

(19)



(11)

EP 3 679 988 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:

20.12.2023 Bulletin 2023/51

(51) International Patent Classification (IPC):

A62C 2/24 (2006.01)

(52) Cooperative Patent Classification (CPC):

A62C 2/242

(21) Application number: **20150877.7**

(22) Date of filing: **09.01.2020**

(54) **FIRE SEAL**

FEUERDICHTUNG

JOINT IGNIFUGE

(84) Designated Contracting States:

**AL 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 RS SE SI SK SM TR**

(30) Priority: **10.01.2019 GB 201900347**

(43) Date of publication of application:

15.07.2020 Bulletin 2020/29

(73) Proprietor: **FSI Limited**

Measham, Leicestershire DE12 7DS (GB)

(72) Inventor: **Atkinson, Carl David**

Measham, Leicestershire DE12 7DS (GB)

(74) Representative: **Etex Services NV - Etex IPSC**

Kuiermansstraat 1

1880 Kapelle-op-den-Bos (BE)

(56) References cited:

DE-A1- 3 239 177 KR-A- 20100 097 997

EP 3 679 988 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] This invention concerns a fire seal, and particularly but not exclusively a fire seal selectively engageable between the side edge of a floor panel and a facing wall; and also a fire sealing assembly.

[0002] It is often desirable or required to prevent the passage of fire between floor slabs, and side walls or external facades or rain screens. Conventionally this is generally achieved using intumescent materials. This generally involves a certain time delay to provide a seal as the material intumesces in the event of a fire, and such seals may not always be wholly reliable.

[0003] DE 32 39 177 A1 discloses a fire resisting door, which consists of door body and door case or door frame, at least in the area of one door edge, with an additional closing device which responds to the heat of a fire. The closing device contains, as trigger means, a material which changes its state under the effect of heat by expanding, melting, shrinking or by releasing energy, either actively or passively, in another way. A bolt is seated on an intumescent cushion of such an expanding material, and, in the event of fire, the bolt is pushed out of the door body and into a recess, thus positively locking door body and door case while at the same time sealing the gap between them. This means that the door body is no longer capable of warping on account of the prior response of the intumescent cushion. The closing device may bring about a positive or frictional locking.

[0004] KR 2010 0097997 A discloses a door closing device to prevent components from being damaged when a door is opened and closed and to eliminate noise by eliminating a spring inserted between moving frames. The door closing device comprises a protect unit frame and a push frame. The protection unit frame comprises a door receiving part for accepting a door and a frame receiving part. The push frame is slid along the inner surface of the protection unit frame and is accepted in the frame receiving part during moving.

[0005] According to a first aspect of the invention there is provided a fire seal as set out in the appended claim 1.

[0006] The elongate housing may be made of any of steel, aluminium, or calcium silicate.

[0007] The resilient member may comprise one or more compression springs.

[0008] A sealing part may be provided on an outer face of the elongate sealing member. The sealing part may comprise any of a brush, vane seal, intumescent seal, or an elongate strip, which strip may be hollow and may be made of silicone or EPDM.

[0009] The fusible restraint may be made of nylon, EPDM, rubber, PVC or metal, and especially an alloy.

[0010] Alternatively the fusible restraint may comprise a sleeve extending at least partially around the elongate housing and elongate sealing member so as to restrain the elongate sealing member in the inactive position. The sleeve may be made of PVC, or the sleeve may be made of a paper material.

[0011] A plurality of resilient members may be provided.

[0012] A guide may be provided, which is locatable inside the helical coil of one of the one or more compression springs, to maintain the alignment of the compression springs.

[0013] The fire seal may further include an extension arrangement for spacing the elongate housing and the elongate sealing member from a mounting point such as a floor panel. The extension arrangement may include an elongate spacer for location between the elongate housing and a bracket, wherein the bracket is for mounting to a floor panel, the spacer is mountable to the bracket, and the housing is mountable to the spacer.

[0014] The invention still further provides a fire sealing assembly, the assembly including a fire seal according to any of the preceding paragraphs provided on a side edge of a floor panel and facing towards a wall, with the fire seal configured such that in the inactive position a space is provided between the floor panel and the wall, but in the active position the sealing member engages against the wall to close the space.

[0015] Embodiments of the present invention will now be described by way of example only and with reference to the accompanying drawing, in which:-

Fig. 1 is a diagrammatic end view of a first fire seal in an inactive position;

Fig. 2 is a similar view to Fig. 1 but with the fire seal in an active position;

Fig. 3 is a diagrammatic end view showing the fire seal of Fig. 1 in use in an inactive position;

Fig. 4 is a similar view to Fig. 3 but with the fire seal in an active position.

Fig. 5 is a diagrammatic perspective end view of the fire seal of Fig. 1 in an inactive position;

Fig. 6 is a similar view to Fig. 1 but showing a further feature;

Fig. 7 is a similar view to Fig. 6 but in an active condition;

Figs. 8, 9, 10 and 11 are diagrammatic side views of different possible components of the fire seal;

Figs. 12 and 13 are respectively similar views to Figs. 1 and 2 but of a second fire seal;

Figs. 14 and 15 are respectively similar views to Figs. 1 and 2 but of a third fire seal;

Figs. 16 and 17 are respectively similar views to Figs. 1 and 2 but of a fourth fire seal;

Figs. 18 and 19 are respectively similar views to Figs. 1 and 2 but of a fifth fire seal;

Figs. 20 and 21 are respectively similar views to Figs. 6 and 7 but of a sixth fire seal;

Figs. 22 and 23 are respectively similar views to Figs. 6 and 7 but of a seventh fire seal;

Figs. 24 and 25 are see-through top views of the seventh fire seal in inactive and active positions respectively;

Figs. 24 and 25 are see-through top views of the seventh fire seal in inactive and active positions respectively;

Fig. 26 is a diagrammatic end view of an eighth fire seal;

Fig. 27 is a diagrammatic side view of part of the eighth fire seal;

Figs. 28A to D are schematic side views demonstrating the assembly of the eighth fire seal;

Fig. 29 is a diagrammatic end view of part of the eighth fire seal in an active condition;

Fig. 30 is a diagrammatic end view of a ninth fire seal; and

Fig. 31 is a diagrammatic end view of part of the ninth fire seal in an active condition.

