

(No Model.)

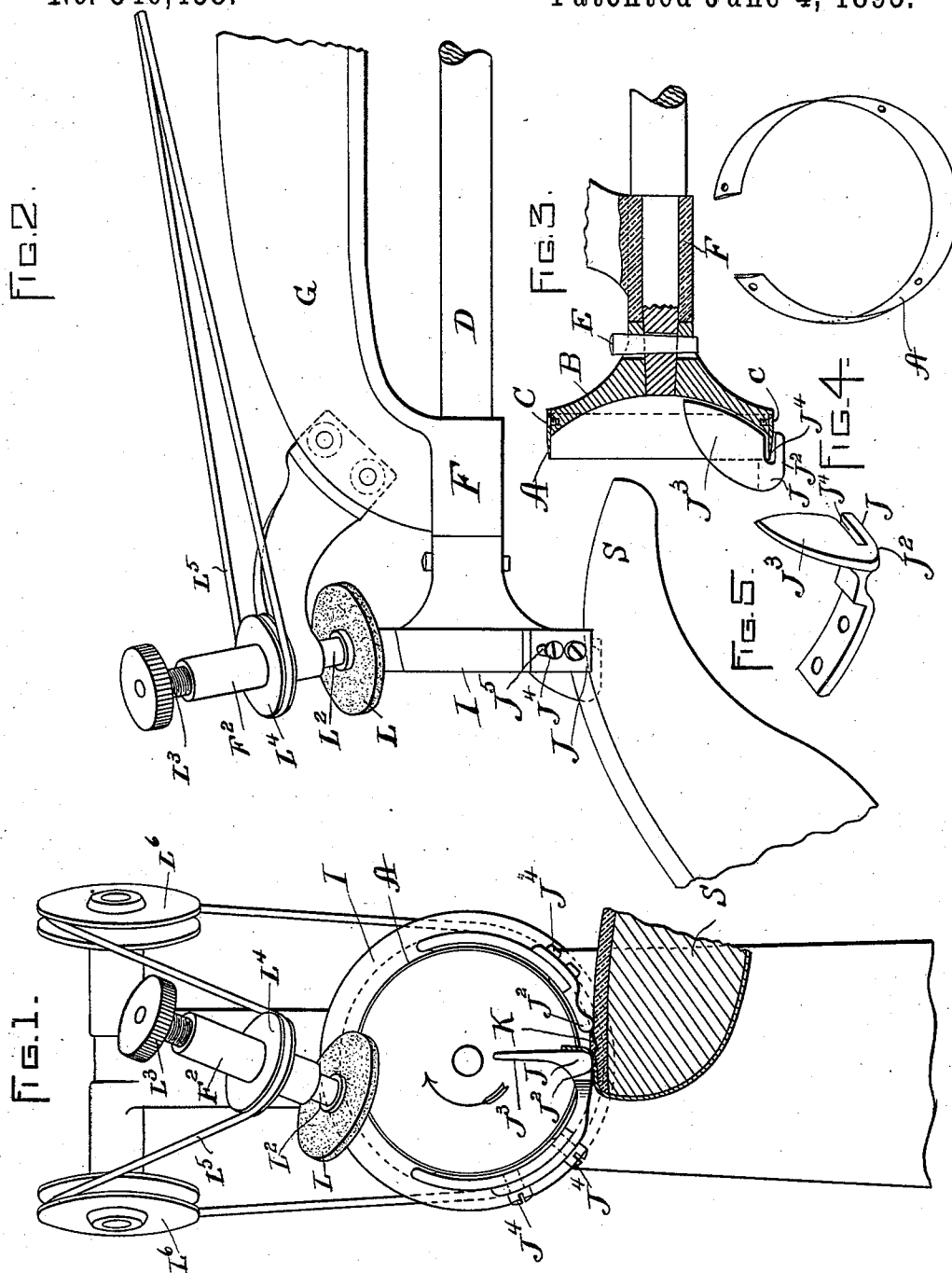
3 Sheets—Sheet 1.

E. S. HARRIS.

MACHINE FOR TRIMMING BOOT OR SHOE UPPERS.

No. 540,438.

Patented June 4, 1895.



WITNESSES:

A. D. Harrison
E. A. Washburn.

INVENTOR:

E. S. Harris
by *Wm. B. Brown & Quincy*
Attys.

(No Model.)

3 Sheets—Sheet 2.

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FIG. 6.

