

(No Model.)

G. C. BEMIS.
PNEUMATIC LAST.

No. 555,996.

Patented Mar. 10, 1896.

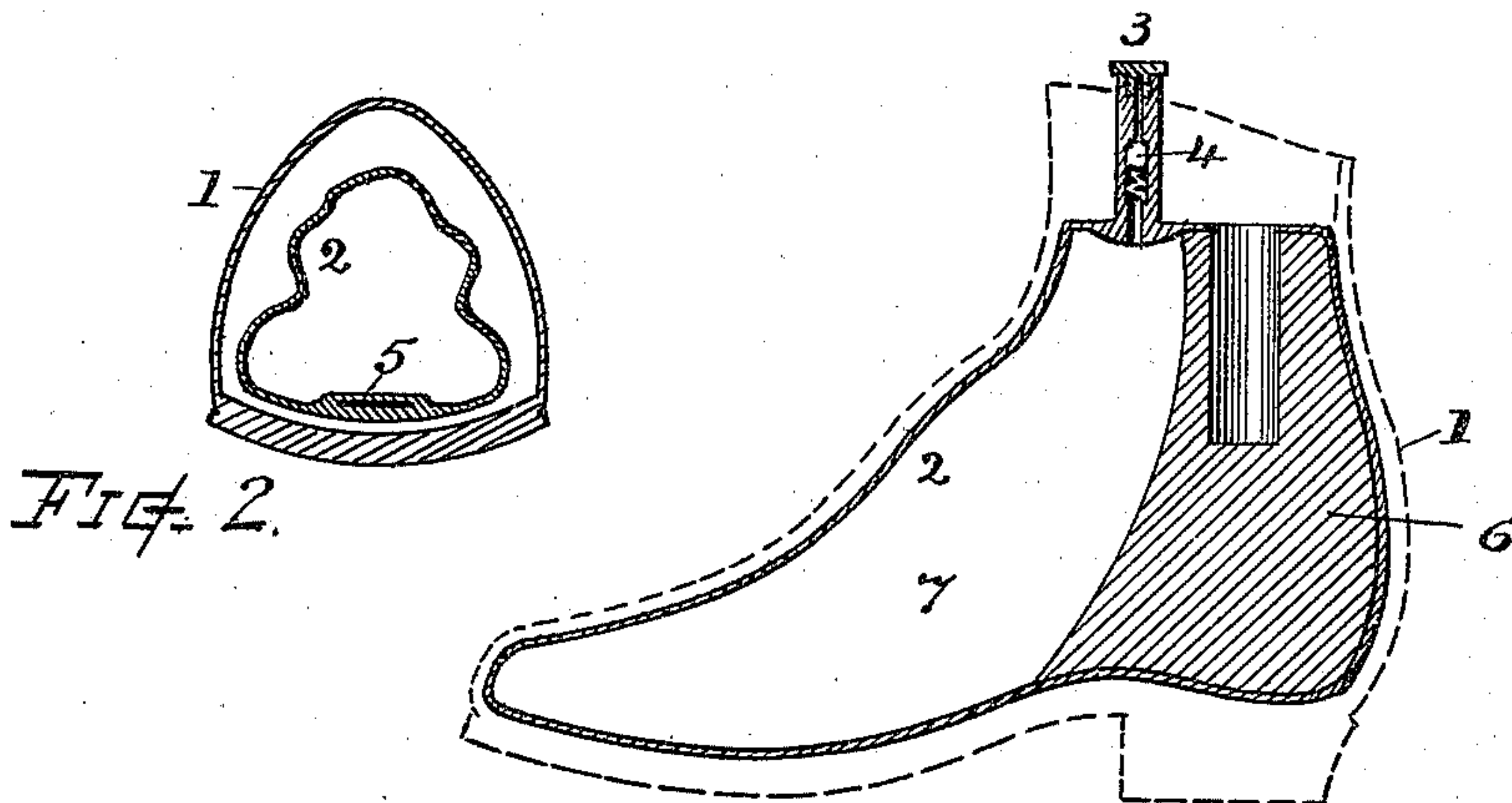


FIG. 1.

