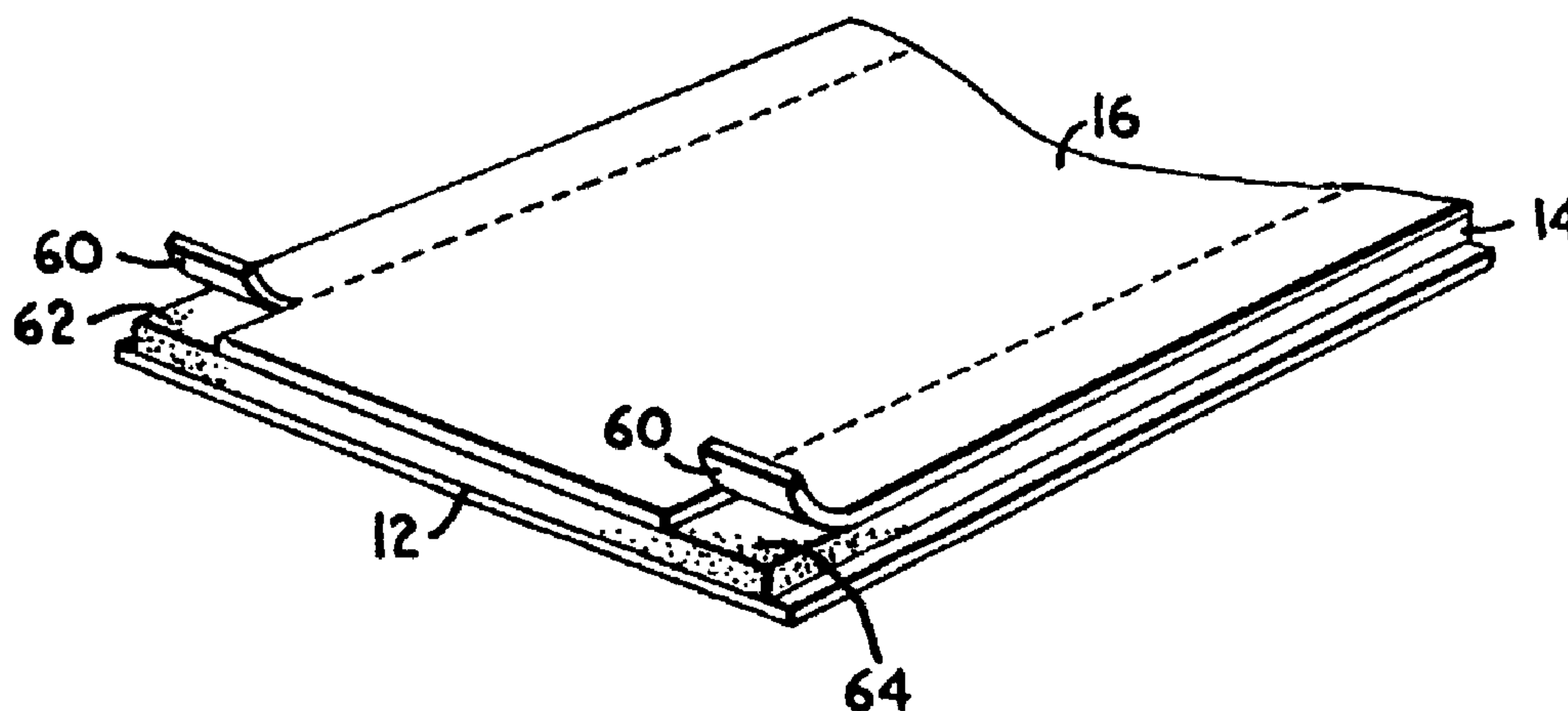




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(54) Title: WATERPROOFING MEMBRANE AND METHOD OF MANUFACTURE



(57) **Abrégé/Abstract:**

A waterproofing membrane is provided which includes a waterproof synthetic resin film presenting opposed first and second surfaces, and an inner bitumen adhesive supported on the first surface of the film. The membrane is manufactured by heating the bitumen adhesive and applying it to a web of the waterproof synthetic resin film. As such, the resulting membrane includes an adhesive possessing a coating temperature at which the adhesive can be applied to the film as a viscous liquid, and a film possessing a still higher transition temperature that permits the film to function as a substrate for the bitumen adhesive during manufacture. Also, a membrane is provided having a release coating applied to an area of the film to prevent the film from bonding with the adhesive layer. The coated film is removed from the membrane to expose the underlying adhesive for overlapping adjacent membrane sheets.

**ABSTRACT OF THE DISCLOSURE**

5 A waterproofing membrane is provided which includes a waterproof synthetic resin film presenting opposed first and second surfaces, and an inner bitumen adhesive supported on the first surface of the film. The membrane is manufactured by heating the bitumen adhesive and applying it to a web of the waterproof synthetic resin film. As such, the resulting membrane includes an adhesive possessing a coating temperature at which the adhesive can be applied to the film as a viscous liquid, and a film possessing a still higher transition temperature that permits the film to function as a substrate for the bitumen adhesive during manufacture. Also, a membrane is provided  
10 having a release coating applied to an area of the film to prevent the film from bonding with the adhesive layer. The coated film is removed from the membrane to expose the underlying adhesive for overlapping adjacent membrane sheets.

## WATERPROOFING MEMBRANE AND METHOD OF MANUFACTURE

### BACKGROUND OF THE INVENTION

This invention relates generally to waterproofing membranes and, more particularly, to an improved waterproofing membrane employing a waterproof film on which a bitumen adhesive is supported, and to a method of manufacturing such membranes.

In the construction industry, it is known to provide waterproofing membranes of various constructions which can be adhered to the walls, floors, decks, etc. of a building to seal them against the passage of water and moisture therethrough. A typical waterproofing membrane comprises a layer of waterproof elastomeric or synthetic resin material or composition that is applied to a bitumen adhesive, e.g. of modified asphalt or the like, and may include additional layers to strengthen or support the various layers of the membrane during manufacture and use. As with any product, waterproofing membranes must perform their intended waterproofing function at the lowest possible cost, be easy to manufacture and use, and permit application to a multitude of different types of construction surfaces and to conform to varying substrate shapes.

