

S. F. Dexter,

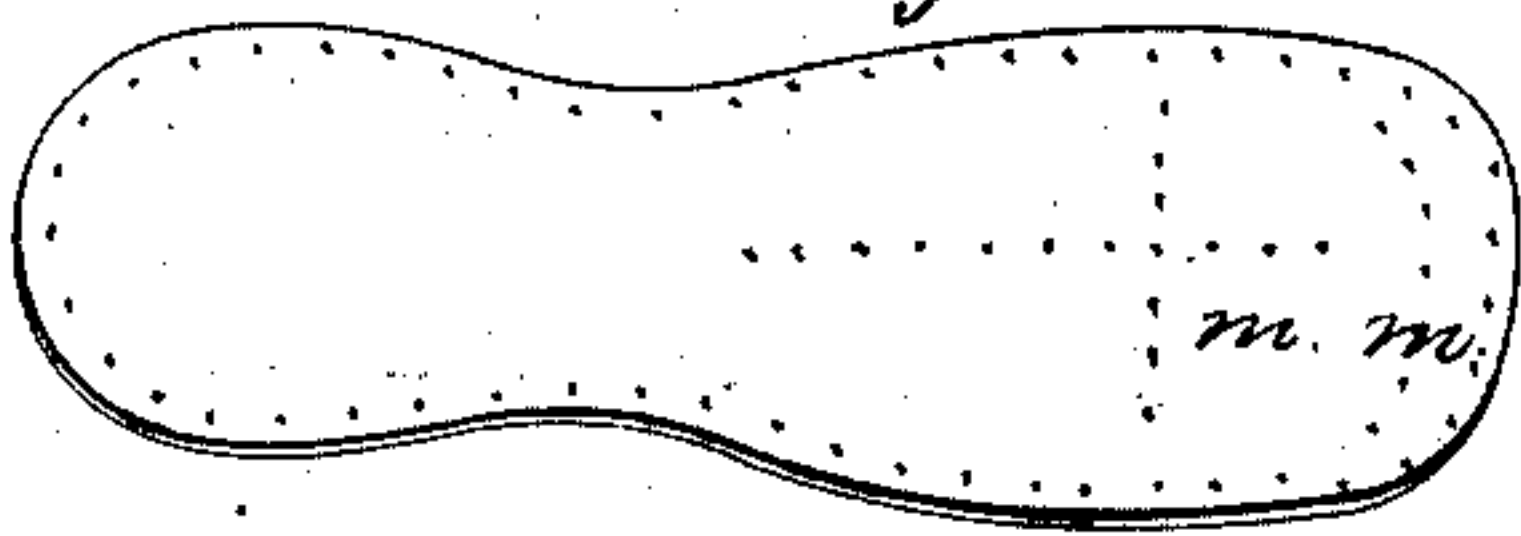
Shoe Sole,

No 30,391,

Patented Oct. 16, 1860.



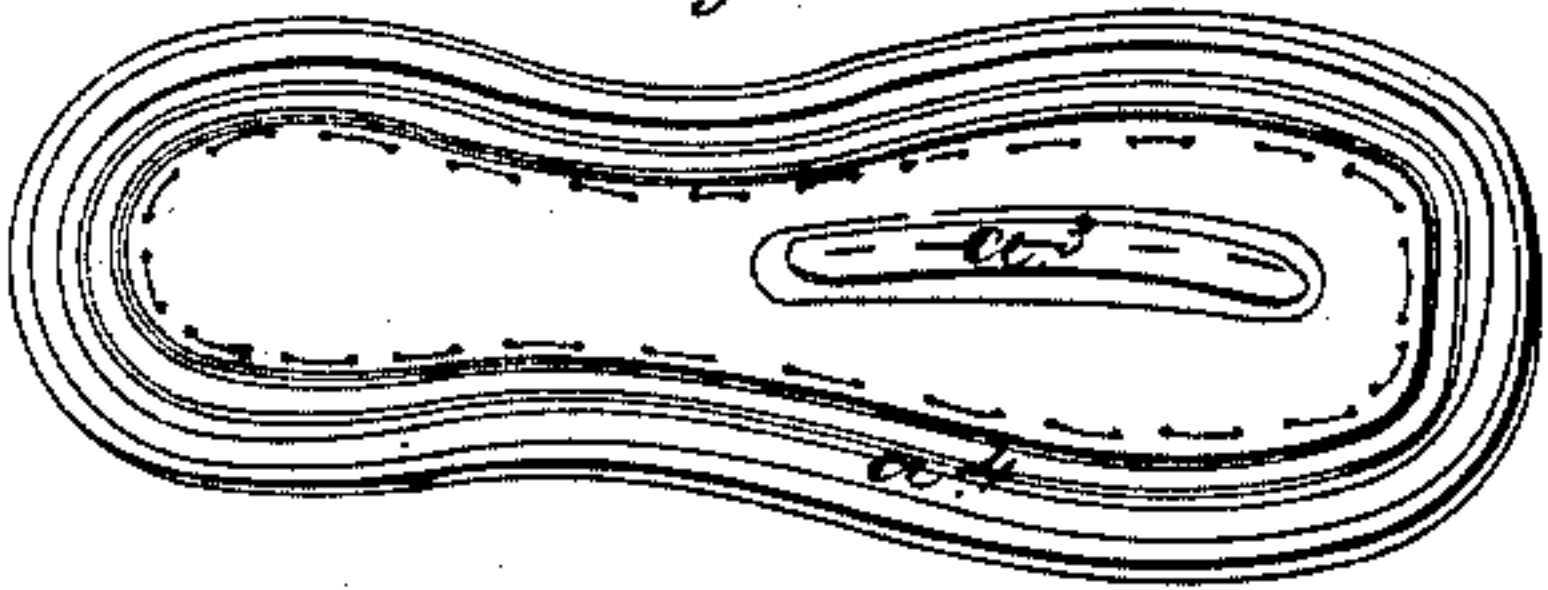
I, Fig: 8.



