

No. 750,019.

PATENTED JAN. 19, 1904.

F. BRENNER.
COMPOSITE BARREL STAVE.
APPLICATION FILED FEB. 21, 1903.

NO MODEL.

Fig. 1.

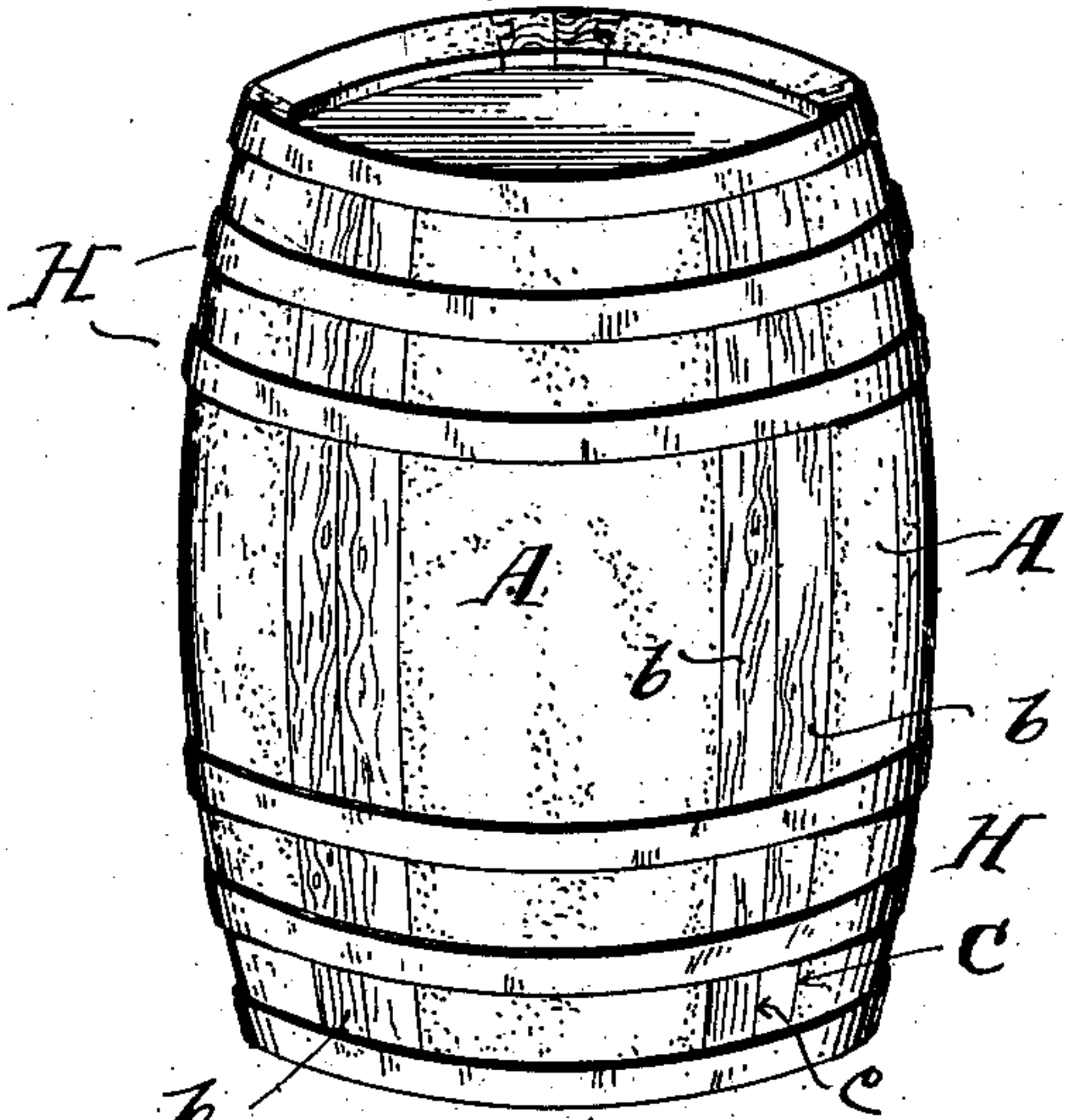


Fig. 4. Fig. 5.

