

H. PORT.
MANUFACTURE OF BOOTS AND SHOES.

No. 39,421.

Patented Aug. 4, 1863.

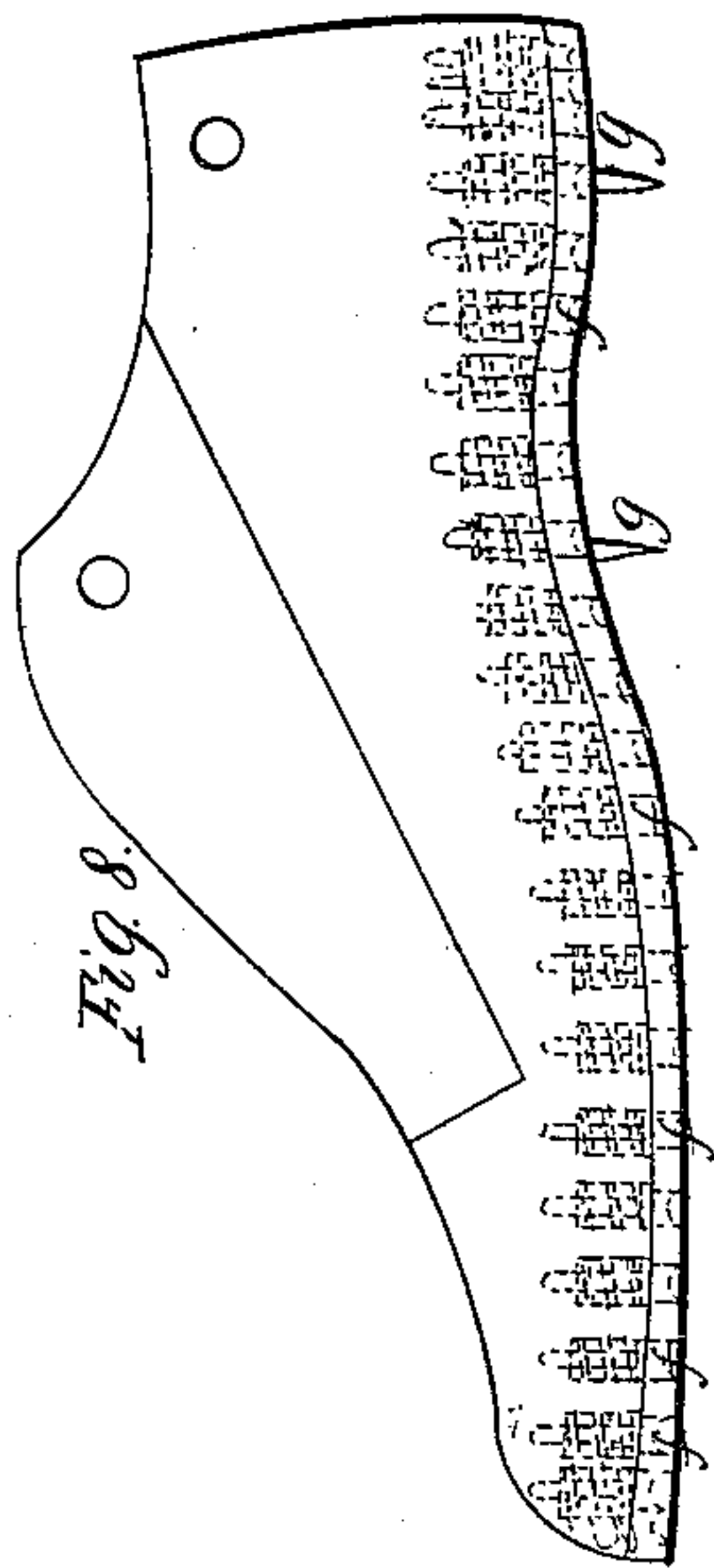


Fig. 8.

