(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 186 987 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
19.05.2010 Bulletin 2010/20

(51) Int Cl.:
E06B 9/00 *(2006.01)*

(21) Application number: **09252606.0**

(22) Date of filing: **12.11.2009**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
AL BA RS

(30) Priority: **12.11.2008 GB 0820659**

(71) Applicant: **Hydroflex Barriers Limited**
Maidencombe
Torquay,
Devon TQ1 4SY (GB)

(72) Inventors:
- **Green, Dominic Andrew**
  Torquay,
  Devon TQ1 4SY (GB)
- **Lang, Andrew Richard**
  Torquay,
  Devon TQ2 7BX (GB)

(74) Representative: **Brown, Michael Stanley**
Alpha and Omega,
Chine Croft,
East Hill
Ottery St. Mary,
Devon EX11 1PJ (GB)

(54) **Flood defence barriers**

(57) A flood defence barrier comprises a track (10) fitted adjacent an opening in a building so as to extend up both sides of the opening and along or beneath the bottom of the opening, a channel or groove (12) in the track, and a flexible waterproof sheet (17) which includes means (19) for engagement in the channel or groove (12) in the track (10) and which includes a portion (18) that can be inflated.

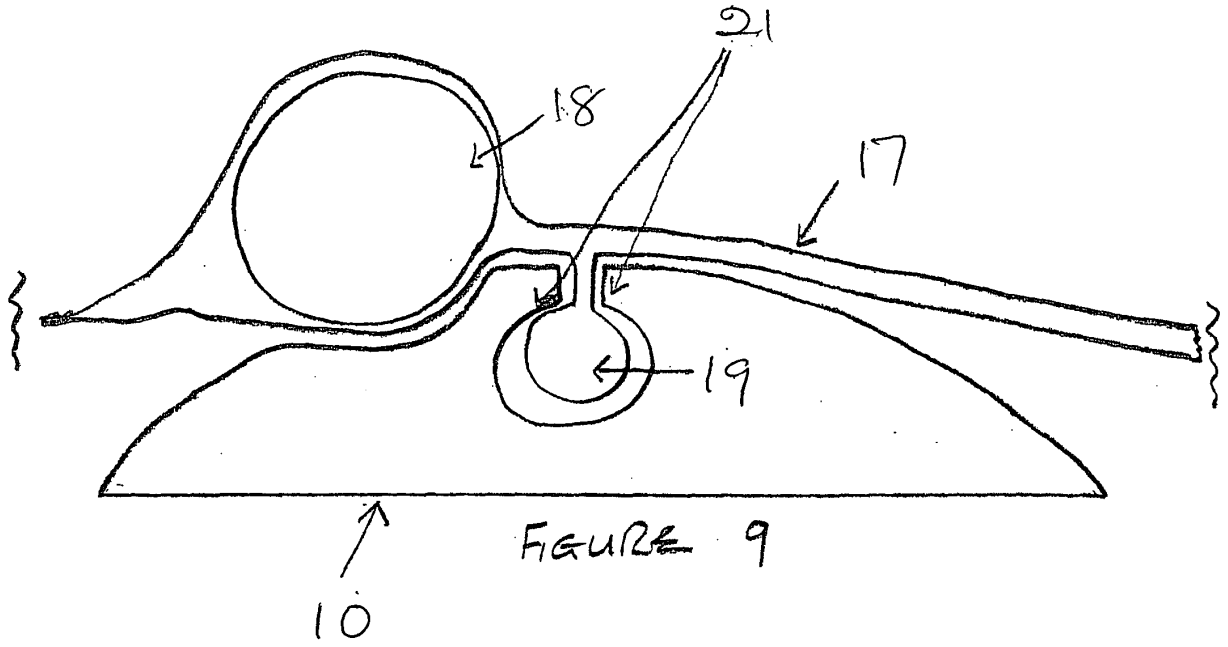

FIGURE 9

EP 2 186 987 A2

Description

Field of the Invention

[0001] This invention relates to flood defence barriers and to a method of providing a defence against flooding of a property.

[0002] The flood defence barriers currently available are difficult to store when not in use as they typically comprise a number of rigid parts or a bulky barrier. They can be heavy, expensive and complicated. They can also take a long time to put into place.

