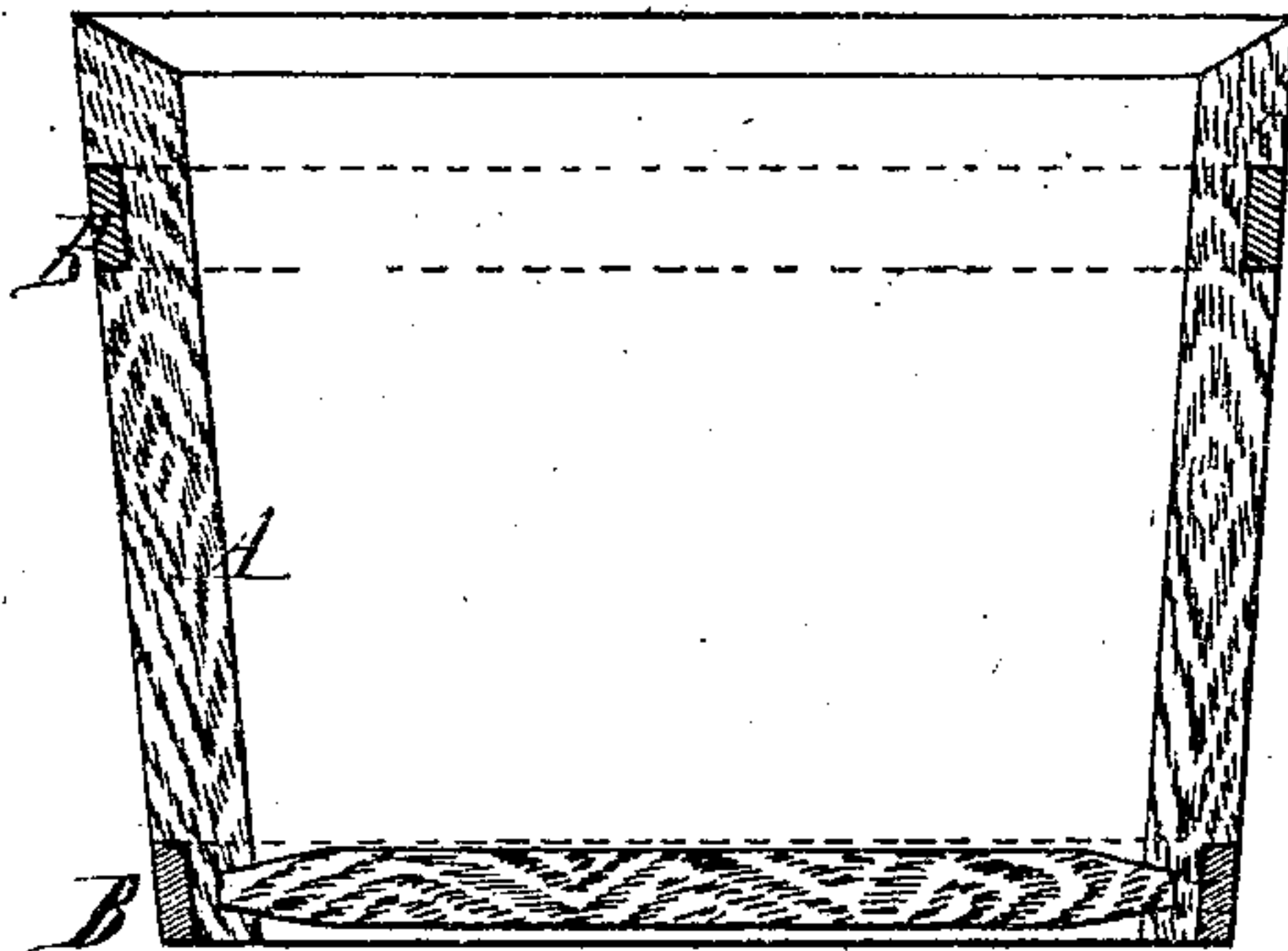


*E. A. Firby,  
Tub.*

117163

PATENTED JUL 18 1871



*Witnesses.*

*E. H. Bates.*

*C. M. Kanouse.*

*Inventor.*

*E. A. Firby  
Chipman & Co.  
Attys.*

# UNITED STATES PATENT OFFICE.

EDWIN AUGUSTUS FIRBY, OF EAST NORWALK, OHIO.

## IMPROVEMENT IN TUBS, &c.

Specification forming part of Letters Patent No. 117,163, dated July 18, 1871.

*To all whom it may concern:*

Be it known that I, EDWIN AUGUSTUS FIRBY, of East Norwalk, in the county of Huron and State of Ohio, have invented a new and valuable Improvement in Cooperage; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a vertical section of a vessel illustrating my invention.

This invention has relation to an improved method of hooping tubs, wooden measures, and other straight-seamed vessels constructed from staves; and it consists in letting the hoop into an exterior groove cut around the circumference of the vessel, thereby effectually preventing the hoop from falling off by reason of the shrinkage of the wood.

Referring to the drawing, A represents a wash-tub, and B the metal hoops, fitted into grooves cut around the outside of the tub just deep enough to hold the hoops, which will be, therefore, even with the surface. If desirable, these grooves may be made wider than the hoops, so

that the latter may be tightened in the ordinary way when they become loose by their expansion or the shrinkage of the wood. No amount of contraction of which wooden vessels are capable is sufficient to cause the hoops thus arranged to fall down out of place.

This method of hooping wooden vessels is designed only for straight-seamed vessels having but one closed end, and which, in consequence of their construction, are liable to extensive shrinkage.

In the manufacture of wooden vessels, hooped in the manner described, the hoops must be first fitted to the grooves before being riveted.

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

The tub or measure herein described, constructed of staves channeled in their exterior surface for the reception of the hoop or band, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

EDWIN AUGUSTUS FIRBY.

Witnesses:

E. J. FIRBY, Jr.,  
E. G. HARRIS.