

Nov. 18, 1958

V. L. SMITHERS

2,860,768

PACKAGING OF FRAGILE OBJECTS

Filed Aug. 23, 1954

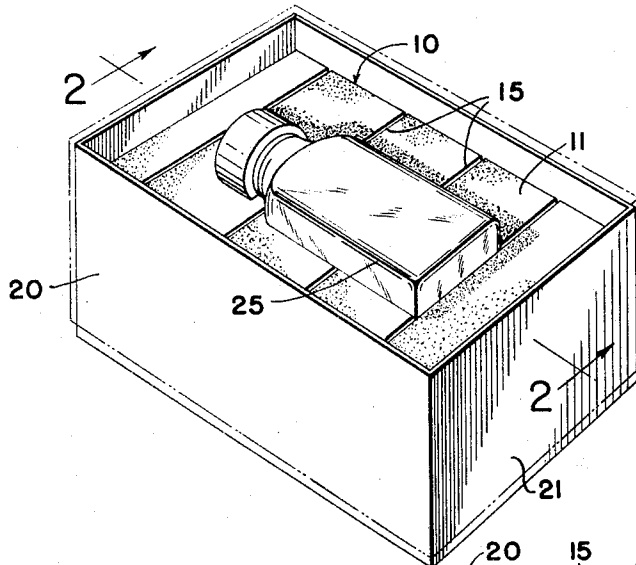


FIG. 1

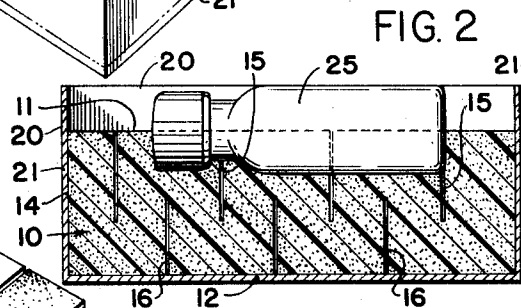


FIG. 2

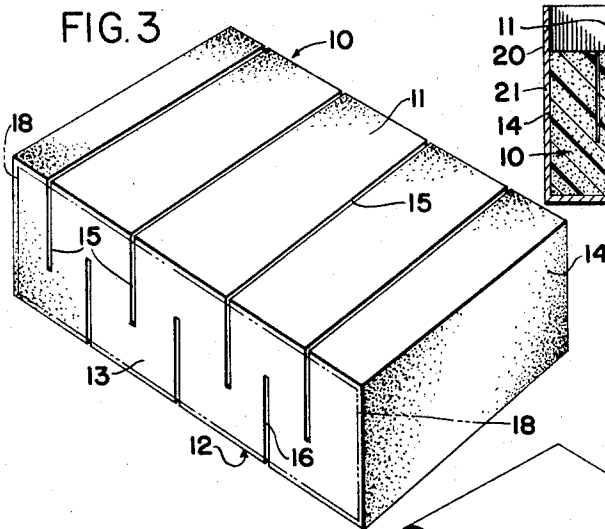


FIG. 3

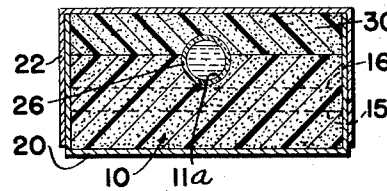


FIG. 5

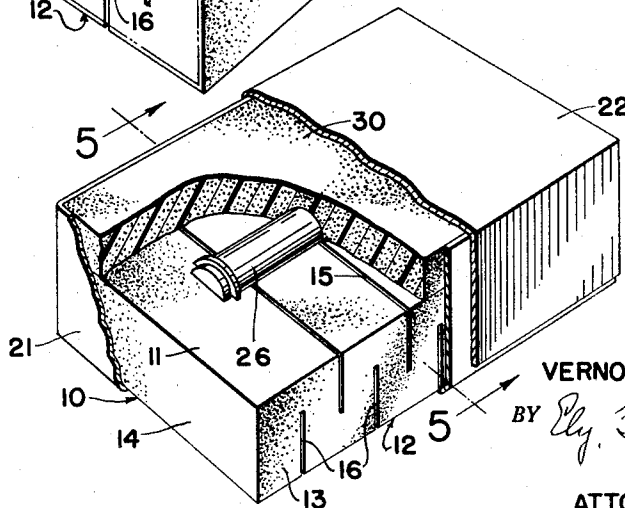


FIG. 4

INVENTOR
VERNON L. SMITHERS

BY *Ely. Faye & Hamilton*

ATTORNEYS

1

2,860,768

PACKAGING OF FRAGILE OBJECTS

Vernon L. Smithers, Akron, Ohio, assignor to The V. L. Smithers Manufacturing Company, Akron, Ohio, a corporation of Ohio

Application August 23, 1954, Serial No. 451,455

1 Claim. (Cl. 206—46)

The present invention relates to the packaging of fragile objects. More particularly, the present invention relates to the use of foamed synthetic resins as a packaging material, and to a novel way of forming blocks of foamed synthetic resins for use as a packaging material.

A large number of fragile objects, including vials of medicine, test samples, perfumes, etc., are transported daily by mail or express. There has long been a need for a light weight, inexpensive and readily prepared packaging material which would substantially reduce the possibility of breakage occurring when such shipments are made. There is also a shipping requirement that the packaging material be capable of absorbing all spillage occurring from breakage in order to prevent damage to other packages. Heretofore, the packaging material most widely used has been cotton or waste paper, in the form of pressed mats, batting or as excelsior.

It is an object of the present invention to provide a new and improved method of packaging fragile or liquid-filled objects.

It is also an object of this invention to provide a novel, light weight, inexpensive and readily prepared packaging material.

These, and other objects, will be apparent in view of the following detailed description thereof taken in conjunction with the attached drawings.

In the drawings:

Fig. 1 is a perspective view of a box-like container enclosing a block of synthetic resin and a liquid-filled glass bottle.

Fig. 2 is a longitudinal section taken substantially on line 2—2 of Fig. 1.

Fig. 3 is a perspective view of a rectangular block of foamed synthetic resin fabricated according to the practice of this invention.