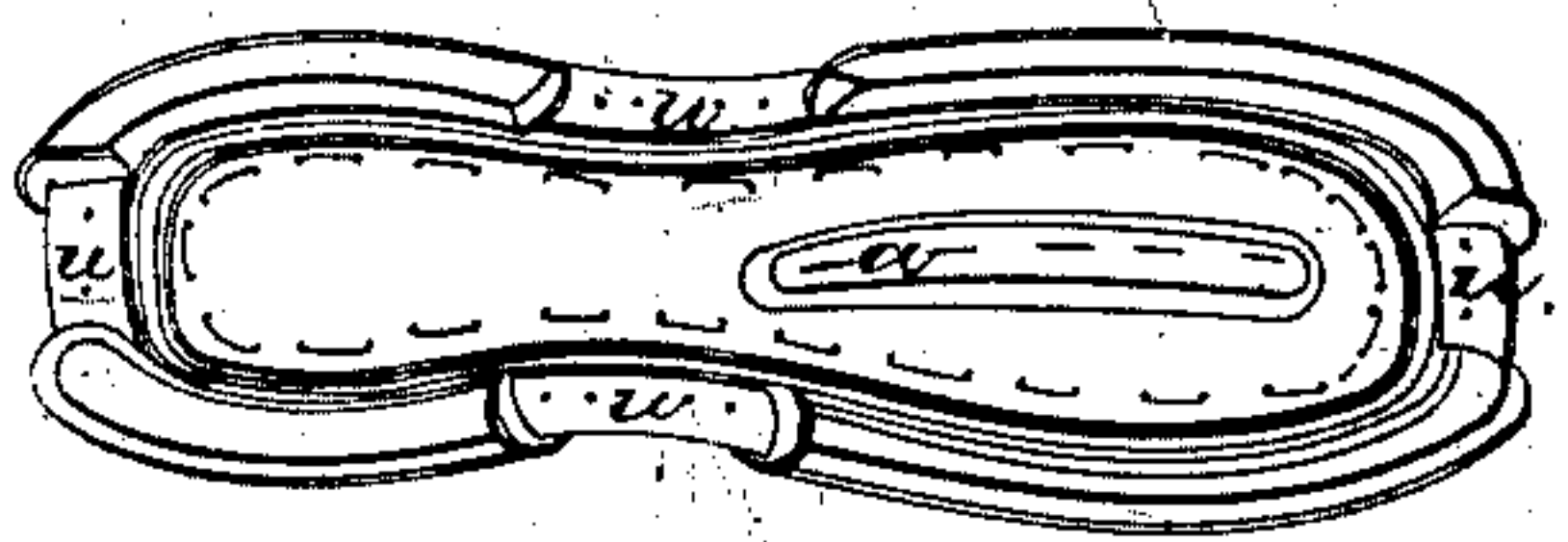
II, Fig: 4.



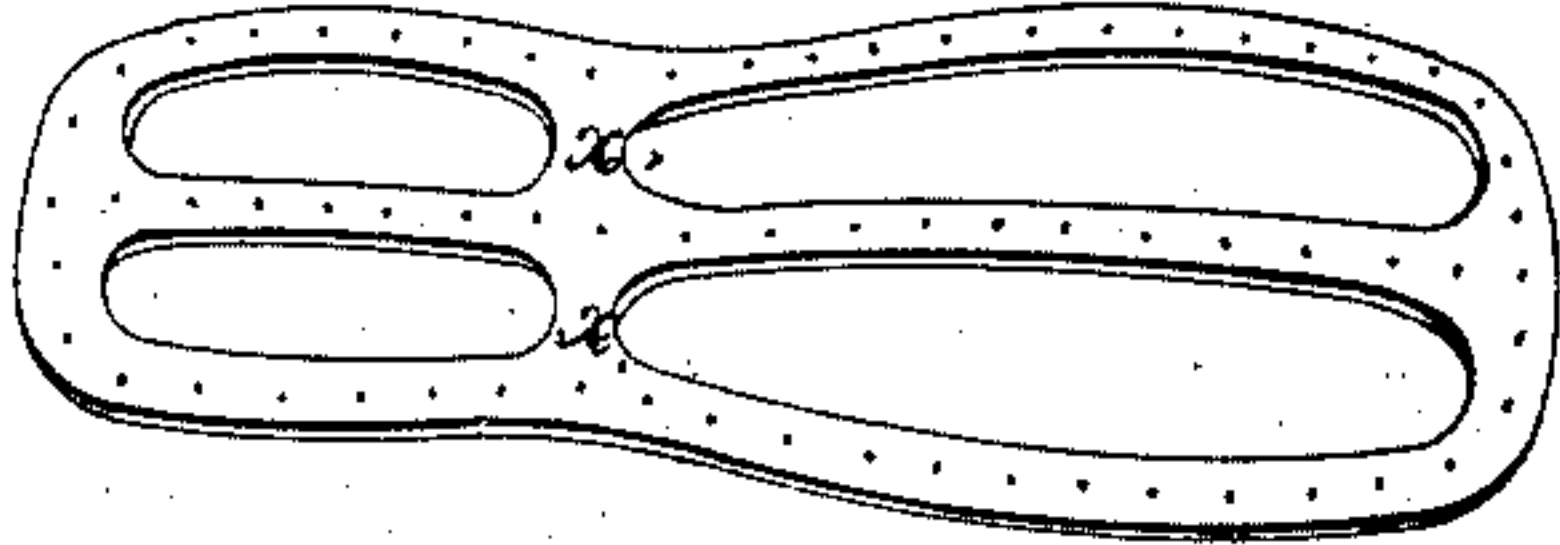
C, Fig: 3.