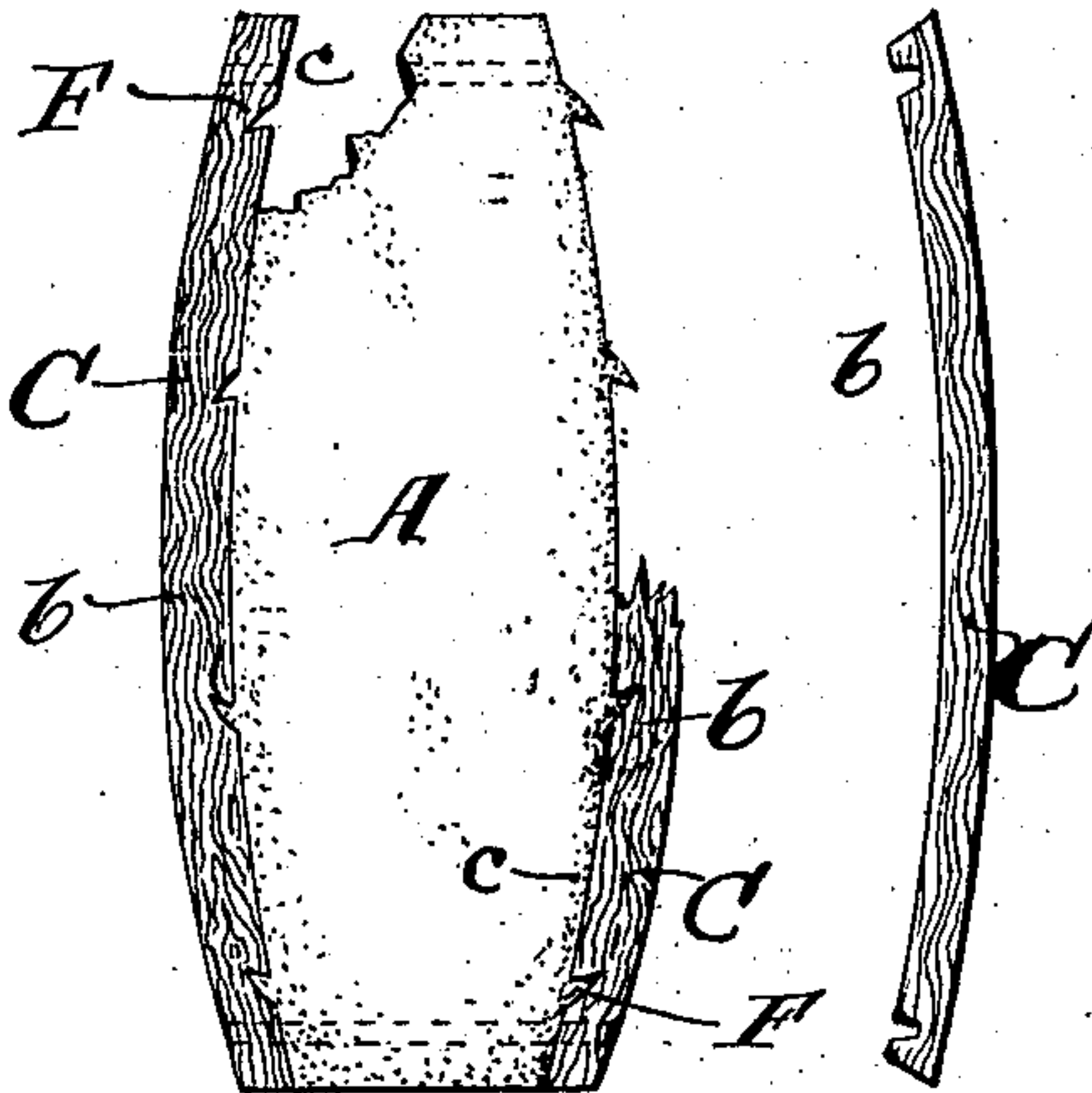


Fig. 2.

