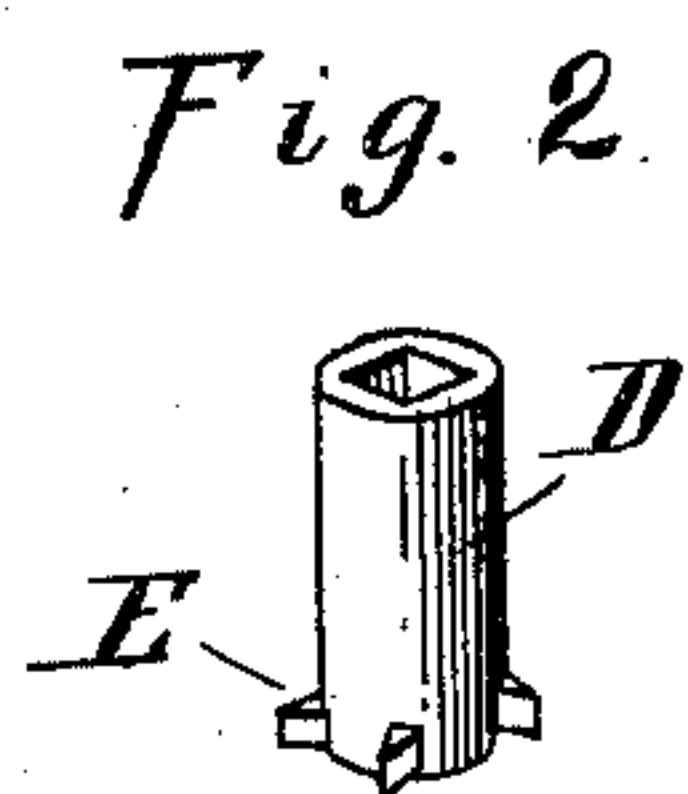
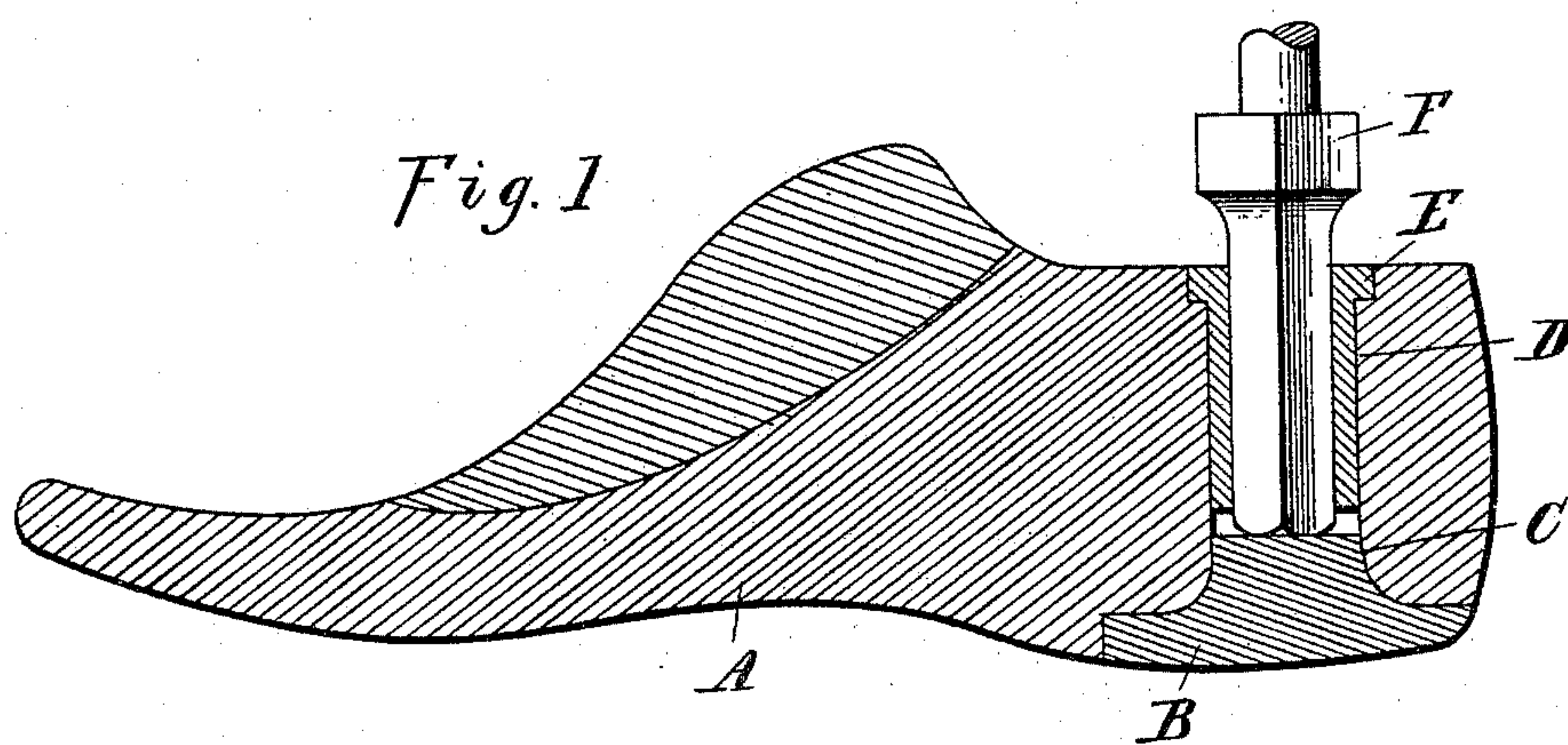


