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CA 2405921 A1 2001/10/25

(21) 2 405 921

(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(86) Date de dépôt PCT/PCT Filing Date: 2001/04/13
(87) Date publication PCT/PCT Publication Date: 2001/10/25
(85) Entrée phase nationale/National Entry: 2002/10/15
(86) N° demande PCT/PCT Application No.: US 2001/040532
(87) N° publication PCT/PCT Publication No.: 2001/079094
(30) Priorité/Priority: 2000/04/13 (09/548,876) US

(51) Cl.Int.^{7}/Int.Cl.^{7} B65G 69/00

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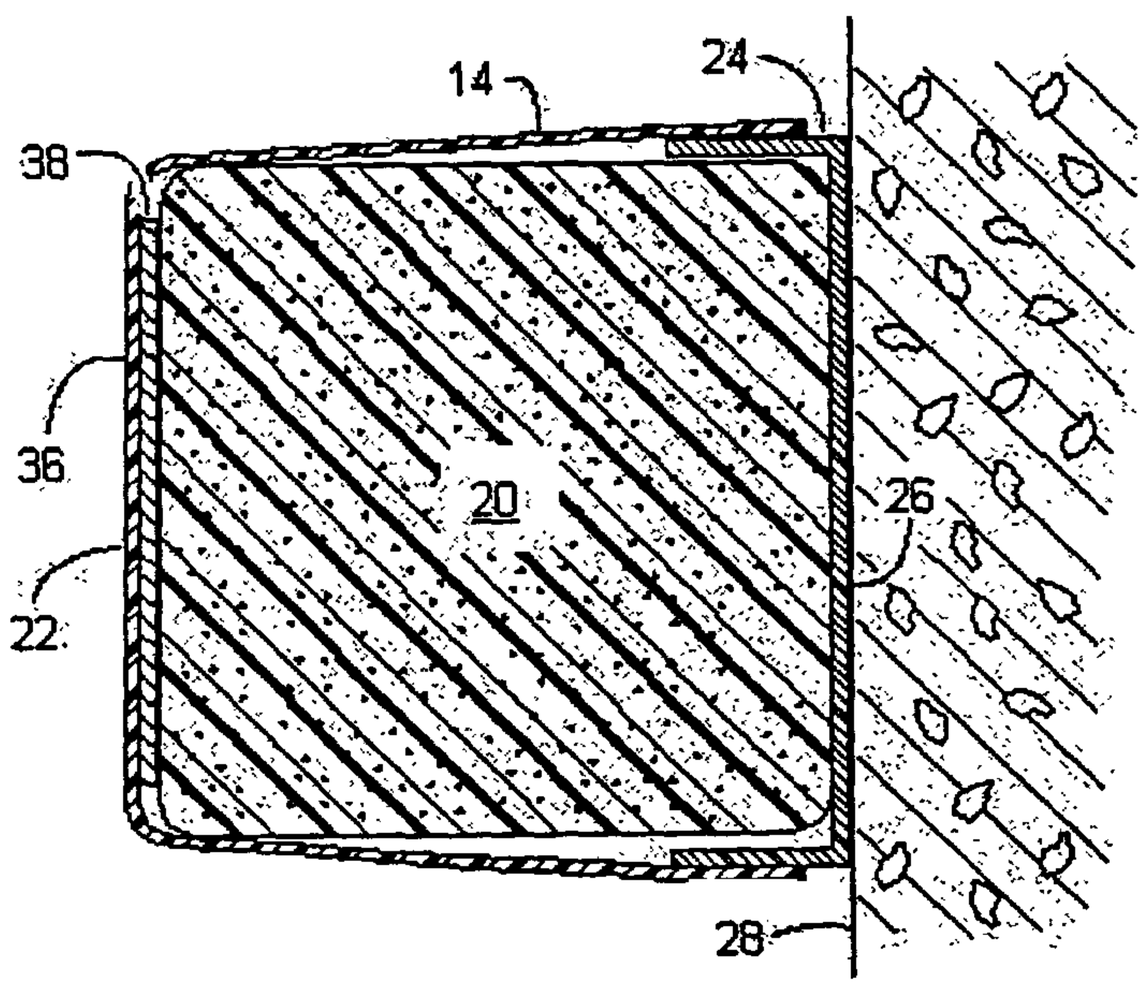
(54) Titre : JOINT POUR PLATE-FORME DE CHARGEMENT A PROTECTION THERMIQUE
(54) Title: HEAT SHIELDED DOCK PAD



