

[54] **SHRINK-FILM PACKAGE**

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[22] Filed: **Nov. 6, 1972**

[21] Appl. No.: **303,762**

[52] U.S. Cl. **206/322; 206/45.33; 206/386;**
206/497; 214/10.5 R; 229/DIG. 12

[51] Int. Cl. **B65d 65/16; B65d 19/22; B65d 71/00;**
B65d 85/46; B65d 85/62

[58] Field of Search..... **206/655, 45.33, 65 R, 497,**
206/322, 386; 229/DIG. 12; 214/10.5 R

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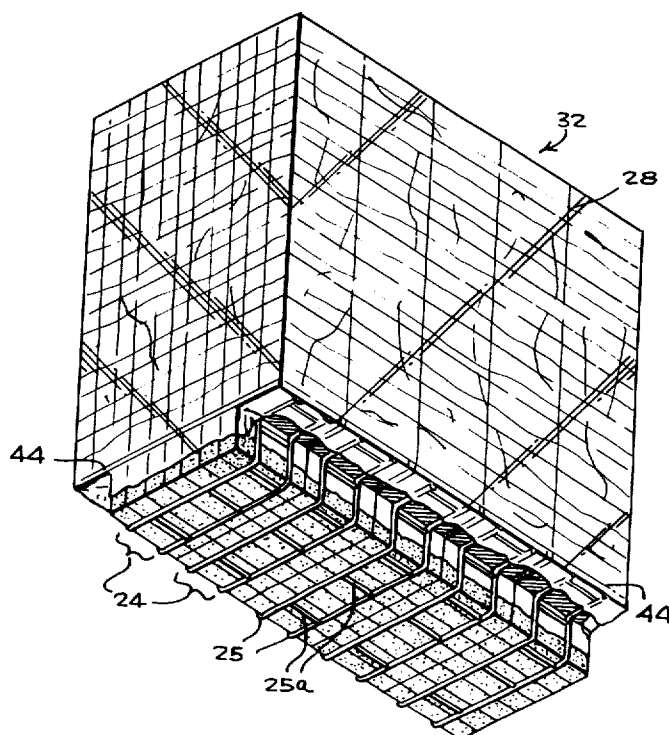
[57] **ABSTRACT**

An improved generally cube-shaped package made up of a plurality of rows of plural individual sub-packages of the articles being packaged and which package is

overall embraced and stabilized by a heat-shrunk plastic film material. The improved package resides essentially in embodying initially formed smaller separate sub-packages of predetermined and usually like-multiples of the aligned multiple unit articles which have been wrapped by a heat-shrunk film essentially on all sides except perhaps their supported surface, thereby consolidating and partially stabilizing the unit articles therein. A plurality of the separate shrink-fit-wrapped sub-packages are disposed closely adjacent one another to constitute a given size layer or tier, upon which are superposed predetermined plural other rows or tiers, and often upon on in conjunction with suitable auxiliary lower level stabilizing members, which are wrapped so at least part of the auxiliary stabilizing members and all of the superposed plural tiers of the sub-packages are embraced within an overall enveloping heat-shrunk shroud of the film. An alternate form of the package comprises either vertical tiers or horizontal rows of the articles which have heat-shrunk-fit wrappings essentially around the full tier or full layer, rather than individual rows comprising a given layer, and which plural tier and/or layers are collectively wrapped in an essentially overall enveloping heat-shrunk shroud.

The novel completed package is suitable for various articles but more particularly provides a stabilized, heat-shrunk wrapped package for heavy unit articles, such as of masonry bricks and similar articles whose individual tolerances collectively adversely effect stable stacking and packaging in tiers without the use of tie straps.