[0016] Figs. 1 to 5 show a first fire seal 10 which has an elongate housing 12 in the form of a channel section with inwardly extending lips 14 on an open side. An elongate sealing member 16 is provided which is of narrower channel section than the housing 12 so as to be slidably movable in and out of the housing 12. The sealing member 16 is arranged with the recess therein facing towards the elongate housing 12. Outwardly extending lips 18 are provided on the elongate sealing member either side of the opening therein, so as to be engageable with the inwardly extending lips 14 on the housing 12 so as to prevent the elongate sealing member 16 from fully coming out of the elongate housing 12.

[0017] A resilient member in the form of a compression spring 20 is provided within the elongate housing 12 and engageable against the closed end of the elongate sealing member 16, to urge the elongate sealing member 16 out of the elongate housing 12. The compression spring 20 may be in the form of a linear compression spring, or could comprise a plurality of discreet compression springs.

[0018] Figs. 3, 4 and 5 show the first fire seal 10 mounted in the side of a floor panel 24, which faces a vertical

wall 26 with a gap 28 therebetween. In the active position shown in Fig. 4, the first fire seal 10 closes the gap 28.

[0019] Figs. 6 and 7 show the first fire seal 10, and with a fusible link 22 extending between the elongate housing 12 and the elongate sealing member 16 so as to in Fig. 6 restrain the elongate sealing member 16 in an inactive position just protruding to a small amount from the elongate housing 12.

[0020] In Fig. 7 the fusible link 22 has been broken such that the elongate sealing member 16 extends out of the elongate housing 12, with the external lips on the sealing member engageable 18 with the internal lips 14 on the housing member.

[0021] The fusible link may take a number of different forms, and four examples are shown respectively in Figs. 8 - 11. Figs. 8 and 9 show fusible links 30, 32 made for example of nylon, EPDM, rubber or PVC. Figs. 10 and 11 show metal alloy fusible links 34, 36, and include a central part 38 which is intended to fail in the event of a fire. The fusible links 22, 30, 32, 34, 36 are intended to fail at temperatures of between 120 - 160°C, and within less than 30 seconds.

[0022] A sealing part may be provided on the outer end of the sealing member 16 to provide a good seal for instance against the wall 26. Four examples of sealing parts are shown in Figs. 12 to 19. In the second sealing member 38 in Figs. 12 and 13, an elongate sealing part 40 is provided which is essentially dome shaped and may be hollow. This may be made of silicone or EPDM.

[0023] Figs. 14 and 15 show a third sealing member 42 with an intumescent sealing part 44 in the form of a strip of intumescent material on the outer end of the sealing member 16.

[0024] Figs. 16 and 17 show a fourth fire seal 46 where the sealing part 48 is in the form of a brush seal.

[0025] Figs. 18 and 19 show a fifth fire seal 50 in which the sealing member is in the form of a vane seal 52 mounted to a distal end of the compression spring 54. As can be seen the vane seal 52 is held in a spiral within the elongate housing 12 until it uncoils when a fusible link 56 has been broken.

[0026] Figs. 20 and 21 show a sixth fire seal 58. In this instance no lips are provided on the elongate housing 12 or elongate sealing member 16, and the compression spring 20 retains a link from the housing 12 to the sealing member 16 when in active position. Figs. 20 and 21 illustrate another form of fusible link in the form of a sleeve 60 which in this instance is made of PVC, that surrounds the housing 12 and sealing member 16, to retain sealing member 16 in the housing 12 an inactive position, until the sleeve 60 fails for instance in the event of a fire.

[0027] Figs. 22 to 25 show a seventh fire seal 62 which is similar to the sixth fire seal 58, but includes a plurality of compression springs 20. In this example, the seventh fire seal 62 includes three compression springs 20 spaced along the length of the fire seal 62, to ensure a uniform transition along the length of the fire seal from an inactive to an active position. The compression

springs 20 can be fastened to the elongate housing 12 and the elongate sealing member 16 using fixing screws 64 and/or rivets. The alignment of the compression springs 20 is maintained by one or more guides 66. The one or more guides 66 may be in the form of rods which are locatable inside the helical coil of the compression springs 20 to maintain the alignment of the compression springs 20.

[0028] Figs. 22 and 24 show the seventh fire seal 62 in an inactive position. The sealing member 16 is restrained in the elongate housing 12 in an inactive position by a sleeve (not shown) extending partially around the elongate housing 12 and elongate sealing member 16 between the elongate housing 12 and the sealing member 16. The sleeve may be made from a paper material such that it fails in the event of a fire. Once the sleeve fails, the seventh fire seal 62 transitions to an active position, which is shown in Figs. 23 and 25.

[0029] Fig. 26 shows an eighth fire seal 68, which is similar to the first fire seal 10, but includes an extension arrangement 70. The extension arrangement 70 is for spacing the elongate housing 92 and the elongate sealing member 16 from a mounting point such as a floor panel 24 as shown in Fig. 3 & 4, thereby enabling the elongate housing 92 and the elongate sealing member 16 to be positioned closer to a wall 26. This can be useful where the gap between the floor panel 24 and the wall 26 is too large to seal using only the elongate housing 92 and the sealing member 16.

[0030] The extension arrangement 70 includes a bracket 72, shown in Fig. 27, for mounting to the floor panel 24. The bracket 72 includes one or more holes 74 for receiving fasteners such as screws, to enable the bracket to be secured to the floor panel 24. The extension arrangement 70 further includes an elongate spacer 80, which is mountable to the bracket 72. The mounting bracket 72 includes a channel 76 which locates a mounting part 82 of the elongate spacer 80. The channel 76 of the mounting bracket 72 includes two recesses 78 which locate two corresponding projections 84 on the mounting part 80. One or more of the projections 84 may include a tapered portion 86 to enable the respective projection to more readily be inserted into the corresponding recess 78.