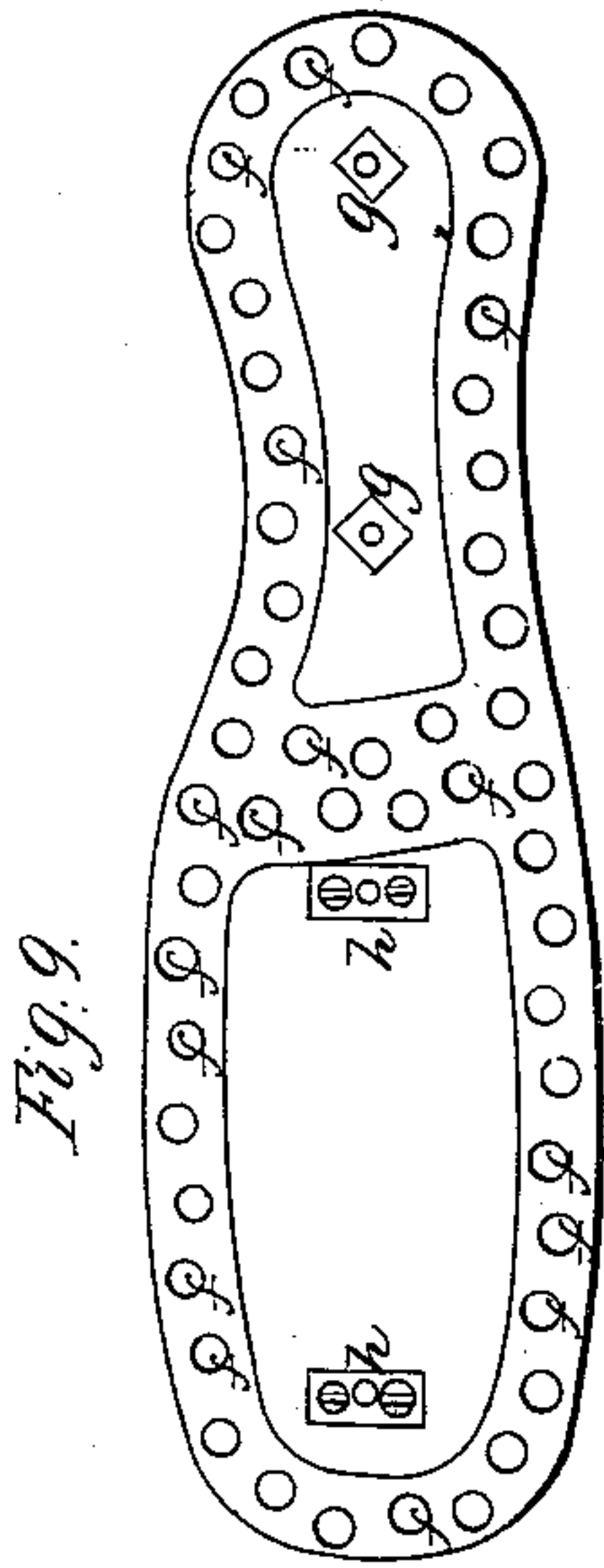


Fig. 9.