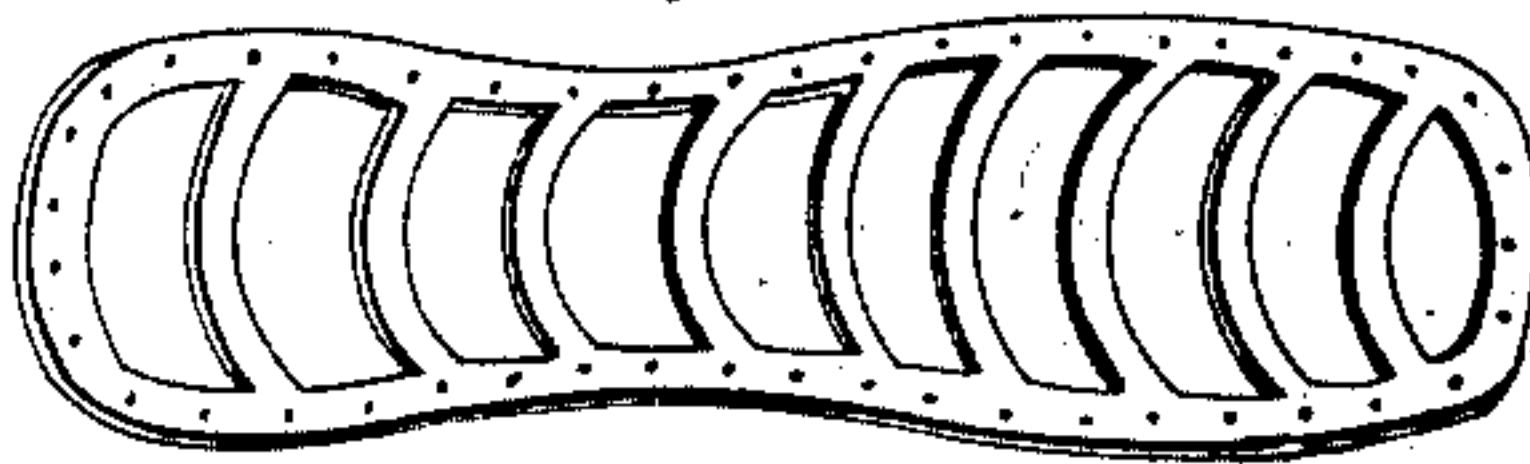
C, Fig: 6.



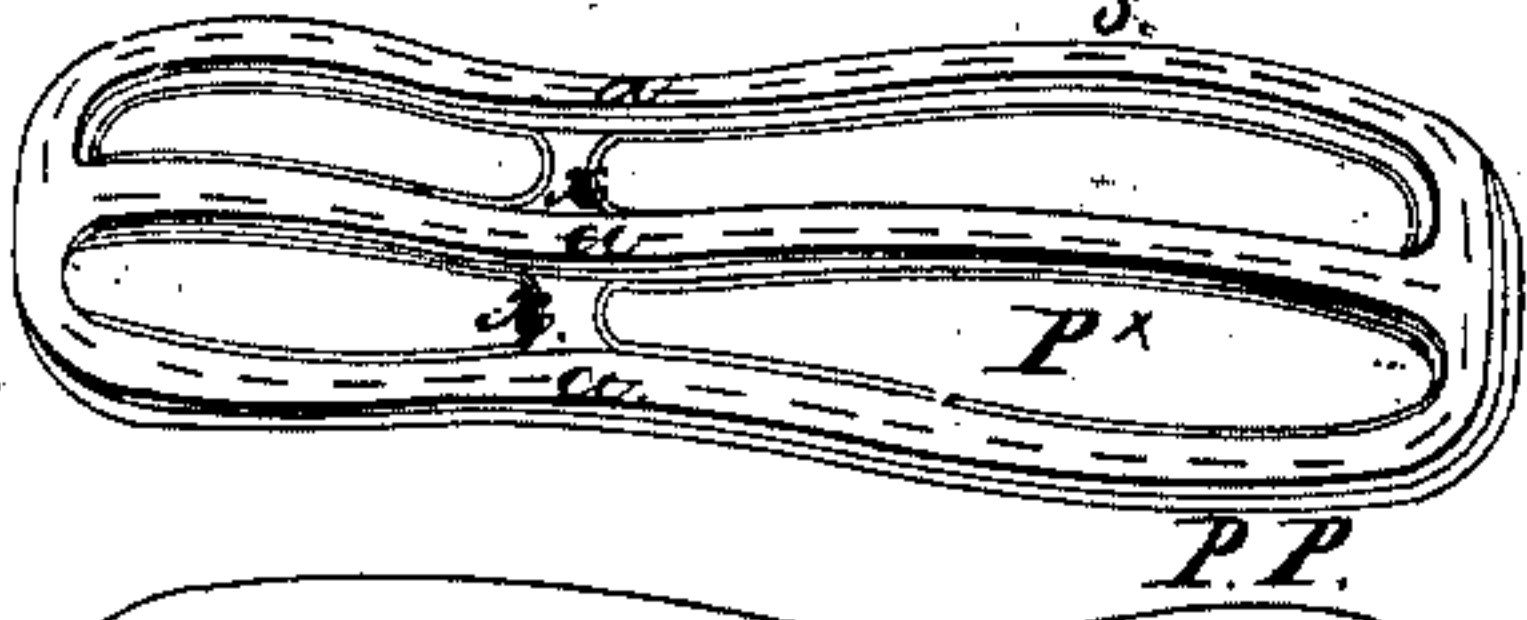
a, B, Fig: 2.



