

June 22, 1926.

1,589,898

I. L. REEVES

FLUSH PLATE AND THE LIKE AND METHOD OF MANUFACTURING THE SAME

Filed Oct. 22, 1925

Fig. 1.

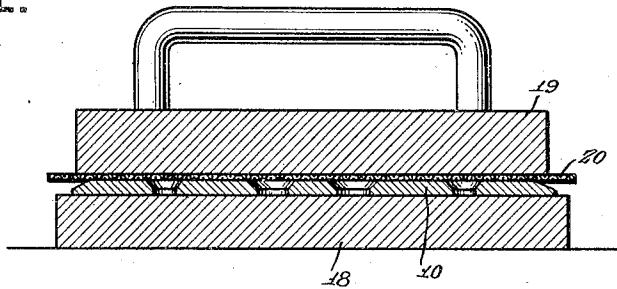


Fig. 2.

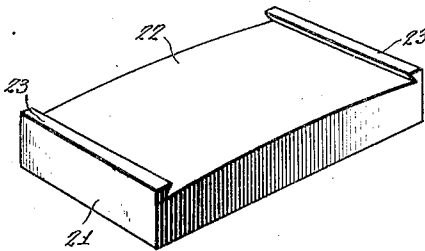


Fig. 3.

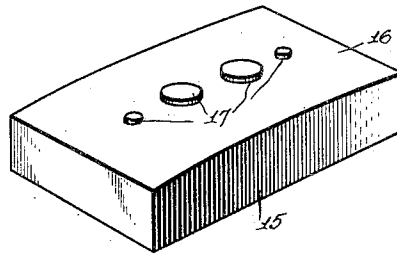


Fig. 4.

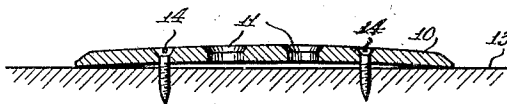


Fig. 5.

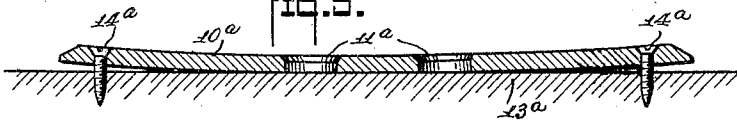
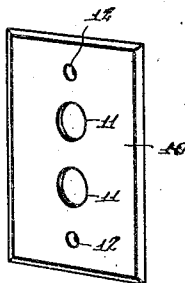


Fig. 6.



Inventor
Ira L. Reeves,
Ira L. Reeves

Patented June 22, 1926.

1,589,898

UNITED STATES PATENT OFFICE.

IRA L. REEVES, OF NEWARK, NEW JERSEY.

FLUSH PLATE AND THE LIKE AND METHOD OF MANUFACTURING THE SAME.

Application filed October 22, 1925. Serial No. 64,191.

The present invention relates to improvements in flush plates, escutcheon plates, convenience outlets, door plates and similar devices, and is particularly concerned with plates of the general class above noted which are formed of casein. By casein I means the commercial product having a milk base, which is supplied in rod or sheet stock and sold under various trademarks and trade names such as Galolith,

The invention further consists in novel methods of manufacturing the articles mentioned above.

There have been several factors contributing to render prohibitive the use of casein in the manufacture of wall or door plates. Among these factors may be noted difficulties of manufacture, such as an excessively high percentage of breakage and the difficulties involved in accurately cutting and boring the sheets. The outstanding reason for the nonuse of casein, however, is its well recognized tendency to warp, and the failure of manufacturers to devise any means for overcoming or counteracting such warping.

My invention is based partially upon the discovery that when a casein plate or sheet has once started to warp, all subsequent warping will be in the same direction, that is to say, if the plate warps into curved shape the further warping tendency will always be to accentuate the curve.

This discovery and the method and means by which I make use of it enable me to make casein plates and apply them to walls or doors with the absolute assurance that the plates will always be retained flatly in position.

In carrying out the invention I deliberately artificially warp the plates in one direction or the other during manufacture and then so position the screw holes in the plates that when the latter are applied, their normal warping tendency will serve to retain them pressed flatly against the supporting surfaces with which they may be associated.

