

G. W. Day.

Boot & Shoe.

Nº 43295.

Patented Jun. 28. 1864.

Fig. 1.

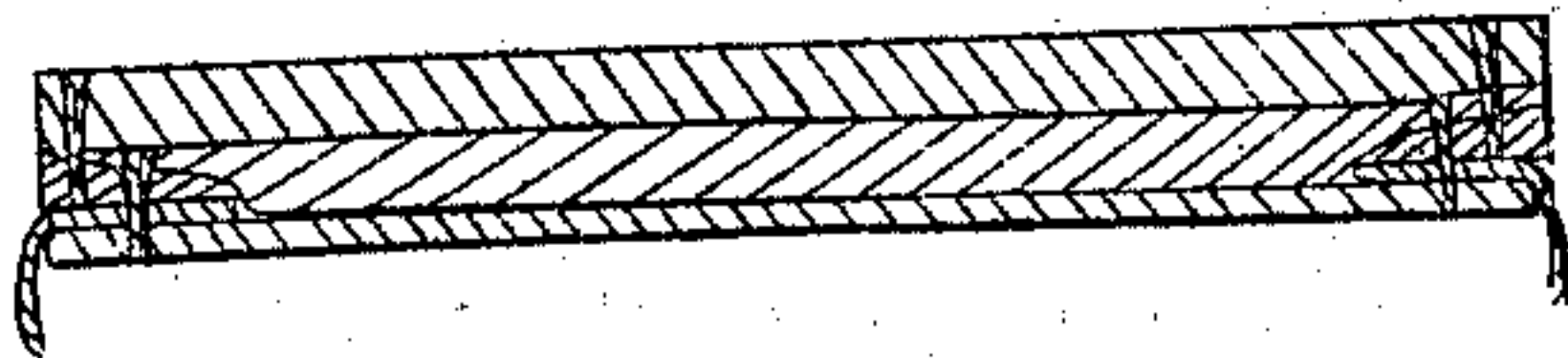


Fig. 2.

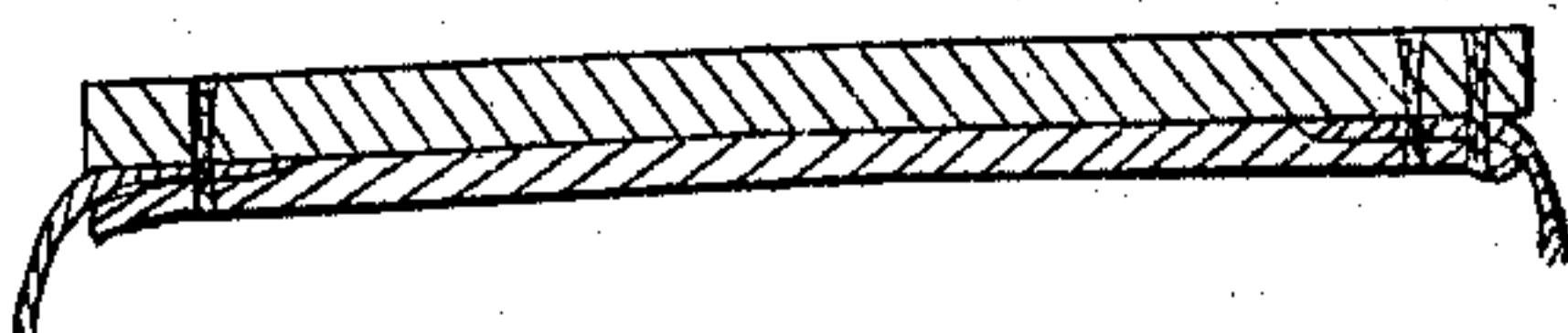


Fig. 3.