A problem that arises in the use of conventional waterproofing membranes, especially in underground applications, is hydrolysis. Hydrolysis is a process whereby prolonged exposure of the waterproof material to moisture, typically standing water, leads to a deterioration of the membrane's ability to prevent the transmission of water. In an attempt to overcome the problems associated with hydrolysis, at least one known conventional membrane includes a waterproof layer incorporating high density polyethylene which is not vulnerable to hydrolysis. However, polyethylene possesses a relatively low transition temperature, above which both its dimensional stability and its ability to support a continuous load is lost relative to the dimensional stability and ability of the material to support a continuous load at room temperature.

Because this transition temperature of the material used in the waterproof layer is lower than the temperature at which the bitumen adhesive is capable of being extruded during manufacture, it is necessary to first extrude the adhesive onto a separate

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substrate, such as a release liner, allow the adhesive (asphalt) to cool to a temperature lower than the transition temperature of the waterproof layer, and subsequently apply the waterproof layer to the adhesive. The release liner is thus used as a substrate during the manufacturing process because it can support the weight of the adhesive at the coating  
5 temperature. Although it is possible to employ a waterproof layer that incorporates stabilizers or fillers such as glass fiber, mineral particles or the like to improve the mechanical properties of the material above its transition temperature, such compositions increase the cost of the membrane.

Several problems arise from the use of conventional membrane materials  
10 and methods of manufacture. For example, because the adhesive in the membrane must be allowed to cool before the waterproof layer can be applied during manufacture, large flat bed cooling devices are used, which consume a significant amount of space and provide only relatively slow convection cooling of the asphalt. As such, the manufacturing process is slow and expensive.

15 Another problem with prior art membranes relates to overlapping one sheet of waterproofing membrane material with the next adjacent sheet so that a large surface may be completely waterproofed. In order to prevent water from seeping through the seams between two adjacent sheets of waterproofing membrane material, it is important that an adhesive to adhesive bond be formed between the sheets. Thus, each  
20 waterproofing sheet must have an upper adhesive surface to contact the lower adhesive surface of the next adjacent sheet to achieve the desired adhesive to adhesive bond.

In the prior art, the membrane sheets are manufactured so that adhesive margins extend beyond the waterproofing film. The adhesive margins of each sheet of waterproofing membrane are in adhesive to adhesive contact with the overlapping  
25 adjacent sheet. However, extending the adhesive layer beyond the adhesive film causes the sheet to be adhered to itself when placed in a roll. To prevent the margins from adhering to itself, the margins must be covered during the production process prior to rolling the sheets. One prior art process involves applying narrow strips of release film to the adhesive margins before rolling the membrane sheet. The application of these “zip  
30 strips” requires an additional step involving a number of moving parts. Moreover, the process requires re-threading of the zip strip applicator machine when the strips break.

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To rethread the machine, a worker must place his or her hands near the running press roll.

Another prior art solution to this problem is to extend the release sheet secured to the underside of the adhesive layer beyond the adhesive layer. The portion of the release sheet extending beyond the adhesive layer is folded over itself so that the side  
5 of release sheet coated to contact the adhesive layer is directed toward the exposed adhesive of the adjacent layer when the membrane is stored in a roll. This prior art solution requires the additional burdensome step of folding the excess release liner in the manufacturing process. Accordingly, a waterproofing membrane and method of making the same is needed that overcomes the time consuming, costly and dangerous prior art  
10 manufacturing processes directed to waterproofing sheets capable of being applied in overlapping sheets with an adhesive to adhesive bond between the adjacent sheets.

Moreover, in some types of waterproofing membranes, it is difficult to simply extend the adhesive layer beyond the waterproofing film. For instance, when the film itself is used as the substrate for the membrane, such as when the adhesive layer is  
15 melted and coated on the film, the adhesive layer is necessarily coextensive with the film, and it is impossible to extend the adhesive beyond the film. Thus, a new waterproofing membrane and method of making the same is needed that allows membrane sheets having coextensive film and adhesive layers to be overlapped and adhered to the adjacent waterproofing membrane sheets in adhesive to adhesive connection.

## 20 **BRIEF SUMMARY OF THE INVENTION**

It is an object of the present invention to provide a waterproofing membrane that can be used to waterproof a wall, floor, deck or the like, and that will not deteriorate substantially with time due to hydrolysis.

A still further object of the invention is to provide a waterproofing  
25 membrane having coextensive film and adhesive layers that can be applied by overlapping and adhering adjacent sheets of the membrane to one another in adhesive to adhesive connection.

It is another object of the invention to provide a method of manufacturing the waterproofing membrane that reduces the total cost and time of manufacture of the  
30 membrane.

It is another object of the invention to provide a method of manufacturing a waterproofing membrane sheet having adhesive marginal areas that requires less manufacturing steps and is safer than prior art methods.

In accordance with these and other objects of the invention, a  
5 waterproofing membrane is provided which includes, possibly among other features, a waterproof synthetic resin film presenting opposed first and second surfaces, and a bitumen adhesive supported on the first surface of the film. The adhesive possesses a coating temperature at which the adhesive can be coated on the film as a viscous liquid, and the synthetic resin film possesses a transition temperature above which the  
10 dimensional stability of the film and the ability of the film to support a continuous load is substantially reduced, e.g. by at least 50% relative to the dimensional stability and ability of the film to support a continuous load at room temperature. The transition temperature of the film is higher than the coating temperature of the adhesive, permitting the film to be used as a substrate for the adhesive during manufacture.

15 By providing a construction in accordance with the present invention, numerous advantages are realized. For example, by employing a waterproof film of the type employed in the invention, it is possible to manufacture the membrane using a method comprising the steps of raising the temperature of a bitumen adhesive to a coating temperature, and coating at least one surface of a web of waterproof synthetic resin film  
20 with the adhesive. Thereafter, the coated web can be cooled by running it over one or more chilled rollers that employ conduction to cool the membrane to a temperature at which it can be rolled up for storage or shipment to a work site. Thus, the method is much faster than conventional methods, and cooling of the membrane can be done more efficiently, resulting in a lower cost membrane.

25 In accordance with one aspect of the invention, the membrane includes a pair of adhesive layers, each of which is applied to an opposing surface of the synthetic resin film. By providing this construction, added protection is afforded the film against exposure to moisture, improving the durability of the membrane and reducing the effects of hydrolysis. As such, it is possible to employ synthetic resin materials in the film that  
30 do not, by themselves, exhibit excellent resistance to the effects of hydrolysis.

In accordance with another aspect of the invention, the membrane

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includes, among other features, a waterproof synthetic resin film having a thickness of less than about 3 mils, wherein the bitumen adhesive supported on a first surface of the film presenting laterally spaced side edges that are  
5 substantially coextensive with the side edges of the film. As such, the membrane is capable of being wrapped around corners and over other odd shaped walls and floors, and adheres well to many different types of surfaces.