16 Claims, 16 Drawing Figures



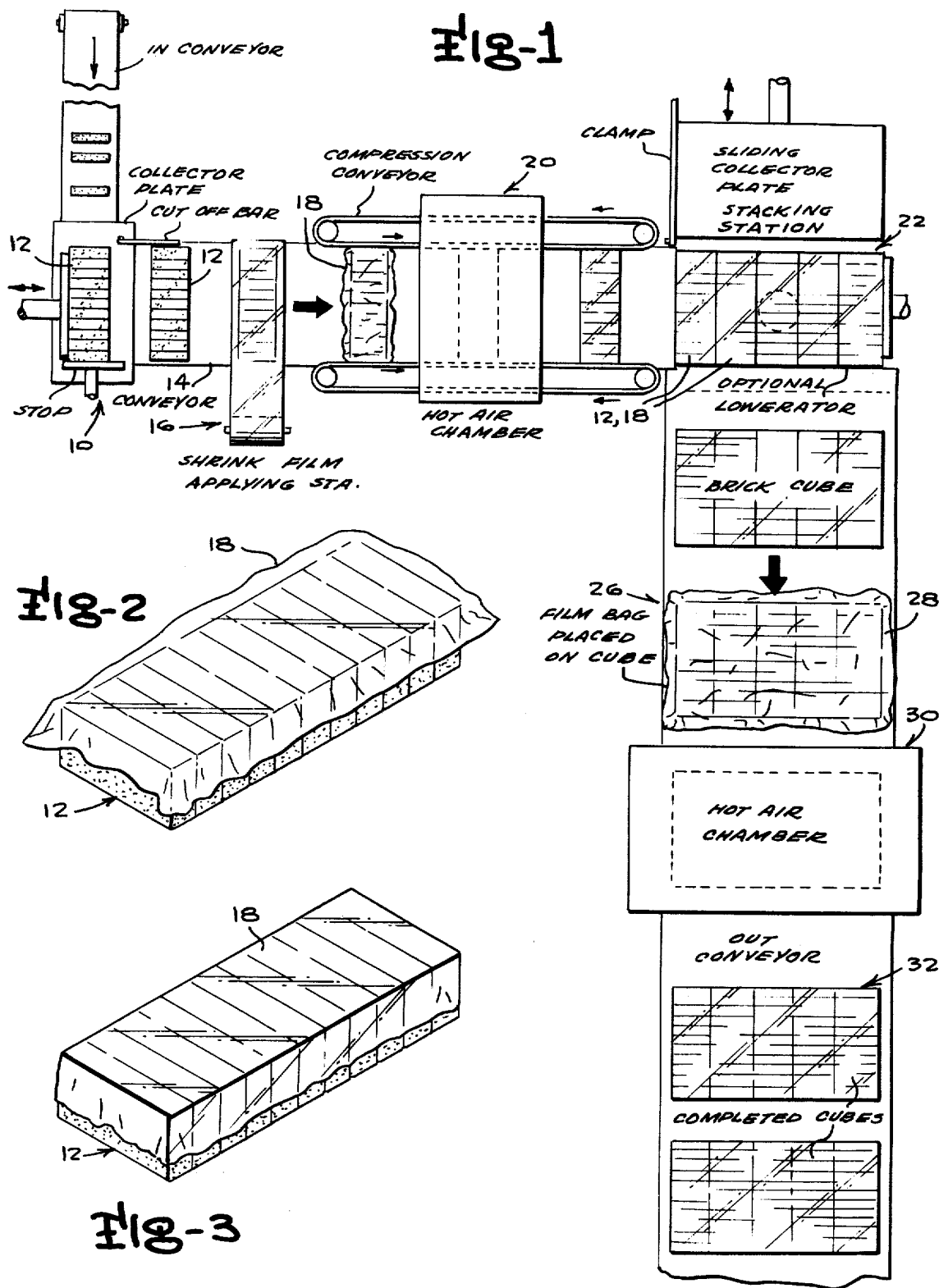


FIG-4

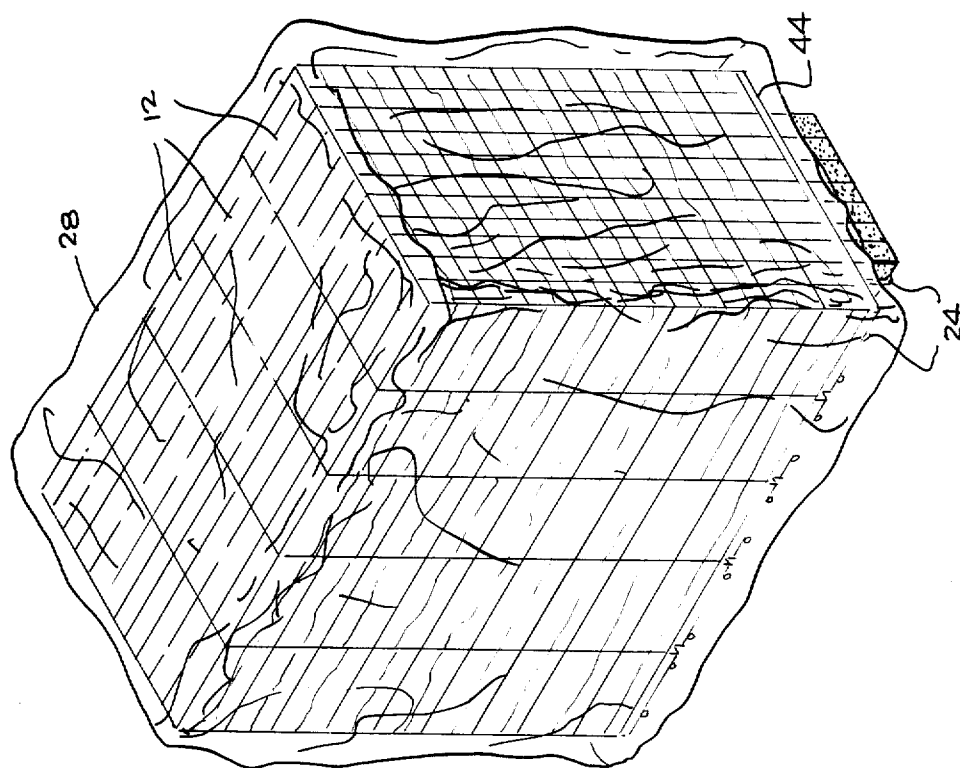
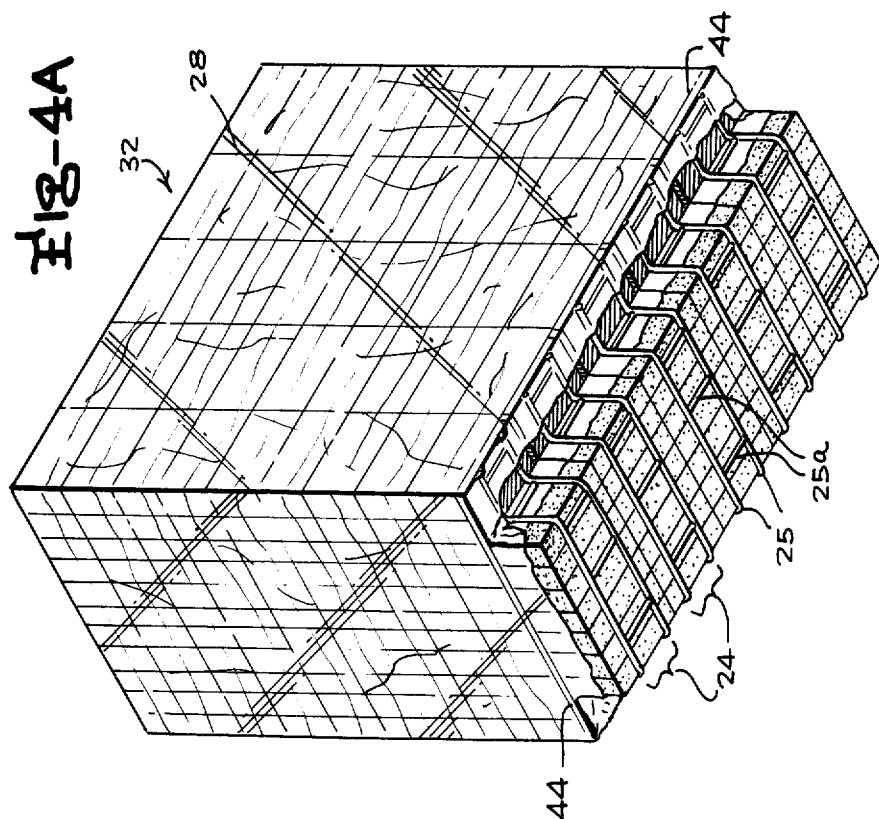
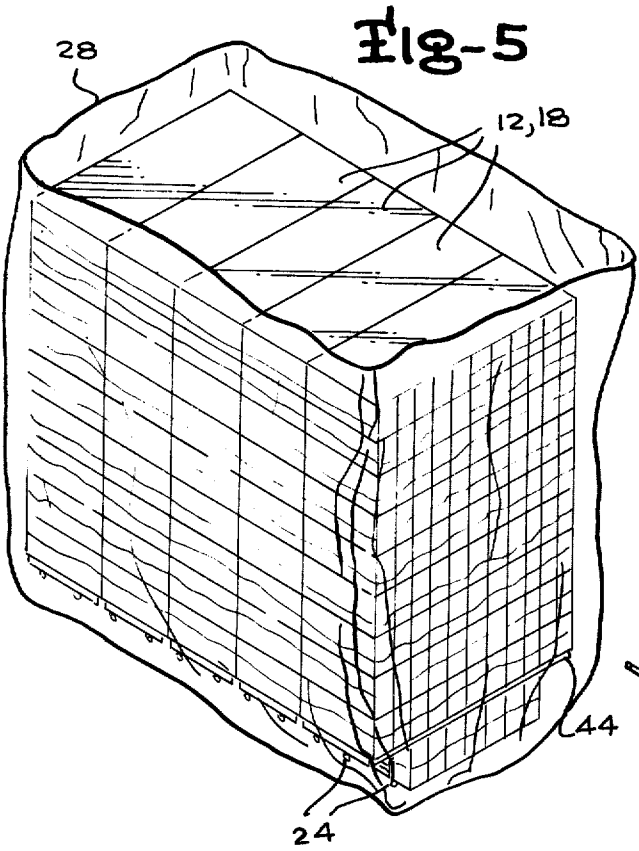
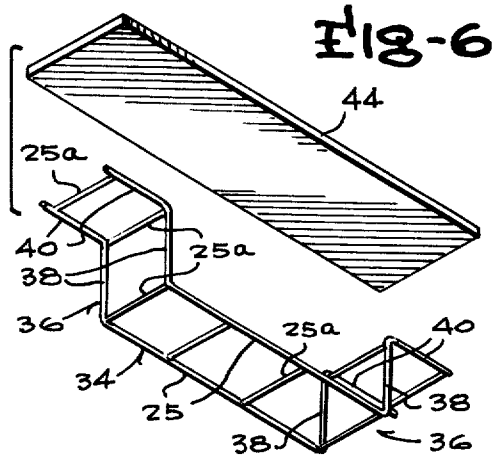
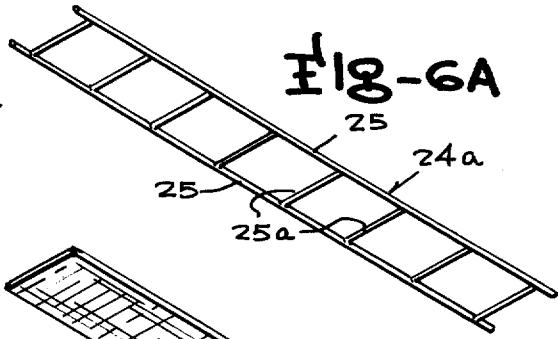
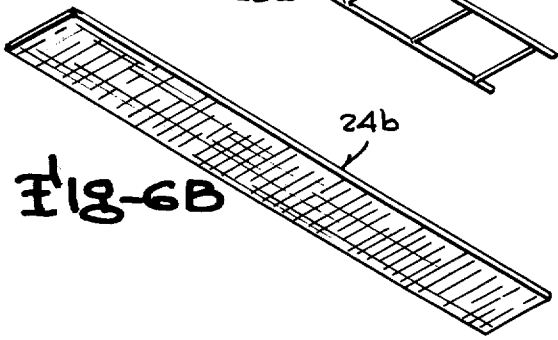
