

O. SCHUBERT.
 PROCESS OF MANUFACTURING BARRELS.
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929,715.

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Fig. 1

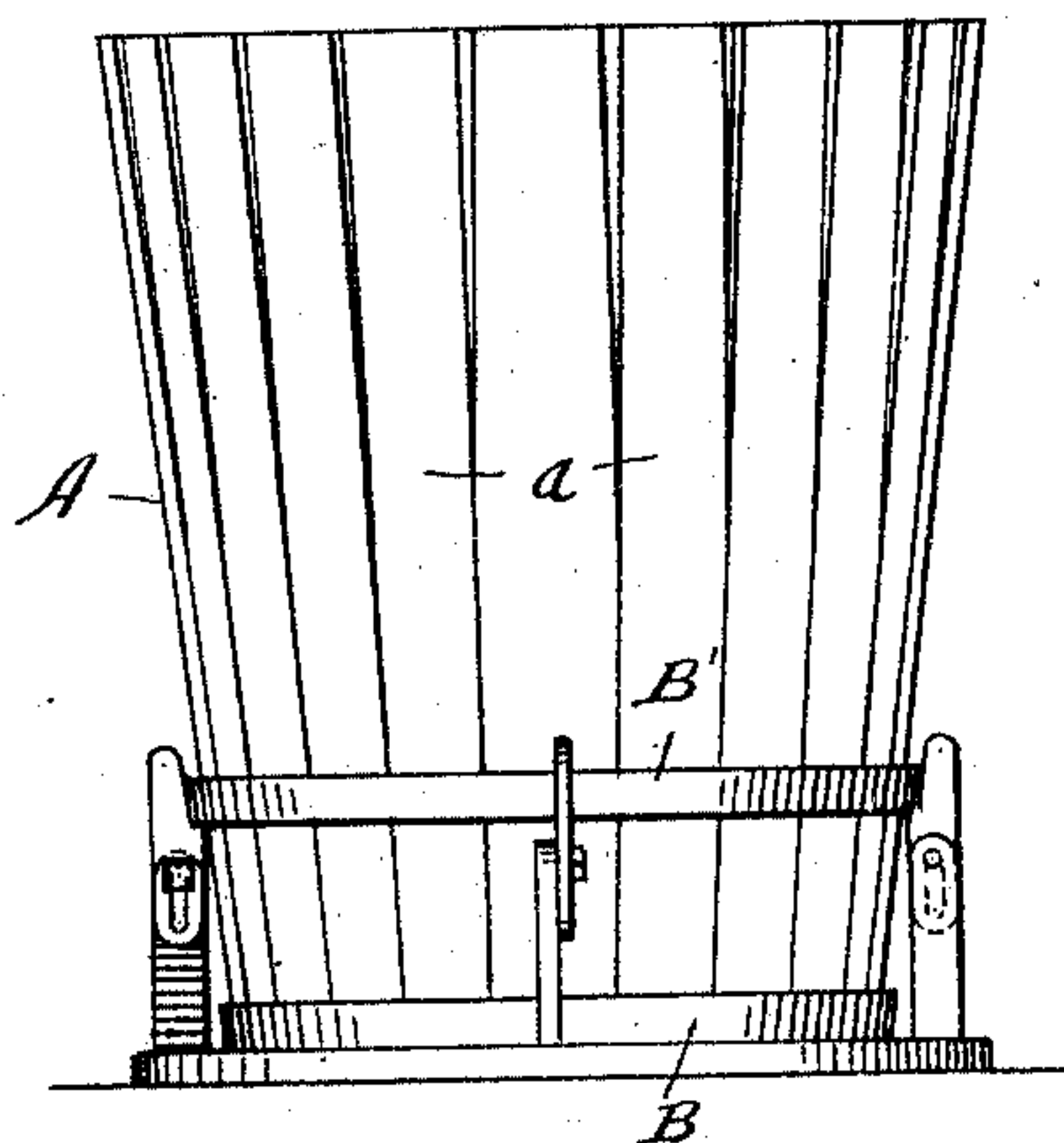


Fig. 2

