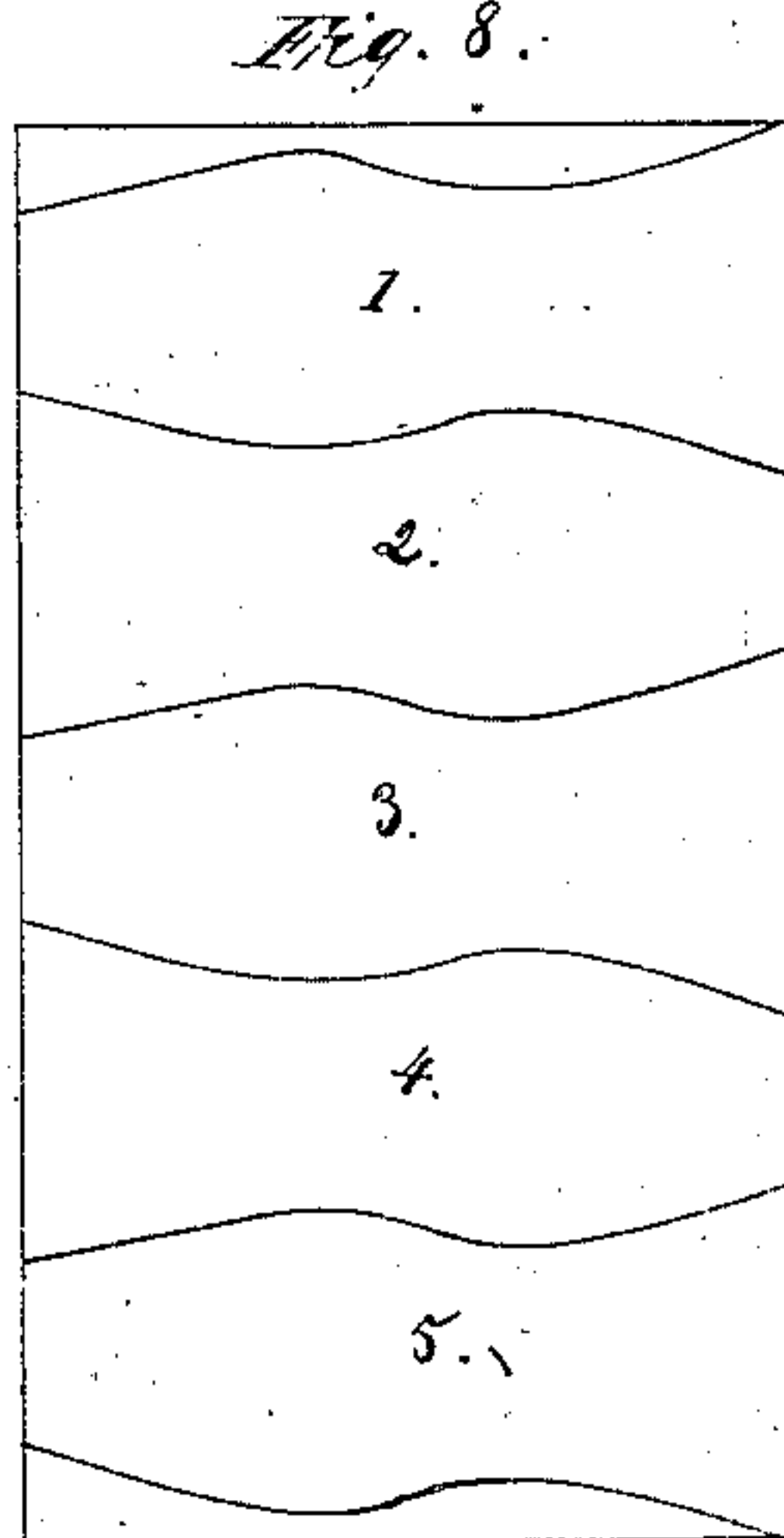


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UNITED STATES PATENT OFFICE.

ELIAS T. INGALLS, OF HAVERHILL, MASSACHUSETTS.

CUTTING LEATHER INTO SOLES.