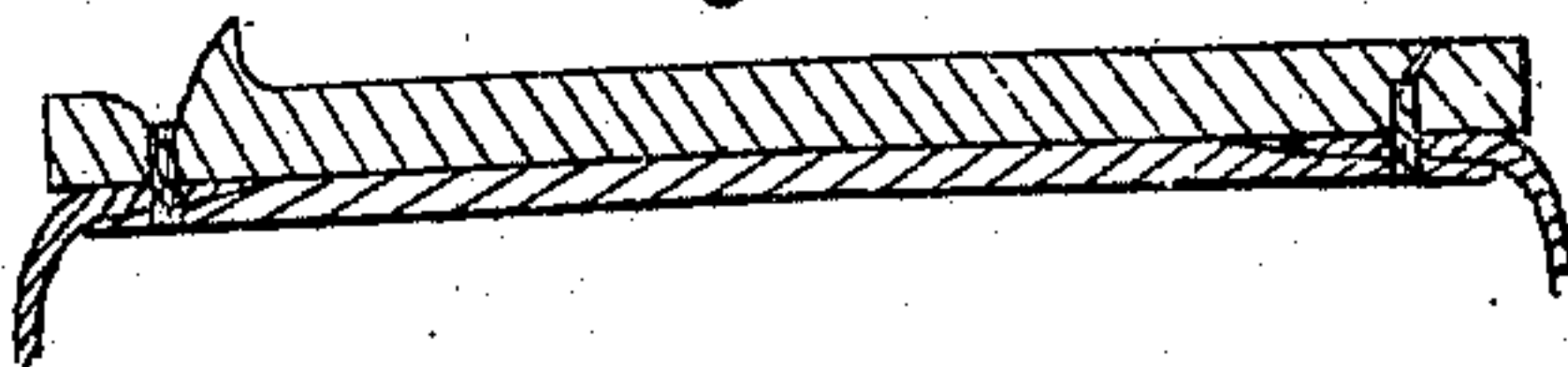


Fig. 4.

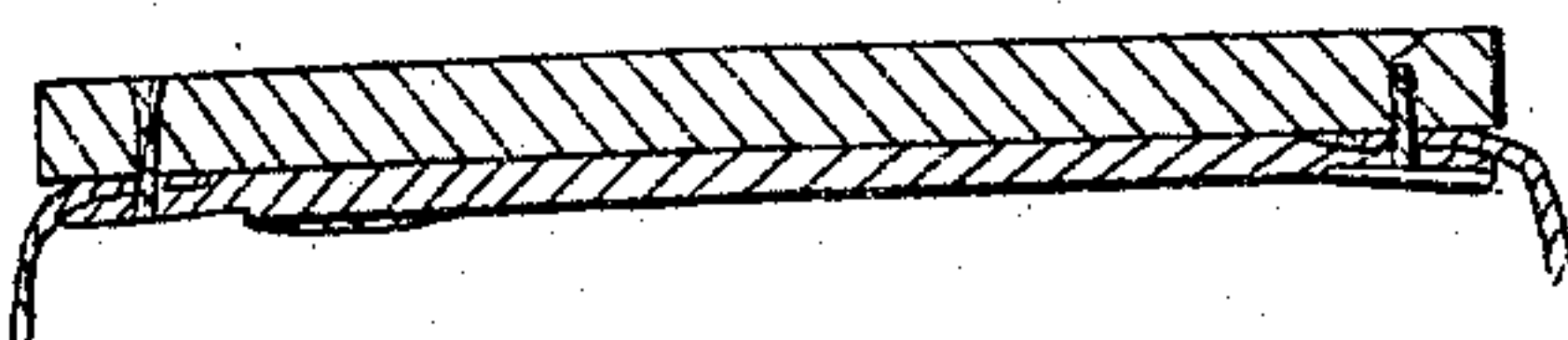


Fig. 5.

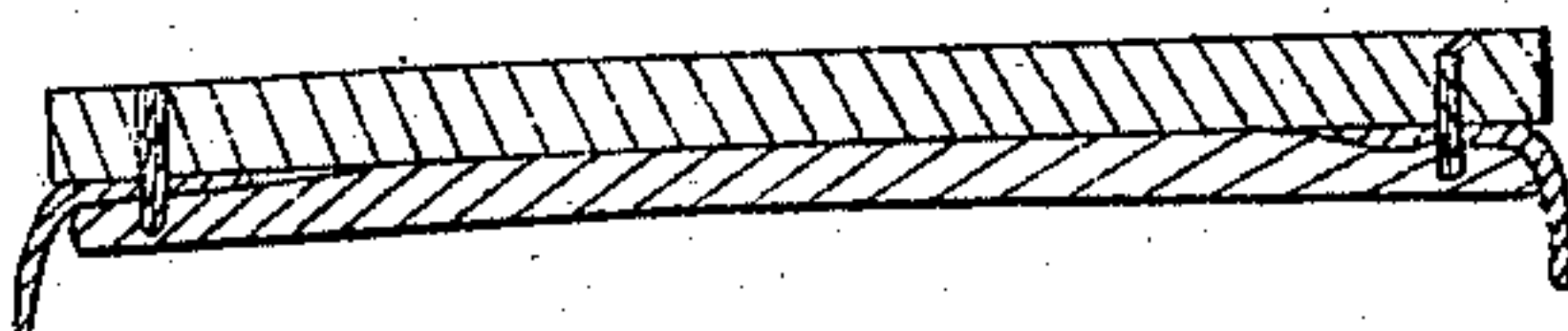


Fig. 6.