[0031] The elongate spacer 80 is locatable between the bracket 72 and the housing 92, and is configured to extend outwardly from the bracket 72 to space the housing 92 from the side of a floor panel 24. The elongate spacer 80 includes a cavity 88 extending along the length of the elongate spacer 80, to lower the weight of the elongate spacer 80 and reduce the quantity of materials used. The elongate spacer 80 includes a channel 90, which in this example is the same shape as the channel 76 of the mounting bracket 72. The channel 90 of the elongate spacer 80 is positioned on an opposite side of the elongate spacer 80 to the mounting part 80.

[0032] The elongate housing 92 of the eighth fire seal 68 is mountable to the elongate spacer 80. The elongate

housing 92 includes a mounting part 94, which is of the same shape as the mounting part 82 of the elongate spacer 80. The mounting part 94 of the elongate housing 92 forms part of the extension arrangement 70, and is locatable in either the channel 76 of the mounting bracket or the channel 90 of the elongate spacer 80. Figs. 28A to 28D schematically illustrate the mounting of the elongate spacer 80 to the bracket 72, and the mounting of the elongate housing 92 to the elongate spacer 80. Fig. 29 illustrates the elongate housing 92, the elongate sealing member 16, and the compression spring 20 of the eighth fire seal 68 in an active position.

[0033] It is to be appreciated that a plurality of elongate spacers 80 may be provided in the extension arrangement 70, for further spacing the elongate housing 92 from the floor panel 24. The extension arrangement 70 could be utilised with any of the fire seals describe herein.

[0034] Figs. 30 to 31 illustrate a ninth fire seal 94, which is similar to the eighth fire seal 68, but includes an intumescent material 96 inside the elongate sealing member 97. The intumescent material 96 expands upon heating and retains the ninth fire seal 94 in an active position.

[0035] There are thus described fire seals which can be active quite quickly, and in many instances significantly more quickly than conventional intumescent seals. As indicated the fire seals may take a number of different forms as required. The fire seal should provide long term maintenance free operation when required, and will not degrade in a similar manner to intumescent materials. Also inconsistencies along the fire seal should not be encountered unlike with intumescent materials. The fire seal is thought of relatively straightforward mechanical construction and can thus be inexpensively produced for long term reliable operation.

[0036] The elongate spacer, the elongate housing and elongate sealing member may be made of steel, aluminium or calcium silicate.

[0037] It is to be realised that any of the above combinations can be combined as required. A number of other modifications may be made without departing from the scope of the invention which is defined in the appended claims.

[0038] For example a resilient arrangement may take a different form, and could for instance include sprung fingers engageable between the elongate housing and elongate sealing member. Different materials could be used than those described.

Claims

1. A fire seal, the fire seal including:

a housing (12, 92) provided with lips (14), wherein the housing is an elongate housing in the form of a channel section and having inwardly extending lips (14) on an open side;
an elongate sealing member (16, 38, 42, 97) in

the form of a channel section with an opening facing towards the housing, the elongate sealing member being slidably movable relative to the housing between an inactive position located at least to a significant extent within the housing, and an active position extending outwardly to a significant extent from the housing, wherein the elongate sealing member (16) is provided with outwardly extending lips (18) on either side of the opening therein, and configured for engagement with the lips (14) of the housing to prevent the elongate sealing member (16) from fully coming out of the housing (12), wherein the channel section of the elongate sealing member is narrower than the channel section of the elongate housing;

a resilient member (20) in the form of at least one compression spring (20), that is provided within the housing (12) and which is engaged against a closed end of the elongate sealing member (16), to urge the elongate sealing member away from the housing, whereby a gap adjacent to the elongate housing can be closed, in that the elongate sealing member is urged to the active position by means of the resilient member; and

a fusible restraint (22, 30, 32, 34, 36) that retains the elongate sealing member (16) in the inactive position, the fusible restraint being configured to fail at a required raised temperature such that the elongate sealing member will automatically move to the active position, for instance in the event of a fire, said fusible restraint being a fusible link (22, 30, 32, 34, 36) extending between the housing and elongate sealing member when in the inactive position;

characterized in that

the fusible link (22, 30, 32, 34, 36) is configured to break at a required raised temperature of 120°C to 160°C, wherein the fusible link (22, 30, 32, 34, 36) is positioned on the outside of the device when in the inactive position and the active position.

2. The fire seal as claimed in claim 1, wherein the fusible link is made of nylon, EPDM, rubber, PVC or metal, especially alloy.
3. The fire seal as claimed in claim 1, wherein the fusible link is made of nylon, EPDM, rubber or PVC.
4. A fire seal according to any of the preceding claims, in which a sealing part (40, 44, 48, 52) is provided on an outer face of the elongate sealing member, and the sealing part may comprise any of a brush (48), vane seal (52), intumescent seal (44), an elongate strip (40), a hollow elongate strip (40), or an elongate strip (40) made of silicone or EPDM.

5. A fire seal according to claim 4, wherein the sealing part comprises an intumescent sealing part (44) in the form of a strip of intumescent material on the outer face of the elongate sealing member (16).
6. A fire seal according to claim 1, wherein a guide (66) is provided, which is locatable inside the helical coil of one of the one or more compression springs to maintain the alignment of the compression springs.
7. A fire seal according to any of the preceding claims, wherein the fire seal further includes an extension arrangement (70) for spacing the elongate housing and the elongate sealing member from a mounting point such as a floor panel.
8. A fire seal according to claim 7, wherein the extension arrangement includes an elongate spacer (80) for location between the elongate housing and a bracket, wherein the bracket is for mounting to a floor panel, the spacer is mountable to the bracket, and the housing is mountable to the spacer.
9. A fire sealing assembly, the assembly including a fire seal according to any of the preceding claims provided on a side edge of a floor panel (24) and facing towards a wall (26), with the fire seal configured such that in the inactive position a space (28) is provided between the floor panel and the wall, but in the active position the sealing member engages against the wall to close the space.