Specification of Letters Patent No. 2,549, dated April 11, 1842.

To all whom it may concern:

Be it known that I, ELIAS T. INGALLS, of Haverhill, in the county of Essex, in the State of Massachusetts, have invented new and useful Improvements in Machinery for Cutting Leather into Soles for Shoes or Boots, of which the following description, taken in connection with the accompanying drawings, forms a full and exact specification.

In said specification I have set forth the nature and principles of my invention, by which it may be distinguished from others of like character, together with such parts or combinations of the same, as I claim and for which I solicit Letters Patent.

Of the above mentioned drawings Figure 1, represents a top view of my machine. Fig. 2, is a side elevation of it. Fig. 3, is an elevation of that end at which the person stands who operates the machine. The remaining figures, which are detailed representations of some of the parts, will be hereinafter particularly described.

A strong bench or table A, Figs. 1, 2, 3, is mounted upon the tops of standards or side planks B, B, which are secured together at their lower ends by a horizontal plank C, Fig. 2.

A bent treadle lever D E F, formed as represented in Fig. 2, or having its portion E F extending about perpendicularly from the other part D E, passes through suitable elongated vertical slots formed in the sides or upright planks B, B, and turns near its end E upon a pin or fulcrum G passing through the side plank B and said lever. The end of the lever extends as seen in Figs. 1, 2, to the left some distance beyond the other upright B, so that the attendant who uses the apparatus can depress said lever by placing his foot on the end D of the same. Heavy weights H H are fixed on the upper end F of the lever, and their object will be hereinafter described.

I is the cutting tool or die, which is held in position by being connected to a horizontal cap-piece or transverse plate K, to each end of which one of two side bars L, L, Figs. 2, 3, extends downward, and is suitably jointed to one of two levers M N O—one of these levers being exhibited in its position in Fig. 2, and both being seen in end view at M, M, in Fig. 3. Each lever M N O, has its fulcrum at its end M, and is connected at its

end O by diagonal rods P, P, (see Fig. 4, which is an end view of the lever M N O, and parts adjacent), to the foot lever D E F, by a suitable joint Q, Figs. 2, 4. On depressing the end D of the foot-lever, the ends O, O, of the levers M, N, O will also be depressed, thus bringing the die I downward toward or upon a block R, placed on the table A, directly under the die I, as seen in the drawings. On removing the foot from the end of the treadle, it, together with the die I, will be raised upward by a helical or other suitable spring S, Fig. 2; one end of which spring is attached to the treadle, and the other to the lower side of the table A.

The cutting tool or die, I, is represented, in top view in Fig. 5, as detached from the cap piece K. It is also exhibited in Fig. 6, which is a view of it turned bottom upward, and in Fig. 7, which is a longitudinal, central, and vertical section of it. It is composed of two vertical blades or knives *a, a*, Figs. 3, 7, which are bent into the requisite shape as denoted in Fig. 6 one of each being bolted or riveted or otherwise suitably connected to one of two plates *b, b*, which latter are arranged on opposite sides of a central plate or bar *c*, and are connected to it by two cross-bars *d, d*, which are riveted to the underside of the bar *c* and extend at right angles to said bar on each side thereof, and have screws *e, e, e, e*, and nuts *f, f, f, f*, formed on their outer ends. The screws pass through the blades *a, a*, and the nuts are screwed on them as seen in the drawing—so that when said nuts are turned they press the blades *a a* nearer together. A counter-acting screw *g*, Figs. 1, 3, 5 is tapped into one of the blades, its end abutting or bearing against the inner side of the opposite blade. By these screws the blades may be adjusted to any desirable distance apart. In order that the blades may be moved back and forth and retain their proper position in other respects, each plate *b* of each blade has two pieces of metal *h, i*, attached to its lower side and extending from it at right angles and passing into or sliding through corresponding mortises cut through the center bar *c*. The center bar has two rectangular projections *k, k*, upon its upper side, which, when the die I is placed under the cap K extends through corresponding elongated slots *l l* cut through the cap as seen in Fig.

