

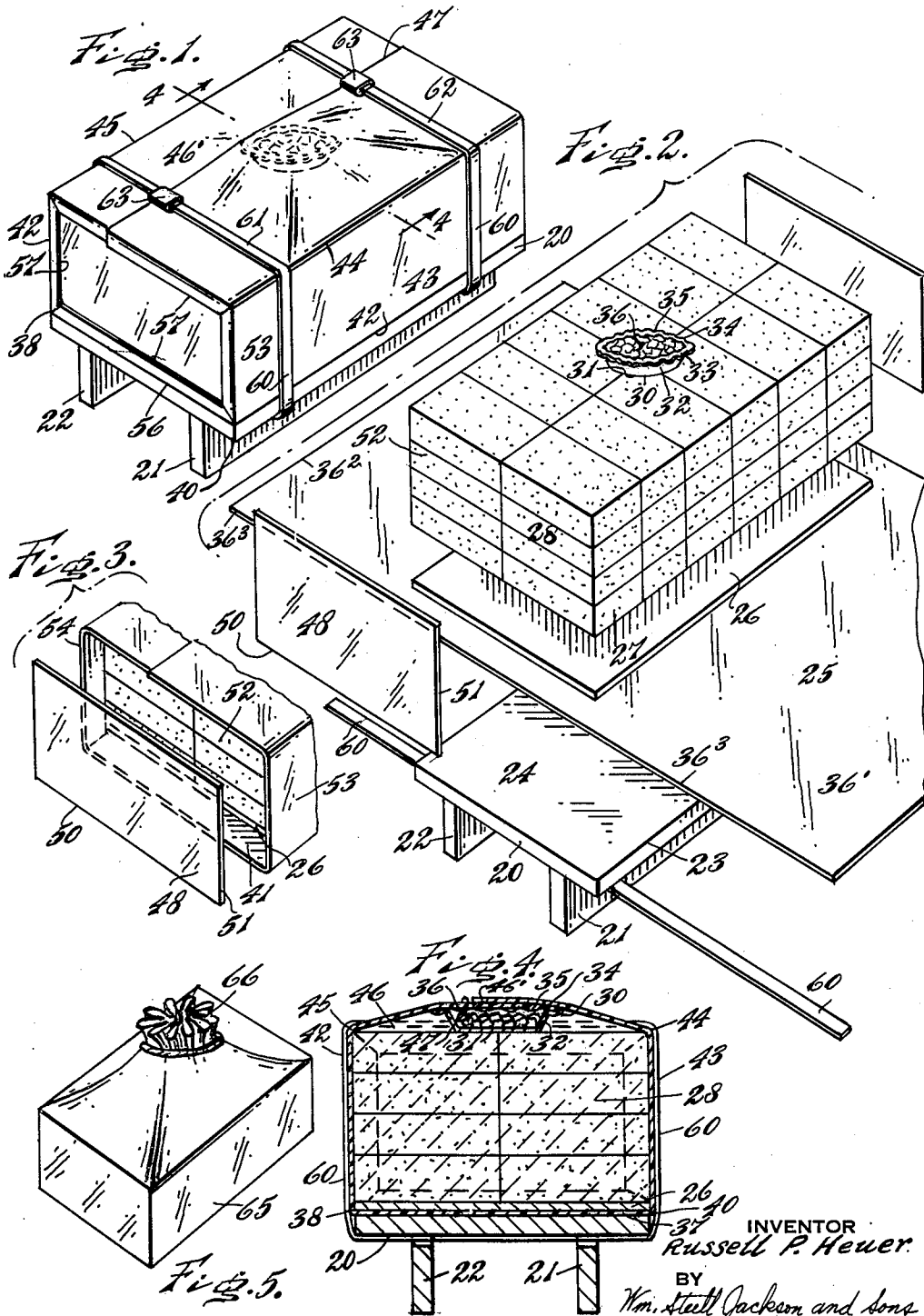
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BRICK PACKAGE

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BRICK PACKAGE

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My invention relates to refractory brick containing calcined dolomite and packages for such brick.

A purpose of my invention is to manufacture the said brick and to store them before use in a manner to prevent deterioration of the brick.

A further purpose is to manufacture the said brick, pile the brick for transport and/or storage on pallets, place on the pile a container holding a hydrophilic agent and enclose the pallet and the hydrophilic agent container in a sealed enclosure of polyethylene sheet or other suitable material.

Further purposes appear in the specification and in the claims.