(57) Abrégé/Abstract:
A compressible seal for a loading dock includes a pliable heat shield that helps protect the seal from concentrated heat generated by a truck's taillight being pressed against the seal. The seal includes a compressible foam core protected by a tough outer covering. The heat shield is preferably placed against the foam core, just underneath the cover. The shield reflects heat away from the foam and helps disperse the heat over a broader area to reduce the peak temperature of any hot spots.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
25 October 2001 (25.10.2001)

PCT

(10) International Publication Number
WO 01/79094 A1

(51) International Patent Classification[7]: B65G 69/00

(21) International Application Number: PCT/US01/40532

(22) International Filing Date: 13 April 2001 (13.04.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/548,876 13 April 2000 (13.04.2000) US

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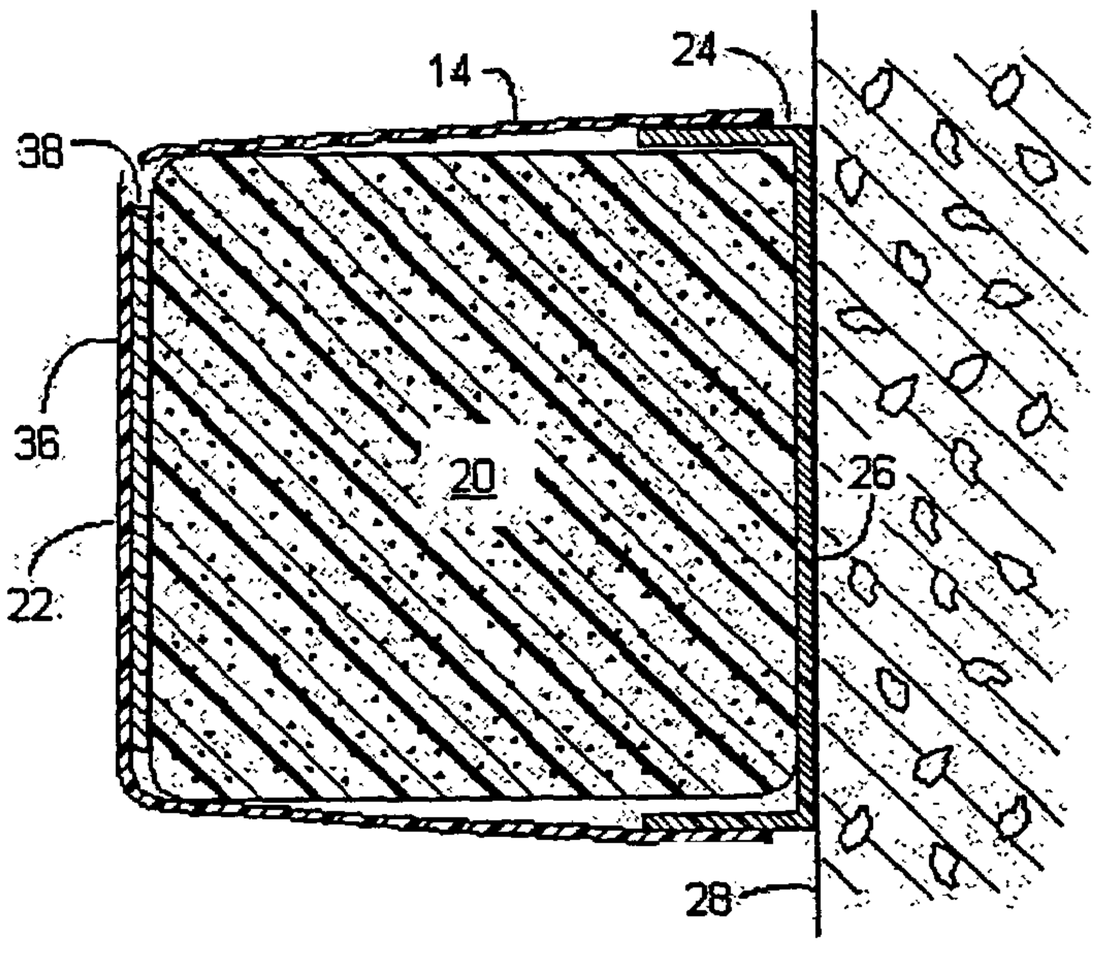
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HEAT SHIELDED DOCK PAD



(57) Abstract: A compressible seal for a loading dock includes a pliable heat shield that helps protect the seal from concentrated heat generated by a truck's taillight being pressed against the seal. The seal includes a compressible foam core protected by a tough outer covering. The heat shield is preferably placed against the foam core, just underneath the cover. The shield reflects heat away from the foam and helps disperse the heat over a broader area to reduce the peak temperature of any hot spots.

