(No Model.)

3 Sheets—Sheet 1.

A. S. ADLER & W. S. BLACK.

CONFORMATOR.

No. 506,761. Patented Oct. 17, 1893.

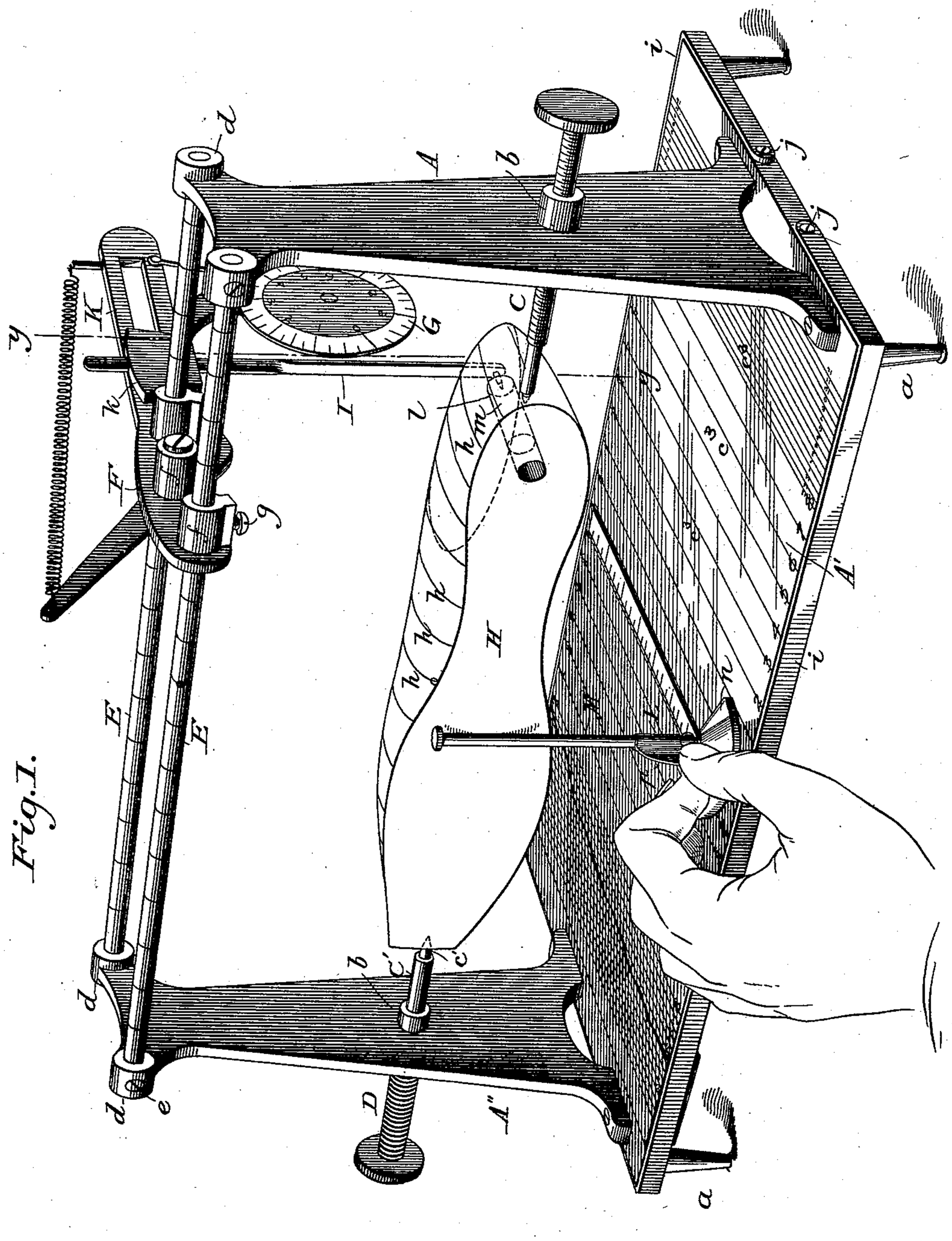

Fig. 1.