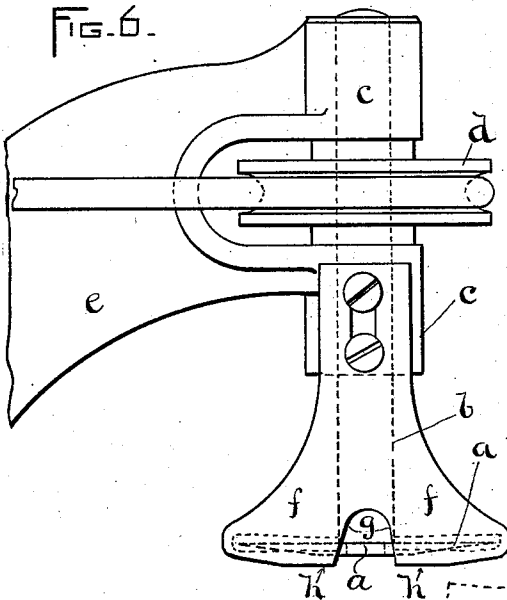


FIG. 7.

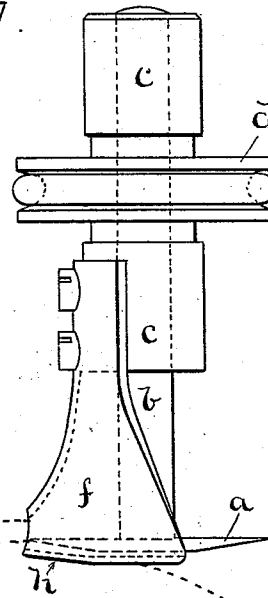


FIG. 8.

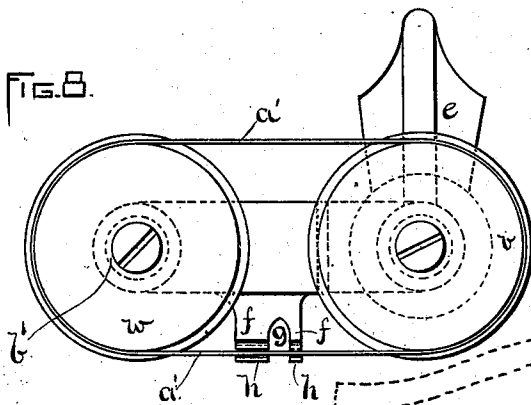
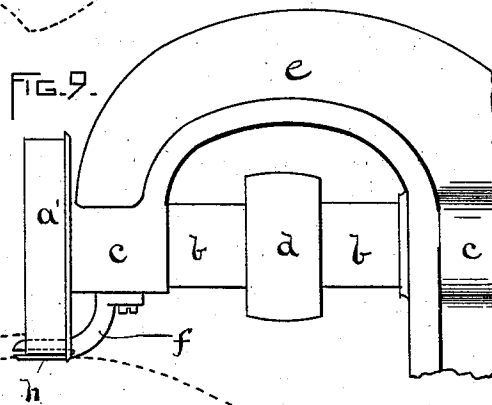


FIG. 9.



WITNESSES
H. D. Harrison.
E. C. Macbroom.

INVENTOR:
E. S. Harris
by Knight Brown & Company
Atty.

(No Model.)

3 Sheets—Sheet 3.

E. S. HARRIS.

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FIG. 10.

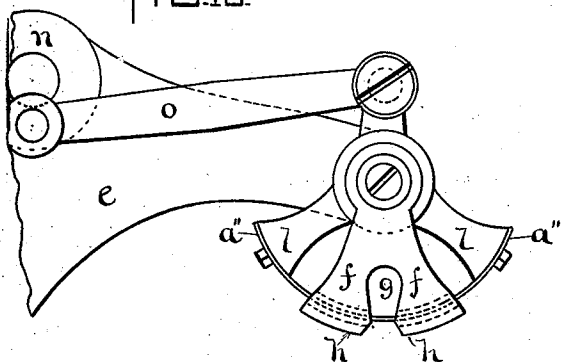


FIG. 11.

