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J. ARKELL, DEC'D.

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LINING FOR BARRELS OR OTHER LIKE CONTAINERS.

APPLICATION FILED DEC. 21, 1901.

NO MODEL.

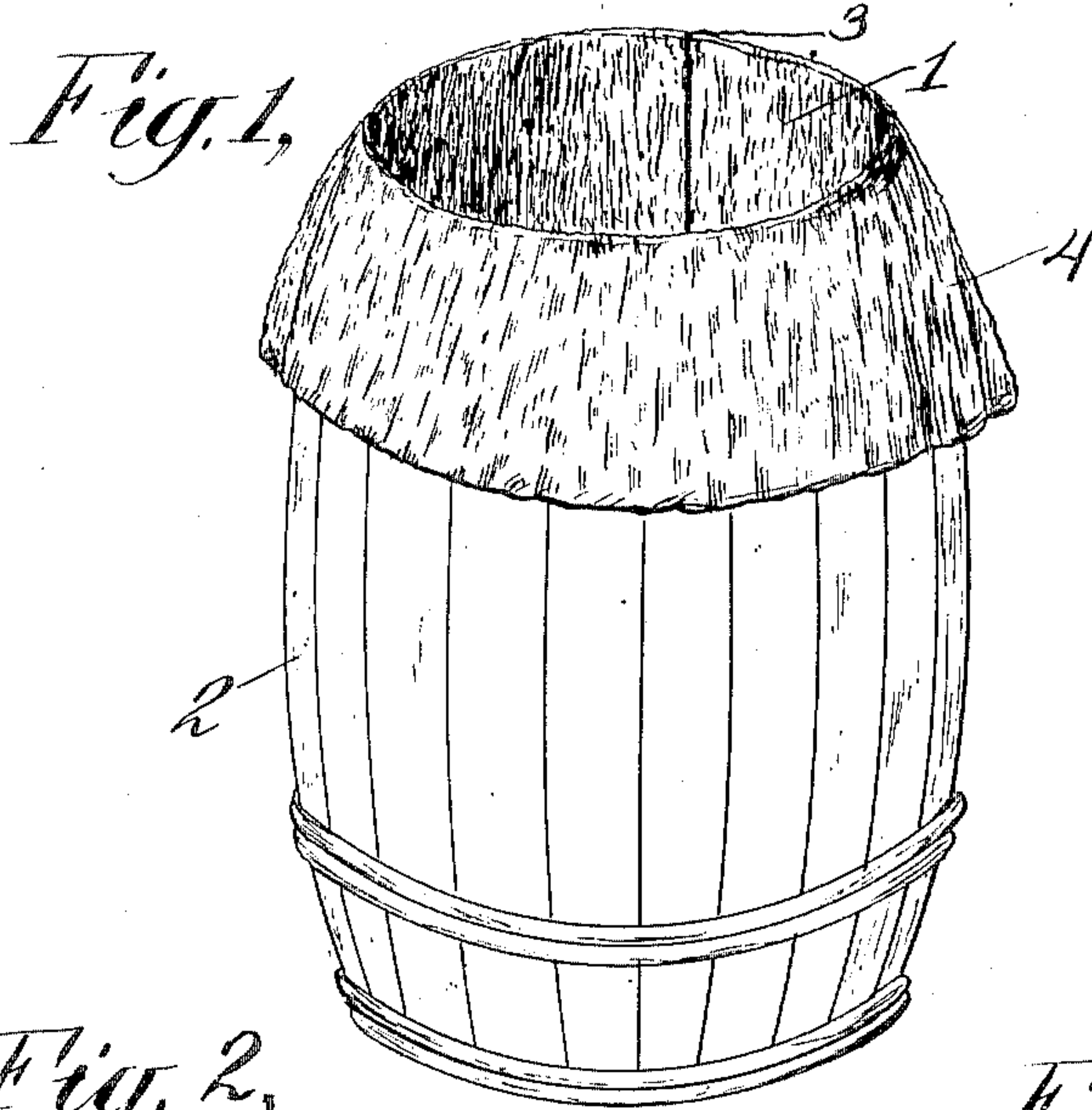


Fig. 2,

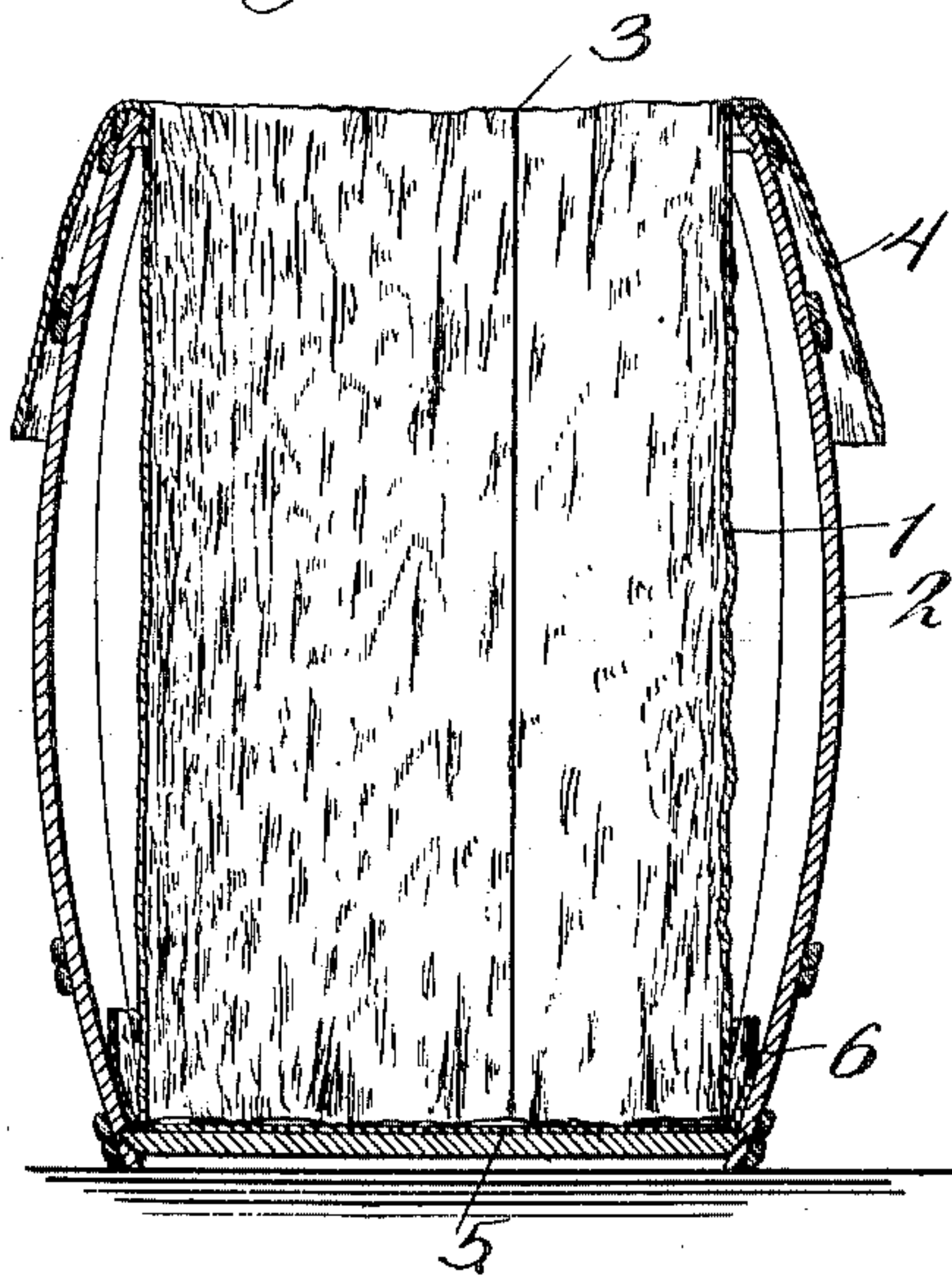