[0003] It is accordingly an object of the present invention to provide an improved form of flood defence barrier.

[0004] It is also an object of the present invention to provide an improved method of providing a defence against flooding of a property.

Summary of the Invention

[0005] According to a first aspect of the present invention there is provided a flood defence barrier comprising a track fitted adjacent an opening in a building so as to extend up both sides of the opening and along or beneath the bottom of the opening, a channel or groove in the track, and a generally rectangular flexible waterproof sheet which includes means for engagement in the channel or groove in the track, the sheet also including a portion or portions that can be inflated, said portion or portions extending along three sides of the sheet.

[0006] The portion or portions of the flexible sheet that can be inflated is or are preferably of generally tubular form when inflated.

[0007] The means for engagement with the channel or groove in the track preferably comprises a seam projecting from the sheet and disposed adjacent the portion(s) that can be inflated.

[0008] The track preferably comprises a plurality of sections that can be assembled together adjacent the opening in the building.

[0009] A pump or a compressed gas container may be provided for effecting inflation of the portion(s) of the sheet that can be inflated.

[0010] Means for injecting an expanding foam into the portion(s) of the flexible sheet that can be inflated may alternatively be provided.

[0011] There may also be a water sensor which, when activated, initiates operation of the means for inflating said portion(s) of the flexible sheet.

[0012] According to a second aspect of the present invention there is provided a method of providing a defence against flooding of a property, said method comprising fitting a track adjacent an opening in a building so as to extend up both sides of the opening and along or beneath the bottom of the opening, a channel or groove being formed in the track, providing a generally rectangular flexible waterproof sheet which includes means for engagement in the channel or groove in the track and which includes a portion or portions that can be inflated, said portion or portions extending along three sides of the sheet, and engaging the waterproof sheet with the track.

Brief Description of the Drawings

[0013]

Figure 1 shows a track system fitted to a front door,

Figure 2 is a view showing the result of fitting of the flexible barrier and inflation thereof,

Figure 3 is a sectional view of the track,

Figure 4 is a horizontal sectional view of the arrangement shown in Figure 2,

Figure 5 is a side view showing a track fitted to a front door,

Figure 6 is an enlarged side view of a corner insert shown in Figure 5,

Figure 7 is a plan view of the corner insert shown in Figure 6,

Figure 8 shows the corner insert interconnecting two straight sections of the track system,

Figure 9 is a sectional view of part of the track with the flexible barrier in place and inflated, and

Figure 10 is a sectional view of part of the track fitted with a protective cover.

Description of the Preferred Embodiment

[0014] Figure 1 shows a track 10 fitted in position adjacent a front door 11 so that part of the track 10 is at a level below the bottom of the door 11, with the ends of the track 10 extending upwardly on either side of the door 11 to a level corresponding to the height of the letter box in the door. The ends of the track 10 may, of course, be at a higher level if desired. The track 10 is formed with a longitudinal groove or channel 12 which, as can be seen in Figure 2, has a relatively narrow mouth and a significantly wider main body portion. At the base of the groove or channel 12, there is a series of apertures 13 through which screws or other fasteners can be passed in order that the track 10 can readily be secured to the building structure.

[0015] When the flood barrier is not in use, i.e. when the owner of the property is satisfied that there is no imminent risk of flooding, a cover strip 14 can be used to protect the groove or channel 12 and prevent the entry of debris into the groove or channel 12. The cover strip

14 is formed of a resiliently deformable material and includes a substantially circular cross-section portion 15 that can be snap-fitted in the groove or channel 12, as shown in Figure 10.

[0016] The flood barrier 16 comprises a waterproof and water-resistant flexible rubber sheet 17 of generally rectangular form with a projecting inflatable tubular portion 18 at or adjacent the sides and lower edges of the sheet 17. Just inwardly of the projecting tubular portion 18 there is a projecting seam 19 so shaped that it will fit in the groove or channel 12 of the track 10.

