G. B. DUNHAM.

Boot and Shoe Heel Trimming-Machines.

No. 152,732. Patented July 7, 1874.

Fig. 1

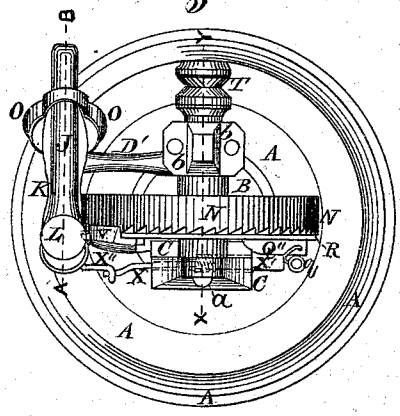


Fig. 6

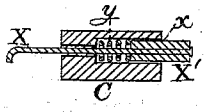


Fig. 7

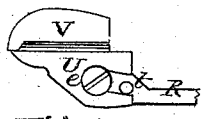


Fig. 3

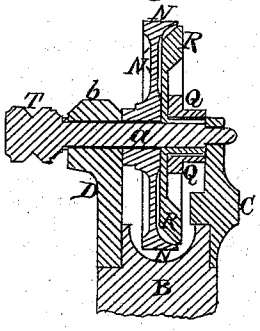


Fig. 4

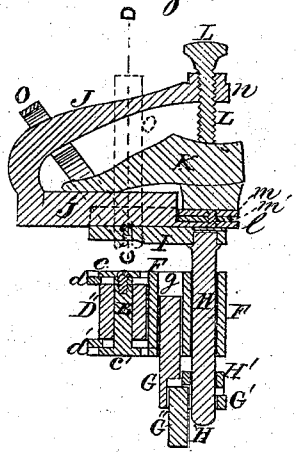


Fig. 2

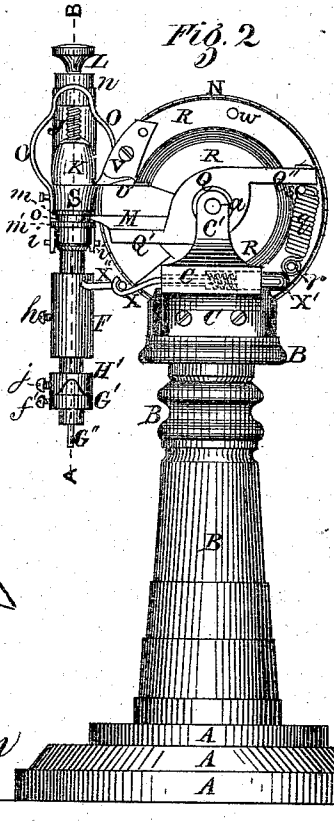


Fig. 8

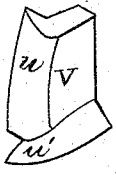


Fig. 5

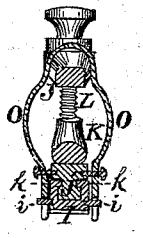
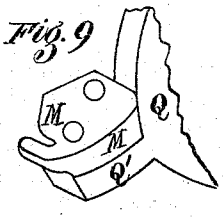


Fig. 9



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# UNITED STATES PATENT OFFICE.

GEORGE B. DUNHAM, OF LYNN, MASSACHUSETTS.

## IMPROVEMENT IN BOOT AND SHOE HEEL TRIMMING MACHINES.

Specification forming part of Letters Patent No. **152,732**, dated July 7, 1874; application filed March 25, 1874.