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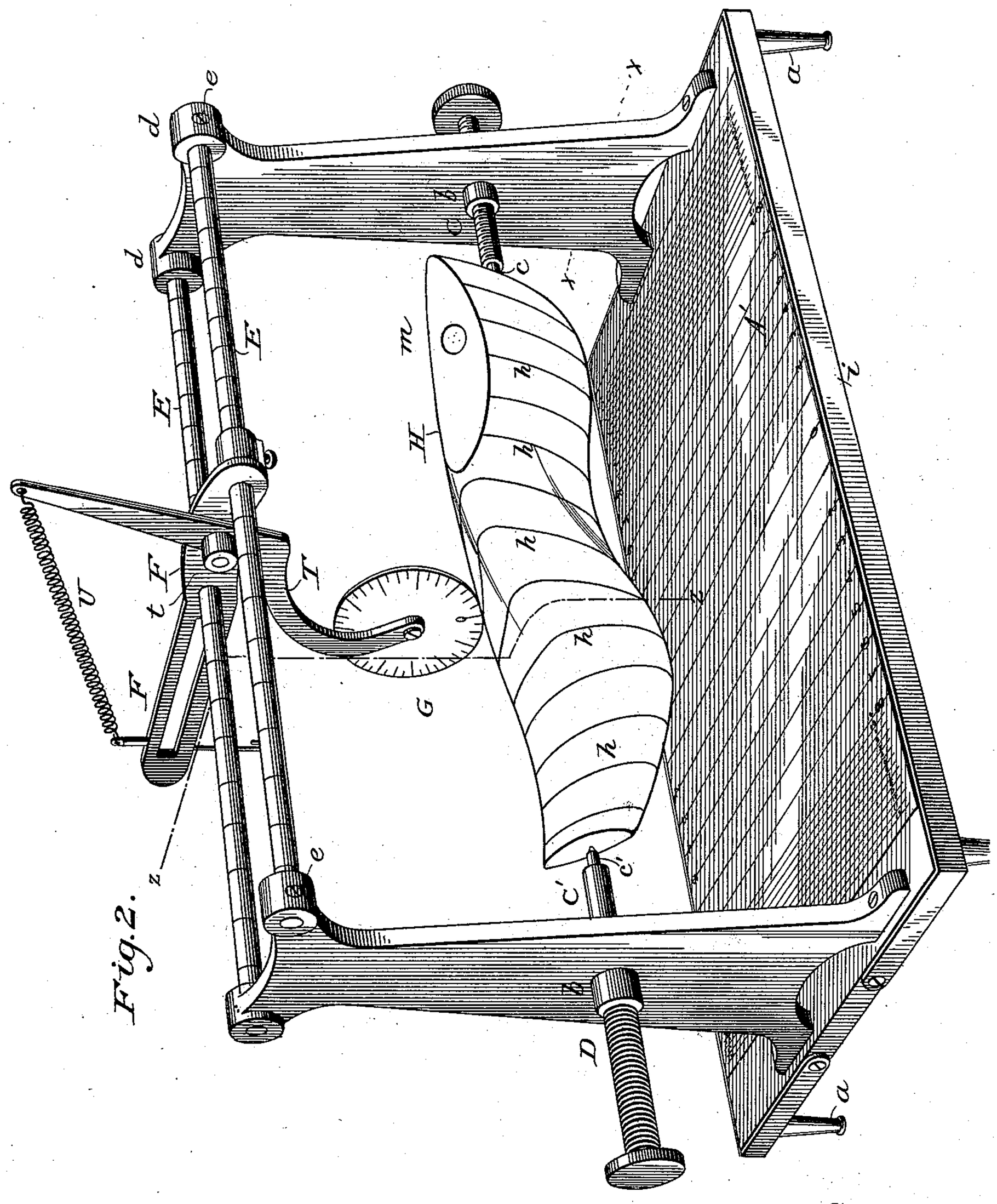

Fig. 2.

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CONFORMATOR.