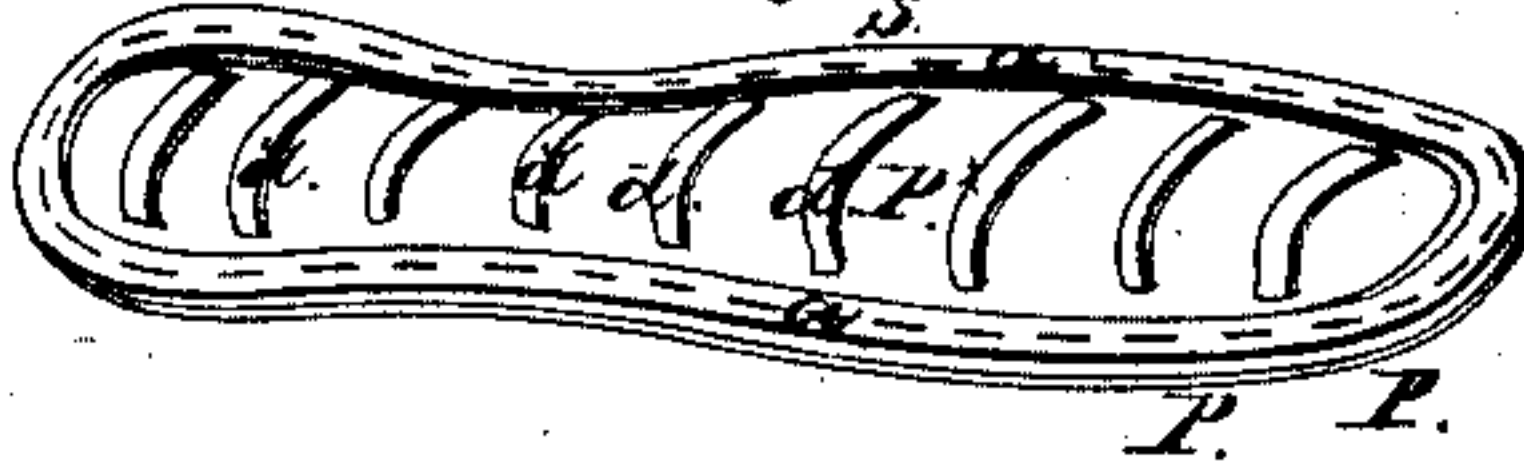
c, Fig: 5.



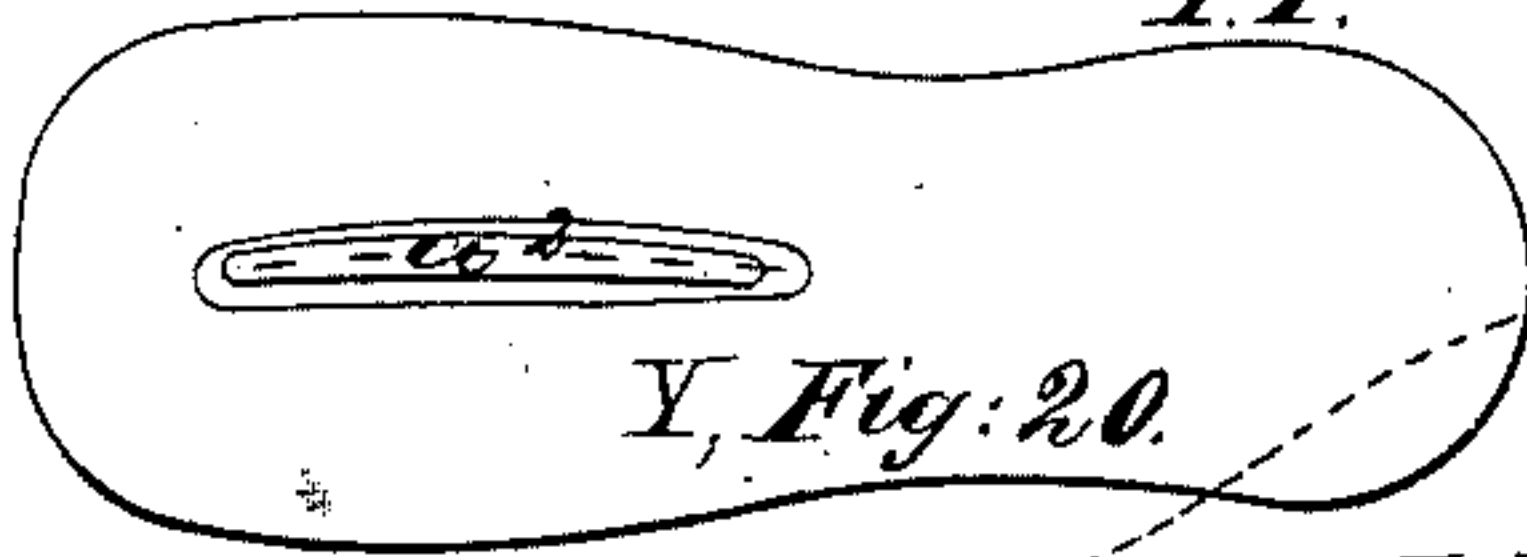
B, Fig: 2.



