Nov. 12, 1929. C. S. CRICKMER 1,735,264

FLUID CONTAINING CUP

Filed March 30, 1928 2 Sheets-Sheet 1

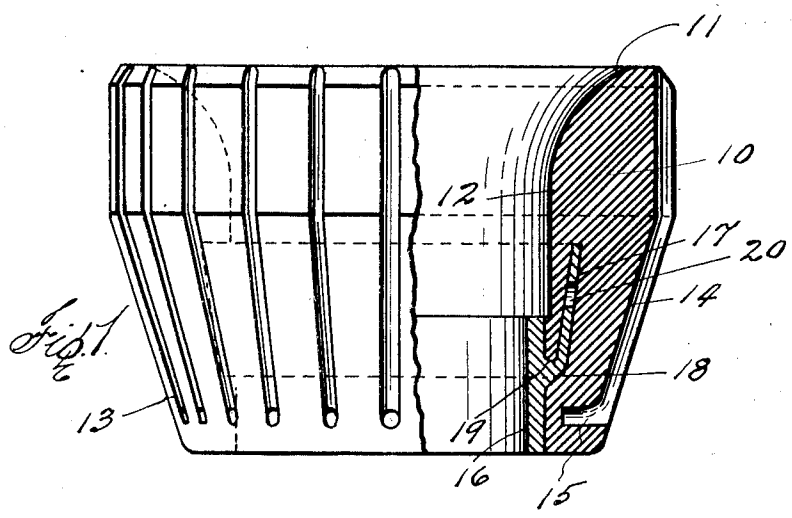


Fig. 1.

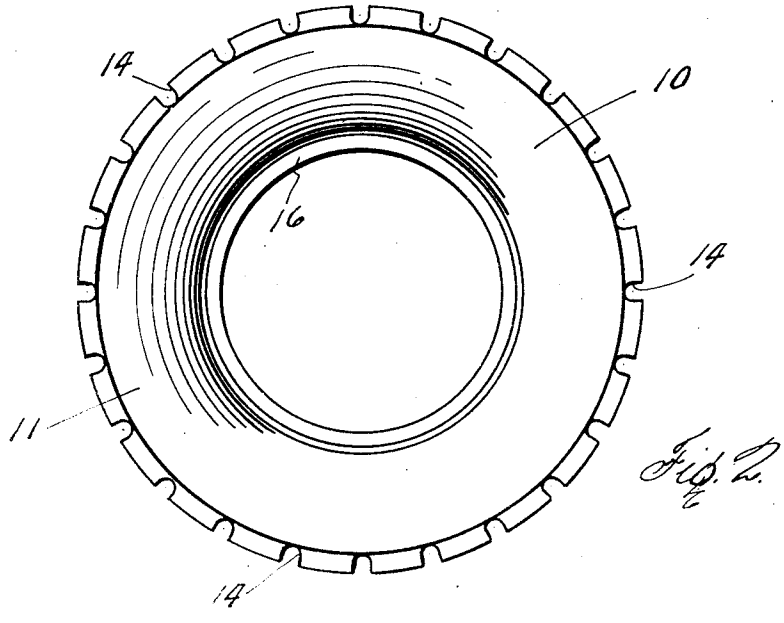


Fig. 2.

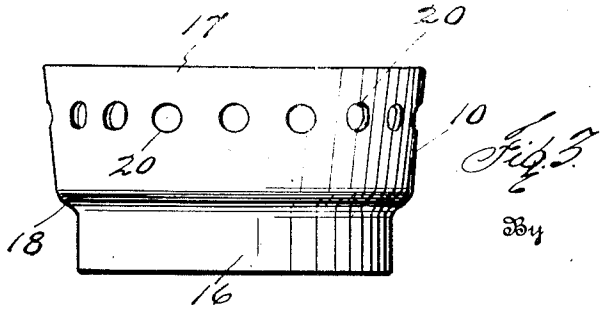


Fig. 3.

