(No Model.) 2 Sheets—Sheet 1.

J. B. SWEETLAND.

SIZE STICK.

No. 598,034. Patented Jan. 25, 1898.

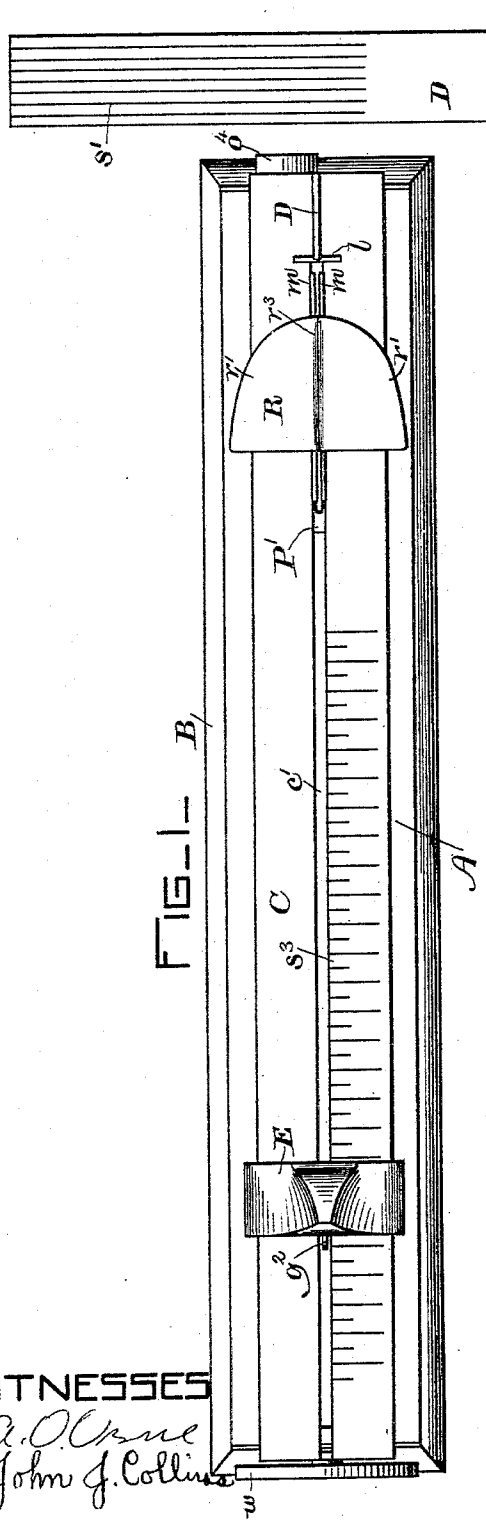


FIG. 1.

