

(No Model.)

3 Sheets—Sheet 1.

W. H. PAIGE.

SOLE FITTING AND CHANNELING MACHINE.

No. 474,608.

Patented May 10, 1892.

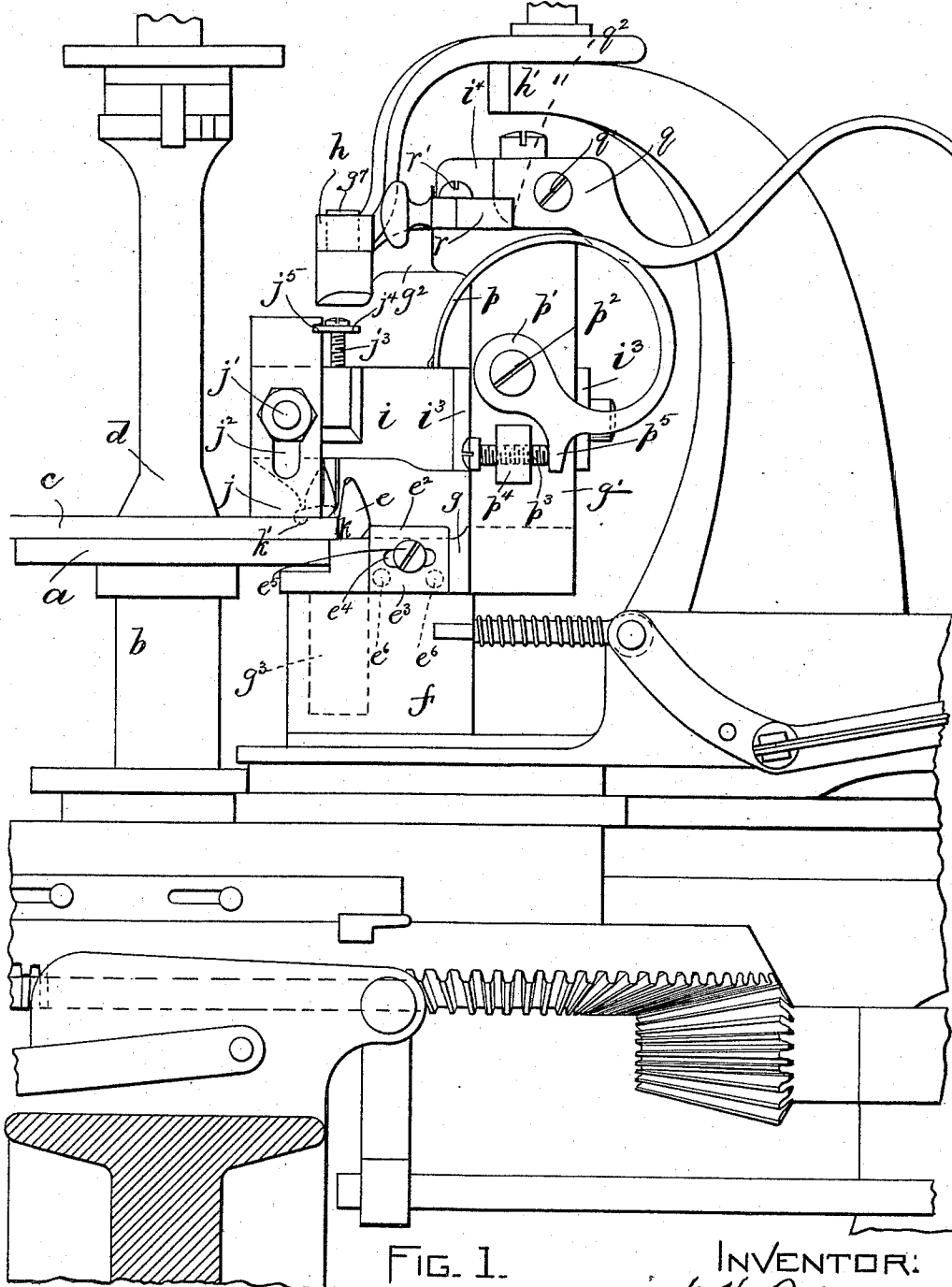


FIG. 1.