H, Fig: 5.



Y, Fig: 20.



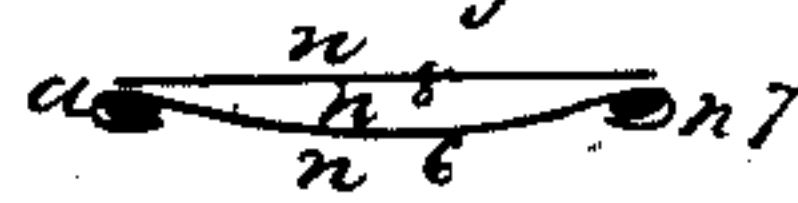
J, Fig: 9.



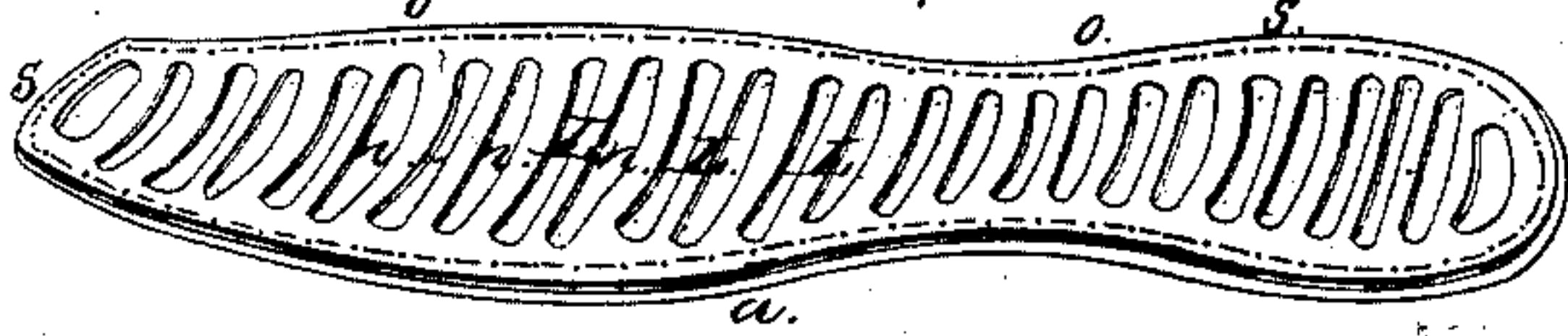
K, Fig: 11.



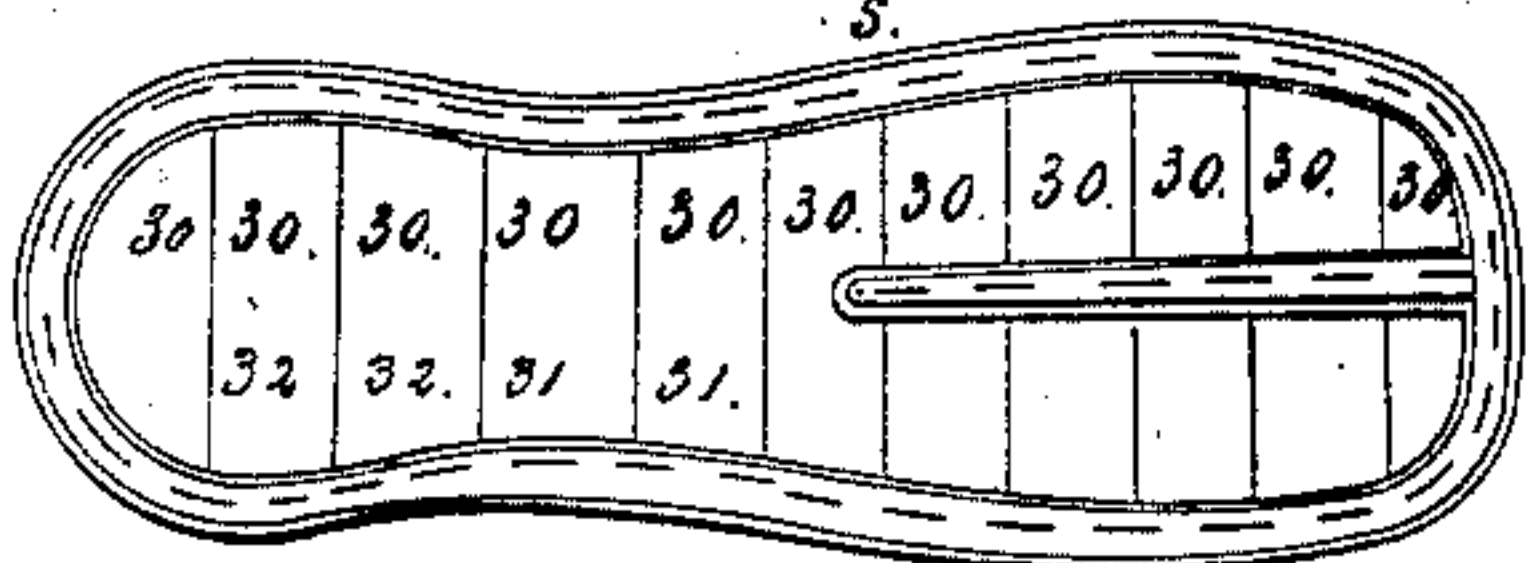
a, A, Fig: 21.



