

J. H. MORRISON.  
Barrel.

No. 163,512.

Patented May 18, 1875.

Fig. 1.

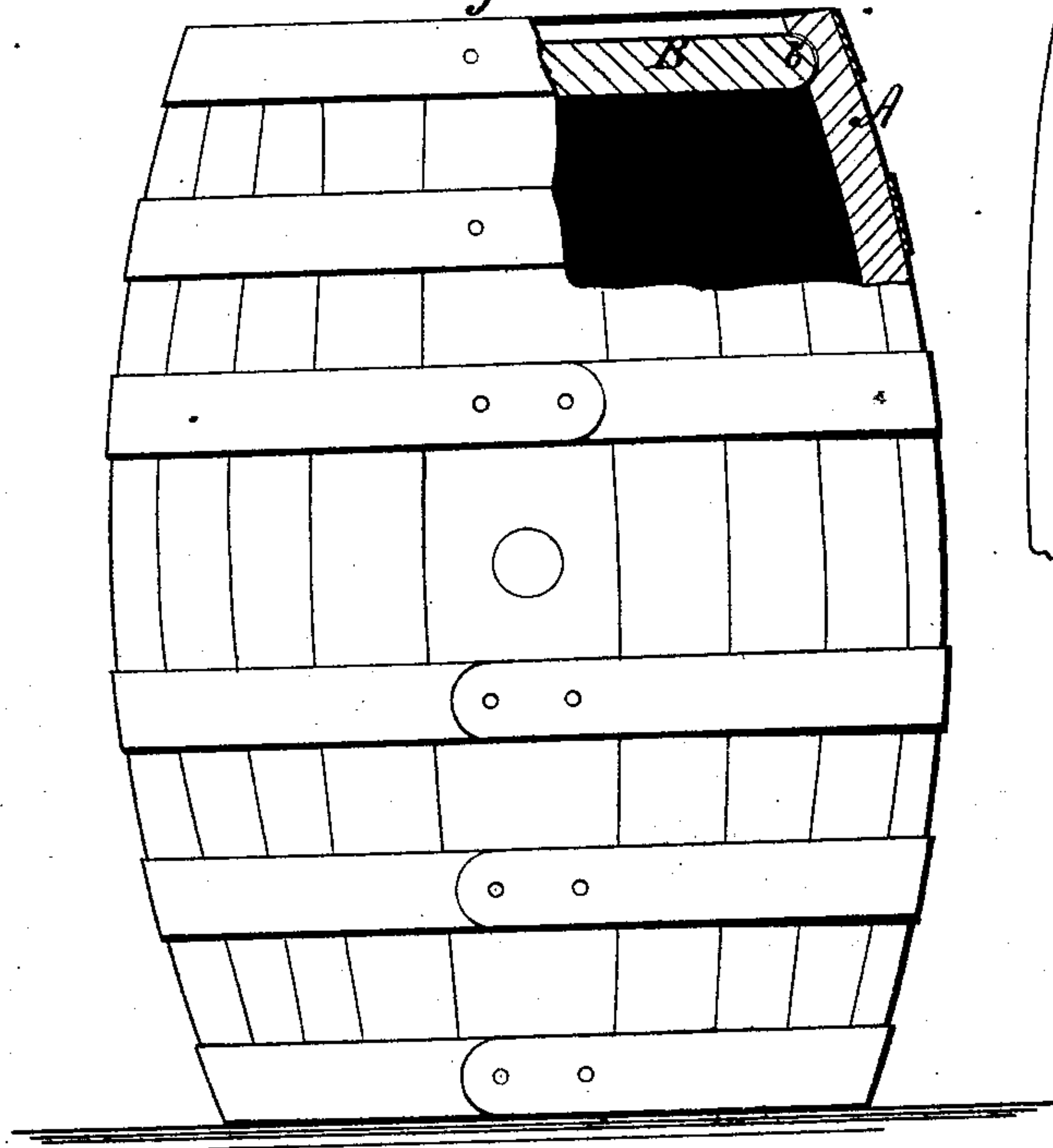


Fig. 2.

