

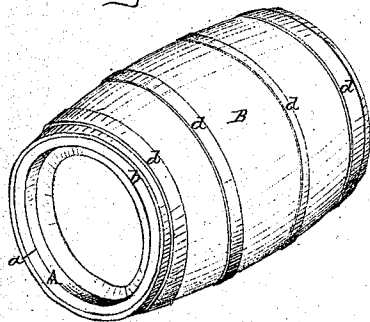
*H. Willard,*

*Barrel.*

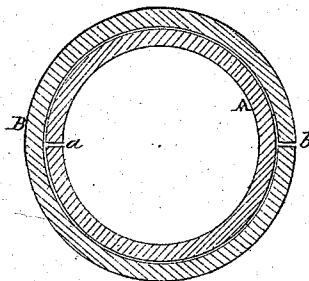
*No. 103000.*

*Patented May 10, 1870.*

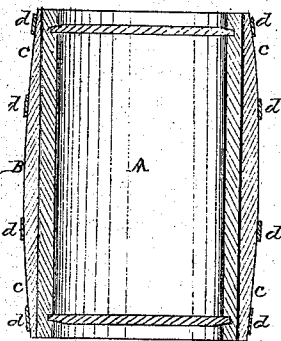
*Fig. 1.*



*Fig. 3.*



*Fig. 2.*



*Witnesses*  
*Samuel Smith*  
*Frederick Raymond*

*H. Willard, Inventor.*

*by Alex. A. & Klauke & Co.*  
*his Attorneys.*

# UNITED STATES PATENT OFFICE.

HENDERSON WILLARD, OF GRAND RAPIDS, MICHIGAN.

## IMPROVED BARREL.

Specification forming part of Letters Patent No. 103,000, dated May 10, 1870.

*To all whom it may concern:*

Be it known that I, HENDERSON WILLARD, of Grand Rapids, in the county of Kent and State of Michigan, have invented a new and useful Improvement in Barrels; and I do hereby declare the following to be a full and correct description of the same, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 is a perspective view of my improved barrel. Fig. 2 is a longitudinal vertical section of the same; and Fig. 3 is a horizontal section of two cylinders, of which the barrel is constructed.

Like letters of reference indicate like parts in the several figures.

The nature of my invention consists in constructing a barrel of two cylinders, an outer and an inner one, each of which consists of one piece of wood, although the outer cylinder may be constructed of more than one piece.

In the drawing, A may represent the inner and B the outer cylinder. These may be constructed by sawing them from a solid block of timber, of the size or a little larger than the barrel to be produced, and both cylinders may be cut at the same operation. One method of preparing them leaves one side open, and I prefer such open cylinders. The inner one, A, is represented as having its open part at *a*, and the outer one, B, at *b*.

In Fig. 3 I have shown the position of the two cylinders when put together, the open parts *a b* being at opposite sides.

The outer cylinder, B, is tapered at the ends, as shown at *c*, to give the barrel a proper bulge, the inner cylinder, A, properly chamfered to receive the heads and proper hoops, *d*, applied in the usual manner.

The great advantage of a barrel so constructed is that one cylinder will cover any imperfections of the other one, such as cracks, knot-holes, &c., thus forming a much tighter

barrel than where but one thickness of wood is used.

The hoops *d* will press the cylinders together firmly, so that any fluid escaping through the opening *a* of the inner cylinder, A, should the same not have been tightly closed, would be arrested by the solid body of the outer cylinder, B, and no leakage will occur through the same.

These barrels are very strong, and at the same time elastic, and can be constructed very cheaply.

The outer cylinder may be constructed of two pieces instead of one, especially in very large casks, so as to prevent the possibility of its cracking in the length of the barrel; but care should be taken to place the pieces over the inner cylinder in such a manner that the places where the edges join shall be a suitable distance apart from the open part *a* of the inner cylinder.

In cutting out these cylinders by hand-saws, as now used, many of the same will be smaller than the size of the barrels required.

These cylinders may be made into barrels by inserting a piece cut from the smallest ones between the edges at the open part, thus bringing the circumference of the cylinder to the required size.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A barrel or other similar package constructed of an inner cylinder, A, and an outer cylinder, B, with their open portions *a b* so arranged at opposite sides that the open portion of one cylinder shall be contiguous to the solid portion of the other cylinder, substantially as and for the purposes herein described.

HENDERSON WILLARD.

Witnesses:

SAMUEL SMITH,  
FREDK. RAYNSFORD.