

H. Willard's  
Improved Barrel.

No. 120,920.

Patented Nov. 14, 1871.

Fig. 1

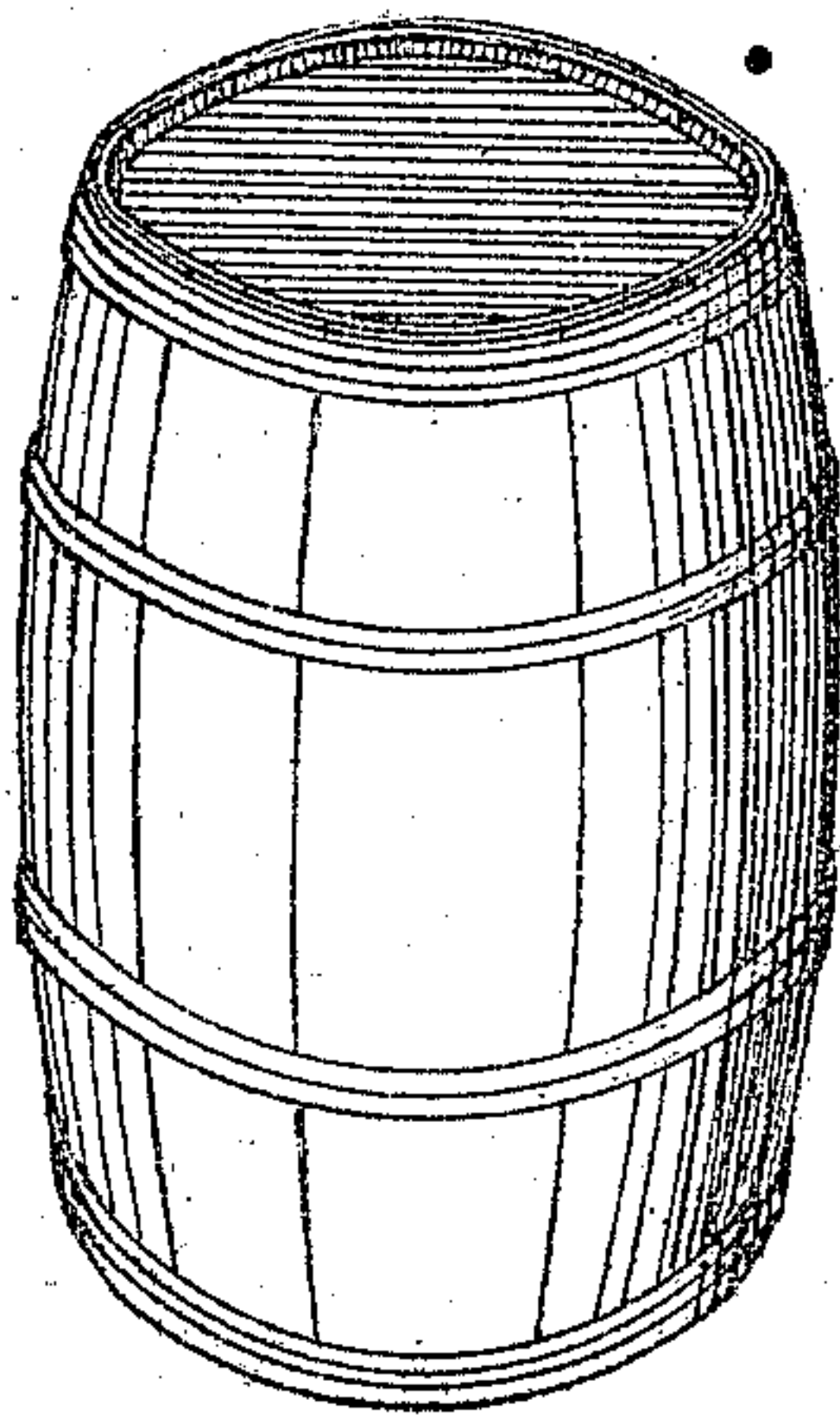


Fig. 2

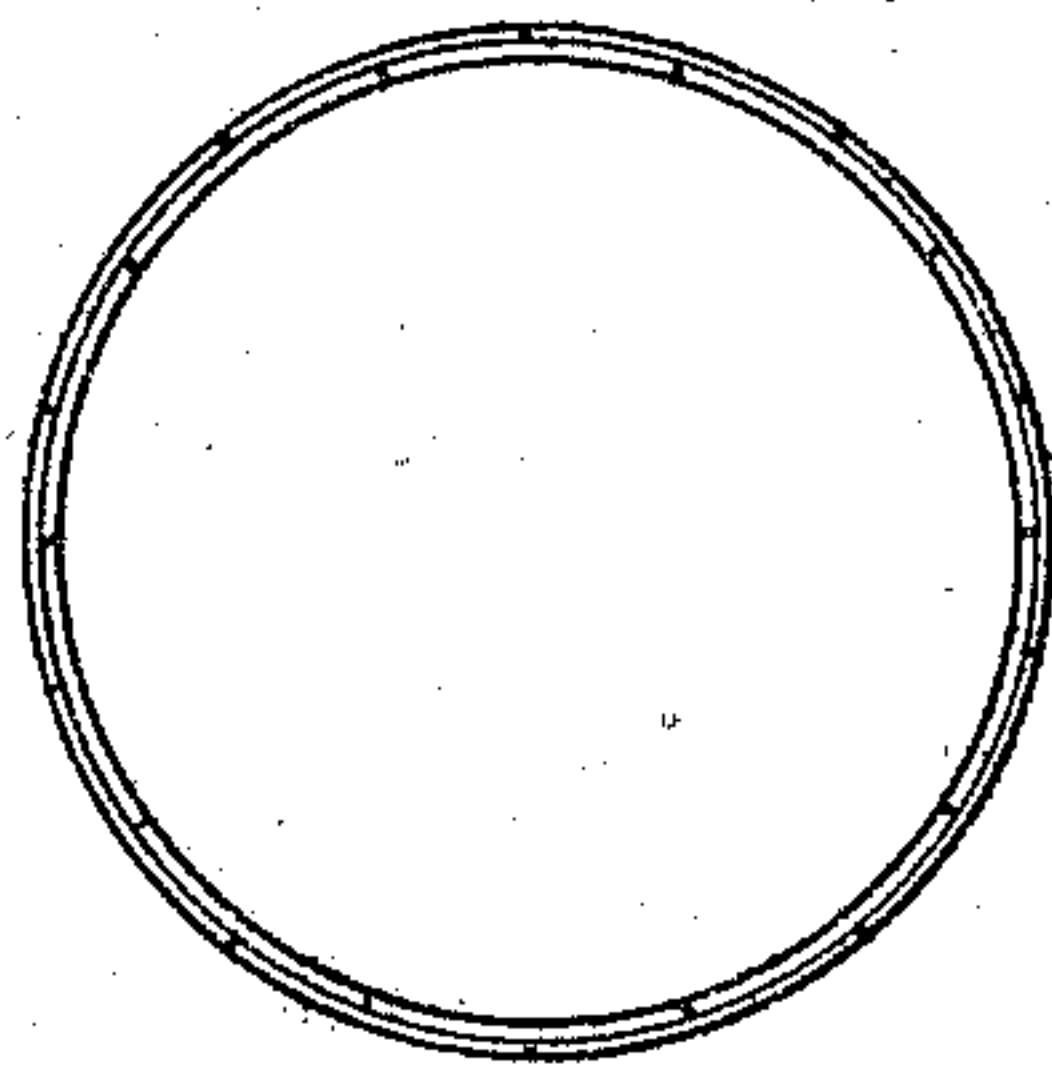