In accordance with yet another aspect of the  
10 invention in which the waterproofing film serves as substrate for the adhesive layer, a release coating is applied to at least one area of the film so that the adhesive layer is not secured to the film. Typically, the release coating is applied to the marginal edges of the  
15 film. The film is perforated along the inner boundary of the area covered by the release coating. To apply the membrane, the release liner supported on the side of the adhesive layer opposite the film is removed to expose the adhesive layer. The sheet is applied to the surface at the  
20 exposed lower adhesive surface. Then, the marginal strip of the film having the release coating is removed from the adhesive layer by tearing along the perforation and pulling the strip away from the adhesive layer. The upper surface of the adhesive is exposed along the margins previously  
25 covered by the strips. Finally, the next sheet of waterproofing membrane material is applied by removing the release liner and placing the lower adhesive surface of the sheet into contact with the exposed marginal area of the previous sheet. The adhesive to adhesive bond between the  
30 adjacent sheets of waterproofing material creates a continuous sheet of the waterproofing membrane.

Importantly, this same method may be used with membrane sheets produced with conventional materials and techniques

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to eliminate the need for upper adhesive margins extending beyond the waterproofing film prior to rolling and to overcome the problems associated with covering these margins in prior art methods.

5           According to one broad aspect of the invention, there is provided a waterproofing membrane comprising: a waterproofing film presenting opposed first and second surfaces and having opposing first and second sides, said film having a first perforation at a distance from said  
10 first side, said film having a release coating on the portion of the film between said first side and said perforation; and an adhesive layer supported on the first surface of the film wherein said film is precluded from adhering to said adhesive layer at said portion of the film  
15 between said first side and said first perforation and wherein a portion of the adhesive layer is exposed when said portion of said film between said first side and said first perforation is removed by tearing the film at said perforation.

20           According to another aspect of the present invention, there is provided a waterproofing membrane comprising: a waterproofing film presenting opposed first and second surfaces, said film having an area coated with a release coating, said film perforated about said area; and  
25 an adhesive layer supported on the first surface of the film wherein said film is precluded from adhering to said adhesive layer at said area of said film and wherein said portion of the adhesive layer is exposed when said area of said film is removed at said perforation.

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**BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING**

A preferred embodiment of the present invention will be described below with reference to the attached drawing, wherein:

- 5           **Fig. 1** is a cross-sectional view of a first waterproofing membrane constructed in accordance with one embodiment of the present invention;

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Fig. 2 is a cross-sectional view of a pair of the first membranes adhered to a wall that is to be waterproofed;

Fig. 3 is a schematic view of a machine for manufacturing the first waterproofing membrane, illustrating the method of manufacture;

5 Fig. 4 is a cross-sectional view of a second waterproofing membrane constructed in accordance with an embodiment of the present invention;

Fig. 5 is a perspective view of the waterproofing film constructed in accordance with a third embodiment of the present invention; and

10 Fig. 6 is a perspective view of the third waterproofing membrane with the marginal strips of the film partially removed from the adhesive layer.

## DETAILED DESCRIPTION OF THE INVENTION

As illustrated in Fig. 1, a waterproofing membrane 10 constructed in accordance with one embodiment of the present invention includes a release liner 12, a first or inner adhesive layer 14, a waterproof film 16, and a second or outer adhesive layer 15 18. In addition, a surface treatment 20 is applied over a majority of the exposed surface of the second adhesive layer, except along a marginal edge of the membrane over which a release liner 22 is applied.

The first and second adhesive layers 14, 18 are both preferably formed of a polymer-modified bitumen such as a styrene-butadiene-styrene (SBS) block polymer, 20 and can include one or more fillers such as limestone or the like to provide the desired consistency and physical properties for use in the membrane. The adhesive possesses a coating temperature at which it can be coated on the film as a viscous liquid. For example, the coating temperature of the SBS block polymer-adhesive described falls generally in the range of about 330°F to 365°F. Other adhesives may be used having 25 other coating temperatures outside this range depending on the film utilized therewith. In addition to providing a tacky layer on the membrane for permitting adherence of the membrane to a floor or wall, the adhesive also resists water penetration, having a water permeability less than approximately 0.05 perm, where perm is the unit of measurement for permeance to water. Thus, the lamination of the film between the two adhesive layers 30 substantially inhibits standing water from coming into direct contact with the film,

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substantially reducing deterioration of the film due to hydrolysis. By providing this construction, it is possible to employ materials for the film that would not otherwise be suitable candidates due to their poor ability to resist hydrolysis.

The release liners 12, 22 are conventional, and may be formed of a  
5 cellulose material such as paper that is coated with silicone or another suitable release material. The inner liner 12 is removably adhered to the exposed inner surface of the first adhesive layer 14, and is removable prior to application of the membrane on the surface to be waterproofed. The exposed surface of the second or outer adhesive layer 18 is covered with the non-adhesive surface treatment 20, which preferably includes silica,  
10 limestone, coal slag, talc, or the like. These fine mineral materials adhere readily to the adhesive to form a non-stick surface that is easy to handle during application to a surface to be waterproofed, and so that the membrane 10 can be rolled or stacked for storage and transportation. The nonadhesive surfacing 20 preferably covers a central area of the outer side adhesive layer 18, and the outer release liner 22 covers at least one marginal edge  
15 of the outer side adhesive layer 18. As illustrated in Fig. 2, the outer release liner 22 is removed from the marginal edges to expose the tacky exposed outer surface of the layer 18 so that an adjacent membrane 10 of similar construction can be placed over and adhered to the first membrane, forming a bonded overlap.

The waterproof film 16 is substantially impenetrable to water and  
20 moisture, preferably possessing a water permeability less than approximately 0.01 perm ( $1 \times 10^{-2}$  perm). The film has a thickness of less than about 3 mils, permitting the membrane to be constructed of a thickness thin enough to facilitate its application around corners, over steps and onto surfaces of many varying shapes. The material used to make the film is a synthetic resin, preferably selected from the group consisting of polyester,  
25 polypropylene, polybutylene, polyimide, polycarbonate, polyamide, polyethylene, polystyrene, polyvinylchloride, fluorochemicals, sulfone polymers, and polyvinylidene chloride, all of which maintain their dimensional stability and their ability to support a continuous load at bitumen adhesive coating temperatures. The most preferred material is polyester because of its current low cost, its ready availability in webs of film of the  
30 desired thickness, and its mechanical properties. Alternately, polyethylene or other film materials having poor mechanical properties and load bearing capacities above about

330°F could be used if combined with additives or stabilizers that would improve the mechanical properties of the material at such elevated temperatures and allow use of the material in the inventive method. However, the cost of the membrane would be increased by adding such complexity, and should be avoided unless the advantages obtained by  
5 using such compositions outweighs the added cost thereof.