WITNESSES:
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L. E. Brown.

INVENTOR:
W. H. Paige
by Night Brown & Co.
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(No Model.)

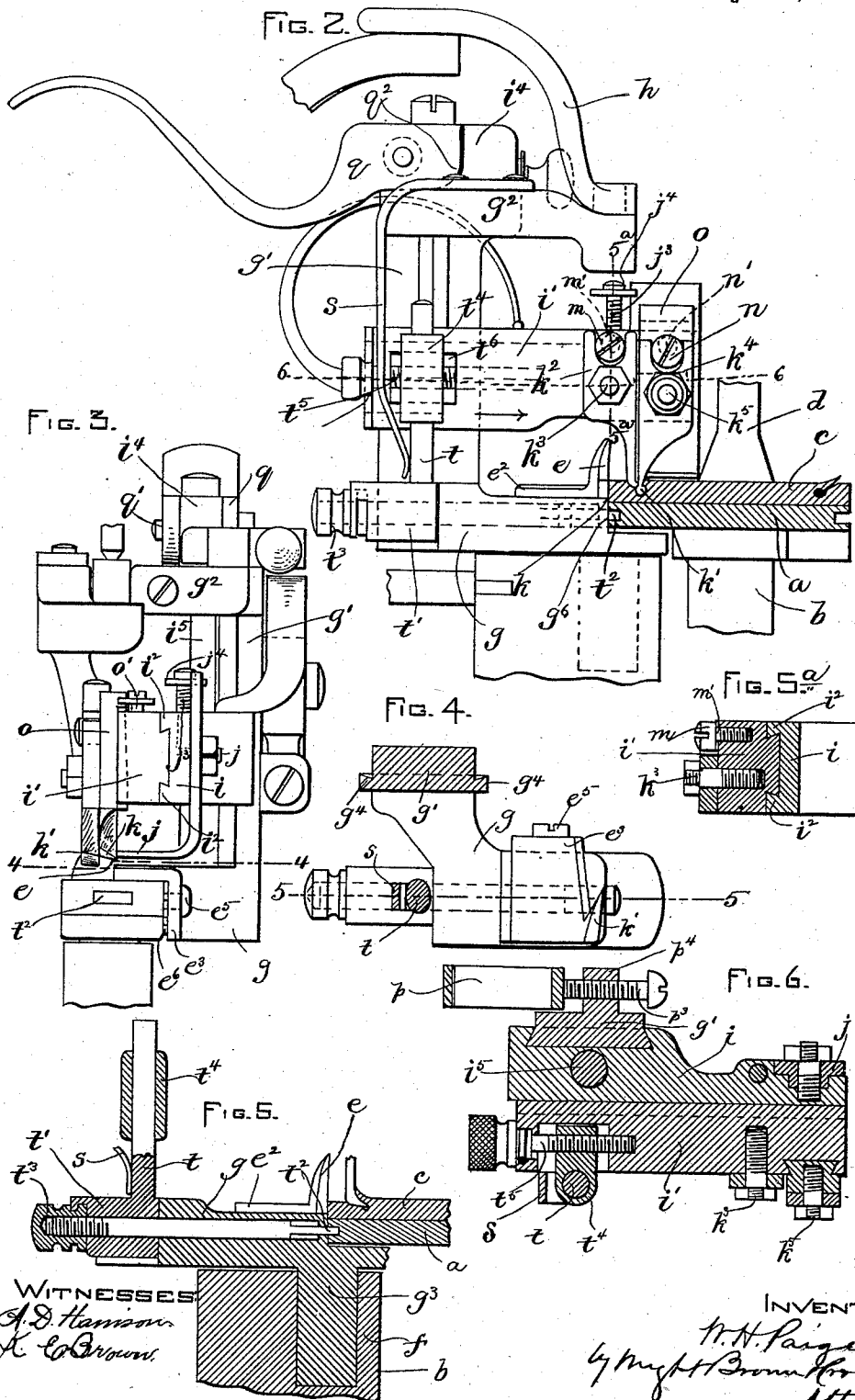
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SOLE FITTING AND CHANNELING MACHINE.