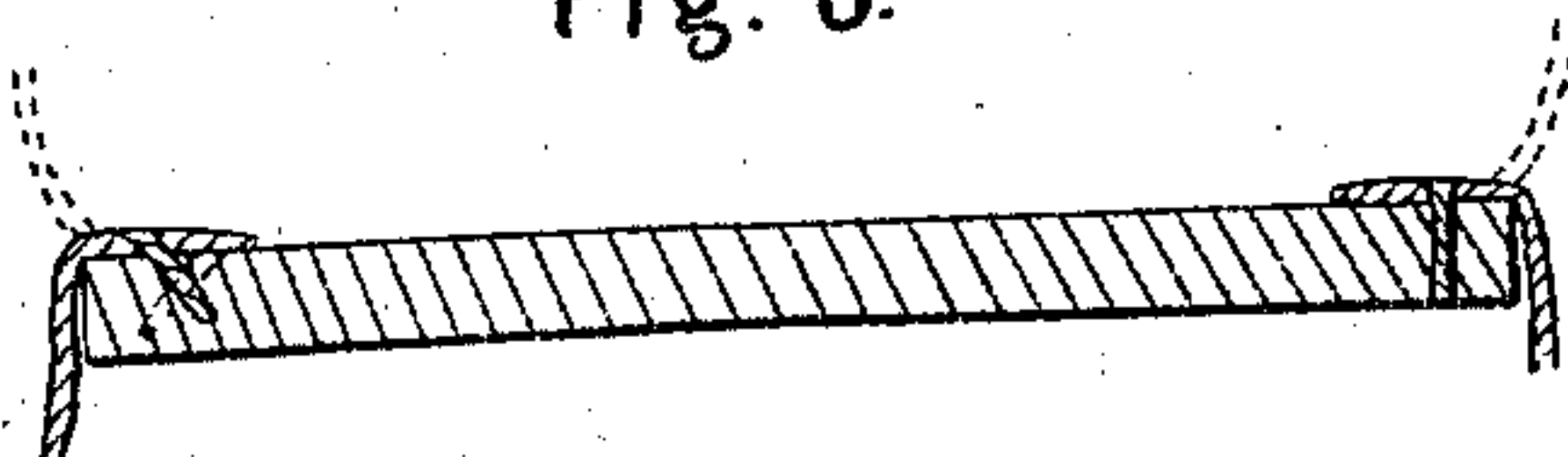


Fig. 7.



Witnesses.

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GEORGE W. DAY, OF CHARLESTOWN, MASSACHUSETTS.

IMPROVEMENT IN BOOTS AND SHOES.

Specification forming part of Letters Patent No. 43,295, dated June 28, 1864.

To all whom it may concern:

Be it known that I, GEORGE W. DAY, of Charlestown, county of Middlesex and State of Massachusetts, have invented a new manufacture, the same being a boot or shoe with its vamp and sole united by thread pegs; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention, sufficient to enable those skilled in the art to practice it.

My invention consists in boots and shoes as new articles of manufacture, when these are made with their soles and uppers united by thread inserted substantially in the manner of pegs.

Where in boots and shoes their soles and uppers have been united by the use of thread this has been employed in the form of stitches, the continuity of the thread being substantially preserved throughout the entire seam formed in the sole, with exception of a few breaks made by accident or for convenience, and this continuity has been relied upon to draw, clamp, and hold together the various pieces of leather composing the bottom of the shoe.

In much of the sewing both by hand and by machines, where the soles and uppers of shoes are united by stitches, these are so applied that in use the thread is worn off on the tread of the sole, and the continuity of the seam is destroyed, there being left to hold the parts together a series of thread staples, the points or ends of the staples appearing on the worn surface of the sole and the uniting-bar of the prongs of the staple resting on or in the inner part of the shoe or on the upper surface of its welt. The ends or points of these staples hold by heading or riveting under wear, and this alone, or aided by the wax on the thread, causes these staples to hold the work together when in construction the proper proportion has been preserved between the size of the hole and the thread inserted therein. In hand-sewing this proportion can be attained; but as the labor of drawing a large thread into a small hole is considerable, the work is not often faithfully done. In machine-sewing it is impossible to have the thread fill the hole to the extent it can be made to fill by hand-sewing, because the material of the