Inventor
C. S. Crickmer
By Jack A. Ackley
Attorney

Nov. 12, 1929. C. S. CRICKMER 1,735,264

FLUID CONTAINING CUP

Filed March 30, 1928 2 Sheets-Sheet 2

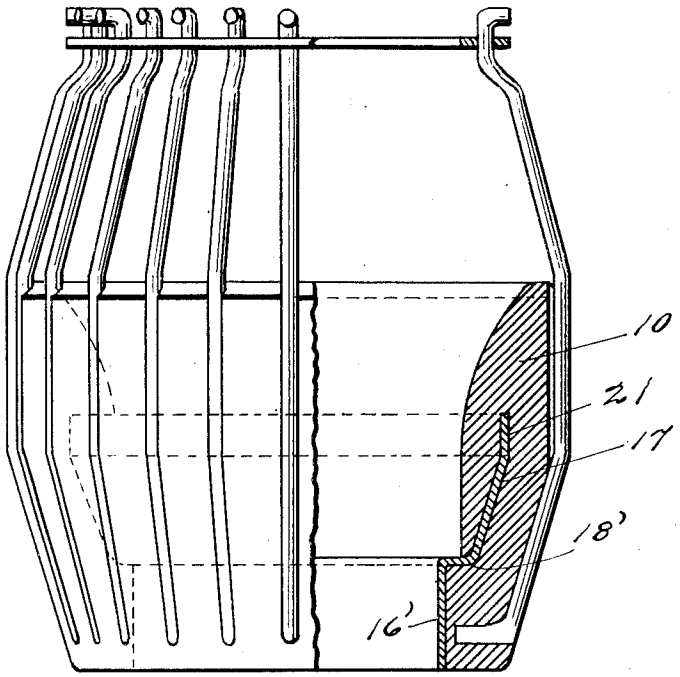


Fig. 4.

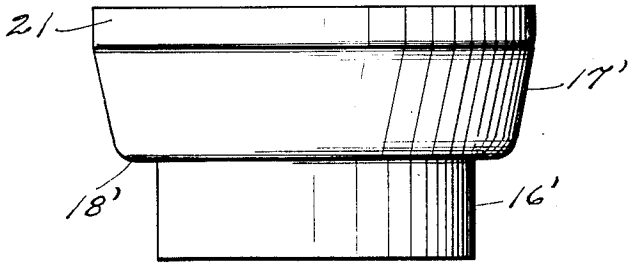


Fig. 5.

Inventor
C. S. Crickmer
Jucker & Talley
Attorney

Patented Nov. 12, 1929 1,735,264

UNITED STATES PATENT OFFICE

CHARLES S. CRICKMER, OF DALLAS, TEXAS, ASSIGNOR TO THE GUIBERSON CORPORATION, OF DALLAS, TEXAS, A CORPORATION OF DELAWARE

FLUID-CONTAINING CUP

Application filed March 30, 1928. Serial No. 265,961.

This invention relates to new and useful improvements in fluid containing cups.

The object of the invention is to provide a flexible cup having a bushing for attaching the cup to its support and arranged to reinforce the lower portion of the cup as well as to attach itself to the cup in such a manner as to prevent relative displacement.

A particular object of the invention is to provide an upwardly extending apron integral with and offset from the body of the bushing so as to be imbedded in the cup and to extend above the body of the bushing, thus reinforcing the cup against lateral displacement or bulging immediately above said bushing as well as anchoring the bushing in the cup.

A construction designed to carry out the invention will be hereinafter described, together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings, in which an example of the invention is shown and wherein:

Fig. 1 is a view of a cup constructed in accordance with my invention, a portion being in elevation and a portion in section,

Fig. 2 is a plan view of the same,

Fig. 3 is an elevation of the bushing removed from the cup,

Fig. 4 is a view partly in section and partly in elevation and showing another form in which the invention may be carried out, and

Fig. 5 is an elevation of the bushing used in the same.

This application is a continuation in part of my former application Serial No. 195,369, filed May 31, 1927.

In the drawings the numeral 10 designates a flexible cup composed of rubber, rubber compound, or any other suitable material capable of use with the invention. The cup illustrated is of the mushroom type, such as is used with a reinforcing cage and mandrel for lifting fluids in a well or for bleeding a well, but the invention is not limited to such a cup or shape and may be applied to any style of cup where its use is found advantageous.

The cup chosen for illustration has an annular lip 11 at its upper end and is formed with a central bore or well 12. The lower portion of the cup is externally tapered, as indicated at 13, so as to offer less resistance to a down stroke. In the outer surface of the cup are provided spaced vertical grooves 14 terminating short of the bottom of the cup. Radial pockets 15 are directed inwardly at the lower end of the grooves. Reenforcing rods (not shown) are imbedded in the grooves and have inturned ends seated in the said pockets. The grooves and pockets have no connection with the invention and are merely part of the particular cup shown.

It will be seen that the pockets, grooves and tapered lower end of the cup reduces the material or stock, and as it is customary to attach the cup to its support at the base of the cup, reenforcing means will greatly improve the cup and increase its efficiency. In my Letters Patent 1,565,797, issued December 15, 1925, I show a cup having a reenforcing bushing imbedded in its lower end and this bushing has proved very efficient in practical use. However, it has been found that under extreme loads the cup is sometimes forced outwardly from the bushing and in some instances blown out or ruptured just above the top of the bushing.

