No. 841,002. PATENTED JAN. 8, 1907.

J. F. EAST.

BARREL.

APPLICATION FILED AUG. 9, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

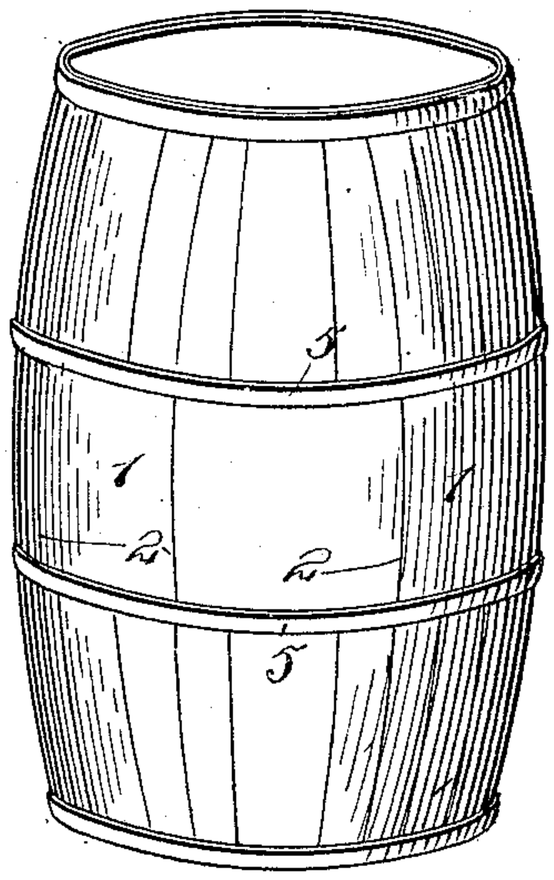


Fig. 2.

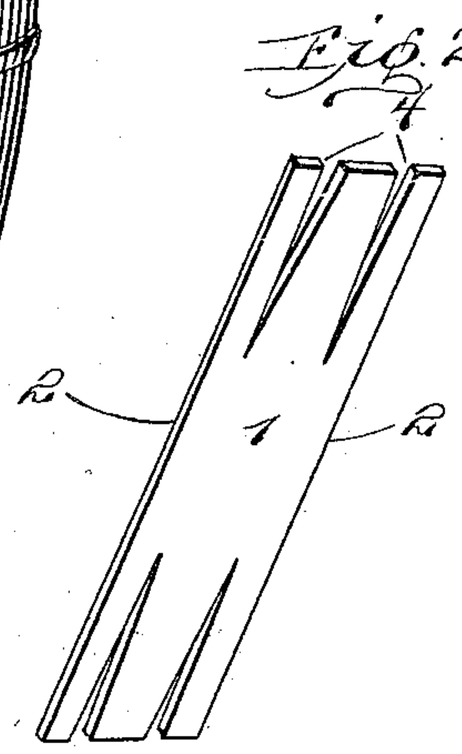


Fig. 3.