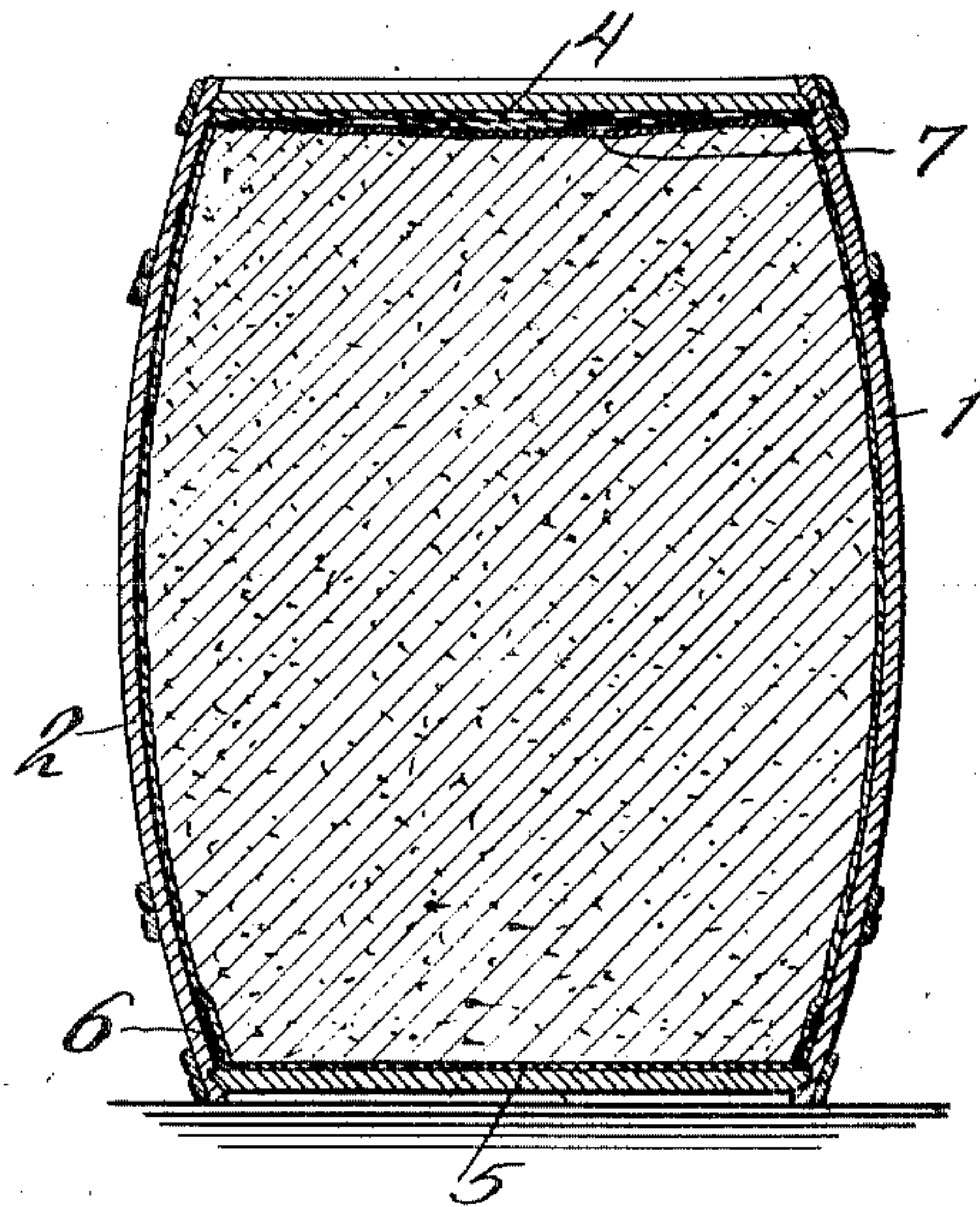


Fig. 3,



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LINING FOR BARRELS OR OTHER LIKE CONTAINERS.

