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A. B. DOW

3,190,499

DISPENSING CONTAINER

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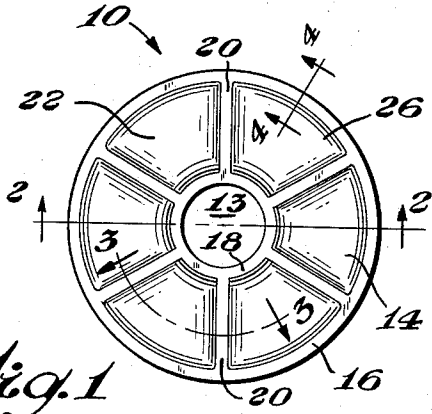


Fig. 1

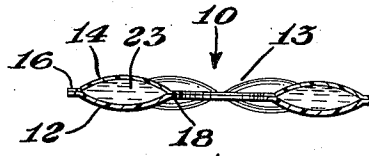


Fig. 2

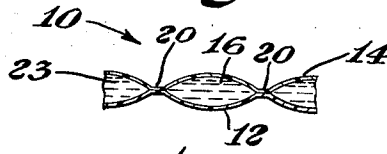


Fig. 3

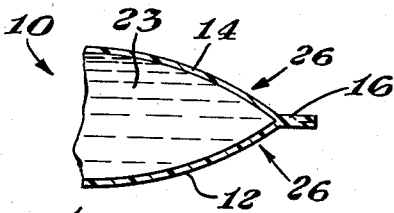


Fig. 4

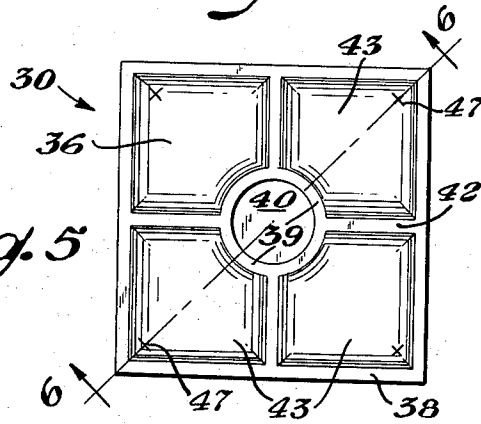


Fig. 5

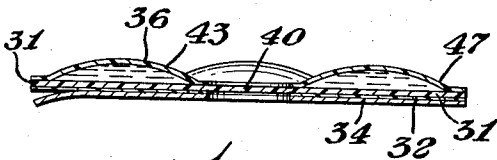


Fig. 6

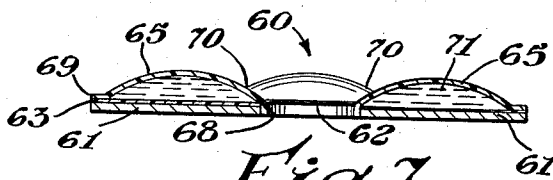


Fig. 7

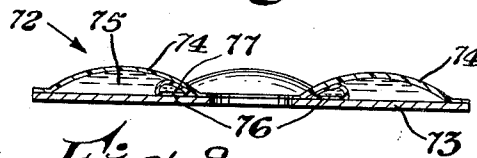


Fig. 8

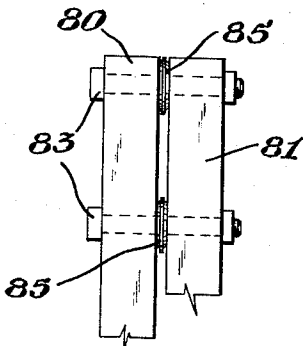


Fig. 9

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3,190,499

DISPENSING CONTAINER

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This invention relates to a dispensing container. It more particularly relates to a dispensing container which is an adhesive applicator particularly adapted to be utilized for the controlled directional dispensing of an adhesive.

It is known to utilize frangible or rupturable packages containing an adhesive material for dispensing adhesives between surfaces to be joined. Generally the package or container is placed between the surfaces which are to be adhered together. The surfaces are then forced together with a force sufficient to rupture the frangible adhesive container and spread at least a portion of the adhesive over a portion of the surfaces to be joined. Oftentimes such adhesive applicators or dispensing containers give less than an ideal distribution of the adhesive material over the surfaces. Generally this is due to the rupture pattern of the package wall and oftentimes, at least in part, due to the geometric relationship of the surfaces to be joined. Frequently both of these factors may contribute to the uneven distribution of the adhesive. Known adhesive applicators often are not successfully or conveniently employed in the joining of vertical surfaces such as exist between wooden members that are utilized in many framing applications. For example, in forming a bolted wooden joint between two pieces of 2 by 6 inch lumber, wherein a portion of the wider surfaces are joined, rupture of a conventional adhesive applicator often will cause a major portion of the adhesive to be forced toward one edge of the joint and occasionally a major portion of the adhesive will be forced out of the joint without adhering to either of the surfaces.