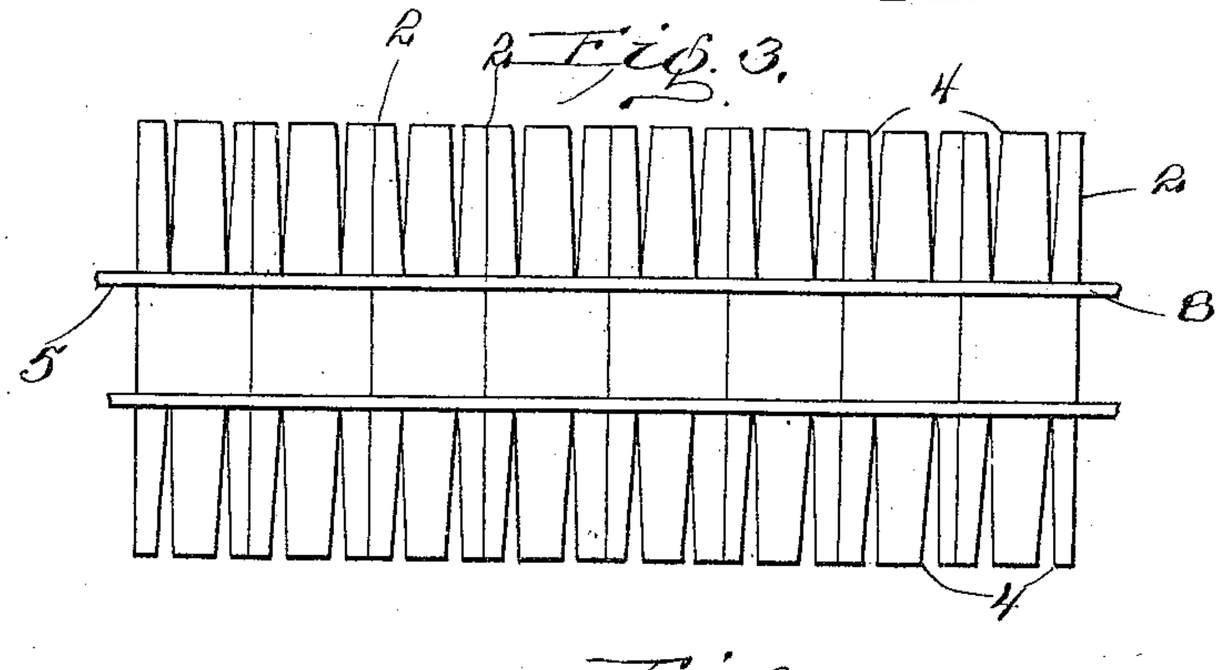
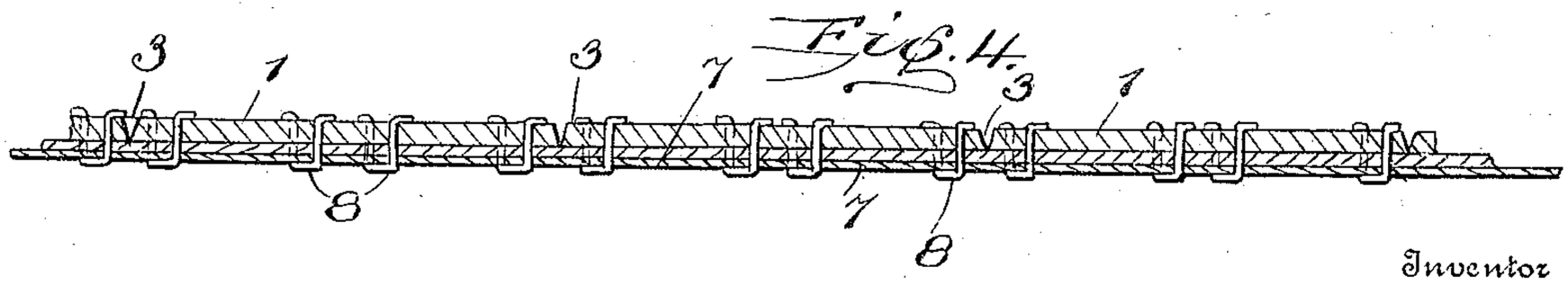


Fig. 4.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 6.