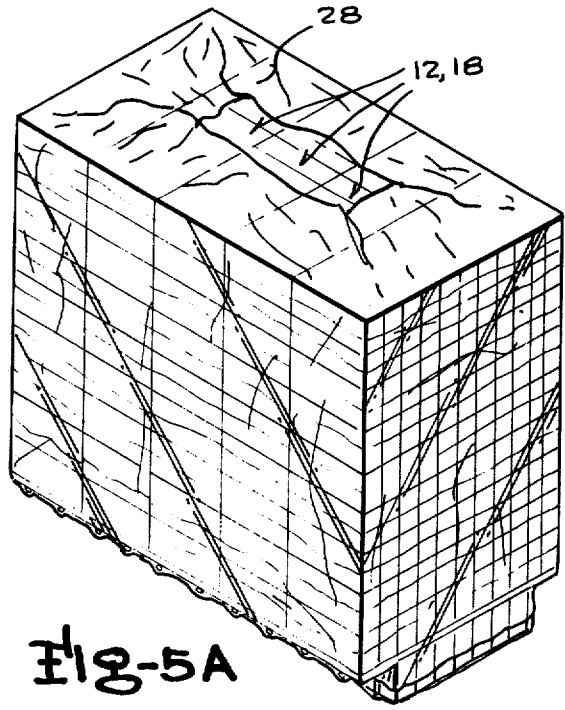
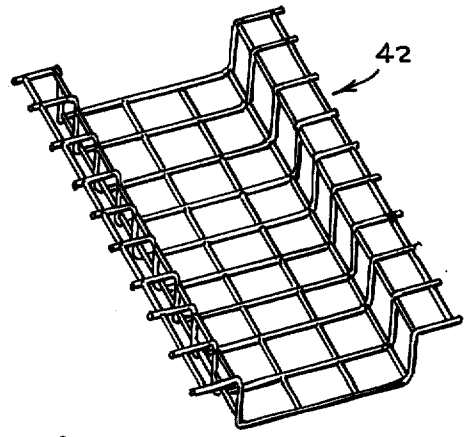
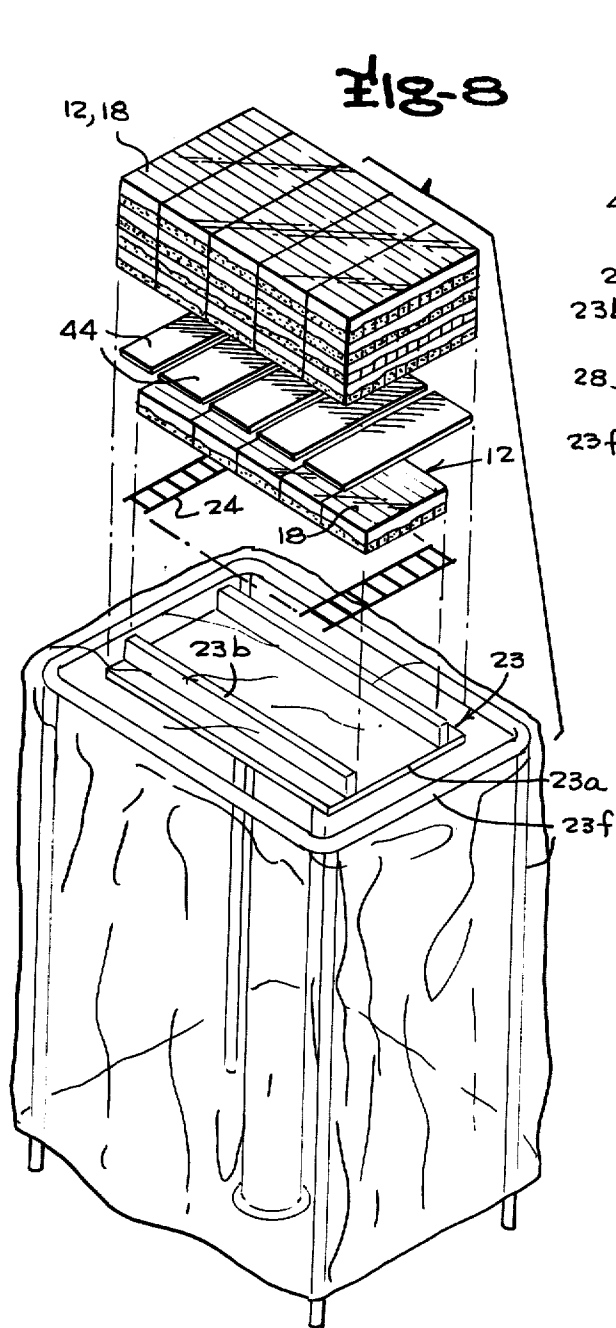
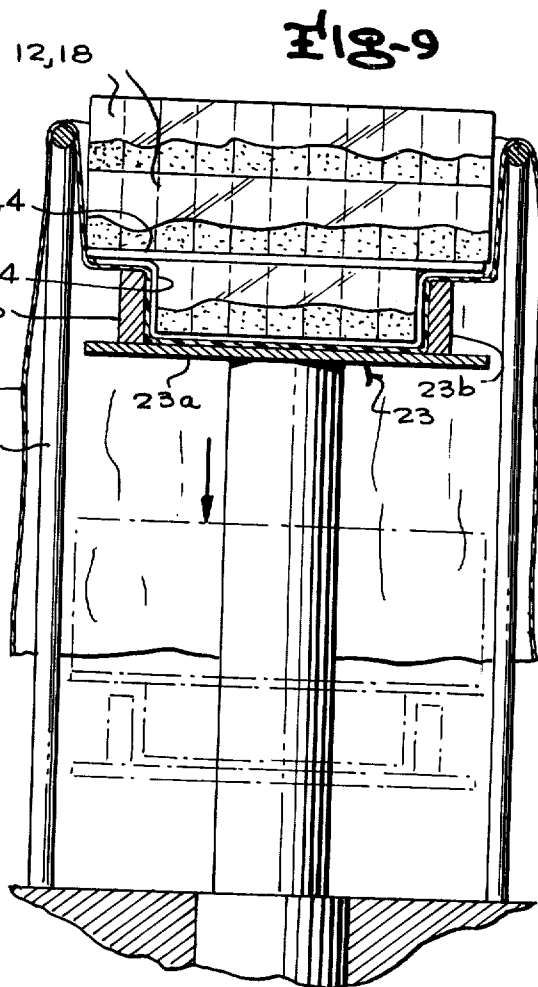
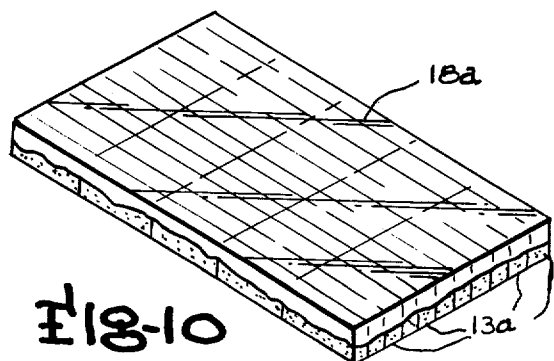
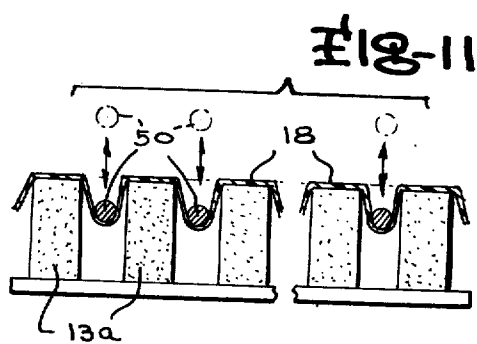
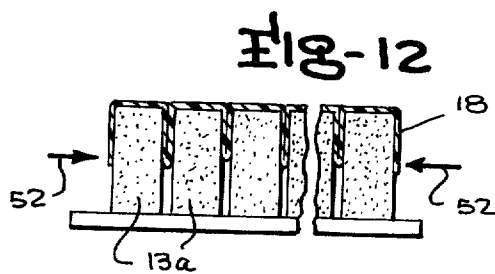