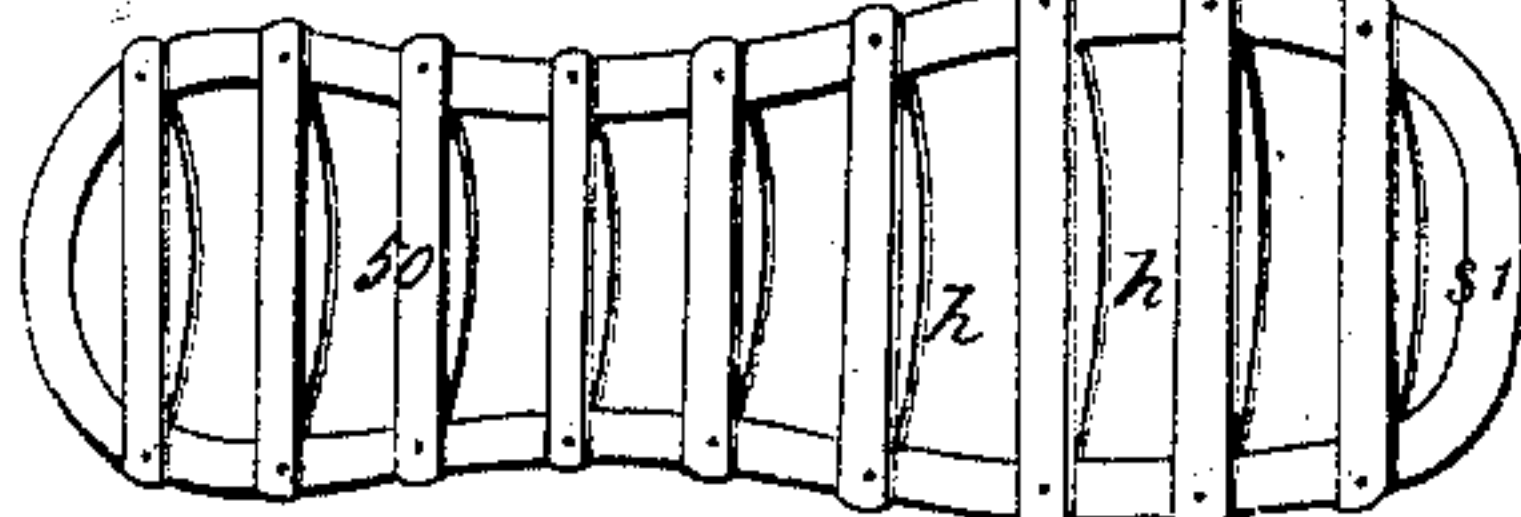
A, Fig: 1.



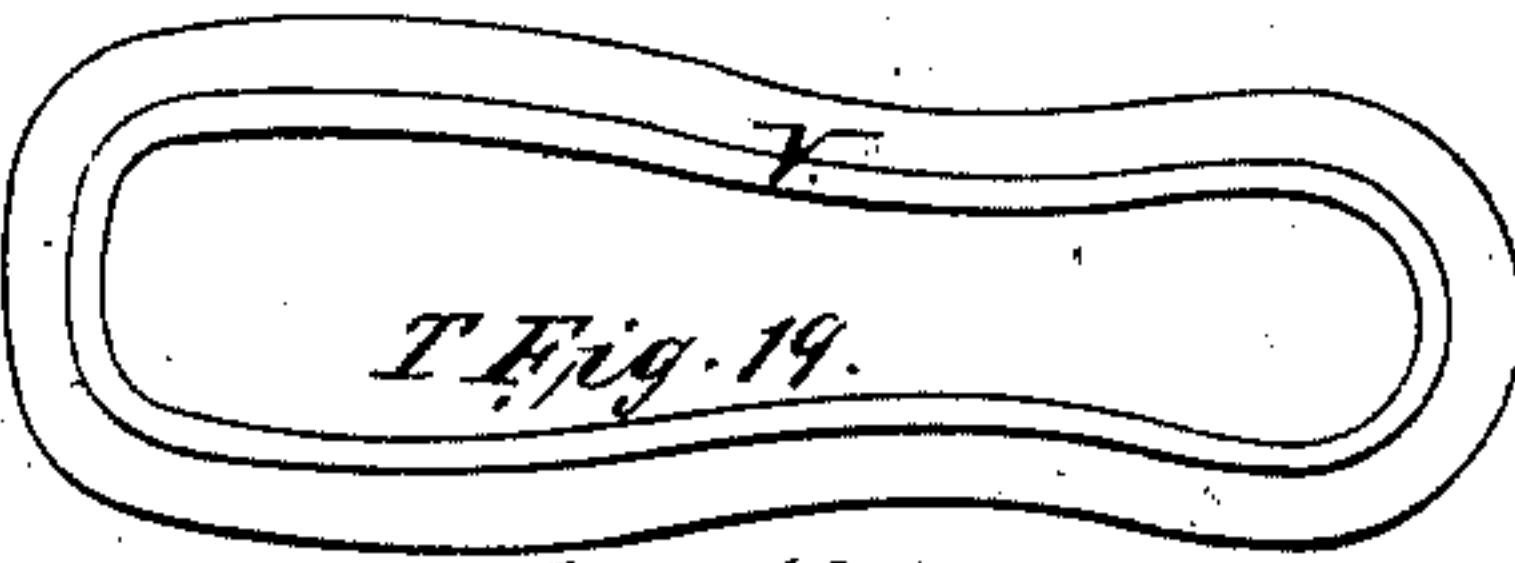
A, Fig: 22.