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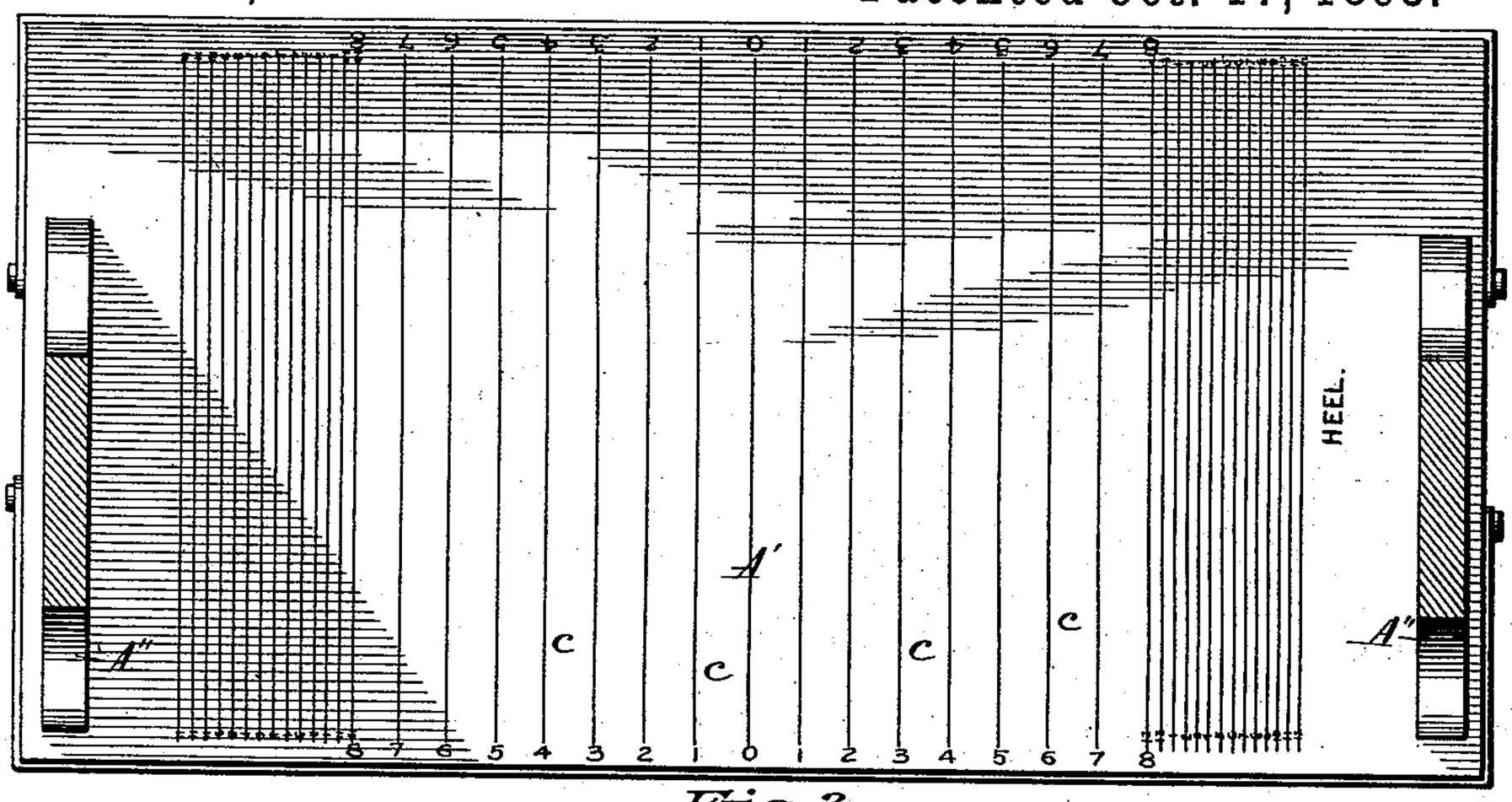


Fig. 3.

Fig. 4.