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HEAT SHIELDED DOCK PAD

Background of the Invention

Field of the Invention

The subject invention generally pertains to a loading dock and more specifically to a dock seal disposed around a doorway of the dock.

Description of Related Art

When an exterior doorway of a building is used as a loading dock for vehicles, especially trucks, the perimeter of the doorway typically includes a seal known as a dock pad. The dock pad seals off gaps that would otherwise exist between the exterior face of the building and the back end of the truck. This allows cargo from the rear of the truck to be loaded or unloaded while dockworkers and the cargo are protected from the weather. Usually a side dock pad runs vertically along each lateral edge of the doorway, and a top or head pad runs horizontally along the doorway's upper edge. A typical pad comprises a resiliently compressible foam core protected by a fabric outer covering. Sealing is often provided by backing the truck up against the pad, so that the pad compressively conforms to the shape of the rear of the truck.

When a truck backs into a loading dock, in many cases, taillights on the rear of the truck press against the dock pad. This often occurs with taillights that are located along the upper rear edge of the truck, whereby the lights push against the head pad that is mounted over the doorway. Normally, this does not create a problem. However, if the driver of the truck inadvertently leaves the lights on for an extended period (e.g., while the truck is being loaded or unloaded), the dock pad absorbs much of the heat generated by the taillights. The pad's core being made of foam, which is inherently a poor conductor of heat, tends to keep the heat concentrated to a relatively small area of the pad near the light. Thus, the temperature of that area can rise significantly. Excessively high temperatures can degrade the materials of the pad, or

in some extreme cases, may even cause portions of the pad to burn or melt.

Perhaps one solution would be to make a dock pad of materials that could tolerate higher temperatures. However, such an approach would likely compromise other desirable qualities of the pad, such as abrasion resistance, puncture resistance, weather resistance, compressibility, resilience, lightweight, appearance, etc., as the materials currently being used are often chosen for the purpose of optimizing these qualities.

Summary of the Invention

In order to provide a dock seal that can tolerate heat generated by a vehicle's taillight, a dock pad comprising a compressible foam core with a pliable outer cover includes a heat shield that helps protect the foam core and its outer cover from excessive heat.

In some embodiments, a heat shield is interposed between a dock pad's foam core and its cover to retain at least some of advantages of the cover.

In some embodiments, a dock pad is provided with a heat shield that has appreciable thermal conductivity to help disperse heat.

In some embodiments, a dock pad is provided with a heat shield that has appreciable reflectivity to reflect some heat away from a foam core of the dock pad.

In some embodiments, a dock pad is provided with a heat shield that can withstand a higher temperature than a foam core of the dock pad, whereby the heat shield helps protect the foam core from heat.

Brief Description of the Drawings

Figure 1 is a perspective view of a dock pad that includes a heat shield.

Figure 2 is a cross-sectional view taken along line 2-2 of Figure 1.

Figure 3 is a cross-sectional view similar to that of Figure 2, but of another embodiment.

Description of the Preferred Embodiment

To create a weather seal between the rear of a truck 10 (or some other vehicle) and the perimeter a loading dock doorway 12, a dock pad 14 (or dock pad assembly) is installed, as shown in Figure 1. In this example, dock pad 14 includes a side pad 16 mounted along each lateral edge of doorway 12, and a top or head pad 18 installed along the doorway's upper edge. Pads 16 and 18 are resiliently compressible, so as truck 10 backs up against them, the pads compressively and sealingly conform to the contour of the truck's rear edges.

To provide dock pad 14 with durability and resilient compressibility, pad 14 includes a resiliently compressible foam core 20 covered by a tough outer cover 22, as shown in Figure 2. In this example, core 20 consists of a polyurethane or foamed polyester, such as, for example, an L24 open-cell polyurethane foam provided by Leggett & Platt of Carthage, Missouri. It should be appreciated by those skilled in the art; however, that a wide variety of other synthetic or natural foams may also work well. In some embodiments, cover 22 is a 3022_MFRLPC_DC7 material provided by the Seaman Corporation of Wooster, Ohio. Other examples of cover materials would include, but are not limited to, HYPALON, canvas duck, rubber-impregnated fabric, and coated nylon fabric.