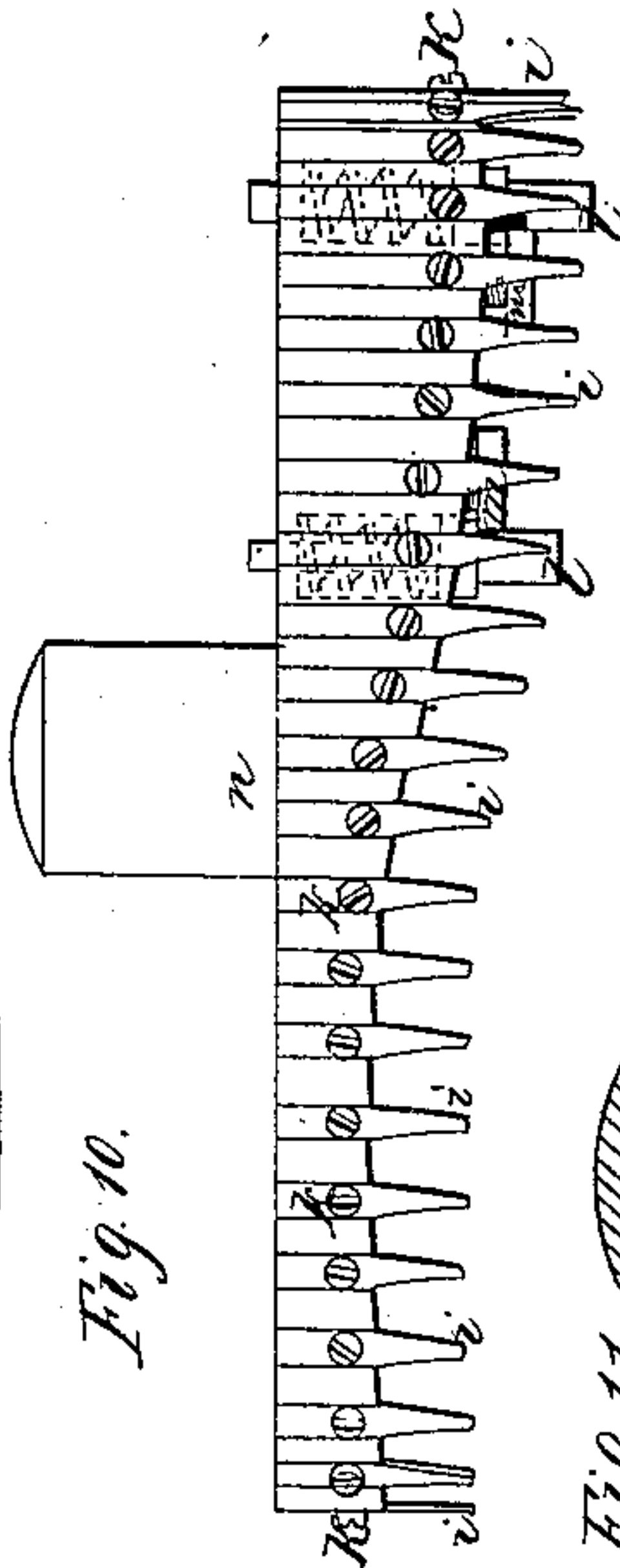


Fig. 10.