1. A screw m' passing through the center of the cap k and the bar c confines the die to said cap.

A metallic plate u Figs. 6, 7, a little smaller than the sole to be cut, is connected to the center bar c , by springs v, v Fig. 7, which permit said plate u to rest upon the leather and to rise when the cutting knives of the die are forced into the same and to free said knives from the leather as they rise therefrom.

Fig. 8, represents a strip of leather on which is delineated the manner in which the same is divided into soles. This strip is in width equal to the length of each sole. It is placed upon the block R and its proper position thereon is determined by two screws T, U , Figs. 1, 2, 3, which are tapped through the tops of standards V, V , whose lower ends are screwed to the table A as seen in the drawing. The inner end of each screw T, U , bears against the contiguous edge of the strip of leather—the screws being on opposite sides of the table A , as well as on opposite sides of the die I , as seen in the drawings.

One of the side bars L has a stud or pin m projecting from its side, which, when the bar is depressed by the lever $M N O$, comes in contact with the bent arm n of a shaft o Figs. 1, 2, and turns the shaft in its bearings p, p , sufficiently to elevate a gage bar q , which extends over the block R at right angles to the shaft o , and slides on the shaft and is confined thereon in any desirable position, by a set-screw r .

A curved spring s Figs. 1, 2, 3, is screwed at its lower end to the side of the table A , and extends upward by the outer side of the bent arm n , and its upper end is bent over the end of the cap K as seen in Fig. 3. The spring has a small notch or shoulder t on its inner side in contiguity with the bent arm n . Now when the die I is depressed by the foot lever, the stud m comes in contact with the bent arm n , and carries the same downward, until it comes below the shoulder t , which springs over it and confines the gage bar q in its elevated position until the die rises, so as to bring the end of the cap K against the inner side of the curved spring s , so as to force said spring outward and cause the gage q to drop upon the block.

The operation of cutting the soles may be thus described reference being had to Fig. 8, which represents a strip of leather cut as denoted in the same, into five soles numbered 1, 2, 3, 4, 5. First, regulate the die by its adjusting screws to a standard pattern until it is brought to cut out a sole of the requisite size. Then set the gage screws T, U , so that the strip of leather

will just pass between them, when forced forward in a direction at right angles with the cap K by the workman, care being taken to always have the strip placed so that the center part of each sole, shall be directly under the center of the die. Then by the same standard pattern set the gage bar q in such position on the shaft o that the pattern will just lay upon the block between the gage and the die taking care that the heel of the pattern shall be adjacent to the toe of the die, and vice versa. If we then carry the strip of leather under the die and depress the latter by the foot lever, the die will cut out the sole, 5, of Fig. 8. As the foot lever $D E F$ goes down, the movable gage q will rise and be latched or held up until the foot lever resumes its former place, thus giving to the operator time to pass the strip of leather further under the die or until the sole 5 passes beyond the block R , and so that the side of sole 4, contiguous to sole 5, may abut against the side of the gage q . The die I is then again brought down and cuts out sole 3—which operation together with the preceding forms sole 4. The same process is continued—a pair of soles being formed exactly alike at each succeeding operation until the whole strip is thus cut up.

By applying the weights upon the end F of the bar $D E F$ as before described, the momentum of the same when the foot lever is depressed assists greatly in forcing the knives of the die through the leather.

Having thus explained my invention I shall claim—

1. The method herein above described of arranging and constructing the upper part of the knives of the die where they are united, and connecting them by screws, so that said die may be made to cut soles of different sizes as set forth.

2. The apparatus by which the proper position of the strip of leather on the block R , is regulated previous to each descent of the cutting knives thereon, the same consisting of the adjusting gage q , with its shaft o (having a bent arm n), the curved spring s , projecting pin or stud m , and cap piece K on top of the bar L , the whole being combined and arranged, so as to operate substantially as above set forth.

In testimony that the foregoing is a description of my said invention and improvements, I have hereto set my signature this ninth day of February, in the year eighteen hundred and forty-two.

ELIAS T. INGALLS.

Witnesses:

LEONARD M. WEBSTER,
CHARLES W. CHASE.