FIG-4A







SHRINK-FILM PACKAGE**BACKGROUND OF THE INVENTION**

The present invention relates generally to an improved method for shrinkwrapping or packaging and consolidating individual articles, and more particularly articles such as masonry bricks and like units used in the construction industry, and also relates to the finished heat-shrunk-wrapped package resulting from use of this method, said package providing fully acceptable rigidity and stability thereof as well as greater overall protectability of the articles at a considerably reduced expense.

Palletized shrinkwrapping is a system which has recently evolved whereby various synthetic resinous types of flexible film material, such as polyvinylchloride or polyethylene film, is heat shrunk to the contours of the load and also usually to its supporting pallet. An apparent advantage of this is that it usually assures sufficient stability of the load without need of strapping or cardboard shrouds and the like.

Pallet shrinkwrapping has only been introduced into the brick industry in more recent years, and heretofore, as far as is known to applicant-inventor, has been confined to providing a loose sheet type shroud or an open bag of the heat shrinkable film around a fully interlocked stack or usually wire-strapped palletized grouping of bricks and subjecting same to the necessary heat to effect the final shrink wrapping of the cube-shaped load of bricks. Reference may be made to a related article appearing in volume No. 6, Spring/Summer Issue of 1970 of the British Ceramic Review Magazine, which article is entitled 'Shrinkwrapping of Bricks' and is found on page 28 and 29 thereof. However, the system described therein utilizes only a covering shroud for the complete assembly. Said assembly embodies a novel inexpensive wire mesh pallet in lieu of heavier and more costly wood pallets, and upon which the bricks are stacked in an interlocking manner, such that neither the pallet nor bricks are capable of being readily broken down into unit packs as contemplated in a preferred embodiment of the subject application. It is acknowledged that other and varied industrial products have long been packaged by utilizing heat-shrunk wrapping, and that various patents heretofore issued directed to film wrapped packages and the method of making them. Among these prior art patents are included U.S. Pat. Nos. 3,458,036; 3,529,717; 3,589,510; 3,662,512 and 3,695,426. None of these prior art patents relate to the applicant's improved method summarized in the foregoing Abstract of the Disclosure and in the following.