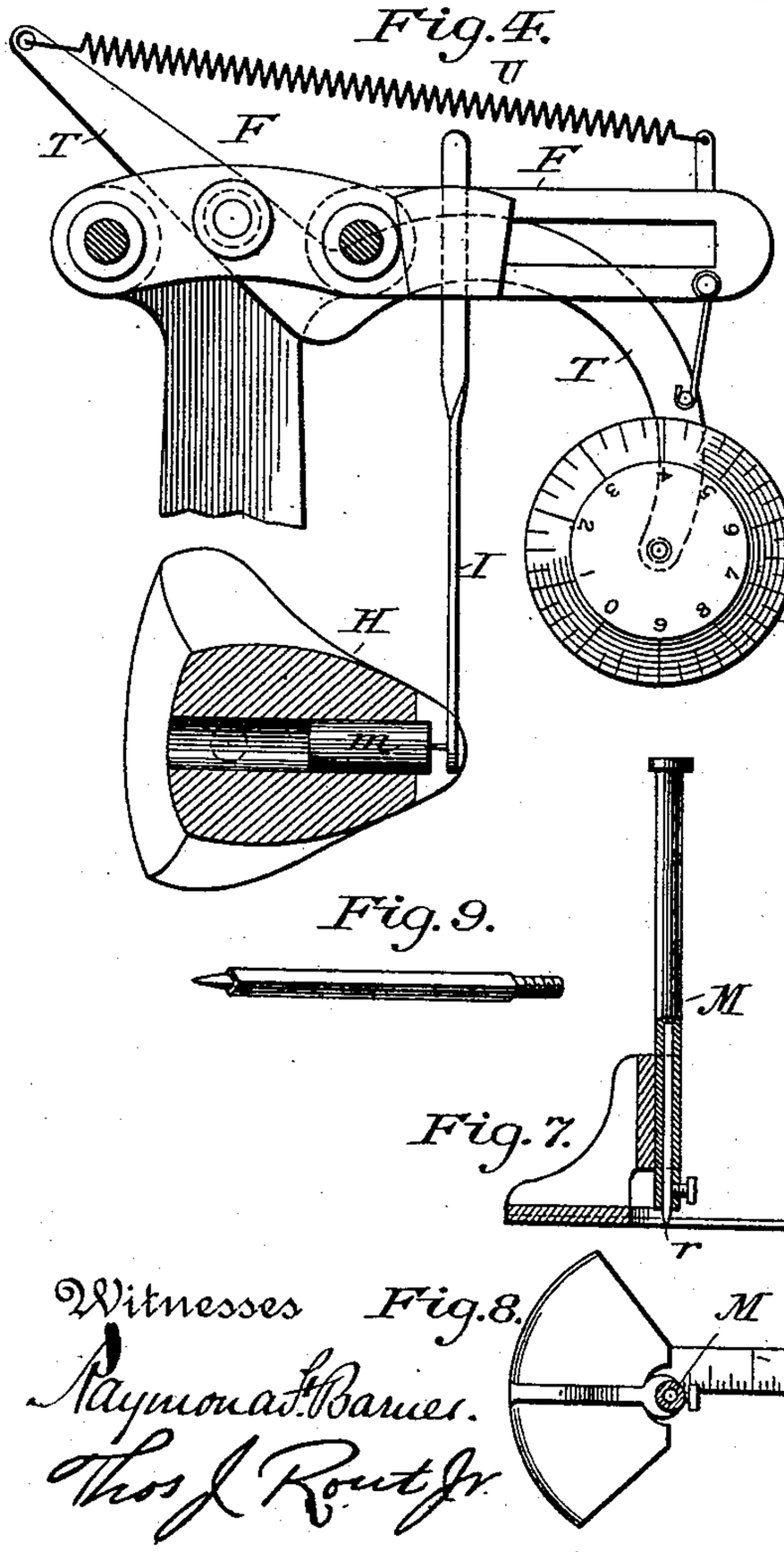


Fig. 5

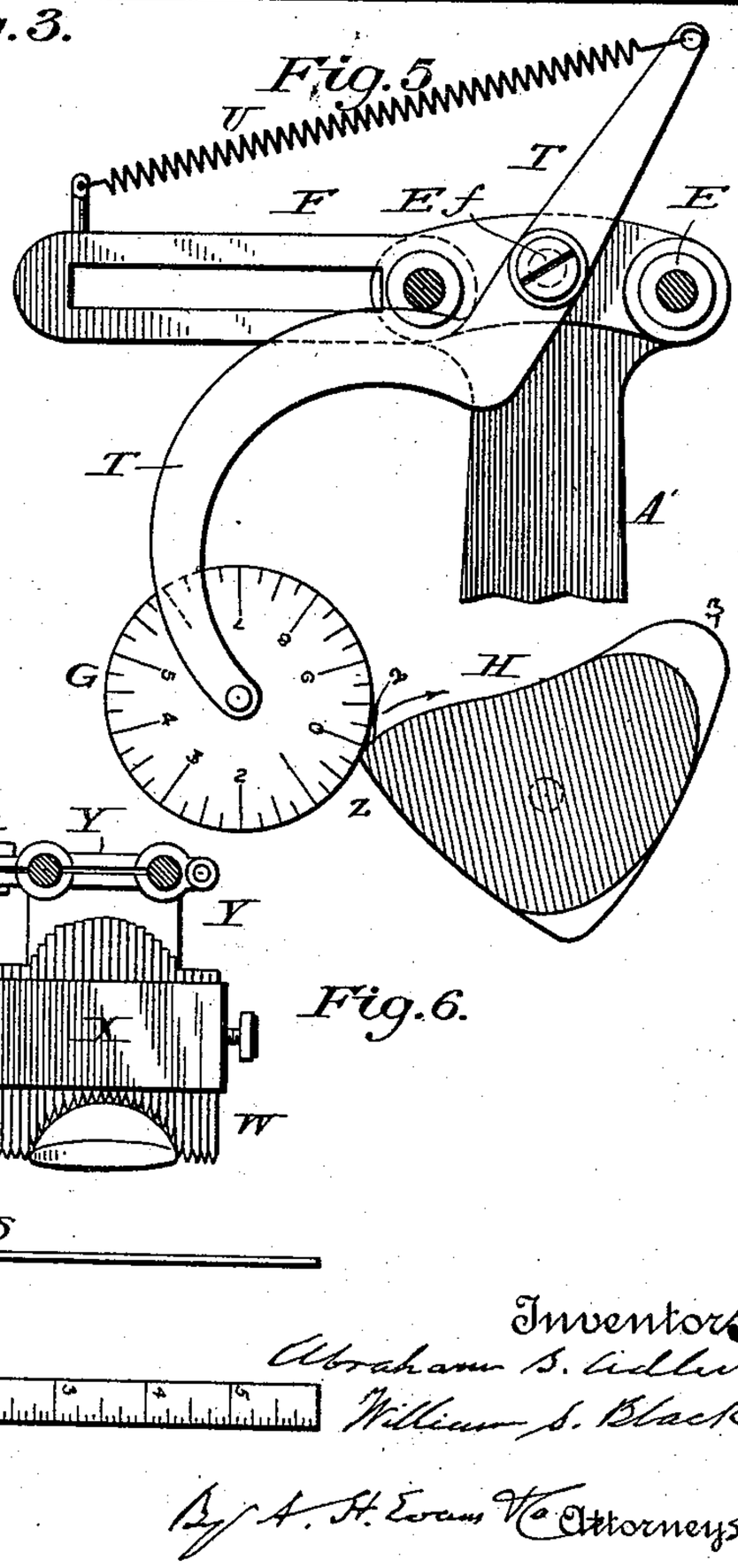


Fig. 9.

Fig. 7.

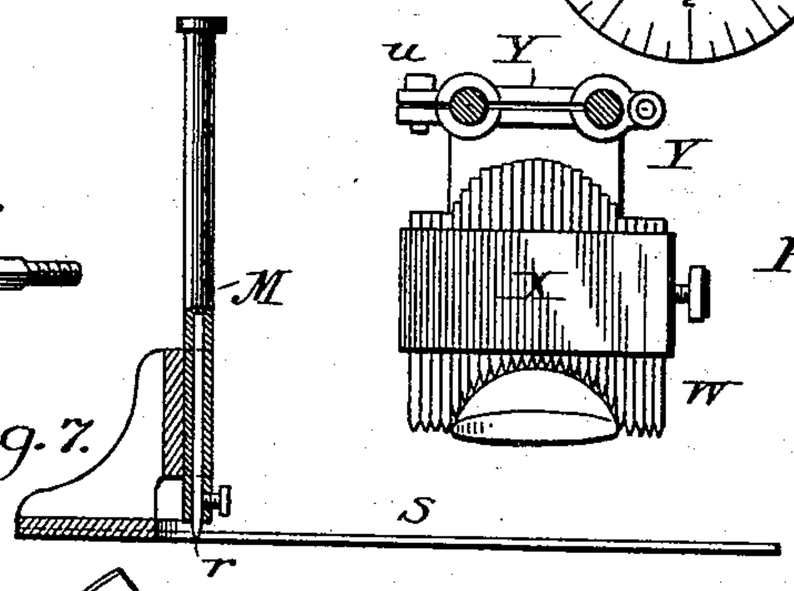
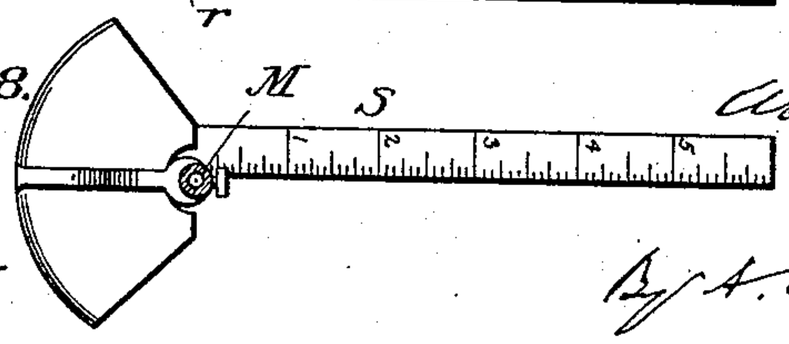


Fig. 6.

Fig. 8.



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UNITED STATES PATENT OFFICE.

ABRAHAM S. ADLER AND WILLIAM SUMTER BLACK, OF BALTIMORE, MARYLAND.

CONFORMATOR.

SPECIFICATION forming part of Letters Patent No. 506,761, dated October 17, 1893.