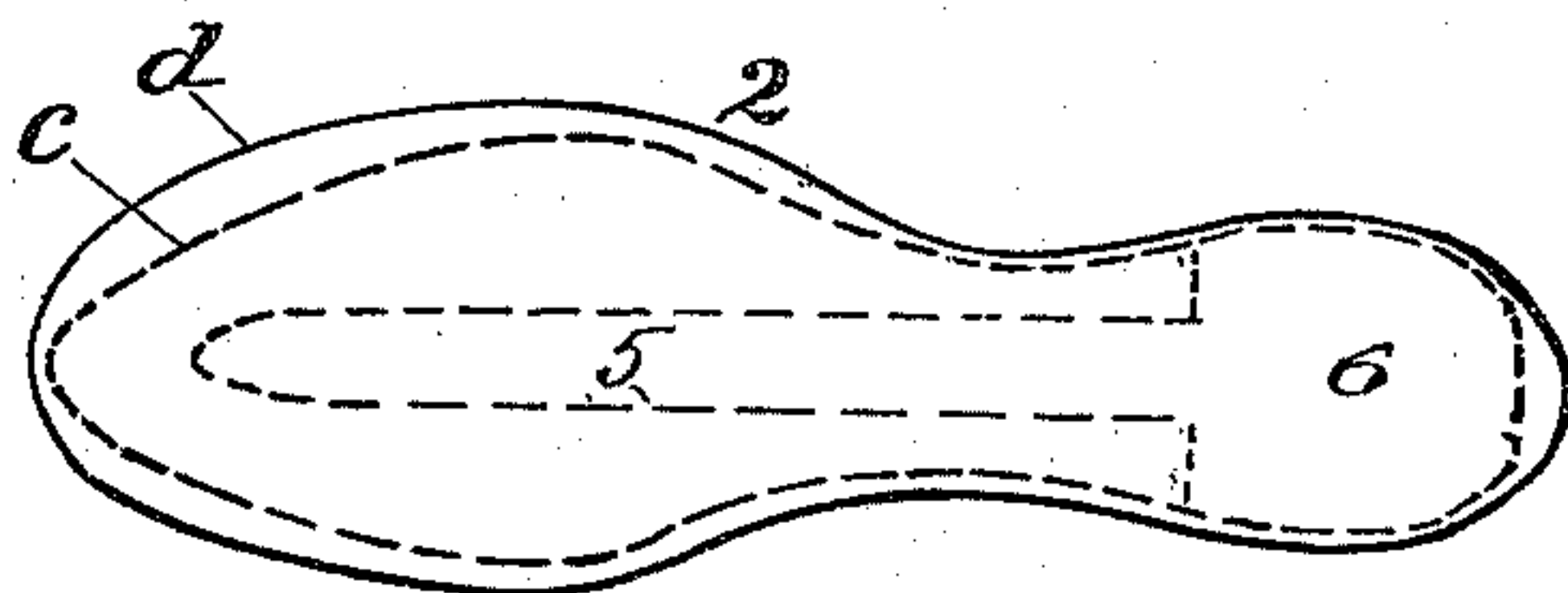


FIG. 3.

