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Proud

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(54) **FILLER ASSEMBLY FOR CABLE GLAND**

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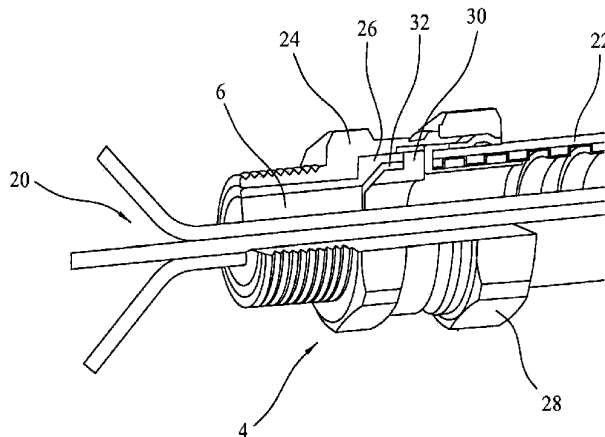
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(57) **ABSTRACT**

A dispenser apparatus (2) for a curable liquid material is disclosed. The apparatus comprises a flexible bag (8) defining a first compartment (10) for accommodating a first component of a curable liquid material, and a second compartment (12) for accommodating a second component of the curable liquid material and adapted to communicate with the first chamber to enable mixing of the first and second components to initiate curing of the curable liquid material. A first clamp (14) temporarily prevents mixing of the first and second components, and an elongate nozzle (16) communicates with the second compartment to dispense the mixed curable liquid material therefrom. A second clamp (18) temporarily prevents passage of the curable liquid material from the second compartment to the nozzle.

19 Claims, 2 Drawing Sheets



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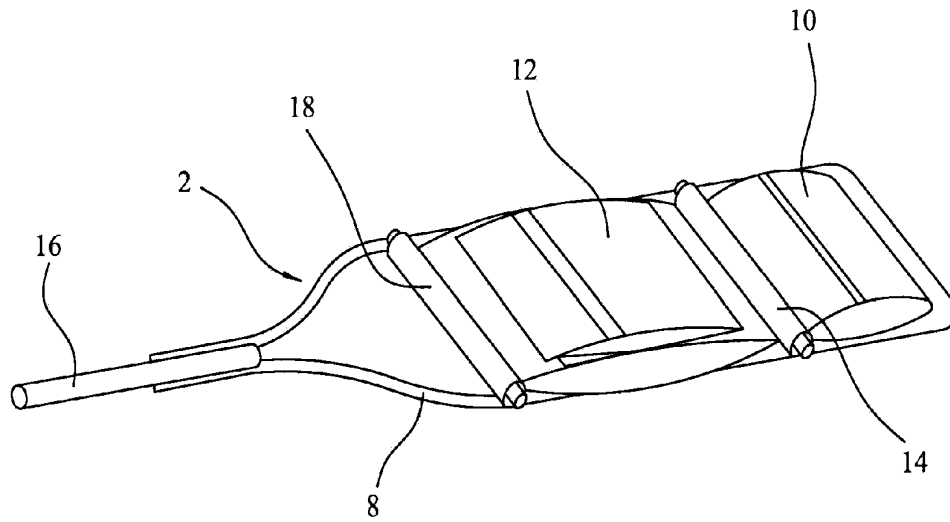