Patentansprüche

1. Feuerdichtung, wobei die Feuerdichtung einschließt:

ein Gehäuse (12, 92), das mit Lippen (14) versehen ist, wobei das Gehäuse ein längliches Gehäuse in der Form eines Kanalabschnitts ist und sich nach innen erstreckende Lippen (14) an einer offenen Seite aufweist;

ein längliches Dichtungselement (16, 38, 42, 97) in der Form eines Kanalabschnitts mit einer zum Gehäuse weisenden Öffnung, wobei das längliche Dichtungselement relativ zum Gehäuse zwischen einer inaktiven Position, die sich mindestens zu einem erheblichen Teil innerhalb des Gehäuses befindet, und einer aktiven Position, die sich zu einem erheblichen Teil vom Gehäuse nach außen erstreckt, verschiebbar beweglich ist, wobei das längliche Dichtungselement (16) mit sich nach außen erstreckenden Lippen (18) auf jeder Seite der Öffnung darin versehen ist und für den Eingriff mit den Lippen (14) des Gehäuses konfiguriert ist, um zu verhindern, dass das längliche Dichtungselement (16) vollständig

aus dem Gehäuse (12) herauskommt, wobei der Kanalabschnitt des länglichen Dichtungselements schmaler als der Kanalabschnitt des länglichen Gehäuses ist;

ein elastisches Element (20) in der Form mindestens einer Druckfeder (20), das innerhalb des Gehäuses (12) vorgesehen ist und das gegen ein geschlossenes Ende des länglichen Dichtungselements (16) in Eingriff steht, um das längliche Dichtungselement von dem Gehäuse weg zu drängen, wodurch ein Spalt, der an das längliche Gehäuse angrenzt, geschlossen werden kann, indem das längliche Dichtungselement mittels des elastischen Elements in die aktive Position gedrängt wird; und eine Schmelzsicherung (22, 30, 32, 34, 36), die das längliche Dichtungselement (16) in der inaktiven Position hält, wobei die Schmelzsicherung konfiguriert ist, um bei einer erforderlichen erhöhten Temperatur zu versagen, sodass sich das längliche Dichtungselement automatisch in die aktive Position bewegt, zum Beispiel im Falle eines Feuers, wobei die Schmelzsicherung eine Schmelzverbindung (22, 30, 32, 34, 36) ist, die sich in der inaktiven Position zwischen dem Gehäuse und dem länglichen Dichtungselement erstreckt;

dadurch gekennzeichnet, dass

die Schmelzverbindung (22, 30, 32, 34, 36) konfiguriert ist, um bei einer erforderlichen erhöhten Temperatur von 120 °C bis 160 °C zu brechen, wobei die Schmelzverbindung (22, 30, 32, 34, 36) in der inaktiven Position und der aktiven Position auf der Außenseite der Vorrichtung positioniert ist.

2. Feuerdichtung nach Anspruch 1, wobei die Schmelzverbindung aus Nylon, EPDM, Gummi, PVC oder Metall, insbesondere einer Legierung, hergestellt ist.
3. Feuerdichtung nach Anspruch 1, wobei die Schmelzverbindung aus Nylon, EPDM, Gummi oder PVC hergestellt ist.
4. Feuerdichtung nach einem der vorstehenden Ansprüche, wobei ein Dichtungsteil (40, 44, 48, 52) auf einer Außenfläche des länglichen Dichtungselements vorgesehen ist und das Dichtungsteil ein beliebiges umfassen kann von: einer Bürste (48), einer Flügeldichtung (52), einer intumeszierenden Dichtung (44), einem länglichen Streifen (40), einem hohlen länglichen Streifen (40) oder einem länglichen Streifen (40), der aus Silikon oder EPDM hergestellt ist.
5. Feuerdichtung nach Anspruch 4, wobei das Dichtungsteil ein intumeszierendes Dichtungsteil (44) in

der Form eines Streifens aus intumeszierendem Material auf der Außenfläche des länglichen Dichtungselements (16) umfasst.

6. Feuerdichtung nach Anspruch 1, wobei eine Führung (66) vorgesehen ist, die innerhalb der spiralförmigen Windung einer der einen oder der mehreren Druckfedern lokalisierbar ist, um die Ausrichtung der Druckfedern aufrechtzuerhalten.
7. Feuerdichtung nach einem der vorstehenden Ansprüche, wobei die Feuerdichtung ferner eine Verlängerungsanordnung (70) zum Beabstanden des länglichen Gehäuses und des länglichen Dichtungselements von einem Montagepunkt wie einer Bodenplatte einschließt.
8. Feuerdichtung nach Anspruch 7, wobei die Verlängerungsanordnung einen länglichen Abstandshalter (80) für eine Lokalisierung zwischen dem länglichen Gehäuse und einer Halterung einschließt, wobei die Halterung zum Montieren an einer Bodenplatte dient, wobei der Abstandshalter an der Halterung montierbar ist und das Gehäuse an dem Abstandshalter montierbar ist.
9. Feuerdichtungsbaugruppe, wobei die Baugruppe eine Feuerdichtung nach einem der vorstehenden Ansprüche einschließt, die an einer Seitenkante einer Bodenplatte (24) vorgesehen ist und zu einer Wand (26) weist, wobei die Feuerdichtung konfiguriert ist, sodass in der inaktiven Position ein Raum (28) zwischen der Bodenplatte und der Wand vorgesehen ist, aber in der aktiven Position das Dichtungselement gegen die Wand in Eingriff steht, um den Raum zu schließen.