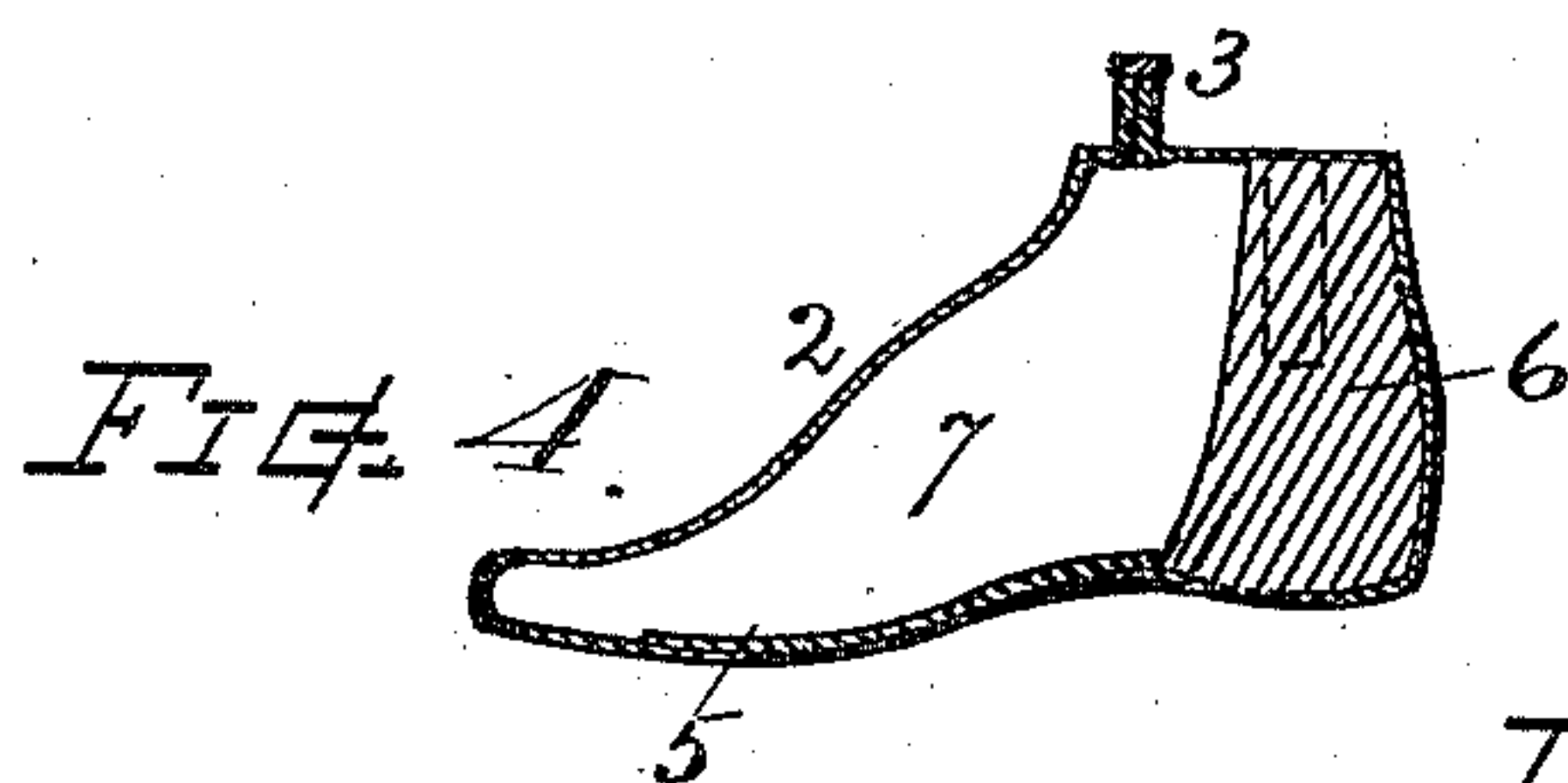


FIG. 4.

Witnesses.

W. B. Barton
Simon E. King

Inventor

Gilbert C. Bemis
By Charles H. Burleigh
Attorney

UNITED STATES PATENT OFFICE.

GILBERT C. BEMIS, OF WORCESTER, MASSACHUSETTS.

PNEUMATIC LAST.

SPECIFICATION forming part of Letters Patent No. 555,996, dated March 10, 1896.

Application filed March 25, 1895. Serial No. 543,009. (No model.)

To all whom it may concern:

Be it known that I, GILBERT C. BEMIS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Pneumatic Last, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

In the manufacture of shoes of many kinds it is customary to remove the wood last from the shoe at an early stage of its construction, and then to proceed with the work, such as sewing on the soles, heeling, finishing the edges and bottoms, &c., either without a last or by the introduction of a supplementary last, which latter is a common and much the best method; but as heretofore practiced sectional lasts are required, made of wood or metal, and a separate size or shape of last for every size and shape of shoe in process of manufacture. Thus the work in progress in any factory demands a great number of such supplementary lasts and necessitates a large outlay and expense therefor.

