

No. 615,716.

Patented Dec. 13, 1898.

W. M. KINNARD.
PAPER VESSEL.

(Application filed May 24, 1897.)

(No Model.)

5 Sheets—Sheet 1.

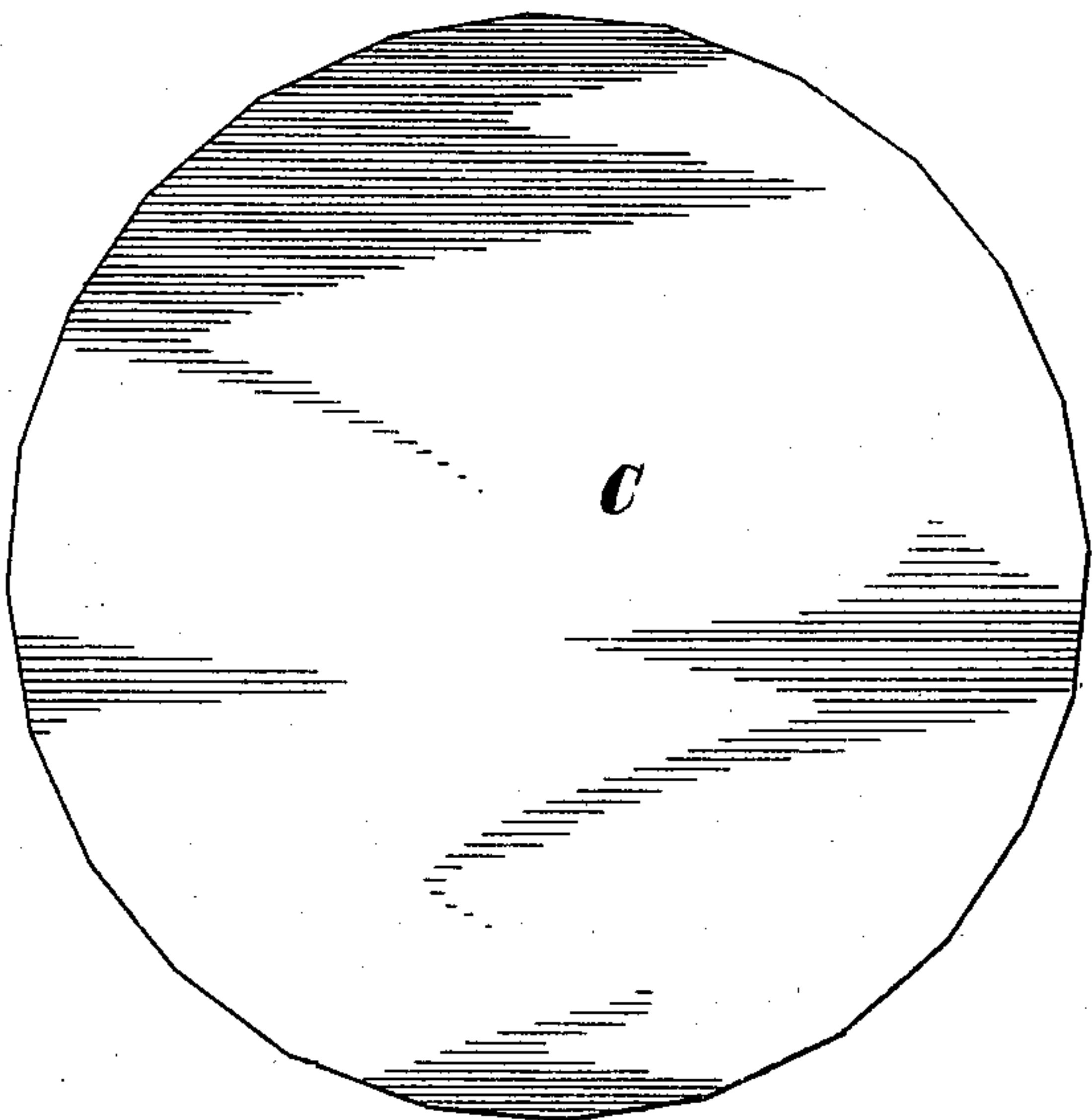


Fig. 1

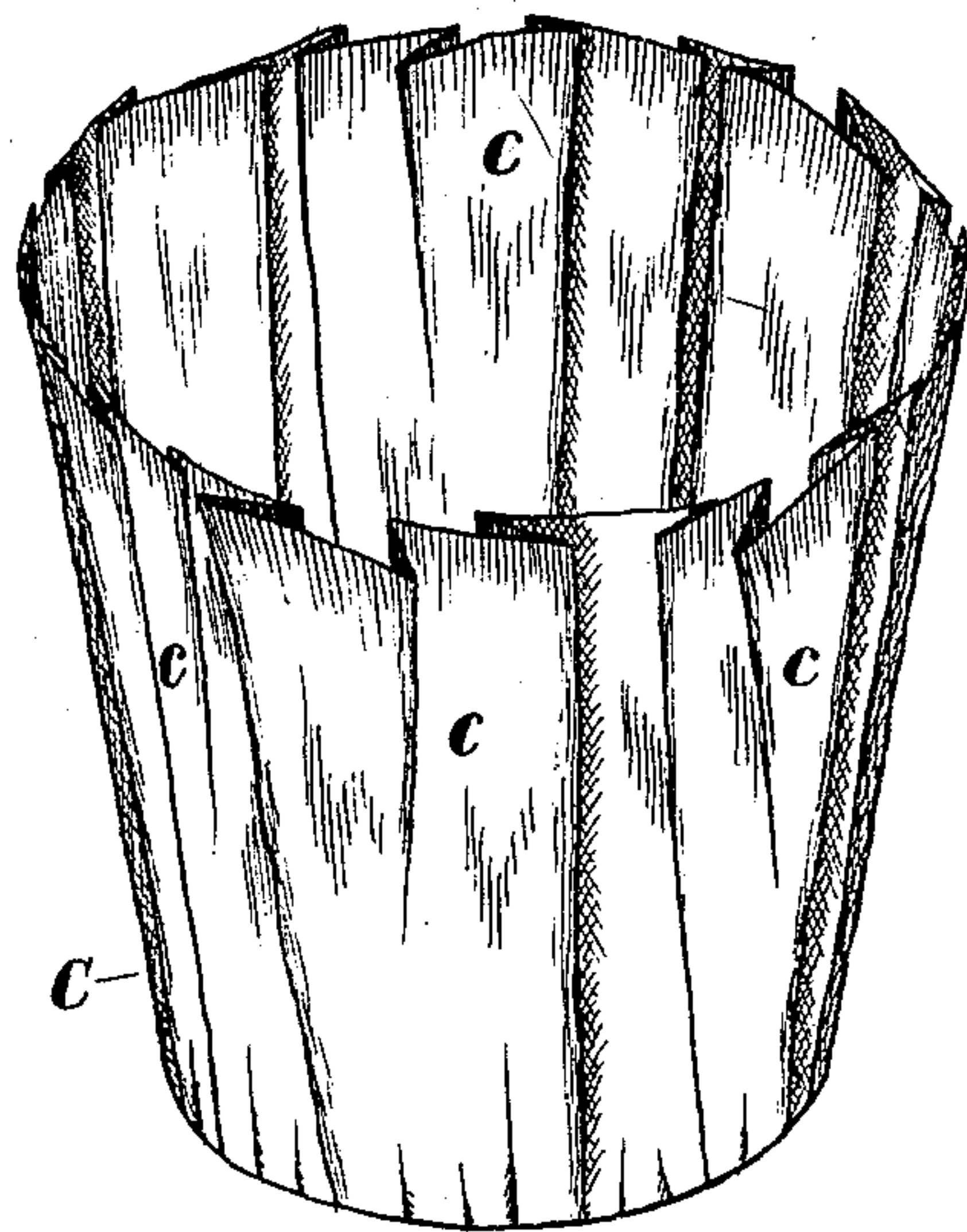