In order to determine whether a material is suitable for use in the film 16 of the membrane 10, it is necessary to determine whether the mechanical properties of the material and its load bearing capacity are maintained at the elevated temperatures at which the film is to be coated with the adhesive for the duration of the coating and  
10 cooling processes.

The transition temperature for the waterproof film must include a transition temperature that is at least higher than the coating temperature of the bitumen adhesive in a viscous form and preferably above the highest temperature at which the adhesive is to be applied to the film during manufacture so that the film 16 can serve as  
15 a support substrate for the adhesive layers 14, 18 without falling apart or irreversibly distorting during exposure to the elevated temperatures of the bitumen adhesive. One example of a readily available modified bitumen adhesive calls for a coating temperature of about 325°F up to about 390°F. Other successful bitumen adhesives have been tested and were successfully applied to a film at temperatures as low as about 250°F to about  
20 320°F. Thus, selection of the waterproof film may vary accordingly.

Although it is preferred to employ a waterproof film that both includes a transition temperature greater than that mentioned above and which possesses excellent resistance to the effects of hydrolysis, it is possible to employ materials having less resistance to hydrolysis by sandwiching the film between two layers of the water resistant  
25 adhesive, as shown in Fig. 1. As such, the adhesive layers protect the film from exposure to moisture, prolonging the useful life of the membrane. However, as illustrated in Fig. 4, it is also possible with many suitable types of films 16 to employ only the first or inner adhesive layer 14, and to leave the exterior surface of the film 16 exposed. Such a membrane 24 does allow moisture to contact the film, resulting in accelerated  
30 deterioration of the material due to hydrolysis. Thus, by selecting a film having resistance to hydrolysis, this is not a problem.

With reference to Fig. 2, in order to waterproof a floor, wall or the like 50, the surface is preferably first cleaned and primed with a primer coating 26. After the primer coating has dried, the inner release liner 12 of the membrane 10 or 24 is peeled away from the inner adhesive layer, and the exposed surface of the adhesive is adhered to the surface. If the membrane 10 does not cover the entire surface, the overlap release liner 22 is removed from the membrane 10, and a second membrane 10 or 24 is applied with an edge of the second membrane overlapping the tacky edge of the first membrane to form a bonded overlap between the two membranes. The membranes are preferably overlapped by at least two inches, and if desired, the bond can be further sealed by application of an asphalt mastic, urethane sealant, or other appropriate material along the seam.

The membrane 10 or 24 is manufactured in a coating machine 28 as illustrated in Fig. 3. The waterproof film 16, which forms the substrate, is fed into one end of a dry looper 30 of the coating machine from a large diameter roll 32 preferably containing several thousand linear feet. The coating machine 28 heats the polymer-modified bitumen in a storage bin 34 to a coating temperature in the range of about 325°F up to about 390°F at which the bitumen is a viscous liquid capable of being applied to the web as a liquid coating. Inking or coating rolls 36 are provided both above and below the web for applying the bitumen to both sides of the substrate film 16 to encapsulate the film. The coating machine 28 can be modified to coat only the underside of the film if a membrane of the type shown in Fig. 4 is to be manufactured. Because the bitumen is applied as a liquid to the web, the adhesive and film both present opposed lateral edge margins that are substantially coextensive.

With reference to Fig. 6, a third embodiment of the waterproofing membrane is shown. Generally, the membrane is similar to the membrane of Fig. 4, and has a waterproofing film 16 that serves as the substrate for an adhesive layer 14 supported on the inner surface of the film. On the side of the inner adhesive layer 14 opposite the film 16, a release liner 12 is applied. With particular reference to Fig. 5, the film 16 is perforated longitudinally along lines 52 and 54 at a small distance from the opposing sides of the film to define a pair of removable strips 56 and 58. Preferably, the perforations are placed a constant distance of about two inches away from, and in parallel

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alignment with, the edges of the film, and the removable strips are generally rectangular. However, the strips may be varied in both shape and size.

With reference to Figs. 5 and 6, a release coating 60 is applied to the underside of strips 56 and 58 to prevent the strips from adhering to the adhesive layer 14. The release coating extends along the length of the film between the sides of the film and the perforations 52 and 54. The film and adhesive layer are fixedly secured to one another between the perforations 52 and 54 since the release coating is selectively applied to the marginal areas. This embodiment of the waterproofing membrane sheet may be rolled and stored after manufacturing without the upper adhesive surface adhering to itself since the release coated waterproofing film overlies the upper adhesive margins. Thus, the additional steps of covering the upper marginal adhesive areas with zip strips or folding excess release paper over from the lower release liner are obviated in this process.

Alternatively, the release coating may be applied to other areas besides the marginal edges of the film or paper. For instance, strips of zone coating could be applied at any of a number of positions on the sheets, such as near the center of the sheets. Moreover, single or multiple rows of strips oriented in a variety of directions with respect to the length of the roll are contemplated by the present invention. After the appropriate areas or zones are coated, the film or paper could be perforated at or near the boundaries of the coating before the production of the waterproofing membranes. Likewise, the film or paper could be perforated or slit during the production process.

To apply the waterproofing sheets, the release liner 12 of a first waterproofing sheet is removed and the underside of adhesive layer 14 is adhered to the surface to be sealed. Next, one of strips 56 or 58 of the first membrane sheet film is pulled away from the adhesive layer 14 by lifting at one of the ends as shown in Fig. 6. As the strip 56 or 58 is pulled, the strip is torn from the remainder of the film at the perforation line. Once the strip is removed, a marginal adhesive area 62 or 64 of the adhesive layer 14 is exposed. Subsequently, a second waterproofing sheet is applied in overlapping relation to the first sheet by removing the release liner 12 and placing the edge of the lower surface of the adhesive layer 14 in connection with the exposed marginal adhesive area 62 or 64 of the first sheet membrane. Finally, the remainder of

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the lower adhesive layer 14 of the second sheet is adhered to the surface to be sealed. Thus, the desirable adhesive to adhesive bond is formed between the exposed adhesive area on the upper surface of one sheet and the lower adhesive surface of the next sheet. Each additional sheet is applied in substantially the same manner until the entire surface  
5 is protected by a continuous membrane comprised of a plurality of sheets in overlapping relation with one another.