In the drawings, I have chosen to illustrate a few only of the numerous embodiments in which the invention may appear, selecting the forms shown from the standpoints of convenience in illustration, satisfactory operation and clear demonstration of the principles involved.

FIGURE 1 is a perspective of a package according to the invention.

FIGURE 2 is an exploded perspective of the package of FIGURE 1.

FIGURE 3 is a partial perspective view of the package of FIGURE 1 prior to the assembly and sealing of the end.

FIGURE 4 is a vertical section along the line 4-4 of FIGURE 1.

FIGURE 5 is a perspective view of a modification of the invention.

Refractory brick comprised entirely of calcined dolomite bonded with tar or mixtures of dolomite with calcined magnesite or other refractory materials have recently acquired considerable importance in the lining of so-called oxygen converters for making steel. These brick are made by mixing the properly grounded refractory materials with hot tar or pitch, pressing the brick into form, and cooling the same whereupon they are ready for furnace use.

Unfortunately, in the prior art, such brick must be transported to the furnace and placed into service as soon as manufactured. If they are exposed to the atmosphere under ordinary conditions for even a few days the dolomite is attacked by the atmosphere and the brick disintegrate or lose their brick-like properties.

To overcome this difficulty some furnace operators make the brick at the site of the furnaces. They furthermore find it difficult to store sufficient bricks before the furnace is ready for relining. The bricks are therefore made so that the manufacturer is finished just as the furnace is shut down for relining. Frequently, the furnace operation is delayed because the brick have not been made.

The present invention is intended to provide for the preservation of brick after manufacture for a period of several weeks or even months. This allows the brick to be made at a point remote from the furnace, stored at the site of manufacture if necessary, and after transport to the site of the furnace, allows storage for subsequent use. The present invention permits sufficient time between manufacture and use to enable the manufacture of brick in centrally located brick plants which are at considerable distance from the furnaces where the brick are used. It also permits storage of the brick at the factory or at the

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furnace so that a suitable supply of brick is always available.

Considering now the drawings in detail, a pallet 20 has beams 21 and 22 which support a platform 23 of suitable size. An example of a suitable size would be a 36 inch width by a 48 inch length. Upon the upper side 24 of the platform 23 rests a sheet of suitable gas impervious material 25 such as polyethylene. A suitable sheet thickness for polyethylene would be about 4 mils, but it should be understood that the thickness of the sheet would depend on the impervious qualities of the material as well as the strength of the material.

A cardboard layer 26 suitably the size of the platform 23 is placed over the impervious sheet 25 and aligned with the platform 23. On top of the cardboard, dolomite brick 27 are stacked in courses over the area of the cardboard 26. Any suitable number of courses of brick 27 can be arranged in the pile of brick 28. A suitable height for a pile of dolomite brick would be 18 inches. On top of the pile 28 and suitably centered is a container 30 supported by the brick at 31. The container has a bottom 31 and a side wall 32. The top of the side wall 32 has configurations 33 having a peak 34 and a valley 35. The purpose of this configuration will be later explained. Inside the container is a hydrophilic material or desiccant 36 such as calcium chloride.

A longitudinal wrap 36' of the gas impervious material extends across the top of the support 20 below the cardboard 26 at 37. The sheet follows the contour of the cardboard 26 and pile 28 at the lower longitudinal edges 38 and 40 upward along the pile. The longitudinal wrap 36' prior to assembly consists of a rectangle having a width 36² in excess of the platform length so that prior to end assembly the sheet extends beyond the pile as shown at 41, best seen in FIGURE 3. The gas impervious sheet encloses the pile along the longitudinal sides at 42 and 43 and then follows the contour of the pile 28 at upper edges 44 and 45. The sheet overlaps along the top 46 of the pile to a suitable length, which can be 2 inches, at 46'. The sheet encloses the container 30 as well as the top of the pile. The sheet is suitably sealed at 47 by the application of heat or by the application of a pressure sensitive tape over the seam.

It will be seen that the sheet, in coming into contact with the container 30 is supported at the peaks 34 so that the atmosphere surrounding the pile has access to the hydrophilic material 31 inside the container through valley 35. An end sheet 48 of rectangular form as seen in FIGURE 3 having a length 50 equal to the pile width and a height 51 equal to the pile height is in contact with the pile 28 at the end 52. After assembly, the extending portions of the longitudinal wrap 41 follow the contour of the pile at sides 53 and 54 and edges 55 and 56 along the end 52 of the pile, as seen in FIGURE 1. The envelope is sealed at 57 by the application of heat or the use of a pressure sensitive tape.

