

No. 749,693.

PATENTED JAN. 12, 1904.

M. J. KREMER.
WASHTUB JOINT.

APPLICATION FILED FEB. 10, 1903.

NO MODEL.

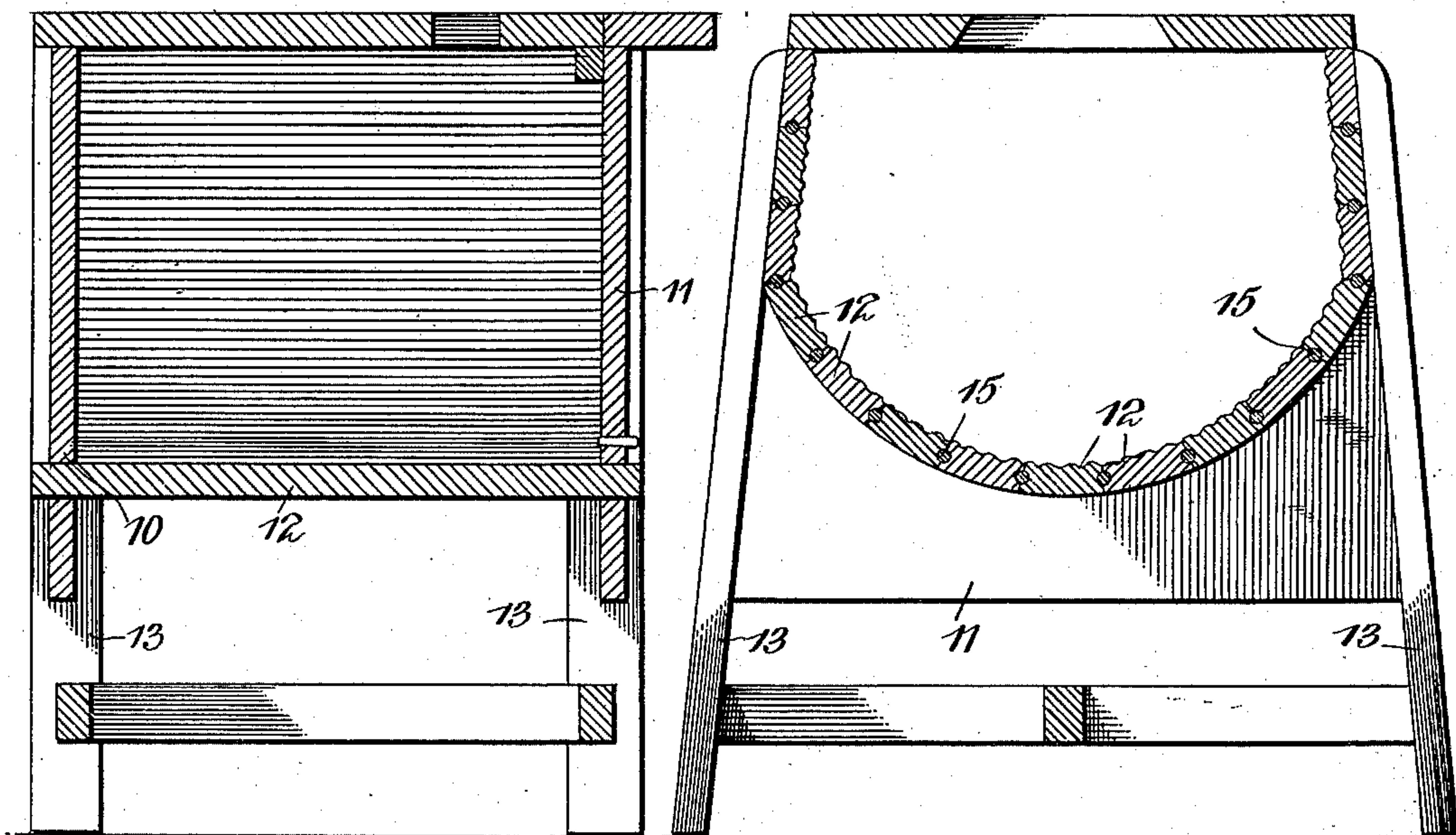


Fig. 1.

Fig. 2.