In the manufacture of a membrane as shown in Fig. 1, the coated web leaves the coating rolls 36 (Fig. 3). The release liner 22 that provides for the exposed edges of the outer adhesive layer of the membrane, as well as the material for the  
10 nonadhesive surface treatment 20, are both preferably applied to the outer adhesive 18 prior to entering the group of water cooled drums 38. The nonadhesive surface treatment 20 is preferably dusted onto the exposed surface of the outer adhesive layer 18 by an applicator 42. The release liner 12 is also preferably applied to the exposed surface of the inner adhesive layer 14 prior to entering the group of water cooled drums 38. In the  
15 manufacture of a membrane as shown in Fig. 4, only release liner 12 is applied after exiting the coating rolls 36 and prior to entering the group of three cooling drums 38. To produce the embodiment of the invention depicted in Fig. 6, the release coating 60 is applied along the marginal areas on either side of the film 16. Preferably, the release coating is applied by a zone coating process. The perforations 52 and 54 are cut into the  
20 film 16 at the inner boundary of the coating. The release coating step must be performed prior to applying the adhesive layer to the film. Also, it is preferable to perforate the sheet prior to applying the adhesive layer. However, the perforation could be cut into the film after the adhesive layer is applied.

This method of creating removable strips overlying the adhesive layer is  
25 a particularly advantageous method for creating an upper adhesive surface in waterproofing membranes utilizing the film as the substrate since it is impossible to create margins of adhesive extending beyond the film in these types of membranes. However, the process could be utilized with waterproofing membranes made from conventional waterproofing and adhesive layers to obviate the problems associated with  
30 covering the adhesive margins prior to rolling the waterproofing sheet.

After application of necessary surfacing materials (release liner 22,

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nonadhesive surface treatment 20, and/or release liner 12), the membrane proceeds through a group of water cooled drums 38 or the like and a cooling looper 46 to cool the membrane to a temperature at which it can be accumulated into rolls and stored, e.g. at 40.

5                   While preferred embodiments and particular applications of this invention have been shown and described, it is apparent to those skilled in the art that many other modifications and applications of this invention are possible without departing from the inventive concepts herein. It is understood that substitutions may be made and  
10   equivalents employed herein without departing from the scope of the invention as recited in the claims.

## CLAIMS

1. A waterproofing membrane comprising: a waterproofing film presenting opposed first and second surfaces and having opposing first and second sides, said film having a first perforation at a distance from said first side, said film having a release coating on the portion of the film between said first side and said perforation; and  
5 an adhesive layer supported on the first surface of the film wherein said film is precluded from adhering to said adhesive layer at said portion of the film between said first side and said first perforation and wherein a portion of the adhesive layer is exposed when said portion of said film between said first side and said first perforation is removed by tearing the film at said perforation.

10 2. The membrane of claim 1 wherein said film further comprises a second perforation at a distance from said second side, said film having a release coating on the portion of the film between said second side and said second perforation and wherein a portion of the adhesive layer is exposed when said portion of said film between  
15 said second side and said second perforation is removed by tearing the film at said second perforation.

20 3. The membrane of claim 1 wherein said film is a waterproof synthetic resin possessing a transition temperature above which the dimensional stability of the film and the ability of the film to support a continuous load is substantially reduced relative to the dimensional stability and ability of the film to support a continuous load at room temperature, the transition temperature being higher than the coating temperature of the adhesive.

25 4. The membrane of claim 3 wherein said adhesive layer is a bitumen adhesive possessing a coating temperature at which the adhesive can be applied to the film as a viscous liquid.

30 5. The membrane of claim 1 further comprising a release liner supported by said adhesive layer on the side of said adhesive layer opposite said film.

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6. A waterproofing membrane comprising: a waterproofing synthetic resin film presenting opposed first and second surfaces and having opposing first and second sides; strips of release coating applied to said first surface of said film proximate said first and second sides; and an inner adhesive layer supported on the first surface of the film, the adhesive layer precluded from adhering to said film at said strips wherein marginal portions of said inner adhesive layers are exposed when said portions of the film coated by said strips are removed.

7. The waterproofing membrane of claim 6 wherein said film is perforated at the boundary of said strips of release coating and wherein said portions of said film coated by said strips are removable by tearing the strips along the perforation.

8. The membrane of claim 6 wherein said film is a waterproof synthetic resin possessing a transition temperature above which the dimensional stability of the film and the ability of the film to support a continuous load is substantially reduced relative to the dimensional stability and ability of the film to support a continuous load at room temperature, the transition temperature being higher than the coating temperature of the adhesive.

9. The membrane of claim 6 further comprising a release liner supported by said adhesive layer on the side of said adhesive layer opposite said film.

10. A method of manufacturing a waterproofing membrane comprising the steps of: applying a release coating to the marginal areas of a waterproofing film sheet, and applying an adhesive layer to the sheet.

11. The method of claim 10 further comprising perforating said sheet along the inner boundary of the release coating.

12. The method of claim 10 further comprising applying a release liner to side of the adhesive layer opposite the film sheet.

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13. The method of claim 10 wherein applying said adhesive to said film includes heating an bitumen adhesive to a coating temperature; and applying the bitumen adhesive to a first surface of a web of waterproof synthetic resin film, the film possessing a transition temperature above which the dimensional stability of the film and the ability of the film to support a continuous load is substantially reduced relative to the dimensional stability and ability of the film to support a continuous load at room temperature, the transition temperature being higher than the coating temperature of the adhesive so that the adhesive can be applied as a viscous liquid to the first surface of the film during manufacture without irreversibly deforming the film.

14. A waterproofing membrane comprising: a waterproofing film presenting opposed first and second surfaces, said film having an area coated with a release coating, said film perforated about said area; and an adhesive layer supported on the first surface of the film wherein said film is precluded from adhering to said adhesive layer at said area of said film and wherein said portion of the adhesive layer is exposed when said area of said film is removed at said perforation.

15. The membrane of claim 14 wherein said area is a strip.

16. The membrane of claim 14 wherein said area is a pair of marginal strips.

17. The membrane of claim 14 wherein said film is a waterproof synthetic resin possessing a transition temperature above which the dimensional stability of the film and the ability of the film to support a continuous load is substantially reduced relative to the dimensional stability and ability of the film to support a continuous load at room temperature, the transition temperature being higher than the coating temperature of the adhesive.