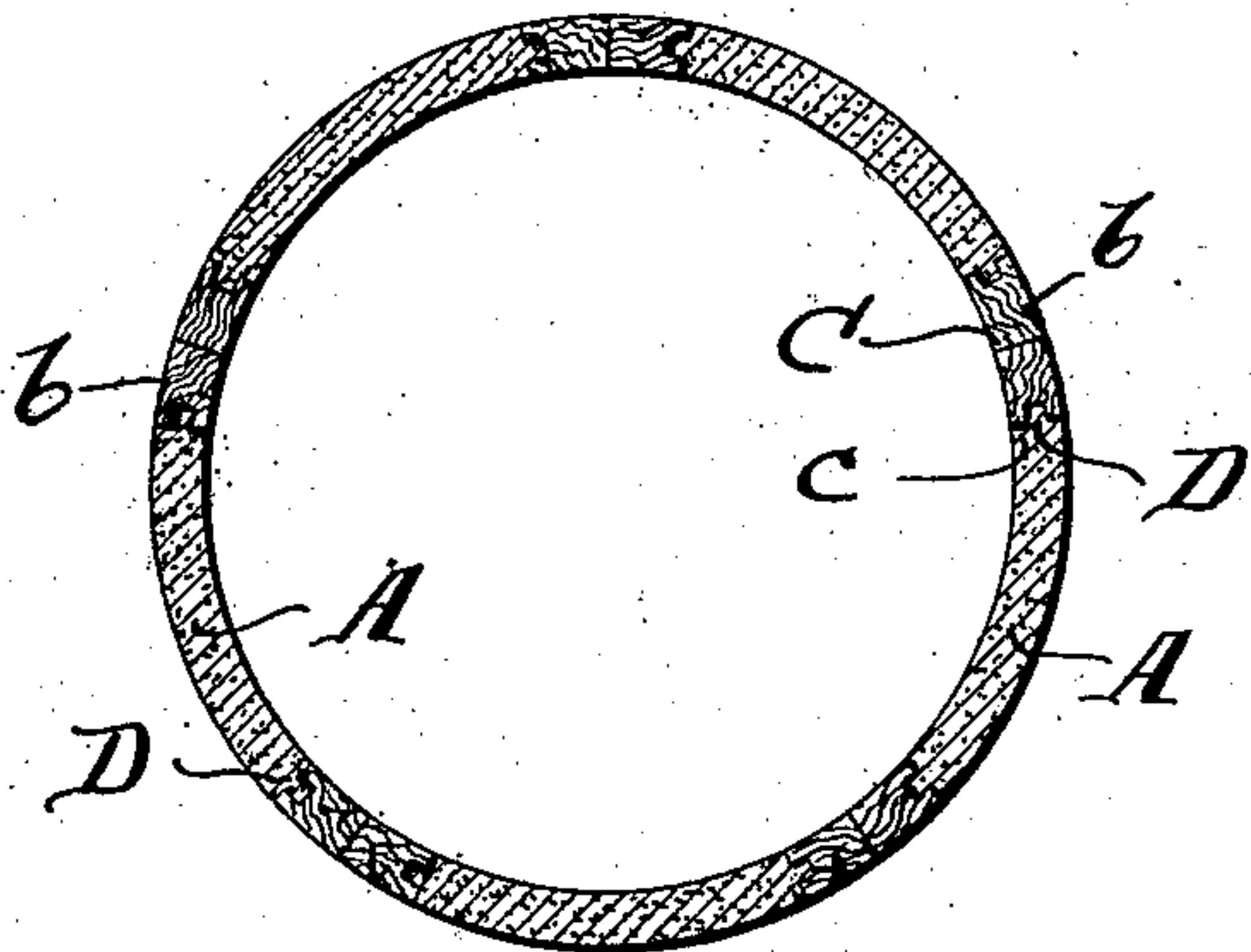


Fig. 6.