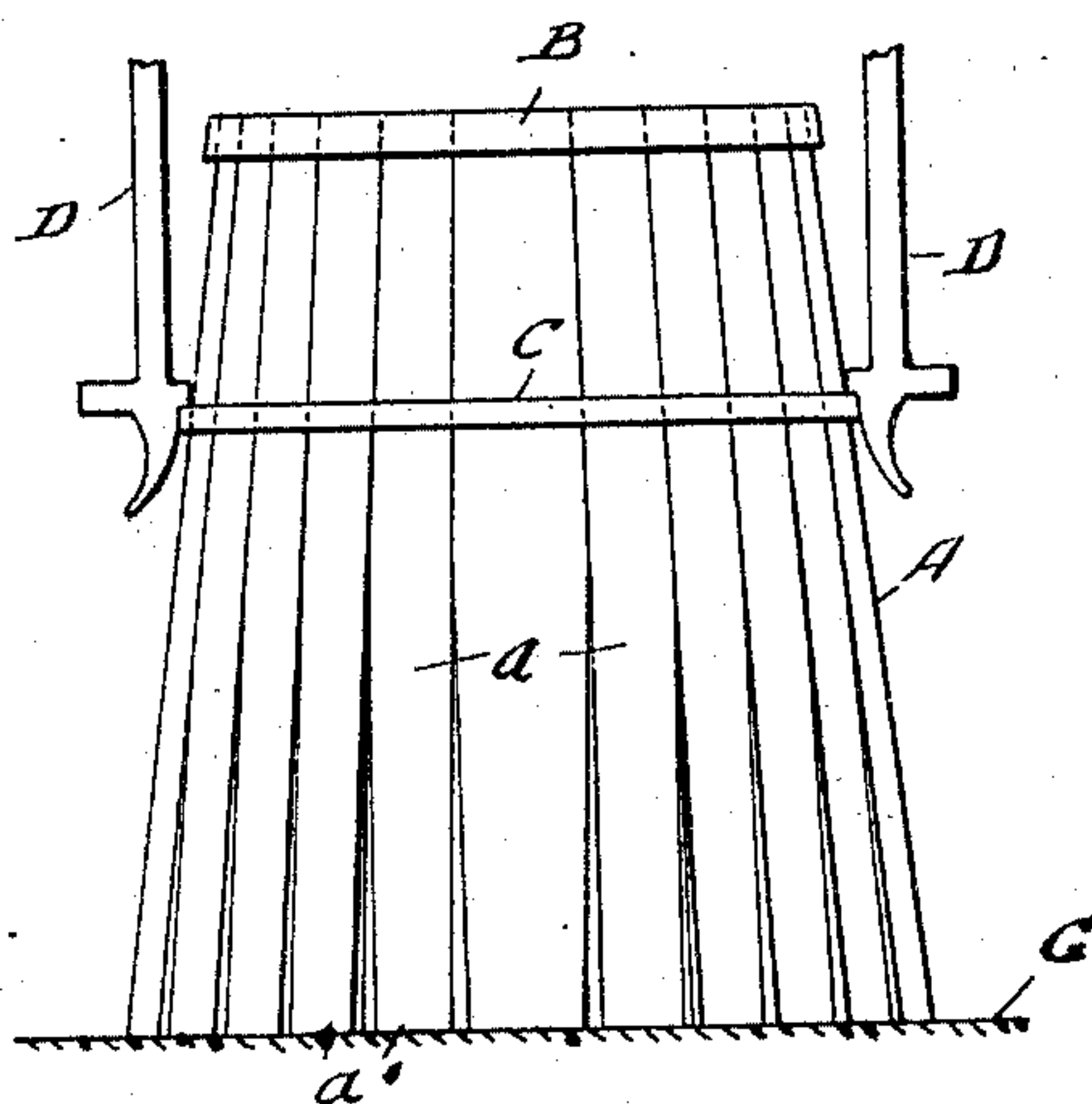


Fig. 3

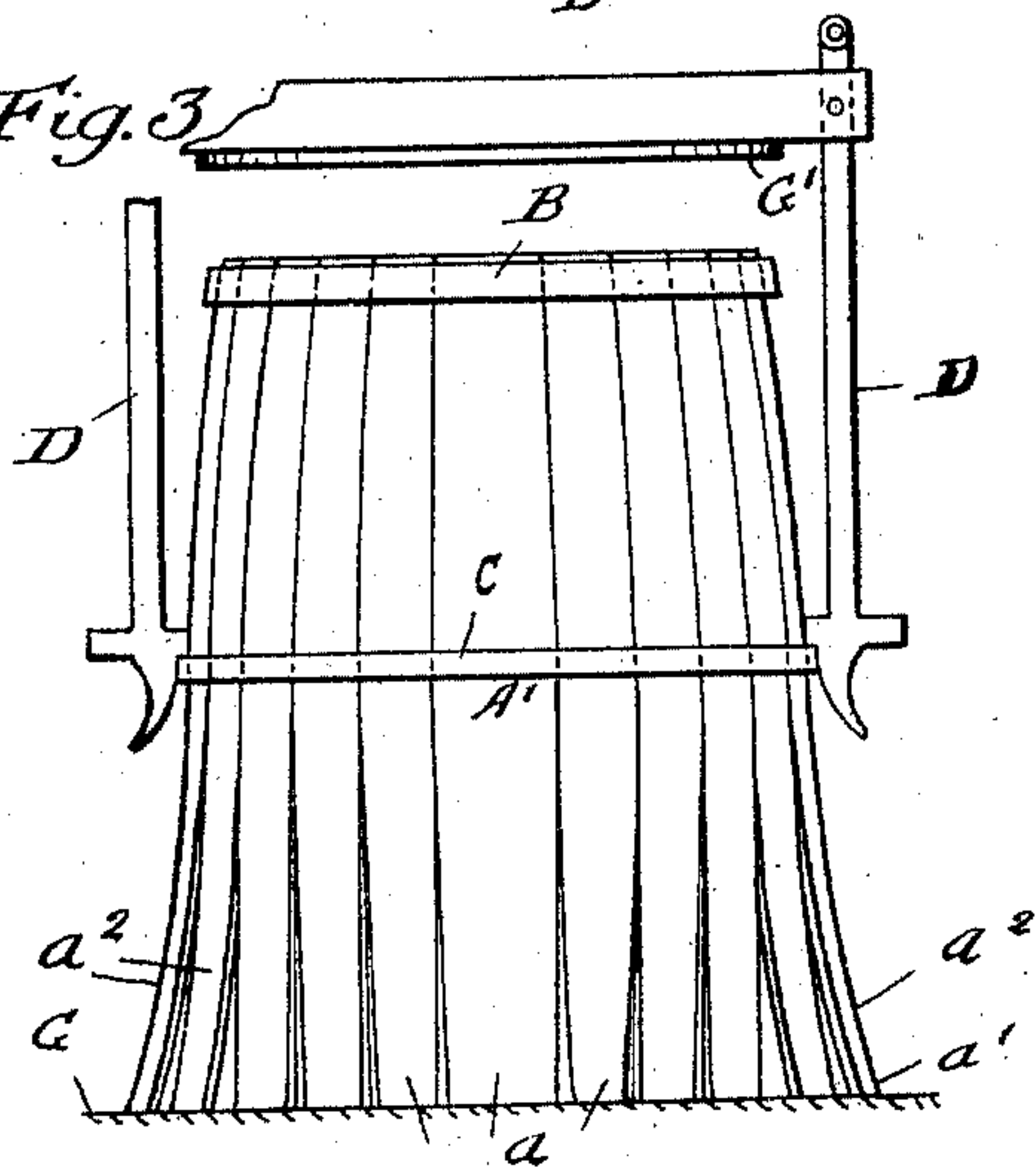


