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G. B. LINDERMAN, JR

2,125,793

PAPER UTENSIL

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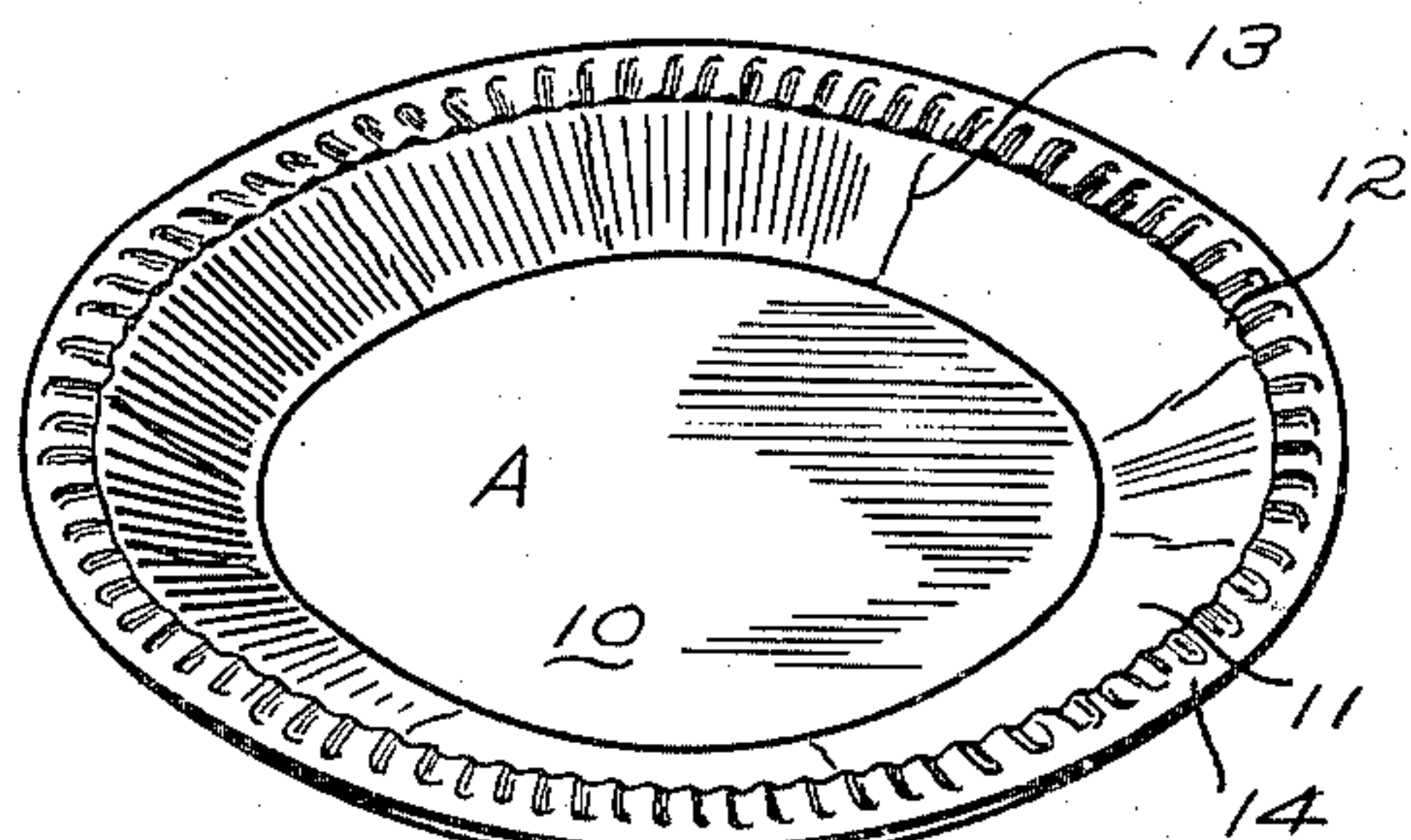