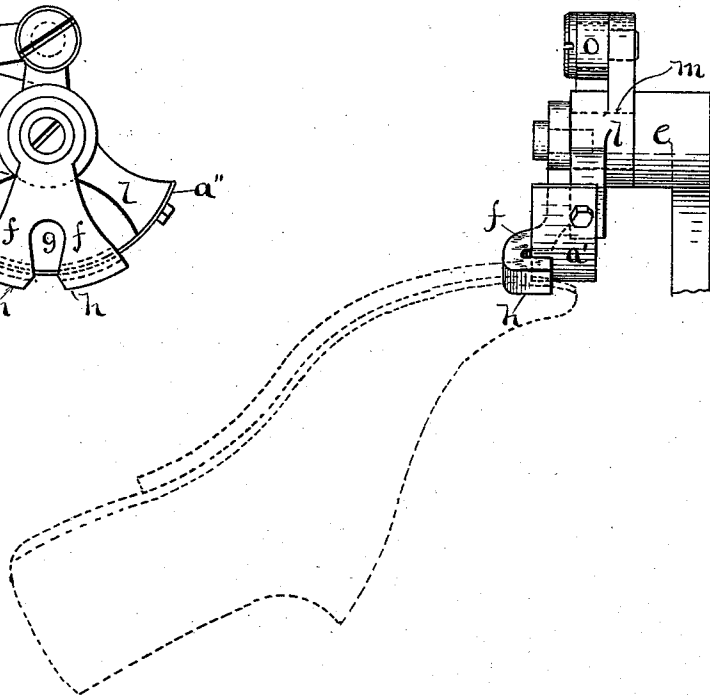


FIG. 12.

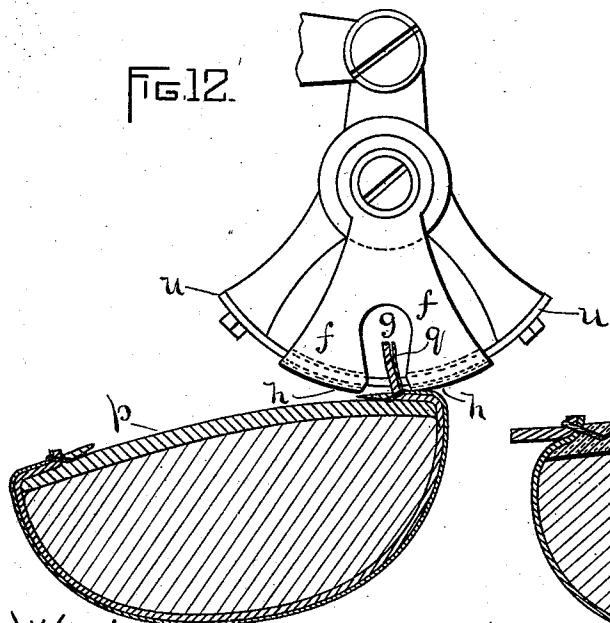
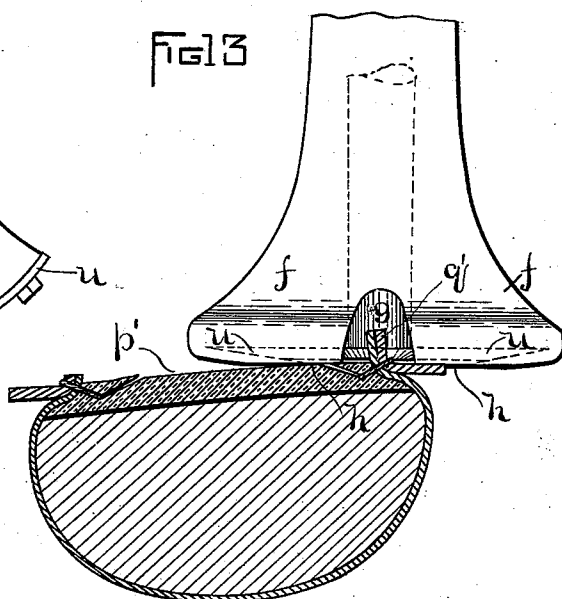


FIG. 13.



WITNESSES:

A. D. Harrison.
C. R. Nashburn.

INVENTOR

E. S. Harris
by Hught Brown & Company
Attys.

UNITED STATES PATENT OFFICE.

ELMER S. HARRIS, OF HAVERHILL, MASSACHUSETTS.

MACHINE FOR TRIMMING BOOT OR SHOE UPPERS.

SPECIFICATION forming part of Letters Patent No. 540,438, dated June 4, 1895.

Application filed April 1, 1895. Serial No. 544,030. (No model.)

To all whom it may concern:

Be it known that I, ELMER S. HARRIS, of Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Trimming Boot or Shoe Uppers, of which the following is a specification.