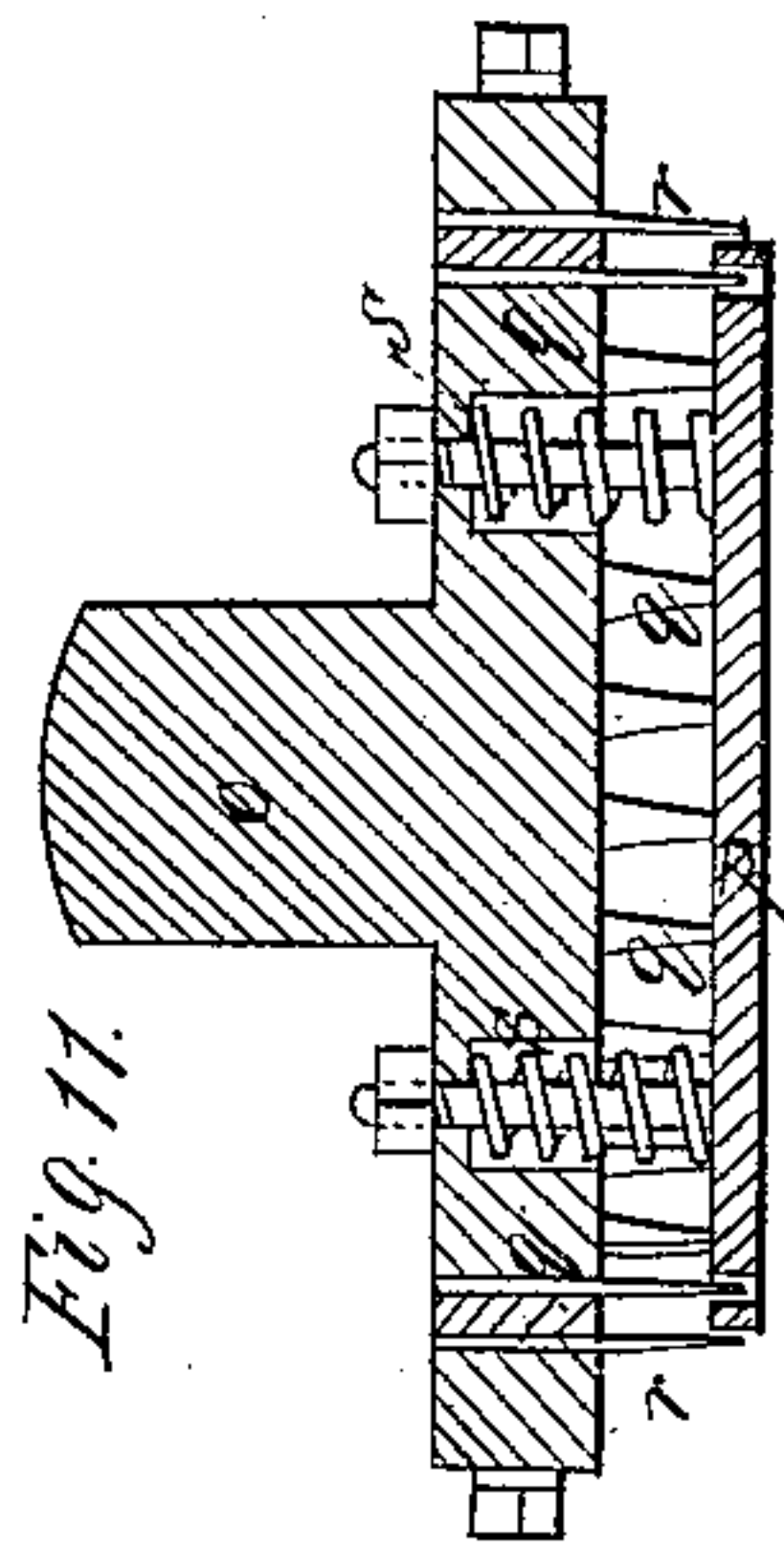


Fig. 11.