Fig. 3

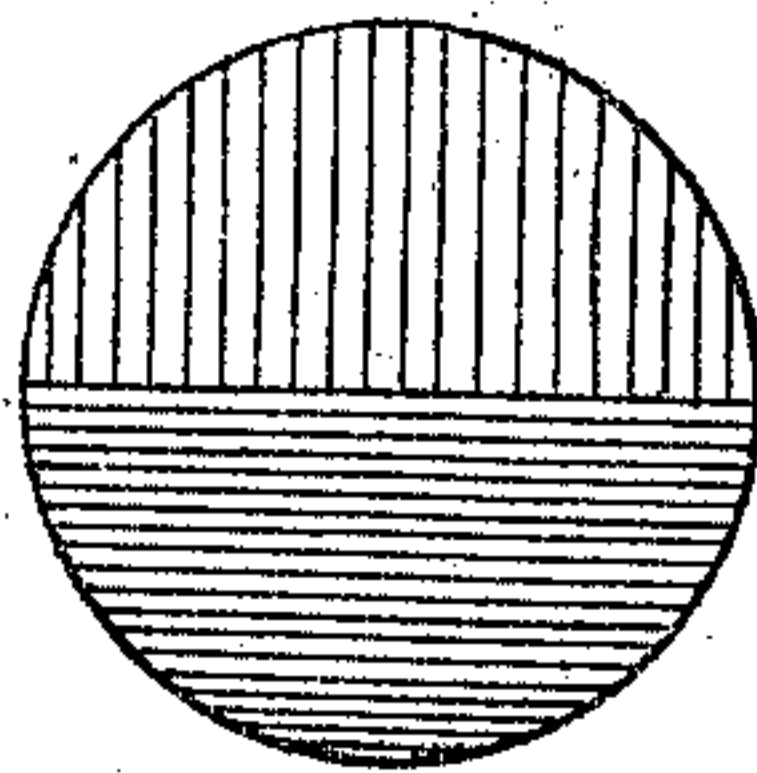
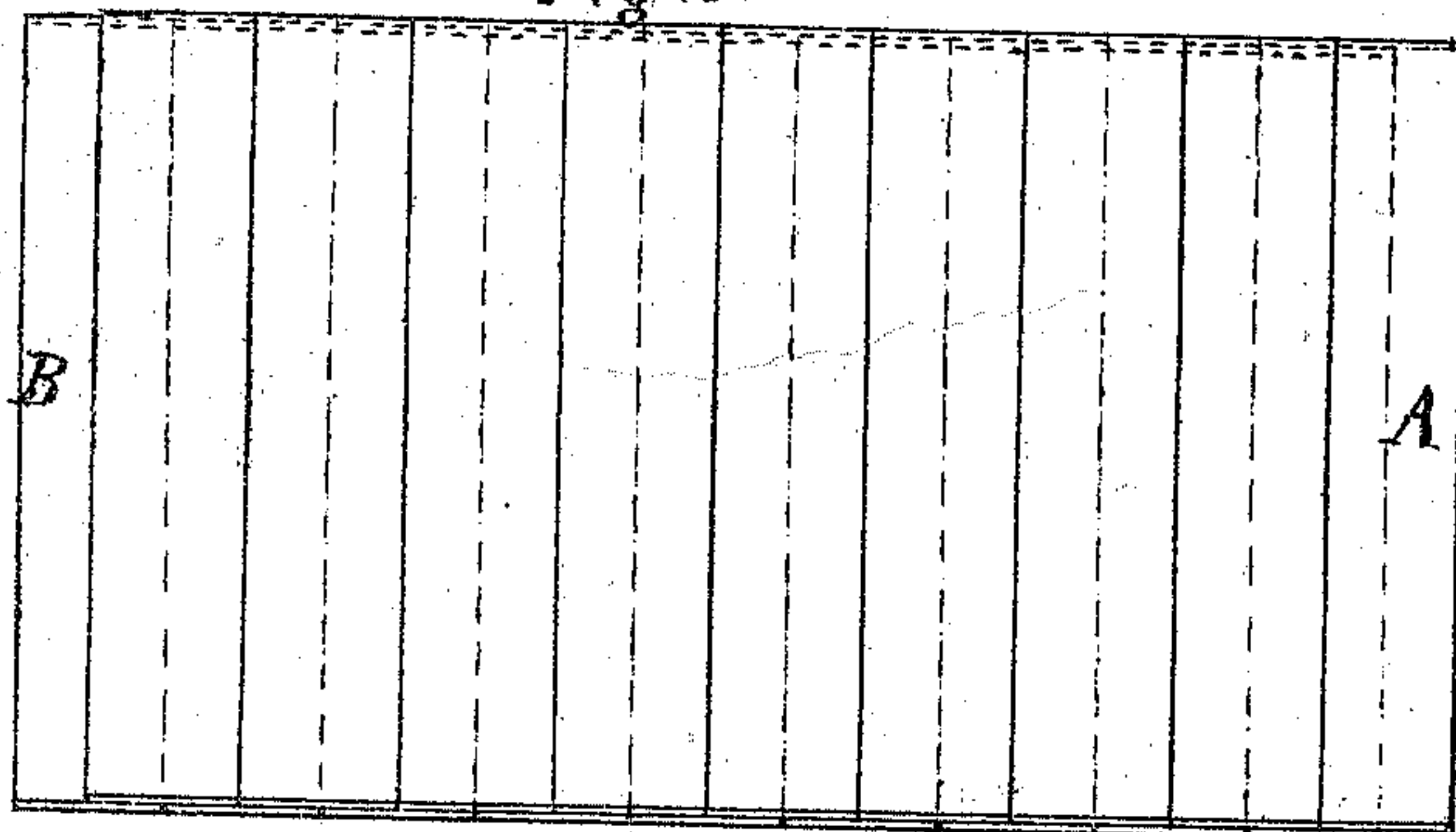