Revendications

1. Joint d'incendie, le joint d'incendie comportant :

un boîtier (12, 92) pourvu de lèvres (14), dans lequel le boîtier est un boîtier allongé sous la forme d'une section de canal et ayant des lèvres (14) s'étendant vers l'intérieur sur un côté ouvert ;

un élément d'étanchéité allongé (16, 38, 42, 97) sous la forme d'une section de canal avec une ouverture faisant face vers le boîtier, l'élément d'étanchéité allongé étant mobile de manière coulissante par rapport au boîtier entre une position inactive située au moins en grande partie à l'intérieur du boîtier, et une position active s'étendant vers l'extérieur en grande partie à partir du boîtier, dans lequel l'élément d'étanchéité allongé (16) est pourvu de lèvres (18) s'étendant vers l'extérieur de chaque côté de

l'ouverture à l'intérieur de celui-ci, et conçues pour venir en prise avec les lèvres (14) du boîtier pour empêcher l'élément d'étanchéité allongé (16) de sortir complètement du boîtier (12), dans lequel la section de canal de l'élément d'étanchéité allongé est plus étroite que la section de canal du boîtier allongé ;

un élément élastique (20) sous la forme d'au moins un ressort de compression (20), qui est prévu à l'intérieur du boîtier (12) et qui vient en prise contre une extrémité fermée de l'élément d'étanchéité allongé (16), pour pousser l'élément d'étanchéité allongé loin du boîtier, moyennant quoi un espace adjacent au boîtier allongé peut être fermé, en ce sens que l'élément d'étanchéité allongé est poussé vers la position active au moyen de l'élément élastique ; et un dispositif de retenue fusible (22, 30, 32, 34, 36) qui retient l'élément d'étanchéité allongé (16) dans la position inactive, le dispositif de retenue fusible étant conçu pour céder à une température accrue requise de telle sorte que l'élément d'étanchéité allongé se déplace automatiquement vers la position active, par exemple en cas d'incendie, ledit dispositif de retenue fusible étant un maillon fusible (22, 30, 32, 34, 36) s'étendant entre le boîtier et l'élément d'étanchéité allongé lorsqu'il est dans la position inactive ;

caractérisé en ce que

le maillon fusible (22, 30, 32, 34, 36) est conçu pour rompre à une température accrue requise de 120 °C à 160 °C, dans lequel le maillon fusible (22, 30, 32, 34, 36) est positionné sur l'extérieur du dispositif lorsqu'il est dans la position inactive et la position active.

2. Joint d'incendie selon la revendication 1, dans lequel le maillon fusible est en nylon, EPDM, caoutchouc, PVC ou métal, notamment alliage.

3. Joint d'incendie selon la revendication 1, dans lequel le maillon fusible est en nylon, EPDM, caoutchouc ou PVC.

4. Joint d'incendie selon l'une quelconque des revendications précédentes, dans lequel une partie d'étanchéité (40, 44, 48, 52) est prévue sur une face externe de l'élément d'étanchéité allongé, et la partie d'étanchéité peut comprendre l'un quelconque parmi une brosse (48), un joint d'aube (52), un joint intumescent (44), une bande allongée (40), une bande allongée creuse (40), ou une bande allongée (40) faite de silicone ou EPDM.

5. Joint d'incendie selon la revendication 4, dans lequel la partie d'étanchéité comprend une partie d'étanchéité intumescente (44) sous la forme d'une bande

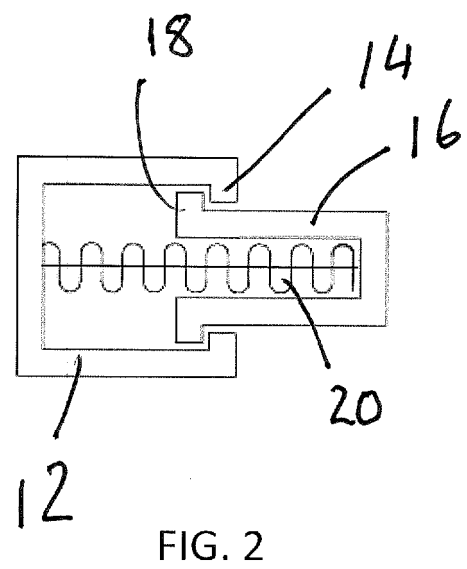
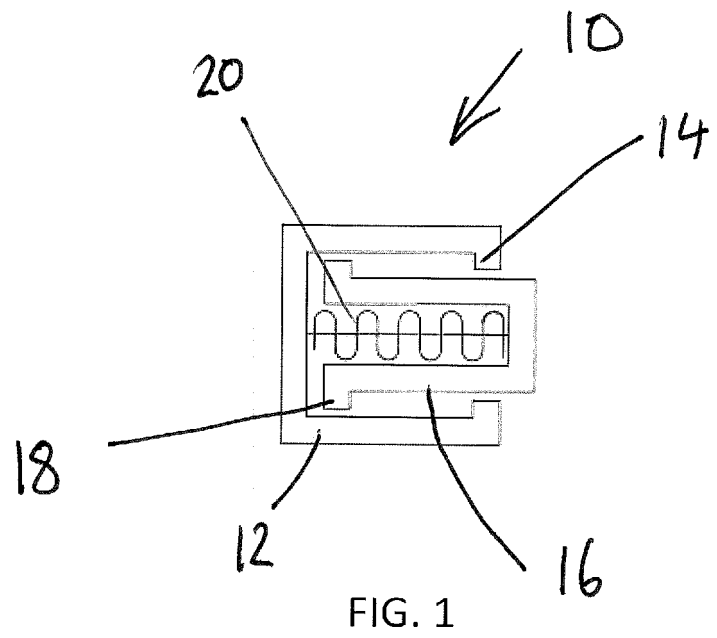
de matériau intumescent sur la face externe de l'élément d'étanchéité allongé (16).