Fig. 4

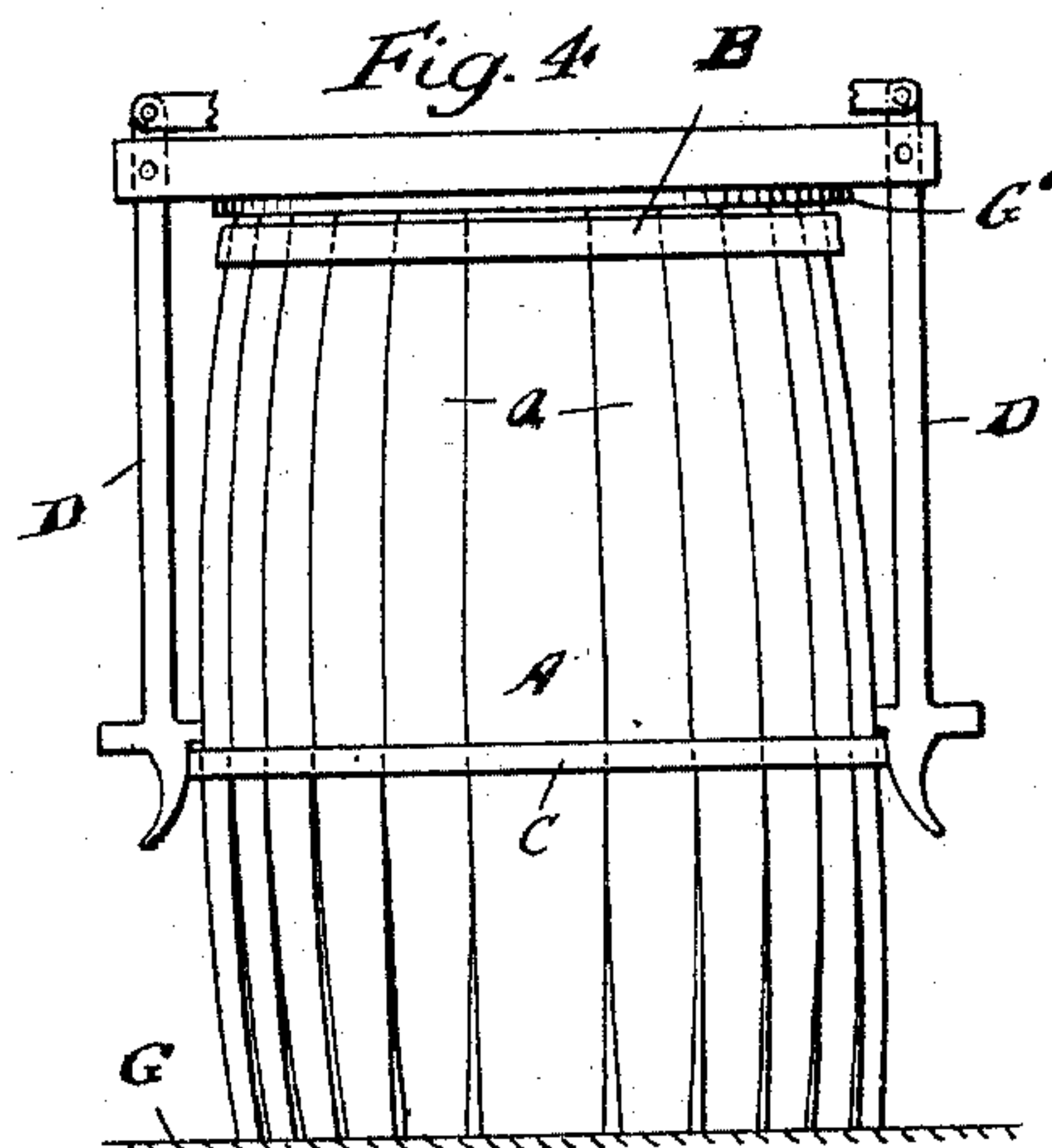


Fig. 6