Fig. 2

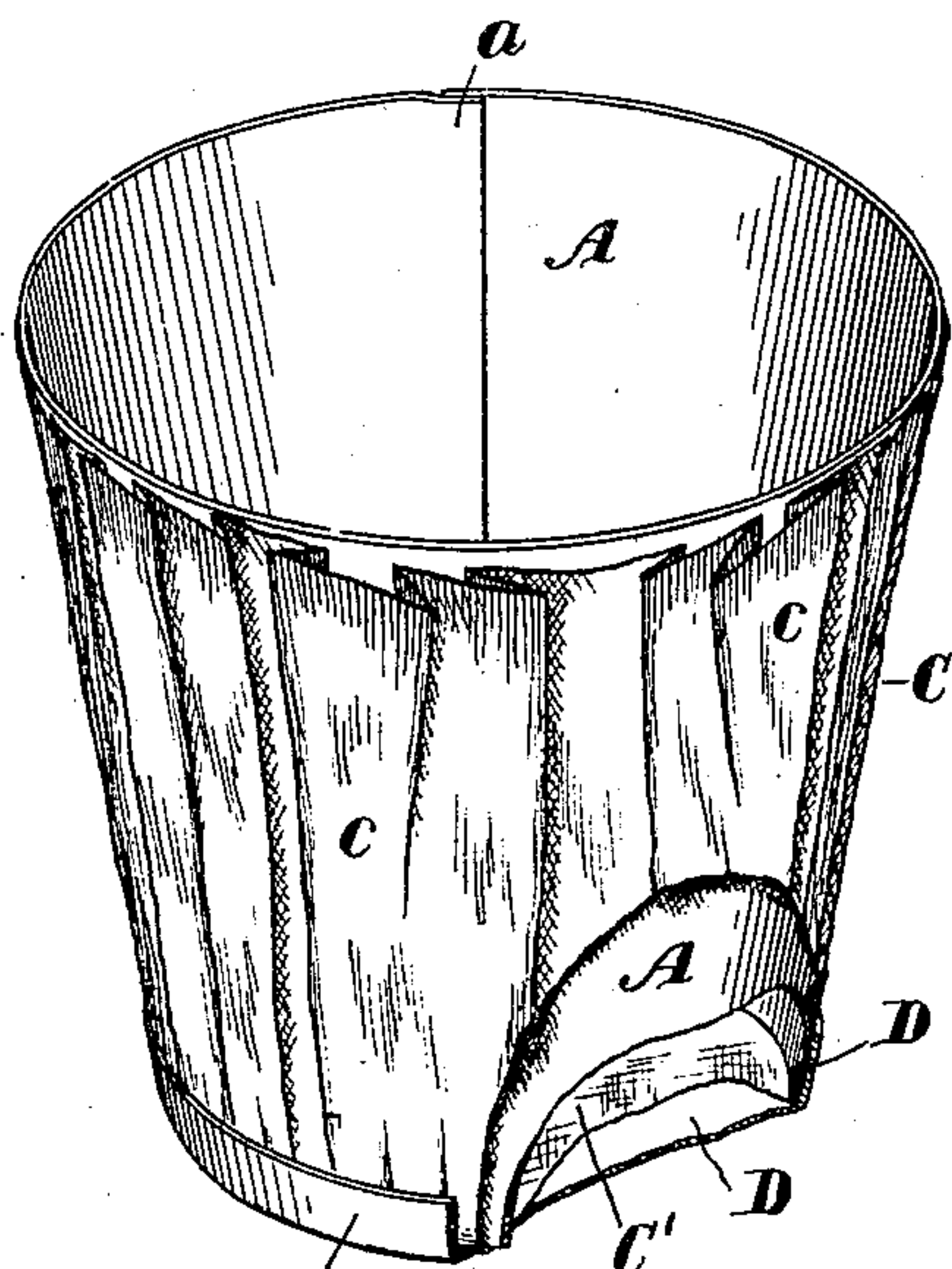


Fig. 3

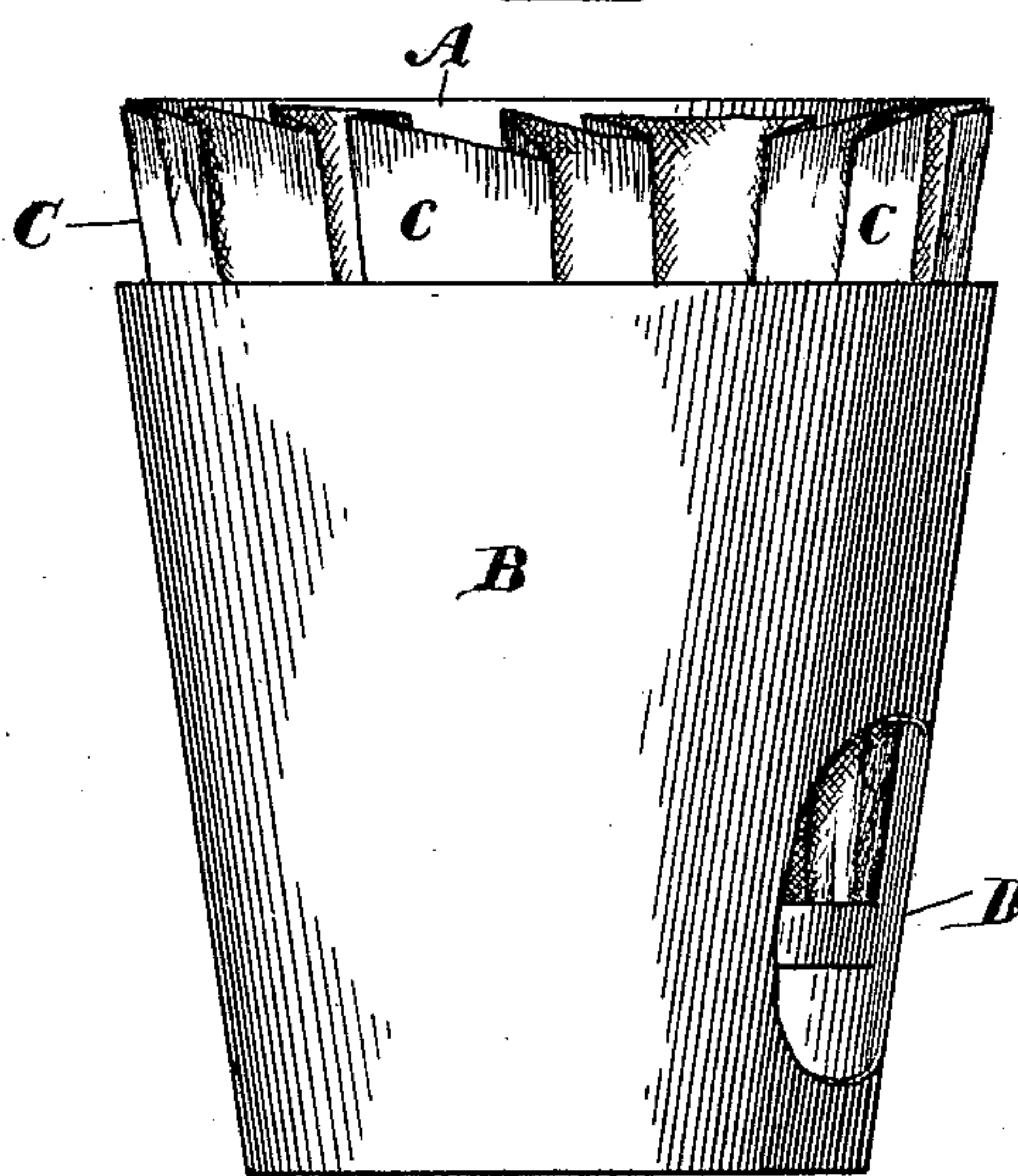


Fig. 4

WITNESSES

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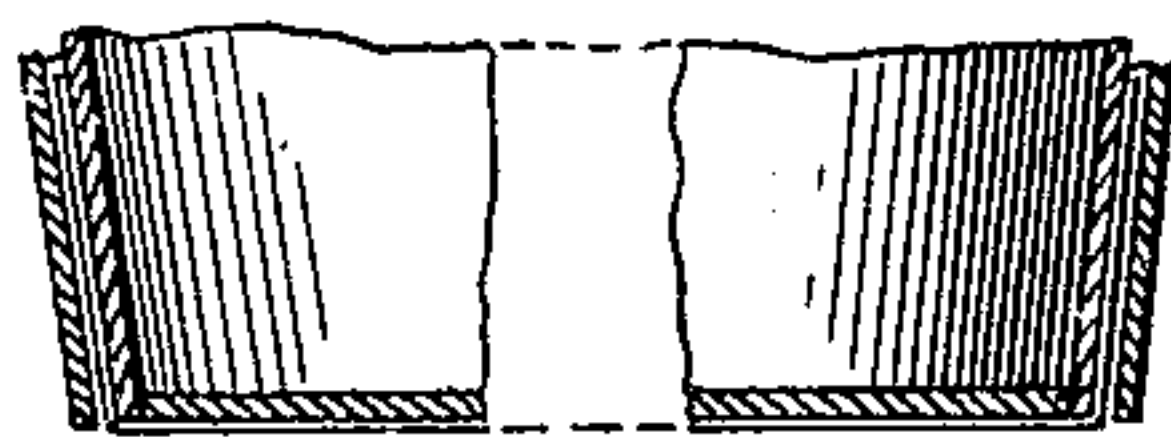


