

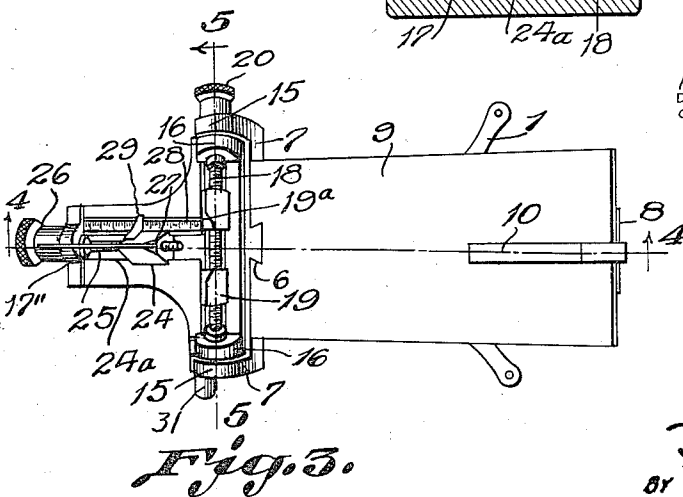
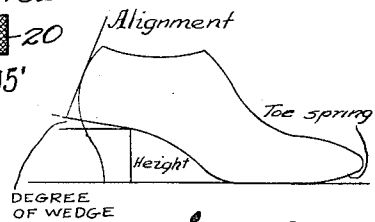
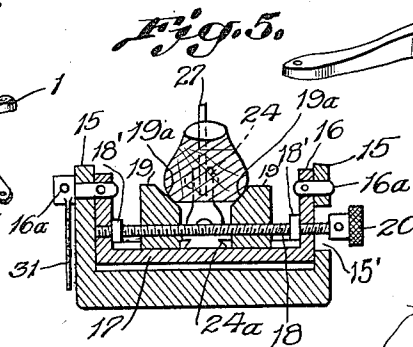
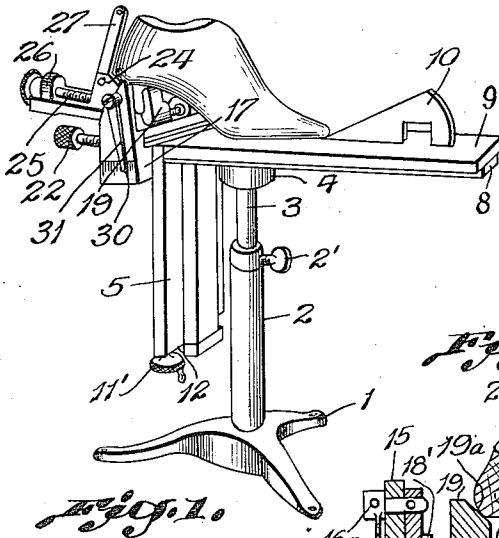
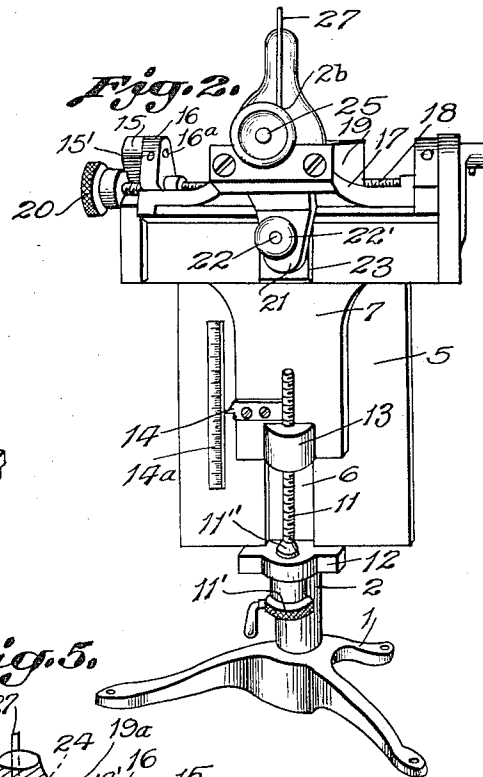
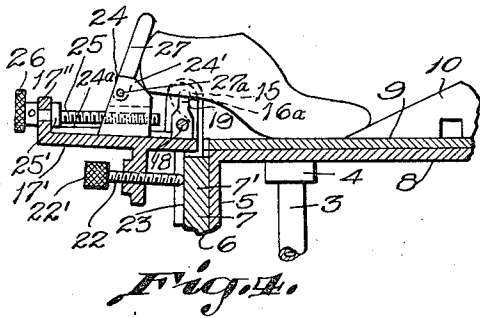
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G. CLAUSING

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MACHINE FOR TESTING LASTS

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2,013,458

MACHINE FOR TESTING LASTS

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corporation of Ohio

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9 Claims. (Cl. 33—3)

My invention relates to machines for testing and gauging the measurements of lasts.