This invention relates to machines for trimming off the projecting or surplus material which is present in turned and welted shoes after the operation of stitching the upper to the sole, or to the sole and welt, such material being the edges of the upper and welt in a welted shoe, while in a turned shoe it is the edge of the upper only. Machines now in use for this purpose are of two types,—one in which two mutually acting knives remove the surplus material by an intermittent shearing cut; and another in which a single oscillating knife operates intermittently against the feeding and supporting action of a pair of rolls. In the former type, the possible closeness of the cut is limited by the necessary thickness of the shearing knife adjacent to the shoe; but as no positive guide or rest is provided, the results are irregular. In the latter type, no guide or rest of any description is provided, and as the closeness of cut is unlimited, shoes are frequently damaged. A further objection to both types is that the amount of work performed is limited by the lack of continuity due to the intermittent action of the cutting knives, and also by the speed at which the feed-rolls may be arranged to be driven in the latter type.

The object of my invention is to provide a trimming machine in which the construction and appliances are such that the closeness of the cut will be accurately determined, the damage of shoes rendered impossible, and the amount of work limited only by the keenness of the cutting knife and the deftness of the operator. To this end, I provide the cutting knife with two rests separated by a space or recess formed to receive the projecting material to be trimmed, said rests being formed to support the surfaces of a boot or shoe at opposite sides of said material, the cutting edge of the knife extending across said recess above the acting faces of said rests and in position to trim the projecting material at a height determined by the projection of the

said acting faces below the knife. I also provide a continuously moving cutting edge, either by means of an annular rotating knife, a rotary disk knife, a belt knife, or approximately by means of an oscillating knife.

Of the accompanying drawings, forming a part of this specification, Figure 1 is a front elevation of the preferred form of my machine, showing the edge of an annular rotating knife A, two rests J J separated by a recess K, and an emery or other grinding wheel L arranged and adapted to sharpen the edge of the said knife. Fig. 2 is a side elevation of Fig. 1, showing the frame G of the machine, the annular knife upon the shaft D, and means for driving the latter and the grinding-wheel. Fig. 3 is a section of the annular knife and a supporting cupped disk or cutter-head, a portion of the driving-shaft, and a bearing therefor. Fig. 4 is a perspective view of the annular knife made from a strip of sheet steel and bent to a circle, but shown with the abutting ends sprung apart. Fig. 5 is a perspective view of one of the rests and a chip-guard J³, to be more specifically described hereinafter. Fig. 6 is a side elevation of that portion of a trimming-machine embodying my improvement and showing the application of the rests to a rotary disk knife. Fig. 7 is an end view of the parts shown in Fig. 6. Fig. 8 is similar to Fig. 6, but showing the application of the rests to a belt-knife. Fig. 9 is an end view of the parts shown in Fig. 8. Fig. 10 is similar to Fig. 6, but showing the application of the rests to an oscillating knife. Fig. 11 is an end view of the parts shown in Fig. 8. Fig. 12 is a transverse section of a portion of a turned shoe, together with the rests and knife, showing the relation of the several parts with the shoe and the projecting material to be trimmed. Fig. 13 is similar to Fig. 12, but showing a welted shoe in place of a turned shoe.

Corresponding parts in the several views are denoted by like letters of reference.

Referring now in particular to Figs. 1 to 5, inclusive, A represents the annular knife secured to a cupped disk or cutter-head B by means of screws C. The said cutter-head is secured to a driving-shaft D by a tapered fit and key E or other suitable means. The said

shaft rotates in bearings F supported by a frame G, and is provided with a belt-driven pulley and balance-wheel. A guard I secured to the frame G projects forward and incloses the knife A, protecting both the latter and the workman from accident. Adjustably secured to the said guard are the rests J J separated by the recess K and having the acting faces J² J² and the recess J⁴ arranged to receive the knife. The rest toward which the knife rotates and against which the shoe and the trimmed surplus material are consequently pressed is provided with a chip-guard J³ projecting inward toward the center of the cutter-head B and close to the face thereof. The purpose of the said chip-guard is to deflect the trimmed material from following the course of the rotating knife and to facilitate the discharge from the knife of the said material or chips. I further provide my improved trimming-machine with an emery or other grinding wheel L for the purpose of conveniently sharpening the rotary knife. The said grinding wheel is secured upon a shaft L² rotating in bearing F² supported by the frame G, and is provided with an adjustable screw L³ by means of which the said grinding wheel may be fed to or from contact with the rotary knife at the will of the operator. A pulley L⁴ is secured to the shaft L² and is driven by a belt L⁵ passing over suitable idler pulleys L⁶ supported on the frame G and from a driving pulley secured upon the shaft D. The adjustment of the rests J J may be by means of the screws J⁴ and slots J⁵, or any other suitable means. At S S is shown the outlines of a shoe in position to be trimmed.

The operation will be evident. The workman presses the shoe upward against the rests and forward against the knife, with the surplus material to be trimmed introduced in the recess K, and the said surplus material is rapidly cut away, the chips being deflected and thrown from the knife by the chip-guard J³; but I do not confine myself to this particular form of knife, and will now describe several modifications.