BRIEF SUMMARY OF THE INVENTION

The present invention represents an important advancement particularly in the brick packaging art, but which also is universally useable and applicable to other articles grouped in small or large packages. The invention is directed to the improved completed package as well as to the method of making the same. Rather than merely peripherally wrapping the overall grouped stacks of individual articles, applicant's improved method comprises forming preferably a generally cube-shaped assembled load made up of a plurality of tiers of plural sub-groups of the individual articles, such as bricks, wherein they are initially formed into a

plurality of separate smaller or sub-packages of closely grouped multiple unit articles by initially wrapping the sub-groups in a heat shrinkable material in a predetermined and usually like-multiples of the article, subjecting them to heat to shrinkfit the wrapping essentially around at least all except possibly the supported sides of the grouped bricks, then laying or accumulating the separate sub-packages closely adjacent one another to constitute a given size layer or tier, subsequently stacking and maintaining the smaller sub-packages in a predetermined number of plural superposed tiers with the aid of a jig means, including stacking them in conjunction with and upon suitable auxiliary course stabilizing means, subsequently wrapping the thus supported plural tiers of the sub-packages in an overall enveloping heat-shrinkable shroud of the film, and then subjecting the assembled stack or wrapped articles to heat to shrink-fit the outer wrapping and to further compactly consolidate the respective sub-groupings as well as the complete assembly thereof.

Accordingly, the principal objectives of the present invention are to provide both an improved compact and better protected package, and a novel method of making the package in a competitively economical manner.

Another object is to provide an improved packaging of brick-like articles by providing individual covers of heat shrinkable film over every sub-group of a predetermined number of the closely aligned articles, accumulating the sub-groups into superposed units which are preferably generally cube shape, maintaining the close grouping thereof while subsequently enveloping the entire cube with a larger film or shroud and then subjecting the completely covered assembly of sub-groups to the prerequisite heat to shrinkfit the film therearound as a unitary assembly. Additionally, the bricks comprising the sub-groups may be protected from one another by inserting a fold of the film material at least part way down between the adjacent bricks before closing their ranks and heat-shrinking the film.

A further object is to provide a lighter weight non-palletized packaged cube of the articles in accordance with the preceding objectives by embodying therewith auxiliary course-stabilizing means which are preferably specially formed wire mesh or a generally flexible reinforced web strip material, and further in conjunction with the usual veneer boards.

These and other objectives and advantages will become more apparent from a reading of the following detailed description of preferred embodiments, taken in conjunction with the illustrative drawing figures.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top plan view depicting illustrative schematic stations and apparatus utilized on conducting the improved method thereof;

FIG. 2 is a perspective view from above of a sub-group or sub-package of eleven aligned articles with a sheet of heat shrink material loosely overlaying same before being subjected to heat;

FIG. 3 is a similar view of the same sub-group of articles after the heat shrink material has been shrinkfit therearound;

FIG. 4 is a perspective view from above of the multi-tiered assembly of sub-package before one form of the outer shrink film has been shrinkfit therearound;

FIG. 4A is a perspective view of the FIG. 4 form as seen from below, but of the completed package after the outer wrapping has been shrinkfit therearound;

FIG. 5 is a perspective view similar to FIG. 4 but on a reduced scale and of another preferably bag form of the outer shrink film loosely enveloping the assembly from below;

FIG. 5A is a perspective view of the form of FIG. 5 showing the bag type cover in its shrinkfit form over the assembled sub-packaged articles and depicting a finished assembled package;

FIG. 6 is an exploded, perspective view of a relatively flexible wire and veneer board course-stabilizing means;

FIG. 6A is a perspective view of the auxiliary wire before formation and which may be specially fabricated and distributed in roll form;

FIG. 6B is a perspective view of a flexible reenforced paper of fabric strip which may be used in lieu of the wire form of FIG. 6A;

FIG. 7 is a perspective view from above of an interjoined or integrally made assembly of the wire sub-units of FIG. 6 to make one full cradle to support a lower reduced number layer of the bricks articles in conjunction with a cubed assembly;

FIG. 8 is a perspective semi-schematic view showing a method of the assembly and film bagging in conjunction with a suitable jig support means for receiving and forming both the fabric, paper or the wire type auxiliary supporting members and the lowermost course of brick;

FIG. 9 is an enlarged transverse cross-section taken through an assembly of the apparatus of FIG. 8;

FIG. 10 is a perspective view depicting a modification of heat-shrink-wrapping individual layers comprised of plural rows of the multiple articles, either with or without preliminarily heat shrink wrapping sub-grouped rows thereof.

FIG. 11 is an elevational cross-section showing the preliminary steps in an alternate method of wrapping sub-groups of the brick articles; and

FIG. 12 is a view similar to FIG. 11 showing the completed step and shrinkfit wrapped sub-group or sub-package of bricks.

PREFERRED EMBODIMENTS

Referring in more detail to the drawing figures relative to the method of packaging, the articles are sequentially fed from a supply source in the factory by suitable conveyor means initially to one or more suitable gathering or grouping stations 10, where a predetermined number such as eleven of the articles, which are preferably bricks in this instance, are aligned into rectangular sub-groups or sub-package designated 12 and passed in spaced intervals along conveying means 14 to the next station 16 where a layer of the unshrunk film 18 is placed over each passing group of bricks. The film is of a large enough size and placed as per FIG. 2 so as to overlay the exposed major plane of the sub-groupings and to fold down a substantial distance on each side of the said sub-groups. The conveyor means continues to convey the film covered sub-groups 12 to and preferably through a heated film shrinking station 20. Station 20 may comprise a heated tunnel type hot-air chamber or any other suitable heat applying means which will effectively shrink the film wrapping onto the sub-groupings of bricks.

The conveyor means are understood to either embody therewith or pass adjacent to suitable means for maintaining the aligned sub-groups of the bricks in close contiguous relationship while passing through and sufficiently beyond the film-shrinking station during the cooling of the film. It is also understood that the character of the shrink film is such that upon cooling after emerging from the heated station 20, it shrinks a substantial amount thus drawing around and snugly holding each course or sub-group 12 of the articles or bricks 13 together as shown in FIG. 3. This pre-wrapping of the sub-groupings of the articles, particularly masonry bricks which are sand faced and rough or somewhat irregularly sized, snugly holds the bricks together to keep the outermost end brick from falling off when superposed in stack form. Previous shrink film methods have omitted this intermediate step of pre-wrapping sub-groups, and therefore has not been successful without also wirestrapping the stacked bricks prior to enveloping in an outer plastic shroud or bag.