Fig. 1B

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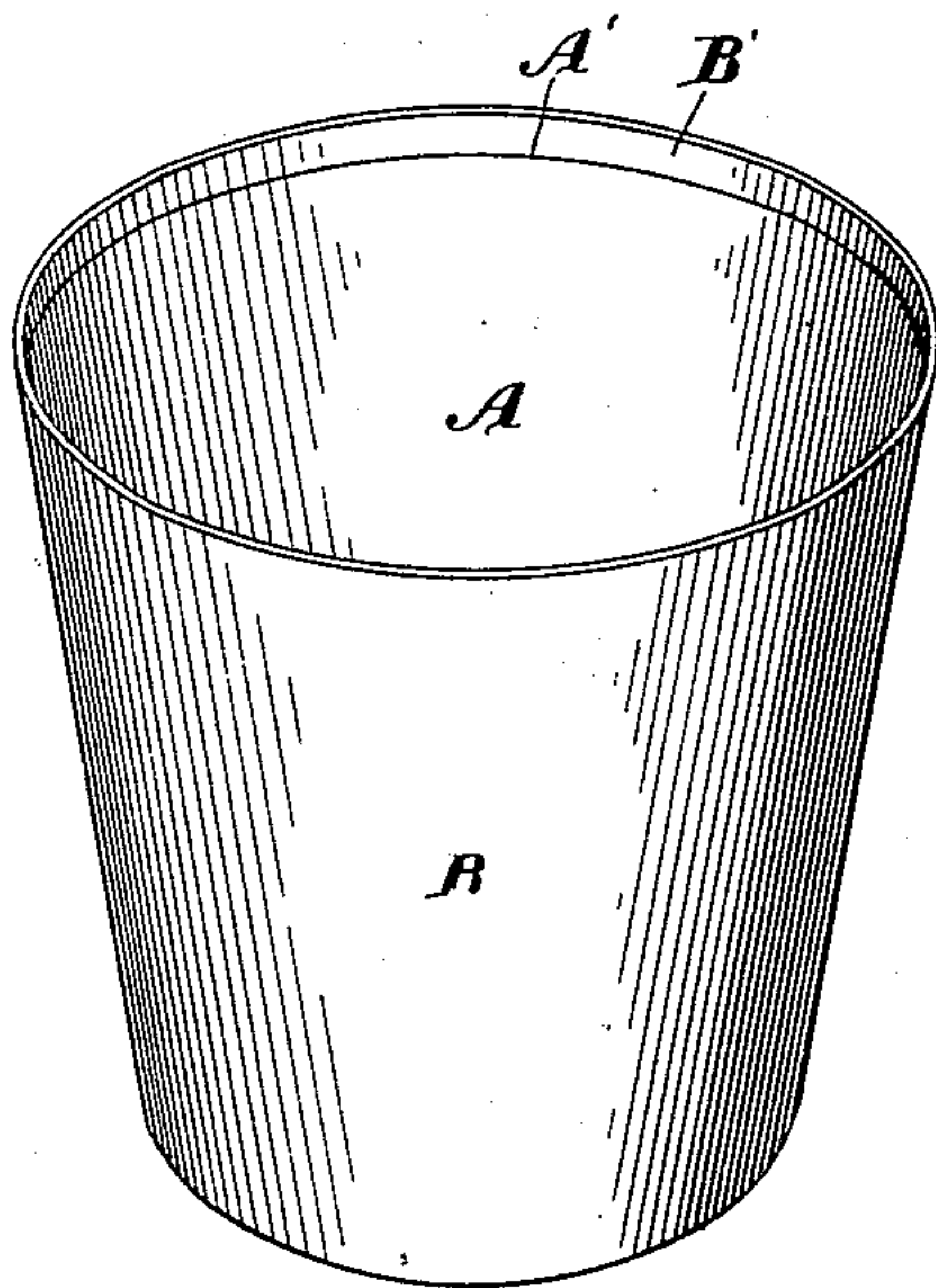