[0017] When the owner of the property considers that there is a risk of flooding, he or she will take the flexible sheet 17 from the place in which it has been stored and, beginning at the top of one side of the track 10, will feed the seam 19 into the track or groove 12. Once the whole of the seam 19 has been introduced into the track or groove 12, inflation of the tubular portion 18 can then be effected using a hand pump or a pre-charged container filled with air, release of air from the container being activated by operation of a pull cord - in a manner similar to inflation of a life jacket. The condition indicated schematically in Figure 9 will then be obtained.

[0018] The size of the flexible sheet 17 is such that it will be larger than the opening that it is covering so as to ensure that feeding of the seam 19 into the whole of the channel or groove 12 can readily be effected. In addition, a particular size of flexible sheet 17 can be used for the protection of a number of different sizes and configurations of door openings.

[0019] After inflation of the tubular portion 18 has been effected, any excess material can be gathered together and held in position using releasable fasteners strips 20 of the kind sold under the Registered Trade Mark "VELCRO". The condition obtained on inflation of the tubular portion 18 is illustrated schematically in Figure 4.

[0020] It is to be noted that, when the tubular portion 18 has been inflated, it will be urged resiliently into sealing engagement with the adjacent surface of the track 10 and/or of the building structure. At the same time, the seam 19 will be pulled into sealing engagement with the adjacent surfaces 21 of the channel or groove 12 further enhancing the effectiveness of the seal that is obtained.

[0021] Figure 5 is a side view of a track 10 fitted to a front door with a corner insert 22 fitted and Figure 6 is an enlarged view of the corner insert 22 which is pre-formed with through holes 23 through which screws or other fasteners can be passed in order that the track 10 can readily be secured to the building structure. The corner inserts 22 will be made available as ninety degree bends and as straight runs. The ninety degree bend corner inserts 22 bring the channel or groove 12 off the wall and include a ninety degree bend. The straight corner inserts 22 only bring the channel or groove 12 away from the wall and are then mated with a ninety degree bend piece of track, which is then connected to a straight piece of track which extends along the ground beneath the door opening.

[0022] A corner track insert 22 will be used when the door opening is such that the track 10 cannot be fitted immediately underneath the door opening. The corner track insert 22 allows continuation of the channel or groove 12 by bringing it away from the wall and continuing it at a distance from the wall along the ground.

[0023] The solid lines of Figure 7 show a corner track insert 22 with a ninety degree bend. It has an arcuate channel or groove 12a. The broken lines of Figure 7 show the straight version of the corner track insert 22 and this has a straight channel or groove 12b. Both forms of corner track insert 22 have through holes 23 through which screws or other fasteners can be passed in order that the track 10 can readily be secured to the building structure.

[0024] Figure 8 shows a corner track insert 22 mating up with straight pieces of track 24 and 25 to provide a continuous channel or groove 12 into which the seam 19 on the flexible sheet 17 can be fitted.

[0025] As an alternative to inflation of the tubular portion 18 using a hand pump or a compressed air container, inflation of the tubular portion 18 may be effected by injecting an expanding foam into the tubular portion 18. Activation of the foam injection facility may be effected either manually or by means of a water sensing device that responds automatically to the presence of water. The water sensing device, if provided, will be shielded from the rain but will be so positioned that it is activated when the level of water in the vicinity of the track 10 reaches a predetermined value.

[0026] If, for example, is going on holiday, he or she will be able to engage the flexible sheet 17 with the track 10 and leave the barrier in an uninflated condition knowing that, if flooding occurs, inflation will automatically be effected to protect the property to which the barrier has been fitted.

[0027] It will, of course, be necessary to fit barriers over any air vents or otherwise prevent entry of flood water into the property via the air vents that are typically provided.

Claims

1. A flood defence barrier comprising a track fitted adjacent an opening in a building so as to extend up both sides of the opening and along or beneath the bottom of the opening, a channel or groove in the track, and a generally rectangular flexible waterproof sheet which includes means for engagement in the channel or groove in the track, the sheet also including a portion or portions that can be inflated, said portion or portions extending along three sides of the sheet.

2. A flood defence barrier as claimed in claim 1, in which the portion or portions of the flexible sheet that can be inflated is or are of generally tubular form when inflated.

3. A flood defence barrier as claimed in Claim 1, in which the means for engagement with the channel or groove in the track comprises a seam projecting from the sheet and disposed adjacent the portion(s) that can be inflated.