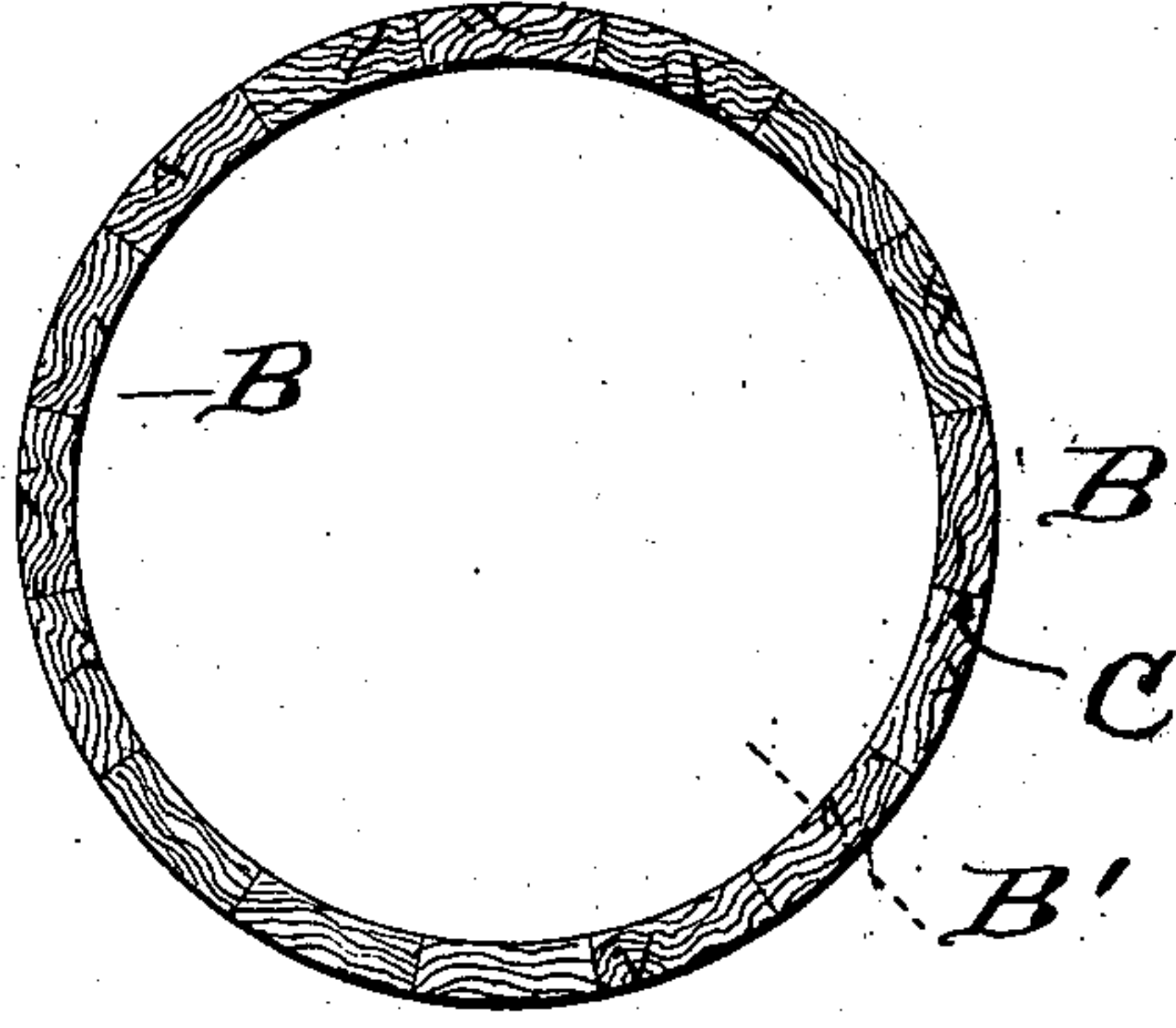


Fig. 3.