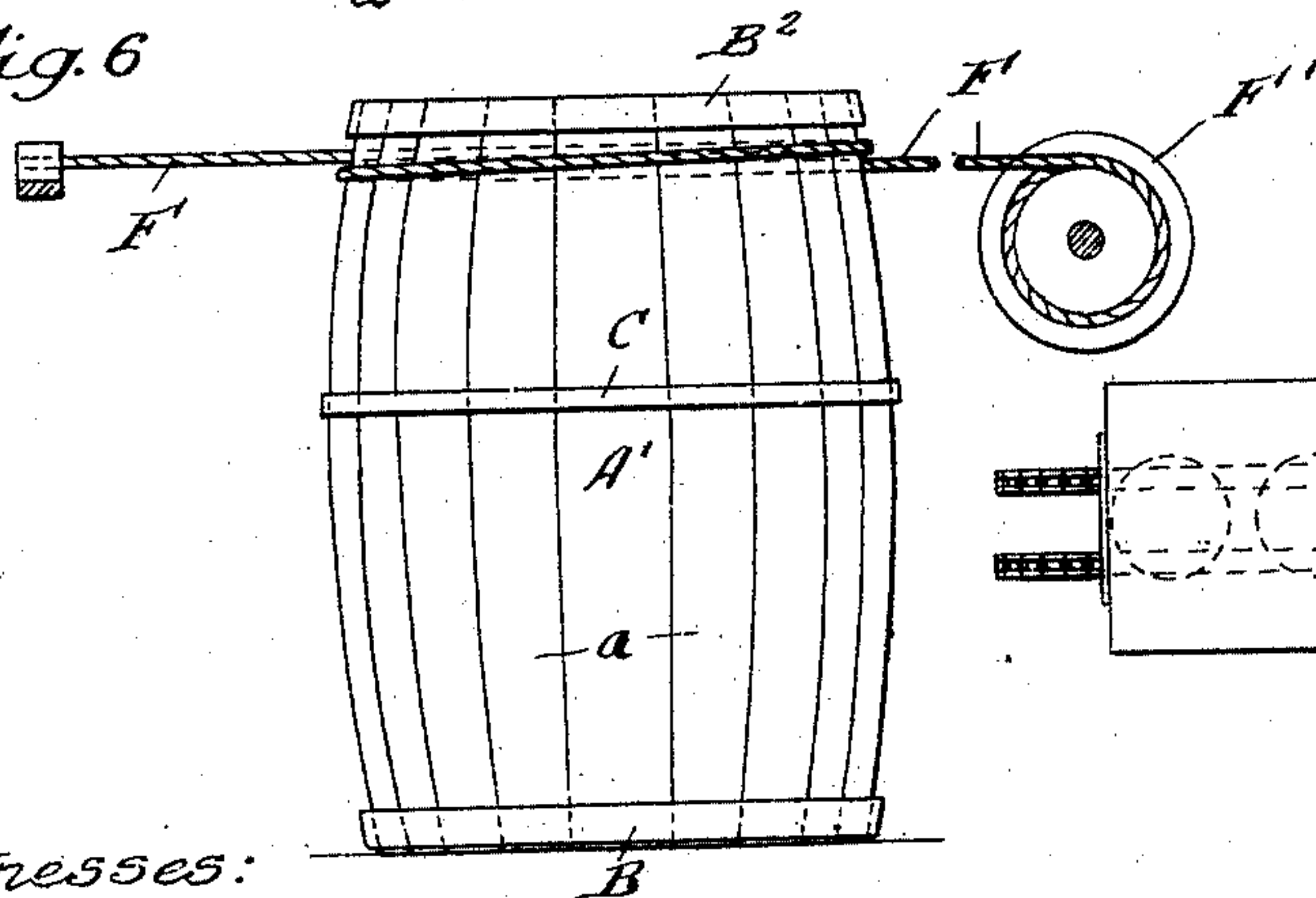
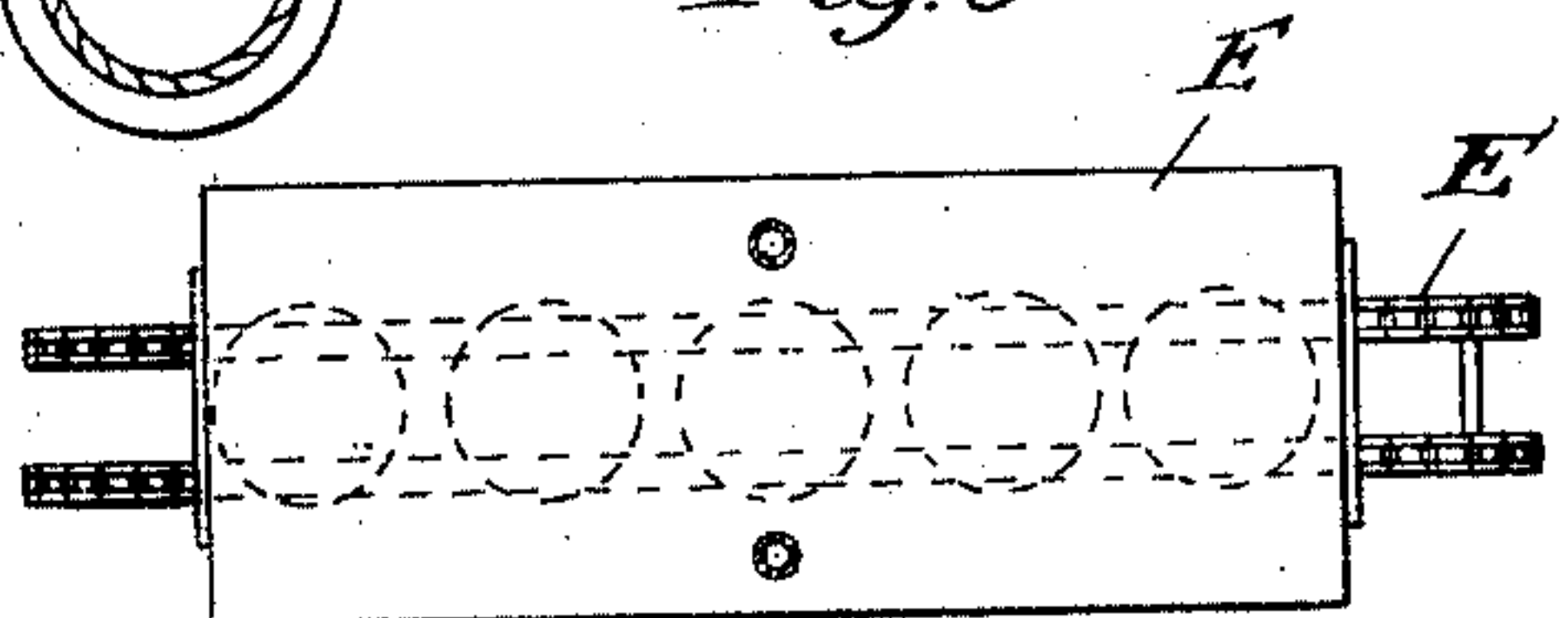


