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BRICK PACKAGE

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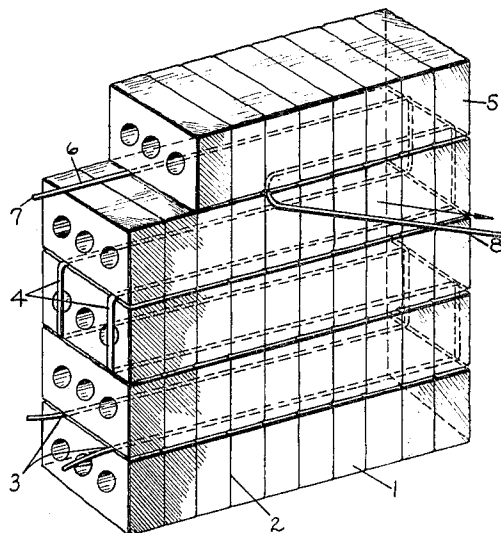


FIG. 1

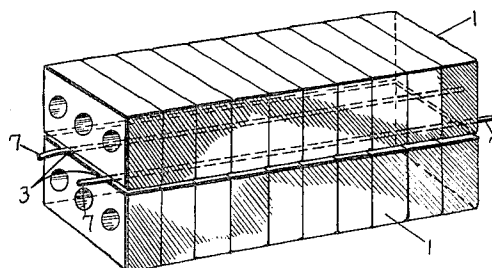


FIG. 2



FIG. 3

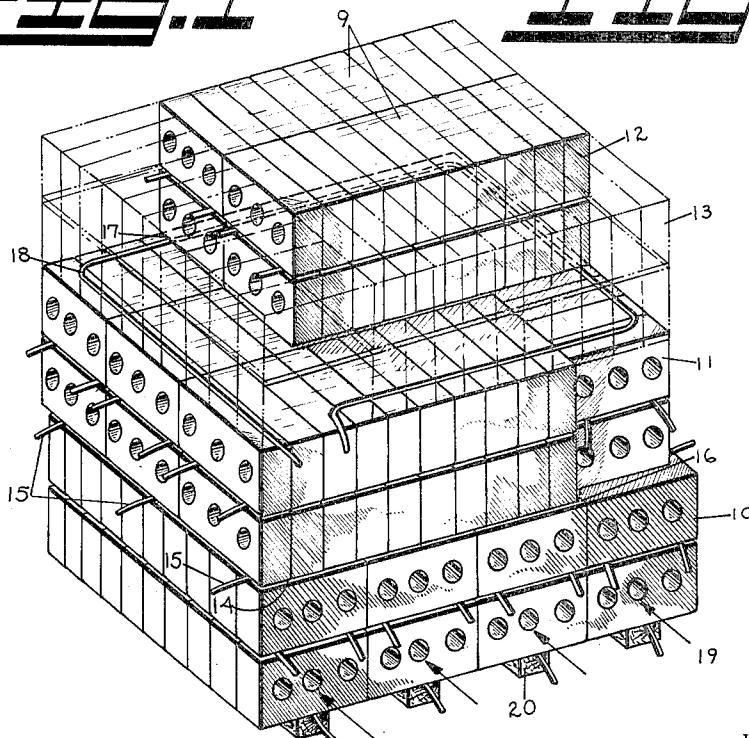


FIG. 4

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This invention relates to the packaging of brick and similar building products. More particularly it concerns construction of a package or bundle of the subject product stabilized by adhesive anchorage and ties at critical points or areas of contact among the assembled objects, thus unitizing a relatively large number of such product to permit efficient handling without reliance upon external envelopment or peripheral banding.