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Patented May 10, 1892.



WITNESSES
A. D. Hanson.
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(No Model.)

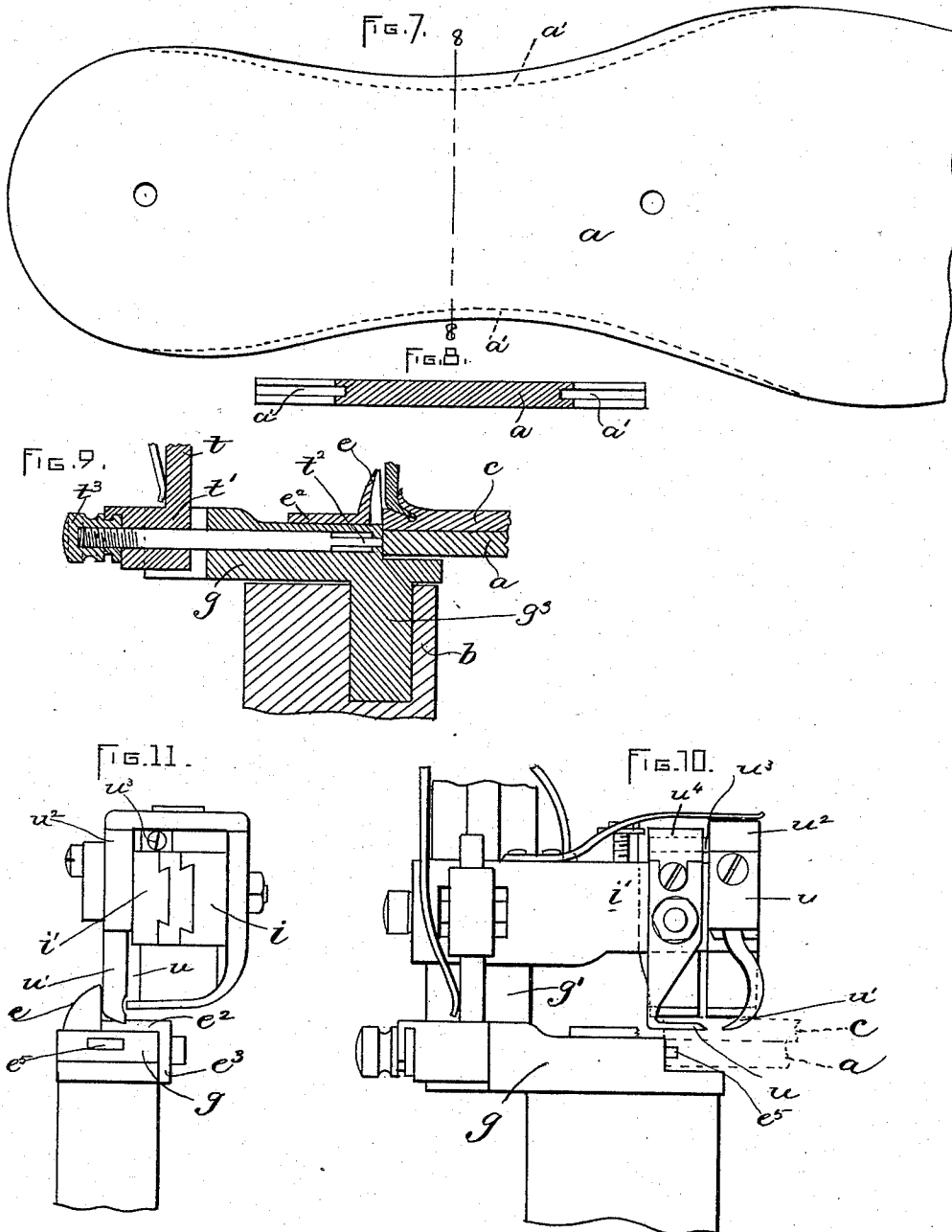
3 Sheets—Sheet 3.