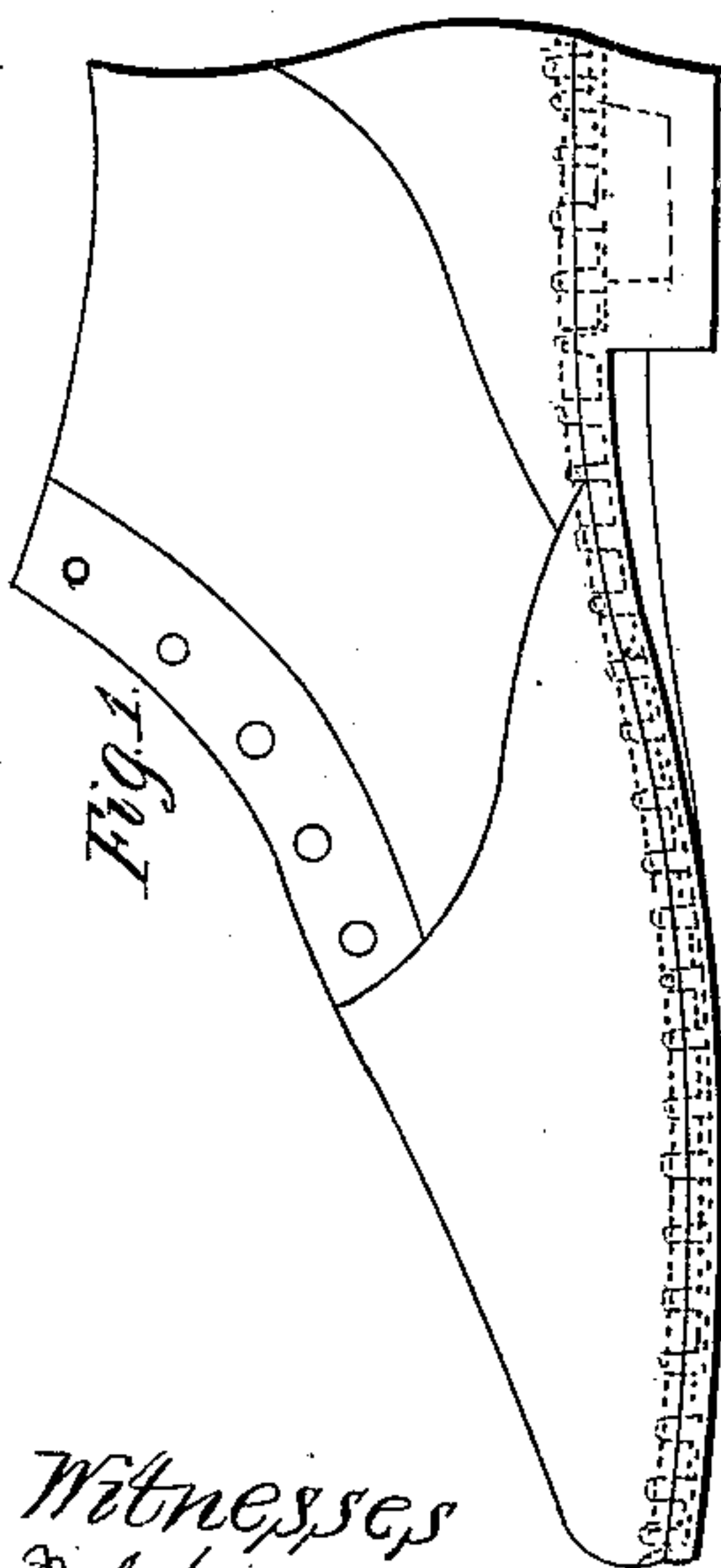


Fig. 1.

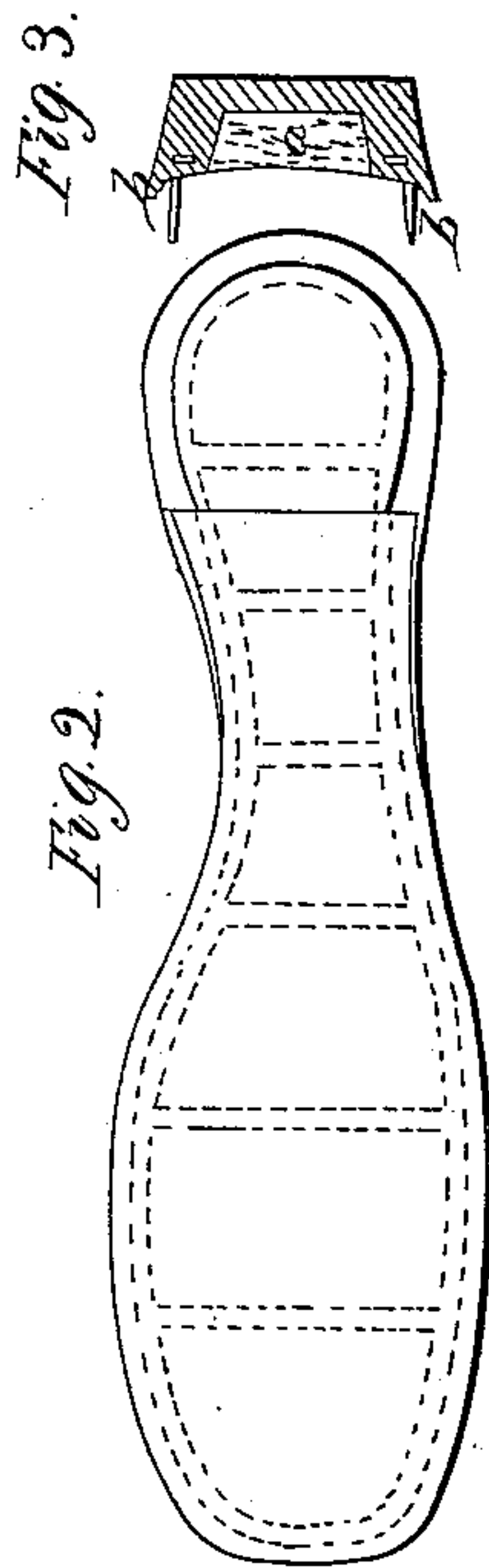


Fig. 2.