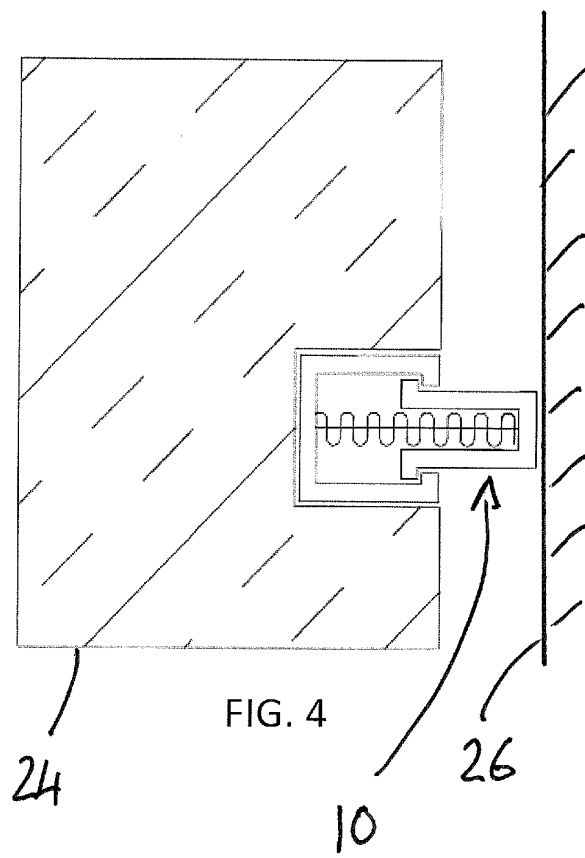
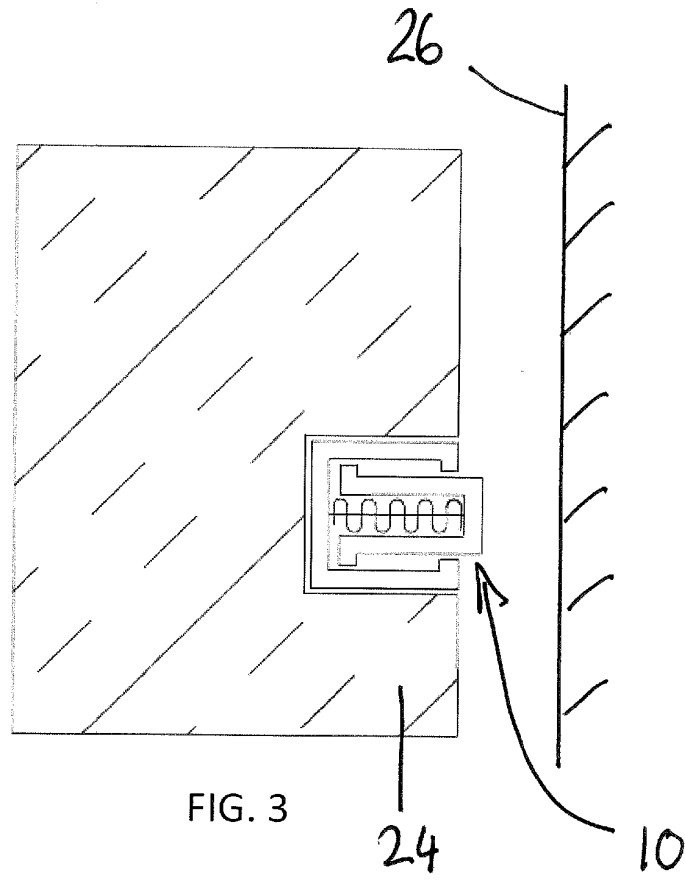
6. Joint d'incendie selon la revendication 1, dans lequel un guide (66) est prévu, qui peut être positionné à l'intérieur de la bobine hélicoïdale de l'un parmi le ou les ressorts de compression pour maintenir l'alignement des ressorts de compression.

7. Joint d'incendie selon l'une quelconque des revendications précédentes, dans lequel le joint d'incendie comporte en outre un agencement d'extension (70) pour espacer le boîtier allongé et l'élément d'étanchéité allongé d'un point de montage tel qu'un panneau de plancher.

8. Joint d'incendie selon la revendication 7, dans lequel l'agencement d'extension comporte un espaceur allongé (80) pour une localisation entre le boîtier allongé et un support, dans lequel le support est destiné à être monté sur un panneau de plancher, l'espaceur peut être monté sur le support, et le boîtier peut être monté sur l'espaceur.

9. Ensemble d'étanchéité au feu, l'ensemble comportant un joint d'incendie selon l'une quelconque des revendications précédentes prévu sur un bord latéral d'un panneau de plancher (24) et faisant face vers une paroi (26), le joint d'incendie étant conçu de telle sorte que dans la position inactive un espace (28) est prévu entre le panneau de plancher et la paroi, mais dans la position active, l'élément d'étanchéité vient en prise contre la paroi pour fermer l'espace.