In the manufacture of shoe lasts, the contour of the bottom line of a last is very difficult to measure as concerns the height of the heel seat portion and what height of a shoe heel which the last will take or is designed for, the degree of wedge of the last heel seat portion and degree of wedge of a shoe heel which the last will take or is designed for, the alinement of the last parts for proper cooperation with a heel, and as concerns the toe spring of the last. Designers and last makers not only find it difficult to make up a last of completely new measurements without some means of accurately determining the above factors, but also find it extremely difficult to make up lasts from predetermined measurements and instructions. Shoe manufacturers find it difficult to determine what height and degree of wedge of heel a last to be used by them will take.

It is one object of my invention to provide a measuring instrument or device which will enable a shoe last maker, designer or user to test the dimensions and contours as concerns the bottom line of the last, both to test and determine features of the bottom line of a last which has already been made up, and so that, being given certain dimensions for heel height and degree of wedge of a heel to be used on a last, or the toe spring desired on the last, a new last may be built up which will be correct as to all features of bottom line and toe spring, or may accurately determine the features of an old last which is to be used or reproduced. Likewise, the last or model may be accurately alined to properly receive a heel.

Specifically, it is an object of my invention to provide a device by means of which the bottom lines of a last may be accurately measured or tested to determine the height and degree of wedge of a heel to which the last is adapted, the toe spring of the last, and the alinement of the last, and in which each of the different dimensions may be especially designated.

Broadly stated my improved device comprises a horizontal support on which the tread of the last rests with the heel part of the last projecting past one end of the support, which end has a vertical depending part on which is guided for up and down adjustment a carriage in which is trunnioned a frame to tilt forwardly or rearwardly, and which frame carries a pair of gauge blocks to contact the side edge portions of the bottom of the heel portion of the last, and which are laterally adjustable and have their portions

contacting with the last edges inclined so as to more or less elevate the rear portion of the last accordingly as they are adjusted toward or away from each other. This carriage also carries a rear block adjustable forwardly and rearwardly and having a blade pivoted therein and upstanding therefrom to be inclined into close relation with the back of the last to gauge the lateral adjustment of the last on the device with reference to what would be the back seam of a shoe made on the last. I also provide a wedge shaped gauge to rest on the horizontal part of the device and be inserted under the toe of the last for gauging the toe spring of the last.

Objects other than those above mentioned will appear in the course of the following more detailed description which is illustrated by the accompanying drawing, in which—

Fig. 1 is a side perspective view of a device embodying my invention, with a last being gauged thereon.

Fig. 2 is a rear perspective view of the same.

Fig. 3 is a top perspective view of the same, but without the last thereon.

Fig. 4 is a partial longitudinal vertical section on the plane of the line 4—4 of Fig. 3.

Fig. 5 is a partial vertical transverse section on the plane of the line 5—5 of Fig. 3.

Fig. 6 is a diagram indicating the measurements.

As I prefer to construct my improved device, it is provided with a base 1 having an upstanding hollow column 2 in which slides up and down a stem 3, clamped at any convenient height by a set screw 2' in the top of the column 2. This stem 3 supports the main frame of the device by having its upper end rigidly secured in a boss 4 on the under side of the frame.

This frame comprises the rear upright member 5 having vertically extending in its rear side a dovetail groove 6. The carriage 7 comprises a vertical part with a vertical rib 7' slidably fitting in the groove 6. The frame also comprises the forwardly extending horizontal member 8, which is the part of the frame having the boss 4 before mentioned, and this rib 8 supports on its top the base plate 9; the rear ends of this rib 8 and plate 9 rigidly joining the upper end of the rear upright member 5. The frame is thus of inverted L-shaped formation; and the top surface of the base plate 9 is made flat and smooth as the support for the tread of the last.

Along this flat surface the wedge shaped toe spring gauge 10 may be slid; entering under the toe of the last to a greater or less extent accord-

ingly as the toe spring is greater or less; this being understood to be indicated by a suitable scale on the top of the gauge 10 sighted down past the tip of the toe of the last.