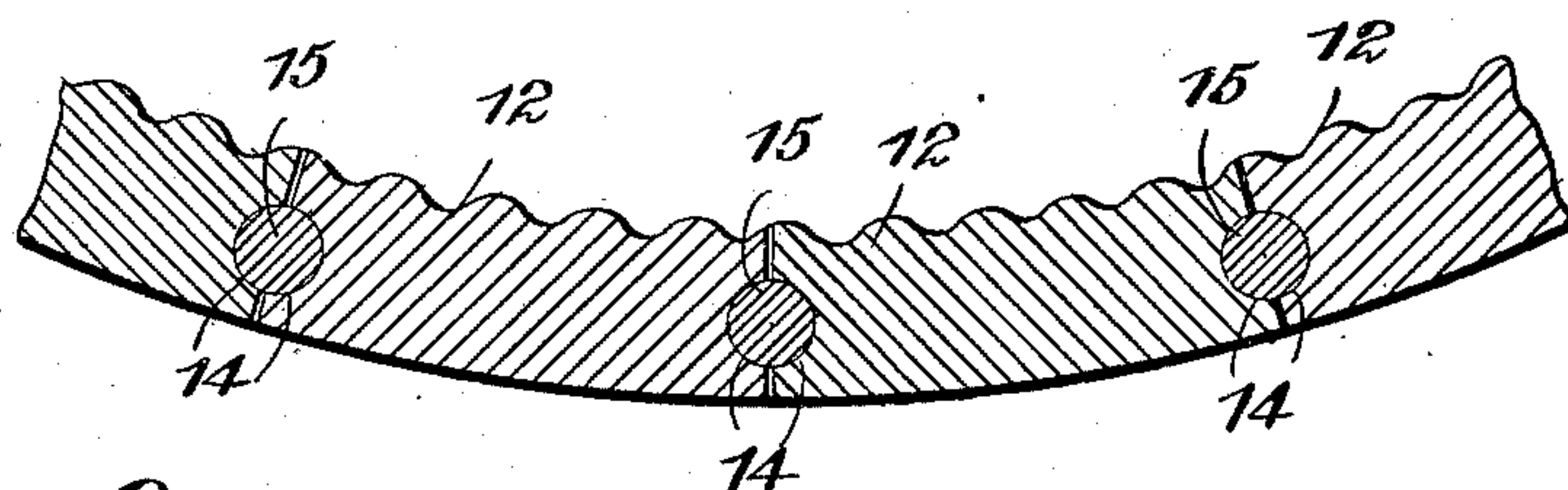


Fig. 3.

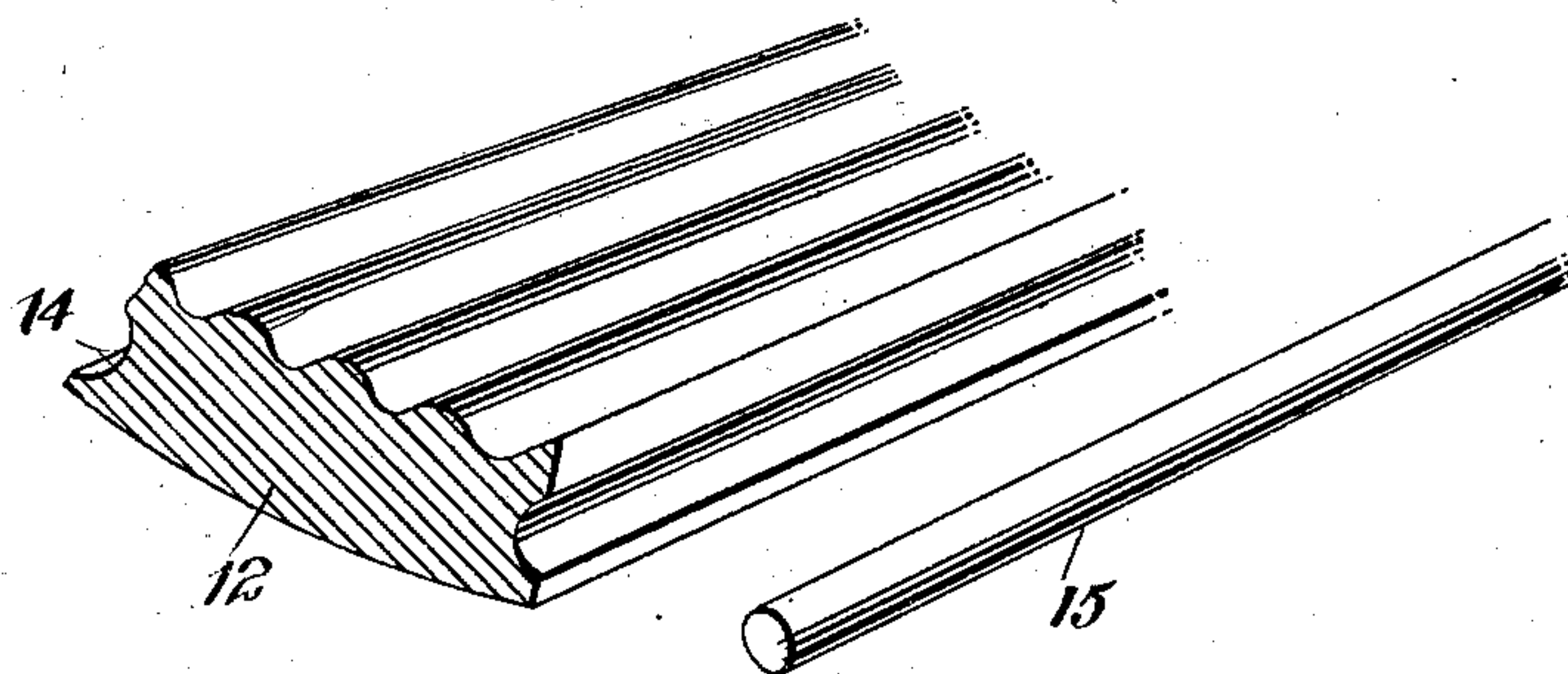


Fig. 4.