SPECIFICATION forming part of Letters Patent No. 764,545, dated July 12, 1904.

Application filed December 21, 1901. Serial No. 86,729. (No model.)

To all whom it may concern:

Be it known that I, JAMES ARKELL, a citizen of the United States, and a resident of Canajoharie, in the county of Montgomery and State of New York, have invented certain new and useful Improvements in Linings for Barrels or other Like Containers, of which the following is a specification.

This invention relates to linings for barrels, kegs, casks, boxes, and other like containers.

The invention seeks to provide an efficient durable flexible paper lining for the purpose stated, one capable of meeting the conditions of actual practice, and which may be manufactured at a reasonable cost. Such a lining must be capable of being readily and conveniently inserted in proper position within the barrel or other container, and must be capable of stretching under tensile strains, so as to conform at once to the interior of the container and so as to yield to the expansions and contractions of the container. It should also be capable of being conveniently and economically baled or packed for shipment to the users. Moreover, the linings must be of such character that such bales or packages will not injuriously diminish the stretchability of the paper in actual use.

The invention also seeks to so construct and arrange the lining that its upper end may project above the upper end of the barrel or other like container, so as to be capable of being turned with facility and despatch outward and down around the upper end of the barrel or other container to support the lining in position during the operation of filling.

In the accompanying drawings, forming part of this specification, and in which like numerals designate corresponding parts of the several figures, I have illustrated my invention as applied to the purpose of lining a barrel.

Figure 1 is a perspective view of a barrel with the lining in position and supported therein by the downturned upper end of the lining. Fig. 2 is a central vertical section of Fig. 1, and Fig. 3 is a central vertical section of a closed barrel provided with my lining and filled with some comminuted material.

In carrying out my invention I take durable flexible crinkled paper with which the sides of a barrel or other like container are to be lined. This crinkled paper is characterized by a multiplicity or tight crinkles or creases formed in the paper when it is wet and which render the paper capable of stretching. The crinkles in the paper are of such nature that they will not be injuriously pulled out or pressed out by compression between the sides of the barrel and the contained material. In other words, direct pressure against the surface of the crinkled paper has no substantial effect in pressing out the crinkles. These crinkles, however, are capable of yielding under tensile strain, thus enabling the paper to stretch and conform itself to the inequalities upon the interior of the barrel or container and also enabling the paper to stretch under strains incident to the shifting of the contained material and incident to the yielding of the barrel or other container occasioned by the rough handling to which it may be subjected. Moreover, these crinkles enable the paper to stretch at precisely the points or regions where the strain is concentrated. It will thus be seen that the crinkled paper, having the capability of maintaining its crinkles under compression and the capability of stretching under tensile strain, will not tear or break when actively fulfilling its purpose, but, on the other hand, will be always ready to stretch wherever the strains occur and will thus be able to maintain its integrity.

In the best form of the invention the lining is made of a single sheet of paper with its meeting edges permanently joined together by sewing, gluing, or other suitable means, as shown at 3. It would be no departure from the invention to employ a crinkled lining whose meeting edges are not permanently joined to each other so long as the lining is open at both ends and is not permanently closed up at the bottom like a bag. When the lining is inserted within the barrel or other container, it may be made to support itself in position with convenience and despatch by turning outward and down the upper projecting end 4 of the lining. The crinkles in the paper

enable the paper at the angle of this down-turned portion 4 to stretch, and thereby readily conform itself to a circular or other shape possessed by the barrel or other container. I
 5 generally line the bottom of the barrel with a sheet of paper 5, which may be crinkled like the tube 1. This bottom 5 has an upturned margin 6, within which the lower end of the tubular lining 1 is inserted, so that the up-
 10 turned margin 6 may embrace the lower end of the tubular lining 1 when the barrel is filled. After the barrel is filled the down-turned portion 4 is turned inward over the contents, as shown in Fig. 3. In some cases
 15 a top sheet of paper 7 is laid over the contents beneath the portion 4 after the same has been turned in.