It is an object of this invention to provide an improved dispensing container containing an adhesive which, on rupturing, gives an improved distribution of the adhesive on the faces to be joined.

It is a further object of this invention to provide an adhesive applicator which is particularly adapted for use on vertical or near vertical surfaces wherein the applicator may be supported by means of a bolt, dowel, nail, or similar projection.

Another object of this invention is to provide a dispensing container containing an adhesive which provides a means for its support to a surface and provides substantially symmetrical distribution of its contents when ruptured by the pressure of two opposing surfaces.

These benefits and other advantages are achieved in accordance with the present invention by providing a dispensing container comprising a base member, a rupturable membrane adhered to the base member about the periphery, and about a centrally disposed area of the base member, the base member in combination with the membrane defining a closed space having therein a flowable adhesive material, the membrane being further adhered to the base member by means of a plurality of seals which extend from the periphery of the base member to the centrally disposed portion of the base member adhered to the membrane thereby forming a plurality of sealed adhesive containing compartments, each of the compartments having at least one edge adjacent to the periphery of the base member.

Further features and advantages of the invention will become more apparent from the following specification when taken in connection with the drawing wherein:

FIGURE 1 is a plane view of an adhesive container in accordance with the invention;

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FIGURE 2 is a view of the container of FIGURE 1 along the line 2-2;

FIGURE 3 is a sectional view of the container of FIGURE 1 along the line 3-3;

FIGURE 4 is an enlarged view of the edge of the container of FIGURE 1 along the line 4-4;

FIGURE 5 is a view of an alternate configuration of a dispensing container;

FIGURE 6 is a sectional view of the container of FIGURE 5 taken along the line 6-6;

FIGURES 7 and 8 are sectional views of alternate containers; and

FIGURE 9 illustrates an application of adhesive containers in accordance with the invention.

With reference to FIGURES 1, 2, 3 and 4, there are illustrated views of an adhesive container generally designated by the reference numeral 10. The container 10 comprises a base member 12 having joined thereto a rupturable membrane 14. The rupturable membrane 14 is secured to the base member 12 adjacent an aperture 13 by means of the seal 18. A plurality of seals 20 extend between the seal 16 and the seal 18 to form a plurality of compartments or spaces 22 having incorporated therein a fluid adhesive material 23. The rupturable membrane 14 is sealed to the base member 12 in the area of the peripheral seal 16 in a manner that provides a weakened area generally designated by the reference numeral 26. In the area 26 the thickness of the rupturable membrane has been reduced to less than the thickness of the remainder of the wall portions of the membrane 14.

FIGURES 5 and 6 depict an alternate dispensing container in accordance with the invention generally designated by the reference numeral 30. The container 30 comprises a base member 31 having secured thereto on one side thereof a contact or pressure sensitive adhesive layer 32. Adhering to the adhesive layer 32 is a stripable protective layer 34. A rupturable membrane 36 is affixed to the base member 31 and disposed oppositely from the adhesive layer 32. The rupturable membrane 36 is secured to the base 31 by means of a generally peripheral seal 38 and a generally centrally disposed seal 39. The centrally disposed seal 39 is endless and defines an area 40. A plurality of seals 42 extend between the seal 38 and the seal 39, thus providing a plurality of chambers 43. The chambers 43 contain a fluid adhesive 45. On the surface of the membrane 36, partially defining the chambers 43, is a weakened portion having grooves or scratches 47.

In FIGURE 7 there is illustrated a sectional view of an alternate dispensing container in accordance with the invention generally designated by the reference numeral 60. The container 60 comprises a base member 61 defining a generally centrally disposed aperture 62. Adhered to one of the major faces of the base member 61 is coating 63. A rupturable membrane 65 is secured to the base member 61 by means of a seal 68 generally conforming to the configuration of the aperture 62 and to the coating 63 by means of seal 69 about the periphery of the base 61. A plurality of seals 70 between the seals 68 and 69 serve in combination with the coating 63 and the rupturable membrane 65 to define a plurality of spaces 71.