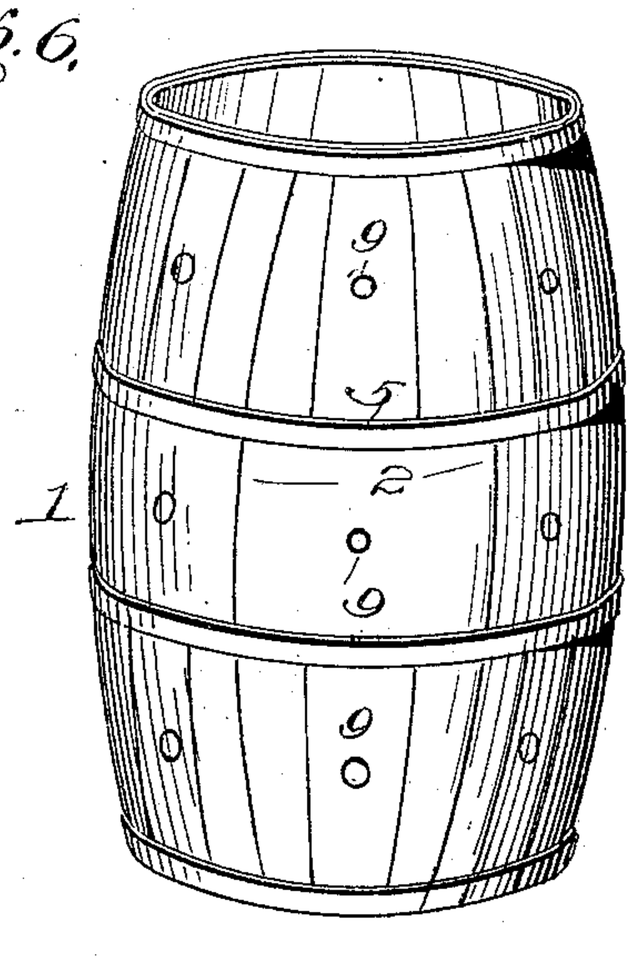


Fig. 5

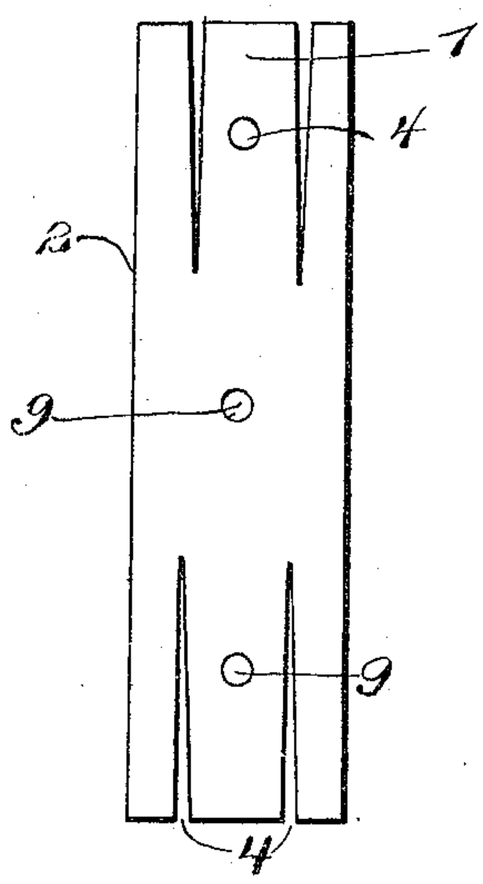


Fig. 7.

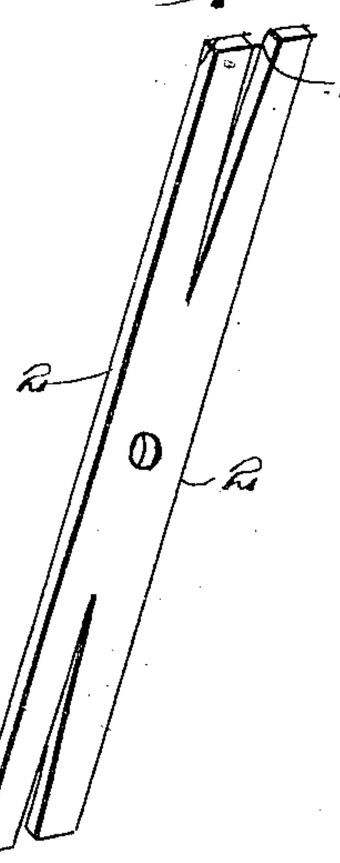
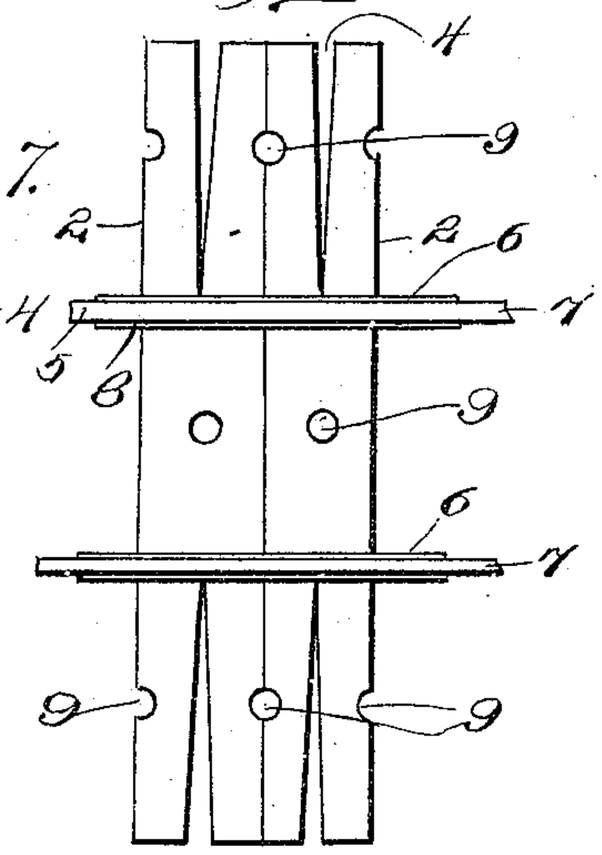


Fig. 8



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UNITED STATES PATENT OFFICE.

