March 14, 1967 T. PIETSCH 3,309,186

METHOD OF MANUFACTURING KILN TREATED ARTICLES

Filed July 29, 1965

Fig. 1

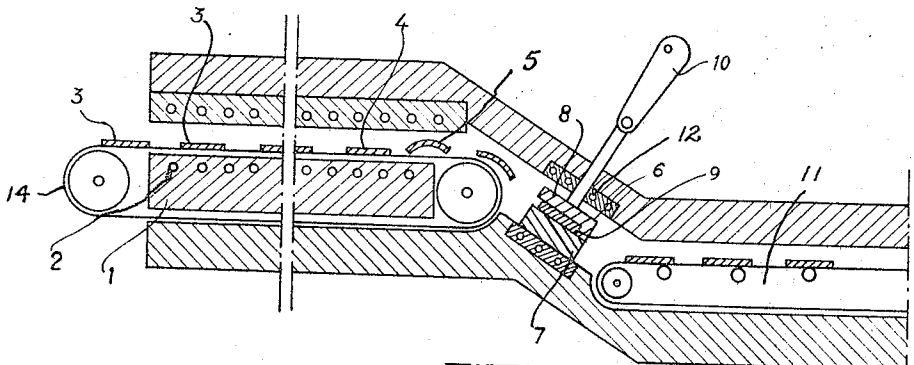
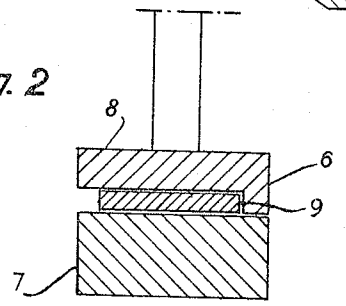


Fig. 2



INVENTOR.
Tibor Pietsch
BY
Wenderoth, Lind & Ponack
Attorneys

United States Patent Office 3,309,186
Patented Mar. 14, 1967

1

3,309,186

METHOD OF MANUFACTURING KILN TREATED ARTICLES

Tibor Pietsch, Santo Domingo de Siles 8, Madrid, Spain

Filed July 29, 1965, Ser. No. 475,707
Claims priority, application Spain, Aug. 8, 1962, 279,900
1 Claim. (Cl. 65—102)

This application is a continuation-in-part of my application Ser. No. 299,100 filed July 31, 1963, entitled, Manufacture of Kiln Treated Articles and the Action of the Elements That Give Form to Same, now abandoned.

This invention refers to improvements in the manufacture of ceramic or vitreous kiln treated articles with relation to their formation elements when such articles are softened by heat.

Ceramic articles at higher than boiling temperatures become plastic and so are easily deformable, while if the boiling temperature is lowered to avoid said deformation danger, then the material is insufficiently baked, and if the temperature is too high, good quality but deformed material is the result. This invention corrects such deformation by means of a press that actuates on these deformed articles to give them the desired regular form before their hardening. The pressure plates of this press should be at such a sufficiently high temperature that in cooperation with the adequate softening reached by the whole of the mass under treatment, maximum efficacy shall be derived from the pressing operation.

The annealing of vitreous materials requires that they reach their softening temperatures, but this softening should not be carried to the extent of producing appreciable deformation, this presenting one of the greatest difficulties confronted, above all when dealing with comparatively large pieces.

According to this invention these softened pieces are also submitted to rectifying pressure under the same conditions as those required for the pressing of ceramic pieces, implying a sufficiently high press temperature with the vitreous material in a plastic state throughout the whole of its mass; under these conditions only can the desired rectification be carried out.

This invention solves both these problems by situating a press inside the treatment kiln, to which press the pieces are carried for example on a conveyor belt to be pressed, after which the pieces continue on their way with means for their gradual cooling.

For a better understanding of the foregoing, a drawing is annexed hereto showing one realization of the treatment of ceramic pieces with the press situated within the kiln.

With the above and other objects in view which will become apparent from the detailed description below, a preferred form of the invention is shown in the drawings in which:

FIGURE 1 is a diametrical cross-section of a kiln for treating vitreous articles, and

FIGURE 2 is an enlarged cross-section of the pressing plate.

FIGURE 1 shows at **1** stoneware walls with electric resistances **2**. The initial positions of the pieces to be treated is shown at **3**, and such pieces at **4** have reached the softening temperature that may deform them as at **5**,

2

from which limiting position of the first stage of the kiln they slide toward the press where they take up the position **6** between the plate **7** which is fixed, and the upper movable plate **8** articulated to an eccentric **10**, to later continue through the cooling stage **11** from which they are collected.

This arrangement with the stage serving as the cooling tunnel situated at a lower level than the heating stage, prevents the passage of heat by convection from one stage to the other. This implies an inclined stage for the situation of the press which should be hot, and heated by adequately arranged electric resistances **12**, while the inclination of the plates **7** and **8** requires a container, which as seen with more detail in FIGURE 2, is provided with a flange or projection **9**.

The insulation between the stages of the kiln may be completed by means of screens which will allow the passage of the pieces under treatment.

The advance of the pieces in the heating stage of the kiln is synchronized with the alternative movements of the plate **8** of the press.

In this example, conveyor belts **14** are used so that the pieces of argillaceous stone loaded at the entrance to the kiln at ambient temperature gradually become heated up to about 1100° C. at position **4**, while the temperature in the press stage of the kiln is about 1050° C., and the cooling tunnel **11** is sufficiently long to allow a slow and progressive cooling.

By means of this improvement in treatment, higher heating temperatures may be employed, with a resulting higher working speed, a better finished product and elaborated pieces of exact form may be obtained.

When dealing with cellular glass, the same press may be employed in the manner already described.

Instead of a press, any other forming, bending, shaping or cutting element may be employed.

It is thought that the invention and its advantages will be understood from the foregoing description and it is apparent that various changes may be made in the process, form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing its material advantages, the form hereinbefore described and illustrated being merely a preferred embodiment thereof.

I claim:

A process for improving the form of ceramic and vitreous articles which have been formed in a kiln comprising heating said articles to a softened state, then passing said heated ceramic articles to a press while heated to a temperature not more than 10% lower than the softening temperature of said ceramic articles, then repressing said articles and then cooling said articles at a controlled rate to anneal said articles.

References Cited by the Examiner

UNITED STATES PATENTS

694,711	3/1902	Anderson et al.	65—273 X
1,465,545	8/1923	Demongeot	264—332
1,824,684	9/1931	Pine	264—332
2,901,811	9/1959	Hall	65—102 X

DONALL H. SYLVESTER, *Primary Examiner.*

S. LEON BASHORE, A. D. KELLOGG,
Assistant Examiners.