

(No Model.)

M. G. GILLETTE.

CONSTRUCTION OF BARRELS, &c.

No. 338,948.

Patented Mar. 30, 1886.

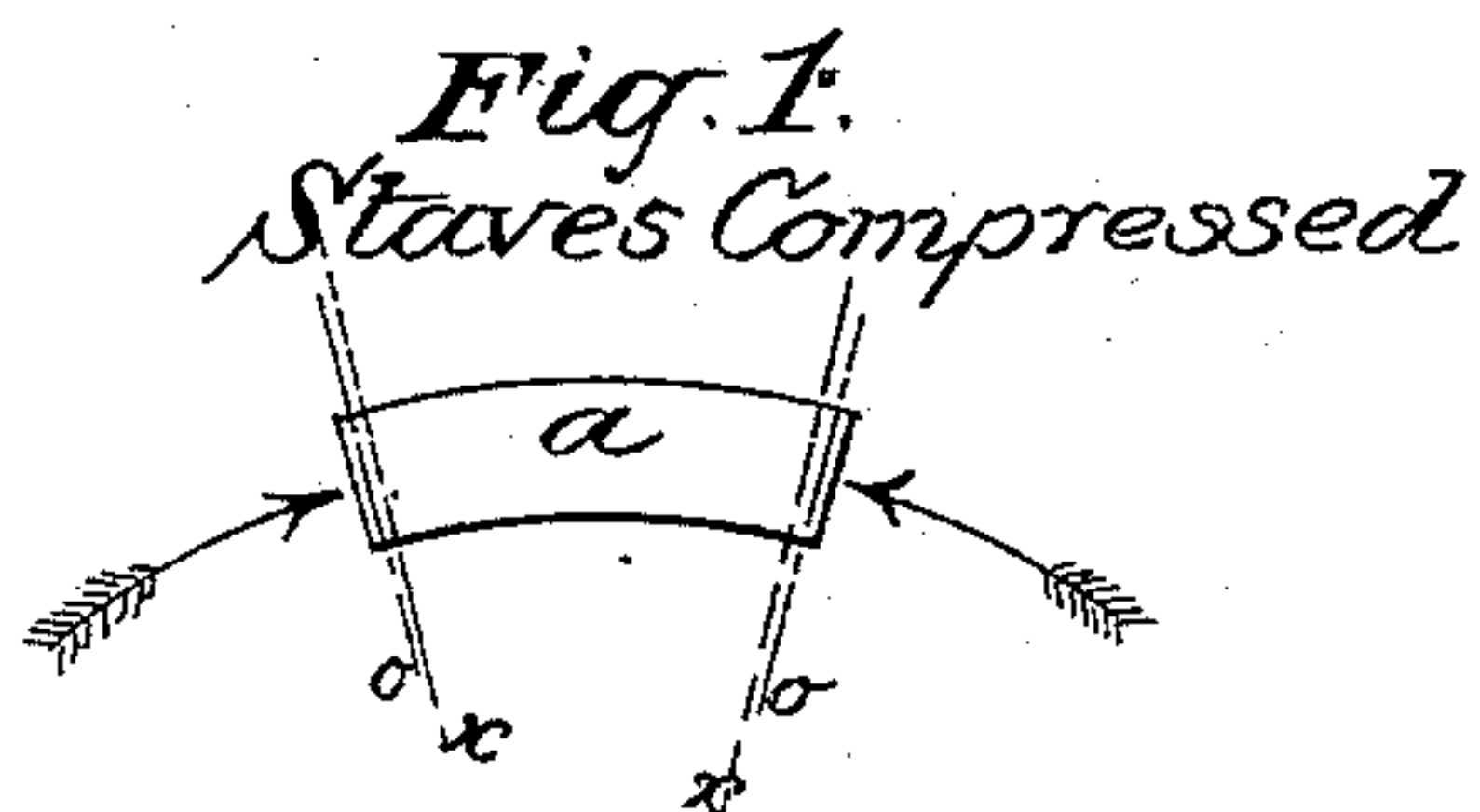


Fig. 2.