FIG. 1

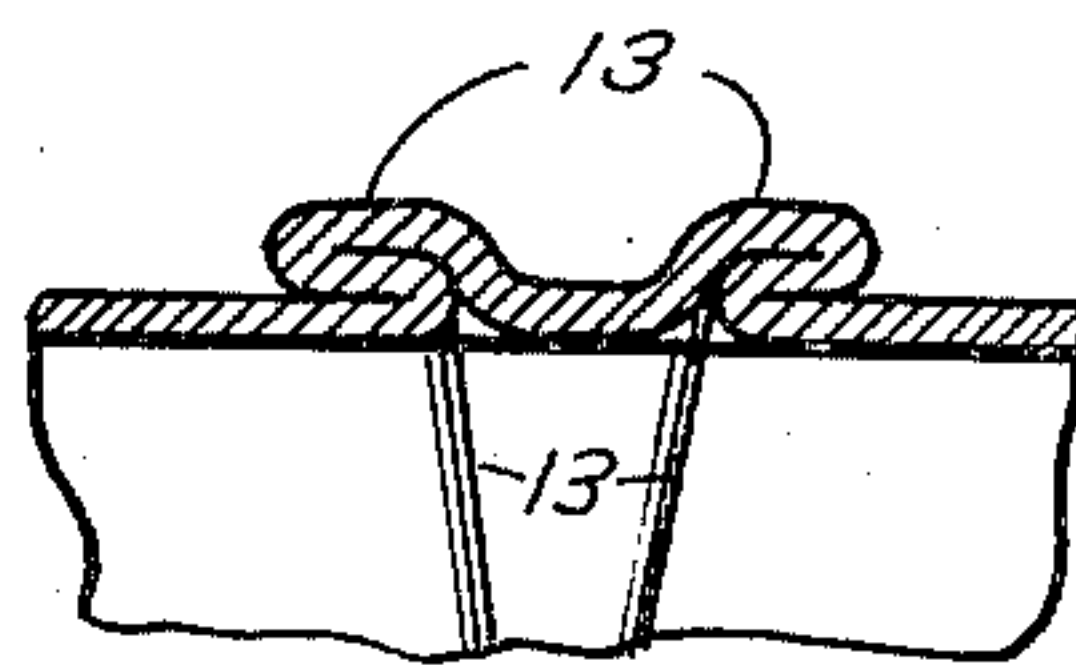


FIG. 1a

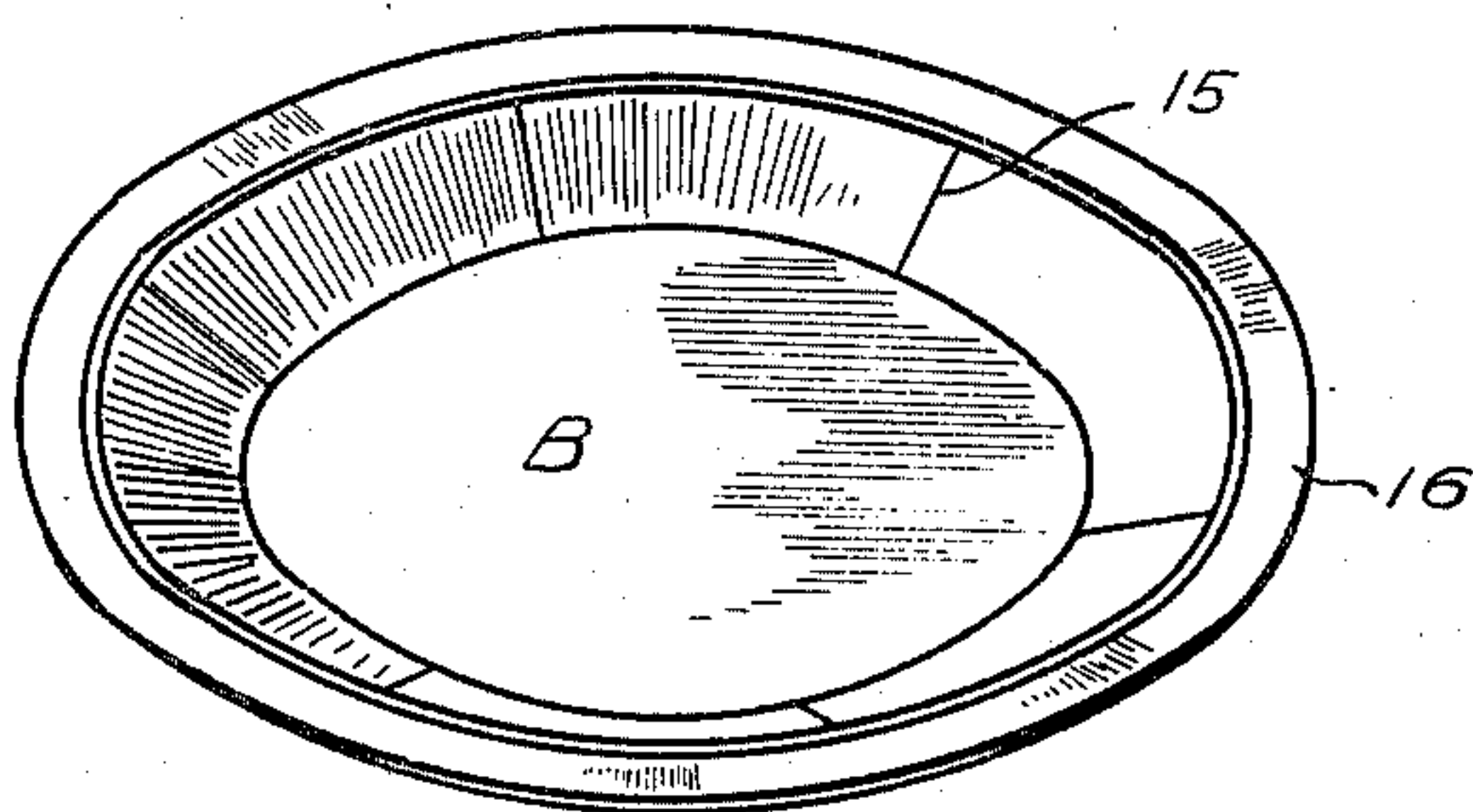


FIG. 2

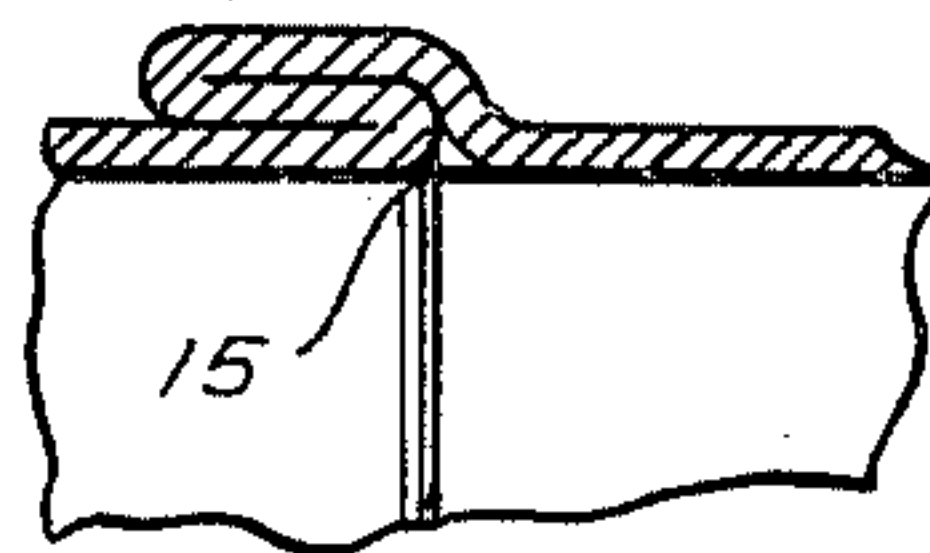


FIG. 2a

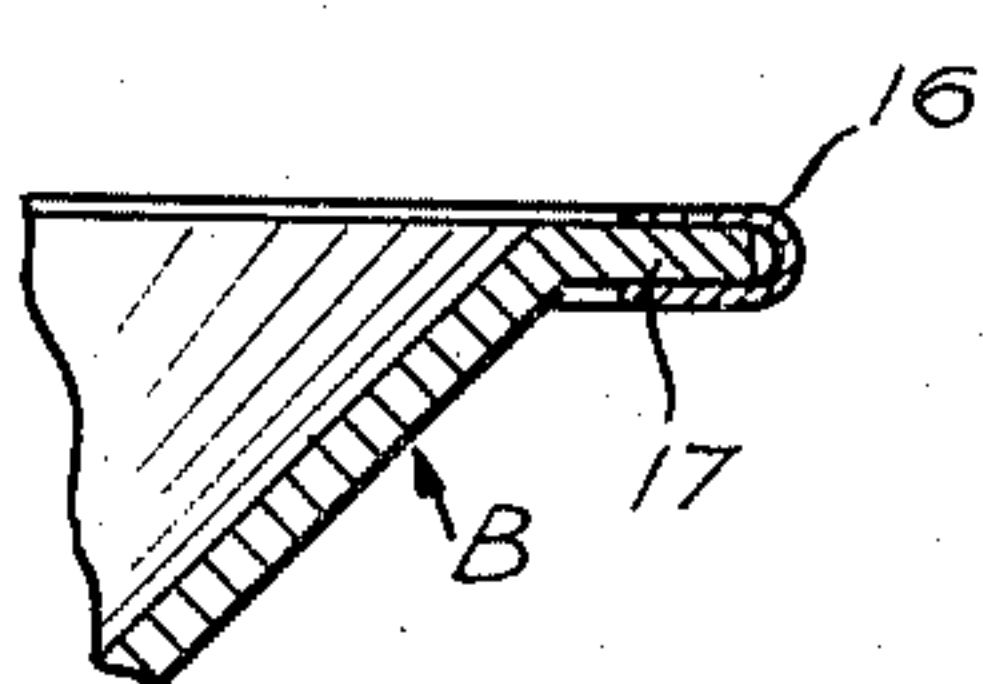


FIG. 3

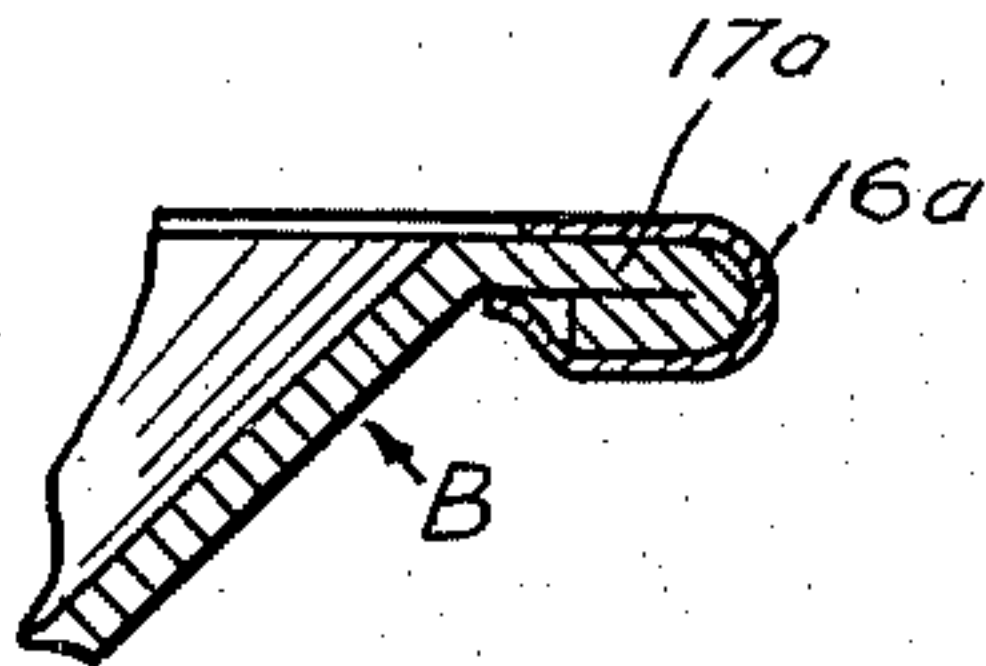


FIG. 4

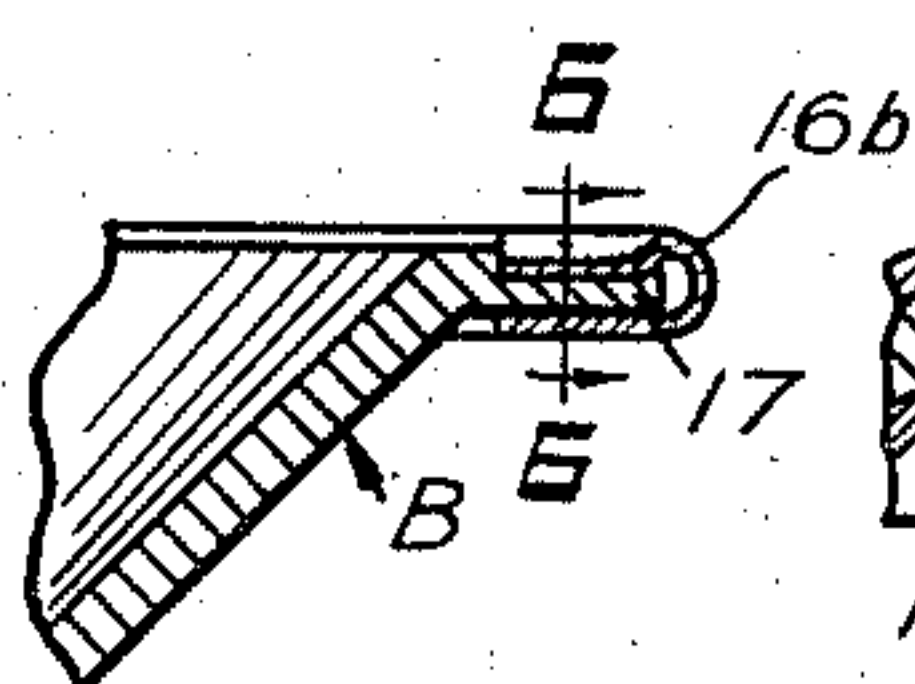


FIG. 5

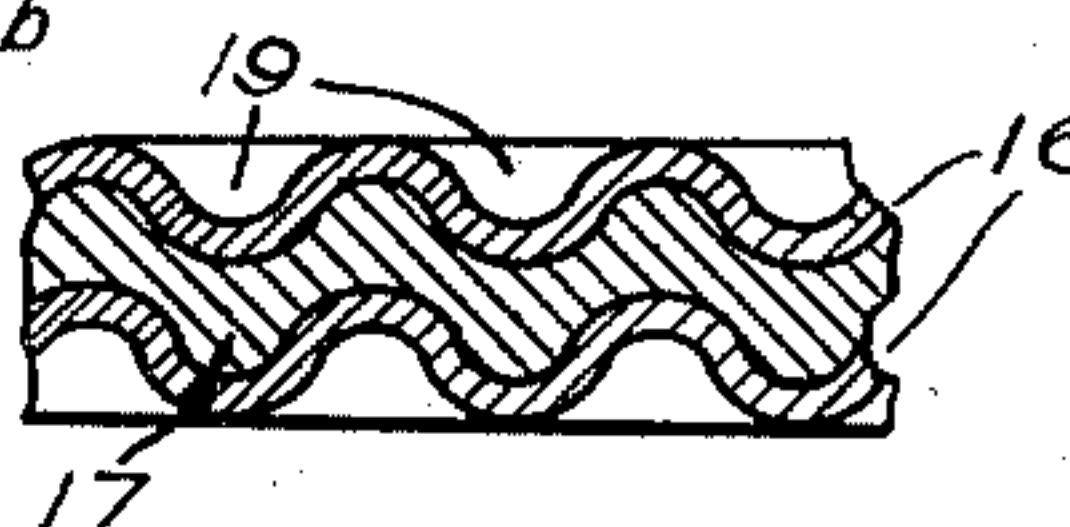


FIG. 6

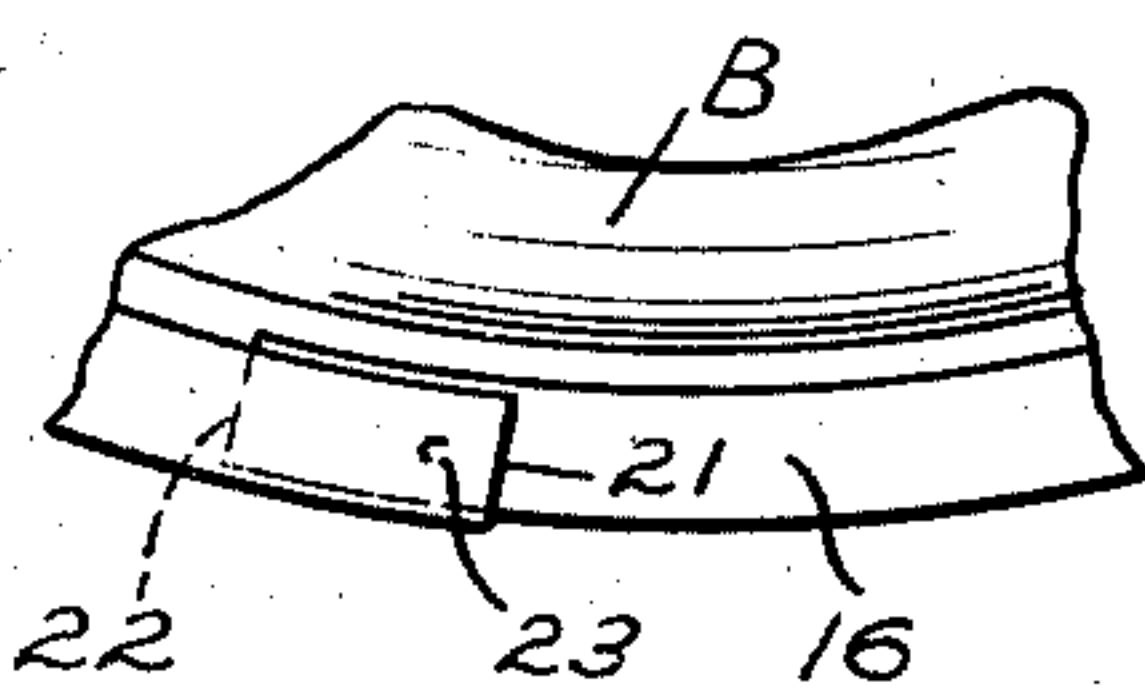


FIG. 7

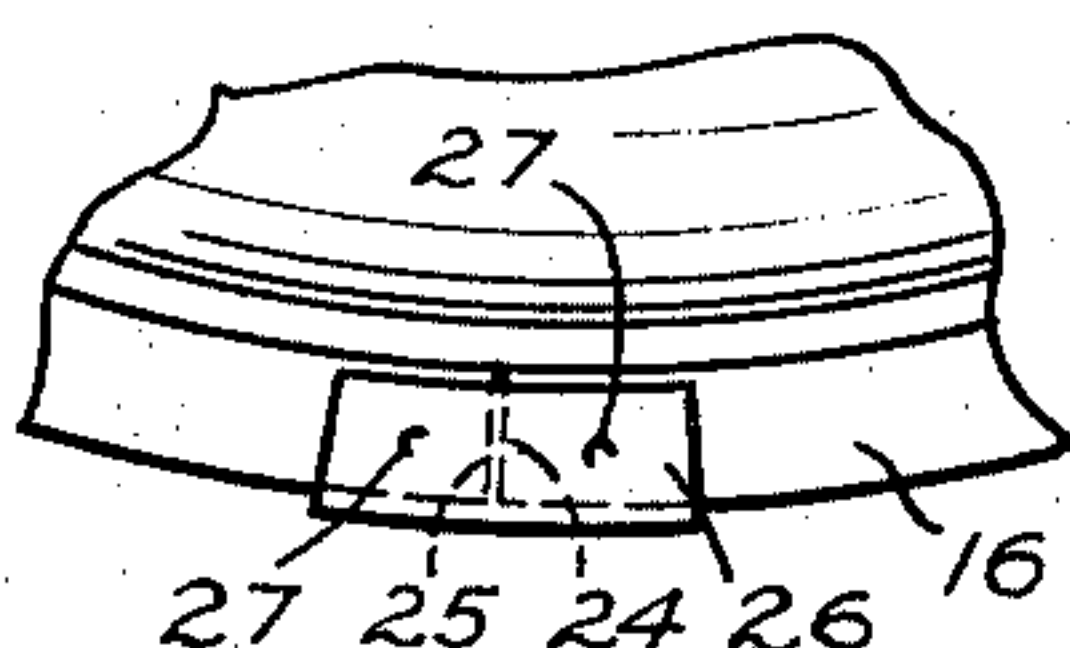


FIG. 8

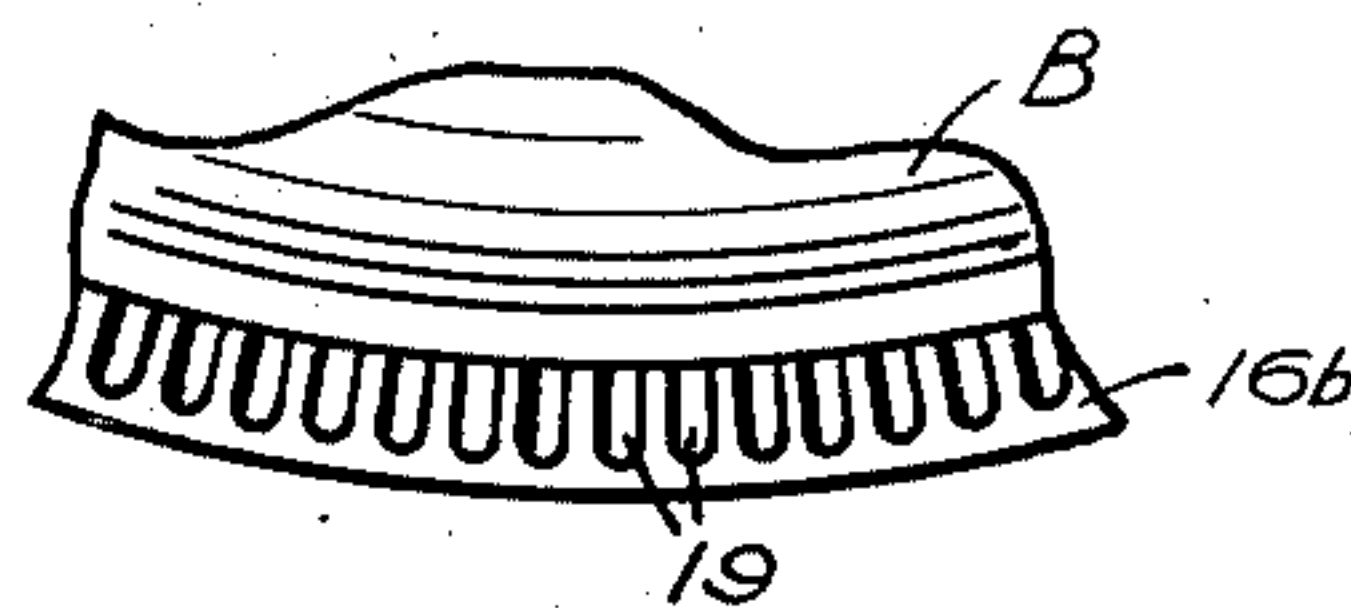