FIG. 1

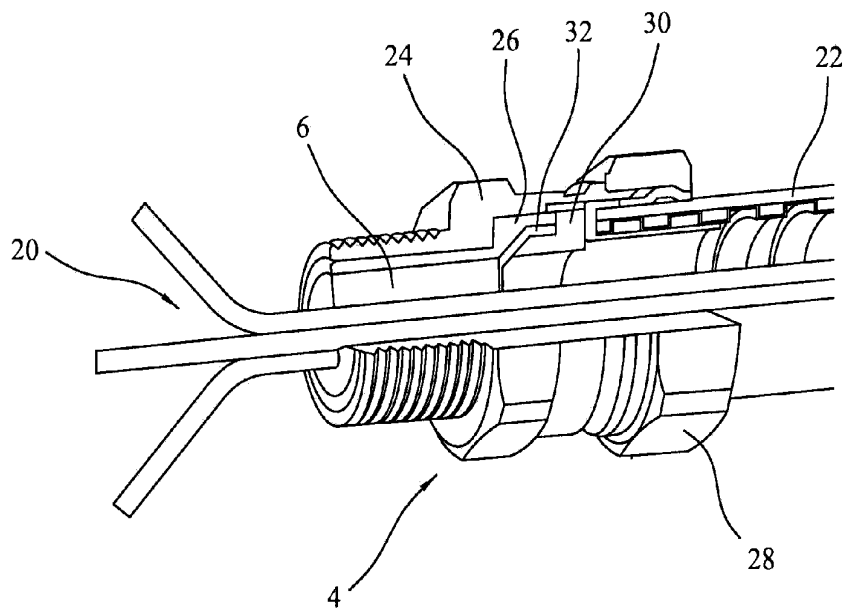


FIG. 2

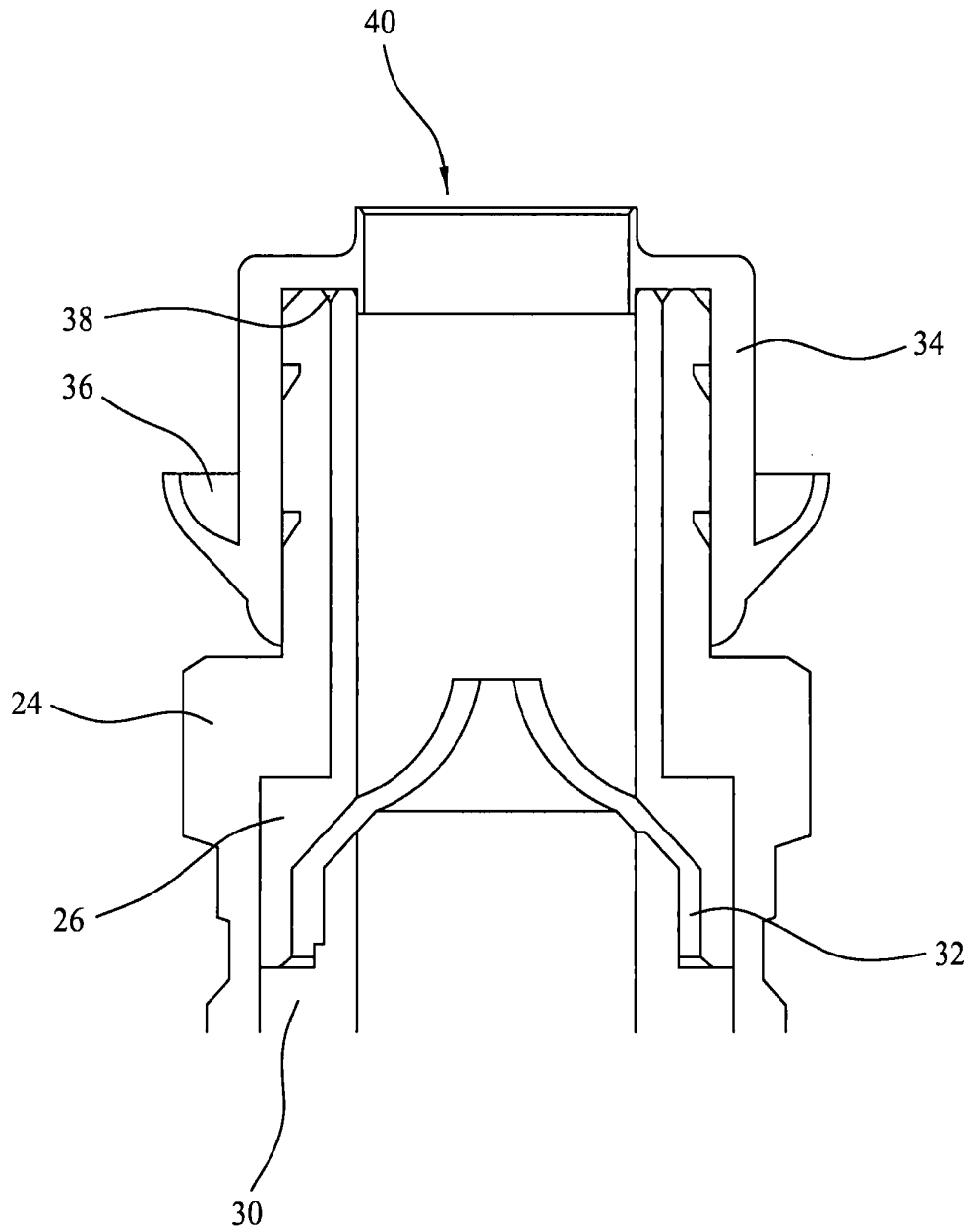


FIG. 3

FILLER ASSEMBLY FOR CABLE GLAND

CROSS-REFERENCE TO RELATED
APPLICATIONS

This application claims priority to PCT International Application No. PCT/GB2010/050989 filed on Jun. 14, 2010, which claims priority to European Patent Application No. 09168430.8 filed on Aug. 21, 2009, European Patent Application No. 09168429.0 filed on Aug. 21, 2009, Great Britain Patent Application 1004216.6 filed on Mar. 15, 2010 and Great Britain Patent Application 1009450.6 filed on Jun. 7, 2010, all of which are fully incorporated by reference herein.