4. A flood defence barrier as claimed in any one of the preceding claims, in which the track comprises a plurality of sections that can be assembled together adjacent the opening in the building.

5. The combination of a flood defence barrier as claimed in any one of the preceding claims and a pump for effecting inflation of the portion(s) of the sheet that can be inflated.

6. The combination of a flood defence barrier as claimed in any one of Claims 1 to 4 and a compressed gas container for effecting inflation of the portion(s) of the sheet that can be inflated.

7. The combination of a flood defence barrier as claimed in any one of Claims 1 to 4 and means for injecting an expanding foam into the portion(s) of the flexible sheet that can be inflated.

8. The combination claimed in either Claim 6 or Claim 7 and a water sensor which, when activated, initiates operation of the means for inflating said portion(s) of the flexible sheet.

9. A method of providing a defence against flooding of a property, said method comprising fitting a track adjacent an opening in a building so as to extend up both sides of the opening and along or beneath the bottom of the opening, a channel or groove being formed in the track, providing a generally rectangular flexible waterproof sheet which includes means for engagement in the channel or groove in the track and which includes a portion or portions that can be inflated, said portion or portions extending along three sides of the sheet, and engaging the waterproof sheet with the track.

10. A method as claimed in claim 9, in which the portion or portions of the flexible sheet that can be inflated is or are of generally tubular form when inflated.

11. A method as claimed in Claim 9, in which the means for engagement with channel or groove in the track comprises a seam projecting from the sheet and disposed adjacent the portion(s) that can be inflated, the seam being fitted in the channel or groove.

12. A method as claimed in any one of Claims 9 to 11, in which the track comprises a plurality of sections that are assembled together adjacent the opening in the building.