FIG. 9

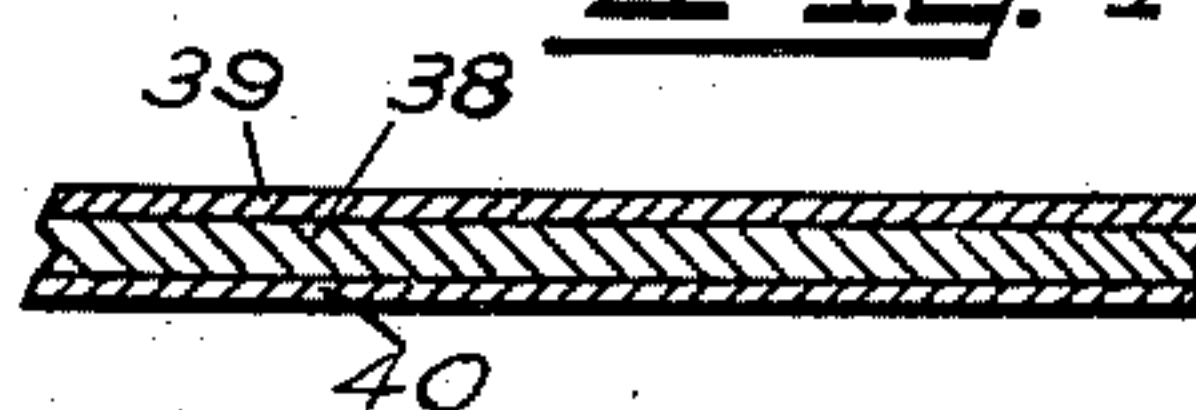


FIG. 10

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## UNITED STATES PATENT OFFICE

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## PAPER UTENSIL

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Application June 26, 1937, Serial No. 150,447

4 Claims. (Cl. 229—2.5)

The present invention relates to paper receptacles or utensils and is particularly concerned with the production of inexpensive light weight but yet durable receptacles that will compare satisfactorily with metallic receptacles of similar size.

Paper pie plates have been heretofore proposed wherein the plate is made of molded paper pulp. These plates have not been satisfactory because in the first place they will not withstand baking temperatures unless they are specially chemically treated, and it is accordingly necessary to bake the pie in a metal pan and transfer it to the paper plate. Also, those paper plates have not possessed sufficient rigidity to be handled in the automatic pie plate handling machinery used in the modern bakeries. Moreover, the edges of the plates have been subject to considerable wear and tear and on the whole the paper plate has not presented a very attractive appearance from the so-called "sales appeal" standpoint.

It is accordingly a primary object of the present invention to provide paper utensils which are light in weight and of low cost and yet which are rigid and are durable in use.

It is a further object of my invention to provide paper baking utensils which will stand up under baking temperatures and which are durable and possess sufficient rigidity to be handled in the automatic pie plate handling machines now in use in modern bakeries.

It is a further object of the invention to apply to a pie plate or similar receptacle embodying pleated sides, a stiffening member which reinforces the article and also securely holds the pleats in closed condition.