In assembling pad 14, cover 22 wraps at least partially around core 20, and the two are attached to a relatively rigid backer 24, such a formed steel channel or a wood board. Backer 24, in this example, provides a mounting surface 26 that facilitates the installation of pad 14. A conventional fastener or anchor can be used to attach backer 24 to a wall 28 of a loading dock 30. In some embodiments, cover 22 attaches to the side edges of backer 24 by any one of a variety of fasteners including, but not limited to, screws, VELCRO, rivets, hooks, and adhesive. Core 20 can be frictionally held to cover 22, or the two can be joined in a more positive manner. For example, cover 22 can be connected to core 20 with adhesive, straps, hooks, VELCRO, stitches, screws,

etc.

To make pad 14 more resistant to heat, such as heat generated by a taillight 32 pressing against certain points 34 on a sealing surface 36 of pad 14, a heat shield 38 is attached to pad 14. In some embodiments, heat shield 38 is incorporated within a Commercial Material RTCM01, which consists of two flexible sheets or layers of perforated aluminum foil reinforced with a polyethylene scrim or fabric, as provided by Radiant Technology, of Dallas, Texas. The flexibility of shield 38 is preferably sufficient to allow dock pad 14 to compressively conform to the contour of the truck's rear edges and then decompress to the pad's original shape. Heat shield 38 can be attached to pad 14 using adhesive, friction, hooks, straps, stitches, and/or various other fasteners. Shield 38 can be attached to the exterior or interior of pad 14, however; shield 38 is preferably installed between cover 22 and foam core 20 for structural, functional, and aesthetic reasons.

Placing shield 38 underneath cover 22, helps keep cover 22 exposed to the outside, thus taking advantage of the cover's toughness, weather resistance and pliability. Moreover, shield 38 preferably has a higher reflectivity than core 20 and cover 22. This can be beneficial in cases where the cover can withstand a higher temperature than the core, wherein "withstand a higher temperature" means a material can be raised to the higher temperature and then substantially recover its original properties after its temperature returns to normal. For example, if the foam of core 20 has an auto ignition point (i.e., temperature at which the material self-ignites without being triggered by a spark or a flame) of 700 degrees Fahrenheit and cover 22 has an auto ignition point of 900 degrees, then heat shield 38 with high reflectivity could reflect heat away from the foam and redirect it into cover 22, which may be able to handle the heat better. In some embodiments, both cover 22 and core 20 have a lower auto ignition point than heat shield 38 (e.g., when shield 38 is one of the two layers of aluminum foil contained within Commercial Material RTCM01).

To reduce peak temperatures of core 20 and/or cover 22 when heated by taillight 32, heat shield 38 is made of a material that has a higher thermal conductivity than core 20 and/or cover 22. The maximum temperature at areas of concentrated heat, such as points 34, is reduced by shield 38 being able to effectively disperse the heat over a

broader area. The term, "thermal conductivity" refers to a material's ability to conduct heat of a given temperature gradient along a given length and through a given cross-sectional area of the material, thus thermal conductivity is a property of the material itself, and is generally independent of the material's shape. A typical unit of measure for thermal conductivity would be (Btu)/(hr)(ft)(°F).

To provide even greater heat protection, another embodiment, similar to that of Figure 2, provides a dock pad 14' with two heat shields 38', as shown in Figure 3. It is believed that additional heat protection is provided by the additional overall thickness of the two shields and perhaps partially provided by virtue of an additional slight air interface 40 that may exist between the two shields 38'. Moreover, for a given total thickness, two individual shields instead of one relatively thick one is more flexible, just as a stack of individual cards is more flexible than a stack of cards whose faces are glued together.

A strap 42 inserted through a slit 44 in foam core 20' helps hold the two shields 38' in place. A loop 46 at each end of strap 44 engages holes 48 in shields 38'; however, strap 42 could attach to shields 38' in a variety of other ways as well. Also, strap 42 could feed around the back of core 20' to eliminate the need for slit 44; however, strap 42 extending through slit 44 helps keep strap 42 and shields 38' from shifting along the length of a pad.

Although the invention is described with reference to a preferred embodiment, it should be appreciated by those skilled in the art that various modifications are well within the scope of the invention. For example, although the illustrated dock pads have cross-sections that are generally rectangular, various other shapes are also well within the scope of the invention. Moreover, the shape of the head pad could be different than that of the two side pads. One or more heat shields can be applied to just the head pad, just the side pads, or applied to both the head and side pads. Therefore, the scope of the invention is to be determined by reference to the claims that follow.