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Patented May 10, 1892.



WITNESSES:
A. D. Hanson.
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UNITED STATES PATENT OFFICE.

WILLIAM H. PAIGE, OF BROCKTON, MASSACHUSETTS.

SOLE FITTING AND CHANNELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 474,608, dated May 10, 1892.

Application filed July 1, 1891. Serial No. 398,156. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. PAIGE, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain
5 new and useful Improvements in Sole Fitting and Channeling Machines, of which the following is a specification.

This invention relates to certain improvements in machines for rounding or trimming
10 flat soles before they are incorporated into boots or shoes, and at the same time cutting the stitch-receiving channels in said soles; and it has for its object to provide certain improvements in machines of this class looking
15 to the increased efficiency of the machine.

The invention consists in the several improvements, which I will now proceed to describe and claim.

In the accompanying drawings, forming a
20 part of this specification, Figure 1 represents a side elevation of a portion of a sole fitting and channeling machine embodying my invention. Fig. 2 represents an elevation of a portion of the opposite side from that shown in
25 Fig. 1. Fig. 3 represents an end elevation of the portion of the machine shown in Fig. 2. Fig. 4 represents a section on the line 4 4 of Fig. 3, looking downwardly. Fig. 5 represents a section on the line 5 5 of Fig. 4. Fig.
30 5^a is a detail section on line 5^a 5^a of Fig. 2. Fig. 6 represents a section on line 6 6 of Fig. 2. Fig. 7 represents a top plan view of the pattern employed in my improved machine. Fig. 8 represents a section on line 8 8 of Fig.
35 7. Fig. 9 represents a view similar to Fig. 2, showing some of the parts in a different position. Fig. 10 represents a side elevation of a modification. Fig. 11 represents an end view of the same.

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

a represents the pattern, which is the exact shape of the sole that is fitted and channeled by the operation of the machine, said pattern
45 being adjustably secured to a fixed support *b*, which constitutes a part of the machine.

c represents the sole to be trimmed, the same being placed upon the pattern *a* and secured thereto by any suitable means, such as
50 a clamp *d*, substantially as shown in Letters Patent granted to Jason Smith, January 9, 1883, No. 270,498. The pattern and sole are

revolved on a fixed center, while the channeling and trimming devices, hereinafter described, are yieldingly held in operative relation to the pattern and caused to simultaneously trim the edge and channel the face of the sole, the pattern and the channeling and trimming devices being actuated by any suitable means—such, for example, as are shown in 55
60 the patent above mentioned—my invention relating to the channeling and trimming knives and to the devices for directly supporting and adjusting the same, and not to the means for actuating the said knives and the pattern. 65

e represents the sole-trimming knife, which is mounted upon a supporting bed or plate *g*, the latter being supported by the carrier *f*, substantially as shown in the patent above referred to or otherwise. The knife *e* is provided with a shank *e*², which is formed to rest upon the top of the plate *g*, and has at one end a downwardly-projecting flange *e*³, which is provided with a slot *e*⁴, receiving a screw *e*⁵, which passes through said slot into 75
the supporting-plate *g*.