Further objects of the invention will become apparent as the specification proceeds in connection with the annexed drawing and from the appended claims.

In the drawing:

Figure 1 is a perspective view of a pie plate embodying the present invention.

Figure 1a is a fragmental view of the edge of the plate shown in Figure 1 before the metal rim is applied.

Figure 2 is a view similar to Figure 1 but shows a modified form of pie plate embodying the invention.

Figure 2a is an edge view of Figure 2 showing the way the pleats appear before the metal rim is applied.

Figure 3 is a sectional view of the plate shown in Figure 2.

Figure 4 is a view similar to Figure 3 but shows a modified form of flange.

Figure 5 is a view similar to Figures 3 and 4 but shows a further modified form of rim.

Figure 6 is a sectional view taken on the line 6—6 of Figure 5.

Figure 7 is a top plan view of the plate shown in Figures 5 and 6.

Figure 8 is a top plan view of the plate shown in Figure 2 and illustrates one method of joining the free ends of the metal rim.

Figure 9 is a view similar to Figure 8, but shows a modified method of securing the free ends of the metal rim.

Figure 10 is an enlarged sectional view of the laminated material preferably used in making the pie plates of the invention.

With continued reference to the drawing wherein similar references are employed to designate like parts throughout the several view thereof, I have illustrated a plate A, which may be made of paper or foil and paper laminated material or any other suitable flexible material and it has been illustrated as assuming the form of a pie plate having a bottom 10, a sloping side wall 11 and a flange 12.

The plate is formed in a pair of dies and during this operation the excess material forms what is known as random "pleats" 13 in side wall 11 and when the dies assume the final position these pleats are crimped flat so that the plate has a substantially smooth side wall and flange. The pleats are so termed because no provision is made to cause the material to fall about definite lines. In other words the paper is placed flat in the dies and when pressure is applied the pleats form at random in the material. After the plate has been taken from the die, a metal rim 14, preferably of light gauge metal is crimped about the flange and it performs three important functions.

First, it engages substantially the full area of the flange and stiffens the entire plate, so that it may be handled as ordinary tin pie plates in shipment and also in the automatic pie plate handling machinery in bakeries.

Secondly, it positively holds the pleats formed in the flange in closed position, and therefore maintains the plate in operative assembled condition at all times.

The metal rim also performs the function of preventing the edges of the flange from being frayed, and it is particularly advantageous when a laminated material embodying metal foil is employed as it prevents the foil from flaking off.

Rim 14 may be made of any suitable material



having sufficient rigidity to perform the functions desired such as molded papier-mâché, a synthetic resin, then aluminum or steel, but I preferably employ a metallic rim as it is easy to apply, is inexpensive and gives the plate an attractive appearance.

In Figure 1a I have illustrated an edge view of the flange of the plate of Figure 1 as it appears before the metal rim is applied, showing how random pleats 13 occur in the side wall and also the flange of the plate. When the metal rim is clamped in place, it is apparent that it prevents pleats 13 from opening up, and thereby maintains the plate in rigid unitary condition. Metal rim or band 14 has been illustrated as having a plurality of corrugations therein for enhancing the grip upon the flange and it will be more fully discussed hereinafter.

In Figures 2 and 2a I have shown a plate B which is similar to the plate of Figure 1 with the exception that it is provided with a definite number of pre-formed pleats 15. The blank for which this plate is made has a definite number of folds provided therein preliminary to operating upon it in the dies. Pleats 15 are illustrated as eight in number and they are accordingly deeper or overlap further than the pleats of the plate of Figure 1, and this fact is illustrated in Figure 2a which shows one of the pleats in the flange before the metal rim is applied. Metal rim 16 with the exception of having a smooth surface is of a form similar to that of Figure 1 and performs the same functions. However, it is more important in this form of the invention than in Figure 1 because pleats 15, being comparatively large, they exhibit more tendency to open up than the smaller pleats.

In Figure 3 I have illustrated a sectional view of the plate of Figure 2 and which illustrates how the metal rim 16 cooperates with the flange 17 of plate B.

Referring to Figure 4, plate B is provided with a modified flange 17a which is turned under at the edge for the purpose of affording it greater rigidity. Metal rim 16a is accordingly of slightly modified form to allow for the increased thickness of material at the edge of the plate.

In Figures 5, 6 and 7, I have illustrated a further modification of the invention wherein metal rim 16b is embossed to more tightly grip the flanges of the plate and to also more smoothly assume a circular form. In this form of the invention plate B is provided with a single outwardly extending flange 17 and rim 16b is put in place around the plate and preferably simultaneously operated on to provide embossed depressions 19 which, as seen in Figure 7, assume the form of depressions in the rim which terminate short of the periphery thereof. As seen in Figure 6 the effect of the embossed depressions 19, which are staggered with respect to each other, is to give the inner part of the metal rim a corrugated appearance. This form of the invention provides an exceptionally rugged and durable plate as the embossed portions of the rim firmly grip the flange 17 of the plate and there is no possibility of the two parts becoming detached.

The free ends of the metal rim may be joined in any suitable manner as for instance by suitable cementing, welding, soldering, riveting or crimping operations.