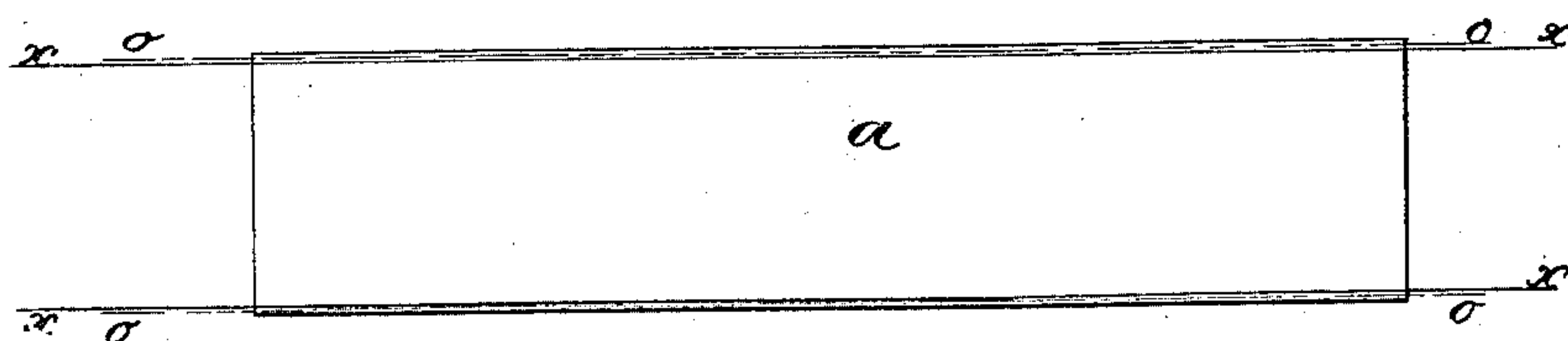


Fig. 4.