*To all whom it may concern:*

Be it known that I, GEORGE B. DUNHAM, of Lynn, in the county of Essex and State of Massachusetts, have invented certain Improvements in Boot and Shoe Heel Trimming Machines, of which the following is a specification:

Figure 1 of the accompanying drawings is a top view, and Fig. 2 is a side view, of my improved machine for trimming the heels of boots and shoes. Figs. 3 and 4 are respectively a vertical transverse section and a vertical longitudinal section of portions of the same taken in lines X Y and A B. Fig. 5 is a vertical transverse section, taken in line C D, of a portion of the machine. Fig. 6 is a horizontal section of one of the axle-standards. Fig. 7 is a bottom view of the welt-knife and guard, at an enlarged scale. Fig. 8 is a perspective view of knife-guard, and Fig. 9 is a perspective view of heel-guard attached to a portion of its operating lever, both at an enlarged scale.

The present invention relates to that class of machines for trimming boot and shoe heels in which the heel is brought in position to receive the action of a rotary cutter; and has for its principal object the production of a simple and economical machine by whose use the heel shall be trimmed in an expeditious and effective manner.

My improvements consist mainly in a barrel or band saw, arranged and operating, as will be hereinafter more fully explained, to rotate vertically against the periphery of the heel of a boot or shoe, held on a jack carried back and forth horizontally on a suitable support having a vertical stem turning in a swinging standard so as to carry round the jack and consequently the heel supported thereby; the said swinging standard being arranged to be readily connected with or detached from suitable mechanical devices for securely holding it in place or allowing of its release so as to swing out and allow the removal or adjustment of a boot or shoe. My improvements also consist in an adjustable cam, so formed and connected with the stem of the jack-support or otherwise arranged to travel over the top of an adjustable plate connected with an adjustable vertical stem held in the swinging standard and having a projecting ring or collar to receive the former stem and form a seat for the cam, which so operates by the turning of its stem as to raise and lower the heel as the jack is turned, and bring the heel at an incline with the cutter to trim the vertical slope on a heel or to be readily adjusted to trim a straight heel, as desired. These improvements also consist of an adjustable welt-knife attached to a saw-guide, arranged to turn and raise the knife from or hold it firmly upon the top of a heel so as to trim its edge while the periphery of the heel is being trimmed; also, of a knife-guard, constructed and arranged, as will be duly described, to protect the upper of the boot or shoe from any injury from the knife. Further, these improvements consist in a lock or heel-guard, held on and operated by a pivoted spring-lever so as to connect with or be disconnected from a groove formed between the heel forms, and bear up and firmly hold in position or allow the release of the heel. All of which I will now proceed to describe.

In the drawings, A represents a circular or other shaped base of a cast-iron or other suitable vertical stand, B, of a tapering, cylindrical, or other desired shape. To the top of the stand B is attached on one side a standard, C, whose lower portion is curved laterally and vertically on the front, and on the inside is rabbeted or otherwise formed to fit on the upper portion of the stand B, which is cut away to receive it. The upper portion of the standard C is curved and narrowed in or otherwise shaped to form an upright standard, C′, to support one end of a transverse axle, *a*, whose other end is supported in an axle-box, *b*, formed on the top of a standard, D, which is curved out on the sides, or otherwise formed and attached to or formed on the opposite side of the stand B, which is cut away to receive it. The lower portion of the standard D is formed with a forward-projecting longitudinal arm, D′, terminating in a partially-cylindrical vertical standard, D″, which receives and allows the turning of a stem, E, connected with plates *c c′*, held so as to have a forward and back play in top and bottom slotted plates *d d′* projecting from the front end of a transverse vertical standard, F, which