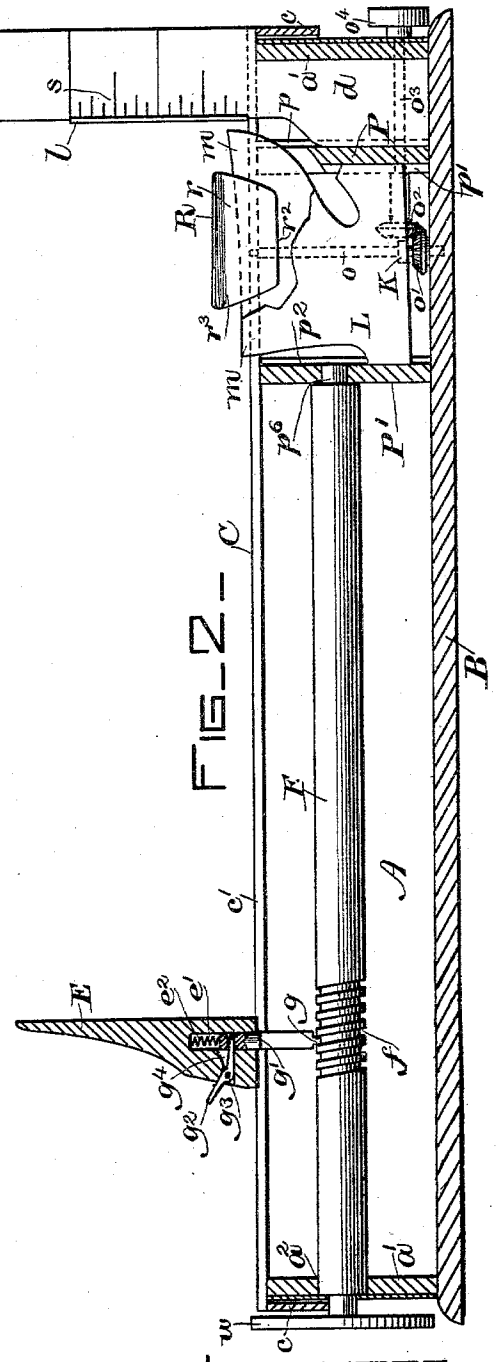


FIG. 2.

WITNESSES

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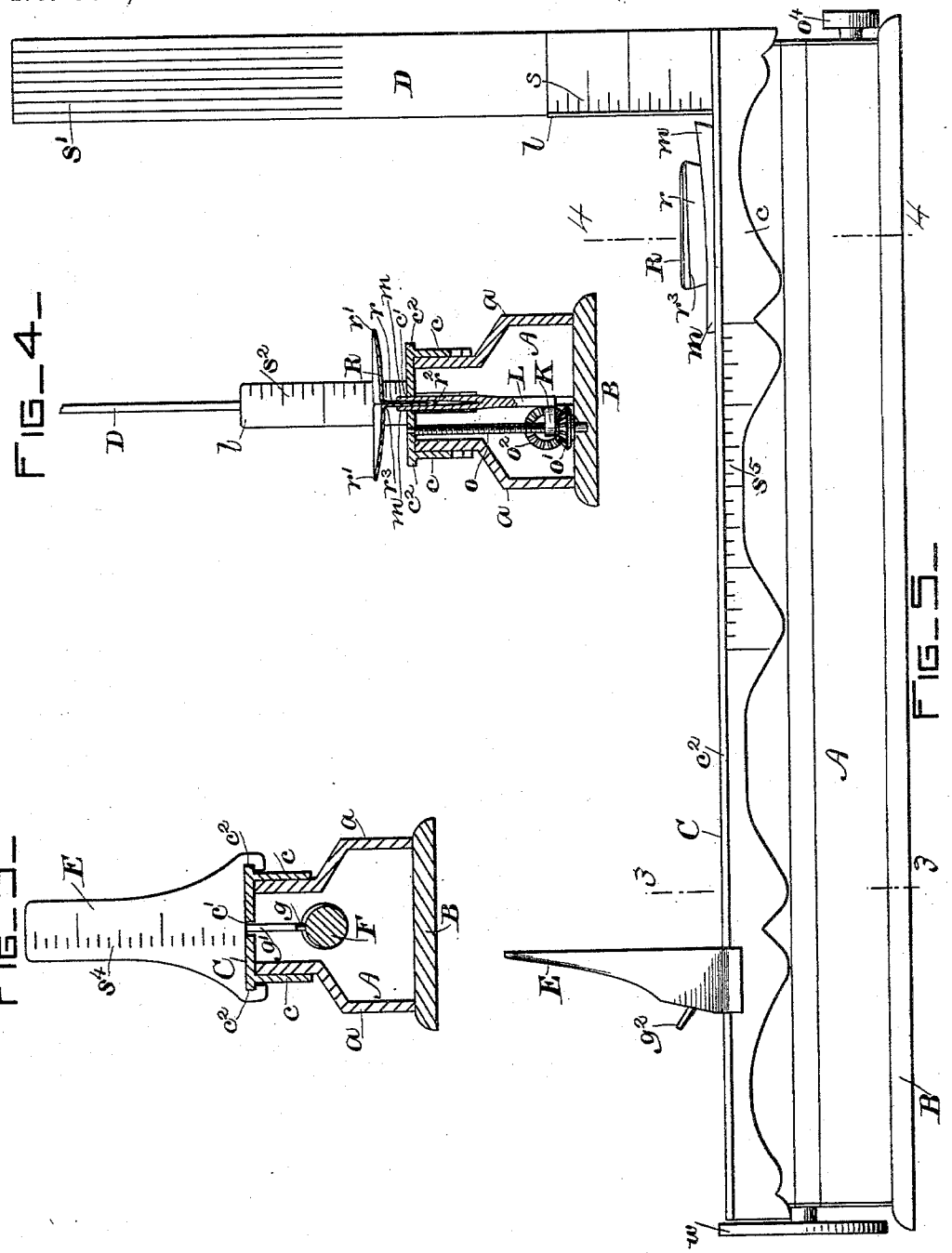
THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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UNITED STATES PATENT OFFICE.