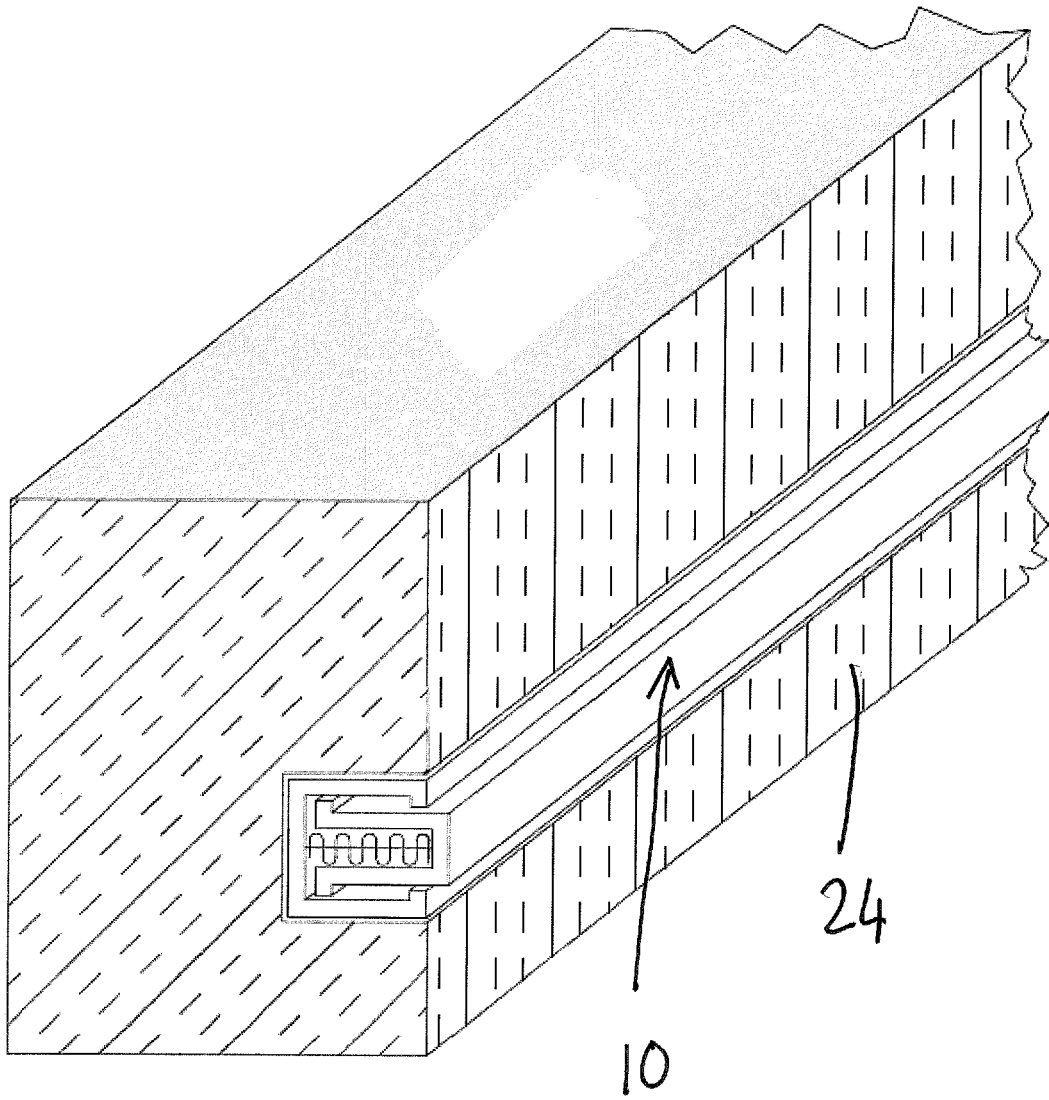
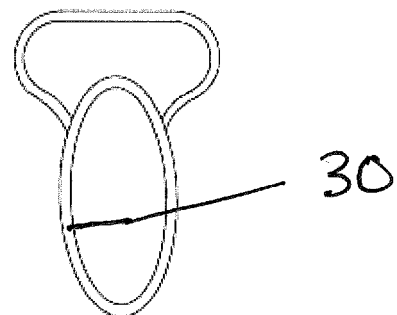
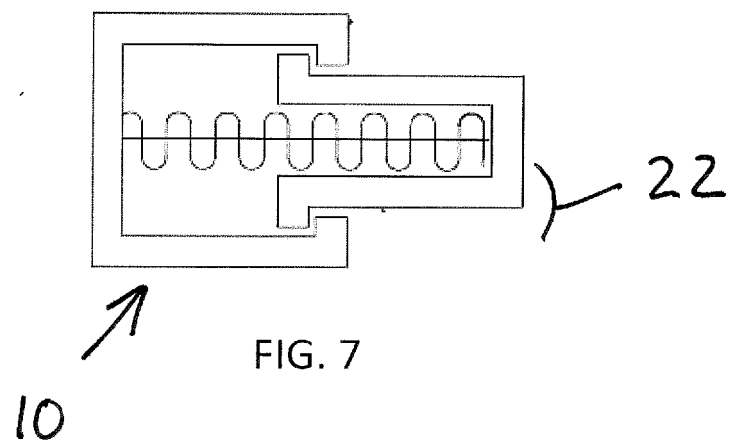
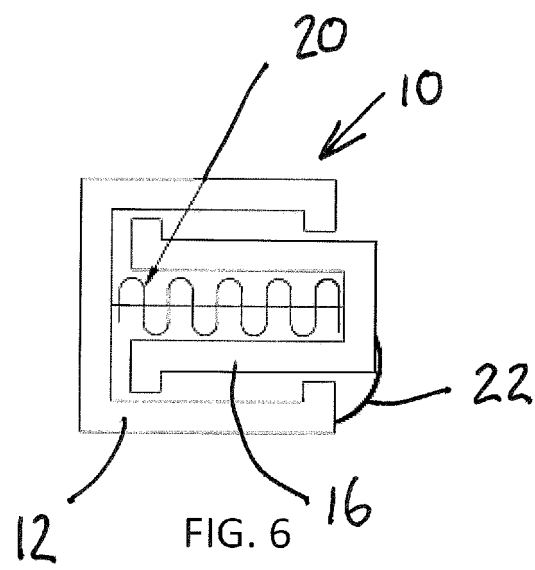