In carrying out the present invention, I provide a cylindrical sleeve or collar 16 forming the body of the bushing. This sleeve is preferably made of metal, or other suitable material, and is snugly embedded in the bottom portion of the cup with its lower end substantially flush with the bottom of said cup and its upper end terminating at the bottom of the well 12. At the central portion of the sleeve an upwardly directed annular apron or flange 17 is secured. The apron is connected at its bottom to the sleeve proper by an annular boss 18, whereby the bottom of the apron is offset from the outer wall of the sleeve, thus permitting the material of the cup 10 to be received and moulded in a circumferential pocket or groove 19 formed between the apron and the upper portion of the sleeve.

The apron is inclined or flared outwardly and extends some distance above the top edge

of the sleeve and it may be reduced in thickness toward its upper end if desired. Spaced holes or openings 20 may be provided in the apron for receiving the material of the cup so as to more effectively bond the cup and the bushing together. It will be seen that the apron extending well above the top edge of the sleeve and being imbedded in the annular wall of the cup, will prevent bulging and rupturing of the cup around the bottom of the well 12, thereby preventing blowouts. The apron being imbedded in the cup will also prevent longitudinal displacement of the sleeve as well as lateral separation of the cup and bushing.

The bushing may be formed in any suitable manner, as by stamping, spinning, pressing, casting or machining, and is preferably moulded in the cup, but may be inserted therein in any suitable manner. It will be seen that the upper portion of the cup is free to flex and may be compressed or expanded. The bore of the bushing being less than the bore of the well 12 permits the bushing to be snugly fitted on a mandrel or other support of less diameter than the well 12. It has been found by actual use that a cup reenforced with the apron 17 will last longer and give better service than a cup which does not have such an apron.

The bushing is the essential feature of the invention and may be made in a number of different shapes and forms. As an illustration, I have shown in Figs. 4 and 5 a bushing having a body formed of a cylindrical sleeve 16′ having an outwardly directed annular flange 18′ at its upper end from which an annular apron 17′ is extended upwardly. The apron has a circumferential lip 21 at its upper end.

This particular form of bushing readily lends itself to production by spinning or pressing. The flange 18′ also forms a suitable seat for a spacing sleeve surrounding the mandrel which is snugly received in the sleeve 16′. The exact shape is not essential to the invention, but it is obvious that by contracting the lip 21 the same is more equally spaced in the cup 10. While the invention has been shown in connection with a cup having grooves, it is obvious that it may be used in connection with any type of cup wherein it is found useful and practical.

Various changes in the size and shape of the different parts, as well as modifications and alterations, may be made within the scope of the appended claims.

What I claim, is:

1. A fluid containing cup comprising a flexible cup body provided with a central well, and a metallic reinforcing bushing in the lower portion of the cup and having a non-yielding reenforcing members rigidly attached thereto and projecting upwardly in the walls of the cup, whereby the wall surrounding the lower portion of the well is reenforced against lateral distortion.

2. A fluid containing cup comprising a flexible cup body having a central well, and a metallic reenforcing bushing inserted in the lower end of the cup body and having a continuous circumferential projection engaging in the walls of the cup body and extending vertically therein, whereby the bushing is held against longitudinal and lateral displacement in the cup body.

3. A fluid containing cup comprising a flexible cup body, and a reenforcing bushing moulded in the lower portion of the cup and comprising a cylindrical sleeve and an annular apron extending upwardly from the sleeve.

4. A fluid containing cup comprising a flexible cup body, and a reenforcing bushing moulded in the lower portion of the cup and comprising a cylindrical sleeve and an annular apron extending upwardly from the sleeve, said apron being flared upwardly from the sleeve.

5. A fluid containing cup comprising a flexible cup body, and a reenforcing bushing moulded in the lower portion of the cup and comprising a cylindrical sleeve and an annular apron extending upwardly from the sleeve, said apron being flared upwardly and offset laterally from the sleeve.

6. A fluid containing cup comprising a flexible cup body, and a reenforcing bushing comprising an annular sleeve inserted in the bottom portion of the cup and having an upwardly directed and outwardly flared continuous apron integral at its lower end with the sleeve and extending a substantial distance above the top edge of said sleeve.

7. A fluid containing cup comprising a flexible cup body having a well, and a metallic bushing embedded in the cup at the bottom of the well comprising a cylindrical sleeve and an upwardly flared apron integral at its lower and with the sleeve, said apron being imbedded in the wall of the cup and surrounding the lower portion of the well.

8. A metallic bushing for a cup comprising a cylindrical sleeve, and an upwardly directed and outwardly flared apron having its lower end integral with the sleeve and extending a substantial distance above the top edge of said sleeve, said apron relatively surrounding the sleeve.

9. A metallic bushing for a flexible cup comprising, a cylindrical sleeve having an outwardly directed annular flange at its upper end, and an upwardly directed and outwardly flared annular apron having its lower edge integral with the flange.

In testimony whereof I affix my signature.

CHARLES S. CRICKMER.