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L. BROWN

2,315,395

REFRACTORY SETTER

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Fig. 1.

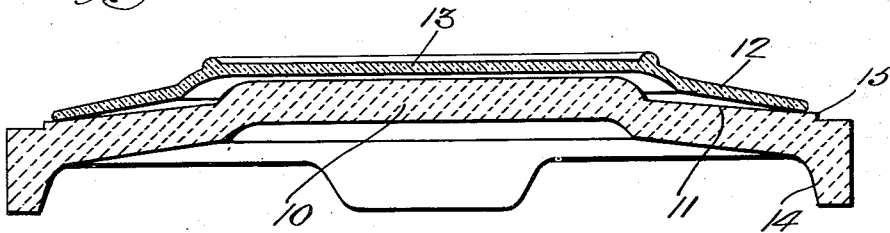


Fig. 2.

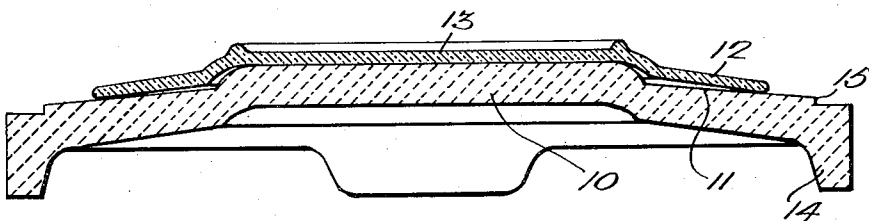
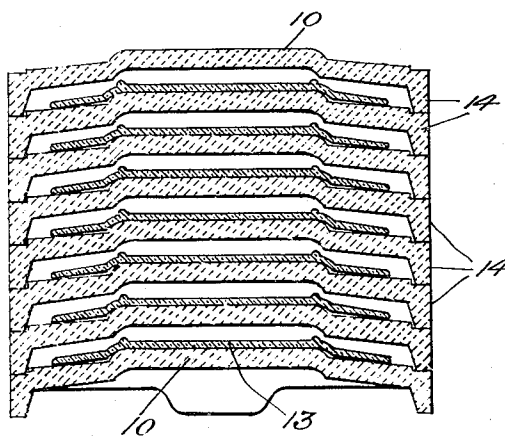


Fig. 3.



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REFRACTORY SETTER

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2 Claims. (Cl. 25—153)

This invention relates to refractory setters and, more particularly, to setters employed in the production of fine quality porcelain such as that known to the trade as Minton, Doulton, Lenox, or the like.

As is well known to those familiar with the art, due to internal strains set up in formation of the clay piece and to the shrinkage occurring during initial firing thereof, there is a very decided tendency to warping, particularly in the rim portions of the finished article. While a slight warp is not important in the coarser grades of porcelain, in the finer grades such as those above referred to even the slightest warping results in rejection. Since the articles themselves are of very fine texture and of delicate construction in such finer wares, there is an increased tendency to warping, and it has been the practice to prepare such wares for firing by providing a suitable base and then forming upon this base a flint powder form which will provide a full support for the clay piece from which the article is to be produced. A second base is then placed over this assemblage and this operation continued until the stack of 8 or 10 is prepared for the oven. Such a method of setting, in addition to being time-consuming, is wasteful of oven space, necessitates a longer firing time due to the fact that the articles are, in effect, embedded in the setting material and, furthermore, the setting operation involves a decided silicosis hazard even though greatest possible care is taken to insure good working conditions. This hazard arises not only during the formation of setters with flint powder, but likewise in removing the fired articles from the kiln, and particularly at this latter time since the flint powder is then in a very dry state and tends to float in the atmosphere. While this method of setting reduces the number of "rejects" materially, it still fails to produce anything like an adequate or efficient support for the articles being fired, as is evidenced by the fact that with such methods the "rejects" constitute between 20 and 40 per cent of the fired articles.

An important object of the present invention is the provision of a unitary setter for use in the manufacture of fine chinaware which will of itself provide an adequate warp-preventing support throughout the firing operation; which provides a compact stack for insertion in the oven and, accordingly, admits of an increase of the number of articles which may be fired in a given time; which so supports the article that the oven heat can readily reach all parts thereof and

thereby reduces the firing time, and which may be readily produced at a moderate cost.

These and other objects I attain by the construction shown in the accompanying drawing wherein, for the purpose of illustration, I have shown a preferred embodiment of my invention and wherein:

Figure 1 is a sectional view through a setter constructed in accordance with my invention, the clay piece being shown prior to the initial firing;

Fig. 2 is a view similar to that of Fig. 1 but showing the clay piece after firing; and

Fig. 3 is a sectional view illustrating a stack of setters as they appear when prepared for the oven.

Referring now more particularly to the drawing, the setter comprises a central hub 10 flattened to form a uniform seat upon which the central portion of the dish finally comes to rest during the firing operation. This hub is surrounded by a depressed conical flange 11 the angle of which is made somewhat flatter than the conical rim 12 of the clay piece which it is to support. The depth of the depression of the flange 11 is made such that the central portion 13 of the clay piece, when initially placed upon the setter, will have its lower face slightly spaced above the hub 10. As will be noted by a comparison of Figures 1 and 2, there is, during the firing operation, a very considerable shrinkage, this shrinkage being one of the main reasons why the flint powder forms fail to give continuing adequate support to the clay piece during the firing operation. By use of the construction just described the plate, during shrinkage, maintains its rim in constant supporting engagement throughout with the flange 11, and until the firing operation is substantially completed all portions of the clay piece will remain in spaced relation to the opposed surface of the setter. Such a setter may be readily formed from any suitable refractory and the surface of the flange 11 may be trued to insure absolute accuracy. Obviously, with a construction of this character all silicosis hazard is eliminated; the setting and firing times are materially reduced; and the number of clay pieces which can be fired in an oven of a certain size is materially increased.

The setters are so constructed that they may be readily stacked, being provided with legs 14, in desired number, adapted to engage a second setter and maintain the same in slightly spaced relation to adjacent setters. In the present instance, the marginal portions of the rim 11 are grooved to provide a shoulder 15 against which

the inner edges of the legs 14 will engage to prevent accidental displacement of one setter with relation to another. Obviously, however, this method of engagement between setters may be considerably modified.

Since the construction illustrated is capable of a certain degree of modification without departing from the spirit of my invention, I do not wish to be understood as limiting myself thereto except as hereinafter claimed.

I claim:

1. A setter for use in the initial firing of vitrified translucent flat ware such as fine porcelain and the like, said setter comprising an imperforate hub to oppose the center of an inverted clay piece, and an imperforate annularly true depressed flange, said flange being depressed to an extent such that it is adapted to engage continuously the rim of the clay piece during the entire firing operation and to support the central portion of the clay piece in spaced relation to the opposed surface of the hub until the firing has been substantially completed, said hub affording a support for the clay piece during only

the final portion of the firing period whereby to prevent deformation of the central portion of the ware during that period when it is in a semi-plastic condition.

5 2. A setter for use in the initial firing of vitrified translucent flat ware such as fine porcelain and the like, said setter comprising an imperforate hub to oppose the center of an inverted clay piece, and an imperforate annularly true depressed flange, said flange being depressed to an extent such that it is adapted to engage continuously the rim of the clay piece during the entire firing operation and to support the central portion of the clay piece in spaced relation to the opposed surface of the hub until the firing has been substantially completed, said hub affording a support for the clay piece during only the final portion of the firing period whereby to prevent deformation of the central portion of the ware during that period when it is in a semi-plastic condition, said flange being conical and having a flatter angle than the cone of the rim of the clay piece.

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