is thus arranged to be supported by and to swing on the standard D″; or the standard F may be otherwise arranged to be held and to be swung out to release or adjust a boot or shoe or last, as preferred. At the rear of the projecting plates *d d′* the swinging standard F is formed with a vertical socket, *g*, to receive an adjustable vertical stem, G, held or released by a screw, *h*, or otherwise, and formed at the bottom with rear projecting collar or ring G′, to receive the lower end of a rear parallel vertical stem, H, that extends through a vertical socket formed through the rear portion of the standard F, above which the stem H projects, and at the top connects with the rear portion of a bed-plate or jack-support, I, whose upper portion is cut down at the rear, and whose forward portion is formed with a central longitudinal slot or groove, and top plates or ways *k k′*, or otherwise formed to support and allow the forward and back travel of the bottom plate J′ of a jack, J, whose upper portion is curved at the front, and extends in the form of a bar upward in an inclined direction to the rear over the bottom plate and heel rest, between which and the bar or upper portion of the jack is an open space of sufficient size to admit and allow the adjustment or release of a boot or shoe, or last, K, the sole of which rests on the top of the bottom plate J′ which is grooved on the sides to receive the plates or ways *k k′*, (as shown in Fig. 5,) or otherwise formed to travel on the bed-plate I, and is cut down at the rear to allow the reception of the heel, leaving a rear-projecting plate, *l*, which receives adjustable forms *m m′*, the top one of which receives the heel of the boot or shoe, which is securely held thereon by a screw, L, bearing on the top of the last, and arranged to turn in a screw-socket, *n*, formed on the end of the upper portion of the jack. Pivoted on each side of the bottom plate J′ of the jack J is a yoke, or bent lever-handle O, whose ends extend down on each side of the bed-plate I, and are notched to receive and bear against a pin, *i*, projecting from each side of the said plate I. This yoke is bulged out on the sides, to admit the adjustment or release of the boot or shoe last, and is contracted on the sides of its upper portion, and bent to extend and have free play over the top of the jack J, which is carried back and forth by the back and forward movement of the yoke O. The stem G is formed at the bottom with a slot or groove, open on the rear to receive and allow the lateral extension of an adjustable vertical plate, G″, held in the slot or groove so as to be raised or lowered by a screw, *f*″, turning in the side of the stem G, and bearing against the side of the plate G″; or, the stem G may be otherwise arranged to allow and regulate the travel of an adjustable annular cam, H′, attached to the stem H, by a screw, *j*, or otherwise held thereon, so as to be raised and lowered, and cut out at the front and back of its lower portion in a triangular shape, so that when turned it shall travel over the top of a rear lug or flange, or the adjustable plate G″, connected with the stem G, and raise and lower the stem H, and, consequently, the jack, and boot or shoe, and bring the heel at a different vertical inclination with the saw or cutter, in order to trim a sloping heel; or, by lowering the adjustable plate G″ to disconnect it from the cam H′, allow the stem H to turn without raising the jack, thereby permitting a straight heel to be trimmed.

The heel form is composed of two adjustable flat plates, *m m′*, curved on the sides and rear to correspond with the horizontal curve of the heel. The under plate, *m′*, which rests on the projecting plate *l*, which is also curved on the sides and rear, is of smaller diameter than the upper plate, *m*, which supports the heel S and the rest-plate *l*, thus forming a groove, *o*, between the piate *l* and form-plate *m*. The top plate *m* only may be made adjustable, if desired. Engaging in the groove *o*, to direct the travel of the bottom plate J′, and hold the heel up in position while operating, is the end of a guard, M, of sufficient thickness on the front to fit in the groove *o*, and notched out on one side (as shown in Fig. 9) to allow the rotation of a circular, barrel, or band saw, N, and is beveled downward on the bottom at the front to a thicker rear portion, which is attached by screws, or otherwise, to a lower, forward, and lateral projecting arm, Q′, of a cam-like lever, Q, located so as to turn on the nave of a segmental guide, R, and having an upper, rear, and lateral projecting arm, Q″, to the end of which arm Q″ is attached a spiral or other spring, *q*, whose bottom end is attached to a pin, *r*, projecting from one side of the guide R. The guide R is formed of a circular plate cut away on its forward part to allow the adjustment of the guard M, and to receive an adjustable welt-knife U and guard V, and is countersunk on its front side to receive the central or cam portion of the lever Q, which is formed of a nave that turns on the hub of the guide R, and whose arm Q″ is beveled or rabbeted on the inside, to allow of its up-and-down play on the outside of the side band of the guide R, which, on the opposite side, is beveled inward from the outer edge of the band which forms a guide to the saw, or is otherwise formed to be contained within a cylindrical case or drum, N′, open on the front side to receive it, and whose periphery or band N is serrated on the edge to form saw-teeth, that are revolved over the rim of the guide R by the rotation of the drum N′, which is attached to a transverse shaft or axle, *a*, which receives the hub of the guide R at one end, and at the other end is provided with a suitable belt pulley or pulleys, T, for operating the band or barrel saw; or the axle *a* may be connected with a suitable crank or treadle, or arranged as desired, to be operated by foot, hand, or other motive power.