Fig. 5

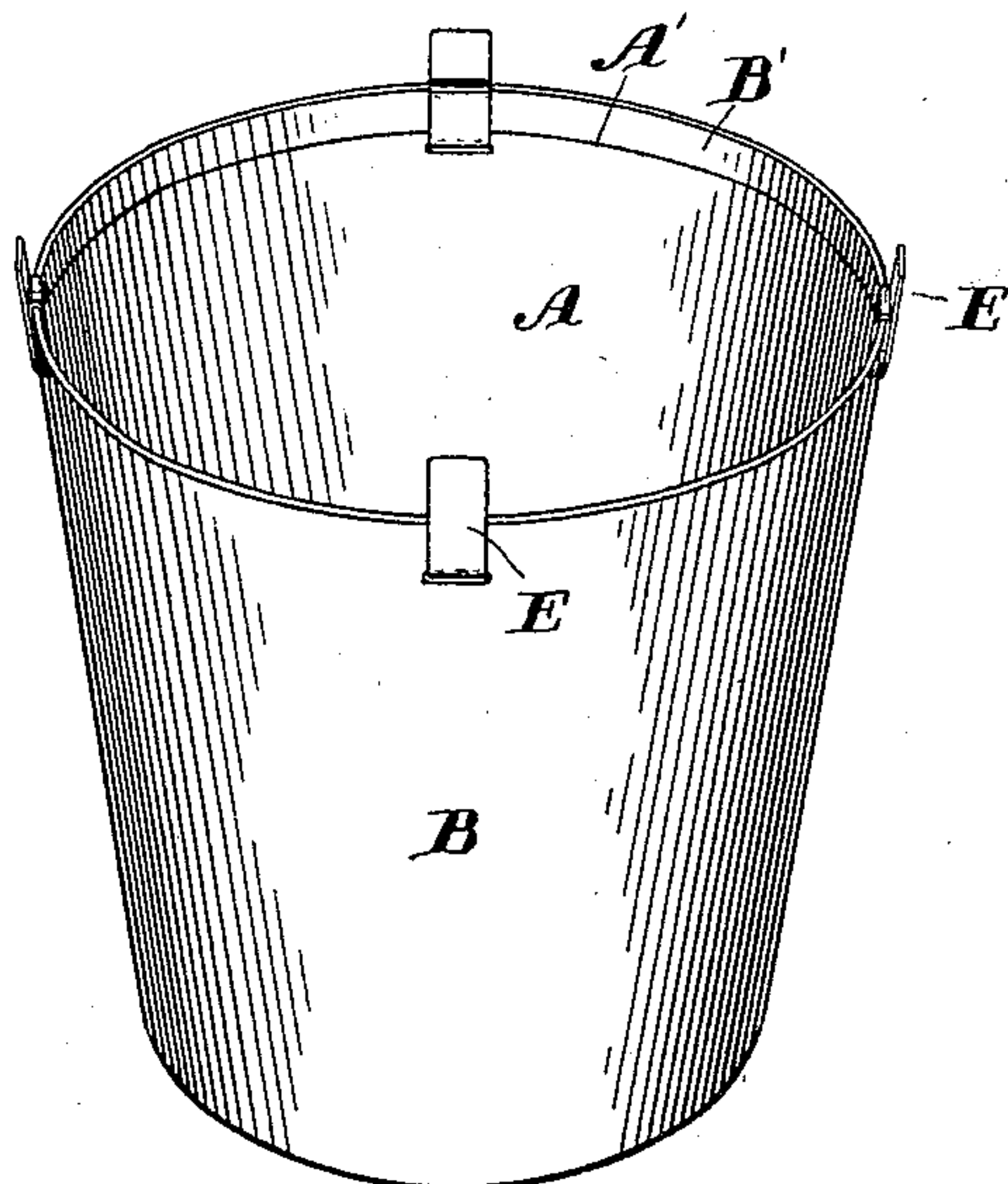


Fig. 6

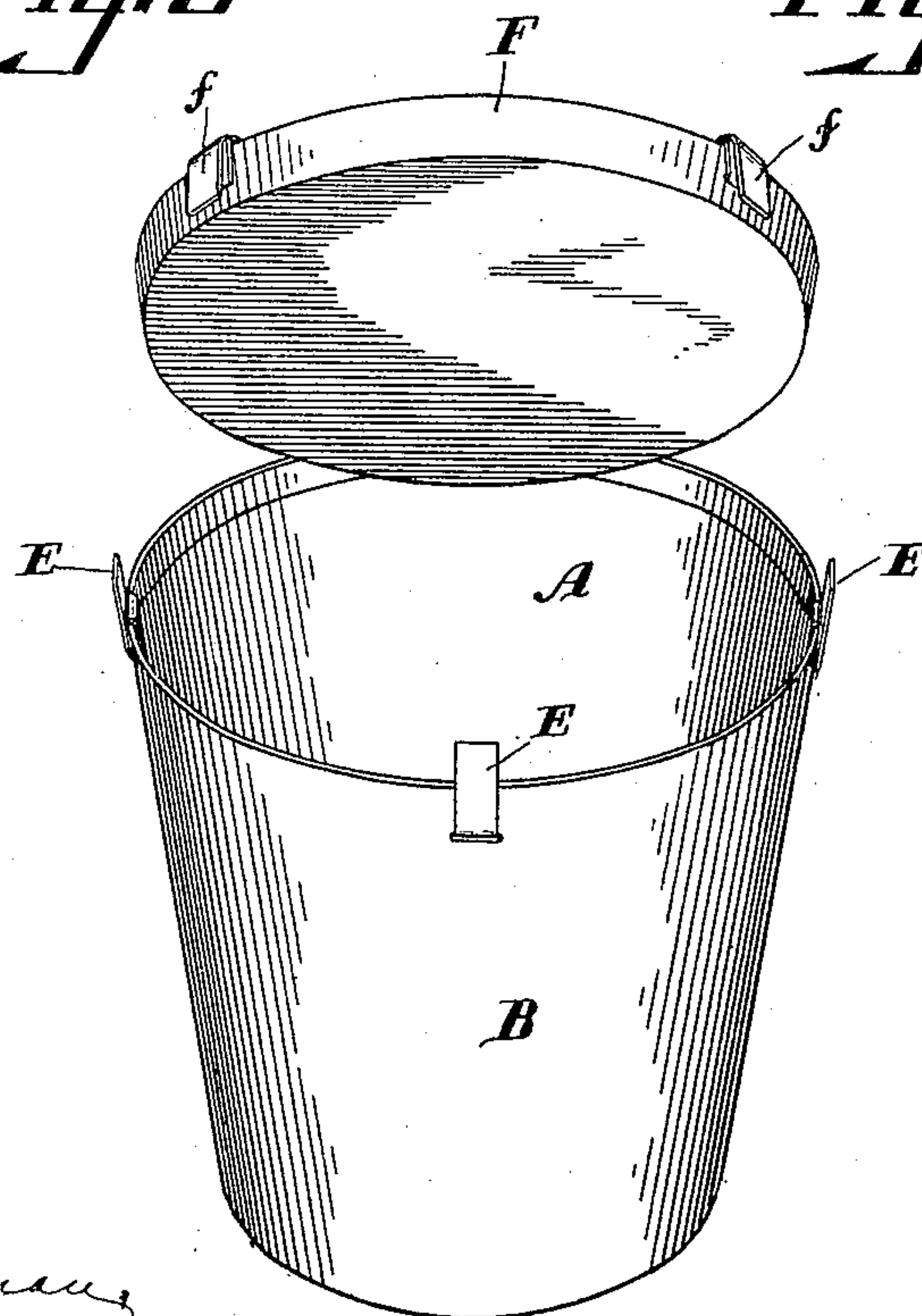


Fig. 7

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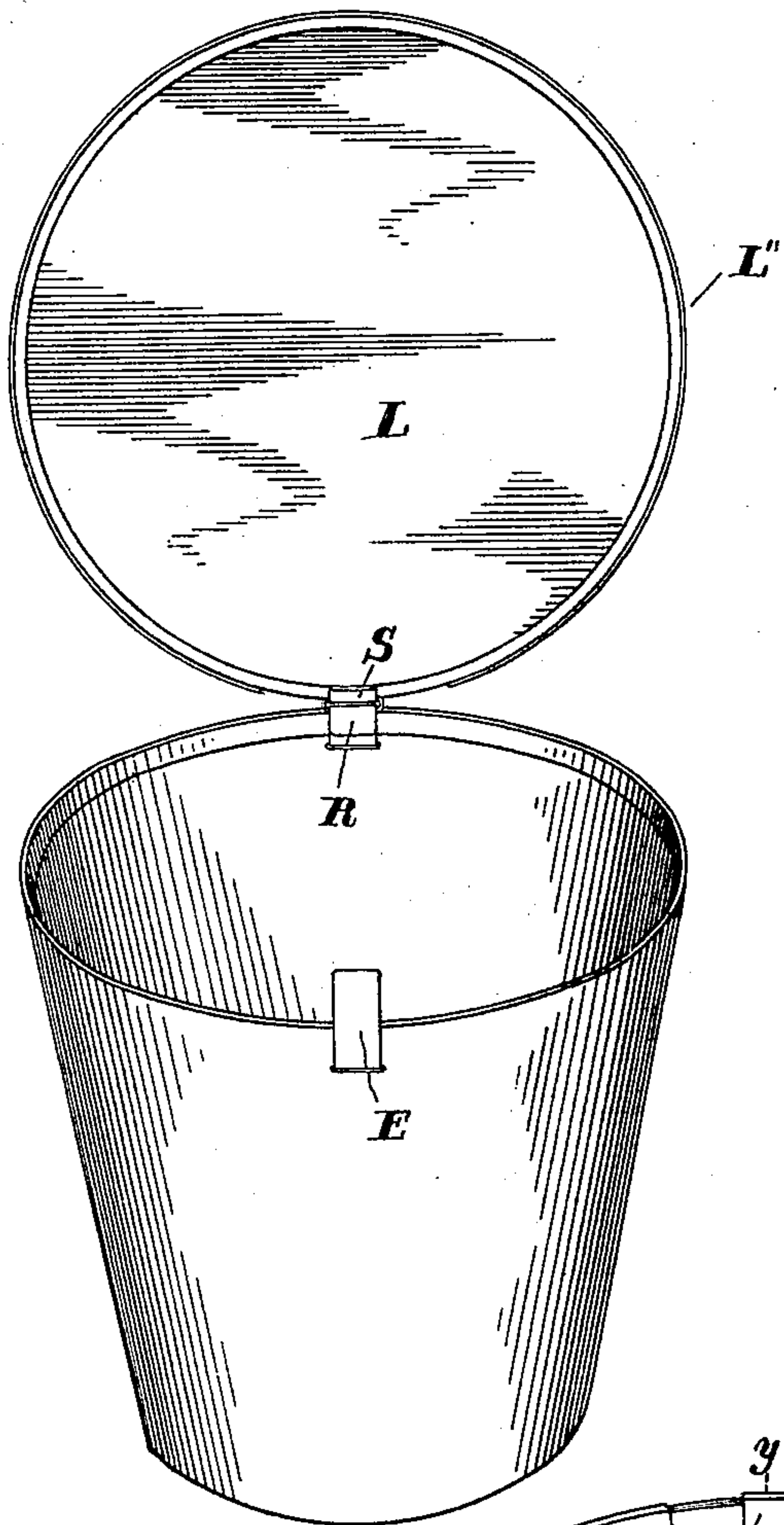