Fig. 3.
Assembled Staves Compressed

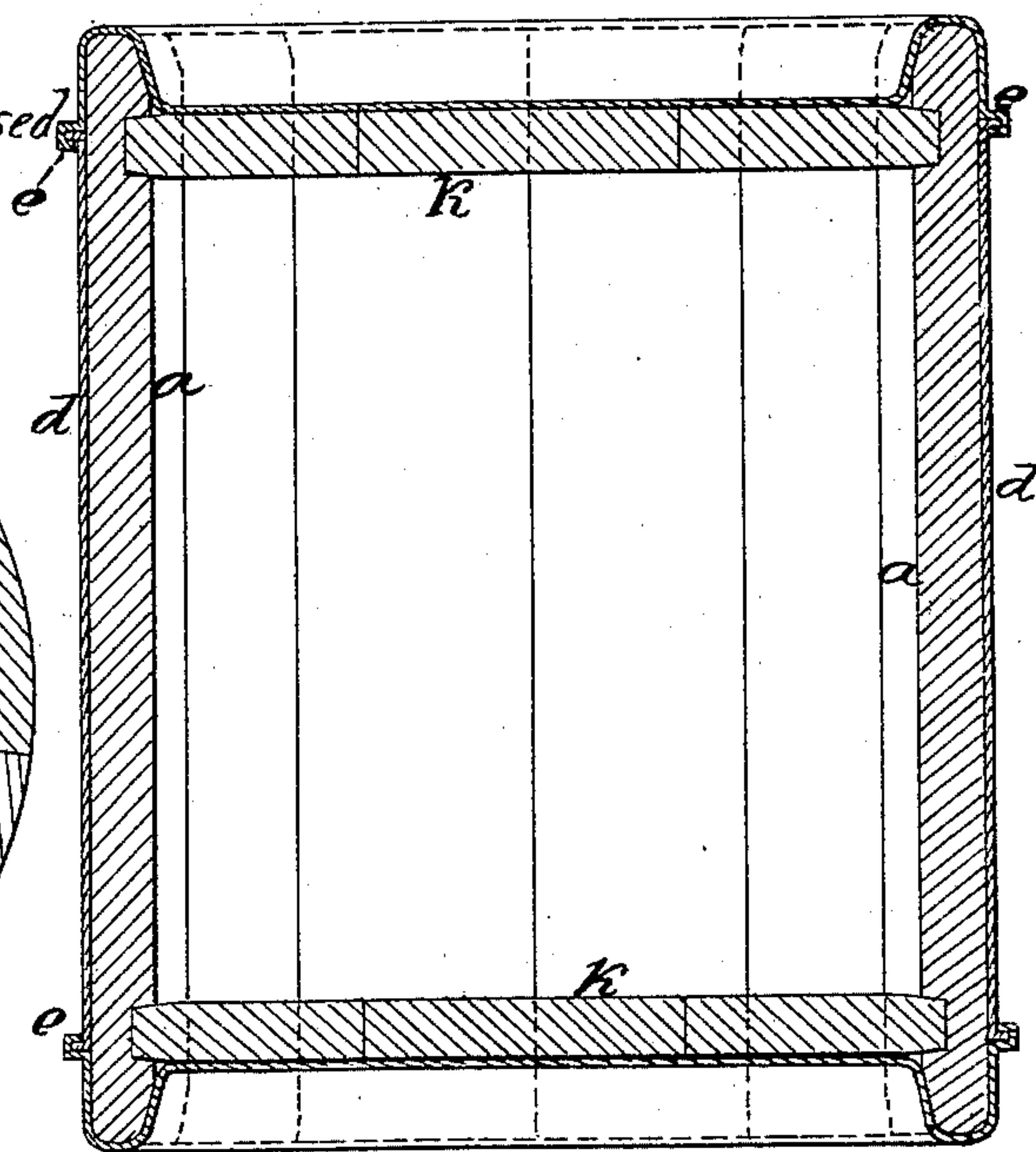
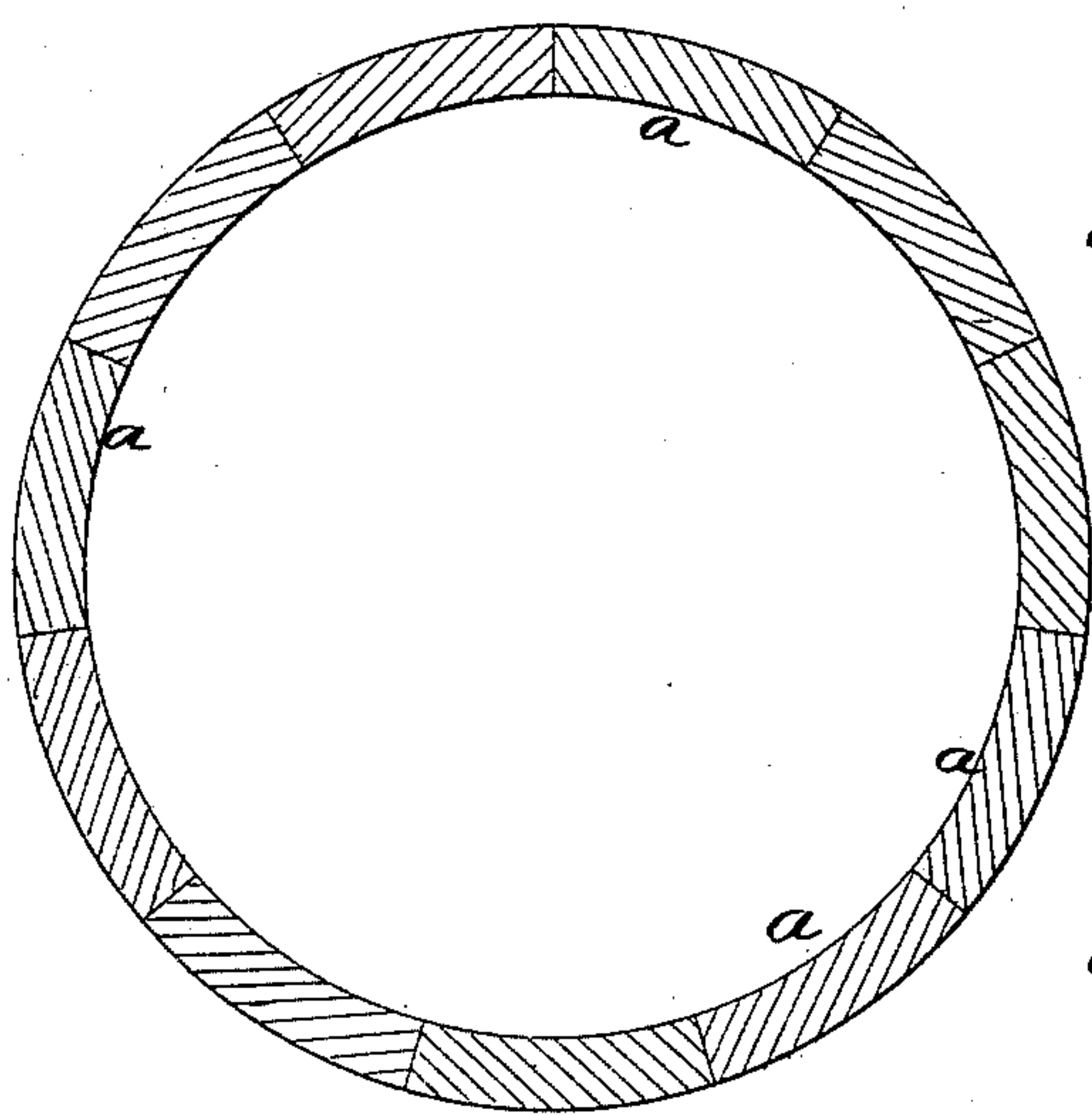


Fig. 5.