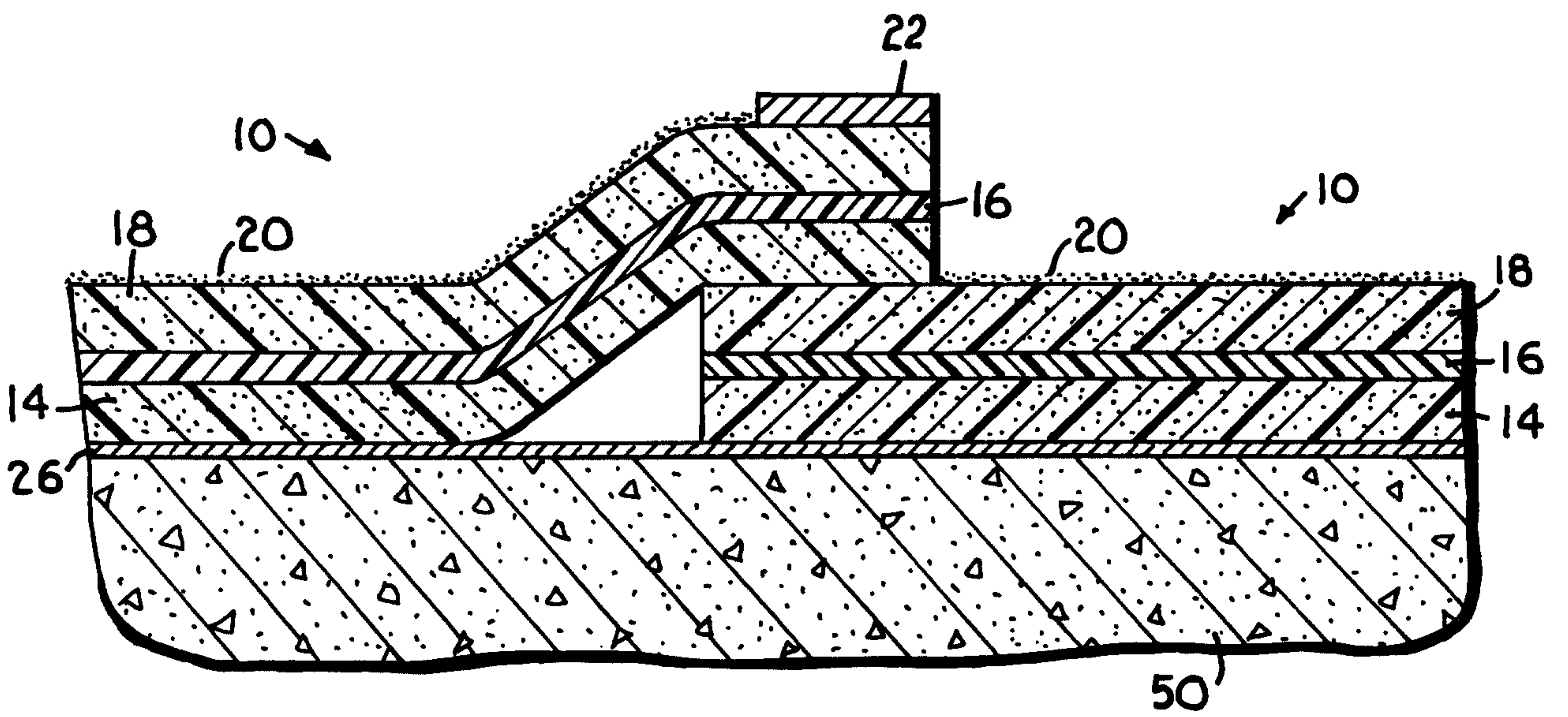
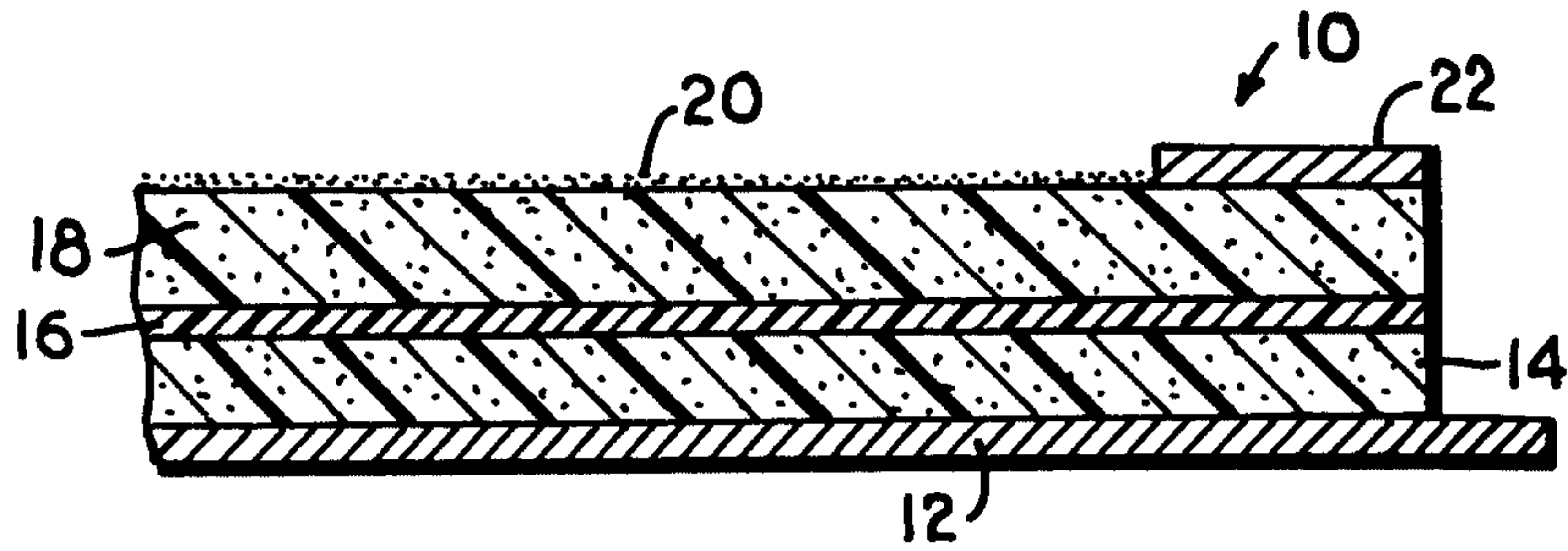
- 16 -

18. The membrane of claim 17 wherein said adhesive layer is a bitumen adhesive possessing a coating temperature at which the adhesive can be applied to the film as a viscous liquid.