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BARREL.

No. 841,002. Specification of Letters Patent. Patented Jan. 8, 1907.

Application filed August 9, 1905. Serial No. 273,488.

To all whom it may concern:

Be it known that I, JOHN F. EAST, a citizen of the United States, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented certain new and useful Improvements in Barrels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to that class of barrels which are composed of staves and to the construction and arrangement of the staves for use in said barrels, the object being to construct a cheap strong barrel having a curve or bulge and which will answer all the purposes of the more expensive stave-barrels now on the market. In addition thereto it can be shipped in the flat condition, so as to greatly economize space in cars or vessels in the shipment of the same in such flat condition and which upon arrival at the point of destination can be readily and cheaply formed into a properly-shaped barrel by unskilled labor.

In my long experience as a practical barrel manufacturer I have observed that the trade has been in need of a stave-barrel which could be produced by unskilled labor at much less cost than the ordinary stave-barrel and which would possess all the advantages of such latter barrels, especially when used for such purposes as the shipment of apples, oranges, and other products which do not require the barrel to be water-tight.

In the manipulation of ordinary stave-barrels considerable time and labor is consumed and expense necessarily incurred in the production of the staves and the assembly or "setting up" of the same in the formation of the completed product by skilled workmen, each stave requiring to be properly sawed, shaped, and bent and then set up in a former, the latter step being more or less slow, whereas in my construction and arrangement which is about to be disclosed much of this work is dispensed with and unskilled workmen can be employed, and consequently the cost of production lessened.

It is my main object to produce a slack barrel as distinguished from a water-tight barrel or from one which is purposely rendered unventilated at its ends in the act of manufacture and to produce the same from staves preferably made of veneering.

It is of course obvious that, if desired, auxiliary ventilating-apertures may be formed in the staves, which apertures perform no function in the formation or shape of the barrel, and that the formation of such apertures in a barrel of the type I produce would not be contrary to the spirit of my invention, my object being, as stated above, the formation of a barrel from staves in which the edges of the staves and the V-shaped apertures formed in said staves are brought closer together during the formation of the barrel. It is the formation of such a barrel as distinguished from one in which the space is left between the edges of the staves or between separated walls of the staves produced by the formation of U-shaped slots that my present invention is designed to distinguish.

In the accompanying drawings, Figure 1 is a perspective view of one form of the barrel constructed in accordance with my invention. Fig. 2 is a perspective view of a double stave constructed in accordance with my invention. Fig. 3 is a plan view of a series of double staves secured together in accordance with my invention. Fig. 4 is a sectional view of a plurality of staves secured together in accordance with my invention, said section being taken through one of the quarter-hoops. Fig. 5 is a plan view of a modified form of a double stave. Fig. 6 is a perspective view of a slightly-modified form of barrel. Fig. 7 is a perspective view of a single stave, the word "single" being contrasted with the word "double," in which former construction the stave is substantially one-half as wide as a double stave and provided with a single slot in each of its ends. Fig. 8 is a plan view of a series of single staves secured together in accordance with my invention.

In carrying out my invention I contemplate employing a specially-constructed machine for uniting the staves. In this machine the staves are laid flat on the bed-plate thereof with their side edges in contact from end to end and in this manner are fed into the machine successively beneath the riveting mechanism, and as they pass through the machine with their side edges parallel and abutting against each other the staves are flexibly united by means of rivets or nails passed through the outside quarter-hoops in the manner as will be further described. By "outside" quarter-hoops are meant the

hoops applied on the outside of the barrel intermediate the ends thereof and as distinguished from the end hoops, the expression "quarter-hoops" being well understood in the trade.