Steel straps 60 extend around the sheet at 61 and 62 and are fastened together at their ends 63 in a well known manner. It will be seen that the straps pass through the beams 21 and 22 of the pallet so that a fork-lift truck or the like can by maneuvering pallet 20 control and support the entire package.

In one example of the application of the invention, a rectangular sheet of polyethylene 4 mils thick having dimensions 52 inches by 112 inches was used as a longitudinal wrap 36'. The 52 inch dimension of the longitudinal wrap was disposed along the 48 inch length of a 36 inch by 48 inch platform so that the sheet projected over the edge of the platform about 2 inches at each end at 41 prior to final assembly as shown in FIGURE 3. The 112 inch dimension extended along the 36 inch width of

the platform and projected over the edge of the platform about 38 inches in each direction at 36³ prior to folding along the longitudinal walls of the pile at 38 and 40. When the longitudinal wrap was folded into the position shown in FIGURE 1, the ends of the wrap overlapped 2 inches at 46'. In this package the bricks were piled 18 inches high. A conventional 10 inch pie plate about 10 inches in diameter was used for the container 30 with about 1 pound of calcined chloride as a hydrophilic agent. The sheet consisted of polyethylene. The joints were sealed by pressure sensitive tape 2 inches wide. The end sheets 48 were of polyethylene having dimensions of 18 inches by 36 inches. The fold 41 was 2 inches wide.

It will be seen that the vertical faces of the pile can be suitably covered with cardboard between the pile 28 and the impervious sheet for further mechanical protection.

While one form of polyethylene envelope is shown it should be understood that other forms within the scope of the invention can be used. For example, the polyethylene sheet could be made in the form of a bag 65, seamless except for a top opening as shown in FIGURE 5. The bag would be placed on the platform or pallet and the brick and hydrophilic material placed within. The pile and hydrophilic material would be enclosed by sealing the open end of the bag over the top of the brick pile at 66.

It is evident that although a platform in the form of a pallet suitable for transport has been described in the above specification, a platform other than a pallet may be used. This would include any flat structure sufficiently strong to support a brick pile which for instance could be utilized solely for storage only, and could consist of, for example, a flat board or metal sheet.

As a substitute for polyethylene, other gas impervious sheets such as tarred paper or the like may be used, but polyethylene is generally preferred.

Other hydrophilic agents, such as silica gel, activated alumina and the like may be used instead of calcium chloride. The calcium chloride is advantageously priced and may be disposed of after use. Activated alumina and other similar agents after saturation may be heated and repeatedly used.

It will be evident that vapor-tight access openings or hand holes with suitable covers and seals, as well known in the art of long term storage, may be provided to permit removal and replacement of the dessicant whenever required to maintain a low relative humidity in the atmosphere within the container.

It will also be evident that indicators for relative hu-

midity, visible for example through vapor-tight transparent windows, as well known in the art, will be employed where desired to indicate when the dessicant should be replaced or regenerated.

In view of my invention and disclosure, variations and modifications to meet individual whim or particular need will doubtless become evident to others skilled in the art, to obtain all or part of the benefits of my invention without copying the structure shown, and I, therefore, claim all such insofar as they fall within the reasonable spirit and scope of my claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A package for storing and transporting refractory brick comprising a pallet of the type adapted to be used with a fork lift apparatus, a pile of refractory brick containing calcined dolomite resting on and supported by the pallet, a substantially gas impervious envelope surrounding and enclosing the said pile of brick, a hydrophilic agent within the said envelope, a container holding the hydrophilic agent out of contact with the brick and in contact with the atmosphere within said envelope comprising a bottom, sides extending substantially vertically from the bottom and having configuration at the top in the form of periodic peaks and valleys, whereby said envelope is supported at the peaks and the atmosphere within the said envelope is free to move within said valleys, and straps surrounding and securing the said envelope and said pile to the said pallet.

2. A package for storing and transporting brick, comprising a pallet of the type adapted to be used with a fork lift apparatus, a pile of dolomitic refractory brick containing free lime resting on and supported by the pallet, said refractory brick being subject to destructive attack by moisture in the atmosphere, a substantially gas impervious envelope surrounding and enclosing the said pile and providing a barrier against moisture vapor transmission from the atmosphere to said refractory brick, a hydrophilic agent within the said envelope adapted to absorb moisture which may reach the interior, and straps surrounding and securing the said envelope to said pile.

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