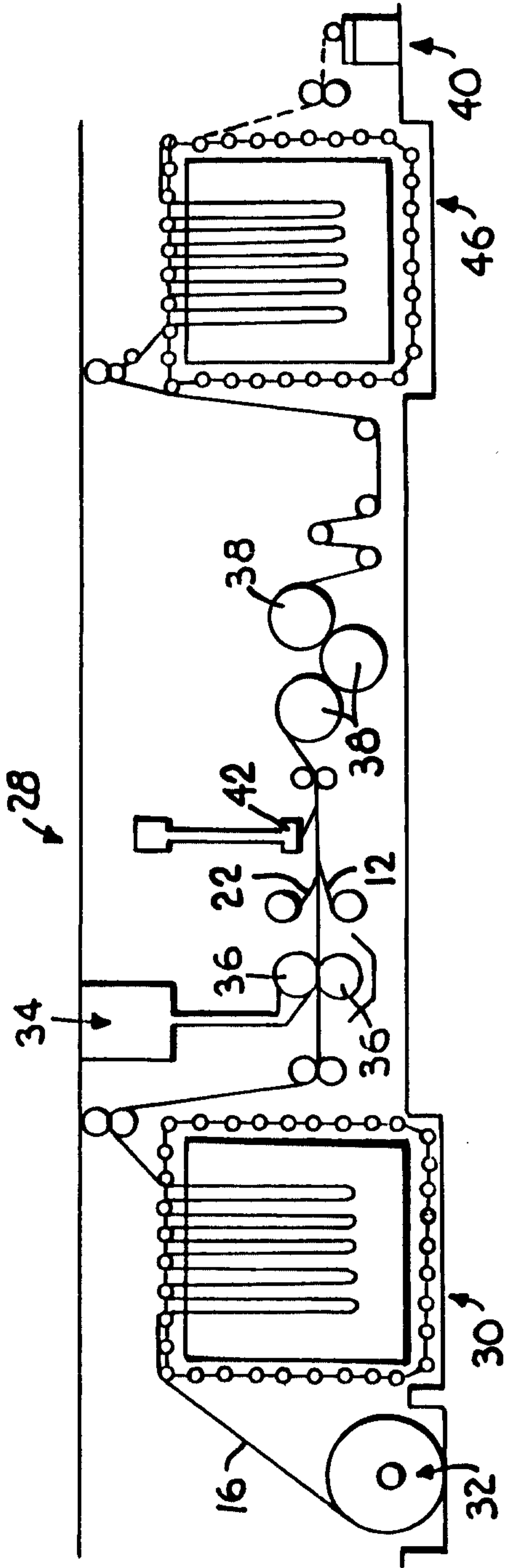
5 19. The membrane of claim 14 further comprising a release liner supported by said adhesive layer on the side of said adhesive layer opposite said film.

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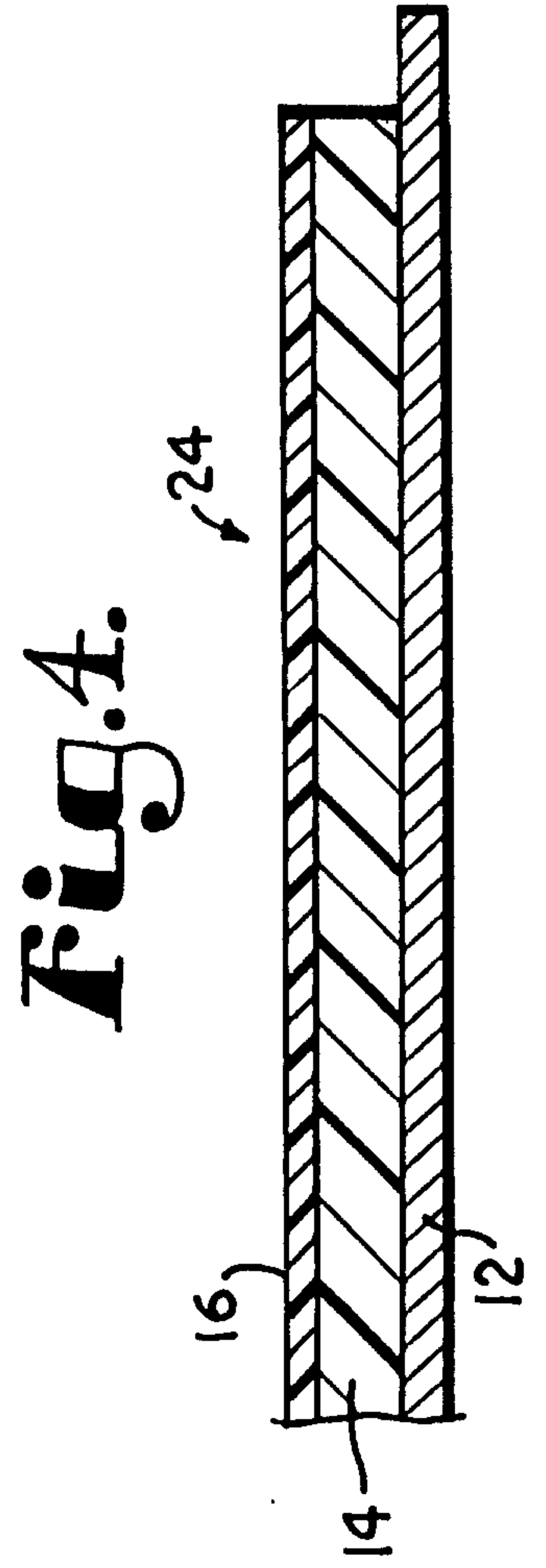
**Fig. 1.**