In order to facilitate mechanization in the handling of this type of product, which traditionally had been manual and too oft performed, the industry now unitizes much of its product. In the case of brick, such units may comprise cubes ranging in count from 200 to 500 and packages of 50 to 100. The term "cube" is indeed descriptive of the unit's shape and three-dimensional bulk, being made up of a plurality of relatively large-area courses tiered one upon the other to the desired height or count. These may be assembled on pallets or stacked upon a patterned bottom course of brick designed for pickup by clamp fork lift. Steel strapping is used extensively to secure the cube for shipment, which in some cases permits handling by standard fork lift or crane by tine insertion into ports formed in one of the lower courses, without benefit of supporting pallet. Adjacent courses may be differently patterned so as to provide interlocking and thus improve the cube's stability. Additionally, chipboard is sometimes inserted between courses, yielding profitable advantage in reduced damage by providing horizontal ties within the cube and lessening interfacial shifting in transit. Demands for reduction in final handling costs at certain jobsites have led to the packaging of smaller units referred to above as "packages," so sized that they can be carted along narrow planking and/or supported on lesser scaffolding. Such packages generally differ from cubes both in size and shape, the courses being only one brick length in width.

Although the mechanization of brick handling made possible by unitization has contributed significant construction economics especially beneficial to jobber and contractor, each of the named elements tends to increase the manufacturer's cost, which much of the industry finds burdensome. The packaging techniques so far utilized have given the manufacturer little aid or comfort with respect to labor cost from kiln to completed package unit, nor have they been wholly satisfactory in maintaining integrity and thus protecting the product from damage in transit or in subsequent handling of an insecure unit. Due to these and other shortcomings of methods presently in use, combined with numerous and difficult problems of integrating the packaging unit with universal handling equipment, standardization thus far has not been achieved in spite of earnest and diligent effort toward such end. One of the purposes of the instant invention, therefore, is to offer a constructive contribution which may be helpful in achieving such a desirable goal.

Briefly, my improvement in brick packaging comprises latex coating of twine and its wet placement between adjacent courses or tiers of the brick. By providing adhesive attachment per se at the horizontal interface between opposing brick surfaces, both vertical tensile (or lifting stresses) and horizontal shear forces are resisted. The adhesively brick-anchored twine provides tensioned horizontal ties connecting adjacent brick in each of the contacting courses, providing maximal opposition to parallel horizontal tensile and vertical shear forces. In addition to its function just described, twine serves as a facile

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vehicle for carrying the wet latex controllably into its desired placement. Its physical structure provides some supporting clearance under initial compression, preventing excessive exudation of the wet latex and maintaining reliable film continuity of the elastomer. The twine's imbedment within the elastomer permits complete removal of the anchoring element, and thus all connecting links which the package, at its point of use. This is accomplished by grasping an exposed end and ripping it out from the interface, thus freeing the course above and permitting the brick to be lifted out individually or in groups by tonging.

The effectiveness of relatively weak reinforcing components used to stabilize high-densitized mass may best be explained by the favorable placement of these elements in direct opposition to the desirably resisted forces and by their distribution throughout the total mass, permitting control of disruptive stresses at their individual points of origin and thus discouraging accumulation. A second factor favorably affecting package stability is its cushionable absorbance of shock, which could be destructive if the construction were absolutely rigid. Additionally there is the teaching of industry experience concerning the value of internal ties and semblance of keying between courses, both accomplished to some degree by insertion of chipboard.

The primary object of my invention is the application of the shown-described principles to the construction of a stable package. It is also important that the cost be minimal and that the package is adaptable insofar as possible to mechanical assembly. Another object is that it be facile both in handling and in use. Still another objective is that it be weatherproof. A further objective is that standardization may be achieved in the packaging of brick and like commodities. A still further objective is the development of a basic package unit which may be plurally assembled and further unitized for efficiency in handling large quantities of product.

These and other objectives of importance to the industry may be achieved by the packaging of its product in accordance with the teaching of the instant invention, further exposition of which be aided by reference to the accompanying drawings, in which

FIGURE 1 is a perspective view showing a package of brick partially disassembled.