WITNESSES

Adm. Becker
Jno. C. Gavin

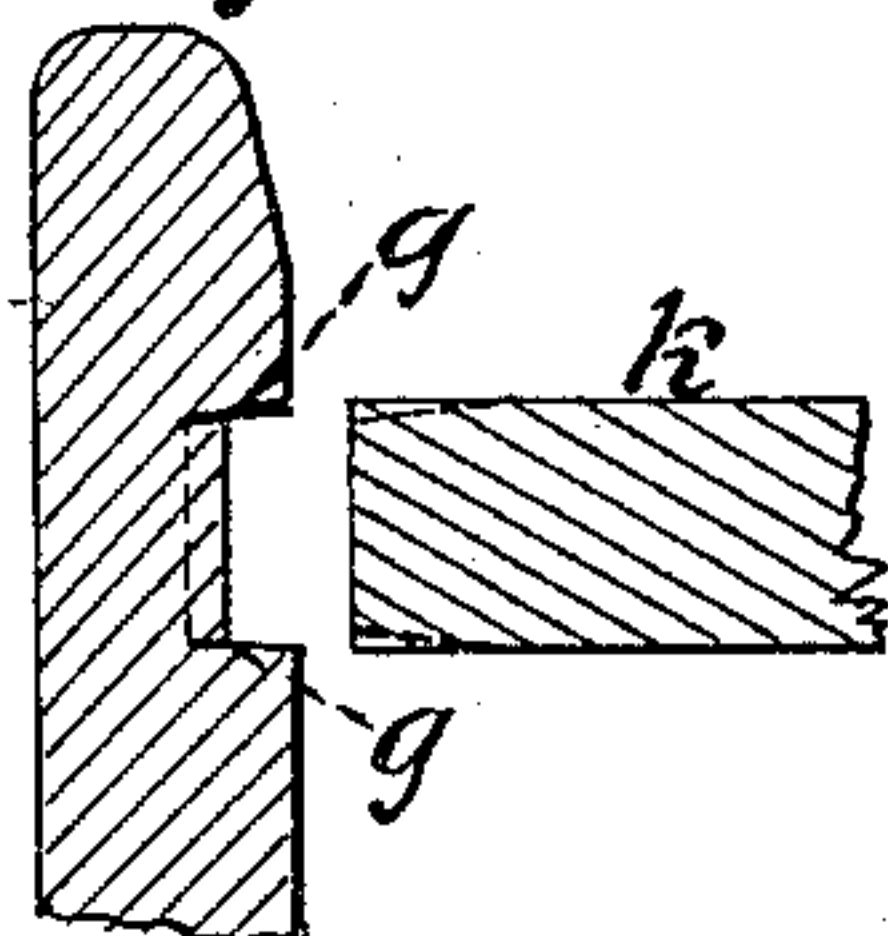
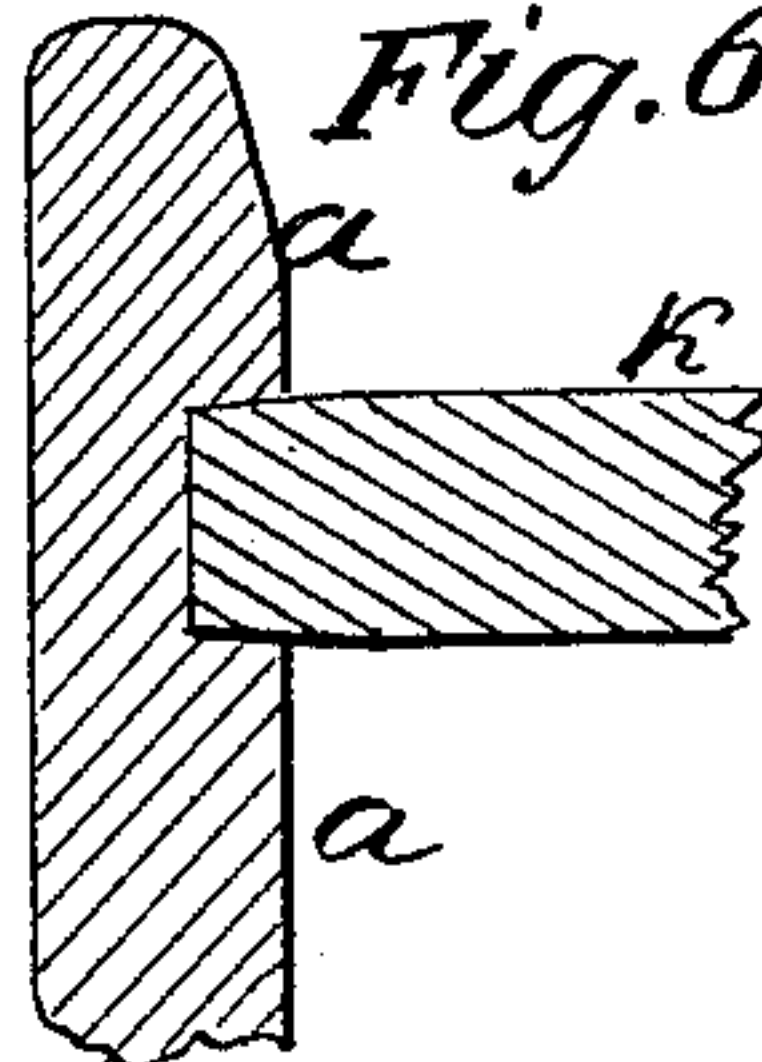