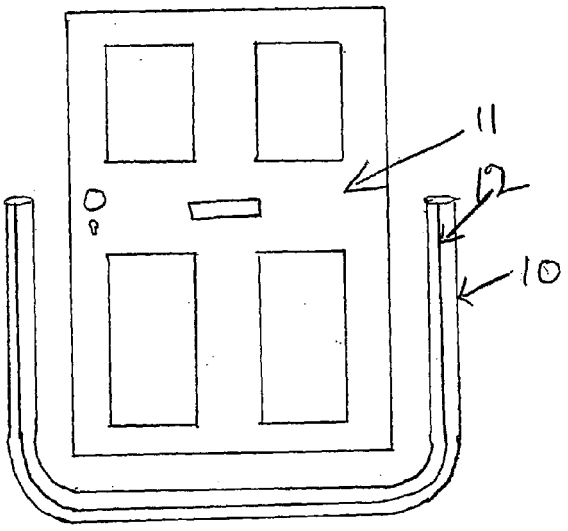

FIGURE 1

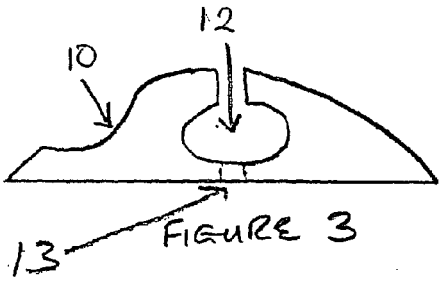

FIGURE 3

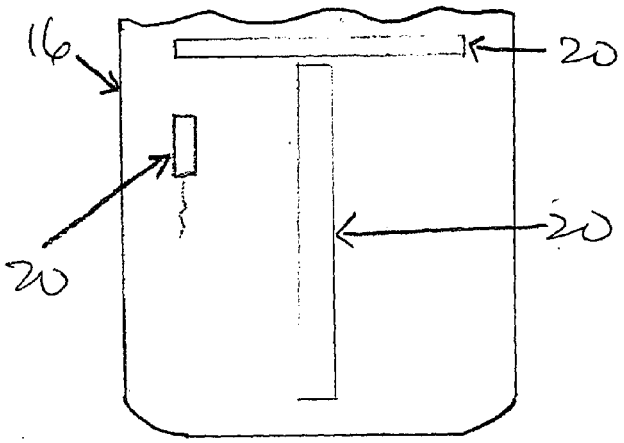

FIGURE 2