To the bottom of the forward upper portion of the guide R is attached a welt-knife, U, formed by a flat plate having a straight edge on one side, that is carried forward in a pointed blade beyond the saw-teeth a sufficient distance to bear upon and trim the top of the heel S, and beveled back from the point on the other side to allow the passage of the saw, and curved or inclined, as shown in Fig. 7, and bifurcated to receive, and be held by, a screw, *e*, or otherwise formed and arranged to be readily adjusted to, or removed from, the guide R, from which depends a stud, *t*, against which one arm of the knife bears, to prevent the movement of the blade when operating against the heel. Attached by a screw or screws or otherwise connected with, so as to be readily adjusted to or detached from, the front side of the upper portion of the guide R, is a knife-guard, V, formed by a vertically-inclined plate having a front-curved band or lateral flange, *u*, as shown in Fig. 8, that extends partly over the saw-band N, the said plate having its bottom flanged laterally beyond the front side of the knife, and projecting forward in a rounded downward-beveled point, *u'*, against the point of the knife-blade; or may be otherwise formed to protect the upper of the boot or shoe from any injury of the knife-blade. Projecting from the side band of the guide R is a stem or handle, *w*, for the purpose of turning the guide to engage the knife U with, and disengage it from, the heel, the tension of the spring *q* attached to the pin *r*, or otherwise connected with the guide R, holding the latter so as to bear the knife upon the top of the heel. A pin, *s*, projects laterally from the guide-band R at the proper point to support the rear arm Q″, and prevent its going beyond the desired position to properly sustain the heel. The standard C is formed with a longitudinal bore or aperture, *x*, Fig. 6, of smaller diameter at the forward portion, to form a shoulder or abutment for a spiral spring, *y*, located within the larger portion of the aperture, and surrounding a rod, X, attached at the rear to a stem, X′, arranged to shove in at the larger portion of the aperture, and abut against the spring *y*. The forward end of the rod X is hooked or otherwise formed to readily connect with, or be detached from, the hooked or other-formed end of a rod, X″, connected with so as to turn, and projecting laterally from, the rear end of the swinging standard F, which, when the rods X X″ are connected, is thus held firmly in place, and, when the said rods are disconnected, by shoving in the stem X′ or otherwise, is released, to allow of its being thrown to one side, to admit of the adjustment or release of the boot or shoe.

The rods X X″, if desired, may be arranged to be disconnected by the action of a foot-treadle connected with the same.

The operation of my improved machine is as follows: The rods X X″ are disconnected, as above described, to release the swinging standard F, which, turning on the standard D″, is swung out on one side, to allow the adjustment of the boot or shoe on the jack-plate J′, where it is securely held by means of the screw L, which is turned down so as to bear on the top of the last. When the boot or shoe is properly secured the standard F is swung in, and the guard M is, by the action of the lever Q, brought to engage in the groove *c*, where it is held so as to bear up the heel-form, and, consequently, sustain the heel in the desired position by the tension of the spring *q* drawing downward the arm Q″. The knife U is brought to bear on the top edge of the heel by the adjustment of the guide R turning on the axle *a*, and held in position by the spring *q*, as before described, the knife-guard V protecting the boot or shoe upper from any injury of the knife. The rods X X″ are then hooked or otherwise connected, the spring *y* serving to firmly hold them together, and securely holding the standard F in position to bring the heel against the saw N. Power being applied to the axle *a*, the saw N is rotated in a vertical direction against the heel, which is carried back by the jack J, by means of the yoke or lever O, until the center or curved part of the heel is in contact with the saw, when the jack, by means of the stem H turning in the standard F, or otherwise, is turned round, thus carrying the curved portion of the heel against the saw. The jack is now advanced by turning the yoke or lever O in the opposite direction, carrying the other side of the heel to the action of the saw. At the same time the saw is operating vertically on the heel the knife U acts on its top, so as to trim the top edge, thus completing the trimming of the heel at one operation. The rods X X″ are now detached, as before described, or otherwise, to release the standard F, which is swung out for the removal of the boot or shoe and the adjustment of another, and the above operation is repeated.