Fig. 5



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PROCESS OF MANUFACTURING BARRELS.

No. 929,715.

Specification of Letters Patent.

Patented Aug. 3, 1909.

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To all whom it may concern:

Be it known that I, OSCAR SCHUBERT, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Processes of Manufacturing Barrels, of which the following is a specification.

My invention relates to the manufacture of barrels.

In the method or process heretofore commonly employed for manufacturing barrels, the wood staves are first snugly set up in a frustum shape in a suitable form within temporary metal truss or assembling hoops which encircle the frustum at its smaller or lower end, one at the extreme end and the other about midway between such extreme end and the middle or bilge of the barrel; then the frustum is turned end for end and the temporary assembling or truss hoops slightly tightened and the staves arighted; then the barrel frustums are moistened, steamed or fried to soften the wood of the staves, ordinarily by passing them through a steam chamber; and then the larger or unhooped end of the frustum is roped and said end thus drawn in sufficiently to receive the temporary metal truss hoop. In this method or process, great loss and difficulty is experienced in practical operation from more or less of the staves breaking or cracking during the roping or drawing in operation, owing to the severe bending strain to which the staves are subjected, the loss from this source becoming greater year by year as the quality of the oak or other wood available for barrel use grows more and more inferior.

The object of my invention is to provide a method or process by which the difficulties heretofore experienced may be practically overcome and the loss from breaking staves during the roping operation practically eliminated. I have discovered and demonstrated by experiment, and also by practical use, that this object or result may be accomplished by driving or forcing a temporary metal driving hoop to, and preferably past, the center or bilge of the barrel prior to the roping or drawing in operation, so that this temporary driving hoop, thus driven to or past the bilge, will serve to materially contract the larger end of the barrel frustum, and thus materially diminish the bending of the staves subsequently necessary under the

roping or drawing in operation; the forcing of the temporary driving hoop to or past the bilge also serving to give the staves a temporary reverse or outward bend at their free ends, which serves to open the pores and cause the moisture of the steaming operation to more effectually penetrate the interior portions of the staves. The forcing of the temporary driving hoop to or past the bilge also further serves to materially diminish the breakage of the staves during the roping operation by reason of the fact that it gives a greater space or stave length between such temporary driving hoop and the temporary or assembling hoop at the hooped end of the barrel frustum, and thus gives greater flexibility to this portion of the staves between said hoops, and thereby also tends to diminish the liability of breakage during the roping operation. The temporary driving hoop being driven to or past the bilge also tends to prevent breakage at or above the bilge by reason of the reinforcing or binding action upon the staves at this bilge portion where the breakage is most likely to occur during the roping operation. It is in this discovery and the method or process employed for practically carrying it out that my invention consists.

In the accompanying drawing forming a part of this specification, to enable my invention to be more clearly understood by those skilled in the art, I have represented a barrel in successive steps of manufacture by my process.

In said drawing, Figure 1 shows the staves set up in barrel frustum shape within the assembling hoops; Fig. 2 the barrel frustum reversed and the temporary metal driving hoop applied and ready to be driven. Fig. 3 shows the temporary metal driving hoop partially driven to place and the staves outwardly curved or bent at their lower ends by the pressure on the temporary driving hoop. Fig. 4 is a similar view showing the driving hoop driven past the bilge and the pressure of the drivers on such hoop released so that the lower ends of the staves are free to spring inward. Fig. 5 illustrates the next or steaming step to which the barrel frustums are subjected after the driving hoop is driven past the bilge as shown in Fig. 4, and Fig. 6 represents the roping or drawing in step so as to receive the second temporary metal hoop at the roped end of the barrel.

In the drawing, A represents a barrel frustum composed of wood staves *a*.

B is the lower assembling hoop at the extreme lower end of the barrel frustum and B¹ the upper assembling hoop.

C is the temporary metal driving hoop, D the hoop drivers of any suitable hoop driving machine or press, E E¹ the steaming apparatus by which the steaming step or operation is performed, the same preferably consisting of a steam chamber into which exhaust steam is admitted and through which the barrel frustums, as shown in Fig. 4, are slowly conveyed by an endless chain or other conveyer E¹.

F F¹ is the roping mechanism or apparatus, the same preferably consisting of a wire rope F and a power driven winding drum F¹.

The wood staves *a* are first set up into barrel or frustum shape within the assembling hoops B B¹, as shown in Fig. 1. The barrel frustum thus formed is then inverted and the metal driving hoop C applied. The temporary driving hoop C is then by the hoop drivers D forced past the bilge or middle A¹ of the barrel frustum, as shown in Figs. 3 and 4. This is preferably done in two successive applications of pressure on the drivers D, so that the lower ends *a*¹ of the staves *a* which remain stationary and cannot slip inward on the floor or support G while the driving pressure remains with full force on the barrel frustum A may nevertheless partially draw inward at the slight interval or release or relieving of downward pressure upon the barrel between the two successive applications of driving pressure of the hoop drivers D. This avoids or prevents too sharp or severe an outward bending or curving of the staves *a* near their lower ends under the pressure of the hoop drivers D. By forcing the temporary driving hoop C past the bilge A¹ at two successive applications of pressure or with a slight release or relieving of pressure between the outward curvature *a*² of the staves near their lower ends under the driving pressure, is not sharp or acute enough to endanger or injure the staves, and is at the same time sufficient to open the pores of the wood on the inner side and thus enable the steam and moisture to more fully penetrate the interior portions of the staves during the subsequent steaming step.