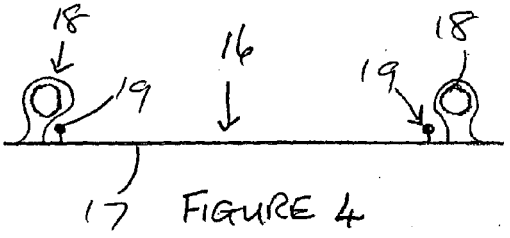

FIGURE 4

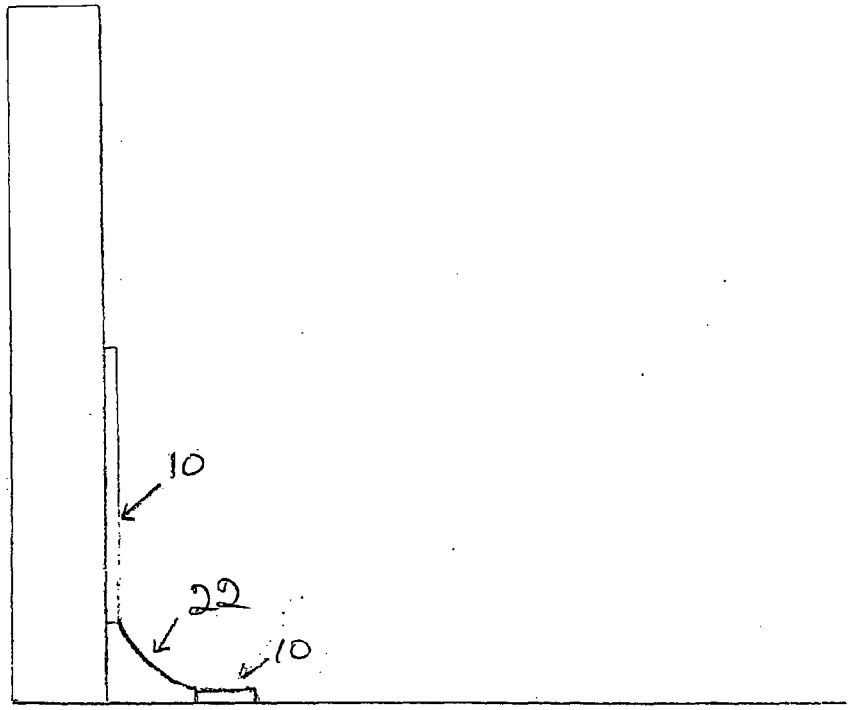

FIGURE 5

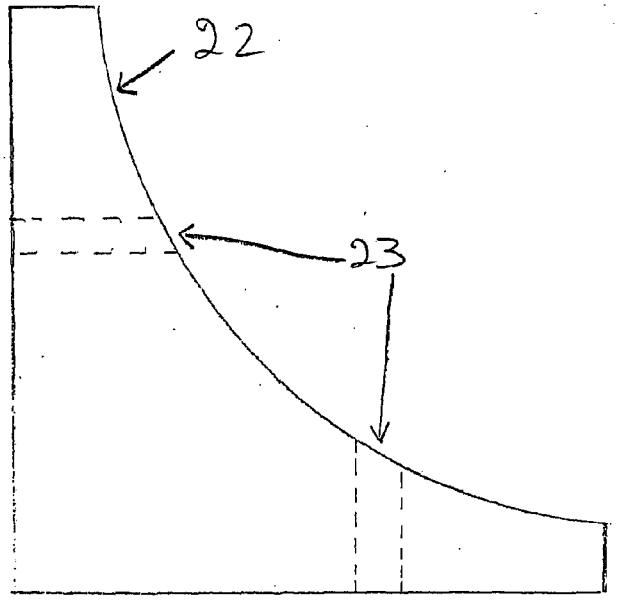

FIGURE 6

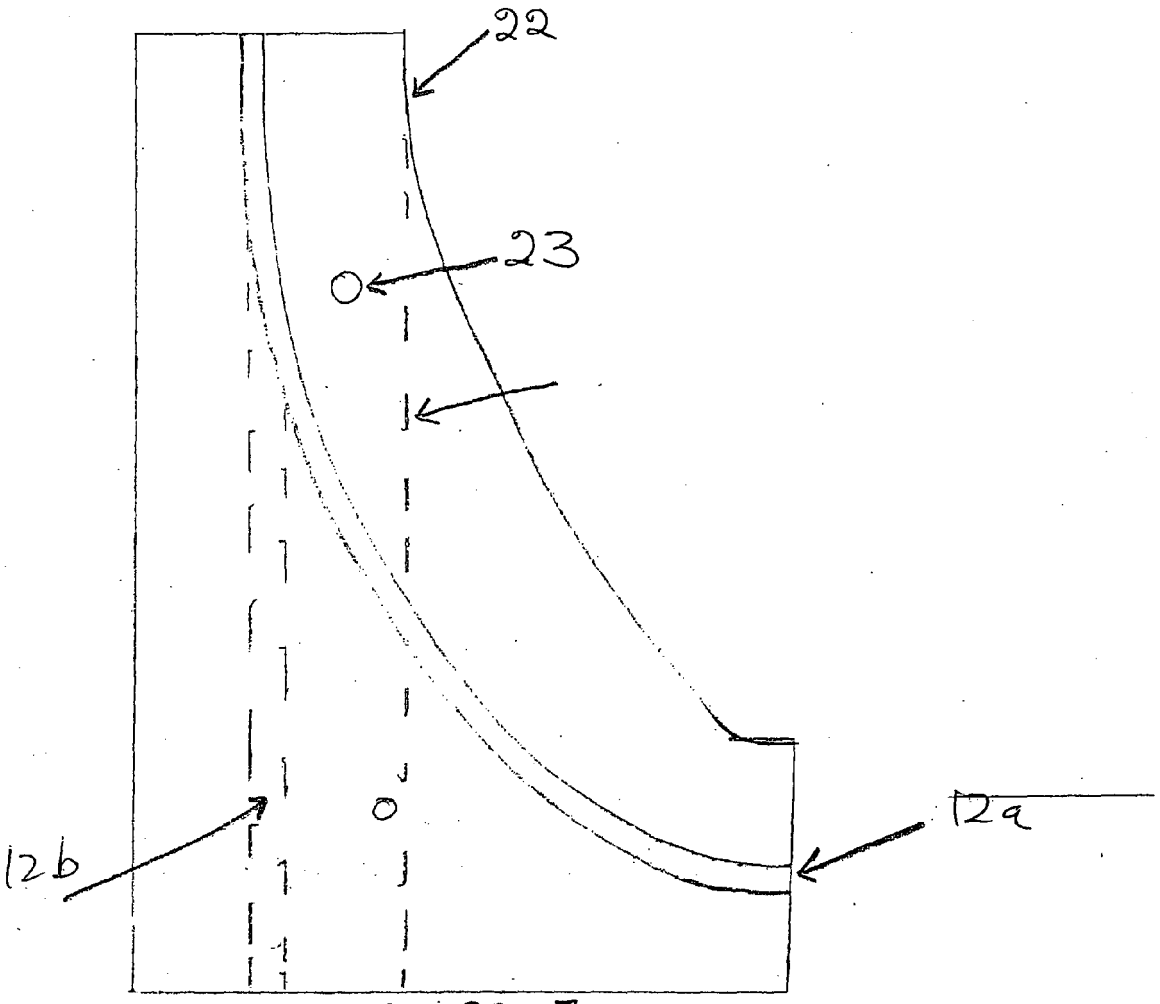