Referring in particular to Figs. 6 and 7, *a* represents the rotary knife, secured at the end of a shaft *b* revolving in fixed bearings *c c* and provided with a belt-driven pulley *d*. Secured to the frame *e*, which supports the bearings, shaft, and knife, are the rests *f f* separated by the recess *g* and having the acting faces *h h* which extend under the knife.

Referring to Figs. 8 and 9, *a'* *a'* represent a belt knife, *v* a driving pulley, and *w* an adjustable idler pulley, over which pulleys the knife runs. *b* is the shaft to which the driving pulley is secured, revolving in fixed bearings and provided with the belt-driven pulley *d*. *b'* is the shaft to which the idler pulley is secured, revolving in adjustable bearings. Secured to the frame *e* which supports the bearings, shafts, and knife, are the rests *f f* arranged as above described.

Referring to Figs. 10 and 11, *a'' a''* repre-

sent an oscillating knife secured to a frame *l* oscillating upon the fixed shaft *m* and driven by a crank or eccentric *n* by means of the connecting-rod *o*. Secured to the frame *e* which supports the bearings, knife, &c., are the rests *f f* arranged as above described.

Referring now to Fig. 12, *p* is a section of part of a turned shoe; *q*, a section of the projecting edge of the upper, a portion of which is to be removed; *f f*, the rests; *g*, the recess receiving the projecting material to be trimmed, and *h h* the acting faces against which the sole or surface of the shoe on opposite sides of said material is pressed, and *u u* is a knife having its cutting edge extending across the said recess at such a height above the acting faces as to remove so much of the surplus portion as may be desired and no more, as hereinbefore described.

Referring now to Fig. 13, *p'* is a section of a portion of a welted shoe; *q'*, a section of the projecting edge of the upper and welt, a portion of which is to be removed, all shown in relation to the rests and knife as in the case of a turned shoe described above.

It will be seen that the closeness of the trimming depends on the thickness of the rests and their adjustment in relation to the knife.

A further advantage is that the part of the rests forming the sides of the recess act as a support for the material to be trimmed, against the displacing action of the moving knife.

It will also be evident that the amount of work performed is chiefly dependent on the skill of the operator, since the speed and length of the knife-edge is merely a matter of dimension.

The knife A shown and described in this application is shown and described and claimed in another application for Letters Patent of the United States filed by me the 11th day of May, 1895, Serial No. 548,927.

I claim—

1. In a trimming-machine of the character specified, the combination of two adjustable rests separated by a recess formed to receive the projecting material to be trimmed, said rests being formed to support the surfaces of a boot or shoe at opposite sides of the said material, a knife having its cutting edge extending across the said recess above the acting faces of the said rests and in position to trim the projecting material at a height determined by the projection of the said acting faces below the knife, and means for operating said knife.

2. In a trimming-machine of the character specified, the combination of two adjustable rests separated by a recess formed to receive the projecting material to be trimmed, said rests being formed to support the surface of a boot or shoe at opposite sides of the said material, a knife having a continuously acting cutting edge such as that possessed by an annular rotating knife, a rotary disk knife, or

a band knife, and having its cutting edge extending across the said recess above the acting faces of the said rests and in position to trim the projecting material at a height determined by the projection of the said acting faces below the knife, and means for operating said knife by moving it progressively in one direction.

3. In a trimming-machine of the character specified, the combination of an annular rotating knife secured to a suitable shaft turning in fixed bearings on a supporting frame, a belt-driven pulley secured to the said shaft, and two rests adjustably secured to and supported by the said frame, the said rests being separated by a recess formed to receive the projecting material to be trimmed and formed to support the surfaces of a boot or shoe at opposite sides of the said material.

4. In a trimming-machine of the character specified, the combination of an annular rotating knife secured to a suitable shaft turn-

ing in fixed bearings on a supporting frame, a belt-driven pulley secured to the said shaft, two rests adjustably secured to and supported by the said frame, the said rests being separated by a recess formed to receive the projecting material to be trimmed and formed to support the surfaces of a boot or shoe at opposite sides of the said material, and a grinding wheel adapted to sharpen the said annular knife secured to a suitable shaft turning in bearings on the said supporting frame and driven by a belt and suitable pulleys, the said grinding wheel being adjustable to and from contact with the edge of the said knife.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 19th day of January, A. D. 1895.

ELMER S. HARRIS.

Witnesses:

A. D. HARRISON,
ROLLIN ABELL.