Fig. 8

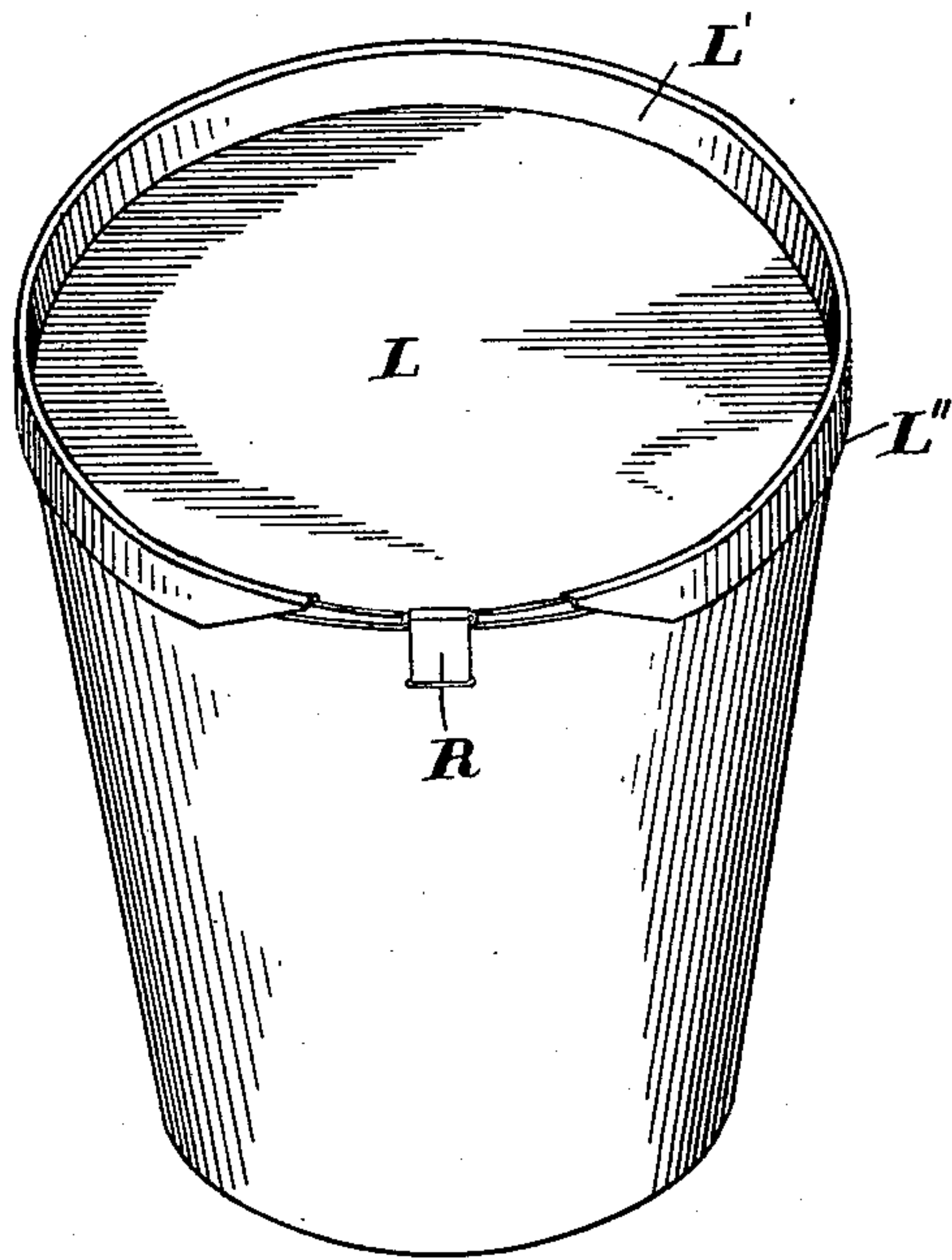


Fig. 9

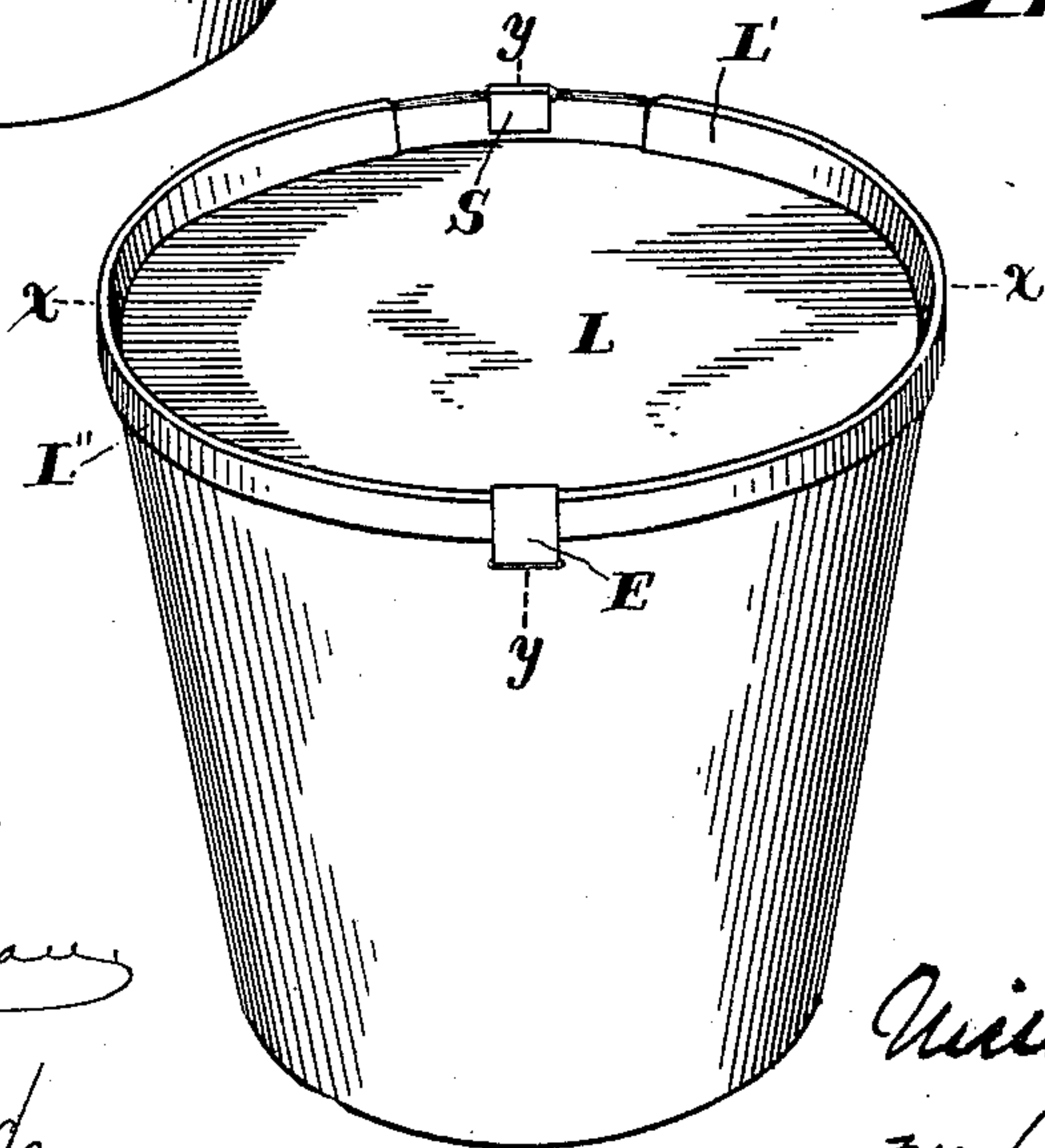


Fig. 10

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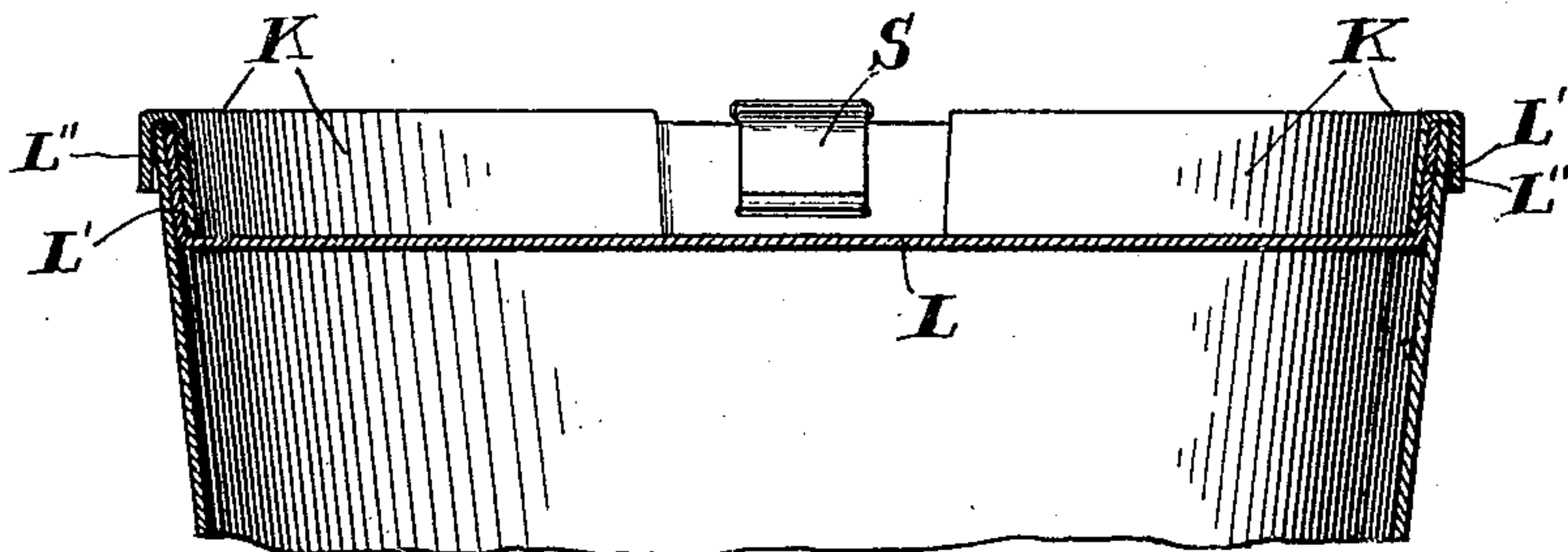