Fig. 4

Witnesses.  
Edwin A. Burlingame  
Edward Jaggart



Inventor.  
Henderson Willard

# UNITED STATES PATENT OFFICE.

HENDERSON WILLARD, OF GRAND RAPIDS, MICHIGAN.

## IMPROVEMENT IN BARRELS AND OTHER CYLINDRICAL PACKAGES.

Specification forming part of Letters Patent No. 120,920, dated November 14, 1871.

*To all whom it may concern:*

Be it known that I, HENDERSON WILLARD, of Grand Rapids, Michigan, have invented certain new and useful Improvements in Barrels and other cylindrical-packages, of which the following is a full and sufficient specification, reference being had to the accompanying drawing and the letters of reference marked thereon.

My invention consists in forming the cylinder of a barrel or other similar package of two series of vertical staves so arranged that the joints between staves in the inner series are broken and covered by the solid portions of the staves in the outer series, and vice versa.

The object of using a double set of staves is to make stronger and tighter work of unseasoned and unsound timber, if necessary, than can be made of a single thickness.

These staves may be made either flat or concavo-convex, from a solid block of wood, by cuts of either a saw or knife. If made flat, after they are arranged together so as to break joints they may be steamed and bent at one operation of machinery.

Heads and hoops may be adjusted in the usual way. By tapering the ends of the staves from the middle each way and drawing them with hoops a bilge will be formed in the package.

I prefer to cut my staves thin and wide from steamed blocks by knives constructed for such work and well known to the trade. Saws, of

course, will do the work, but less rapidly and with greater waste of timber.

If these staves are cut from a solid cylinder and in a concavo-convex form, as by upright band or jig-saws, no steaming and bending will be necessary, and the staves may be quickly set up and hooped together.

Fig. 1 is a perspective view of my improved barrel. Fig. 2 is a horizontal section of the double cylinder of which the barrel is constructed. Fig. 3 shows the arrangement of the two series of staves before they are bent into a cylinder.

The joints between staves in either series are broken and covered by the solid portions of the other series. When this form is bent into a cylinder the projecting and uncovered half of the stave A in the outer series will overlap the projecting and uncovered half-stave B in the inner series, thus completing the double cylinder of which the barrel is constructed.

What I claim as new, and wish to secure by Letters Patent, is—

A cylinder for barrel or other circular package with two series of vertical staves arranged to break joints, substantially as and for the purpose set forth.

HENDERSON WILLARD.

Witnesses:

BENJ. A. HARLAN,  
WM. H. VAN LENWEN, Jr.

(40)