Fig. 6.

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CONSTRUCTION OF BARRELS, &c.

SPECIFICATION forming part of Letters Patent No. 338,948, dated March 30, 1886.

Application filed November 9, 1885. Serial No. 182,165. (No model.)

To all whom it may concern:

Be it known that I, MOTT G. GILLETTE, a citizen of the United States, residing at New York city, county and State of New York, have
5 invented certain new and useful Improvements in the Construction of Kegs and Barrels, of which the following is a specification.

The chief objects of my invention are, first, to produce wooden kegs or similar staved
10 packages, which shall be proof to the possibility of shrinkage, and whose constant tightness shall hence be insured; and, second, to enable kegs to be made in the straight cylindrical form, instead of the bilged form heretofore necessary, and which shall yet afford a hold for
15 the hoops.

It will be apparent that the chief reason for making kegs and barrels in the bilged form is to present a tapering circumference on
20 which the hoops may be driven or wedged tightly, so as to close the staves together, and at the same time enable the hoops to keep in place, and on which also the hoops can be farther driven down as shrinkage occurs to keep
25 the keg tight.

A keg has been heretofore made of straight staves, but these have been bound together and afterward sheathed in a completely inclosing-case of sheet-steel, as shown in the
30 patent to George H. Gillette, of November 10, 1885, which is one practical way of making a straight-staved keg; but I aim to produce a straight-staved keg whether bound by hoops or a complete case, and in either instance to
35 prevent the possibility of any shrinkage of the staves within their case or hoops, which would render the keg defective or leaky within its case.

To these ends the chief features of my invention consist in compressing the wood of
40 the staves across the grain or in the direction of the circumference of the keg, such compression being sufficient to amply exceed all possible shrinkage, but within the limit of elasticity of the wood, so that the constant
45 after tendency of the wood is to expand as soon as released and moistened, and to such an extent as to overreach any possible tendency to shrinkage, thus keeping the keg constantly tight in extremes of dryness or wetness,
50 and enabling it to retain any hoops or other

bindings by which it may be bound or incased. I also compress the croze into the staves and compress the edge of the head to fit into said groove, so as to give the wood a tendency to
55 expand at the croze-joints, and thus insure constant tightness at the head joints, as well as at the stave joints.

In the drawings annexed, Figure 1 shows a cross-section of the stave, and indicates the
60 treatment to which it is subjected. Fig. 2 shows a plan view of the stave. Fig. 3 shows a cross-section of the keg or assemblage of staves. Fig. 4 is a vertical section of the complete compressed keg entirely inclosed in a
65 case of metal, the latter being according to the Gillette patent before cited. Fig. 5 gives a fragmentary section of the stave and head at the croze, to illustrate the compression of the same. Fig. 6 represents the same parts when
70 compressed and fitted together.