Fig. 11

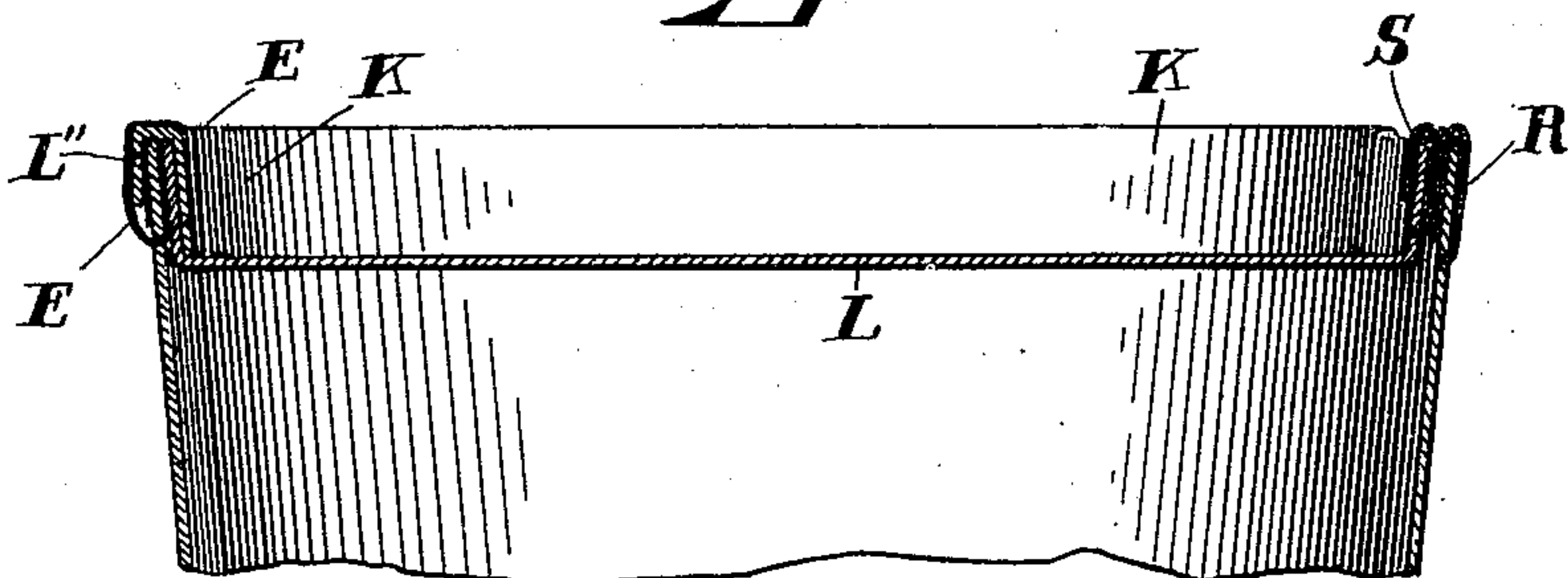


Fig. 12

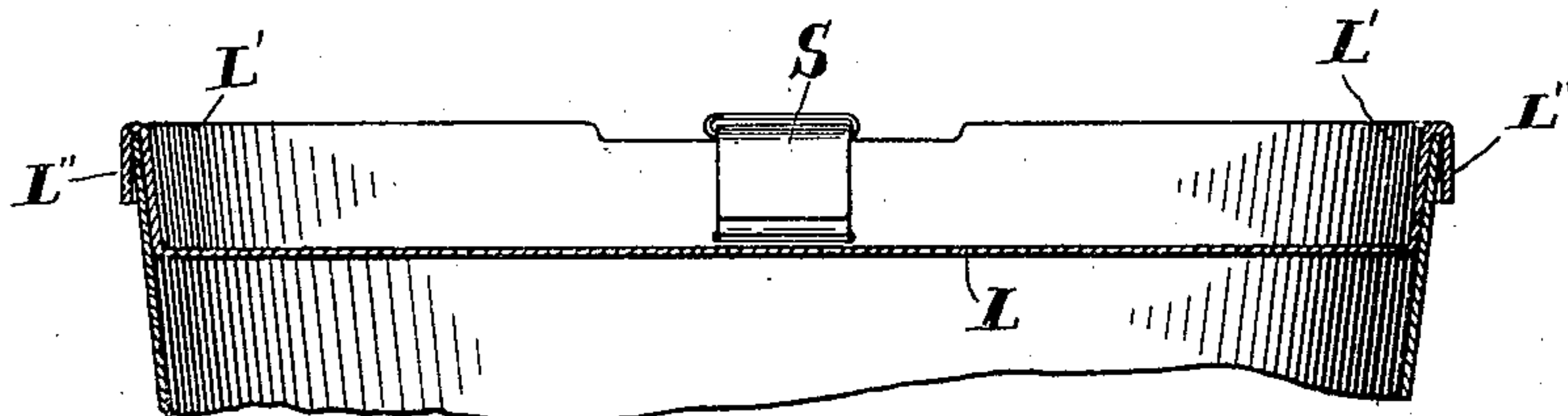


Fig. 13

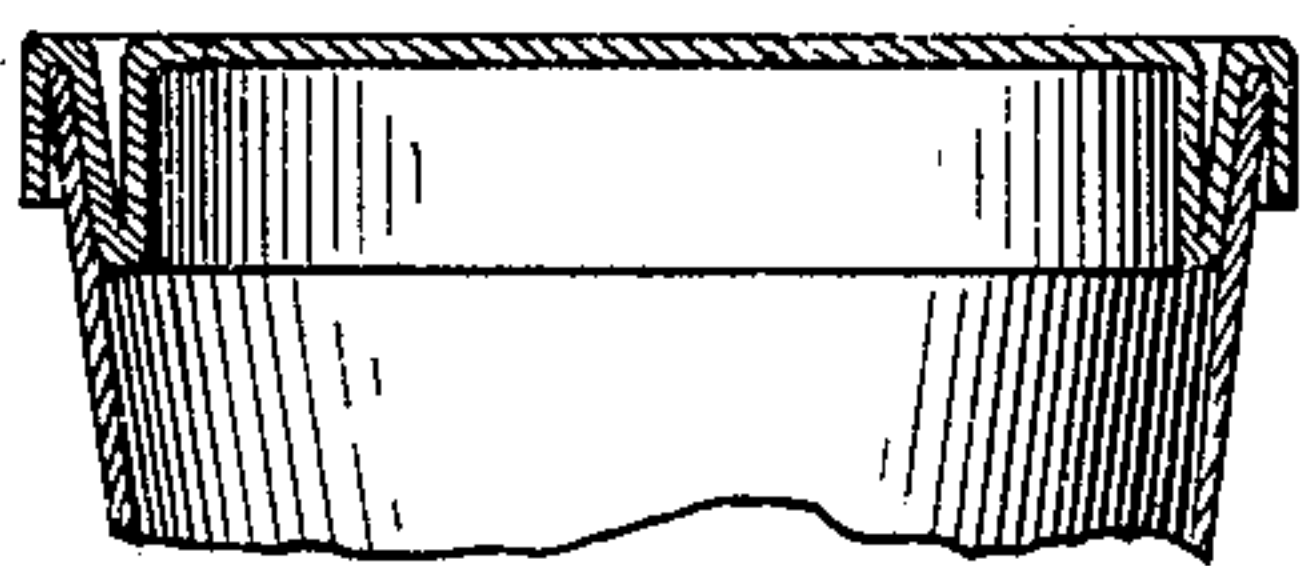


Fig. 15

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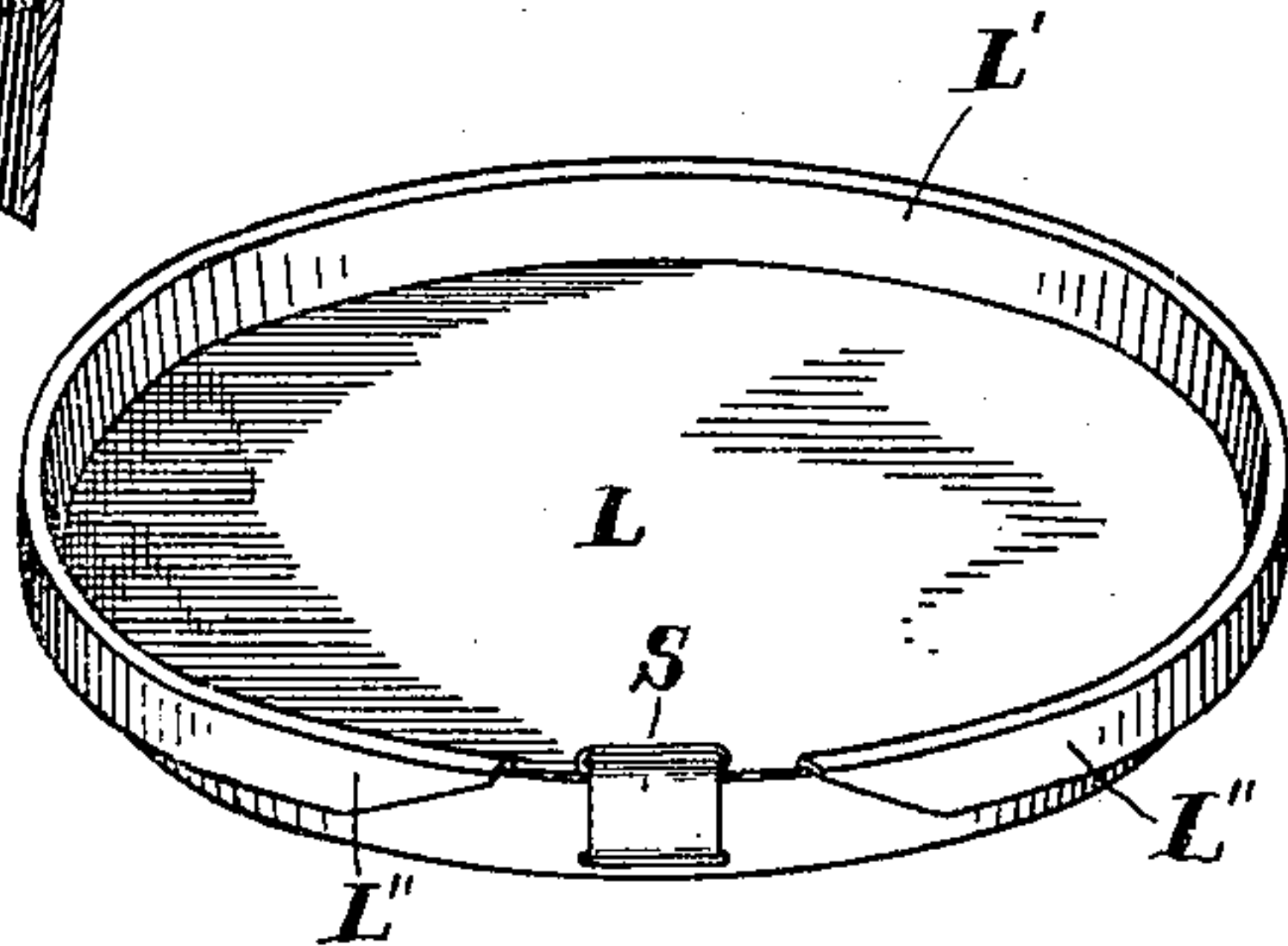


Fig. 14

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Fig. 16.