5 An adjusting screw 11 is journaled in a lug 12 extending rearwardly from the bottom of the rear upright member 5 in alinement with the vertical groove 6. This screw 11 extends up and is threaded through a boss 13 extending rearwardly from the bottom of the upright portion of the carriage 7, and a knob 11' is fixed on the screw 11 below the bearing block 12 for turning the screw, which has its end play limited by this knob and by shoulder 11'' on the screw above the lug 12. Thus the carriage 7 may be adjusted up and down by turning the screw 11. At one side of the vertical part of the carriage 7 a pointer 14 extends to traverse a vertical graduated scale 14a fixed on the back of the vertical frame part 5.

20 The top of this carriage 7 is somewhat widened rearwardly, and at its opposite sides has upstanding bearing lugs 15 receiving laterally extended trunnions 16a of upstanding lugs 16 of the tiltable frame 17, as best seen in Fig. 5. This tiltable frame 17 thus hangs between the carriage lugs 15 to swing forwardly and rearwardly. Below its trunnions this frame 17 has journaled transversely thereof in its lugs 16 a transverse adjustment screw 18, held against end play by collars 18' fixed thereon adjacent the inner sides of the lugs 16. This transverse adjustment screw 18 has the two halves of its length between the collars 18' threaded in opposite directions; and each oppositely threaded portion is threaded through a respective gauge block 19. These blocks 19 project up from the screw 18; and their inner upper portions 19a are inclined downwardly toward the middle of the device. At one side, the screw 18 projects out past the frame lug 16 and has fixed on it a knob 20 for turning the screw; the carriage lug 15 at this side having a recess 15' making room for the screw knob to swing with the frame 17.

45 The frame 17 has a rear extension 17', and depending from this rear extension near the front of the frame is a bracket 21 through which is threaded an adjusting screw 22, having at the rear end of the bracket a knob 22', and having its front end bearing against an abutment 23 on the adjacent upper part of the vertical member 5 of the carriage 7, as best seen in Fig. 4. On the top of the rearward extension 17' a block 24 is mounted to slide forwardly and rearwardly in a dovetail groove 24a in the extension 17'. The rear end of the extension 17' has an upstanding bearing lug 17'' in which is journaled an adjusting screw 25 with a knob 26 fixed on its rear projecting end part for turning it and a collar 25' fixed on it at the front of the lug 17'', by which its end play is limited. This screw 25 is threaded through the block 24, so that by turning the screw 25 the block may be adjusted forwardly and rearwardly. The top of the block 24 is slotted from front to rear to receive the lower end part of the alinement blade 27 with a pivot 27a through the block and the blade, on which the blade may be inclined more or less forwardly. The blade will be understood to fit tightly enough in the slot to keep any position to which it is adjusted. A scale 28 is fixed on the top of the frame extension 17' with graduations to which a pointer 29 on the block 24 refers to indicate the forward or rearward adjustment of the block. The front upper part of

the block 24 has a forwardly downwardly inclined face 24' to contact the back lower edge part of the heel portion of the last.

5 One of the trunnions 16a extends out past the carriage lug 15 in which it is journaled; and a segmental graduated scale 30 is provided on the side of the carriage below and concentric with the extended trunnion 16a; the trunnion having fixed on it a depending pointer 31 which traverses this scale, indicating the degree of tilting of the frame 17.

15 The last is placed on the apparatus with its tread on the plate 9 as before described and the sides of its heel base portion resting on the inclined faces 19a of the blocks 19. Different shoe manufacturers use different locations of heel height; which is an arbitrary matter; and this determines at what point along the last it shall engage these blocks 19. The widths of the heel base portion of the lasts of course also vary; and for this reason the blocks 19 are made inversely adjustable by the right and left hand screw 18, so that with a desired transverse position of the last on the apparatus, the blocks 19 may be made to engage the heel portion lower side edges properly, whatever is the width of this portion. The last having been placed so that these blocks 19 contact it at the desired heel height location, the block 24 is adjusted to contact its inclined surface 24' with the lower rear edge of the heel portion; upon which the pointer 29 will indicate on the scale 28 by some definite numerical value this front-to-rear positioning of the last, and hence the location of heel height.

35 Different lasts also have different degrees of wedge of the heel base portion. By swinging the frame 17 the face 24' of block 24 and the faces 19a of blocks 19 all may be made to contact the edges of the last; whereupon the pointer 31 will indicate on the scale 30 by some definite numerical value the degree of tilting of the frame 17, and hence the degree of wedge of the last.