needle carrying the thread has to be drawn through the thread-hole with the thread, and consequently the hole has to be large enough to admit the passage of the needle as well as the thread. The continuity of the thread in sewing is a cause of stiffness in the sole, inasmuch as when the sole is bent the thread on one side has to be stretched and on the other has to be compressed or contracted. The uniting-bar of the staples stiffens the sole in this way, while it has but little effect in aiding the holding force of the thread, and in the bending of the sole has a direct tendency to draw the thread out of its place. Wherever thread has been employed heretofore in uniting the soles of boots and shoes it has been drawn into place by tension, which tends to reduce the diameter of the thread. By my invention I insert the thread by percussion or pressure endwise thereupon, which has the effect to increase its diameter. In the practice of my invention I prepare the thread for use by stiffening it, which may be done to the requisite degree by passing it through liquid glue or other suitable cement, and by reducing the size of the thread and stripping it of superfluous glue by passing it through a draw-plate, after which, when dry, the thread is waxed, preferably by passing it through melted shoe-makers' wax and removing the surplus quantity adhering by passing the thread again through a suitable stripper or draw-plate. The strands comprising the thread may be twisted together while in the act of passing through the fluid glue or other cement. When glue is used to stiffen the thread, its diameter is reduced by the contraction of the glue in drying. The whole stiffening may be given to the thread by the wax alone, varying the compounding of the wax to produce the degree of stiffness needed for different degrees of temperature and for different diameters and lengths of the thread when cut into the short lengths in which it is to be used. I prefer to have the awl which is employed to form the thread-hole made round in section, with a round or piercing point, so as to puncture and displace the leather, instead of cutting and displacing it, and somewhat taper in its length, so that the thread will enter somewhat easily and will be upset or enlarged or riveted, so as to fill the taper. As the thread is forced inward,

the tendency is for the advanced portions to leave part of the wax thereupon, which also goes to fill the taper of the hole.

The thread may be inserted as pegs by any of the well-known forms of pegging-machines, slightly modified for the purpose. The thread in a continuous coil-like wire may be placed upon a suitable reel and fed in proper lengths into the peg-tube over the hole in the sole beneath previously made by the awl of the machine. The thread is then cut off in the tube and the driver descends in the peg tube and forces the thread into the sole, there being the usual pressure exerted between the sole and the pegging mechanism to close the parts together, they being afterward held in place by the holding force of the thread.

Whether a machine is employed or not in the practice of my invention I recommend in all cases the use of a peg-tube to guide the thread properly to the hole and to prevent its bending under the percussion or pressure thereupon.

In the practice of my invention by hand I prefer to place the work in such clamps as will bring all parts of the sole and the vamp proper and solidly into contact, and even compress them somewhat. Peg-tube holes may be formed in that part of the clamping apparatus which rests upon the surface of the sole, these holes being properly formed with relation to the edge of the sole and its curvatures, so as to secure uniform distances apart of the threads in the sole, a uniform distance from the edge, and a proper angle or inclination to the threads.

A simple hand-operated awl and driver may be used in connection with this clamp peg-tube plate, or an apparatus may be employed which shall form the holes in the sole and drive the thread therein. Either with or without a clamp it is best to use a peg-tube in some form or other—as, for example, a small piece of metal provided with one or more suitable holes for reception of the thread may be used, and it may also have a gage to regulate the distance of the thread pegs from the edge of the sole, while their distance apart may be governed by any proper measurement or system of marking by which the peg-tube can be placed either over previously-formed holes, or so that the holes in the sole can be made by driving the awl through the peg-tube. With care and with properly-prepared thread and a suitable awl the thread may be driven into the sole with a common hand-hammer, or may be inserted by pressure without employment of a guiding or peg tube; but any of the methods of practice before noted I consider to be preferable to this. The work is generally to be performed like ordinary pegging or nailing upon a last. When the ends of the threads, as they are driven through the inner surface of the inner sole, enter the holes made by the awl to such an extent as to cause the last to resist extraction from the boot or

shoe to an inconvenient amount, a channel may be formed in and around the last under the line of the threads, so that the threads will not penetrate the last, and the inward projecting ends of the threads may be removed by cutting or rasping, which will enlarge or rivet the thread at its inner end, so as to increase its holding force. The thread may be driven entirely through the sole from the outside to the inside, or it may be driven into (but not quite through) the inner sole, and in the outer sole the thread may be driven in a channel and the flap thereof turned down so as to cover the outer ends of the thread. A flap may also be cut and turned back on the inner sole on that surface coming against the last, so that the inner ends of the threads may be covered by turning the flap of the inner sole back to its place and cementing it there, if needed, this saving employment of an inner lining of the sole to protect the stockings of the wearer. To perform this operation well, provision should be made on the sole face of the last to accommodate the flap of the inner sole.