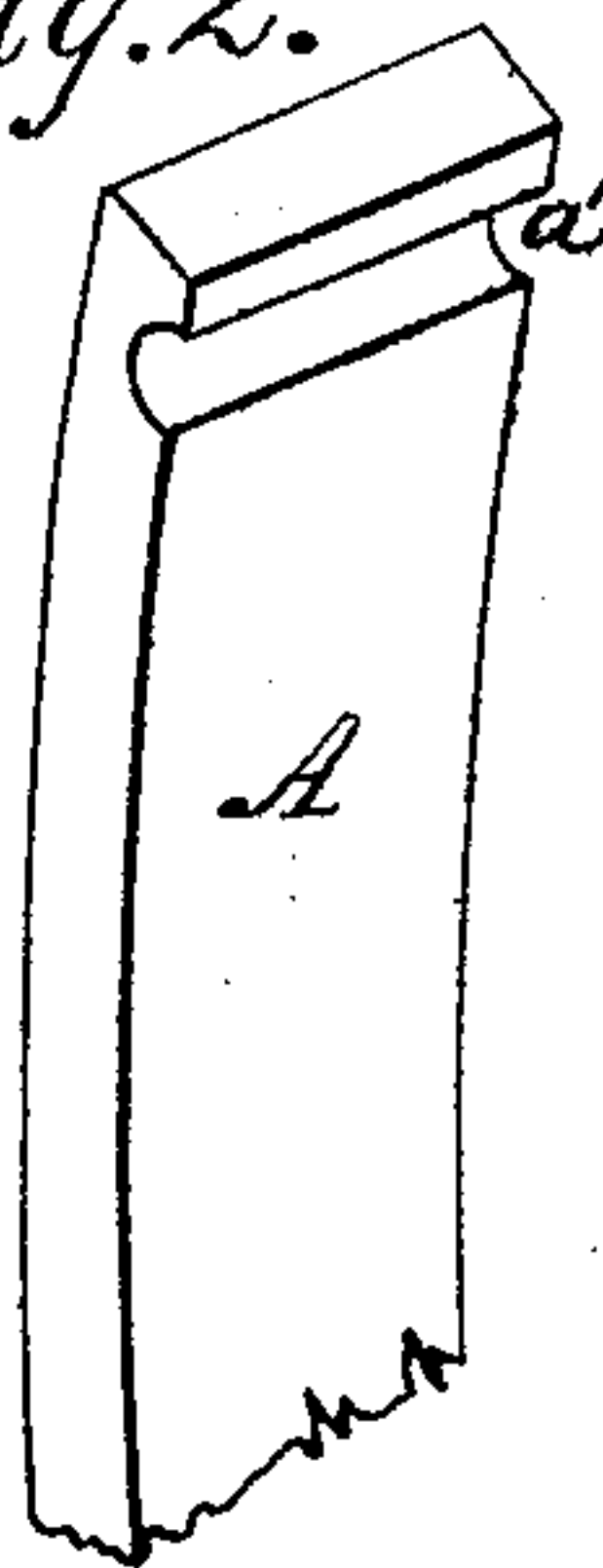
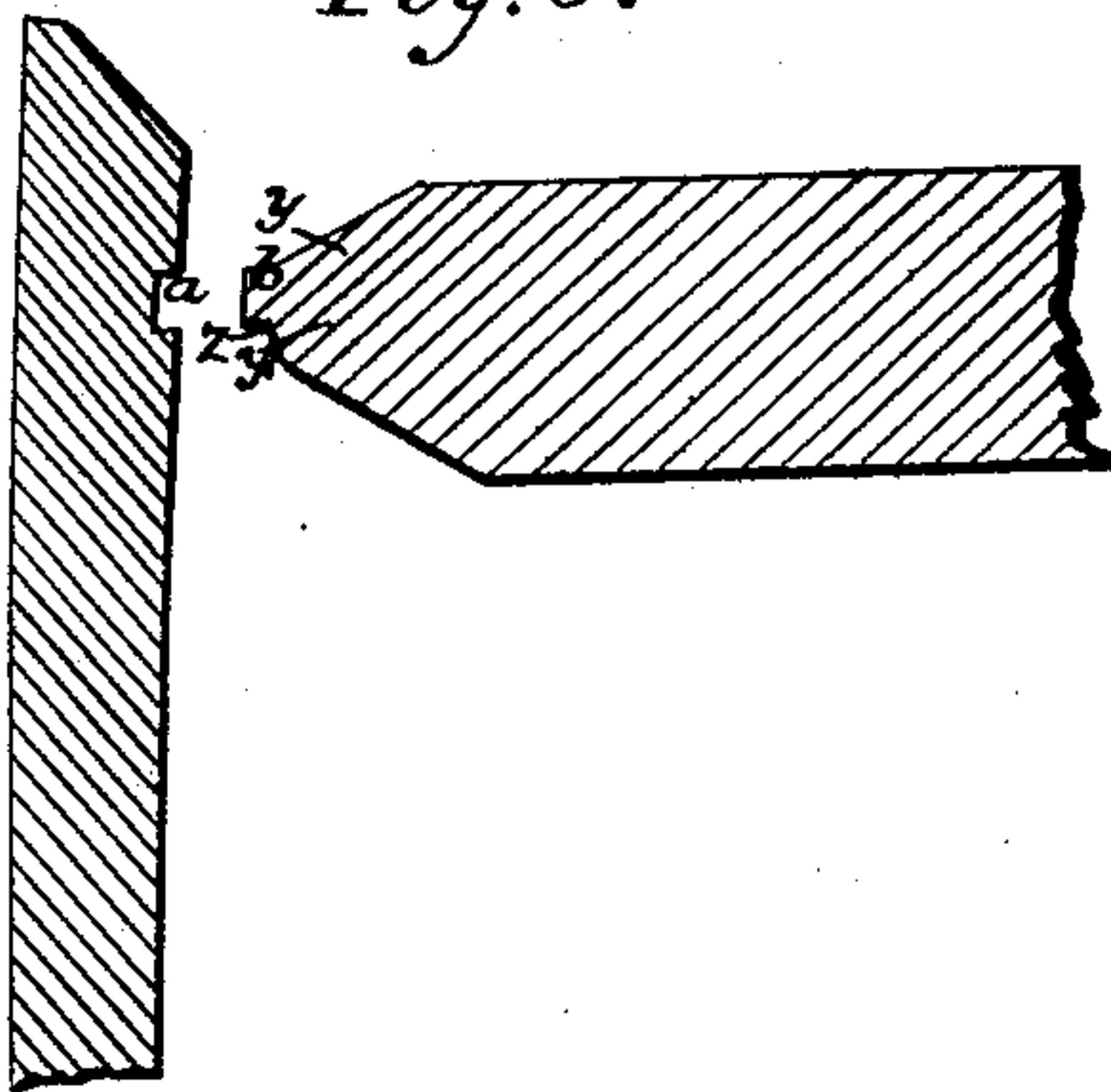