The object of my present invention is to provide a last having a pneumatically extensible or inflatable fore body and provided with a rigid or solid heel-supporting block connected therewith and adapted for fitting the rear portion of the shoe to afford support upon a jack or machine spindle for holding shoes in certain steps or machining operations in their manufacture. This object I attain by the shoe-last herein described and illustrated in the drawings, wherein—

Figure 1 is a longitudinal section of the last as expanded within a shoe, the shoe indicated by dotted lines. Fig. 2 is a transverse section of a shoe and the collapsed last therein. Fig. 3 is a bottom view with dotted line indicating variation in form; and Fig. 4 is a section of the pneumatic last as made with a rigid heel block or frame for supporting the heel-seat on a machine or jack spindle and a sole-supporting reinforce combined therewith.

In accordance with my invention the last is made with a hollow fore body 2 of approximately the desired shape and size, formed of

a flexible air-tight fabric of any suitable kind sufficiently thin and pliable to fold or collapse, or of comparatively thin rubber or similar elastic material that will stretch or expand by introduction of pneumatic pressure to its interior and contract or collapse as such pressure is released. This hollow flexible body is provided with an inflating-tube 3 and valve 4, which may be of any suitable kind for introducing, retaining and releasing the air as desired.

To render this last efficient for use in shoes whereon machinery or jack work is required the rear part of the last is made with a rigid heel block or form 6, shaped to fill within the heel portion as a solid rear body having a cavity therein for the jack-spindle, and permanently connected with or within the forward portion, 7, of the last, which is flexible and expansible. This heel-block 6 serves to give support upon the jack or machine spindle when attaching heels to the shoes and for other work thereon.

In some instances it is preferred to make the last with a stiffening or reinforce 5 extending along the sole, so that it can the more readily be inserted into the shoe or removed therefrom when in its collapsed condition, as the stiffening keeps the last longitudinally extended.

For some classes of work—as, for very light shoes—the sole of the last may be made sufficiently stiff and rigid to preserve the form and curvature thereof, so as to sustain the shoe-bottom with its inward curve at the shank.

This flexible or elastic last is introduced into the shoe 1 in collapsed condition after the original wood last has been removed, and is there pneumatically inflated by air introduced through the tube from a suitable air-pump or other means to any desired degree of pressure, causing the flexible fore body to expand and extend itself, so as to conform to the interior size and shape of the shoe, and setting the heel-block back against the counter, thus enabling a single last to adjust itself to different sizes, shapes or styles of shoes—as, for instance, to the narrow form *c* or wider form *d*, Fig. 3. The last is thus adapted for convenient introduction, and when inflated serves to press outward and support the up-

per in proper form and for jacking it for machining during the various subsequent operations of manufacture, thereby preventing it in a great measure from becoming roughened, 5 distorted or injured, or to serve for sustaining the shoe in a manner convenient for handling while the shoes are on exhibition or sale.

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

10 1. A shoe-last, comprising a hollow flexible pneumatically - inflatable fore body portion provided with an air-passage and stop-valve therefor, and having fixed therein a rigid heel-block forming the rear body portion con- 15 forming to the heel shape, and having, in its upper portion, a spindle-hole adapting it for support upon a jack or machine spindle for sustaining the heel-seat of the shoe, substantially as set forth.

2. The combination in a pneumatically- 20 inflatable shoe-last, of a rigid heel-block or solid rear portion with facilities for attachment to a jack, a hollow inflatable and collapsible fore part made of flexible elastic fabric, and a shaped stiff sole portion, substan- 25 tially as set forth.

3. A pneumatically - inflatable shoe-last made of flexible elastic fabric, and having a rigid heel block or frame, a hollow inflatable and collapsible fore part, and a shaped stiff- 30 ened sole portion, substantially as set forth.

Witness my hand this 22d day of March, 1895.

GILBERT C. BEMIS.

Witnesses:

CHAS. H. BURLEIGH,
ELLA P. BLENUS.