In order to facilitate the assembling of the staves and to insure the longitudinal side edges of the staves being parallel and also to lessen the expense in the production of the staves, the said edges 2 of the staves 1 are made straight throughout their entire length, so that when a stave is pushed into the machine above referred to, so as to have its longitudinal side edge parallel with and abut against the longitudinal side edge of an adjoining stave, the said edges will exactly meet and lie parallel and form a close joint along the entire length of the staves. If the staves were tapered or chamfered off at each end, as in the ordinary stave, there would be a tendency or liability of a stave being pushed into the machine in such a manner as to bring two of the ends together and leave the other ends gapping or spaced apart, which would result in the production of a worthless product, and, furthermore, one of the objects of my invention is to dispense with the necessity of chamfering off the ends of the staves. By having the side edges of the staves straight and parallel throughout their length ordinary unskilled workmen can be employed in feeding the staves into the riveting-machine and the expense of chamfering off the edges of the staves is avoided. The straight longitudinal side edges of my improved stave are beveled inwardly, as at 3, so as to make a tight joint when the bulge or curve is given to the barrel.

The preferred construction of stave is that shown in Fig. 2 of the accompanying drawings, in which a stave having two slots in each end is illustrated, usually about eight of such staves being employed in the construction of a barrel as distinguished from sixteen employed in the ordinary stave-barrel, the advantage of employing this construction of stave, which I term a "double stave," being that an operator has only to pick up and handle half the number of staves used in an ordinary barrel. The slots 4 in the staves are tapering in form and substantially V-shaped and cut from the end edges thereof and extend a considerable distance inwardly. The slots are so disposed that the width of the material outside the slots is equal to the width of the material between the slots, so that the slots will be equidistantly arranged around the ends of the barrel and will permit of a uniform bulge and symmetrical formation being given to the barrel. By the use of these end slots I am enabled to have the longitudinal side edges of the stave straight and parallel throughout their entire lengths, the shape being given to the barrel by contracting or drawing in the ends of the staves, which drawing in tends to give a bulge to the barrel and at the same time close the slots 4 and produce a tight-slack barrel. The great advantage in using a V-shaped slot over what might be termed a "U-shaped" slot or a slot which does not come to a sharp point at its inner end is that the slot entirely closes up as the ends are drawn in, whereas in the U-shaped slot only the outer edges come together and the inner edges or walls remain separated and form a ventilated barrel. The greatest advantage, however, of the employment of V-shaped slots is that as the ends of the barrel are drawn inwardly and the edges of the slot come together first at their inner edges, then gradually toward their outer ends, the fulcrum shifts from the inner ends of the slots toward the outer ends of the slots.

Attempts have heretofore been made to produce a tight or unventilated barrel from a sheet of veneering having slots cut from its ends and without any slits in the central zone of the barrel, but said attempts have proven failures and thousands of dollars have been lost in such efforts. Ventilated barrels constructed from a sheet of veneering, as shown in my Letters Patent No. 429,021, have been successfully made, thousands of such barrels being produced annually; but such barrel is a totally different proposition from that being considered in connection with the present invention, the present invention having in view mainly a slack barrel formed of a sheet composed of a plurality of staves having straight longitudinal side edges and provided with V-shaped gores. It is not contemplated to form the sheet of staves in which in the act of formation the edges of the staves and the walls or the edges of the slots in the staves are brought close together into a complete barrel in the first instance, but to ship the sheets of joined staves in a flat condition to a point of destination and at said point form the sheets into a barrel by unskilled labor, such as is usually employed on a farm.

For uniting the staves together I employ quarter-hoops 5 5, which latter preferably consist of a strip of wood 6, extending across a sufficient number of staves from which to construct a barrel. If desired, a metal strip 7 may be applied on top of each wooden strip 6 and the two strips secured together and to the staves by means of nails or rivets, preferably U-shaped in form and passed through the strip and through the stave and clenched on the inner surface of the staves. These U-shaped rivets are preferably driven through the strips in a diagonal manner, as shown in the drawings. The strips 6 project beyond the side edges of the staves, so that they can be overlapped when the staves are formed into a barrel and secured together by means of nails passed through the same and the staves. The advantage of using a thin metal strip, as 7, in connection with the wood strip

6 is that great strength is secured without interfering with the flexibility of the staves to enable them to be formed into a cylinder and afterward into a bulge-shaped barrel; but I do not wish to be limited to the use of the metal strip. After the staves have been joined together in the manner described they are ready for shipment, and it is obvious that a large number of the staves thus made may be shipped in a flat-car, which is a decided advantage over forming the staves into a barrel at the factory in the first instance and shipping the empty barrels to the packer or trucker. The sheets of staves upon arrival at their destination can be readily formed into a barrel by the use of unskilled labor and a very simple device—such, for instance, as an ordinary foot-windlass.