N, Fig: 20.



I, Fig: 19.



I, Fig: 18.

Witnesses:
James Randall
Julia Randall

Inventor:
Samuel F. Dexter

UNITED STATES PATENT OFFICE.

SAMUEL F. DEXTER, OF PARIS, NEW YORK.

BOOT AND SHOE.

Specification of Letters Patent No. 30,391, dated October 16, 1860.

To all whom it may concern:

Be it known that I, S. F. DEXTER, of Paris, in the county of Oneida, State of New York, have invented a new and useful machine or apparatus which may be inserted into a boot or shoe to keep the bottom of the foot dry, although the sole of the boot or shoe may be as wet as water can make it, and also serve to keep the foot at a lower temperature in warm and higher in cold weather making a more uniformity of heat, being a machine or more properly an apparatus, I call an "air-chamber for the foot;" and I hereby declare that the following is a full and exact description thereof, reference being had to accompanying drawings and to letters of reference marked thereon.

The nature of my invention relates to a machine or apparatus which is elastic in all required directions and is so constructed as to prevent the bottom of the foot from coming in contact with the insole of the boot or shoe by leaving an open space or chamber for the air to circulate under the chamber floor and carry off the perspiration and fetid atmosphere which otherwise would condense upon the foot in a cold dead clammy substance. The circulation of fresh air and the bottom of the foot being raised from the hot or cold wet insole are some of the reasons why my apparatus produces a more general uniformity of warmth in the feet, and of course through the whole system.

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

The letters of reference and respective figures refer to the same parts.

A, Figure 1, represents a perspective view of one of my machines or apparatus, with the exception of the chamber floor, an edge view of which is seen at H, Fig. 7, and a face or surface view at I, Fig. 8.

The perforations are unnecessary around the edge for this case. Those marked *m, m*, across the ball and around the toe are for the ingress and egress of air into and out of the chamber below.

The frame A, Fig. 1, I cut out of sheet caststeel which is about one thirtieth part of an inch thick for a man's size. I cut twenty six spaces crosswise of the pattern leaving a rim onehalf inch wide all around marked *o, o*. The spaces are marked *n, n, n*. They should be wider at the rim in order

to give more elasticity to the frame. Twelve narrow strips I call girts or beams which are marked *L, L, L*, these support the floor and keep the rim from spreading. 60

R, R, R, represent twelve strips wider than the beams which are depressed about one-fourth of an inch (mechanics would say swaged down) to fit the scallop of the insole of the boot or shoe upon which they rest. 65 These I call sills. The beams or girts are straight across the top making a framework of one piece of metal.

The rim *o, o*, is perforated near the edge for fastening on a rib of leather not to exceed one eighth of an inch thick and about the width of the rim. An edge view is seen at *a*. This rib of leather rests upon the margin of the insole at the same time that the sills do on the center of the insole, thus making a strong elastic frame. 75

S, S, represent the fastenings, by stitches or rivets, which pass through the rim. For a floor to this frame I use a piece of tin, German silver, brass, rawhide, horn, or wood. Sometimes a metal floor hinged on the underside as seen at *a⁴⁰*, H, Fig. 7, which is an edge view. 80

a B, Fig. 2, represents another form of framework. A strip of plate is left lengthwise through the center connecting with the rim at each end and with sides at the narrowest part of the pattern marked *x x*. This frame is also cut out of one piece of metal. The center piece and rim are perforated to fasten on the rib with thread or rivets. B, Fig. 2, represents the same bottom side up and completed. 90

a, a, a, represent ribs of india-rubber, rubber belting, or leather. These ribs are to elevate the frame above the insole to form an air chamber below. 95

S shows stitches or rivets with which the ribs are fastened to the frame; *P^x*, brass wire cloth floor; *P P*, the cloth is folded over the edge of the frame the width of the rim over which the rib is fastened. C, Fig. 5, is another method or frame work which consists in a rim and nine sills which are depressed (this number is for a small shoe). They join upon the rim forming one piece. The sills may be formed separately and riveted after being hardened and tempered. E, Fig. 5 represents the same bottom side up and clothed, *d, d, d*, the sills, *a a* the ribs, for the purpose before described; *P^x* the floor cloth (which may be brass, German silver, 105 110

rawhide, or strong canvas. The covering material is folded over the edge down upon the rim and the rib is fastened over, as shown at P, P. The same in perspective view is seen at J, Fig. 9, right side up as it sits in the boot or shoe. The rib a , a , is elevated from a shoe bottom (the outlines of which are given with the upper leather removed), marked at the toe, a^* ; S stitches or rivets. K, Fig. 11, represents an edge view of a section of the same; 12, the sill; 14, 14, leather ribs; 15, chamber; 13, chamber floor.