The temporary driving hoop C is preferably forced about two inches past the middle or bilge line A¹ of the barrel, as illustrated in Fig. 4, although the extent to which it is driven past the bilge may be varied without departing from my invention, and indeed, I find that fairly good results may be accomplished by simply forcing the temporary driving hoop C to the bilge, although I prefer that it should be forced somewhat past the bilge or middle line of the barrel. The downward pressure of the drivers D on

the temporary driving hoop C while the free ends of the staves rest upon the flat support G has and can have little tendency to draw the free end of the staves inward until said temporary driving hoop C approaches somewhat near to the middle or bilge line of the barrel frustum, while such downward pressure at this time tends to give a reverse bend to the lower half of the staves, as shown in Fig. 3. As the further downward pressure of the drivers D on the hoop C forces said hoop near to and past the bilge line, the inward drawing or contracting action of said hoop C on the staves tends to cause the free ends of the staves to contract or be drawn inward toward each other. And this contracting or drawing toward each other of the free ends of the staves is further facilitated by the successive application of downward pressure of the drivers D on the temporary driving hoop C or the slight interval of release or relieving of downward pressure between such successive applications of pressure. After the barrel frustums are thus partially drawn in at the lower or free end of the staves by forcing the temporary metal driving hoop C to or past the bilge, as illustrated in Fig. 4, the barrel frustums are next steamed, this being preferably done by passing them through a steam chamber E on a suitable conveyer E¹. The barrel frustums thus steamed are then each passed next to the roping apparatus F F¹, and the free ends of the staves encircled by the rope F and drawn in or contracted sufficiently by operation of the winch F¹ to enable the other temporary metal hoop B² to be applied at the roped end of the barrel. As the free ends of the staves are already partially contracted or drawn in by the temporary driving hoop C, forced to or past the bilge, the roping operation will not in practice break, crack or injure the staves.

In practicing my invention, I ordinarily also level the staves in the barrel frustum by a leveling plate or ring G¹ carried by the cross head of the drivers D, and which, by engagement with the upper ends of the staves levels the frustum or the staves thereof after the temporary driving hoop C is forced home or to the position shown in Fig. 4, or simultaneously with the forcing of said hoop to such position. As the staves are held tightly under tension by the temporary driving hoop C as soon as it is forced to position, the leveling operation can be successfully performed at this time. This saves the labor and expense of subsequently leveling the barrel.

I claim:—

1. The method or process of manufacturing barrels, consisting in first assembling the staves into a barrel frustum within assembling hoops, then applying a temporary driving hoop and forcing it past the bilge by successive applications of pressure thereon, and thereby subjecting the free ends of the

staves to a reverse bend to open the pores, and thereby also partially drawing in or contracting the barrel frustum at the free end thereof, then steaming the barrel frustum and then roping or contracting the unhooped end thereof and applying a hoop thereto, substantially as specified.

2. The method or process of manufacturing barrels, consisting in first assembling the staves into a barrel frustum within assembling hoops, then applying a temporary driving hoop and forcing it to the bilge and thereby subjecting the free lower end portions of the staves to a reverse bend to open the pores and also partially drawing in and contracting the barrel frustum at the free end thereof, then steaming the barrel frustum and then roping and contracting the unhooped end thereof and applying a hoop thereto, substantially as specified.

3. The method or process of manufacturing barrels, consisting in first assembling the staves into a barrel frustum within assembling hoops, then applying a temporary driving hoop and forcing it by successive applications of pressure to the bilge, and thereby

subjecting the free lower end portions of the staves to a reverse bend to open the pores, and also partially drawing in and contracting the barrel frustum at the free end thereof, then steaming the barrel frustum and then roping and contracting the unhooped end thereof and applying a hoop thereto, substantially as specified.

4. The method or process of manufacturing barrels, consisting in first assembling the staves into a barrel frustum within assembling hoops, then applying a temporary driving hoop and forcing it beyond the bilge by successive applications of pressure thereon and thereby subjecting the free ends of the staves to a reverse bend to open the pores and thereby also partially drawing in or contracting the barrel frustum at the free end thereof, then steaming the barrel frustum and then roping or contracting the unhooped end thereof and applying a hoop thereto, substantially as specified.

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