The barrel thus described is found very useful for shipping produce, such as apples, oranges, and other products. Where it is necessary that the barrel should be ventilated it can be readily accomplished, as shown in Fig. 6, by forming apertures, as at 9, either at the center or near the ends of the stave, or at both points. In the manufacture of liquid-tight barrels, such as whisky and beer kegs, my invention would not be especially applicable, for the reason that such packages have to be very carefully made and are much more expensive to produce than the packages contemplated by my invention. In Fig. 7 I have illustrated a single stave—that is, one having a single slot at each end, as contrasted with a double stave—and I contemplate employing such a stave in the construction of my improved barrel; but I prefer to employ the double stave, as it lessens the labor, and consequently the cost of the production, of the barrel. While I also have shown and described the quarter-hoops as being constructed of a wooden section and a metallic section and U-shaped rivets passed through the same, I do not wish to be limited to such exact construction and arrangement, as the metallic section or hoop might be dispensed with and ordinary nails, clenched on the under side, employed.

While by my construction and arrangement I produce what might be termed an "unventilated" barrel as distinguished from a ventilated barrel in which the ventilation is not produced in the act of forming the barrel, I do not wish to be understood as regarding the provision of ventilating holes or slots in my particular construction of stave as not falling within the scope of my invention. The provision of holes or slots at different points in the barrel either by the use of an auger or a knife or by the use of saws during the manufacture of the barrel or after completion of the same is so common that it is immaterial whether such holes or apertures are provided or not, the essence of my invention being the formation of V-shaped slots in staves, said slots extending from the outer edges of the staves a considerable distance inwardly and, further, the formation of such staves into a sheet and, further, the formation of such a sheet into a barrel.

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

1. A barrel formed from a flexible sheet composed of a plurality of individual flat staves, the longitudinal side edges of each stave being parallel and straight the entire length of the staves, said staves being connected by quarter-hoops and formed with a V-shaped slot cut from each of their end edges, and end hoops for holding the ends of the staves in a contracted condition and the edges of the V-shaped slots in contact with each other from end to end thereof, substantially as described.

2. As an improved article of manufacture, a flat stave for a slack barrel having straight, beveled, longitudinal side edges and formed with two V-shaped slots in each of its end edges, which extend a considerable distance inwardly, the slots being so disposed that the width of the material outside the slots is equal to the width of the material between the slots, substantially as described.

3. As an improved article of manufacture, a flexible sheet from which to construct a slack barrel and comprising a plurality of individual flat staves arranged with their side edges contacting from end to end thereof, and connected by means of quarter-hoops; the longitudinal side edges of each stave being straight throughout its entire length and beveled inwardly, each stave being formed with a V-shaped slot cut from each of its end edges and extending a considerable distance inwardly, the inner ends of the slots terminating in a point, substantially as described.

4. A slack barrel formed from a flexible sheet composed of a plurality of individual flat staves, the longitudinal side edges of each stave being parallel and straight the entire length of the staves and beveled inwardly, said staves being formed with two V-shaped slots cut from each of their end edges and held in position by means of end hoops for holding the ends of the staves in a contracted condition and the edges of the V-shaped slots in contact with each other end to end thereof, substantially as described.

5. A slack barrel formed from a flexible sheet composed of a plurality of individual flat staves, the longitudinal side edges of each stave being parallel and straight the entire length of the staves and beveled inwardly, said staves being connected by quarter-hoops and formed with a V-shaped slot cut from each of their end edges, and end hoops for holding the ends of the staves in a con-

tracted condition and the edges of the V-shaped slots in contact with each other, each quarter-hoop consisting of a wooden strip and a metal strip, the latter resting on top of the wooden strip, and fastening means passed through the strips and embedded in the staves of the barrel.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. EAST.

Witnesses:
ROBT. A. DONNELLY,
ALFONSE MERCER.