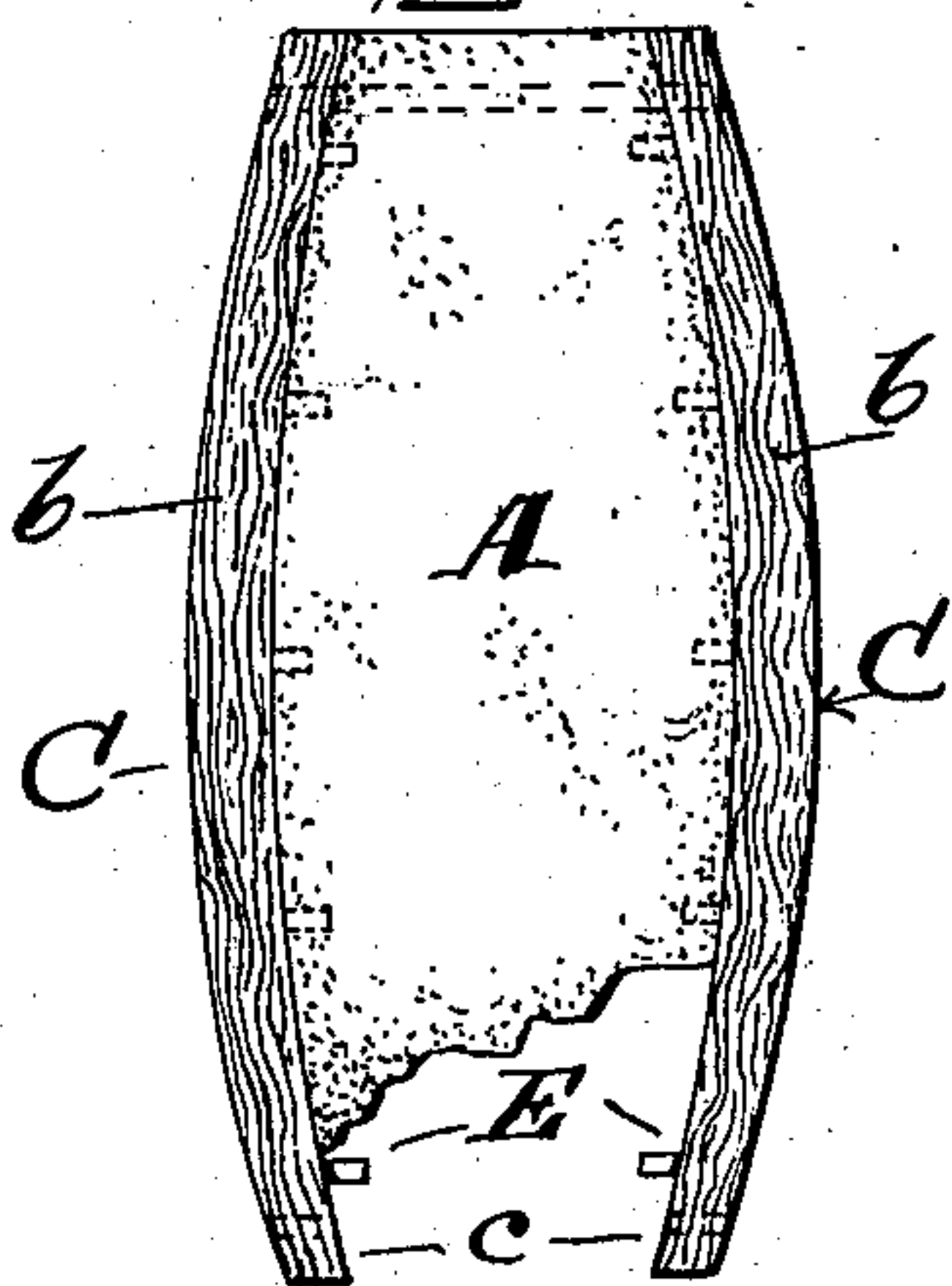
