(No Model.)

W. H. WATSON.

SHANK STIFFENER FOR BOOTS OR SHOES.

No. 458,353. Patented Aug. 25, 1891.

Fig: 1.

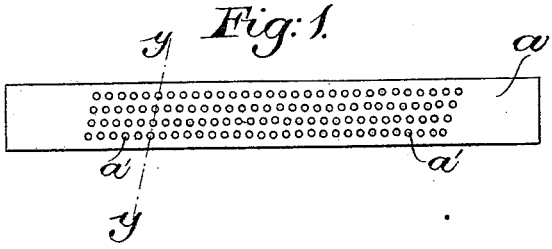

Fig: 2.

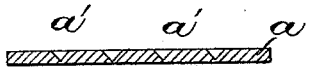

Fig: 3.

Witnesses:

Edward F. Allen

Frederick L. Emery

Inventor:

Walter H. Watson,

by Crosby & Gregory

Attys.

UNITED STATES PATENT OFFICE.

WALTER H. WATSON, OF BOSTON, MASSACHUSETTS.

SHANK-STIFFENER FOR BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 458,353, dated August 25, 1891.

Application filed December 23, 1890. Serial No. 375,561. (No model.)

To all whom it may concern:

Be it known that I, WALTER H. WATSON, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Metallic Stiffeners for Boots, Shoes, or Wearing-Apparel, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

Metal strips are now commonly employed as shank-stiffeners for boots or shoes. When these strips are made from iron, they fail to present the necessary stiffness and resiliency or fail to possess the requisite elasticity, and to overcome this lack of stiffness and elasticity it has been attempted to curve the strips longitudinally and also transversely; but such strips while being stiff are not elastic. These stiffening-strips have also been composed of tempered steel; but owing to the brittle nature of steel the strips are liable to be easily broken and the boot or shoe rendered worthless.

It is the aim of this invention to produce a metallic strip which while it is sufficiently elastic to yield under pressure and resume substantially its normal position is also tough, so as not to be broken under ordinary usage.

By my improvements I have succeeded in producing such a strip, and I have made the same from sheet metal of the kind known as "Bessemer" or like steel, preferably a sort of low-grade steelified iron, capable of being readily bent without breaking, and to give to this otherwise substantially soft ductile metal the necessary stiffness and elasticity to act as a spring I have subjected one side or face of the strip to the action of suitable dies or projections, which form in one side or face of the strip between its edges, but without removing the metal thereof, a series of depressions or pits, the metal being made more or less elastic, according to the number of these depressions or pits and their distance apart. The strain to which these strips are subjected is usually the greatest substantially midway their ends, and they are therefore provided with depressions or pits which do not extend through the material only substantially at or adjacent to the points where they are to bend and resume their natural condition.

Figure 1 of the drawings in plan view represents a shank-stiffener embodying this invention; Fig. 2, a cross-section in the line *y y;* Fig. 3, a side view of the stiffener.

In the manufacture of stiffening-strips in accordance with my invention I take Bessemer or like steel in sheet-metal form and cut the same into strips. These strips, as *a*, for instance, (see Figs. 1 to 3,) of suitable length and width for a shank-stiffener, are provided with a series of pits or indentations, as *a'*, such as may be formed with pointed tools or the like, yet blunt tools may be employed. These pits or indentations are formed between the side edges of the strip and at that portion thereof where it is desired to increase the resiliency. The act of indenting the strip causes it to curve longitudinally, as represented in Fig. 3. These pits or indentations do not pierce the material, but form cavities therein, the molecular structure of the side walls of which is more compact than the material of the strip.

In practice I find that a strip of iron or untempered steel pitted or indented in this manner is materially stiffened, and also has imparted to it a spring action that is permanent.

I do not desire to limit my invention to any particular shape or depth of indentations, although I believe that better results are produced by making them with pointed devices than with blunt devices.

I am aware that it is customary to stiffen metallic objects by corrugating the same; but I am not aware that prior to my invention a shank-stiffener was ever corrugated. Yet I do not claim a corrugated stiffener, for such a stiffener if made would not possess the advantage or serve the purpose of the shank-stiffener herein described and claimed, for the indentations as provided for in this my invention make the stiffener elastic, which simple corrugations will not do.

In ordinary methods the thickness of the material is increased by the amplitude of the corrugation; but in my invention the thickness of the material stiffened and made elastic by the indentations is not increased. The closer the indentations the greater the resiliency, and hence any proper amount of spring

may be imparted to a strip by varying the number and distance apart of the indentations.

The shank-stiffener shown in Figs. 1 to 3 will be indented for more or less of its entire length.

I claim—

A shank-stiffener for boots or shoes, consisting of a strip of metal bent to conform to the shape of the sole, provided on one of its surfaces with a series of indentations between its edges, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER H. WATSON.

Witnesses:
BERNICE J. NOYES,
EMMA J. BENNETT.