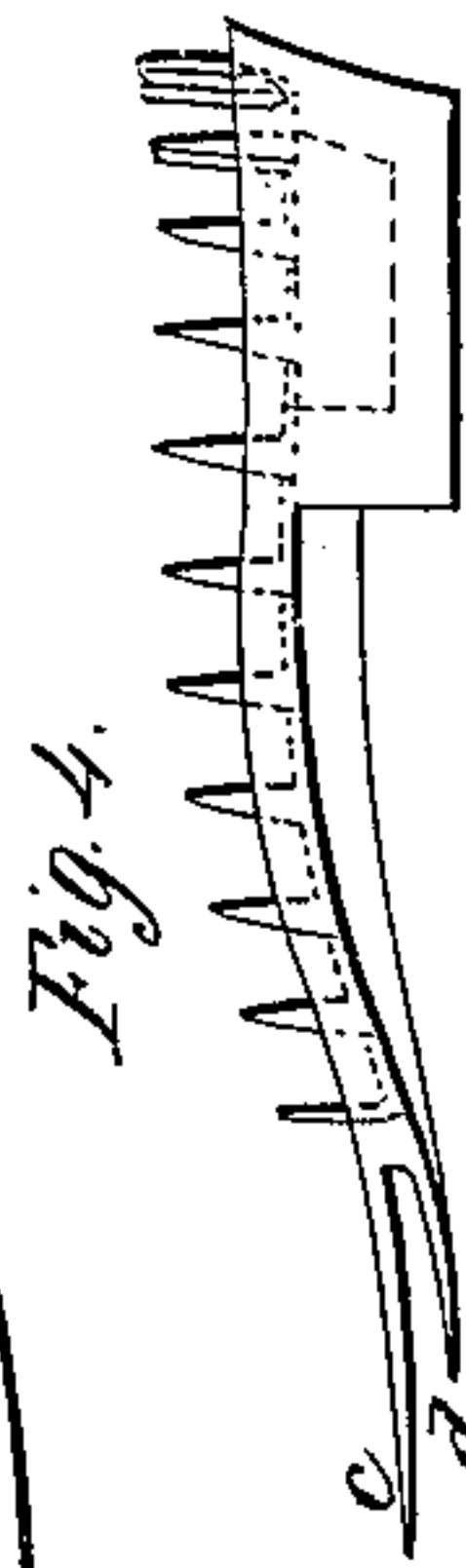


Fig. 4.



Fig. 5.