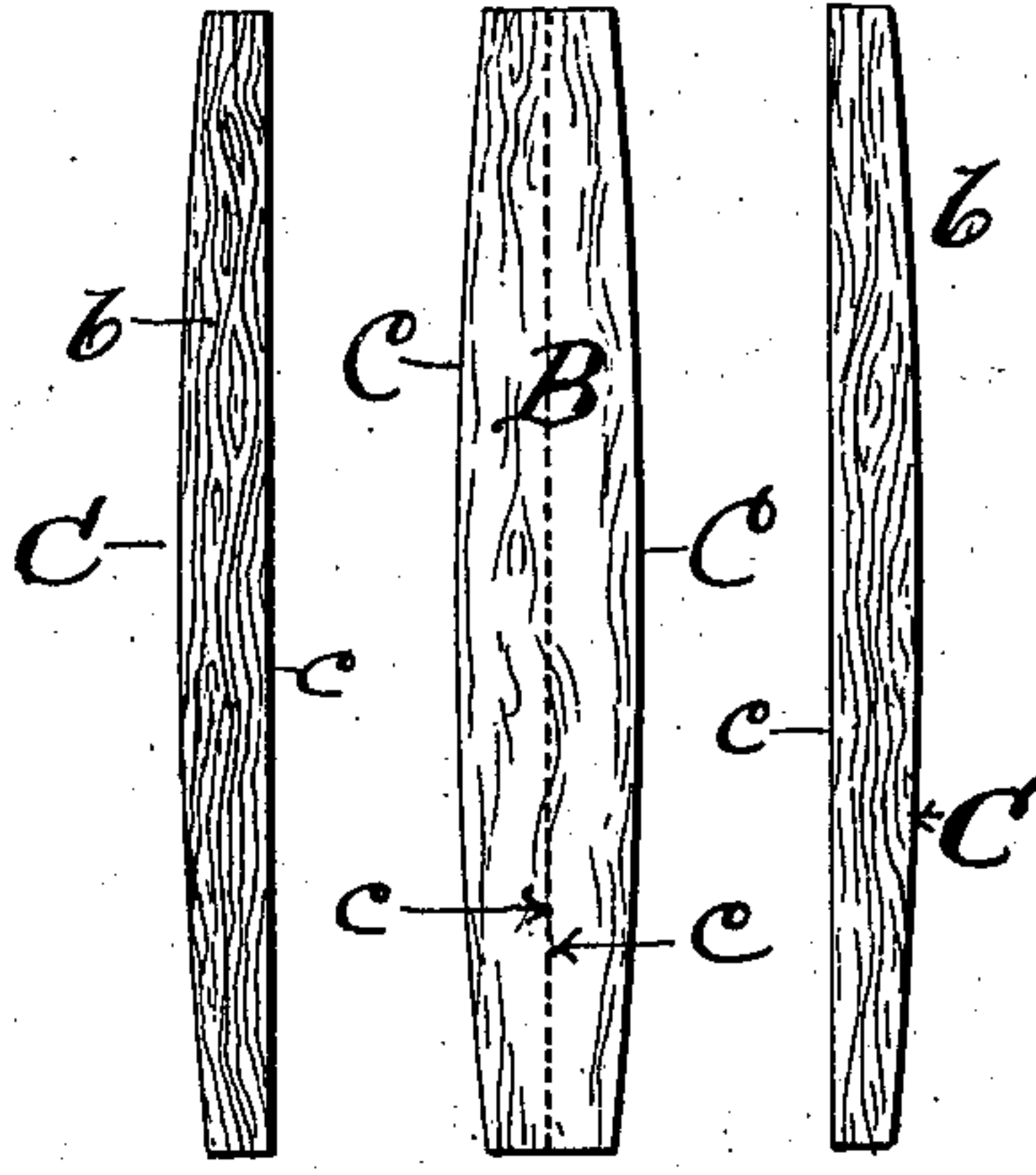