When desired to form a concave, sloping, or inward-inclined heel, the adjustable plate G″ and cam H′ are adjusted to the required height on their respective stems, and held thereon by their respective screws *f j*. When the jack J is turned the cam H′ is of such shape that in traveling over the adjustable plate G″ it raises the stem H, and consequently the jack and heel, gradually, as the rear or curved portion of the latter is being brought round against the saw, and gradually lowers the same as the sides of the heel are advanced or carried back, thus bringing the heel at an incline with the saw, so as to trim the slope of the heel. When a straight heel is trimmed the plate and cam are lowered so as to become inoperative.

Having thus fully described my improvements, what I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. In a machine for trimming boot and shoe heels, a barrel or band saw, the teeth arranged to rotate against the heel of a boot or shoe, substantially as specified.

2. A saw-guide, R, arranged to turn on the saw-axle of a boot and shoe heel trimming machine, and of a circular shape, cut away on the front, to receive a knife and guard, and countersunk on the front side to receive and allow the action of a lever, Q, provided with a spring, *q*, all constructed substantially as specified.

3. A heel guard or lock, M, formed on the front, as shown, to engage with a groove, *o*, of the heel-form of a boot and shoe heel trimming machine, and notched laterally to allow the passage of a rotary saw, substantially as described.

4. The combination of the guard or lock M, band or barrel saw N, lever Q, spring *q*, guide R, and groove *o*, all constructed substantially as and for the purpose specified.

5. A welt-knife, adjustable to or from the heel of a boot or shoe, and held in position to trim the top edge of the heel at the same time the side of the heel is being operated upon, substantially as herein set forth.

6. A knife-guard, V, constructed and arranged as described, in combination with a guide, R, and knife U, substantially as and for the purpose set forth.

7. In a boot and shoe heel trimming machine, a jack, J, having a bottom plate, J′, grooved on its sides to travel back and forth horizontally on ways of a turning bed-plate or support, I, and cut down at the rear end to form a rest, *l*, for one or more adjustable form-plates, *m′ m*, arranged to form a horizontal groove, *o*, and having a top bar inclined upward from the toe over the top of the bottom plate, the end of said inclined bar being formed with a screw-socket to receive a screw, L, substantially as specified.

8. In combination with a traveling and swinging jack and turning bed-plate of a heel-trimming machine, a yoke or bent lever, O, arranged substantially as and for the purposes described.

9. In a boot and shoe heel trimming-machine, a standard, F, constructed as described, to swing laterally, and formed with vertical sockets to receive vertical stems H G, substantially as and for the purposes described.

10. An adjustable cam, H′, connected with a stem of a jack-support turning in a swinging standard of a boot and shoe heel trimming machine, the cam being cut away so as to raise and lower the stem, when turned by it, to travel over the top of an adjustable plate connected with a vertical stem, G, held in a swinging standard, in combination with the jack J, all constructed as and for the purpose described.

11. A bed-plate or jack-support, I, constructed as described, to support and allow the forward and back horizontal travel of a jack, J, in combination with a vertical stem supported and turning in a swinging standard, F, of a heel-trimming machine, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE B. DUNHAM.

Witnesses:
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SAML. M. BARTON.