum-head *h'*, within which is an axle, *j*. *k* is a pulley revolved upon said axle *j*, and is connected by a belt, *k'*, to a small pulley, *m*, revolved on the axle *l*. *m'* is a grooved pulley, joined to which is the driving-drum *m''*. The grooved pulley *m'* is connected by a belt, *n*, with the drum *n'*, joined to the grooved pulley P on the axle *o*. *q* is a belt connecting the pulley P with the pulley *r* on the axle *s*, which carries or revolves a holder, *t*, on said axle *s*, and said holder *t* has one or more knives, *t' t' t' t'*, fastened to it. *v v v v* are parts of a frame movable on the axle *o*, and which carries at its other extremity the axle *s*. Between the axles *o* and *s* is a bolt, *v'*, which also connects an arm, *v''*, that is movable on said axle *o*, which arm *v''* has an adjustable foot, *v'''*, resting upon the form *a*, and this foot may be adjusted by means of a screw, *v''''*, to the arm, according as the form is large or small. *v'''''* is a screw passing through a part of the frame *v*, and

bears upon the bolt *v'*, so that the arm is movable laterally on the bolt *v'* and the axle *o*. *w* is a grooved pulley on the end of a screw, *w'*, which is rotated by the driving-pulley *w''*, connected by the belt *w'''*. Said pulley *w''* is upon one extremity of the axle *j*. The screw *w'*, at the end opposite the pulley *w*, revolves in a nut or rest. Into the threads of this screw mesh the threads of a nut-screw in the end of the lever *x*, which lever is fastened by a pin or screw to the side of one of the uprights A in such manner that it may bear upon the screw *w'* when at work, and by an automatic arrangement, when the heel has been trimmed or the knife passed over its length, the lever will be raised from the screw *w'*. This is partly shown in Fig. 3. By means of this screw lateral motion is produced.

x' is a lever, fastened at one end by a screw or pin, and when the lever *x* is brought to bear upon the screw *w'* the movable end of the lever *x'* is pushed under the lever *x*, and when the knives have traversed from the small end of the heel to the upper or large end of the heel the lever *x'* is pushed out from under the lever *x*. *z z z z* are adjustable washers on the axle *o*, to keep the frame *v* and the arm *v''* in place. B is a sliding table, upon which rest the uprights A A, and the sliding table rests upon a platform, C, which is supported by the standing frame of the machine. D is a rest for the frame *v v v v* and arm *v'* when the knives are raised from work.

The invention is a machine for trimming and shaping the heel of a boot or shoe, and in the accomplishment of this work a form or pattern-heel is employed, so that the boot or shoe heel, when trimmed, will be like the pattern-heel; and that others may understand my invention, and the means employed in trimming heels, I will explain as follows:

In the accompanying drawings, which are made a part of this specification, Fig. 1 is a plan representation of the machine, showing the form or pattern-heel *a*, which form is also clearly shown in Figs. 2 and 4. This pattern may be of any desired size or shape. It is secured in a holder, *b*, the shape of which is seen in Figs. 1, 2, and 4, by means of a screw, (see Fig. 4,) and it can be easily removed by turning the screw.

The holder of the pattern *b* is shown in Figs. 1 and 2 by side views. The side next the upright *A* is metallic, and the axle *f*, passing through the upright *A*, enters the holder, so as to cause it to revolve, as shown in Fig. 4. It is grooved, as shown in said Figs. 1 and 2. The side next the shoe is shown in Fig. 5. It is metallic, having a slide, *b''*, to which slide are fastened two or more pegs or pins, upon which the last is fastened. (See Fig. 4.) To the holder is attached a jacket, *e*, the parts of which I have designated, *e' e' e'* as the tongues of the outer shield, and *e'' e'' e''* as plates or the inner shield. They are held loosely to the holder by screws, and through the tongues of the outer shield are set-screws, so that when the shoe is pressed up under the jacket the screws may be tightened, and the upper of the shoe is entirely protected from the knives which trim the heel. (See Figs. 1, 2, 4, 5, and 6.)

c is the shoe, and *c'* its heel, trimmed as shown in the drawings. The clamp *d*, which is clearly seen in Figs. 2 and 4, may have pegs or other appliances to fasten onto the heel as it turns by its spindle with the heel in a socket in the part *d''*, and when the clamp is to be withdrawn from or closed upon the heel the thumb-screw *d'''* is operated.

Upon the end of the axle *f* will be observed the gear *g*, which meshes into the segmental gear *g'* when the power is applied which sets in motion the machine. These parts are most clearly shown in Fig. 3, which is an end elevation. The segmental gear has a pin, *g'''*, out of the center of the segment, and an arm, *g''''*, connects from this pin with the pulley *h* out of the center of said pulley and on its opposite side, so that while the pulley *h* makes a direct and complete revolution, the said gear makes but a part revolution, and then travels back, and so back and forth, carrying the form or pattern and the holder and shoe backward and forward over the circular part of the heel.