45 Along with the above the heel height must be indicated; and this is done by the pointer 14 indicating by some definite numerical value on the scale 14a the degree of elevation of the carriage 7 which carries all of the heel base portions edge contacting blocks 19 and 24 that were adjusted as above mentioned.

50 The back of the last of course is convex vertically and transversely; and the blade 27 is made inclinable so that it can contact this convex back at the most desirable point, preferably about mid-way of the height of the back of the last, so that the operator can be sure that he is gauging the last in a proper position on the apparatus as regards front-to-rear alinement of the last with the apparatus, by making this blade 27 contact the back of the last where the back seam would be on a shoe that would be made on the last.

65 It will be seen that the various adjustments, some arbitrarily made, and others made as a result of those, and the several adjustments being definitely indicated numerically by the pointers and scales, it is possible to make a record by means of numbers which will fully describe the characteristics of the last design, for reference in the use of the apparatus on any other last, as in reproducing a model last; and that any other apparatus with the same construction, proportions and numbering on the scales may be used similarly, with reference to the numerical record. The machine may be ad-

justed according to the numerical factors given and any last may be tested as to its conformity to the design of which the numerical record was made.

It will be seen therefore that I have provided very effective, comparatively simple means for measuring and comparing lasts as to their essential design characteristics, overcoming the difficulties and avoiding the inaccuracies involved in measuring the complexly curved surfaces of the last.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a last testing machine, a member to contact the tread of the last, a set of contact elements to contact spaced areas of the heel base portion of the last, and a member supporting said set of elements on said tread contacting member for up and down adjustment relative to the tread contacting member, said elements being relatively adjustable up and down on said supporting member, and one of said elements being adjustable along a plane transverse to the last toward or away from another one of said elements.

2. In a last testing machine, a table having a surface to contact the tread of the last, a vertical guide depending from one end of said table, a carriage adjustable up and down on said guide, comprising transversely spaced trunnions, a frame pivoted on said trunnions and extending rearwardly of the last therefrom, lugs mounted between said trunnions for transverse adjustment toward and from each other, and a lug mounted on the rear part of said frame for adjustment toward and from the transversely adjustable lugs, the several lugs being adapted to contact with spaced areas of the heel base portion of the last.

3. A last measuring device comprising a tread support, and a support for the heel seat of a last forwardly of the rearward-most end thereof, said support including spaced members movable relative to each other to accommodate lasts of different widths.

4. A last measuring device comprising a tread support, a support for the heel seat of a last forwardly of the rearward-most end thereof, said support including spaced members movable relative to each other to accommodate lasts of different widths, and means for moving said support vertically of the tread support whereby the last tread will seat properly on its support.

5. A last measuring device comprising a tread support, a support for the heel seat of a last

forwardly of the rearward-most end thereof, said support including spaced members movable relative to each other to accommodate lasts of different widths, means for moving said support vertically of the tread support whereby the last tread will seat properly on its support, and means associated with said tread support for gauging the toe spring of the last positioned on said tread support.

6. A last measuring device comprising a tread support, and a support for the heel seat of a last forwardly of the rearward-most end thereof, said support including spaced members movable relative to each other to accommodate lasts of different widths, and means for moving said last heel seat support along the length of said last heel seat to determine the point from which the height of the last heel seat is to be measured.

7. A last measuring device, comprising a tread support, a support for the heel seat of the last forwardly of the rearward-most end thereof, a member movable into contact with the rearward-most end of said last whereby a plane through the points of contact of the last heel seat support and said last named member will be at an angle to said tread support of a degree coincident with the degree of wedge of the heel seat of said last, and means for indicating such degree.

8. A last measuring device, comprising a tread support, a support for the heel seat of the last forwardly of the rearward-most end thereof, a member movable into contact with the rearward-most end of said last whereby a plane through the points of contact of the last heel seat support and said last named member will be at an angle to said tread support of a degree coincident with the degree of wedge of the heel seat of said last, means for indicating such degree, and means associated with said tread support for gauging the toe spring of the last.

9. A last measuring device, comprising a tread support, a support for the heel seat of the last forwardly of the rearward-most end thereof, a member movable into contact with the rearward-most end of said last whereby a plane through the points of contact of the last heel seat support and said last named member will be at an angle to said tread support of a degree coincident with the degree of wedge of the heel seat of said last, and means for indicating such degree, the support for the heel seat end of said last including spaced members movable relative to each other to accommodate lasts of different widths.

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