Fig. 3.



WITNESSES:

A. B. Robertson  
John C. Kemmer

INVENTOR:

J. H. Morrison  
BY

ATTORNEYS.

# UNITED STATES PATENT OFFICE

JOSIAH H. MORRISON, OF PORTSMOUTH, NEW HAMPSHIRE, ASSIGNOR TO HIMSELF, WILLIAM J. MOAT, CHARLES H. GOULD, AND WILLIAM D. VARRELL, OF SAME PLACE.

## IMPROVEMENT IN BARRELS.

Specification forming part of Letters Patent No. **163,512**, dated May 18, 1875; application filed April 23, 1875.

*To all whom it may concern:*

Be it known that I, JOSIAH H. MORRISON, of Portsmouth, in the county of Rockingham and State of New Hampshire, have invented an Improvement in Barrel-Crozes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a side view, with the corner broken out; Fig. 2, a perspective of one of the staves; Fig. 3, a detached section of an ordinary barrel.

The invention relates more particularly to beer-barrels, but generally to all that contain liquids; and consists in an improved croze or joint, the object of which is to give greater strength to the edge of head and stave, so as to prevent fracture from internal pressure or external percussion.

A represents the stave of a barrel for containing beer or other liquid, and B the head. In barrels as now constructed the stave is made with the angular groove *a*, while the head has the corresponding sharp tenon *b*. These form the usual croze or joint, which is open to several serious objections. In a beer-barrel the gases generated create an average pressure of about sixty-five pounds to the square inch, rising sometimes to a maximum of one hundred. The effect of this is to split the head at *y* and the stave at *a*, while, in rough handling, as third-class freight on railroads, the percussive blows from the outside mash and break the fibers of tenon *b* and make a split at *y*. The barrel is thus caused to leak and allow the gases to escape, rendering the beer flat and unsalable, while the barrel or keg itself is either rendered worthless or requires new cooperage. Again, by the old

croze, the acute-angled cranny or recess *z* is a source of much labor and expense, as every head requires to be nicely cleaned before being sent out to the retail dealer or consumer. The sharpness of this angle makes cleaning very difficult, and necessitates a special tool or scraper.

In order to overcome these objections I have given much thought and many experiments, until I discovered my present croze or joint, which consists in making a corresponding concave and convex arc, *a'* and *b'*, on the stave and head, the arc *b'* being made somewhat larger than the one *a'*, to allow for a slight compression of the fibers, when the hoops are forced into place.

It will be observed that the bearing-surfaces of the arc-joint *a' b'* is more than double that of the angle-joint *a b*, at least one-half of the strain being thus taken off each particular fiber and layer of fibers, while the strength of the arc-tenon *b'* is also more than double that of the angle-tenon *b*, because the average thickness in the direction of pressure is increased to that extent.

In addition to these advantages of my croze or joint is the angle-space, whose angle is so much augmented over the one *z* as to render a particular instrument for cleaning out the recess unnecessary.

Having thus described my invention, what I claim as new is—

A croze for barrels, casks, and kegs, consisting of the arc-joint *a' b'*, constructed and applied, substantially as and for the purpose specified.

JOSIAH H. MORRISON.

Witnesses:

WM. S. HAZEL,  
OZRO J. HOBBS.