We claim:

Claims

1. A dock pad adapted to seal against a vehicle parked against the dock pad, comprising:

a foam core;

a cover disposed on the foam core; and

a heat shield adjacent the cover, wherein the dock pad is adapted to seal against the vehicle by virtue of the foam core being compressible, the cover being pliable, and the heat shield being pliable.

2. The dock pad of claim 1, wherein the heat shield is interposed between the cover and the foam core.

3. The dock pad of claim 1, wherein the heat shield has a higher thermal conductivity than the foam core.

4. The dock pad of claim 1, wherein the heat shield has a higher thermal conductivity than the cover.

5. The dock pad of claim 1, wherein the heat shield can withstand a higher temperature than the foam core.

6. The dock pad of claim 1, wherein the heat shield can withstand a higher temperature than the cover.

7. The dock pad of claim 1, wherein the heat shield has a higher reflectivity than the foam cover.

8. The dock pad of claim 1, wherein the heat shield has a higher reflectivity than the cover.

9. The dock pad of claim 1, wherein the cover has a higher auto ignition point than the foam core.

10. The dock pad of claim 1, wherein the cover has a lower auto ignition point than the heat shield.

11. The dock pad of claim 1, wherein the foam core has a lower auto ignition point than the heat shield.

12. The dock pad of claim 1, further comprising a backer attached to the cover and having greater rigidity than the foam core and the cover to provide the foam core and the cover with structural support.

13. The dock pad of claim 1, further comprising a sealing surface and a mounting surface that face away from each other with at least a portion of the heat shield extending substantially parallel to the sealing surface and being closer to the sealing surface than the mounting surface, wherein the sealing surface is adapted to seal against the vehicle and the mounting surface is adapted to be attached to a wall.

14. The dock pad of claim 1, wherein the dock pad has an elongated length running substantially horizontally.

15. The dock pad of claim 1, wherein the dock pad has an inverted U-shape with one horizontally elongated member and two vertically elongated members, with the heat shield being part of the horizontally elongated member.

16. The dock pad of claim 1, wherein the heat shield includes aluminum.

17. A dock pad, comprising:

a foam core;

a cover disposed on the foam core; and

a heat shield interposed between the cover and the foam core, wherein the heat shield can withstand a higher temperature than the foam core and the cover.

18. The dock pad of claim 17, wherein the heat shield has a higher thermal conductivity than the foam core and the cover.

19. The dock pad of claim 17, wherein the heat shield has sufficient flexibility to allow the dock pad to compress and decompress.

20. A dock pad, comprising: a backer; a foam core; a cover; and a heat shield; wherein the foam core is between the backer and a sealing surface of the cover, the heat shield is between the foam core and the sealing surface, the backer is more rigid than the foam core and the cover, and the heat shield can withstand a higher temperature than the

foam core and the cover.