In carrying out my invention the staves for the kegs or other packages may be made of any suitable wood and of any desired dimensions, and they may be cut either in a bilged
75 or a straight form, but as it is very desirable to cut the staves in a straight form, as this is much simpler and saves wood, and is rendered possible by my improvement, I therefore prefer to cut the staves straight, as shown in
80 Fig. 2, and this is one of the advantages of my invention. The staves being properly cut are kiln-dried in the usual manner, or the wood is kiln-dried before the staves are cut, so as to thoroughly season the wood and prevent sub-
85 sequent shrinkage as much as possible. It has been found, however, that no matter how fully the wood or staves may be previously kiln-dried, the kegs or barrels will shrink slightly after being some time in use, which
90 shrinkage, though not great, will be sufficient to loosen the staves and hoops, and cause leakage and weakness in the package, thus requiring frequent cooperage to keep the packages in condition. Now, in order to overcome and
95 wholly offset this tendency to shrinkage, I compress the wood of the staves across the grain or in the direction of the circumference of the stave or keg, as indicated in Figs. 1 and 2. This compression is always within the
100 limit of elasticity of the wood, so that the constant after-tendency of the wood is to rebound

from such compression, and thus expand to a degree which will entirely exceed any possible shrinkage which occurs in the life of any ordinary keg. With staves of ordinary size, I find a compression of one-quarter of an inch sufficient, as indicated on the lines *xx* in Figs. 1 and 2, and the elastic rebound or expansion from this will be one-eighth of an inch or more, as indicated by the lines *oo*, which is ample for all purposes. A keg formed of staves thus compressed may be hooped just after the staves are compressed and assembled, and the elastic expansion of the wood will retain the hoops firmly in place and insure a tight package, and as soon as moistened the wood will further expand by swelling and render the keg still firmer and tighter, whereas no subsequent shrinkages due to drying or changes in the wood will equal the tendency to expansion, and hence the keg will remain tight and the hoops will remain in place without requiring recooperage.

Instead of compressing the staves individually, the staves may first be all assembled, as in Fig. 3, and then compressed collectively. In either case any suitable method may be used for this compression—such as compressing rollers, dies, or other means which the skilled mechanic will at his own discretion adopt. After the staves are compressed either individually or in the assemblage, the assembled staves, instead of being hooped, may be forced into a completely inclosing case of sheet-steel or other metal, as shown at *d* in Fig. 4, the staves being previously crozed and the heads inserted, as will be understood. Each end of the keg will also be inclosed by a recessed sheet-metal head fitted to the heads of the keg and seamed, as at *ee*, to the cylindrical case *d*, substantially as shown in the Gillette patent before cited. The wood of the staves being thus compressed circumferentially before their insertion in the case they will therefore expand soon after their insertion, and particularly when once moistened, and thus fill the case tightly, and render the stave-joints absolutely tight within the case, and prevent any possible leakage due to subsequent shrinkage, which shrinkage can never equal the expansive tendency. In this way a keg of most superior quality is produced which can be made much lighter and cheaper, as much thinner staves can be used, and yet the keg will not be liable to leak, and the package will be very strong, and will need no recooperage, as is the case with all non-compressed hooped kegs.

In order to insure that the head-joints shall remain tight like the stave-joints, I prefer to compress or partly compress the croze-groove into the wood of the staves, and also compress the edge of the head to fit said croze, as shown in Figs. 4 and 5. I prefer to form the croze-groove first by two saw-cuts, *gg*, Fig. 4, running in the full depth and then removing the wood between the cuts to about half the depth, as shown in Fig. 4, and finally compressing the wood to the remainder of the depth, as seen in Fig. 5. The head *k*, I make of full thickness at the periphery, and preferably with a square edge, as seen in Fig. 4, which I compress on a slight bevel on each side to fit into the compressed croze-groove. The compression in these cases is also within the elastic limit of the wood, and greater than any normal degree of possible shrinkage, so that it will be obvious that the parts when put together will have a constant tendency to expand and insure a tight joint at the croze in the same manner as at the longitudinal joints of the staves. The pieces of wood forming the head *k* should also be compressed across their width in the same way as the staves, so as to insure expansion at all joints, as will be readily understood.

What I claim is—

1. A wooden keg or equivalent package having its staves compressed transversely or circumferentially of the keg.
2. A wooden keg or its equivalent formed of straight staves, producing a cylindrical package and compressed transversely or in the direction of the circumference of the keg.
3. A keg or its equivalent formed of wooden staves compressed transversely or in the circumferential direction and inclosed in an external binding metallic case.
4. A keg or its equivalent formed of wooden staves having the croze-groove compressed into the wood.
5. A keg or its equivalent having the marginal edge of its head compressed to fit into the croze, with a subsequent tendency to expansion therein.
6. A keg or its equivalent having its head pieces compressed across their width previous to being inserted in the croze.

MOTT G. GILLETTE.

Witnesses:

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JOHN BECKER.