From the foregoing it will be evident that the invention consists, partially at least, in the provision of an artificially warped casein plate. The invention further consists in so positioning the openings for the attaching screws that when a plate is secured against a wall its normal tendency will be to hold itself flat and straight.

I have made the further discovery that

the warping of the plates is caused by differences in surface tension on opposite sides of the plates. By relieving or reducing surface tension on one side of the plate, I can easily produce and control such artificial warping.

One convenient method of doing this, is to place the plate upon a polishing block having a curved bed. When the usual polishing operation is carried out upon such a block the frictionally generated heat and the mechanical action of the polishing tool upon the surface to be polished, relieve or reduce the tension on said surface. The plate warps naturally, assuming a curvature predetermined by the shape of the bed on which the under face of the plate rests.

In certain cases where no polishing is required, or where for any reason the above treatment is undesirable, the plates may be rendered pliable by the application of heat, bent into the desired curvature, and then cooled while held against the curved surface of a retaining form or frame.

The heating of the plates to render them pliable presents a new problem. Casein burns very easily and most of the usually acceptable heating methods are therefore unsuitable. The use of water either as a heating medium or as a means for preventing burning of the plates during heating is unsatisfactory because the casein is slightly hygroscopic. It will sweat for a long time after absorbing the water and resist subsequent polishing operations.

I have devised a simple and effective method of heating the plates without burning them and without causing them to absorb moisture. Preferably the plate to be heated is laid upon a suitable bed and an oily rag interposed between the plate and the heating medium. The latter may be in the nature of an ordinary hot plate or sad iron. The oil will not be absorbed by the casein, yet it effectively insulates it against burning contact with the heating medium.

This application is a continuation in part of my copending application, Serial Number 61384 filed Oct. 9, 1925.

The invention may be more fully understood from the following description in connection with the accompanying drawings, wherein:

Figure 1 is a sectional view through the apparatus for heating the plate without burning or moistening the same.

Figure 2 is a perspective view of the retaining block or form which I use to retain a heated and shaped plate during cooling.

Figure 3 is a perspective view of the improved polishing block.

Figure 4 is a sectional view showing the manner of attaching one form of plate constructed in accordance with the invention to a wall or support.

Figure 5 is a view similar to Figure 4 but showing a modified form of plate.

Figure 6 is a perspective view of the plate shown in Figure 4.

I have elected to show the invention as embodied in a flush plate, but it is to be understood that it is also capable of embodiment in escutcheon plates, convenience outlets, door plates and various generally similar articles. To simplify the description and claims I shall refer to the article simply as a plate, it being understood that this term is intended to comprehend all of the various kinds of wall and door plates above noted.

The plate 10, shown in perspective in Figure 6, is formed from a flat section of casein sheet stock. It is provided with the usual openings 11 to accommodate push button switch elements, and with the customary countersunk openings 12 for the reception of attaching screws 14.

As seen most plainly in Figure 4, the plate is warped or curved transversely of its length, so that when it is laid against a supporting wall or door 13 only the ends will contact with the wall, the intermediate portion of the plate bowing outwardly therefrom. The plates are inherently springy and flexible so that a relatively light pressure on the plate center will flatten the same against the wall. It is to be noted that the screw holes 12 are disposed at a substantial distance from the ends of the plate, so that when screwed home, the screws 14 will exert the necessary pressure to straighten the plate flatly against the wall.

As noted above, casein, when once warped in one direction, will always continue to warp in such direction. Thus any warping of the plate 10 after it is secured to the wall would tend to restore or accentuate the curvature shown in Figure 4. (The screws are not shown fully screwed home in this figure.) Such warping tendency would tend to swing the plate ends in and bulge its center out. Inasmuch, however, as the intermediate portion of the plate is firmly retained against such bulging by the screws, the warping tendency can only serve to hold the plate ends flatly and firmly pressed against the wall. Thus with the plate secured in correct position, its natural warping tendency will always act to retain it in such position.

If the plate were flat when applied to the

wall, it would be quite likely to curl outwardly at the ends, or to assume a warp longitudinally of its length to swing the longer edges away from the supporting surface.