Proceeding with the method description, thereafter the shrinkwrapped sub-groups or sub-package 12 are conveyed to a suitable stacking station 22 having suitable machinery for aligning a predetermined number of the sub-groups 12 into a first layer preferably supported upon suitable jig means 23 (FIG. 8) in association with auxiliary package stabilizing and protective means 24, better seen in FIGS. 4-8. Each such layer or tier preferably is made up of five such pre-wrapped sub-groups or sub-packages 12 arranged in coplanar form. A predetermined number of layers or tiers are then accumulated to stacked in superposed fashion to form the preferred cube assembly, whereupon they are conveyed to a bag or shroud applying station 26.

In some installations the bag or shroud may be applied from above the stacked articles. In other installations it may be preferable to apply the bag from below such as by the illustrative means for simultaneously enveloping the articles during the progressive stacking thereof, as shown in FIGS. 8 and 9, and to be described further hereinafter.

The auxiliary package stabilizing and protective means 24 includes a deformable supporting web, such as a relatively flexible wire mesh or specially made wire belting 24a (FIG. 6A) or a reenforced paper or fabric web 24b (FIG. 6B). The wire belting 24a is seen to comprise preferably two laterally and parallel spaced wire members 25 interconnected in ladder form by transversely disposed parallel connecting wires 25a. It is understood that the interconnecting wires 25a may also be of non-parallel or angular disposition. In use as an auxiliary supporting belt each portion of belting 24a or 24b cradles a lowermost course comprising a reduced number of brick between offset or folded end portions deformed by the jig means. The terminal ends of the supporting belt strips subsequently are held by the enveloping shrink film against end portions of stabilizing veneer boards 44, to be described in more detail hereinafter.

In the brick industry the formation of such a cube of bricks often comprises approximately ten stacked courses of the bricks as layed upon edge in four or five adjacently aligned rows. However, at least one of the lower tiers is of a foreshortened or interrupted different arrangement to facilitate forked-lift-truck pickup of the heretofore usually strap-packaged load.

There may be different ways of applying a shrinkfit bag or shroud 28 so as to completely envelope the exposed cube assembly of sub-packages. If it is applied from above, it preferably also extends down sufficiently to enable the lower edges of the shroud or bag 28 to be tucked or folded at least partially beneath the lowermost tier and around a part of the auxiliary stabilizing and protective means 24 before being conveyed to a second heated, shrinkfitting station 30.

A more preferred way of applying the shroud 28, which is preferably in the form of a bag, is by applying it from the bottom of the forming cube upwardly around it. This can be done by utilizing machinery which enables the oncoming conveyed brick sub-packages to be lowered progressively layer by layer after the predetermined numbers of sub-packages are accumulated into their respective layers. To this end, the jig means 23 (FIGS. 8 and 9) may comprise an elevatable horizontal plate 23a with adjustable parallel upstanding side bars 23b spaced so as to centrally receive the plurality of rows of a reduced number of the articles or bricks, for example, such as 7 rather than 11, to comprise the first or lowermost course of the cube. However, before this first course is so accumulated, a shroud or bag 28 of the flexible shrink fit material is placed with the bottom laying upon the jig plate 23a and supported preferably in an inverted manner over any suitable support means such as tubular open centered frame 23f. Strips of the auxiliary supporting web material are then placed across the upstanding bars 23b, such as schematically shown in FIG. 8, corresponding to each row of the bricks. Thereafter the several rows comprising the first course of bricks are aligned thereover and lowered between or within the confines of spaced bars 23b whereupon their weight causes the auxiliary web material strips and also the bag film material to conform thereto. Then the outermost opposite ends of the web are laid horizontally by suitable manual or mechanical means (not shown) to receive thereon and also collectively upon the deposited lower course of bricks, the auxiliary stabilizing and protective veneer boards 44 corresponding in number to the number of rows of bricks, and upon which the subsequent layers of articles are placed.

It is understood the the jig and stacking plate means 23 is progressively lowered during the building of the cube of bricks, while simultaneously effecting a progressive shrouding or enveloping by bag 28 as depicted in enlarged FIG. 9. When the desired predetermined number of layers have been accumulated to form the desired cube assembly, the bag top is then folded over to substantially enclose the so-assembled cube, whereupon it is then conveyed to said heated station 30. Station 30 may be similar to that of station 20, and passage of each cube assembly of bricks therethrough results in the tightly shrinkfit outer wrapping 28 compactly embracing each full assembly as a unitary cube designated 32, such as shown in FIG. 5. It is to be noted that by use of the individual sub-package shrinkfit wrappers, the outer plastic shroud or bag walls adhere at least to some substantial extent to a substantial number of the adjacent side coverings of the individual sub-groups, thereby further providing a stronger and more stabilized package. Said cubes 32 are then ready for storage or shipment to a customer as the case may be.

In order to economize as well as to reduce weight of the packaged cubes, newer light weight pallet means

have been evolved in the brick industry, including those made up at least partly of heavy duty welded galvanized wire mesh-like material. Such wire mesh pallets may be fabricated economically enough to be considered completely expendable and disposable, and are heat shrinkfit packaged with the cube. It is understood that such wire mesh pallets may be made in varying degrees of strength to accommodate varying sized loads of bricks.

In accordance with the present invention, no such formal pallet means is required, and only the auxiliary stabilizing and protective means 24 is utilized. The exemplary means 24 is more compatible with my improved package and the method of shrinkfit wrapping of bricks, as shown in the illustrative figures.

The wire mesh belt 24a, comprising part of the means 24, in their supporting shaped form in FIG. 6, has the elongated dual wires 25 spaced apart a distance less than the length of each brick or article so that each sub-unit 12 of the bricks is underslung and supported thereby when in the finished cube. The wire mesh belt material is initially provided usually in flat condition as per FIG. 6A, but may be formed in preformed sub-sections 34 preferably for each row of the articles, such as shown in FIG. 6. The opposite longitudinal ends of the pallet sub-sections, which are deformed in the jig mechanism into angularly offset portions 36, include essentially the vertical sections 38 corresponding generally to the height of the brick articles, and terminate in oppositely disposed horizontal wing-sections 40. Preferably each wing portion 40 terminates so as to have one of the cross wires 25a sufficiently near the outermost extremity so as to be sandwiched between the veneer board 44 and overlapped by the lower edge of the film shroud in instances where the film or bag may be applied from above. In this manner it provides a greater degree of support for each corresponding row of the lower course of brick in the completed cube assembly 32. The same general arrangement is contemplated when using the fabric or reenforced web 24b shown in FIG. 6B.

The relative size of the offset portions 36 of the sub-sections 34 is dimensioned so as to readily receive the lifting fork arms of a mechanical lift truck normally used in association with the lifting of the conventional brick cubes and/or wood-slatted pallets on which masonry and other products are conventionally stored.