Fig. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

FREDERICK BRENNER, OF CINCINNATI, OHIO.

COMPOSITE BARREL-STAVE.

SPECIFICATION forming part of Letters Patent No. 750,019, dated January 19, 1904.

Application filed February 21, 1903. Serial No. 144,509. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK BRENNER, a citizen of the United States, residing in the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented a certain new and useful Composite Barrel-Stave; and I do declare the following to be a clear, full, and exact description thereof, attention being called to the accompanying drawings, with the reference-letters marked thereon, which form also a part of this specification.

This invention relates to a new construction for manufacturing and providing the component parts or staves used in the production of tight cooperage stuff, like barrels, kegs, and similar packages. Originally and still to a large extent at present wood is used as a material for such cooperage, but in view of increasing scarcity and rising cost is being gradually displaced by other materials with a view to reduce manufacturing expenses or to prevent them from increasing. Some of these materials so substituted are paper, its derivatives, pulp, and similar plastic substances. The particular vessels have been formed by molding, for which purpose the selected material in its plastic state is usually pressed in suitable molds. They have thus been formed in their entirety—that is, in an integral structure—and they have also been formed in sections, both of which methods are old and well known in this art. Manufacture in an integral structure, possibly including also one head or end, is more or less difficult in practice, requiring extensive apparatus, molds, cores, and presses. Manufacture in sections equivalent to staves, only perhaps of larger width, has also its objectionable features, particularly as to the possibility of obtaining a tight close-fitting joint between the component parts and for maintaining such joint closed. With plastic substances and pulp such is rather difficult, because after setting and hardening the material is not readily worked and shaped to a fit.

The object of my invention is therefore to construct the component parts for such a package in a manner which permits me to take advantage of the use of pulp on account

of its cheapness and reduced weight, while at the same time the construction is such that these parts may be worked, assembled, and fitted together like the usual wooden staves.

In the following specification, and particularly pointed out in the claims following, is found a full description of the invention, together with its mode of manufacture, parts, and construction, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a barrel constructed of the staves as contemplated by my invention. Fig. 2 is a central horizontal section of the same. Fig. 3 shows one of the staves or component sections of which the body is composed detached and with parts broken away. Fig. 4 in a similar view shows a slightly-modified construction. Fig. 5 is an edge view of such a section. Figs. 6 and 7 in views similar to Figs 2 and 3 illustrate the manner under which certain parts of the construction are carried on.

The body of a package is constructed in the usual manner—that is, it is composed of component sections or staves—and in order to obtain the advantages of the use of a cheaper and lighter material—like pulp, for instance—I make the portion between the joints or edges of each stave of such pulp, while the edges themselves consist of wood or equivalent material which permits working and shaping to obtain a properly-fitting joint the same as in an all-wooden stave. In order to increase the advantage of cheapness and lightness as to material as much as possible, I increase the area of the pulp portion of each stave quite considerably as compared with the wooden portions. To obtain this result, only a limited number of staves are used as compared with the usual wooden package of corresponding capacity, and the width of the few staves so used is correspondingly increased. For very small packages two and three sections might be sufficient. For the usual-size packages—as, for instance, half-barrel size—four or five staves, as shown in the drawings, are quite suitable.

In the drawings, A indicates the pulp part of each stave, while b shows the wooden side

portions bordering the edges of the former between them. The connection between the two may be in any suitable way; but in general it is by depressions or projections at the inner edges *c* of the wooden parts *b* and into or around which the pulp of the center portion A is compressed when the stave is molded. This latter procedure consists, substantially, of providing a suitable separable mold corresponding to the size and shape of the stave and into which in proper position and properly spaced apart the two wooden parts *b b* are placed. The pulp or plastic mixture is next charged into the mold and between the two wooden portions first placed thereinto. The stave is finished by pressure, preferably applied by hydraulic presses or otherwise, whereby the plastic mass is closely forced against the edges *c* of the wooden parts *b*, engaging thereat any means provided to accomplish or increase the adherence. These means may consist, for instance, of grooves D, as shown in Fig. 2, into which the plastic mass is forced, or it may consist of a number of dowel-pins E, as shown in Fig. 3, which would extend into the plastic mass, or, as shown in Fig. 4, cuts F may be provided, into which the mass is pressed. The other or outer edges C of these wooden portions form at the same time the joints where two adjoining sections or staves come together. The material being wood, it is clear that these adjoining surfaces may be readily shaped to form a proper fit. Again, in case of leaking joints due to shrinkage or other causes these joints being on workable material, like wood, may be readily reshaped and refitted, the package having previously been taken apart.