*e*⁶ represent bearing-screws, which are inserted in the plate *g* and bear at their outer ends against the inner side of the flange *e*³, the head of the screw *e*⁵ bearing against the 80
outer side of said flange. It will be seen, therefore, that the screws *e*⁵ and *e*⁶, arranged as shown, constitute a convenient means for adjusting the trimming-knife *e* to compensate for wear of its cutting-edge, the flange *e*³ being clamped between the outer ends of the screws *e*⁶ and the inner surface of the head of the screw *e*⁵, so that the adjustment of said screws out or in from the edge of the plate *g* will correspondingly adjust the knife *e*. 85
90 The slot *e*⁴ permits the knife *e* to be adjusted laterally or toward and from the edge of the pattern *a*, as will be readily seen.

The knife-supporting bed or table *g* is provided with a vertical standard *g*¹, projecting 95
above the plate *g*, said standard having at its upper end an arm *g*², the outer end of which is directly over and in line with the trunnion *g*³, which is affixed to the bed or plate *g* and is fitted to turn in a socket in the carrier *f*. 100

h represents a center, which is affixed to a vertical standard *h*¹ and bears on the outer end of the arm *g*², said center and the trunnion *g*³ being in line with each other, so that the

bed or plate *g* and standard *g'* are adapted to swing horizontally, as described in the Smith patent, above referred to.

i represents an arm or holder, which supports the presser foot or gage *j*, the channeling-knife *k*, and the grooving-knife *k'*, which cuts the stitch-receiving groove in the bottom of the channel formed in the face of the sole by the channeling-knife. The foot or gage *j* is arranged to bear on the upper surface of the sole at a point immediately in front of the channeling-knife *k*, and is attached to the arm *i* by means of a bolt *j'*, passing through a vertical slot *j²* in the shank of said foot or gage, said slot and screw permitting the gage to be adjusted vertically. The vertical adjustment of the gage *j* may be effected by means of a screw *j³*, having a broad head *j⁴*, engaged with a groove *j⁵* in the shank of the gage *j*, said screw being inserted in a threaded socket in the arm *i*, so that when rotated it will be moved up or down, as the case may be, and thus correspondingly move the gage *j*. The knives *k* and *k'* are directly attached to a slide *i'*, which is supported by and is horizontally movable upon the arm *i*, said arm *i* having dovetailed guides or ways *i²* *i³*, Fig. 3, which receive a corresponding dovetailed tongue on the slide *i'*, so that the knives *k* *k'* are movable horizontally toward and from the trimming-knife *e*, independently of the gage *j*, the latter being attached directly to the arm *i*, as above stated, said arm having no horizontal movement. The channeling-knife *k* has its shank *k²* formed to bear on one side of the slide *i'*, and said shank is provided at its upper end with a recess, which receives the eccentric head *m* of a screw *m'*, which is inserted in the slide *i'*. By rotating said screw the eccentric head is caused to adjust the channeling-knife laterally by turning the shank *k²* of said knife on a pivot *k³*, that secures it to the slide *i'*, the eccentric head *m* bearing on the sides of the recess in said shank, as shown in Fig. 2. The grooving-knife *k'* has its shank *k⁴* pivoted at *k⁵* to a block *o*, which is vertically movable in a guide or way formed for it in the slide *i'*, and is engaged at its upper end with the head *o'* of a screw *o²*, (see Fig. 3,) inserted in the slide *i'*, said screw being adjusted vertically when rotated, and thus moving the block *o* and grooving-knife *k'* up or down, as the case may be, to vary the depth of the groove cut in the channel. The shank *k⁴* has a recess in its upper end receiving the eccentric-head *n* of a screw *n'*, said screw by its rotation imparting a lateral adjustment of the grooving-knife *k'*, the adjustments of the two knives *k* and *k'* being similar, so that each is movable toward and from the trimming-knife *e* to vary the distance of the channel and groove from the trimmed edge of the sole. It will be seen that the pivotal connection of the shanks of the knives *k* and *k'*, respectively, to the supporting-slide *i'* and the block *o* and the eccentric-headed screws engaged with recesses in the

upper ends of said shanks constitute a very simple and desirable means for effecting the lateral adjustment of the knives.