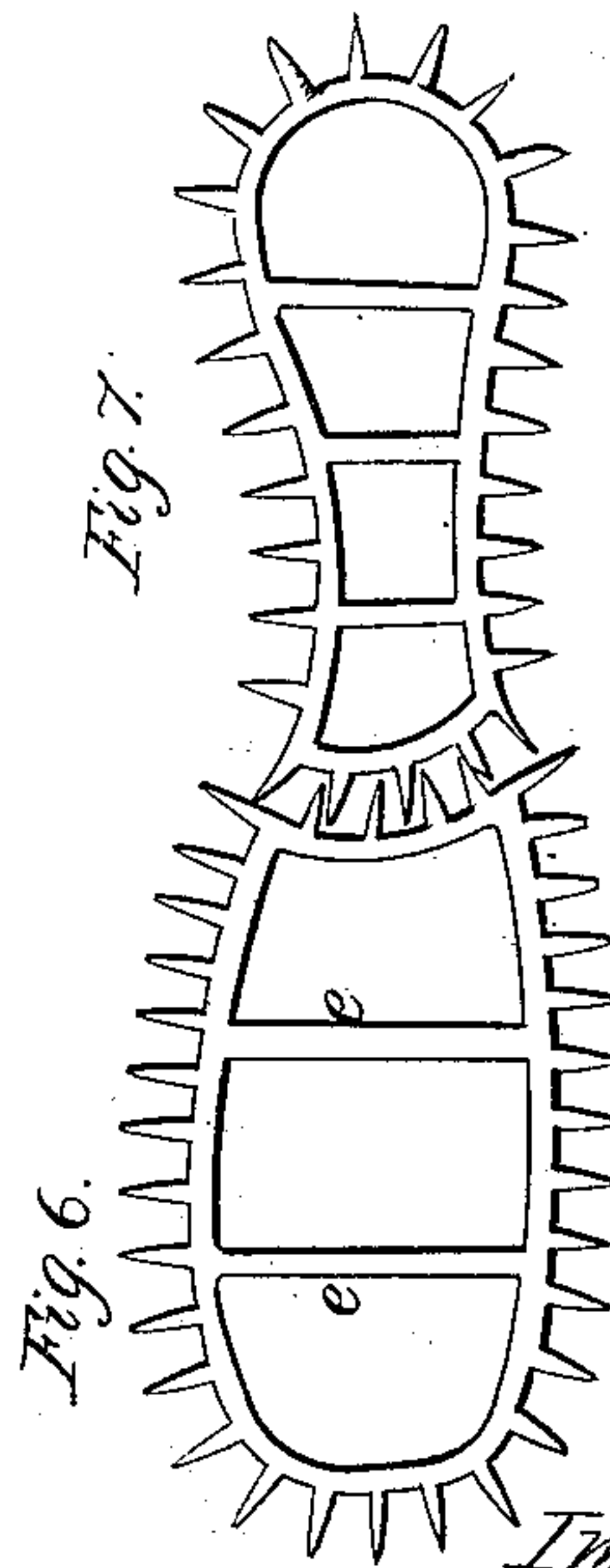


Fig. 6.

Fig. 7.

Witnesses
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IMPROVEMENT IN THE MANUFACTURE OF BOOTS AND SHOES.

Specification forming part of Letters Patent No. **39,421**, dated August 4, 1863; antedated October 16, 1862.

To all whom it may concern:

Be it known that I, HENRY PORT, of the city, county, and State of New York, have invented certain new and useful Improvements in the Manufacture of Boots and Shoes; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon.

My invention relates to the method and means of manufacturing boots and shoes, for which a patent was issued to me on the 13th of August, 1861. The soles are affixed to the uppers by means of rivets that are incorporated into the sole, and are connected together at the heads, and that pass through the edges of the upper and the insole, and have the points of the adjacent rivets clenched in opposite directions. In molded soles and in molded shank and heel pieces of india-rubber, gutta-percha, or other similar and suitable material, I prefer to incorporate the heads of the connected rivets within the sole or shank and heel, but the heads of the rivets may be connected on the exterior of the sole or shank, as is convenient, when the front half-sole is made of a single thickness of leather, without departing from the essential character of my invention, which consists in including a portion of the sole within two or more rivets in such a manner that the heads of the rivets cannot be drawn without undue violence, which also tears and destroys the sole. The points of the adjacent rivets are turned and clinched in opposite directions to spread the points of attachment to the insole, and thereby give them a more secure and firm fastening. The rivets are cut from thin sheet metal, and are bent to project from a narrow skeleton shaped in conformity with the outline of the sole. The skeleton has suitable cross pieces when they are necessary, and it may be made in a single piece or in several pieces, as may be desired. The last on which the sole is riveted to the upper and insole has a series of recesses or notches which receive the points of the rivets and turn them alternately in opposite directions. To insure perfect uniformity in the disposition and arrangement of the rivets, I punch the entire edge of the upper and the insole by means of a die arranged with punches,

in conformity with the recesses on the last, and the rivets incorporated with the sole. Where it is desired to make the front half-sole of leather, I cut and punch it from a side or piece of leather at a single operation.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation with reference to the drawings.

Figures 1 and 2 are a side elevation and a plan of a shoe with a molded sole made of india rubber and secured by incorporated rivets projecting from a continuous skeleton formed in accordance with its outline.

Figure 3 is a section of the same, exhibiting the heel molded with a recess and filled with a piece of cork, *a*, for the purpose of reducing the weight. The edges of the sole are molded with a feather edge or lip, *b*, that fits tightly around the edge of the shoe and closes the joint by its elasticity.

Fig. 4 represents a molded shank and heel piece of the same character as the sole described above, and provided with two tongues, *c* and *d*, at its forward end for the reception of the leather half-sole shown in Fig. 5. The tongues on the shank enable the joint with the front half-sole to be made close and covered. The leather half-sole may be secured with single and separate rivets made from sheet metal; but I prefer to secure it with a skeleton rivet-plate made in one or more pieces, as above described, in connection with molded soles. When the sole is of but a single thickness of leather, the skeleton portion of the rivet-plate should be placed on the outer side.

Figs. 6 and 7 represent the skeleton-rivets as they are cut from the sheet of brass or other metal before the rivets are turned up at right angles. The skeleton rivet-plate for the front half-sole may be made with an ornamental center piece or cross-bars, *e e*, and in several pieces, if desired, and that for the shank and heel piece should be shaped in conformity with the shank, and may be placed on the outside; but I prefer to mold the shank of india-rubber or other similar and suitable material or compound and incorporate the rivet-plate within it when molded.