It will be seen that my flexible paper lining may be tightly baled in convenient and eco-
 20 nomical form for shipment without injuring the paper or detracting from its efficiency in active use. The pressure upon the crinkles when the paper is thus packed or baled in no way affects the crinkles.

I am aware that prior to my invention many efforts have been made to provide a practical lining for barrels and such like containers. In some cases it has been proposed to use a tubular lining made of flexible paper having
 30 corrugations or flutes therein; but such linings have not been a success, because the corrugations or flutes are pressed out flat almost immediately by the pressure of the contained material against the sides of the barrel, so
 35 that in active use such corrugated or fluted paper becomes nothing more than plain smooth paper and has no quality of stretching under tensile strain, such as is necessary in a practical lining and such as is possessed by
 40 my lining above described. Moreover, if such linings of fluted or corrugated paper were baled in packages for convenient shipment the pressure upon the flutes or corrugations would press many of them out flat, so that many of
 45 these linings would be useless when unpacked. Again, such linings could not be turned down around the mouth of a barrel or other container for convenience in filling without tearing the linings.

The crinkles in my paper linings are quite small and tight and are formed in the paper when it is wet. These crinkles enable the paper to stretch fully one-third of its length.

One of the advantages of my paper lining
 55 is that the linings may be cut so as to have a uniform diameter from top to bottom and corresponding to the mouth of the barrel and yet when inserted in a barrel may stretch so as to lie evenly against the varying diam-
 60 eter of the barrel without having any superfluous paper around the mouth of the barrel. Again, in emptying the barrel when containing comminuted materials—such as sugar, salt, flour, &c.—there is no danger of torn pieces
 65 of the lining coming out mixed up with the

contents. The lining remains in one piece and closely hugs the interior of the barrel, fitting over and within all its inequalities, and so remains in place when the contents are poured out. Moreover, my paper lining by
 70 reason of its great efficiency makes it feasible to use barrels of poorer quality than heretofore used. It is not so important when my lining is used to use such great care to fit these staves closely together. Whatever cracks
 75 may be present in the barrel will be reliably covered by the lining.

My lining may be efficiently used for lining boxes, which, although having angular corners, may be satisfactorily lined by this
 80 stretchable lining.

In referring to the lining herein set out as being "tubular" or as "comprising a tube open at both ends" it is of course to be understood that the lining is so designated with
 85 reference to its form when inserted in the container and not with reference to its necessary previous form.

What I claim, and desire to secure by Letters Patent, is—

1. A stretchable flexible lining for barrels and other like containers comprising a tube open at both ends and made of durable paper having a multiplicity of tight crinkles therein whereby the paper is rendered stretchable,
 95 and capable of conforming to the interior of the barrel or other container.

2. A stretchable flexible lining for barrels and other like containers comprising a tube open at both ends and made of durable paper
 100 having a multiplicity of tight crinkles therein whereby the paper is rendered stretchable and capable of conforming to the interior of the barrel or other container, said tube being longer than the barrel or other container in-
 105 tended to receive it so that the upper projecting end of the tube may be turned outward down over the upper end of the barrel or other container to support the tube in place during the operation of filling and may be thereafter
 110 turned inward over the contents.

3. A stretchable flexible lining for barrels and other like containers comprising a tube open at both ends and made of durable paper having a multiplicity of tight crinkles therein
 115 whereby the paper is rendered stretchable and capable of conforming to the interior of the barrel or other container, and a separate bottom for the tube made of a single sheet of paper and having an upturned margin to em-
 120 brace the lower end of the tube.