Fig. 4 is a view similar to Fig. 1, but showing a medicinal vial and a cover portion for the box-like container.

Fig. 5 is a transverse section taken substantially on line 5—5 of Fig. 4.

The present invention utilizes the compressibility of foamed synthetic resinous materials to form a secure packaging structure around fragile objects. The invention further contemplates modifying a block or mass of foam to increase its resiliency so that it will be firmly held within a box or carton. It will be understood that while the invention is described in a preferred form in which the basic material employed for the packaging material is a phenol formaldehyde foam, the invention in many of its aspects is not confined to that particular foam. Urea formaldehyde resins are adaptable for use as packaging materials in the practice of this invention.

However, as a phenol formaldehyde foam is preferred, the invention will be described as applied to that particular type of raw material, it being understood that having explained the preferred embodiment of the invention, those acquainted with the art to which it applies may adapt the invention to similar materials.

2

Phenol formaldehyde resin in liquid form is supplied by the manufacturer thereof in graduated viscosities. A batch of any convenient size is measured out, it being preferable to secure the desired viscosity by mixing measured amounts of selected viscosities, depending upon the density of the foam which is to be made. To the batch is added a foaming agent and a small amount of an agent which will impart a suitable degree of softness and resilience to the finished product. The proportioning of the heavy and lighter resins and the use of a softening agent is within the skill of one familiar with this art and need not be set forth in detail.

The block of foam prepared as described above may be of any suitable dimension but for reasons of economy, it is desirable to make it about 5 feet in each dimension. This large block is then cut into smaller blocks of the shape or size desired.

The mass or block of foam formed in the manner described is a very poor liquid absorbent. In order to increase the liquid absorbency of the packaging material to meet the postal requirements the material should be treated with a wetting agent. This may be done by spraying the exterior of the blocks of foam with a wetting agent or by other suitable means.