By the term "thread" in this specification I mean an assemblage of fiber having a general longitudinal disposition, and twisted or not, and connected with each other by artificial means. In its employment it has many advantages over the use of pegs. In use it grows flexible; they retain their rigidity. Therefore work put together with thread is more pliable and yielding to the feet than is the ordinary pegged and nailed work. Thread becomes roughened and enlarged in diameter in use, and therefore holds in its place, whereas pegs start and work either into or out of the sole. Thread heads over or rivets on the inside by rasping and cutting off its projecting inner ends and by and under the action and contact of the foot, and by reason of the ease with which its fiber separates and then bends over, especially when warm and moist. There is little or no liability that threads will cause the trouble consequent upon inwardly-projecting pegs and nails. Where pegs cut, break, and wear squarely off, thread rivets or heads up, and thus holds with a tenacity not generally expected.

My method of using thread is more economical of material than its employment in the form of stitches, as will be obvious from the less quantity used.

During the process of finishing the shoe after it has had the thread pegs inserted, I recommend its removal from the last on which the pegging was done to one which has a hard, smooth surface under the line of the threads, previous to which the inner ends of the threads should be cut off, if projecting too far through the inner sole, and then by hammering, rolling, or pressure on the surface of the sole the inner and outer ends of the threads may be expanded.

The thread pegs for use may be made as

follows, instead of cutting them off from a continuous thread: An assemblage of fiber, arranged in substantially a longitudinal direction, like a warp in a loom, may be saturated with any suitable cement—shoe-makers' wax, for example—and may be compressed into a sheet of suitable thickness—say from about one to two twentieths of inch. This sheet is then to be cut across into strips, the widths of which are equal to the lengths desired for the thread pegs, and, if desired, each strip may be reduced by two bevels on one edge, either in the process of cutting the strips from the sheet or by cutting or by pressure after the formation into strips. Such strips may be used in hand or power pegging-machines much in the same way in which peg-wood is now used. Thread pegs so made will be substantially rectangular in section, and the awl which forms the holes for their reception should be of similar cross-section.

It will be observed that the claiming clause of this specification is confined to a specific article of manufacture. I would, however, remark that the general employment of thread in the manner specified is of my invention, and that such general employment, as well as other specific manufactures under or by it, will hereafter form the subjects of distinct application for patents be me.

Referring to the drawings for illustration of some of the varieties of the new manufacture claimed by me—

Figure 1 shows a cross-section of a welted shoe, in which the inner sole, vamp, and welt are united by thread pegs, the outer sole being secured by thread pegs, which may be inserted either from the outer surface of the sole or from the upper surface of the welt. Fig.

2 shows in cross-section a shoe in which thread pegs inserted from the outer surface of the sole extend through it, the vamp, and inner sole, a single row being shown on one side and a double row on the other. Fig. 3 is similar to Fig. 2, except that the outer ends of the threads are hidden in a channel, the flap of the channel being shown as raised or open on one side and as closed on the other. In Fig. 4 the inner sole is shown as split on the edge, the split being turned back on one side and in position on the other where it covers the inner ends of the threads. On this same side of the shoe the outer sole is represented as channeled so that at this place both ends of the thread pegs are covered from sight in the sole. In Fig. 5 the thread pegs are represented as not driven through the inner sole, and on one side they are shown as hidden in a channel in the outer sole. Fig. 6 shows how thread pegs may be used in making turns. The vamp is shown as inside out, and its proper position, when turned and finished, is shown in dotted lines. Thread pegs are shown as inserted on one side in an inclined direction, but not passing through the sole, and on the other side as passing directly through the sole, the threads being driven through the vamp into the sole. Fig. 7 is a view of the awl of the form I prefer.

I claim, as a new article of manufacture—

A boot or shoe having a construction substantially as specified.

In witness whereof I have hereunto set my hand this 28th day of April, A. D. 1864.

GEO. W. DAY.

In presence of—

J. B. CROSBY,
FRANCIS GOULD.