D, Fig. 4, represents a plate of steel with a rib around the edge and a rib marked, a , lengthwise of the plate. This piece is to support the sole of the shoe or boot from sinking in and shutting up the air chamber. The orifices at the ball and toe are marked m , m , as on the plate or chamber floor I, Fig. 8. In walking the weight springs down the floor and as the foot rises it acting like a piston forces off the fetid atmosphere and prevents the perspiration from condensing upon the foot in a cold clammy substance, the air having ingress and egress through the orifices m , m .

T, Fig. 18, and T, Fig. 19, represent the outlines of another method of forming a frame work; V, shows a space of one-eighth of an inch between the edges of the two pieces which constitute the frame; C, Fig. 6, with four spaces represented as being cut away, each marked u , shows the leather folded over the rim.

a , is a center piece lengthwise of the ball which is riveted upon the center plate or fastened in any of the known ways. C, Fig. 3, represents the same finished bottom side up; a^3 , center rib; a^4 , outer or rim rib, for the use before described. Rawhide makes the best floor for this. It should be put on in stretched and wet state fastened through the rim with rivets.

Y, Fig. 20, represents the outlines of a metal floor pattern—a rib lengthwise upon the ball marked a^2 . This rib rests upon the center of the insole, while the outer rim of the pattern rests upon the outer edge, thus forming a chamber under the floor.

N, Fig. 20, represents another method of forming air chambers which consists of nine beams; and nine sills lying directly under the beams as seen at h , h . The beams and sills are riveted together near the ends of the beams represented by dots thus . upon each end. The sills are depressed as at h , h , and are wider than the beams. The ends of beams are formed into oblong eyes, into which the leather rib marked s' is placed and the eyes closed upon the rib at equal distances apart. The sills and beams may be riveted upon the rib and so dispense with the eyes. The lengths of these beams and sills must be varied to suit the width of the foot, boot or shoe. O^5 represents a

beam with an outline marked each side, showing that if all of the beams were of equal width they would of themselves form a floor which would easily ply to the foot, and save the extra plate which otherwise must be used, which is seen at I, Fig. 8, the perforations around the rim excepted.

H, Fig. 9, represents an edge view of a chamber floor which I use for A, Fig. 1, as well as N, Fig. 20, which has joints or hinges formed on the under side and narrow enough to drop between the beams and leave a smooth surface on the top for the foot. These hinges are each marked a^4 .

d A, Fig. 21, is an edge sectional view of N, Fig. 20.

n^5 represents the straight beams; n^6 , the sills; n^7 , the oblong eyes for the rib of leather; n^8 , the air chamber; a , the leather rib. Instead of forming oblong eyes for the rib they may be riveted through the rib which answers as well.

A, Fig. 22, represents another mode of forming the chamber, which consists in a rib of leather about one sixteenth to one eighth of an inch thick and three eighths wide more or less, and a center piece lengthwise a part or the whole length of the foot. In the schedule it only runs across the ball lengthwise. These ribs are for the purposes before described. Mounted upon these ribs are eleven strips of metal plate (or other material) riveted or sewed onto the ribs, each of which are marked 30. If these are made of steel, the thickness required for a man is one twenty-eighth of an inch. The black lines 32 represent the meeting of the edges of the strips of the floor plates. In the schedule it is represented bottom side up. The top side is a smooth surface. It being thus joined it plies readily to the foot and is calculated for the most delicate slip, boot, or shoe. The rivets or stitches are marked S; the ribs v , v , v . These ribs can be made of rubber belting or any strong yielding durable material. These aforesaid plates form the floor and can be covered with cloth or leather. If they are made of steel, they should be tinned or coated with some material to prevent their rusting.

The apparatus A, Fig. 22, I sometimes use to constitute an air chamber in the sole of a boot or shoe. When it is used for this purpose, I extend the outer rib about half an inch beyond the plates to admit room for the pegs to pass through the rib into what is commonly called the insole to a boot or shoe.

The boot or shoe is prepared in the common way for the outsole, but first I lay on the apparatus A, Fig. 22, in the same way as if it were a middle sole, over which I place the outsole and peg or sew the soles together, as in the usual manner, except the sole must be tacked on out side of the plates instead of the middle. In some cases I place a set

of plates on both sides of the rib just alike. In the schedule they are placed only on one side. The thickness of the rib governs the depth of the chamber. In this case I use
5 what is commonly called the insole for the chamber floor, which must be perforated for the ingress and egress of air into and out of the chamber below.

10 The different modes adopted in these machines are only different ways to accomplish the one end—namely, dry and warm feet. By means of the chamber below a general

equilibrium of heat in the feet is a natural result.

What I claim as my invention and desire 15 to secure by Letters Patent, is—

The formation of an air chamber in or on the sole of a boot or shoe substantially as herein set forth.

SAMUEL F. DEXTER.

Witnesses:

JAMES RANDALL,
JULIA RANDALL.