Witnesses
E. H. Stewart
C. H. Woodward.

M. J. Kremer, Inventor:
by *C. A. Snow & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

MICHAEL J. KREMER, OF DAVENPORT, IOWA, ASSIGNOR OF ONE-HALF
TO MARTIN SILBERSTEIN, MAX SILBERSTEIN, EMIL SILBERSTEIN, AND
LOUIS SILBERSTEIN, OF DAVENPORT, IOWA.

WASHTUB-JOINT.

SPECIFICATION forming part of Letters Patent No. 749,693, dated January 12, 1904.

Application filed February 10, 1903. Serial No. 142,701. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL J. KREMER, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented a new and useful Wash-tub-Joint, of which the following is a specification.

This invention relates to wooden vessels for holding liquids—such as washing-machine tubs, tanks, and the like—and has for its object to produce a joint between the staves forming such vessels which will be maintained water-tight regardless of the wet or dry condition of the vessel and will not be affected by the shrinking or swelling of the wood.

Great difficulty has been heretofore experienced in maintaining the joints between the staves of washtubs, tanks, and similar vessels water-tight under the varying conditions in which they are employed, as the frequent exposure to alternate wet and dry is very severe upon the joints, requiring constant attention and frequent tightening of the hoops and other holding means and the soaking of the staves to expand them before using.

With the improved joint herein disclosed all tendency of the joints to open when the staves become dry or to be forced apart when exposed to the liquid contents of the vessel is obviated, as the joints will yield to either a shrinking or swelling movement without "opening" the joints, and thereby maintain the integrity of the joints at all times.

The invention consists in forming in the adjacent edges of the staves semicircular longitudinal grooves and providing these grooves with circular rods or tenons extending over the joints between the staves. By this means no change of the lateral alinement between the staves will affect the joints, as the staves will merely roll around the tenons and engage them closely at all times no matter what relative position they may occupy.

Another great advantage of a joint thus constructed is that it will be impossible to produce unequal strains between the parts caused by the swelling when wet, as the engaging parts possess "rolling" contiguous surfaces which

automatically adapt themselves to changes in the relative locations of the parts.

The improved joint may be applied to any wooden vessel formed of staves, but for the purpose of illustration is shown applied to an approved form of washing-machine tub, to which it is especially applicable.

Figure 1 represents a longitudinal sectional elevation, and Fig. 2 a transverse section. Fig. 3 is an enlarged sectional detail of the joint. Fig. 4 is a perspective view of a portion of one of the staves and a section of one of the filling-strips.

The tub is shown composed of end members 10 11, connected by staves 12 of suitable width and supported, as by legs 13. In the contiguous edges of the staves 12 are formed longitudinal semicircular grooves 14, the grooves being so disposed that when the staves are joined as shown circular longitudinal cavities will be formed between each pair of the staves. Within the circular cavities formed by these opposing semicircular grooves circular rods or tenons 15 are inserted, the rods conforming to the grooves, so as to completely fill the cavities formed thereby. The space between the staves above and below the tenons is unobstructed, as shown, to permit the expansion and contraction of the staves and independent rocking movement thereof on the tenons. By this simple means if the wood shrinks when dry the joints will not open, as the correspondingly-curved surfaces will retain their contact and will not be separated, and then when the staves swell when wet the same result occurs, as there is no tendency of the joints to open no matter what the condition of the staves may be. Then, again, if for any reason the staves are forced out of lateral alinement they will merely roll around the rods as centers, and the joints will not be opened by such changes in relative position. Thus no matter in what condition or relative position the staves may be the joints will remain intact and efficiently repel the passage of the water.

Another great advantage of this construction is that the fillets or rods can never be

come "bound" in the grooves, which is very liable to occur with some forms of joint; but in the improved joint the swelling of the wood has a tendency to repel the tenon from the
5 groove rather than to bind it therein, and thus very effectually and automatically maintains the integrity of the joint.

When employed in the construction of washing-machine tubs, the inner surfaces of the
10 staves may be fluted in the ordinary manner to produce the washboard-surface.

The improved device may be employed with any size of stave and applied to vessels employed for any desired purpose.

15 Having thus described my invention, what I claim is—

1. A vessel of the character described composed of staves having opposing semicircular longitudinal grooves in their contiguous edges,
20 and circular tenons conforming to and filling said grooves, the space between the contiguous edges of the staves above and below the

tenon being unobstructed to thereby permit expansion and contraction of the staves and independent rocking movement thereof on the
25 tenons.

2. A vessel of the character described having a curved bottom formed of staves provided with longitudinal semicircular grooves in their contiguous edges, and circular tenons
30 conforming to and fitting said grooves and extending over the joints between the staves, the space between the contiguous edges of the staves above and below the tenon being unobstructed to thereby permit expansion and
35 contraction of the staves and independent rocking movement thereof on the tenons.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MICHAEL J. KREMER.

Witnesses:

WALDO BECKER,
SARAH TAYLOR.