The reason for the preferred use of separated individual sub-sections 34 is to enable the completed cube 32 to be broken down more readily into complete sub-units of approximately 100 or so bricks. In the example being used, with the lowermost course row having seven bricks and each of the nine superposed course rows comprising wrapped sub-groups of 11 bricks, this sub-unit corresponding to a conventional strap of bricks would contain 106 bricks, while a five row per course cube assembly would total 530 bricks. It is understood that various proportionately smaller or larger cubes can be assembled in the same manner.

As an alternative form of package and packaging method, and depending upon the desired cube size, a plurality of said sub-sections 34 of the auxiliary wire type are assembled and preferably either welded in side-by-side relation or otherwise made in one piece to comprise a wire mesh auxiliary supporting frame 42 such as depicted in FIG. 7. In this embodiment while a given subunit of the stacked bricks or articles may be

manually disassociated from the remainder of the cube, it is not able to be done so by the fork lift means, particularly where the vertical subunit of articles might be alternately intermediately wrapped as such before being enclosed in the outer envelope or shroud of film. It is contemplated that such a sub-unit could be wrapped either with or without the preliminary film wrappings on the sub-groups 12. This may be achieved by a handling of the bricks 13 or articles as a sub-unit in a horizontal manner if necessary during such intermediate wrapping.

As already mentioned hereinabove, the use of veneer boards 44 as interposed between at least the two lowermost courses of bricks helps to both stabilize and protect the bricks from possible damage when lifted by a fork lift or similar mechanical lifting means.

While not considered conventional, it is contemplated that a further alternative arrangement might be the use of only one large area type veneer board in place of the several smaller area boards described hereinabove. The remaining method would be the same, with the wire strip or fabric web cradling the lowermost course of bricks or articles beneath said board. One or more such boards could be interposed respectively between some of the superposed courses to give added strength and rigidity to this particular cube arrangement.

A further contemplated embodiment is to assemble a cube of the articles by forming a predetermined number of the articles into individual full course which are then heat shrink covered with a layer of the shrink film, such as depicted in FIG. 10 at 18a, before the courses are superposed on one another. This may be done either with or without also preliminary shrinkfit wrapping the sub-groups 12 with the film. When omitting the preliminary shrinkfit wrappings of the sub-groups 12, in the case where the articles are bricks or similar articles which may tend to chip or crack, it would be preferable to interpose paper or cardboard sheets between abutting row ends to better protect them. However, in lieu of the paper or cardboard pieces, portions of the shrink film may be tucked downwardly as in folds between the abutting row ends prior to then closely grouping them and effecting the heat-shrink-wrapping thereof.

More particularly for protectively shrinkfit-wrapping of a glazed type brick 13a (FIGS. 11 and 12) and the like, it is contemplated to initially space the bricks in open rank form as per FIG. 11. Then the heat shrinkable plastic film shroud 18 is tucked downwardly between the adjacent bricks by any suitable means such as the selectively elevatable grid bars 50. Thereafter the bricks 13a are moved together as indicated by the arrows 52 (FIG. 12) before being subjected to the heat to shrinkfit the film tightly thereabout in the manner previously described. The depth to which the film 18 may be inserted between the bricks may vary for different type brick or preferences to assure the desired or required degree of protection therebetween. The illustrated manner of FIGS. 11 and 12 or its equivalent could apply to the contemplated modification of the preceding paragraph. The end effect of the foregoing alternate methods would be generally the same, i.e., the outermost edge bricks of the course would be snugly held in correct and stabilized position during the stacking of the various courses while providing better protection for the individual bricks. An outer shroud or

bag would be used to envelope the completed assembly, as previously described.

Where sufficiently heavy gauge film is used to be shrunk fit around the cubed articles particularly enveloping from the bottom upwardly, it is contemplated that the wire or fabric web means may be omitted. However, as a safety precaution it is desirable to utilize them in each method and resulting package, in the event the plastic film should become ripped or torn away. Under such latter circumstances it is apparent that the auxiliary wire or fabric webbing would still act to contain and support the lower most course of brick cradled therewithin. This is assured by the strength of the webbing and the fact that the ends are held against the veneer boards by the top surface of the fork lift arms during transporting thereof.

While it may not be necessary in all instances where the shroud is applied from above to have the outer bag film or shroud extend to fully undertuck whatever type of auxiliary stabilizing means is utilized therewith, it is preferable to do so, at least in part in order to effect a more compact and stabilized packaging according to this shrinkfit wrapping method.

While nearly every instance of shrinkfit wrapping of bricks or other heavy articles will preferably include the stacking thereof upon some suitable auxiliary supporting or formal pallet means, whether of the wood, cardboard, plastic or wire mesh form, it is conceivable that for less dense and lighter weight articles, the stacking means will enable similar cube formation without necessarily including any of the auxiliary supports or a pallet per se in the finished wrapped package. It is also understood that where bag type shrouds are utilized, either the closed bag end should be provided with an air escape opening or suitable air exhausting means may be desirable to help evacuate any trapped air which may tend to accumulate and hinder the heat-shrinkfitting.

The advantages attendant the use of the aforescribed methods are apparent and further include the following. Whether mechanized or manual installations are used, there is considerable saving of manpower and less skilled labor is required. By utilizing the sub-units or sub-packages which are initially shrinkfit wrapped, the bricks are not only maintained in more compact relation, but they are also suitable protected from adjacent bricks without need of the interposed paper, wood or light cardboard strips customarily used for such purposes. Also the preliminary shrinkwrapping of the sub-packages, and/or intermediate shrinkfit wrapping of layers thereof, considerably improves the relative stability of the bricks and keeps the bricks from shifting as much, thereby considerably reducing potential loss due to chipping and breaking. This method eliminates the need for the more conventional metallic strapping of the bricks. Elimination of the metal straps eliminates danger of rust marks as well as strap breakage, slippage or shifting resulting in a substantially greater degree of breakage of the bricks. The shrinkwrap film also keeps the stacks of cubed bricks cleaner and protected from the elements which affect color and moisture content. Partial use of a cube of bricks will still enable the remainder of the bricks to be retained in protectively covered form until needed. These and other advantages will become apparent to those familiar with the brick packaging art.

The improved completed package therefore may embody various generally cube-arranged articles with or without the auxiliary stabilizing means or a pallet means therewith. Depending upon relative sizes and weights of the articles being packaged, either heavier gauge film material may be used or plural layers thereof may be used to reduce the likelihood scuff tearing the film.

It is apparent from the foregoing detailed description and drawings that improved methods of packaging and the novelty improved packages resulting therefrom have been evolved which achieve all of the advantages and objectives set forth in the preamble and throughout this specification. Other various changes and alterations may be made by those skilled in the art without departing from the inventive concept, spirit and scope as defined in the appended claims.