Application filed December 6, 1892. Serial No. 454,237. (No model.)

To all whom it may concern:

Be it known that we, ABRAHAM S. ADLER and WILLIAM SUMTER BLACK, citizens of the United States, and residents of Baltimore city, State of Maryland, have invented certain new and useful Improvements in Shoemakers' Conformators, as set forth in the accompanying drawings, forming part of this specification, in which—

Figure 1, is a perspective view of a shoemakers' conformator embodying our invention and showing the position and operation of the scriber. Fig. 2, is a similar view showing the measuring disk or wheel in engagement with the last. Fig. 3, is a horizontal sectional view on the line *x*—*x* of Fig. 2 showing the bed plate with its graduated lines. Fig. 4, is a cross sectional view on the line *y*—*y* of Fig. 1 showing the last immovably held in position to enable the contour of its bottom surface to be delineated by the scriber. Fig. 5, is a cross sectional view on the line *z*—*z* of Fig. 2 showing the measuring disk or wheel in contact with the last. Fig. 6, is a detail showing the removable holder with its formative bars. Fig. 7, is a side elevation partially in section of the scriber. Fig. 8, is a plan view of the same. Fig. 9, is a detail to be referred to.

Our invention relates to certain new and useful improvements in shoe-makers' conformators, and it consists of the constructions and combinations of devices which we shall hereinafter fully describe and claim.

To enable others skilled in the art to which our invention appertains to make and use the same we will now describe its construction and indicate the manner in which the same is carried out.

Referring to the accompanying drawings for a more complete explanation of our invention, A represents the frame of the apparatus consisting of a bed plate A′ and vertical end standards A″, the said bed plate being preferably supported upon suitable legs or lugs *a* as shown, and the standards being provided with bearings *b* for suitable suspending devices for the last as we shall hereinafter fully describe.

The bed plate is provided with lines c^3 which traverse it in transverse planes which are arranged to indicate the heel and toe and other measurements of the last. These lines may be upon a separate sheet of paper or other material with the lines arranged as shown upon the bed plate and as fully shown and described in the former application filed by Abraham S. Adler, on the 5th day of September, Serial No. 445,108, and substantially similar to diagram shown, described and claimed in said Abraham S. Adler's former patent, No. 482,911, dated September 20, 1892.

Between the end standards A″ a last H is pivotally suspended upon the points *c′* of the suspending devices or rods C C′ one of said rods C being adapted to engage the heel portion of the last, and threaded in its bearing so that it may be adjusted to lasts of different sizes; and the other rod C′ being adapted to engage the toe portion of said last and to be automatically held against said toe portion by means of a spring D encircling its outer portion and confined between the standard and a head or collar on the rod. By this means the last may be held so that it may swing about the suspending points as an axis, and it may be readily removed by drawing the rod C′ outward against the pressure of its spring to release its point from contact with the toe of the last. The upper ends of the standards A″ are formed or provided with boxes or bearings *d* in which the longitudinally extending parallel and spaced rods E are mounted, either permanently, or endwise removable by means of set screws *e* or equivalent means. The rods E furnish a guide for a frame or support F which carries the measuring wheel or disk G and the support F has hubs *f* adapted to receive the rods whereby the frame or support may be moved along the rods and be held in any position thereon by means of the set screws *g*.

The rods are provided with numbered lines or graduations approximately corresponding with the lines upon the bed plate, and the last H has its surface marked with lines *h* traversing it in transverse planes and numbered right and left from the zero point *o* to correspond with the lines extending right and left from the center line of the last and center line of the bed plate. By reason of this construction when the desired number of last

is introduced between the suspending points of the rods C and C′ the frame or support is moved along its rods until it reaches the center line when the disk or wheel which it carries will be found to align itself with the center line of the last and may be caused to traverse the surface of the last by turning the latter upon its points of suspension.

The essential object of this invention is to transfer to the sheet or diagram before noted the exact measurement and shape of the last. Therefore some provision must be made to secure said sheet or diagram upon the bed plate. One simple way of doing this is to provide the bed with clamps or holders such as those shown in Figs. 1 and 2 where they are shown as consisting of flat bars *i* lying close against the front and rear surfaces, one or both, of the bed plate and having inwardly turned end extending closely along the ends of the bed plate and pivotally secured at *j* so that these clamps may be turned upward about their pivots to enable the sheet or diagram to be placed upon the bed with its edges overlapping the front and rear edges of the bed whereby when the clamps are forced downward their bars *i* bend the edges of the sheet down and confine them tightly between said bars and the edges of the bed, at the same time drawing the sheet tightly down upon the bed. This construction also enables us to utilize the bar *i* as a straight edge for a T-square or other device by means of which lines may be drawn upon a plain sheet of paper corresponding with the lines on the last and bed plate, and the various measurements hereinafter mentioned may be transcribed to said sheet without difficulty.