The arm *i* is adapted to slide vertically on the standard *g'*, and is provided with ears or gibs *i³* *i³*, which are engaged with guides or ways *g⁴* on the standard *g'*. (See Fig. 6.) The vertical movability of the arm *i* enables the gage *j* and knives *k* *k'* to be raised out of their operative position when it is desired to trim or round the edge of the sole without channeling. The arm *i* is normally held down to keep said gage and knives in their operative position by means of a spring *p*, which is mounted upon a standard *g'*, one end of said spring being enlarged to form a hub *p'*, which is pivotally connected to the standard *g'* by means of a screw or pivot *p²*, the free end of the spring bearing on the upper end of the arm *i*, as shown in Fig. 1. The spring *p* has sufficient force to hold the gage *j* and knives *k* *k'* down to their work, and is at the same time sufficiently yielding to permit said gage and knives to be raised by means of a cam-lever *q*, which is pivoted at *q'* to a head *q⁴*, formed on a vertical rod or standard *q⁵*, affixed to the arm *i*, said standard being adapted to slide vertically in a guide formed for it in the arm *g²*. The lever *q* has one end formed as a cam *q²*, which bears on the upper side of the arm *g²*, and is so formed that when the outer end of the lever is raised from the position shown in Figs. 1 and 2 the cam will elevate the head *q⁴*, rod *q⁵*, and arm *i* with the attachments on said arm—viz., the gage *j*, slide *i'*, and knives *k* *k'*, this upward movement being against the stress of the spring *p*, and causing the immediate elevation of the knives *k* *k'* and gage above their operative positions. The stress of the spring *p* may be varied by means of an adjusting-screw *p³*, inserted in a lug *p⁴*, formed on the standard *g'*, (see Fig. 1,) and bearing against an ear *p⁵*, formed on the rigid portion or hub of the spring.

When the lever *q* is raised to elevate the arm *i* and its attachments, as above described, the parts thus elevated may be retained in their elevated position by means of a catch or button *r*, which is connected by a screw or pivot *r'* to the arm *g²*, and is adapted to be turned so that one end will project under the head *q⁴* when the latter is elevated, thus preventing the depression of said head and of the arm *i* and its attachments until the button is turned to remove it from under said head.

The horizontally-movable slide *i'*, carrying the channeling-knife *k* and grooving-knife *k'*, is normally pressed forward to hold said knives at their maximum distance from the trimming-knife *e* by means of a spring *s*, which is attached to the arm *g²*, and has its free end arranged to bear on a part affixed to the slide *i'*, the tendency of said spring being to move the slide *i'* in the direction indicated by the arrow in Fig. 2. The object of the movable

slide i' and spring s is to enable the knives k and k' to cut the channel and groove at varying distances from the edge of the sole, so that the channel may be cut farther from the edge at the shank than at other portions of the sole-edge.

To the slide i' is connected a vertical rod or stud t , the lower end of which is affixed to a block t' , mounted on a slide t^2 , which is movable in a guide formed for it in the bed or plate g , the forward end of said slide projecting beyond the shoulder or face g^6 , which is formed on the plate or bed g as the surface that bears on the edge of the pattern a . In the edges of the shank portions of said pattern are formed grooves $a' a'$, as shown in Figs. 2, 7, and 8, said grooves gradually decreasing in depth from their central portions to their ends, as indicated by the dotted lines in Fig. 7. The slide t^2 is arranged to coincide with said grooves, and is formed to enter the same, so that when the movement of the carrier f brings the bed or plate g and slide t^2 to the shank portion of the pattern the slide t^2 will be forced by the spring s outwardly into the groove a' , as shown in Fig. 2, the slide i' and the knives $k k'$ moving outwardly to the same extent, so that the knives $k k'$ are caused to recede from the trimming-knife e and thus cut the channel along the shank portion farther from the edge of the sole than elsewhere. Thus the slide t^2 constitutes a guide connected with the operating-knives, and by entering the groove a' , of the pattern serves to guide or hold the said knives at the proper distance from the center of motion. When the bed or plate g passes away from the grooved portion of the pattern, the slide t^2 is forced outwardly by the edge of the pattern until its outer end is flush with the shoulder g^6 , as shown in Fig. 9, the knives $k k'$ being thus caused to approach the trimming-knife e and cut the channel at the minimum distance from the edge of the sole. This provision for automatically varying the distance between the channel and the edge of the sole is new with me, and is a feature of much importance.