Motion is communicated to the gear by means of the pulley *h* and the drum *h'*, connected by the belt *i*, the pulley *k*, and the pulley *m*, connected by the belt *k'*, the pulley *m* being on the main or driving axle *l*, which communicates motion to the whole machine. Upon this driving-axle *l* is seen the large grooved pulley *m'*, which is connected with the pulley *m''* upon the axle *o* by the belt *n*. (Seen in the dotted lines in Fig. 3.) The grooved pulley *P* and the pulley *r* are connected by the belt *q*, which sets in motion the axle *s*, upon which is the knife-holder *t*. The revolution of the driving-axle *l* therefore causes the axle *s* to revolve. The frame *v v v v*, bolt *v'*, and the arm *v''*, movable upon the axle *o*, are shown in Figs. 1 and 3. It will be observed, too, that the grooved pulley *w* and its pinion *w'*, connected by the belt *w'''*, is set in motion by the axle *j*, connected to the driving-axle *l* by the pulleys *k* and *m* and the belt *k'*, and that the screw *w'* is thus set in motion, so that the driving axle or shaft *l* causes the semi-revolution of the shoe, the revolution of

the knife-holder, and the revolution of the screw *w'* at the same time.

It will be observed that the lowest part of the foot *v'''* of the arm *v''* must be upon a level with the cutting-edge of the knife when the heel is of the same size as the form. If the heel is to be larger, turn the screw *v''''*, and any size of the same shape as the pattern may be made, and other patterns may be substituted, and it will be observed that the trimming begins with the lowest part of the heel and works toward the upper of the shoe, and that the knife follows the foot upon the pattern-heel. The pulleys are so made, large and small, that while the shoe is turned on or by means of the axle *f*, and the screw *w'*, producing lateral motion, moves slowly, the revolution of the axle *s*, carrying the holder of the knives, is very rapid. The table *B* moves from left to right, the belt *i* sliding on the drum *h'*. This movement brings successively every part of the circular portion of the heel under the knife, and when the knife has reached as far as the upper, by an automatic movement of the lever *x*, sliding on the end of the bar *x'*, the lever *x* drops or is pushed from the bar *x'* by the pressure of spiral spring, (not shown in the drawings,) which lifts the nut-screw from the screw *w'*. The table *B* is then pushed by the hand or a bar back to its first position to repeat the same movement.

To illustrate the movement of the machine as shown in the drawings, the table *B* is pushed to the left, so that the belt *i* is near the end of the drum *h'*, the knife is at the lower edge or part of the heel, and the foot of the arm *v''* lies on the lower edge or part of the pattern-heel. Raise the end of the lever *x* and push under it the end of the lever or bar *x'*. This brings the nut screw-threads in the end of the lever *x* into the threads of the screw *w'*, and the machine is ready to be put in motion. Turn the crank applied to the end of the axle *l*, the end of which shaft is seen in Fig. 3 in the drawings; but the said crank is at the other extremity, and is not shown in the drawings. The table *B* begins to move toward the right, and the knives to trim the heel, following the foot of the arm *v''* on the pattern-heel *a* until the heel is trimmed to the upper, when the bar *x'* is pushed out from under the lever *x* by contact with a nut or pin, *x''*. (See Fig. 2.) The end of the lever falls and its nut-screw is lifted from the screw *w'*. The frame *v v v v* is then raised, lifting the knives and arm, and is then rested upon the bar *D*, and the table is returned to its first position to repeat the movement.

By this machine a heel is very quickly trimmed. It can be made perfectly true, and of any pattern or shape or size that the manufacturer wishes. The movement of the mechanism bringing the heel under the knives back and forth is new in a heel-turning machine. The construction and arrangement of the heel-pattern and its holder, the jacket or protector attached to the holder for the protection of the

upper while the heel is being trimmed, and the construction and arrangement of the arm with its foot, which rests in or upon the pattern, are new.

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

1. In a heel-trimming machine, the combination of the heel-form *a*, secured in a holder, *b*, which is moved by the axle *f*, the revolving clamp *d*, the revolving knife-holder *t*, having 10 one or more knives, *t'*, and the movable arm *v''*, which is provided with a foot, *v'''*, the whole being combined and arranged substantially in the manner and for the purpose shown.

15 2. In a heel-trimming machine, a heel-holder, *b*, which has a socket for a heel-pattern, whose face toward the shoe-last is provided with a slide, *b''*, having pegs or devices to attach the last of the shoe to said slide, the holder being 20 arranged so as to oscillate upon an axle, *f*, substantially as shown and described.

3. In combination with the holder *b*, which is moved by the axle *f*, the jacket *e*, provided with tongues *e' e' e'*, the plates *e'' e'' e''*, and the set-screws *e''' e''' e'''*, substantially as 25 shown and described.

4. In a heel-trimming machine, the combination of the axle *f*, the gear *g*, the segmental gear *g'*, the pin *g'''*, and the arm *g''''*, attached to the pulley *h*, the same being secured upon 30 or attached to an upright, *A*, whereby a partial revolution of the shoe is produced by a backward-and-forward movement thereof, to bring the heel of the shoe back and forth under the trimming-machine device, substantially in 35 the manner and for the purpose shown and described.

JOHN J. ROSS.

Witnesses:

FRANK G. PARKER,
J. L. NEWTON.