One of the first steps taken to obtain the shape and size of the last is to transfer to said sheet or diagram the contour of the lower surface of the last, and to accomplish this feature it is necessary that the last be immovably held. This is done by means of a rod or bar I having a head *k* at its upper end slidable in a slotted arm K extending from the frame or support F and having at its lower end a point *l* adapted to be forced into a cork or piece of soft wood *m* inserted in the last, or said point may be forced directly into the material of which the last is composed. In either event the last is held against turning upon its pivots or suspension point; the measuring disk or wheel being held elevated or out of contact with the last at this time by devices which we shall hereinafter indicate. Being held immovably in the position indicated, the last has its bottom exposed and directly in front of the operator so that its shape may be taken. The means for obtaining this latter result comprise a scriber L shown in Figs. 1, 7 and 8 and consisting of a broad flat base *n* with finger piece or flange *p*, and vertical tube or hollow standard M in which a marking point as a pencil *r* may be inserted and adjustably held with its point adapted to operate upon the sheet or diagram. The scriber also has projecting from its flanged base a blade or tongue *s* graduated in lines so that each one-half inch of the blade represents one inch of measurement, so that when the full length of any line upon the last is taken and indicated by the measuring wheel or disk as hereinafter described, the number of half inch graduations upon the blade will represent one half of such full measurement, or in other words, when the whole number of lines upon the last are measured and indicated by points upon the diagram, taking the curved line first made by drawing the scriber along the bottom line of the last as in Fig. 1, as a starting point or base, a line drawn by hand so as to intersect said points will give a side view or correct representation of one external side of the last; thereby furnishing a permanent record of the measured last which may be used in the manufacture of the desired shoe or boot or may be filed away for subsequent use.

The measuring wheel or disk G before alluded to has its edge marked with inches and fractions thereof starting from a zero point as shown; and this wheel or disk is pivotally hung upon an arm T fulcrumed near its center upon a bearing *t* on the frame or support F located between the guide rods. The upper end of the arm T is connected with one end of a spring U whose opposite end is secured to the slotted arm of the frame F, whereby when the wheel or disk is in its operative position, the spring maintains it in close contact with the last (see Figs. 2 and 5) but enables it, or its spring-actuated arm to yield to the irregular curve of the last when the latter is turned about its points of suspension; it being understood that when the wheel or disk is in operation, the holding arm I is detached, and the hook V on the frame or support F which holds the wheel elevated when the rod is used to hold the last firm for the scriber, is disconnected from the arm which carries the wheel.

The two positions of the arm T and its wheel or disk are plainly shown in Figs. 4 and 5 in the former of which the wheel is elevated and the arm I is holding the last to be operated against by the scriber, while in the latter figure the arm I is detached and the arm T released so that the wheel may traverse the surface of the last when the last is turned as before stated.

In operation the zero point on the wheel or disk is placed upon the longitudinal line of the last where the side and bottom of the last meet, and when the last is turned by hand upon its suspension points the wheel rotates by reason of the friction of its roughened, or if preferred smooth edge with the last. When the last has been turned from the point 2 in Fig. 5 to the point 3 on the opposite side, the number on the disk or wheel which aligns itself with the point 3 will indicate by inches and fractions the full length of the line traversed by the wheel. Then with the graduated blade of the scriber, exactly one half of

said measurement is marked upon the corresponding line of the sheet or diagram as before stated.

If it be desired to obtain the cross-sectional shape of the last it may be done by means of the formative rods W shown in Fig. 6 which are contained in a suitable holder or frame X and held in the manner described and claimed in said Abraham S. Adler's former application filed September 5, 1892, Serial No. 445,108. The frame or holder for these rods carries clamping plates Y at its upper end formed with half sockets for the rods and the upper member of these plates is hinged so that it may be open to permit the holder to be introduced below the rods and its swinging member swung over the opposing member so as to embrace the rods when it may be secured to its other member and clamped to the rods by means of a screw *u*.

The rods C C′ between which the last is suspended may have their ends pointed to engage the last, but we prefer to bore out the inner ends of the rods and insert pins of varying sizes and of a form shown in Fig. 9. These pins are threaded at one end to enable them to be screwed into the rods and their opposite ends are pointed, while their cross sectional shape may be square or angular to enable them to be grasped by a tool and readily removed.