In Figure 8 I have shown the simple step of overlapping the free ends 21 and 22 of rim 16. By clamping the parts under sufficient pressure

they will be maintained in proper assembled position. If desired, the free ends may be additionally spot welded to each other as at 23.

In Figure 9 I have illustrated a further method of securing the free ends of metal rim 16. In this instance the free ends 24 and 25 of rim 16 terminate in spaced relationship or else can be made to abut, and a U-shaped clip 26 is placed over them and secured in place in any suitable manner. For instance, the parts may be put in a press and embossed as at 27 under heavy pressure to provide interlocking depressions in the parts.

The metal rims of the various forms of the invention may be applied to the flange of the receptacles in any suitable manner by any desired machine or mechanism. For instance, the plates may be placed between dies and the rims clamped upon the flange, or, if desired, rollers may be used to achieve this result. Also, the rollers or dies may be corrugated to produce the article shown in Figures 6 and 7, and also in this connection it is to be understood that the invention is not limited to a metal rim having flat upper and lower surfaces as it may be of rounded configuration both above and below the flange so as to constitute a rounded bead.

The invention is applicable to the formation of plates from flat paper stock and also laminated paper. As an example of laminated paper, I have illustrated in Figure 10 a sheet of cellulose paper 38 interposed between two sheets 39 and 40 of foil, for instance thin aluminum foil from 2 to 5 thousandths of an inch in thickness. The parts are intimately united in full surface engagement, preferably by a latex or casein-latex adhesive, and when the stock is worked up into the plates of the invention it closely resembles metal and the metal rims of the invention enables them to perform in all respects as metal plates and yet possess the extreme lightness of paper. When pie plates are the subject of the invention the adhesive used is preferably a latex or casein-adhesive which will withstand baking temperatures without breaking down and allowing the parts to separate. It has also been found that with a layer of foil 39 and 40 on either side of the paper layer 38, it is unnecessary to fire-proof the paper layer 38.

Although by reason of their low cost the paper plates of the present invention are primarily designed for use but once, they nevertheless are durable and may be washed in the same way as metal plates. Also, in the form of the invention shown in Figure 2, pleats 115 are arranged in thirds, quarters, sixths or eighths so as to form a cutting guide for the pie.

Although I have chosen a pie plate as a specific example for illustrating the invention, it is to be understood that other receptacles of many different forms and sizes may be produced in accordance therewith and are intended to be embraced by the appended claims.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed and desired to be secured by United States Letters Patent is:



1. A generally cup-shaped receptacle formed from flat sheet material and having a bottom, a side wall, and a flange extending outwardly from the periphery of said side wall, said side wall and flange having pleats therein resulting from drawing said flat sheet material into cupped form, the pleats of said side wall merging with the pleats of said flange, and a rigid, peripherally extending member encircling said receptacle and having portions frictionally engaging all around the upper surface of the flange and the lower surface of the flange for positively maintaining the pleats of both said flange and said side wall in tightly closed condition, said member also being operable to stiffen said receptacle and protect the edge of said flange.

2. A generally cup-shaped receptacle formed from flat sheet material and having a bottom, a side wall, and a flange extending outwardly from the periphery of said side wall, said side wall and said flange having pleats therein resulting from drawing said sheet material into cupped form, the pleats of said side wall merging with the pleats of said flange, and a rigid member encircling said receptacle and cooperating with said flange to stiffen said receptacle, said member being generally U-shaped in cross-section and engaging both the upper and lower surfaces of said flange throughout the entire periphery thereof in tightly clamping relationship, for positively maintaining both the pleats of said flange and said side wall in tightly closed condition, to thereby provide a rigid unitary receptacle.

3. A generally cup-shaped receptacle formed from flat sheet material and having a bottom, a side wall, and a flange extending outwardly from the periphery of said side wall, said side wall and said flange having pleats therein resulting from drawing said sheet material into cupped form,

the pleats of said side wall merging with the pleats of said flange, and a rigid member encircling said receptacle and cooperating with said flange for protecting the edge of said flange and stiffening said receptacle, said member being U-shaped in cross-section and being corrugated around its inner periphery to make it conform to the shape of the flange and more firmly frictionally grip the latter, and said member firmly clamping said flange within it and being operable to maintain the pleats of both said side wall and flange in tightly closed condition.

4. A generally cup-shaped receptacle formed from flat sheet material and having a bottom, a side wall, and a flange extending outwardly from the periphery of the side wall, said side wall and flange having a plurality of substantially radially extending reversely bent gathering formations resulting from drawing said material into cup form, the gathering formations of said side wall merging with the gathering formations of said flange, said gathering formations continuously increasing in width from the bottom of said side wall to the periphery of said flange, said gathering formations assuming a predetermined relationship to each other and to the surfaces out of which they are formed when said receptacle assumes a cup-shaped configuration, and a rigid peripherally extending member encircling said receptacle and having portions frictionally engaging all around the upper surface of said flange and the lower surface of said flange for positively maintaining the gathering formations of both said side wall and said flange in said predetermined relationship, so as to rigidly maintain said receptacle in cup-shaped configuration, said member also being operable to stiffen said receptacle and protect the edge of said flange.

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