FIG. 1

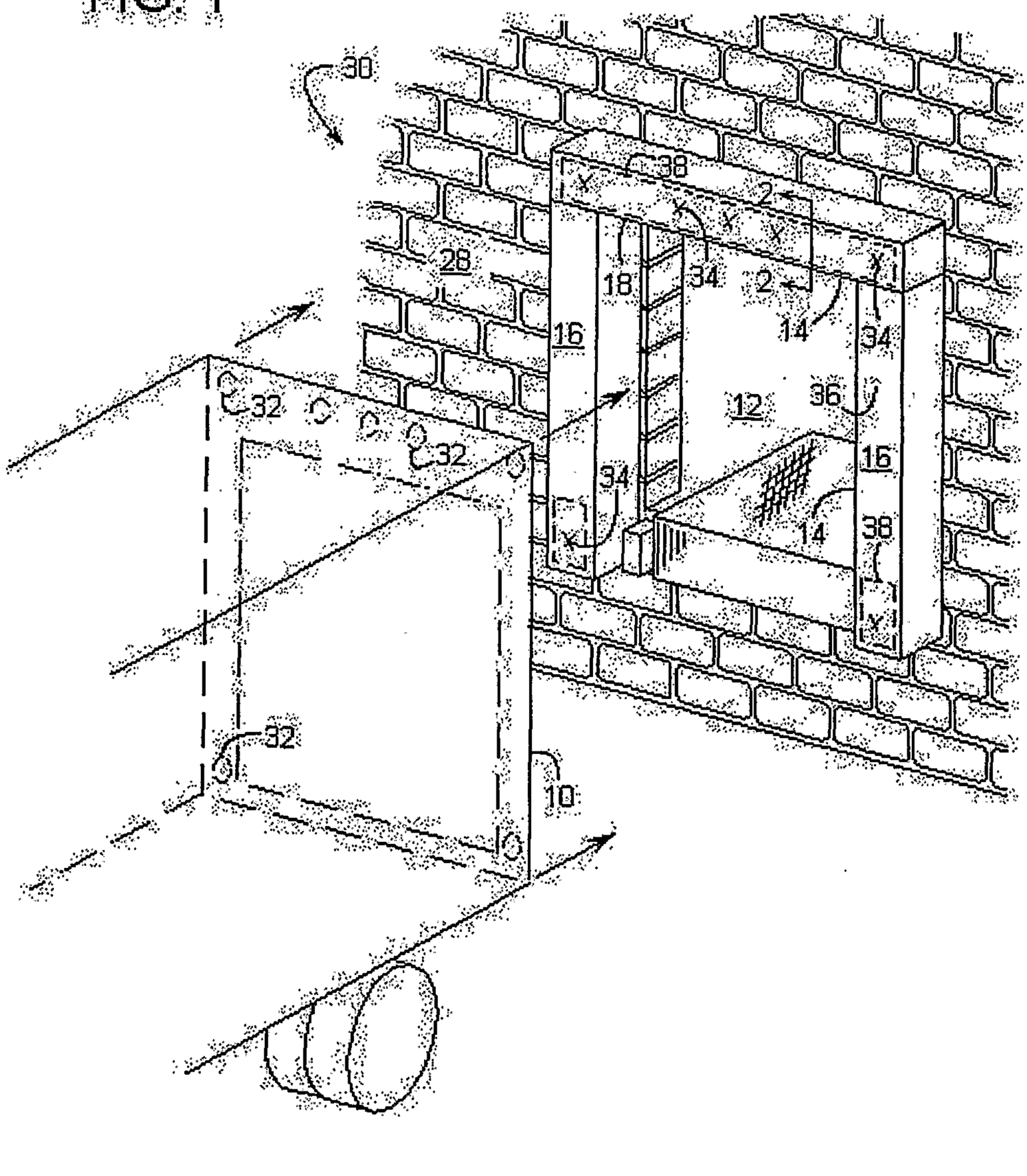


FIG. 2

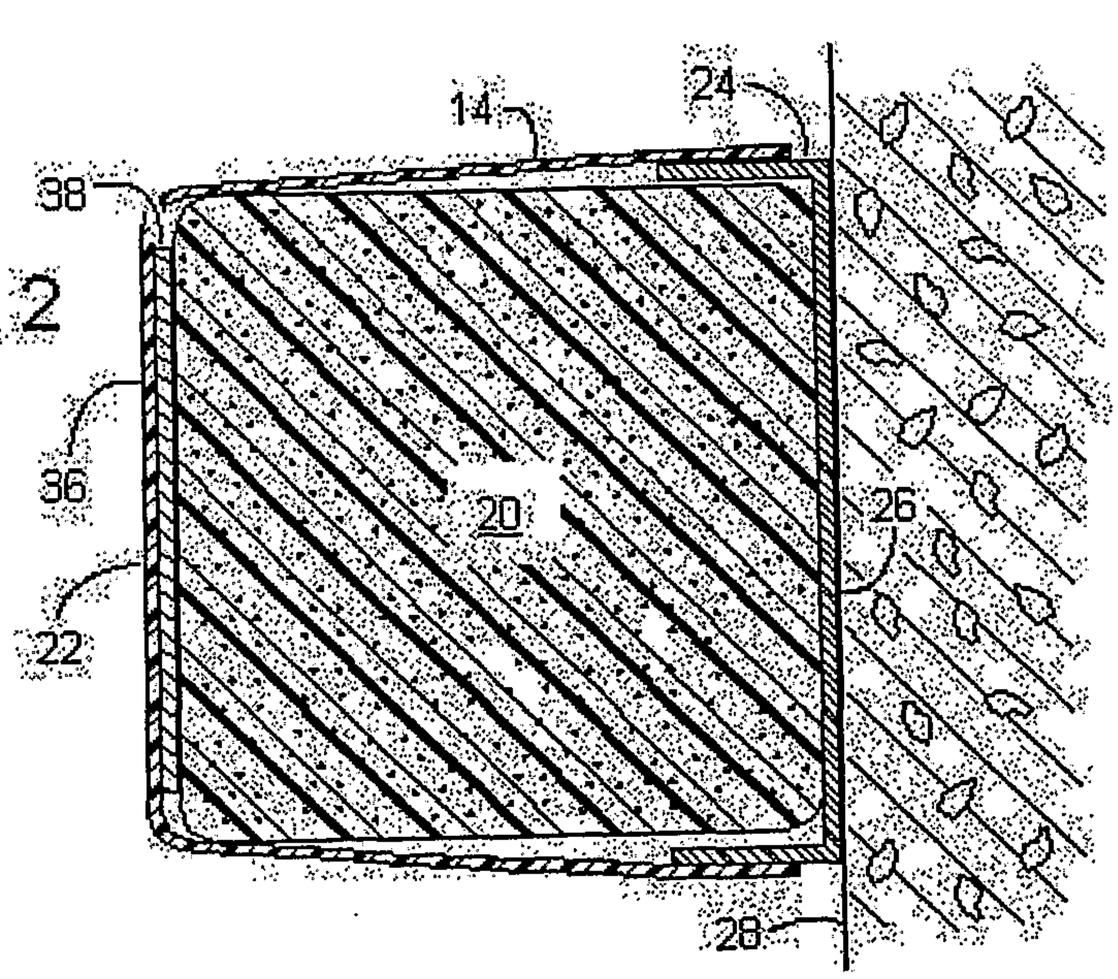