4. A stretchable flexible lining for barrels and other like containers comprising a tube open at both ends and made of crinkled dura-
 125 ble paper having a multiplicity of tight crinkles therein whereby the paper is rendered stretchable and capable of conforming to the interior of the barrel or other container, and a separate bottom for the tube made of a single sheet of crinkled paper and having an up-
 130

turned margin to embrace the lower end of the tube.

5 5. A stretchable flexible lining for barrels and other like containers comprising a tube open at both ends and made of durable paper having a multiplicity of tight crinkles therein whereby the paper is rendered stretchable and capable of conforming to the interior of the barrel or other container, said tube being 10 longer than the barrel or other container intended to receive it so that the upper projecting end of the tube may be turned outward down over the upper end of the barrel or other container to support the tube in place 15 during the operation of filling and may be thereafter turned inward over the contents, and a separate bottom for the tube made of a single sheet of paper and having an upturned margin to embrace the lower end of the tube.

20 6. A stretchable flexible lining for barrels and other like containers comprising a tube open at both ends and made of a single sheet of durable paper having its meeting edges permanently secured together and having a 25 multiplicity of tight crinkles therein whereby the paper is rendered stretchable and capable of conforming to the interior of the barrel or other container.

30 7. A stretchable flexible lining for barrels and other like containers comprising a tube open at both ends and made of a single sheet of durable paper having its meeting edges permanently secured together and having a multiplicity of tight crinkles therein where- 35 by the paper is rendered stretchable and capable of conforming to the interior of the barrel or other container, said tube being longer than the barrel or other container intended to receive it so that the upper pro- 40 jecting end of the tube may be turned outward down over the upper end of the barrel or other container to support the tube in place during the operation of filling and may be thereafter turned inward over the contents.

45 8. A stretchable flexible lining for barrels and other like containers comprising a tube open at both ends and made of a single sheet of paper having its meeting edges permanently secured together and having a multiplicity of 50 tight crinkles therein whereby the paper is rendered stretchable and capable of conforming to the interior of the barrel or other container, and a separate bottom for the tube made of a single sheet of paper and having an

upturned margin to embrace the lower end of 55 the tube.

9. A stretchable flexible lining for barrels and other like containers comprising a tube open at both ends and made of a single sheet of durable paper having its meeting edges per- 60 manently secured together and having a multiplicity of tight crinkles therein whereby the paper is rendered stretchable and capable of conforming to the interior of the barrel or other container, and a separate bottom for the 65 tube made of a single sheet of paper and having an upturned margin to embrace the lower end of the tube, said tube being longer than the barrel or other container intended to re- 70 ceive it so that the upper projecting end of the tube may be turned outward down over the upper end of the barrel or other container to support the tube in place during the operation of filling and may be thereafter turned inward over the contents. 75

10. The combination with a barrel or other like container of a flexible stretchable tubular lining open at both ends and made of durable paper having a multiplicity of tight crinkles 80 therein whereby the paper is rendered stretchable and capable of conforming to the interior of the barrel or other container, said tubular lining having its upper end turned outward and down over the upper end of the barrel or other container to form a support for the lining 85 during the operation of filling.

11. The combination with a barrel or other like container of a flexible stretchable tubular lining open at both ends and made of durable paper having a multiplicity of tight crinkles 90 therein whereby the paper is rendered stretchable and capable of conforming to the interior of the barrel or other container, said tubular lining having its upper end turned outward and down over the upper end of the barrel or 95 other container to form a support for the lining during the operation of filling; and a separate bottom piece made in a single sheet and having an upturned margin to embrace the lower end of the tubular lining. 100

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES ARKELL.

Witnesses:

HELEN E. HART,
MAGDALEN BLOSS.