In FIGURE 8 there is depicted a sectional view of an alternate dispensing container generally designated by the reference numeral 72. The container 72 comprises a base member 73 having adhered thereover a rupturable membrane 74. The base member 73 and membrane 74 define a space or cavity 75. Disposed within the cavity 75 is a rupturable capsule 76 containing an adhesive component 77. The capsule 76 may be readily ruptured without rupturing the walls of the larger space 75. This embodiment is particularly suited for adhesives of the polym-

crization type which require two components to be mixed shortly prior to application.

By way of further illustration, adhesives of the two-component type such as epoxy adhesives are readily utilized in accordance with the invention by placing the resin component in the space 75 and the catalyst component in the space 77 within the smaller capsule 76. Immediately prior to use, pressure on the membrane 74 immediately adjacent to the capsule 76 will cause the small capsule to rupture and discharge its contents into the epoxy resin component contained within the space 75. Satisfactory mixture of the resin and the catalyst is then achieved by gently kneading other two component adhesive systems such as the phenolic resin types based on resorcinol and the like. Beneficially the capsule containing the catalyst or minor component of the adhesive is sealed or joined to the base member or to the membrane or both in order that it is permanently positioned within the space 75. It then can be readily ruptured by applying pressure to one side or corner of the container, thus discharging its contents to the main body of the adhesive without rupturing the container proper. Beneficially, capsule 76 is prepared from a thinner, weaker material than the base 73 or the membrane 74.

In FIGURE 9 there is depicted one manner in which containers in accordance with the invention may be utilized. FIGURE 8 shows a member 80 and an oppositely disposed member 81. The members 80 and 81 have passing therethrough bolts 83. Disposed from each of the bolt assemblies 83 is an adhesive dispensing container 85.

The embodiment of FIGURES 5 and 6 utilizes a different method of providing a relatively easily rupturable portion of the membrane wherein the membrane 36 has been provided with a thin area or region 47, such as is provided by scratching with a scribner, diamond point, or the like.

The embodiment of FIGURES 5 and 6 incorporates the feature of an aperture provided only within only one of the members enclosing the fluid adhesive. The container is readily secured by forcing the central portion over a projection such as a nail, bolt or similar projection and held in position by means of friction during movement of the member into the desired position.

An alternate manner of constructing a container is depicted in FIGURE 7, wherein the packet 60 comprises a base member 61 which is provided with a thermoplastic resinous coat 63 which is poorly adhered to the base member 61. The membrane 65 is firmly adhered to the coating 63 in the area of the seal 69. On application of sufficient pressure to the packet, the base coat 63 is drawn from the base member 61 and ruptures in an area generally adjacent to the seal 69. The aperture 62 provides an opening through which a bolt may readily pass. The bolt is protected from receiving a portion of the adhesive by the membrane 65 extending into the aperture 62. Thus, through compression of the packet the adhesive is forced entirely outward away from the bolt. The adhesive is generally and uniformly distributed from the ruptured edges of the container.

Dispensing containers in accordance with the invention are beneficially employed by utilizing a procedure generally depicted in FIGURE 9, wherein such containers are placed over a bolt or rod-like member and placed in the approximate position for assembly. The members to be joined are drawn together with sufficient force to rupture the spaces or seals of the glue packet about the periphery thereof and distribute the glue evenly over the surface of the members to be joined.

Beneficially, containers in accordance with one invention generally should not represent an area greater than about 25 to 50 percent of the area to be joined and, beneficially, in cases where relatively flat surfaces are to be secured together, the area need not be greater than about 5 to 10 percent.

Adhesive dispensing containers in accordance with the

present invention are particularly beneficial and advantageous for vertical installations where the application of adhesives in the conventional manner must be done with a brush or many individual containers first adhered to at least one of the surfaces and the members placed in position. The dispensing containers are readily handled and positioned without the necessity of the mess and disorder usually associated with brush, trowel or similar application techniques.

Containers in accordance with the invention are readily prepared by conventional means by first sealing the base member and the rupturable membrane together to form an object having the general configuration of the container, but leaving a small opening about the periphery by means of which glue or a suitable adhesive may be inserted into the package. The glue or adhesive is then added to the package to distort it into the shape generally similar to that shown in FIGURES 2, 3, 6, 7, and 8. The filling tube may be then withdrawn from the aperture and the aperture subsequently sealed (such as by the means and method disclosed in U.S. Patent 3,022,184) to provide a packet with a single glue chamber. The single glue chamber is then divided into a plurality of spaces by forming a plurality of seals extending from the inner seal to the outer seal in such a manner that each of the spaces so-formed has one edge adjacent the outer edge of the packet. These seals are beneficially made employing the method and means of U.S. Patent 3,022,184.