FIGURE 2 shows a basic 20-brick packaging unit suitable for makeup of variously sized packages or cubes for shipment.

FIGURE 3 illustrates a large cube partially assembled, using basic units of the type shown in FIGURE 2.

FIGURE 4 is a somewhat enlarged sectional view showing the anchoring element sandwiched between opposing brick faces.

Referring now to FIGURE 1, the illustration shows a brick package originally comprising five tiers of ten brick each 1, the several tiers being superimposed one above the other. The bridge in each tier have been laid on edge with their larger surfaces 2 contacting. Two parallel latex coated lengths of twine 3 interlay between tiers each length being continuous 4 in the illustration indicating the progressive layup of tier upon tier in which manner this particular package was assembled. Two bricks have been removed from the top tier 5, revealing a portion of one of the lengths of twine 6 in position with its one of the lengths of twine 6 in position with its free end 7 overhanging. The lead portion of the other length of twine is being pulled 8 from its adhesively-locked position, illustrating the manner in which the anchoring ties may be stripped out and the tier of brick 5 immediately above free from attachment to the next underlying tier.

FIGURE 2, similarly part-numbered, shows a basic package unit comprising two tiers of ten brick each 1,

similarly laid, latex bonded and twine reinforced by as in FIGURE 1. This type of basic unit is readily adaptable to continuous flow machine assembly, and in its illustrated two-tier form consumes the least amount of twine and latex with which twenty bricks can be unitized. In order to provide maximum protection of the all-important finished edge, especially of face brick, it is preferable that such edges be opposed and thus comprise the cushionably bound interface between the two tiers 1 of this basic unit. By mating like surfaces, such positioning is additionally advantageous with respect to the composition and size of the anchoring ties, which subject is later discussed in this instrument.

FIGURE 3 illustrates the formation of a shipping cube in process of assembly, utilizing as building blocks the 20-brick basic unit 9, identical to that shown in FIGURE 2. This particular cube is to be made up of 4-unit courses, the bottom and second courses 10, 11, being complete, while the third course 12 will contain two additional units positioned as indicated by the phantom lines 13. At the first-constructed interface 14 three parallel anchoring strands 15 have been laid transversely of the four units 9 which comprise the bottom course 10, thus tying together the top surfaces of these units. Three units 9 of the second course 11 are positioned cross-directionally from those in the bottom course 10, the fourth occupying the remaining space but in slightly staggered superimposition above the unit which principally supports it, thus providing additional interlocking 16 between the adjacent courses 10, 11. At the next interface 17 a continuous length of latex cord 18 borders the area, being indicative of one manner in which peripheral reinforcement may be provided if desired. Although not absolutely essential, it is preferable that placement of anchoring ties 3, 15, 18, be such as to facilitate their being stripped from their anchorage in order that overlying units or groups of brick may be lifted out freely without adhesional resistance. The third course 12 oppositely images the second course 11, again providing the maximal interlocking available within the particular dimensional limits of basic unit 9 and cube which are used in this example. It will be apparent that three-unit courses would have permitted a much simpler showing. The complicated pattern, however, is more indicative of versatility in application of the new and novel techniques which comprise the subject of the instant invention.

A shipping cube constructed and internally bound in the manner described may be handled reliably and moved from place to place by clamp lift applied compressively to the bottom 10-brick tiers as suggested by the arrows 19 in FIGURE 3. For handling in locations not so equipped, the cube may be supported on a pallet or provided with adhesively attached runners 20, suitably positioned and dimensioned for tine insertion and fork lift.

FIGURE 4, which is somewhat enlarged, shows a latex-bearing and -reinforced cord 21 compressively positioned between two opposing brick faces 22, 23, demonstrating how the cord per se provides a degree of supporting clearance during the period in which the latex 24 molecules are agglomerating and thus becoming additionally and cushionably load-supporting. Although ribboned by compression, flow-out of the wet latex 24 is subject to control as a function of the cord's size and load-bearing capacity, thus assuring dried film integrity in reliable minimum caliper. Thickening of the latex further contributes to its concentrated placement and cord-like continuity, facilitating clean release and complete removal of the anchoring element when the package ultimately is disassembled. It also is desirable that the elastomer be stabilized against oxidation and/or other destructive elements to which it may be subjected in order that its functioning be unimpaired.