FIGURE 7

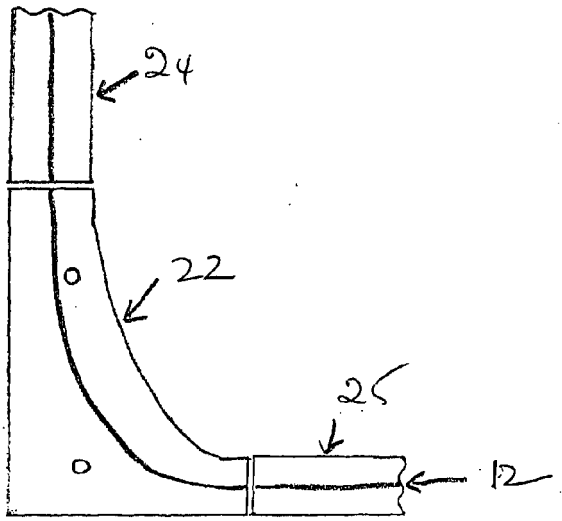

FIGURE 8

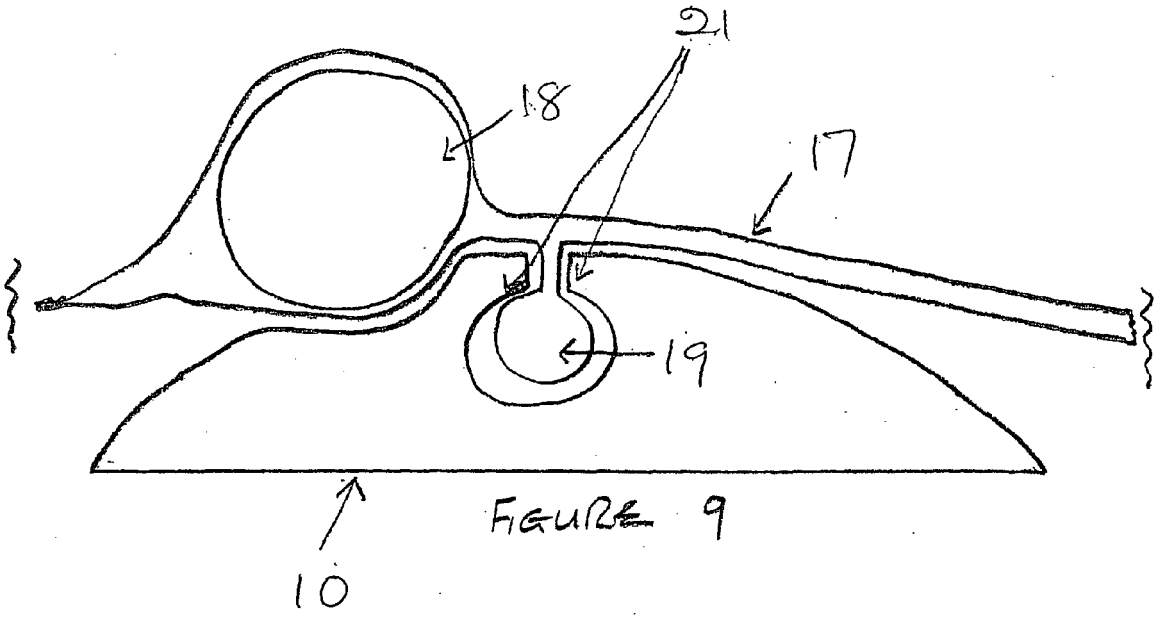

FIGURE 9

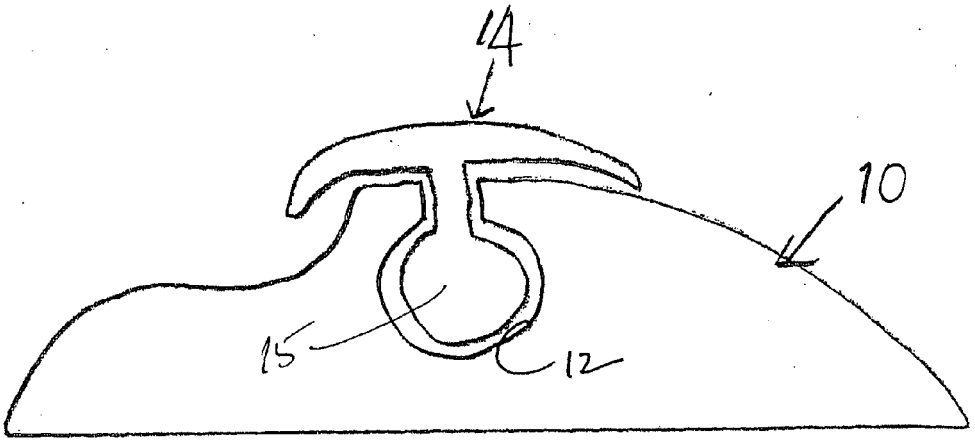

FIGURE 10