Referring to the drawings, the details of the invention become readily apparent. A block of foamed resin, prepared as described above, is indicated generally by the numeral 10. Though shown as rectangular in shape, the block may be square, cubed or any other desired shape. The filler block 10 has a top surface 11, a bottom surface 12, sides 13 and ends 14. The top surface has a plurality of preferably parallel cuts 15 therein which extend inwardly therefrom substantially beyond the central plane of the block. The bottom surface has a plurality of corresponding cuts 16 which extend inwardly from the bottom surface and which are staggered in relation to cuts 15. The wetting agent will penetrate for a short distance into the block, as shown at 18 in Fig. 3.

The cuts 15 and 16 are provided to permit the filler block 10 to be inserted snugly and securely within a box-like carton 20. The width or transverse dimension of each of the cuts 15 and 16 furnish additional resilience or "spring" when the filler block is compressed permitting the block to be cut slightly oversize lengthwise so that when the compression force of insertion is released, the block expands causing ends 14 to tightly grip ends 21 of the carton and the block is not permanently distorted. It is necessary to cut the block oversize in a plane transverse to the cuts, the other direction being cut so as to permit an easy fit.

Another purpose of the cuts 15 and 16 is to provide channels for the flow of any spillage or leakage from the fragile article 25 and thus enhance the absorptive properties of the filler block.

The parallel cuts 15 and 16 may be made in directions other than at right angles to the surfaces 11 and 12. Also, on blocks which are relatively thin, the cuts need be made only on one side.

An article 25 is packaged or impressed in the filler block 10 and within the carton 20, by applying pressure to the article thereby causing the block to become deformed as the article is pressed into the block. As shown in the drawings the block 10 readily conforms to the exact configuration of the article being packaged therein and only a slight pressure is usually required. The upper surface of the block may have a depression formed therein, so that the article may be properly located.

In the embodiment of the invention shown in Figs 1-3, the shape of the article 25 is such that a cover slab of foam material is not required and a carton cover (not shown) is sufficient to hold the article 25 in place. However, referring to Figs. 4 and 5, the articles 26 being

3

packaged might be a test tube and therefore of a shape which could readily be dislodged from the depression 11a made in filler block. Therefore, a cover slab 30 may be provided to hold tube 26 in place. The carton cover 22 is placed over the slab 30 which has been deformed by the tube 26 and the tube is held tightly. It has not been found necessary to provide parallel cuts in the slab cover 30, though this may be done if desired.

The present invention provides an inexpensive packaging material and method which may be used for the transporting of fragile or liquid-filled objects. Further, the packaging material is light weight, adaptable for use with any size or shape of shipping carton, and may be used with any shaped fragile object. Therefore, it is not intended that the invention be limited to the preferred embodiments of the invention described herein, and the subjoined claim is intended to cover all changes and modifications which lie within the true spirit and scope of the invention.

What is claimed is:

In combination with a shipping container, a block of foamed synthetic resinous material fitting within said shipping container, said block having a plurality of substantially parallel spaced cuts extending inwardly from the top and bottom surfaces thereof beyond the central plane

4

of the block, said cuts extending across the entire width of said block and having a transverse dimension, said block having low resilience and being oversize with respect to the interior of said shipping container in a direction transverse to said plurality of cuts, and compressible for insertion within the container.

References Cited in the file of this patent

UNITED STATES PATENTS

1,539,140	Palmer	May 26, 1925
2,176,275	Pierce	Oct. 17, 1939
2,282,908	Thompson	May 12, 1942
2,315,391	Blair	Mar. 30, 1943
2,629,698	Sterling	Feb. 24, 1953
2,663,527	Joslyn	Dec. 22, 1953

FOREIGN PATENTS

195,493	Great Britain	Apr. 5, 1923
710,286	France	June 1, 1931
476,678	Great Britain	Dec. 8, 1937

OTHER REFERENCES

"Modern Packaging" magazine, August 1953 issue, page 97.