The slide t^2 is preferably independently adjustable, so that when in the position shown in Fig. 2 it may project to any desired extent outside of the shoulder g^6 . To this end I form a screw-thread on the rear end of said slide, as shown in Fig. 5, and engage with said threaded portion a nut t^3 , which is connected with the block t' , so that when rotated it will move the slide t^2 endwise. The stud t , which connects the slide t^2 with the slide i' , is shown as entering a sleeve t^4 , which is adjustably secured to the slide i' by means of a screw t^5 , said screw being engaged with the slide i' , so that it will rotate without moving endwise therein. The sleeve t^4 has a projection or offset at one side projecting into a slot t^6 in the slide i' , said projection having a screw-threaded orifice which receives the screw t^5 . The rotation of said screw moves

the slide i' endwise in one direction or the other, thus moving the knives $k k'$ toward or from the trimming-knife. The spring s is preferably arranged to bear on the stud t , as shown in Fig. 2, and its pressure normally holds the block t' against the rear end of the bed or plate g , so that the stud t and the sleeve t^4 thereon becomes the standard by which the slide i' is adjusted when the screw t^5 is rotated.

From the foregoing it will be seen that the following advantages are secured by my invention, viz: First, the trimming-knife is capable of being readily adjusted to compensate for wear of its cutting-edge; second, the channeling and grooving knives are adapted to be quickly thrown up from their operative position and as quickly restored thereto; third, the channeling and grooving knives are adapted to be readily adjusted laterally, first, by means of the eccentric-headed screws m' and n' , and, secondly, by means of the adjusting-screw t^5 ; fourth, the channeling and grooving knives are adapted to automatically vary the distance between the channel and the edge of the sole. The machine is therefore capable of any desired adjustment, and the convenience of its operation is greatly increased over that of any other machines not provided with the described improvements.

In Fig. 10 I show the slide i' , provided with two channeling-knives $u u'$, arranged to form a lip and channel on an inner sole. The knife u is formed to cut into the edge of an inner sole to form the usual upwardly-turned lip, to which (in a welted shoe) the welt is stitched, while the knife u' is arranged to cut the channel in the upper surface of the inner sole. The knife u is attached directly to the slide i' and is preferably made adjustable by means of an eccentric-headed screw and a pivotal connection with the slide i' after the manner of adjusting the channeling-knife k . The knife u' is attached to a slide u^2 , movable horizontally on the slide i' to permit the knife u' to be adjusted toward and from the knife u , and thus vary the distance between the channel cut by the knife u' and the bottom of the lip cut by the knife u . The slide u^2 is adjusted by means of a screw u^3 , the head of which is engaged with a groove in said slide, while its threaded shank is engaged with a threaded socket in a boss u^4 on the slide i' .

The attachment shown in Figs. 10 and 11 may be used interchangeably with the knives k and k' and their supporting devices shown in the preceding figures.

It is obvious that the slide i' may be omitted in case it is not desirable to give the channeling and grooving knives the described automatic movement from and toward the trimming-knife, the said knives being in such case supported directly by the arm i .

I claim—

1. In a sole fitting and channeling machine, the edge-trimming knife e , having a flange e^3

on its shank, combined with a bed or support for said knife, the adjusting-screw e^5 , bearing on the outer side of said flange, and the adjustable bearing-screws e^6 , arranged to bear on the inner side of said flange, as set forth.