Figs. 8 and 9 are a side elevation and a plan of the last which I prefer to use for turn-

ing or clinching the rivets alternately in opposite directions. It may be made wholly of iron or of wood with metal facing, as shown in the drawings. The alternate recesses *f* are placed on each side of the line of rivets extending around and across the sole, and they inclose spring-bolts with concave or cup-shaped ends, which turn the ends of the rivets in the required direction. The springs sustaining the bolts forming the bottoms of the recesses are sufficiently strong to turn the ends of the rivets, but are not stiff enough to prevent their yielding to contact with the punches before the latter can be broken. The projecting pins *g* serve as guides for the punches and for the shank and heel piece which is furnished with corresponding holes for their reception. The holes *h* may also be used as guide or peg holes.

Fig. 10 is a side elevation of the die containing the punches, by which the edges of the upper and the insole are punched for the reception of the rivets. The punches *i* are secured in the die by the screws *K*. The spring-guides *l* fit over the pins *g* in the bottom of the last, and guide the punches properly as they are forced through the upper and the insole, the springs yielding to the compression as the die and last are approached together. The spring guides *l* are retained in the die by the overlapping heads of the screws *m*. The die is fixed into a press by means of the handle *n*.

Fig. 11 is a section of the die by which the front half-sole is cut and punched. It is fixed in the press, by which it is operated by means of the handle *o*. The leather from which the sole is to be cut is placed under the die, and when the die is moved down toward it the plate *p* first strikes it and holds it flat and firm while the punches *q* and the knife *r* perforate and cut it to the shape required. When the die is moved upward and away from the leather, the springs *s*, which have been previously compressed by the downward motion, press the plate *p* outward and discharge the half-sole from the punches and the interior of the knife. In a similar manner, and with a similar instrument, an entire sole may be cut and punched, or the insole merely cut.

In using my invention the insole and upper of a boot or shoe are first secured on the last I have described, and represented in Figs. 8 and 9 in the ordinary manner, and the edges of the upper and the insole are then perforated with the punching-instrument shown in Fig. 10. If the punches project too far through the insole, and strike the bottom of the recesses, the spring-bolts yield without in-

juring the punches. If the boot or shoe is to be entirely soled with an india-rubber or molded sole, I then take a sole made with incorporated rivets and a feather edge or lip around its periphery, as shown in Figs. 1, 2, and 3, and place it upon the guide-pins of the last, and with a suitable die, that conforms to the bottom of the sole, press it at once into its place. The points of the flat rivets pass through the upper and the insole, and have their alternate points turned in opposite directions by alternately striking the opposite sides of the concave or cup-shaped bottoms to the recesses, the springs of which are sufficiently strong to turn the thin rivets without yielding. The feather edge or lip projecting on the periphery of the sole should be made somewhat smaller than the bottom of the boot or shoe, so that it will fit closely against the upper, and be slightly distended in such a manner that its elasticity will constantly preserve a tight joint between the sole and the upper.

When it is desirable to have a front half-sole of leather, the shank and heel piece represented in Fig. 4 is first affixed to the upper in the manner described for fastening an entire molded sole and the leather half-sole, that may have been simultaneously cut and punched with the instrument shown in Fig. 11, is then similarly secured either with single flat-pointed rivets or with a skeleton-plate on the outside, with the rivets projecting through the leather, as illustrated in Fig. 5. The double tongues of the shank receive the end of the half sole and cover the joint, over which they may be secured with cement or suitable rivets. After the rivets have been turned and partially clinched in the manner described, the boot or shoe is taken from the last I have described and placed upon another last with a plain metal facing, upon which the clinching is perfected and completed by means of a hammer or of a suitable die in a press.

I claim as my invention and desire to secure by Letters Patent—

1. The sole molded with a skeleton-plate of rivets and a lip on the edge, substantially as described.
2. The use of the last with spring-recesses to turn the points of the rivets, as set forth, and of the knife and punches, as described, to cut and punch simultaneously.

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Witnesses:

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