Packages come usually in standard sizes, and in order to conform as nearly as possible to these established sizes I proceed as follows: I procure first a wooden package manufactured in the usual manner—that is, of all-wooden staves and with these latter about of the normal width, as shown at B in Fig. 6. Next this package is taken apart, and each stave B, as it appears in Fig. 7, is divided on a longitudinal line, as indicated by the dotted line B'. The two parts *b b* so produced are now separated, as shown in Fig. 7, and constitute the wooden side parts *b*, previously described. They are next placed in the mold, as before described, and receive between them the pulp portion, forming therewith the composite stave. The pulp comes against the edges *c c*, resulting in cutting and dividing the stave B. It will be noticed that the edges C, forming the joints, are in no way touched or altered, so that the composite staves after so produced are at once ready and may be assembled to form a package, with the joints closely and properly fitting as they did before in the wooden package, they being, in fact, the same original joints, provided, of course, however, that the combined width of these broader com-

posite sections or staves so formed correspond to the combined width of the narrow wooden staves, or, in other words, the size and diameter of the new package formed of the broader composite sections must be equal to the size and diameter of the all-wooden package. (See Figs. 2 and 6.) The width of these composite sections depends, therefore, on the number of them to be used in a package and may be conveniently ascertained, as is readily understood. The wooden package furnishes twice as many side portions *b* as there are staves B, so that each of these latter furnishes the edging material for one composite section or stave. The number produced of these latter is therefore equal to the number of staves B, only that they are wider, and therefore less of them are required to make a package. While this is one mode of producing such a composite section, it is of course not the only one, and these sections may be produced in independent sizes and shapes—that is, meaning thereby without reference to a previously-existing wooden package.

The croze and chime part of these composite staves as to the pulp portion is preferably formed in the mold. The insertion of the ends or heads and their material, the assembling of these parts with the assembled staves, and the placing of the hoops H around them form no part of my invention and may proceed somewhat analogous to the usual methods obtaining in coopering, since these composite staves possess all the qualities and possibilities of working and fitting like the present wooden stave.

My composite wooden staves may therefore be handled and manipulated like the present wooden staves and are at once ready to be assembled and fitted, so that they may be furnished as a complete article to coopers and ready for use, which is the intention.

Having described my invention, I claim as new—

1. As a new article of manufacture, a composite stave consisting of a central portion made of pulp or similar plastic matter and having each of its side edges lined or edged with a side portion of wood or equivalent workable material, the whole connected to form a complete integrally-constructed structure, the outer or free edges of these side portions being each shaped to form the joints between adjoining staves.

2. As a new article of manufacture, a composite stave consisting of a central portion made of pulp or similar plastic matter and having each of its side edges lined or edged with a side portion of wood or equivalent workable material, the adjoining surfaces between the pulp and wooden portions being provided with complementary projections and depressions adapted to engage each other to increase the adherence, the engagement taking place while the pulp portion is in its plas-

tic state, so that the completed stave forms an integrally-connected structure.

3. A barrel composed of stave-sections of which each consists of a central portion made
5 of pulp or similar plastic matter and having each of its side edges lined or edged with a side portion of wood or equivalent workable material, the outer or free edges of these side

portions being each shaped to form the joints between adjoining sections.

In testimony whereof I hereunto set my signature in the presence of two witnesses.

FREDERICK BRENNER.

Witnesses:

C. SPENGEL,

JOHN BRENNER.