2. In a sole fitting and channeling machine, the combination, with the supporting bed or plate g , having a standard g' , of the arm i , vertically movable on said standard and normally depressed by a spring, and channeling devices supported by said arm, as set forth.

3. In a sole fitting and channeling machine, the combination, with the supporting bed and plate g , having a standard g' , of the arm i , vertically movable on said standard and normally depressed by a spring, the gage j , the channeling-knife k , and the grooving-knife k' , supported by said arm, and means, substantially as described, for vertically adjusting said gage and for laterally adjusting said knives, as set forth.

4. The combination, with the supporting-standard g' and the vertically-movable arm i , provided with channeling devices, of the curved spring p , having at one end a hub pivotally connected to said standard, and a pressure-adjusting screw p^3 , supported by said standard and arranged to bear on an ear or projection on the spring, as set forth.

5. The combination, with a supporting-standard, the arm i vertically movable thereon and provided with channeling devices, the arm-depressing spring and the arm-raising lever, and connections between said lever and the arm, of a movable stop or button adapted to hold the arm in its raised position, as set forth.

6. The combination of the supporting bed or plate, the trimming-knife thereon, the vertical standard on said plate, an arm i , supported above said plate, a slide i' , horizontally movable on said arm and provided with channeling devices, a spring arranged to normally hold the channeling devices at their maximum distance from the trimming-knife, a slide t^2 , arranged to project beyond the pattern-supporting shoulder or surface on said bed or plate, and connections between said slide t^2 and the channeling-knife-carrying slide, whereby movement imparted to the slide t^2 by the edge of the pattern is caused to also move the knife-carrying slide, as set forth.

7. The combination of the knife-carrying slide i' , the knives k k' , supported thereby, the shank of each knife being mounted to swing on a pivot, and the eccentric-headed

screws engaged with recesses in the upper ends of said shanks, whereby the knives may be laterally adjusted, as set forth.

8. The combination of the knife-carrying slide i' , the knives k k' , supported thereby, the adjusting-slides t^2 , the stud t , secured to said slide, the sleeve t^4 , receiving the stud t , and the adjusting-screw t^5 , engaged with the slide i' and with the sleeve t^4 , whereby the slide i' and the knives thereon may be laterally adjusted, as set forth.

9. The combination of the knife-carrying slide i' , the slide o , vertically movable on the slide i' , means for vertically adjusting the slide o , the channeling-knife secured to the slide i' , and the grooving-knife secured to the slide o and adapted to be vertically adjusted, as set forth.

10. The combination of the bed or plate g , the trimming-knife thereon, the slide t^2 , movable in said bed or plate, the channeling-knife-carrying slide i' , located above said bed, the block t' , secured to the slide t^2 , the stud t , connecting the block t' with the slide i' , and the adjusting-nut t^3 , engaged with the slide t^2 and with the block t' , whereby said slide may be independently adjusted, as set forth.

11. In a sole fitting and channeling machine, the combination, with the pattern a , having grooves a' of varying depths formed in the edges of its shank portion, of means for clamping a sole to the pattern, knives for operating on the sole, a guide connected with the knives and adapted to enter said grooves, and means for normally pressing the guide toward the pattern, for the purpose set forth.

12. The combination of the pattern a , having grooves a' in the edges of its shank portion, the fixed trimming-knife, the channeling and grooving knives movable toward and from the trimming-knife, a slide t^2 , formed to project below the trimming-knife and to enter the grooves a' , connections between said slide and the channeling and grooving knives, and a spring whereby the slide and channeling and grooving knives are normally pressed in one direction to separate the said channeling and grooving knives from the trimming-knife, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 22d day of June, A. D. 1891.

WILLIAM H. PAIGE.

Witnesses:

C. F. BROWN,

A. D. HARRISON.