JOHN B. SWEETLAND, OF LYNN, MASSACHUSETTS.

SIZE-STICK.

SPECIFICATION forming part of Letters Patent No. 598,034, dated January 25, 1898.

Application filed November 19, 1896. Serial No. 612,688. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. SWEETLAND, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Size-Sticks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to combination size-sticks adapted to be used by shoe-manufacturers, pattern-makers, shoe-dealers, and last-makers for measuring shoe-patterns, shoe-lasts, &c.

The object of the present invention is to combine in compact form several scales or measuring devices by which to measure the size of a shoe, the spring of the toe, the rake or spring of the back of the shoe, the width at the ball portion, and the height of the heel, and also to determine the length or size of a last, its width across the ball portion, and the proper height of heel for a last having a particular spring at the toe, all as will be fully set forth in the following specification.

To the above end the invention consists of the devices and combination of devices which will be hereinafter described and claimed.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 shows a top plan view. Fig. 2 shows a longitudinal vertical section through the device, parts being in elevation. Fig. 3 shows a transverse vertical section taken on line 3 3, Fig. 5, looking toward the left. Fig. 4 shows a transverse vertical section taken on line 4 4, Fig. 5, looking toward the right; and Fig. 5 shows the device in side elevation.

Similar letters of reference refer to corresponding parts throughout the several views.

In the drawings, A represents a case or frame which is suitably shaped to sustain the several parts and which may be constructed of any desired material. As now made by me this case or frame A comprises a long substantially rectangular section composed of the integral sides $a\ a$ and ends $a'\ a'$, which is preferably cast of metal, the sides $a\ a$ being narrowed at the top, as shown in Figs. 1, 3, 4, and 5 and more clearly shown in Figs. 3 and 4. B represents a base-plate which is fixed to said frame portion by any suitable means.

C represents a cover-plate which may be formed integral with the casting $a\ a\ a'\ a'$, or, as shown in the drawings, formed separately and held in place on frame A by any suitable means, such as the flanges which depend from said cover-plate C and embrace the narrow portion of frame A and which may be held thereon by screws or other suitable fastening devices. The cover-plate C has a centrally-disposed slot c', which extends from end to end of said plate for a purpose to be hereinafter explained.

At one end of frame A is a standard D, which extends upwardly for some distance above the cover-plate C, it being secured fixedly in position by any suitable means, such as a shank d, which projects through the slot c' in cover-plate C and engages a groove p in a partition P, which may be conveniently cast integrally with the frame A or formed separately and secured therein as desired. Upon the standard D immediately above the cover-plate C is formed a scale s and at its upper end a scale s', comprising a series of vertical parallel lines, as shown. Secured to the front edge of the stand D is a plate l, upon the face of which is formed a scale s^2, similar to the scale s upon standard D.

Reciprocating in suitable guide-grooves p' and p^2, formed, respectively, in partition P and a similar partition P', is a carrier or lifter L, which moves up and down through the slot c' in the cover-plate C. The lifter L is arranged to carry a heel-rest R, which may be secured thereto in any suitable manner, it being shown as detachably mounted thereon, as follows: The carrier or lifter L is preferably split at its upper end or formed into members $m\ m$, between which is clamped by the elastic or resilient action of said members m the shank r of the heel-rest R.