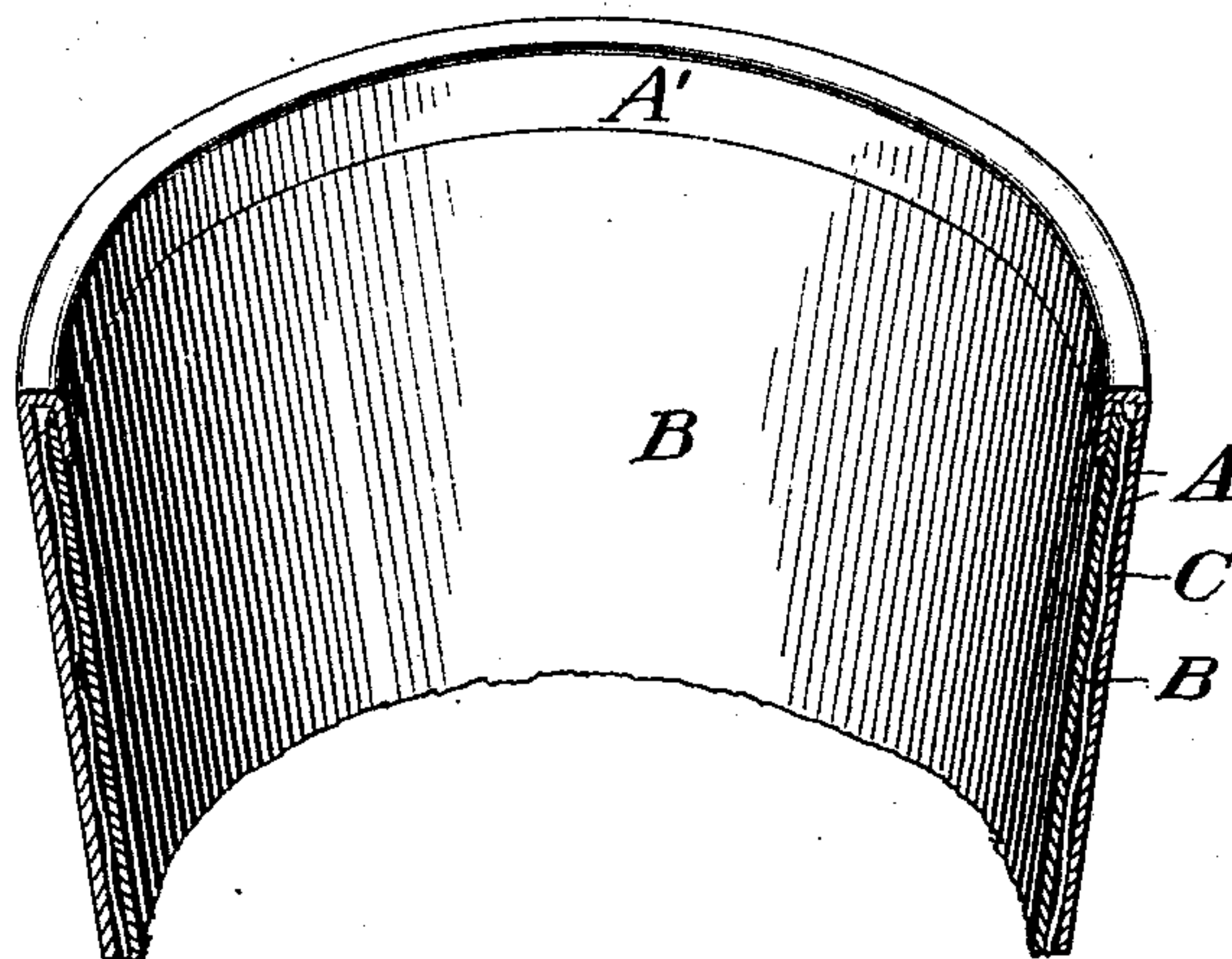
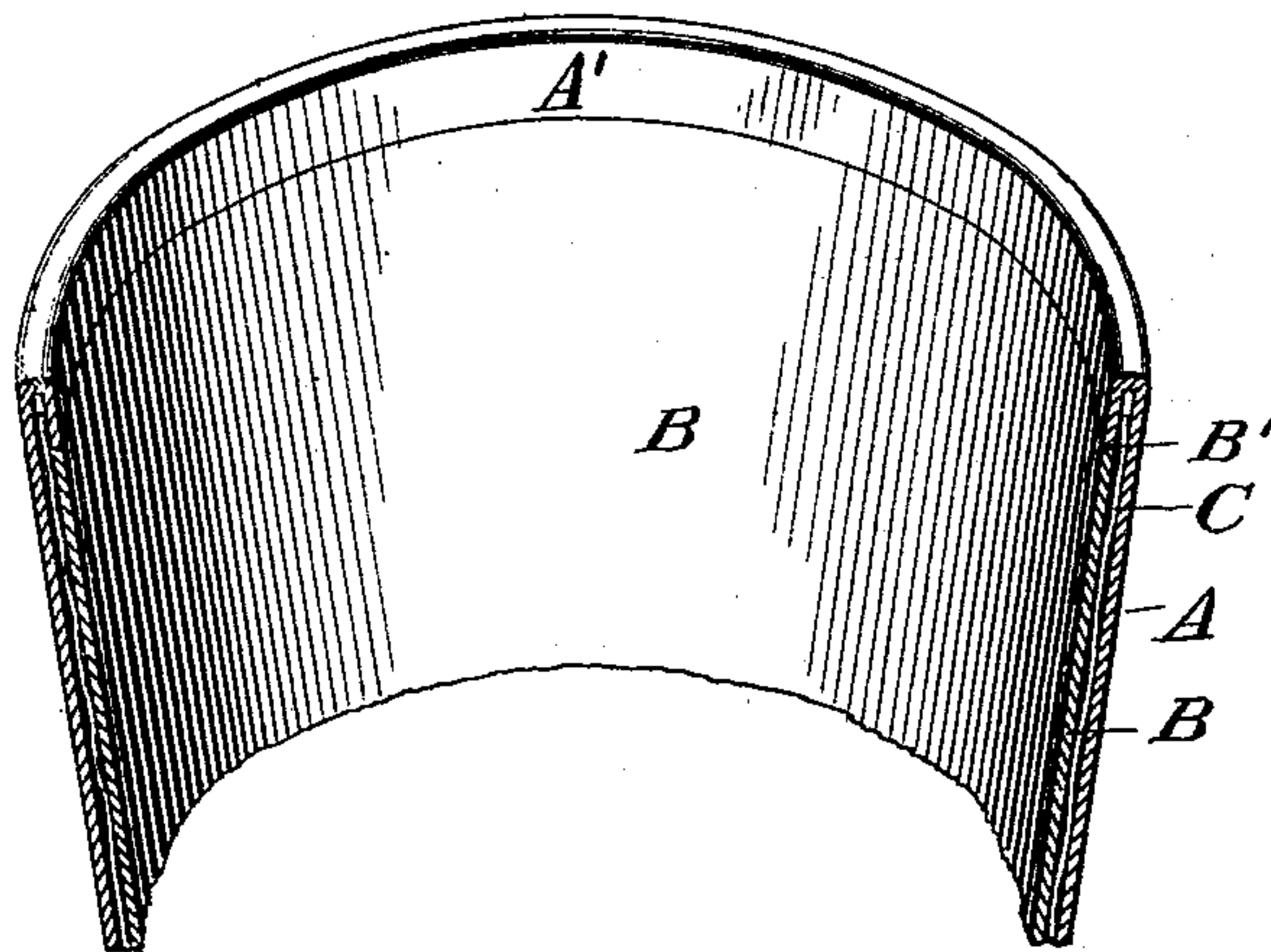


Fig. 17.



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UNITED STATES PATENT OFFICE.

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SPECIFICATION forming part of Letters Patent No. 615,716, dated December 13, 1898.

Application filed May 24, 1897. Serial No. 637,874. (No model.)

To all whom it may concern:

Be it known that I, WILL M. KINNARD, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Paper Vessels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improvement in paper vessels and applies to such vessels made in the form of a bucket and provided with more than one thickness of paper in the construction of the walls and also to the manner of constructing and attaching the lid.

The nature of the invention will be more fully hereinafter set forth.

In the drawings, Figure 1 shows a blank of paper, preferably thin and light, but waterproof, to be pressed into the form shown in Fig. 2, which is a perspective view of the intermediate wall of the pail pressed into form ready to be applied. Fig. 3 is a perspective view of the vessel partially complete, the inner wall and the intermediate, with the bottom in place, partly cut away to show the construction. Fig. 4 is a side elevation of the vessel in process of construction, showing the outer wall partly cut away and the intermediate and inner walls being adjusted to their place. Fig. 5 is a perspective view of the vessel complete without a lid or the fastenings. Fig. 6 is a perspective view of the vessel with the clamps or fastenings in place, and Fig. 7 is a similar perspective view with one form of lid attached to the vessel, but open. Fig. 8 is a perspective view of the vessel with a different form of lid attached and open. Fig. 9 is a perspective view of the vessel with one form of lid closed, showing the exterior portion of the hinge. Fig. 10 is a similar perspective view of the vessel from the opposite side, showing the clamp for holding the lid closed and the other side of the hinge. Fig. 11 is a cross-section of the upper part of the vessel, showing the hinge and the construction of the lid. Fig. 12 is a similar cross-section taken through the hinge and clamp, showing them in cross-section. Fig.

13 is a cross-section similar to Fig. 11 with a slightly-modified form of lid. Fig. 14 is a perspective view of the lid itself. Fig. 15 is a cross-section showing modified form of the lid. Figs. 16 and 17 are cross-sections showing modified constructions of the upper edges of the pail. Fig. 18 is a cross-section showing modified form of bottom.

For simplicity, economy of material, and economy of labor in constructing my improved pail I prefer to use three walls, all of them of lighter material than could be used if the vessel were made with only one or two walls, and the intermediate wall being made of light thin material, preferably waterproof paper. Of course it is desirable to construct these vessels as light as possible both for convenience and economy. It is necessary to make them slop-proof and as nearly as possible waterproof. It is important, therefore, that no two seams in the material used shall register or come together.

The inner and outer walls I make in the shape of a tube open at both ends, preferably larger at one end than at the other. These tubes are made of a blank two of the edges of which are brought together and slightly overlapping, as shown at *a*, Fig. 3, where *A* is the inner wall, the edges meeting or overlapping at *a*.

In Fig. 2, *B* is the outer wall, similar to the inner wall *A*, except that it is slightly larger in diameter, as it is necessary that it should inclose the inner and intermediate walls. These outer and inner walls are made of a stiffer quality of paper than the intermediate wall and of sufficient stiffness to give form and shape to the vessel; but they may be made of much lighter material than when no intermediate wall is used.

C is a blank substantially circular in form and of light flexible paper, preferably waterproof. This blank *C* is placed over a mold of the same shape as the vessel to be made and pressed into the shape shown in Fig. 2. The sides or walls thus produced, as seen at *c*, are very irregular in form, and the folds may take any natural shape without affecting the result, as the material is thin, and it is not necessary for these intermediate walls to ex-

tend all the way up between the inner and outer walls, and, if preferred, they may stop a short distance above the bottom of the pail.