The present invention relates to a filler assembly for cable glands and relates particularly, but not exclusively, to such a filler assembly for filling cable glands for use in hazardous areas.

Many cable glands for use in connecting a cable to an enclosure in hazardous areas need to be filled with a compound which provides a barrier against the effects of an explosion occurring within the enclosure to which the cable gland is attached. The barrier is typically formed from a two-part clay-filled epoxy compound. The two component parts of the compound need to be thoroughly mixed with each other prior to fitting into the gland, and the resulting putty like material needs to be packed between the individual conductors in the cable. Such an arrangement is disclosed in GB 2258350.

This known arrangement suffers from a number of drawbacks. Firstly, the cure time of the putty like material is chosen to be relatively long, in order to enable it to be manipulated into the spaces between the individual conductors before curing becomes advanced. As a result, the filled cable assembly must be left undisturbed for a significant period, usually several hours, especially if mixed at low temperatures. Also, the components of the filler material sometimes contain hazardous materials which become harmless when the filler material is mixed. Persons mixing the components of the putty like filler material may come into contact with these hazardous materials during mixing, and air can become trapped within the cable gland by the filler material which may cause the barrier formed by the filler material to fail in the event of an explosion. Filling of the cable gland is also relatively difficult, especially in the case of small cable glands.

GB 765082 discloses an arrangement for insulating a splice between two stranded connectors in which resinous material is introduced from a capsule having an elongate tip. However, this arrangement suffers from the drawback that it is not suitable for filling cable glands, since the introduction of a material which is sufficiently fluid to penetrate between the individual conductors of a cable would cause material to flow along the conductors along the interior of the cable, which would prevent the cable gland from being sufficiently filled to expel all of the air from the cable gland to avoid air voids.

Preferred embodiments of the present invention seek to overcome one or more of the above disadvantages of the prior art.

According to an aspect of the present invention, there is provided a filler assembly for filling a cable gland, having a plurality of cores of at least one cable extending therethrough, with curable liquid material, the assembly comprising:

(a) a dispenser apparatus for a curable liquid material, the apparatus comprising:

a body adapted to define at least one first chamber for accommodating a first component of a curable liquid material and at least one second chamber for accommodating a second

communicate with at least one said first chamber to enable mixing of said first and second components to initiate curing of said curable liquid material;

first barrier means for temporarily preventing mixing of said first and second components;

elongate dispenser means adapted to communicate with at least one said second chamber and to dispense said mixed curable liquid material therefrom between a plurality of cores of at least one cable; and

second barrier means for temporarily preventing passage of said curable liquid material from the or each said second chamber to said dispenser means; and

(b) at least one barrier member for restricting the extent of penetration of said curable liquid material along said cores.

By providing elongate dispenser means to dispense mixed curable liquid material and second barrier means for temporarily preventing passage of the curable liquid material to said dispenser means, this provides the advantage that the first and second components of the curable liquid material can be mixed in a sealed container comprising the first and second compartments, thus enabling the user to avoid coming into contact with harmful components of the curable liquid material. As a result of the provision of elongate dispenser means, dispensing of the curable liquid can be more carefully controlled, as a result of which less viscous and faster curing liquid material can be used than in the prior art. This therefore provides the advantage of enabling more rapid formation of a filled cable gland incorporating the material, while also allowing the liquid material to be introduced into the cable gland in such a way that the air is expelled from the cable gland to avoid air voids, which could lead to failure of the cable gland in the event of an explosion. In addition, with the present invention, the curable material can be dispensed into the assembled gland, i.e. the cable gland can be filled with the conductors of the cable in a connected state, as a result of which the electrical integrity of the joint can be ensured, whereas the putty like compound of the known arrangement must be moulded around the conductors of the cable with the gland disassembled, as a result of which the cable cores can not be electrically connected. The provision of at least one barrier member for restricting the extent of penetration of said curable liquid material along the cable cores provides the advantage of enabling highly flowable curable liquid material to be used, while also enabling filling of the cable gland.

The body may be flexible.

This provides the advantage of making the apparatus easier and less expensive to manufacture.

The first and/or second barrier means may comprise at least one releasable clamp.

The assembly may further comprise a first component of a curable liquid material in at least one said first chamber, and a second component of said curable liquid material in at least one said second chamber.

The curable liquid material may be adapted to change colour as a result of curing thereof.

This provides the advantage of providing a visual indicator to the user when the cable gland filling process is complete.

The assembly may further comprise a cover member for covering an external screw thread of a cable gland to prevent said curable liquid material coming into contact with said screw thread.

The cover member may be adapted to prevent curable liquid material from penetrating an end face of the cable gland.

At least one said barrier member may comprise a respective flexible member having at least one aperture there-

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