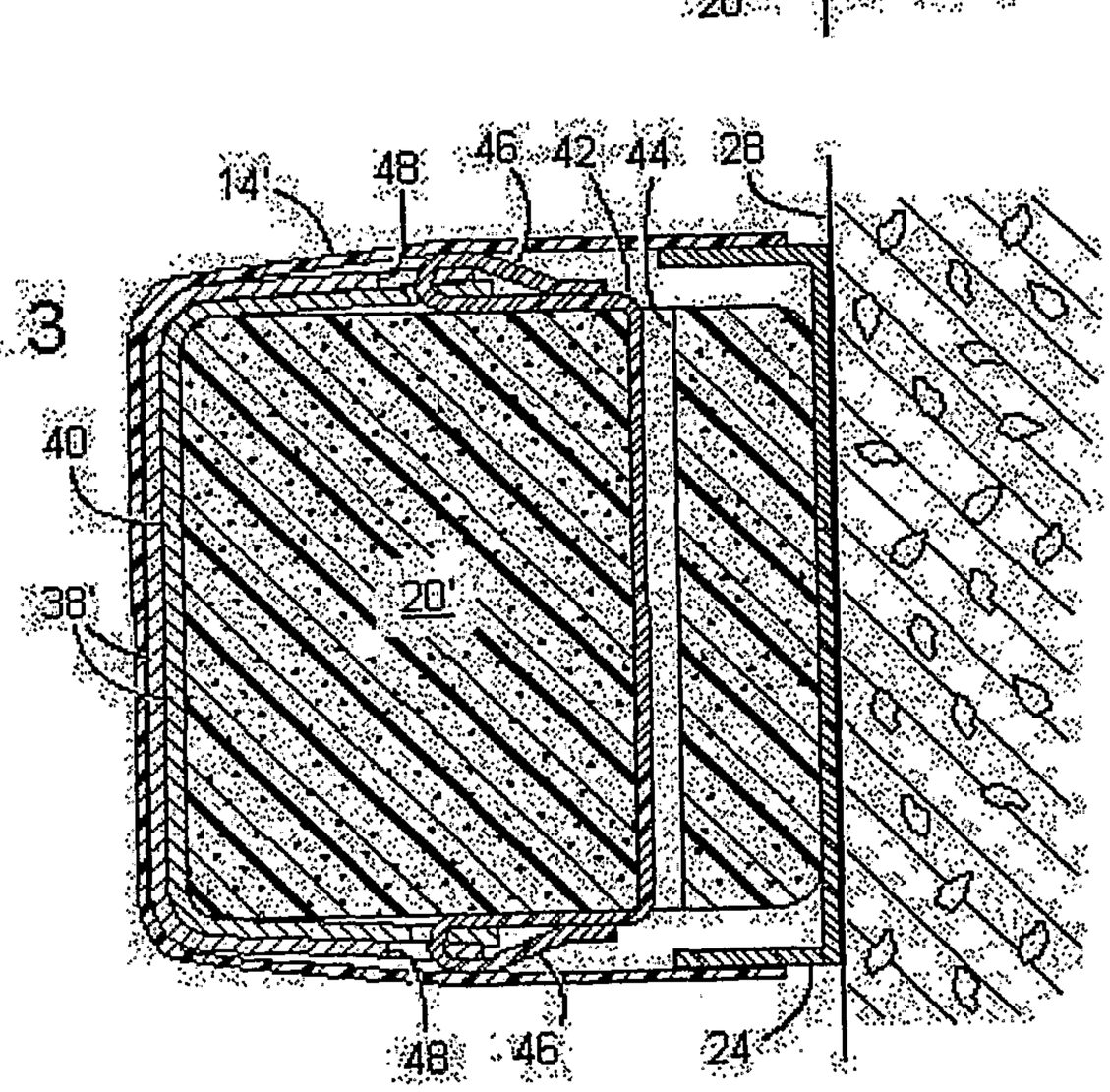
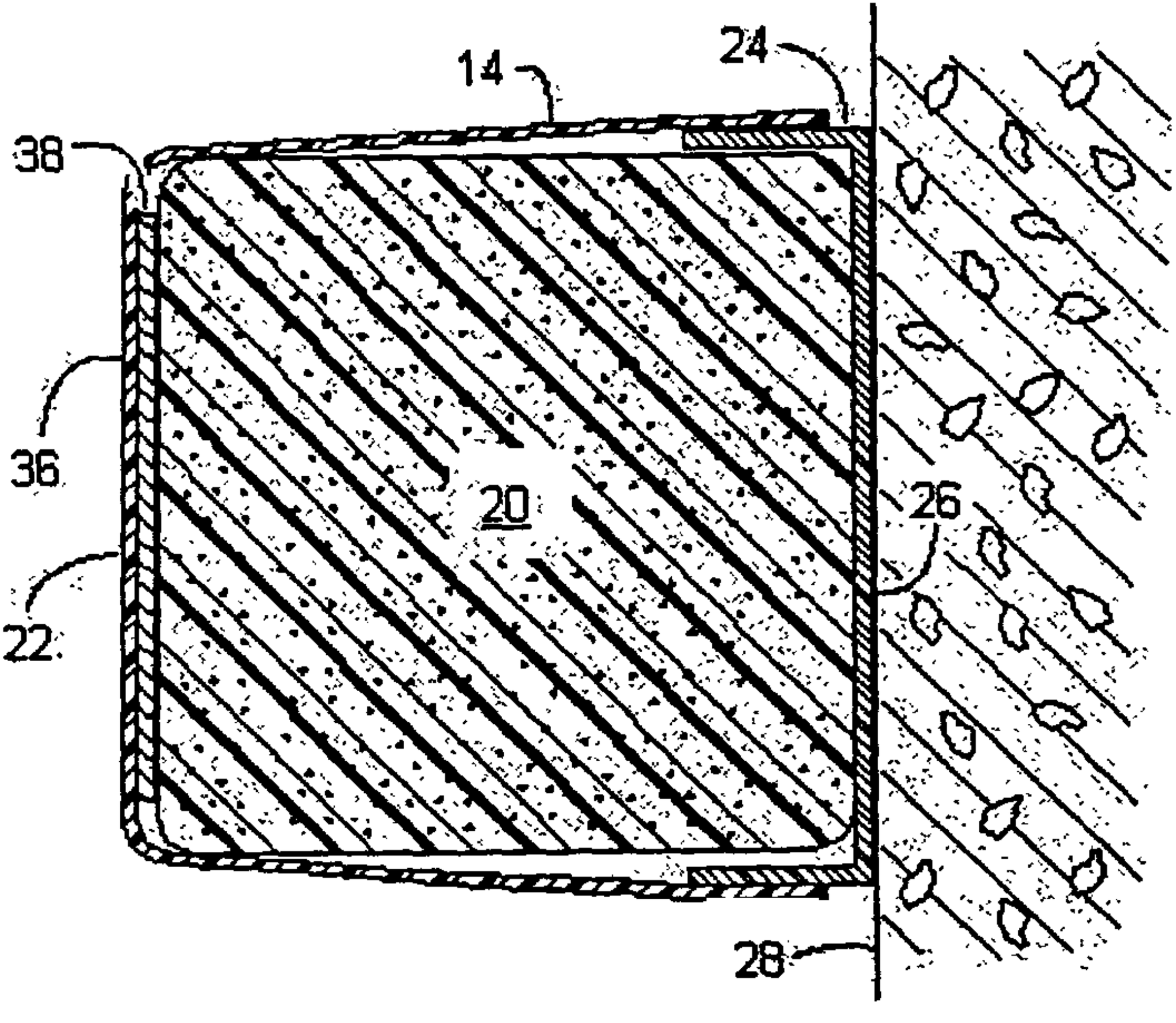


FIG. 3

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