Generally, it is advantageous from both economic and practical standpoints to form the rupturable membrane from material having a thermoplastic resinous surface which may be conveniently and easily sealed by means of the application of heat or by ultrasonic vibrations. The base member advantageously is also formed from a similar material or a laminated sheet having a thermoplastic resinous surface such as plastic-coated paper, metal foil, and the like.

Conventional contact adhesives may be utilized in the embodiment shown in FIGURE 6, wherein a protective sealing layer, such as a waxed paper or similar strippable coating member, is placed thereover to prevent the accumulation of dust and dirt.

In order to provide optimum distribution of the contents of the container, on rupturing at least a portion of the peripheral seal is weakened such as illustrated in FIGURE 4, wherein a portion 26 of the wall of the membrane 14 is thinned toward the edge seal 16. This is readily accomplished with thermoplastic sheets and films by the application of higher heat or pressure or both to this region during the sealing. If materials such as coated metal foils or paper are employed, they may be mechanically torn or weakened during the fabrication by the application of more pressure than is required to form the desired seal.

As is apparent from the foregoing specification, the device of the present invention is susceptible of being embodied with various alterations and modifications which may differ particularly from those that have been described in the preceding specification and description. For this reason, it is to be fully understood that all of the foregoing is intended to be merely illustrative and is not to be construed or interpreted as being restrictive or otherwise limiting of the present invention, excepting as it is set forth and defined in the hereto appended claims.

What is claimed is:

1. A pressure rupturable adhesive or glue containing and dispensing container comprising a base member, a rupturable membrane adhered to the base member about the periphery and about a generally centrally disposed area of the base member, the centrally disposed area adapted to receive a supporting projection, the base member in combination with the membrane defining a closed space having therein a flowable adhesive material, the membrane being further adhered to the base member by means of a plurality of seals which extend from the pe-

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riphery of the base member to the centrally disposed portion of the base member adhered to the membrane thereby forming a plurality of sealed compartments, each of said compartments containing a flowable adhesive, each of the compartments having at least one edge adjacent the periphery of the base member and one edge adjacent the centrally disposed area of the base member.

2. The dispensing container of claim 1, wherein a portion of the rupturable membrane adjacent the periphery of the base member and confining the adhesive is weakened.

3. The container of claim 2, wherein the membrane wall restraining the adhesive adjacent the peripheral seal is thinner than the major portion of the membrane.

4. The container of claim 2, wherein a portion of the membrane wall restraining the flowable adhesive is provided with small surface grooves.

5. The container of claim 1, wherein the membrane and the base are of generally identical material.

6. The container of claim 1, wherein the membrane and the base have facing thermoplastic resinous surfaces.

7. The container of claim 6, wherein the membrane and the base comprise thermoplastic resinous film.

8. The container of claim 1, wherein the base member remote from said membrane is provided with a coating of a pressure sensitive adhesive.

9. The container of claim 1, wherein the base member and membrane define a centrally disposed aperture.

10. The container of claim 9, wherein said base member has adjacent and sealed to the membrane a poorly adhering thin thermoplastic coating which is weaker than the membrane.

11. The container of claim 1, wherein the periphery of the base member and the membrane has a generally circular configuration.

12. The container of claim 11, wherein the seals joining the peripheral seal and the centrally disposed seal are generally radially arranged.

13. The container of claim 1, wherein the peripheral configuration of the container is generally rectangular and the membrane restraining the adhesive is provided with weakened portions generally adjacent the corners of the rectangle.

14. The container of claim 1, wherein there is within the centrally disposed seal a weakened portion which permits ready insertion of a member and provides means to frictionally retain the container on the member.

15. The container of claim 1, wherein there is disposed within each of the compartments a sealed rupturable capsule containing an adhesive component.

16. The container of claim 15, wherein said rupturable capsule is positioned permanently adjacent one edge of the compartment.

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17. A pressure rupturable adhesive or glue dispensing container consisting essentially of a base member, a rupturable membrane adhered to the base member and about a generally centrally disposed area of the base member, defining means to receive a projection and support the container, the base member in combination with the membrane defining a closed space having therein a flowable adhesive material, the membrane being further adhered to the base member by means of a plurality of seals which extend from the periphery of the base member to the centrally disposed portion of the base member, thereby forming a radial pattern of cells, and defining a plurality of compartments, each of the compartments containing a flowable adhesive material and each of the compartments having an edge adjacent to the centrally disposed area and an edge adjacent to the periphery of the base member, said container adapted to be ruptured by the application of pressure by members to be adhered and discharge the flowable adhesive from the compartments in a generally radially outward direction when ruptured between oppositely disposed surfaces.

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