In Figure 5 I have shown an alternative plate construction which is more suitable for relatively long plates. Here a longer, but otherwise similar plate 10^a, provided with openings 11^a corresponding to the openings 11, is warped in a reverse direction. When the plate is laid against a wall 13^a, its intermediate portion contacts the wall and its ends curve outwardly. The screws 14^a are passed through as closely as practicable to the ends of the plate, so that when screwed home the plate ends are forced flatly against the wall. The normal warping tendency of plate 10^a being to curve as in Figure 5, the intermediate portion will always press tightly against the wall, and the plate will be retained in correct position.

Most of the steps of the method by which the plates are manufactured, are well understood in the art of working casein. For instance, the plates may be sawed into the proper size and shape from a piece of sheet stock. The holes 11 and 12 may be bored and countersunk in the conventional manner. The plates may be polished with an ordinary polishing tool. A feature of the present invention is the method and apparatus by which the polishing operation is utilized to artificially warp or curve the plates.

Figure 3 shows a polishing block 15 having a bed face 16 of the curvature which it is desired to have the plate 10 assume. Centering pins 17 rising from the block are adapted to enter the openings 11, 12 to prevent turning of the plate on the polishing block. Having discovered as noted above, that the warping of casein is caused by the surface tension thereof, its naturally follows that polishing a plate on the block 15 will impart a permanent curvature to the plate. This curvature is predetermined by the curvature of the convex bed. The frictionally generated heat, and in some instances, the mechanical action of the polishing tool, relieve surface tension on the upper face of the plate, and the natural warping bows the plate to approximately the shape of Figure 4.

In Figures 1 and 2 I show apparatus for carrying out another method of producing the artificial warp. This apparatus includes a bed 18 (Figure 1) upon which the plate is laid and subjected to heat from a superimposed hot plate or iron 19. The plates are thus rendered quite pliable, and when cooled in the supporting block 21 of Figure 2 will retain the curvature of the face 22 of said block. The plates, while in a hot and pliable condition, are slid edgewise onto said sur-

face under the rails 23. These rails overlying the plate edges retain the plates in bowed shape while cooling.

It will be noted that the apparatus of Figure 1 preferably includes an oil saturated pad 20 for interposition between the plate 10 and hot plate 21. I thus prevent burning of the casein. This highly hygroscopic material is also prevented from absorbing any moisture, as it would do if water instead of oil were used.

In conclusion I should like to call attention to the fact that the apparatus for carrying out the method is subject to a wide variety of variations. The apparatus shown is merely indicative of some simple and efficient instrumentalities for performing the required functions.

I claim:

1. A plate of casein having therein an opening and also curved.

2. As a new article of manufacture, an oblong casein plate of the class described artificially prewarped into a curvature transversely of its major axis.

3. As a new article of manufacture, a curved casein plate of the class described having screw holes so arranged therein that when the plate is secured to a wall by screws passed through said holes, its normal warping tendency will retain it pressed flatly against the wall.

4. As a new article of manufacture, a curved casein plate of the class described having screw holes arranged in the portion thereof which is normally spaced from a wall when the plate is laid thereagainst.

5. As a new article of manufacture, a

curved casein plate of the class described having screw holes so arranged therein, that when the screws are screwed home, the outwardly curving plate portion will be forced against the wall by said screws and the remainder of the plate will be held against the wall by the normal warping tendency of the plate.

6. As a new article of manufacture, a casein plate outwardly bowed so that when laid against a wall only its ends will contact therewith, and having screw holes therein spaced an appreciable distance from said ends.

7. A plate of casein having therein an opening and curved, the plate also having several holes extending through it.

8. A method of making casein plates which includes the step of artificially warping the plates to curve the same and predetermine their future warping tendency.

9. A method of making casein plates which includes the step of polishing the plates and simultaneously artificially warping them to curve them and predetermine their future warping tendency.

10. A method of making casein plates which includes the step of holding them on a polishing block having a convex bed face.

11. A method of making casein plates of the class described, which includes the step of polishing a plate to relieve surface tension on one face thereof by the heat frictionally generated in polishing, while providing clearance for the plate to warp as a result of the difference in surface tension on its opposite faces.

IRA L. REEVES.