What is claimed is:

1. A heat-shrunk film-wrapped rigid, generally cube-shaped unitary package of masonry brick articles and having substantial 3-dimensional size, said brick articles being of parallelepiped prismatic form and having a pair of major planar opposed surfaces for stacking said bricks and having inherent tolerance variations which contribute collectively to the unstable stacking of bricks in substantial height, superimposed layer-relation when uniformly oriented, said brick package comprising;

- a. a predetermined plurality of generally uniform masonry brick articles oriented in like manner and disposed in abutting uniform alignment collectively having corresponding sides coplanarly aligned, and covered and held together to collectively constitute a sub-package by an overlaying film of heat-shrunk flexible material having film edge portions overlaying opposite end sides of endmost brick articles of said sub-package;
- b. a predetermined plurality of said heat-shrunk-wrapped sub-packages disposed in adjacent contiguous and generally coplanar relation to constitute at least one tier or layer of said package; and
- c. said tier of sub-packages having at least one layer of heat-shrunk material outwardly overlaying and essentially tightly embracing all of said heat-shrunk film-wrapped sub-packages so as to hold them in rigid assembly capable of being lifted from beneath, supported and transported as a unitary package.

2. A heat-shrunk film-wrapped rigid, generally cube-shaped unitary package of masonry brick articles and having substantial 3-dimensional size, said brick articles being of parallelepiped prismatic form and having a pair of major planar opposed surfaces for stacking said bricks and having inherent tolerance variations which contribute collectively to the unstable stacking of bricks in substantial height, superimposed layer-relation when uniformly oriented, said brick package comprising;

- a. a predetermined plurality of generally uniform masonry brick articles oriented in like manner and disposed in abutting uniform alignment collectively having corresponding sides coplanarly aligned, and covered and held together to collectively constitute a sub-package by an overlaying film of heat-shrunk flexible material having film edge portions overlaying opposite end sides of endmost bricks articles of said sub-package;

- b. a predetermined plurality of said heat-shrunk-wrapped sub-packages disposed in adjacent contiguous and generally coplanar relation to constitute at least one tier or layer of said package; and
- c. a predetermined plurality of said tiers or layers of sub-packages oriented in like manner and disposed in adjacent contiguous relation with said brick articles having corresponding minor planar side surfaces coplanarly aligned vertically so as to collectively form said generally cube-shaped package of brick articles; and
- d. said tiers or layers of sub-packages having at least one layer of flexible heat-shrunk material outwardly overlaying and fused at least in part to some exposed portions of said film of heat-shrunk material overlaying and holding said plural masonry brick articles in sub-package form, said outwardly overlaying layer of heat-shrunk material essentially tightly embracing said plural tiers or layers collectively to hold them in rigid assembly capable of being lifted from beneath, supported and transported as a unitary package.

3. A package as defined in claim 2 wherein each of said sub-packages of paragraph (a) includes portions of the film of said heat-shrunk material interposed between said abutting brick articles to better protect the adjacent sides thereof.

4. A package as defined in claim 3 wherein each of said plurality of tiers or layers have a major planar side and opposite ends, and said tiers or layers each are respectively covered with intermediately applied layers of the heat-shrunk film so as to overlay said major planar side and said opposite ends.

5. A package as defined in claim 3 wherein said package further includes auxiliary supporting, stabilizing and protective means in conjunction with at least a first and a second layer of sub-packages as operatively assembled.

6. A package as defined in claim 5 wherein said outwardly disposed layer of heat-shrunk material also tightly embraces a sufficient part of said auxiliary means so as to effect a rigid and stabilizing assembly therewith.

7. A heat-shrunk film-wrapped rigid, generally cube-shaped unitary package of substantial 3-dimensional size, said package comprising

- a. a predetermined plurality of generally uniform size unit articles disposed in abutting uniform alignment collectively having corresponding sides coplanarly aligned, and covered and held together to collectively constitute a sub-package by an overlaying film of heat-shrunk flexible material having film edge portions overlaying opposite end sides of endmost unit articles of said sub-package;
- b. said sub-package of paragraph (a) includes portions of the film of material interposed between said abutting unit articles to better protect continuously adjacent sides thereof;
- c. a predetermined plurality of said heat-shrunk-wrapped sub-packages disposed in adjacent contiguous and generally coplanar relation to constitute at least one tier or layer of said package; and
- d. said tier of sub-packages having at least one layer of heat-shrunk material outwardly overlaying and essentially tightly embracing all of said heat-shrunk film-wrapped sub-packages so as to hold them in rigid assembly as a unitary package.

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8. A package as defined in claim 7 which further includes a plurality of said layers disposed in superimposed stacked relation, said plurality of layers being collectively essentially fully embraced by said outwardly overlaying layer of heat-shrunk material.

9. A package as defined in claim 8, wherein each of said plurality of layers have a major planar side and opposite ends, and said layers each are respectively covered with intermediately applied layers of the heat-shrunk film so as to overlay said major planar side and said opposite ends.

10. A package as defined in claim 7 wherein said sub-packages as constituted by the plural unit articles are of generally rectangular parallelepiped prismatic form and have a major upper and lower planar surface and four angularly disposed minor planar surfaces interconnecting one another and said major planar surfaces, said four minor planar surfaces including a pair of opposite ends of the aligned unit articles which comprise a sub-package, and wherein the heat-shrunk flexible material embracing the articles of said sub-packages fully overlays at least one of said major planar surfaces and at least partially overlays a portion of at least said opposite end minor planar surfaces thereof.

11. A package as defined in claim 7 wherein said outer overlaying layer of heat-shrunk material is heat fused at least in part to part of said portions of the heat-shrunk film wrappings of said sub-packages which

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overlay said end sides of endmost articles.

12. A package as defined in claim 7 wherein said package further includes auxiliary supporting, stabilizing and protective means in conjunction with at least a first and a second layer of sub-packages as operatively assembled.

13. A package as defined in claim 12 wherein said outwardly disposed layer of heat-shrunk material also tightly embraces a sufficient part of said auxiliary means so as to effect a rigid and stabilized assembly therewith.

14. A package as defined in claim 12 wherein said auxiliary supporting means includes metallic wire mesh-like material in cradle support of a first layer of articles beneath and in association with a directly superposed layer of said articles.

15. A package as defined in claim 14, further including auxiliary board or panel means in association with at least opposite ends of said wire mesh material and disposed thereabove and beneath at least a portion of said superposed layer of articles.

16. A package as defined in claim 14 further embodying recess areas collectively formed by said auxiliary supporting and stabilizing means and part of said wrapped articles to facilitate transporting of said wrapped package by conventional fork-lift-truck means.

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