The heel-rest R comprises the substantially heel-shaped plate r', which is slightly concaved, as shown, and the depending shank r, which projects from the under side of plate r', and it is preferably formed of thin sheet metal, which is first doubled upon itself at r^2 and then bent outwardly at r^3, forming the shank and heel-rest.

The lifter L is arranged to be raised and

lowered to raise and lower the heel-rest R and the last which may be thereon, and for this purpose any suitable mechanism may be used, such as a toggle-lever connected at one end to the carrier L and at its other end to a fixed support and actuated by any suitable means, the mechanism shown being merely a convenient means of accomplishing this result.

The mechanism shown for raising and lowering the lifter or carrier L comprises a lug K, projected from one side of the lifter L and having a threaded aperture engaging a screw-shaft *o*, which is mounted in suitable bearings in the cover-plate C and bottom plate B, carrying a bevel-gear o', which meshes with a bevel-gear o^2 upon a short horizontal shaft o^3, mounted in suitable bearings in the frame A, and which projects from the end a' of said frame and carries a suitable head o^4, by means of which said shaft may be turned to turn the bevel-gears o^2 and o' and rotate the screw-shaft *o*, to thus raise and lower the lifter L. Coöperating with the standard D, to determine the length or size of a last or shoe, is a block E, which is preferably formed with a perpendicular front face, the bottom edge of which forms an indicator or marker which coöperates with the scale s^3, which is formed upon the upper surface of the cover-plate C, adjacent the slot c'. This block E is arranged to be moved back and forth along said cover-plate C, and it is preferably formed with the lugs which embrace a marginal flange c^2, formed upon said cover-plate, to hold the block in position and to properly guide the same in its movements along the plate C. The block E may be moved along the plate C by hand, if so desired, but it is more conveniently operated by a screw-shaft F, which is mounted longitudinally of the frame A, it being held in a bearing a^2 in the end a' and a bearing p^6 in the partition P′ and provided with a hand-wheel *w* outside of the frame A, by which it may be rotated. The shaft is threaded, as at *f*, for its entire length, (only a portion of such threads being shown,) and the threads *f* are engaged by a finger *g* upon a rod g', which depends from the block E, passing through the slot c' in the cover-plate C, and by means of which the block E can be caused to travel along the plate C by the rotation of the screw-shaft F. It is desirable that the block E be capable of being rapidly moved along the cover-plate C, and for this reason I have arranged the rod g' to be moved vertically to remove the finger *g* from engagement with the screw-shaft F.

As shown in the drawings, the rod g' is arranged to be vertically movable in a bearing e' in the block E, and is normally forced downwardly by a small spring e^2, placed in said bearing e' and bearing upon the top of said rod g'. For the purpose of raising said rod g' there is provided a lever g^2, which is fulcrumed at g^3 in a recess g^4, one end of which engages the upper end of the rod g', and the other end of which projects from the recess g^4 in a position to be depressed by the operator. The above arrangement is such that the block E can be moved along the cover-plate C by means of the screw-shaft F by permitting the rod g' to engage said shaft; but whenever it is desired to rapidly move the block E along the cover-plate C it can be accomplished by lifting the rod g' by means of the lever g^2, and thus removing the finger *g* from engagement with the threads on said rod. When the rod g' is thus raised, the block E can be quickly moved to any position along the cover-plate C.

Upon the front face of the block E is a scale s^4, and upon the flange *c* of the cover-plate C is a scale s^5, the use of which will be hereinafter described.

The functions of the several scales are as follows: Scales *s* and s^2 are in practice substantially alike and are intended to determine the height of heel which may be carried by a shoe made upon a last having a predetermined spring or upward inclination at the toe and also to determine whether a completed shoe has the proper height of heel to harmonize with the spring of said shoe at the toe. The scale s' is to determine whether the upper of a shoe or a pattern of said upper has the proper "rake" or inclination at the upper portion of the quarters. Scale s^3 is to determine the length or size of a shoe or last, and it may be marked to indicate such size by any method or system desired, such as what is known as the "French" system or the system in use in the United States, or both systems may be indicated, if desired. The scale s^4 upon block E is to determine the "spring" or upward inclination of the last or shoe at the toe portion, and the scale s^5 to measure the size or width of a last or shoe at the ball portion.