The scriber also serves a use different from that before mentioned, and that is if it is desired to obtain any particular heel measurement, the scriber is placed upon the line of marks at the heel portion of the bed plate or diagrammatic sheet with its standard in vertical line with the particular numbered line, and the last adjusted by the rods C C′ until its outer heel line comes up against the standard of the scriber. This device will therefore often facilitate the correct disposition of the last to be measured or numbered if desired.

The edge of the measuring wheel or disk may, if desired, be supplied with ink or coloring matter from a pad or otherwise to mark the line upon the last as it traverses the latter and the pencil point of the scriber may be omitted and ink or coloring matter similarly applied to the tracing point of the scriber to mark the line it traverses.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent is—

1. In a shoe-maker's conformator, the combination with a support, a last axially turnable therein, and an indicator connected to said support and adapted to traverse said last when the latter is turned.

2. In a shoe-maker's conformator the combination of a support having a last supported so that it may be turned in transverse planes, and an indicator connected to said support and adapted to engage said last and measure its exterior area as the last is moved by it.

3. In a shoe-maker's conformator, the combination with a support, of a last axially turnable therein, and an indicator connected to the support to engage the exterior wall of the last to indicate the length of a given surface thereof.

4. In a shoe-maker's conformator, the combination of a support, a last pivotally suspended at its ends therein, and an indicator connected to said support and opposing the last and normally engaging its surface whereby it describes and measures said surface as the last is being turned.

5. In a shoe-maker's conformator, the combination of a support, a last pivotally suspended at its ends therein, and an indicator opposing the last and normally engaging its surface whereby it describes and measures said surface as the last is being turned.

6. In a shoe-maker's conformator, the combination of a support, a last supported therein, a diagram or sheet, a means adapted to traverse the length of the last and transfer the shape thereof to the sheet or diagram, and an indicator connected to the support to traverse the exterior of the last in planes transverse of its length.

7. In a shoe-maker's conformator a frame or support comprising a bed plate with lines thereon, and end standards, means for suspending a last between said standards, and an indicator suspended from said standards and movable over said last to determine its proportions.

8. In a shoe-maker's conformator, the combination of a support, a last, suspension points from the support upon which the last is suspended so that it may be turned in lateral planes, and a swinging indicator for determining the transverse dimensions of the last as the latter is moved past it.

9. In a shoe-maker's conformator the combination of a frame or support having a last mounted within it, so that it may be turned in transverse planes, and an indicator connected to the support and engaging said last and rotated by frictional contact therewith to determine the dimension of its exterior transverse surface.

10. In a shoe-maker's conformator, the combination of a frame or support, a last, an adjustable suspension point at one end thereof and a spring controlled suspension point at the opposite end of the last, said points forming an axis about which the last may be turned in transverse planes, and an indicator adapted to traverse the last in planes at right angles to its length to determine its dimensions.

11. In a shoe-maker's conformator, the combination of a frame or support, a last, an adjustable suspension point at one end thereof and a spring actuated point at the other end, means for holding the last against axial movement, and a scriber adapted to traverse the exterior wall of the last in the direction of its length.

12. In a shoe-maker's conformator the combination of a frame or support consisting of a bed plate with lines thereon, and vertical

end standards, a last supported between said standards parallel spaced bars at the upper ends of the standards and having lines and numbers thereon corresponding with lines on the last and bed plate and an indicator mounted on a support adjustable on said rods, said indicator adapted to traverse the exterior surface of the last in planes transverse thereof.

13. In a shoe-maker's conformator, the combination of a frame or support, guide rods at the top of the frame or support a second frame adjustable thereon, an arm fulcrumed upon said second frame a rotatable wheel or indicator on said arm and a spring acting upon said arm to maintain the wheel or indicator in normal engagement with the last.

14. In a shoe-maker's conformator a frame or support having guide rods at its upper end, a frame slidable on said rods, having a slotted arm extension, an arm fulcrumed upon said slidable frame, a graduated wheel or disk at the lower end of said arm, and a spring at the upper end of said arm, a last suspended in the main frame and against which the wheel or disk is maintained by the action of the spring, and a means for holding said wheel or disk out of contact with the last.

15. In a shoe-maker's conformator, having a frame with pivotally suspended last, the rod I, having a point engaging said last and a support for said rod connected to the frame and in which the rod may be adjusted.

16. In a shoe-maker's conformator, a scriber consisting of a base plate, a standard having a marking device and a graduated tongue or blade at right angles to the standard and marking device.

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