Although other types of film-forming latices or dispersions may be formulated to meet specific requirements

and used effectively in the manner herein disclosed, I have found that natural rubber or hevea latex offers an optimal combination of desirable properties and can be used more reliably and universally than other materials in general. This is especially true in the packaging of brick wherein the texturing of differently-styled faces varies markedly from almost polished 22 to extremely jagged 23, from perfect plane to undulating, and from firm to insecure as in the case of antiquing by sand appliqué. In order to function adequately in contact with such diversity, the elastomer's cohesion integrity must be so capacitated as to dominate its peelable adhesion, which in the case of excessively jagged surfaces 23 may include keying into inversely tapered pockets from which only a tensionable elastomeric material 24 could be withdrawn. When applied to more smoothly finished surfaces 22, a lesser ratio of cohesion to adhesion may be tolerated and desirable either from the standpoint of cost reduction or dictated by the need for an increase in specific adhesion. Coincident with such modification, the loss of some elasticity may be permissible.

The use of water-borne latices or dispersions in combination with vegetable-fibered twine or cord is additionally advantageous with respect to the potential linear shrinkage of such fibers as they dry, causing the ties to be tensilely prestressed in their locked placement and thus more ably capacitated to resist instantly the forces they are designed to dominate.

It will be recognized that other forms of adhesional anchorage could be used satisfactorily and advantageously in specific applications, e.g., pressure sensitive compositions and/or thermally, solvatably or manipulatively surface-adhesionable elastomers. Convenience could dictate the use of preformed extrusions which might be used with or without an encased tensiling element such as twine, cord, wire or other filament, or compositioned with tensile-enhancing flock or fillers. Although usually not preferred from the standpoint of facile strippability from the normal package, certain applications may be served efficiently by the use of short segments or by spot anchorage at specific points of contact, especially where the use of continuous lengths would be wasteful and without purpose.

Having thus outlined the more significant aspects of the instant invention in such manner as to assist those skilled in the art to practice the new and novel concepts hereinbefore described, what I claim and desire to secure by Letters Patent of the United States is:

1. A shipping unit comprising a juxtapositionally stabilized assembly of building product, such as brick, architectural stone, tile, cement block, or the like, said assembly being in stacked arrangement and having elastomeric bonding elements selectively interposed therebetween, said bonding elements consisting of supporting strands enveloped in elastomer, and being compositioned and combined so as to reinforce said bonding elements and to anchor areas of contact between said product, said assembly being resiliently stabilized, preventing said product from being fractured in transit.

2. The shipping unit as described in claim 1, wherein said strands are pretensioned in consequence of having been wettedly distended in placement and shrinkage-tensioned upon final drying.

3. A package unit comprising a plurality of superposed tiers of brick with their largest faces vertically abutting, and having adhesively brick-anchored twine interposed between said tiers, each brick being adhesively engaged to at least one connecting twine strand and to a vertically opposed brick in the immediately superposed tier, thereby maintaining juxtaposition of individual brick relative to those adjacent and stabilizing said package unit for handling and shipping.

4. The packaging unit of brick as described in claim 3, comprising two superposed tiers and two twine strands adhesively engaged therebetween.

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5. A cubed unitization of packaging units as described in claim 3, comprising a plurality of superposed courses of said units having linear elastomeric bonding elements horizontally interposed therebetween and sequentially disengageable therefrom, said bonding elements consisting of supporting cords and enveloping elastomer, and being so compositioned and combined as concomitantly to be reinforced and anchored to the contacted areas between said courses.

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