The operation of my invention is as follows: In measuring a last to determine its size in length and also the spring at the toe and the height of heel which a shoe made on said last should carry the last is placed in position with its heel resting upon the plate R and the back of the last resting against the plate *l*. The block E is now moved forward toward the toe of the last until it contacts with said toe. The lifter or carrier L is now raised by means of the shafts *o* o^3 and bevel-gears o' and o^2, thus raising the heel-rest R and the rear end of the last resting thereon until the bottom surface of the last shall be in the position which it is required the sole of the shoe made on such last shall assume, and when thus supported the proper height of heel for such shoe can be determined by either the scale *s* or s^2 and the length or size of the shoe by the scale s^3, the size being indicated by the position of the lower edge of the front face of the block E, which is in contact with the toe of the last, relatively to the scale s^3. At the same time the scale s^4 upon the face of the block E will indicate the spring or upward inclination of the toe portion of the last.

In determining the width of the last across the ball portion the last is placed with its ball portion resting upon the cover-plate C, one side of the last contacting with the top forward edge of the lifter or carrier L, the front line of which should be substantially in line with the right-hand end of scale s^5, and the block E may then be rapidly moved forward by depressing the lever g^2, as described, and brought into contact with the other side of the last at the ball portion, whereupon the width at the ball portion may be accurately determined. In measuring a shoe-pattern the lower edges of the pattern are brought together and the heel-rest R is removed from the lifter L. The edges of the pattern at the heel portion are now inserted between the members m of the lifter L to an extent equaling the material at the bottom of the pattern, which will be lasted in when the shoe is made, the bottom edge at the forward end of the pattern entering the slot c' for an equal distance, the rear edge of the pattern at the heel portions being in contact with the plate l. When in this position, the top portion of the pattern will rest against the side of the standard L and upon the scale s' on said standard, and such scale will indicate the rake of the upper of the shoe made from said pattern with a heel of the height determined by the relative position of the pattern to the scale s or s^2.

Having fully described the construction and operation of my invention, I claim as new and desire to protect by Letters Patent of the United States—

1. The combination with a hollow box or casing carrying a suitable bed-plate, a fixed vertical standard secured at one end of the hollow box or casing provided with a scale to determine the height of heel, and a second scale to determine the rake of the shoe-upper, a scale upon the upper surface of the bed-plate, a movable block provided with a scale movable along said bed-plate, a vertically-adjustable rest or plate at one end of the box or casing, and means within the box or casing provided with actuating devices outside of the box or casing for controlling the movement of the movable block and the rest or plate, substantially as described.

2. In a size-stick, the combination with a bed-plate or casing provided with a slot or guideway in its upper face, of a gage-block movable along said bed-plate, a screw-shaft to move said gage-block, a vertically-movable spring-pressed rod carried by said gage-block and projected through the slot in the bed-plate engaging the screw-rod, and a pivoted lever engaged with the spring-pressed rod arranged to disengage the same from the screw-shaft, substantially as described.

3. In a size-stick, the combination with a vertically-adjustable lifter or carrier, of a heel rest or plate adjustably connected therewith, suitable guides arranged to control the vertical movement of the lifter or carrier, and a threaded rod arranged to raise and lower said lifter or carrier, substantially as described.

4. In a size-stick, the combination with a rest for the shoe-upper, of a vertical standard against which the back of said shoe-upper is adapted to be placed, and a scale upon the side of said standard to determine the rake of the upper, substantially as described.

5. In a size-stick the combination with a lifter or carrier provided with spring jaws or members, of a rest-plate for the heel of a last having a shank embraced by said spring jaws or members, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN B. SWEETLAND.

Witnesses:
A. E. WHYTE,
A. O. ORNE.