It will be understood that the form shown in Fig. 2 is too flexible to retain its shape, but is a complete pail in the sense that it is provided with side walls and a bottom, as shown in Fig. 2. The next step, and it is preferably performed before Fig. 2 is removed from the mold or former, is to apply the bottom D, Fig. 3. This consists of a disk of paper sufficiently stiff, with the edges pressed up into a substantially vertical plane all around, and it is placed over the bottom of the form shown in Fig. 2. The inner and outer walls A and B are then put in place, as shown in Figs. 3 and 4, the outer wall B embracing not only the intermediate wall *c*, but inclosing the sides or upturned flange of the bottom D. It will be seen that the vessel thus constructed has a double bottom C' D and that it has the three side walls—the inner, A, the intermediate, *c c*, and the outer wall, B. The upturned flanges of the outer bottom D extend up a sufficient distance to secure and brace effectively the inner bottom C' both throughout its base and the creases where it is bent up to form the side walls *c c*. There are no seams extending through more than one wall, and the intermediate wall, as well as the bottom, is entirely unseamed and unbroken, serving effectively to seal the vessel at all points. I prefer to carry this intermediate wall well up toward the top of the vessel, though it is not necessary, because there are no seams in the side walls A and B above the bottom which come together and register, and therefore no leakage could occur. It is desirable, however, to extend the intermediate wall up toward the top of the vessel as high as the contents which it is designed to contain are likely to extend. By constructing the vessel with the intermediate wall it is not necessary to observe the same care in putting the different parts together in order to prevent the possibility of a seam being left slightly open at any point, and much cheaper labor can be used to manufacture the pail. The material also may be lighter, thereby reducing the cost.

Instead of constructing the bottom, as shown at D, with the upturned edges a plain disk may be used, fitting within the bottom of the inner wall. The intermediate wall or form *c c* is then placed over it and glued, and the outer wall B placed around and over both, as shown in Fig. 16. In this case the bottom of the form *c c* forms the exterior bottom. I prefer to make the intermediate wall *c c* of waterproof paper, so as to effectually prevent all possibility of leakage, and a convenient manner of doing this is to paraffin it on one side—the outer side. The inside then will take the glue and the outer side needs no glue. The upper edges of the inner and outer walls A B may come together exactly—that is, they may be of the same height and, if desired, may be braced by a strip of tin or stiffer material

folded upon itself and clamped over these upper edges; but I prefer in this form of pail to make one of the walls higher than the other and fold the upper edge of the higher one down upon itself until it meets the upper edge of the other, or, what is better and will produce a stiffer edge, fold the edge of the higher down over and embracing the edge of the other. To illustrate, I may make the outer wall B slightly higher than the inner wall A. Then fold the upper edge B', Fig. 5, down upon itself until the edge of this flange B' meets the upper edge of the inner wall A at the line A', or it may be constructed with the upper edge of the inner wall A passing up underneath the flange B'. In that way the flange B' embraces the upper edge of the inner wall A from the inside and incloses it completely, and this flange B' also serves to brace the vessel and make any additional brace unnecessary. Of course this folded edge incloses and embraces within the fold the upper edges of the intermediate wall of flexible material, which may be made to extend up flush or even with the upper edges of the lower of the two main walls.

The lid of the vessel I prefer to make saucer-shaped in its general construction—that is, to consist of a disk of paper of sufficient stiffness with an upturned flange around the edges, as shown in Fig. 7. It then fits down into the vessel, bringing this upturned flange F parallel with and pressed against the inner side of the wall. Guards *ff* are attached to this flange, which pass over the upper edges of the walls of the vessel and prevent the lid going down too far. Clamps E E are provided, usually made of tin or thin sheet metal, on the upper edge of the vessel to be clamped over the lid and against the inside of the flange F to securely lock it in place. This lid is similar in construction and arrangement to that shown in my application, Serial No. 635,641; but to make the vessel not only slop-proof, but as nearly as possible waterproof, so that water will not escape from it when it is inverted, I have provided the lid. (Shown in Figs. 8 to 14.) This lid consists of a disk with a double flange, which is more clearly seen in Fig. 13. L is the lid, and L' the upturned flange; but this flange instead of stopping at the top of the vessel is carried up and bent over outwardly and downwardly again, as shown at L'', so that the space between the portion L' and L'' can embrace the upper edges of the vessel. This double-flanged lid is constructed in the following manner: The lid is made with an upturned flange integral with the main portion of the lid, as shown in Fig. 7. A strip of the same material or any other suitable material is then folded upon itself longitudinally, so that in a vertical cross-section it will present somewhat the shape of an inverted U. To bend this strip and bring the ends together to form a circle would cause the inner limb to buckle. In order to prevent this, I corrugate the inner limb, prefer-

ably under pressure. This serves to prevent buckling to make it much stiffer and stronger. This inner corrugated limb is then glued or attached to the upturned flange of the lid, as seen at K, Figs. 11 and 12. This flange is thus reinforced, stiffened, and strengthened, and when the lid is put in place on the vessel the upper edges of the vessel will be embraced between this flange and the outer limb of the strip. The circular form of the vessel and its lid causes the lid thus embracing the upper edges of the pail to hug at all points the different sides of the circle, readily adjusting themselves to the different degrees of pressure, thus making a very close snug fit all around. I have described the process of corrugating the inner limb of this strip bent upon itself to prevent buckling. It will be understood, however, that while this is the most desirable way it is not necessary in order to form the lid, and I do not limit myself to the corrugating of it, because it may even be made practical if this inner limb should buckle, as there is no joint there exposed to leakage, or the inner leg may be notched. It, however, presents a much neater appearance if the buckling is obviated. The U-shaped strip when it is first formed is of course straight. By placing one limb of this U-shaped strip in a machine which I have devised and running it through this machine this limb is corrugated, and it brings the straight U-shaped strip into a circle. If I bent it into a circle without corrugating the inner limb, there would be too much material in it. These corrugations, furthermore, extend across this inner limb and produce a great number of angles, which serve to stiffen and brace the strip and hold it permanently in shape. In constructing vessels or lids or any articles of paper which are to be exposed to the changes and conditions of the atmosphere the paper readily absorbs moisture, which softens it and has a tendency to cause it to flatten out. It is to overcome this that I employ the process described. The inner limb of the U-shaped strip being thus corrugated it is then attached to the upright flange of the lid. Without some such support as this, this upright flange would be liable to flatten out when exposed to changes in the atmosphere. Glue having been applied either to this upright flange or this corrugated limb of the strip the lid and the strip are subjected to pressure. The moisture of the glue penetrates more or less the substance of the paper, and under the pressure the two strips are to a certain extent condensed and amalgamated, resulting in a certain change in the constituency of the upright flange and the corrugated limb of the U-shaped strip, which are condensed into a solid stiff rim, which will not be affected by changes in the atmosphere and will always remain stiff and upright. The clamps E E attached to the vessel are bent down over and upon the inner side of the flange L' and hold the lid securely in

place. The preferred form of constructing these clamps is shown in Fig. 12. It consists of a narrow strip of tin inserted through the walls of the vessel. If the slit is made in the vessel to receive this strip by a sharp knife, the sides of the cut thus made will by their natural elasticity substantially close the opening thus made, though not of course entirely; but they will press so tightly against the strip of tin when it is inserted that the opening thus made is practically closed. The inner end of this strip is bent up and over the edge of the vessel and down upon it, while the outer end, which is longer, is bent up into the upright position shown in Figs. 7 and 8, in which position it remains until it is desired to close and lock the lid upon the vessel, when it is bent down and over the flange, as shown in Fig. 12.

In order to hinge the lid to the vessel in the simplest and most economical form, I provide two such strips of tin, as seen in Fig. 12, where one, R, is fastened to the wall of the vessel, and the other, S, fastened to the flange of the lid. One of these strips is then inserted through a wire link and bent down firmly in place and inclosing one arm of the link. The other strip is then inserted through the link and bent down firmly upon itself, inclosing the other arm of the link, thus forming a swiveled hinge which will hold the lid firmly and securely in place and is readily and quickly made. Fig. 8 shows the lid thus hinged to the vessel open. Figs. 9 and 10 show the lid thus hinged closed down upon the vessel.

It will readily be understood that with a lid constructed with the double or folded and embracing flange hinged to the top of the vessel circular in cross-section in order to swing upon its hinge it is necessary that the outer portion of the flange L' should be cut away slightly on either side of the hinge, as shown in Figs. 8, 9, 10, 11, and 14.

I have devised several modified forms of the lid, and if it is desired the lid may be inverted. In that case the flange is constructed with a third fold, as shown in Fig. 15, and the upper edge of the vessel is inclosed between the outer folds. By either construction I secure a simple form of lid, which when locked in place securely closes the vessel. Of course the construction and location of the hinge must be somewhat changed to be adapted to this form of lid.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A paper pail consisting of an outer and inner wall embracing between them an intermediate wall consisting of a single blank of flexible material pressed into the desired shape, and extending up between the inner and outer walls and entirely across one end to form a seamless bottom, substantially as and for the purpose described.

2. A paper pail consisting of an inner and

outer wall provided with an intermediate wall, consisting of a sheet or single blank of flexible material pressed into the desired form extending entirely across one end to form a
5 bottom, said bottom reinforced or strengthened by a disk of heavier material, substantially as and for the purpose described.

3. A paper pail consisting of an inner and outer wall provided with an intermediate
10 wall, consisting of a sheet or blank of flexible material pressed into the desired form and the bottom reinforced or strengthened by a disk of heavier material whose outer edges are bent upward to form a flange which is
15 embraced by the outer wall substantially as and for the purpose described.

4. A paper pail consisting of an inner and outer wall embracing between them the edges or sides of a single blank of flexible material and the flange or upturned edges of a

disk of heavier or stiffer material, substantially as and for the purpose described.

5. A paper vessel whose side walls consist of two or more tubes of paper, the outer wall extending up beyond the other wall or walls
25 and the upper edge bent or folded over inwardly and downwardly to meet the upper edge of the inner wall or walls and embrace the intermediate wall or lining, substantially as and for the purpose described.
30

6. A paper vessel provided with two or more side walls, one wall extending up higher than the others and folded over and embracing the upper edge of the lower wall or walls and intermediate wall or lining, substantially as
35 and for the purpose described.

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