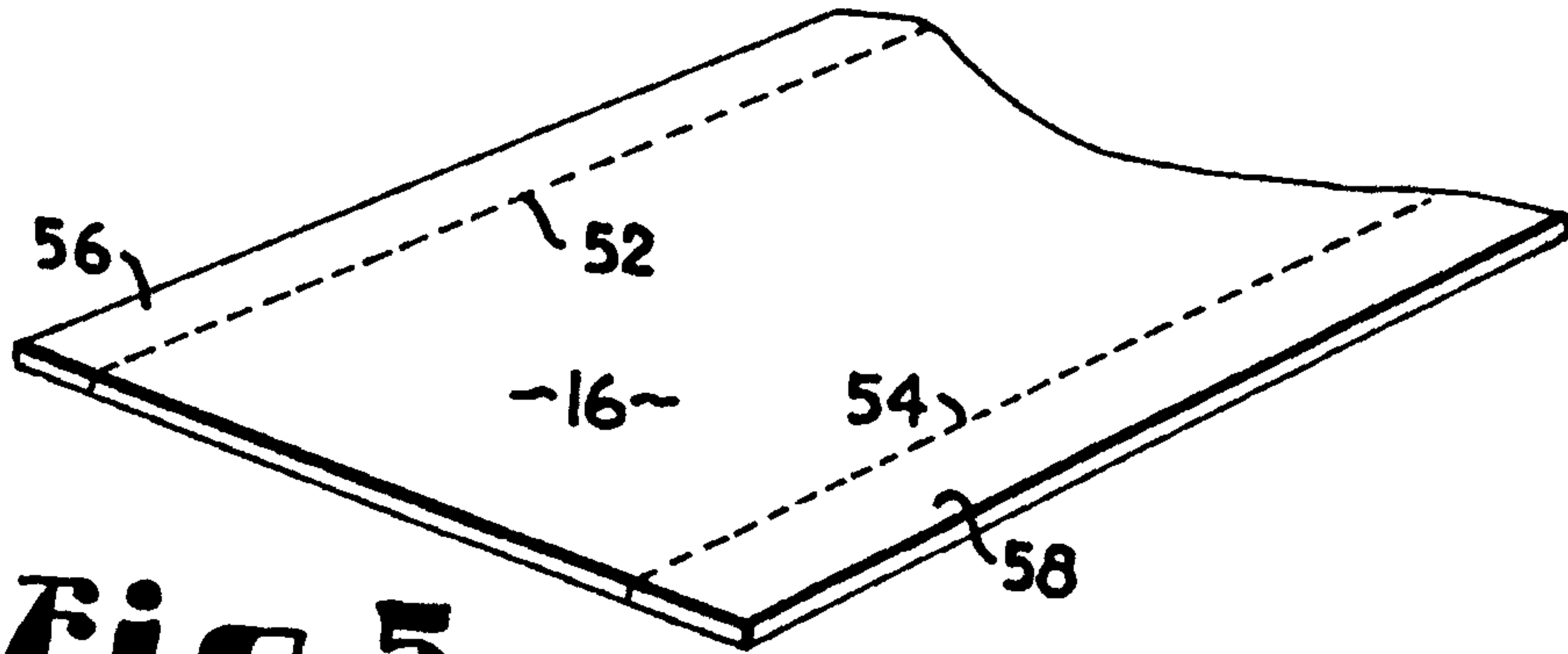
**Fig. 2.**



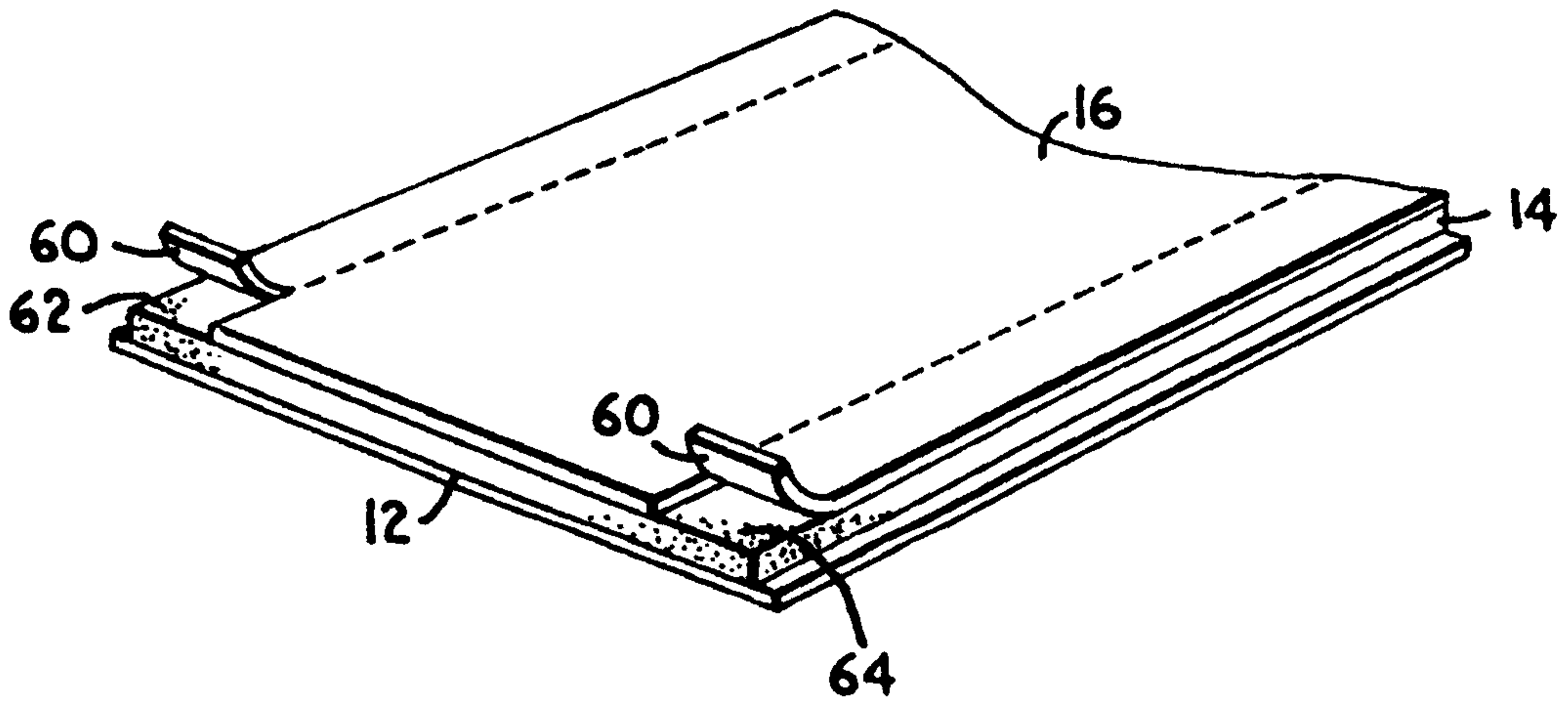
**Fig. 3.**



**Fig. 4.**



**Fig. 5.**



**Fig. 6.**