(No Model.)

E. O. KRENTLER & G. A. KRENTLER.
LAST FOR BOOTS OR SHOES.

No. 456,994.

Patented Aug. 4, 1891.



Witnesses:
P. M. Hulbert
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UNITED STATES PATENT OFFICE.

EDWIN O. KRENTLER AND GEORGE A. KRENTLER, OF DETROIT, MICHIGAN.

LAST FOR BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 456,994, dated August 4, 1891.

Application filed April 28, 1890. Serial No. 349,813. (No model.)

To all whom it may concern:

Be it known that we, EDWIN O. KRENTLER and GEORGE A. KRENTLER, citizens of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Lasts for Boots or Shoes, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in lasts for boots or shoes; and our invention is designed to construct a last of sufficient strength and durability to be adapted for use with the well-known heeling-machine in the operation of securing the heel to the shoe, while at the same time it is cheap and light enough to be used in lieu of the common wooden last, and thus permit the heeling and finishing of the shoe on the same last.

This invention consists in the peculiar construction of a metallic heel and bushing, all as more fully hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 is a vertical central section through a last, provided with our improved metallic heel and bushing. Fig. 2 is a detached perspective view of the bushing.

A is a wooden last of the ordinary construction.

B is a metallic heel provided with a solid stem C, having an unbroken face, which extends into the body of the last, affording a flat bearing for the end of the heel-stem F.

D is a hollow metal bushing secured in an aperture formed in the comb of the last in line with the stem C. This bushing is formed with a triangular, square, or other polygonal or irregular socket, and is provided with a few spurs or irregularities E to hold it from turning in the wood of the last. The bushing and stem of the metallic heel are preferably made of the same diameter, so that by boring a hole through the last they may be both secured in the same hole.

In driving the bushing into place great care must be taken to adjust it properly, so

that when any last is placed upon the stem of the heeling-machine it will always be held in its proper position, the stem F corresponding in shape and irregularity to the shape of the socket in the bushing.

The spurs or irregularities on the bushing have the office of preventing the bushing from turning in the wood.

Our construction of last has another important advantage, which we will now explain: In turning lasts of different sizes with any of the turning-lathes in use it is obvious that all the dimensions of the last are correspondingly enlarged or diminished, and therefore in every last the distance between the heel and the comb of the last necessarily differs in different sizes, and it has always been necessary in other constructions of lasts to reduce this distance to a uniform height. This is entirely obviated in our construction, as the pressure of the heeling-machine is brought upon the metallic heel, and through the stem of the metallic heel it is directly received by the pin F of the heeling-machine, the latter being simply made long enough so as not to bear against the comb of the last. Thus no pressure is brought upon the last at all, and if the metallic heel, and stem C are strong enough the last will stand any amount of wear and tear without being in any way injuriously affected.

The metallic heel may be held in position by the frictional engagement of the stem C in the hole of the last, or, if desired, it may be fastened additionally by a few screws.

The spirit of our invention consists in making a last with a strong and substantial metallic heel, in combination with the pin F of a heeling-machine yoke adapted to directly bear against such heel-plate and with a bushing adapted to hold the last in its proper alignment.

What we claim as our invention is—

The combination, with a last having a vertical aperture extending entirely through the heel thereof, of a metallic heel-plate secured to said heel and provided with an integral extension into the aperture having an unbroken face affording a bearing for the pin, of a

heeling-machine having a corresponding end
and a metallic bushing in the opposite end of
the aperture and extending toward but not
to the stem of the heel-plate, and having an
5 irregularity in the bore and on its exterior
for co-operating with corresponding construc-
tions in the last and pin of the heeling-ma-
chine, substantially as described.

In testimony whereof we affix our signatures
in presence of two witnesses.

EDWIN O. KRENTLER.
GEORGE A. KRENTLER.

Witnesses:

WILLIAM F. BOEBERITZ,
HENRY G. YOUNG.