FIG. 5



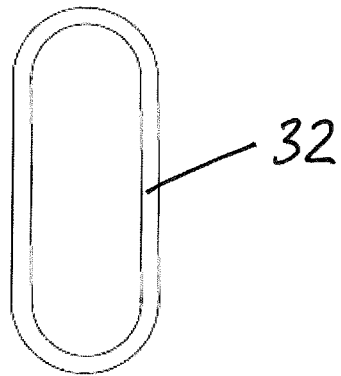


FIG. 9

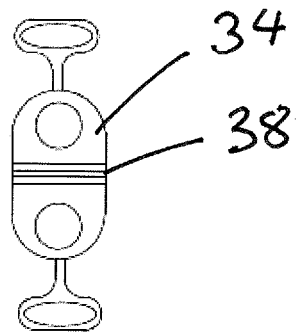


FIG. 10

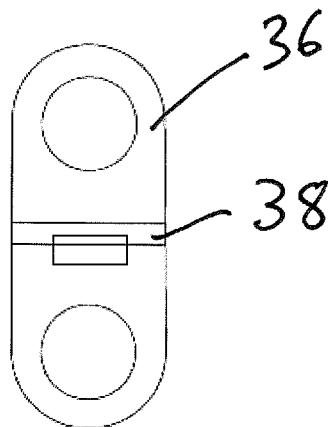


FIG. 11

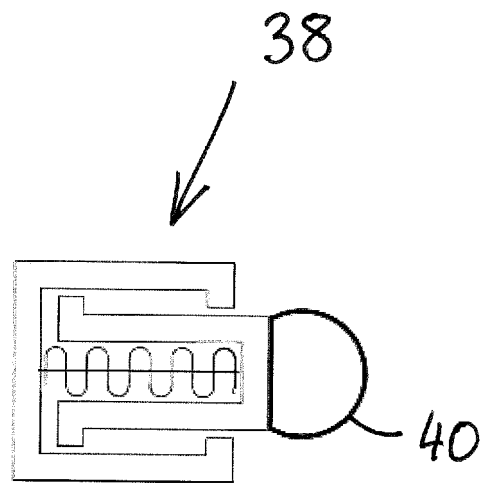


FIG. 12

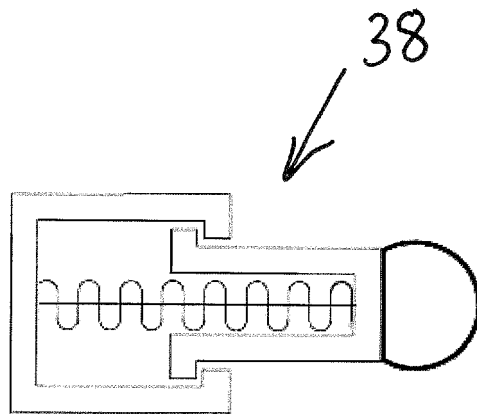


FIG. 13

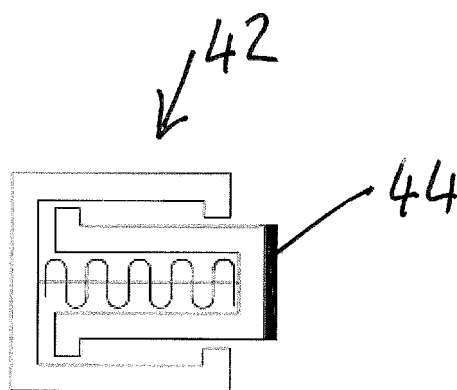


FIG. 14

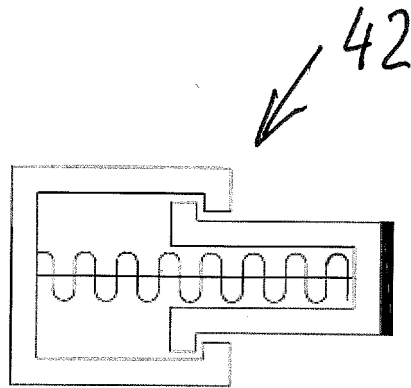


FIG. 15

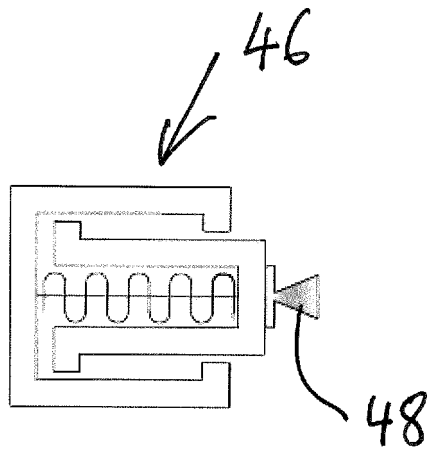


FIG. 16

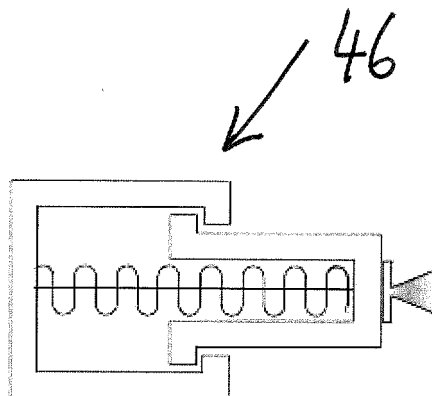


FIG. 17

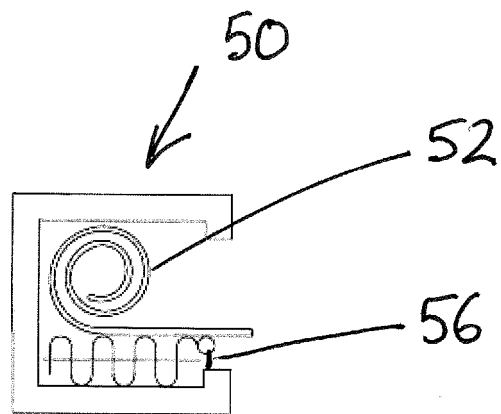


FIG. 18

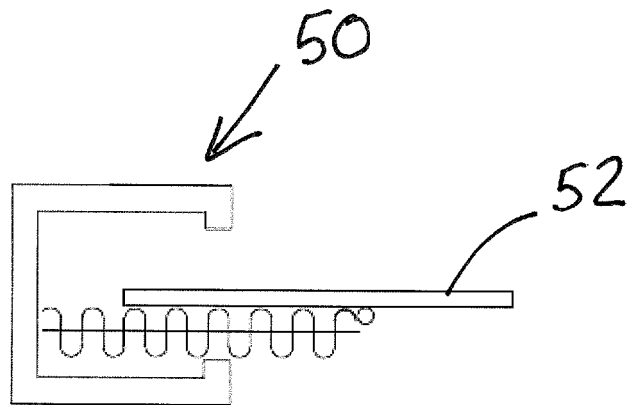


FIG. 19

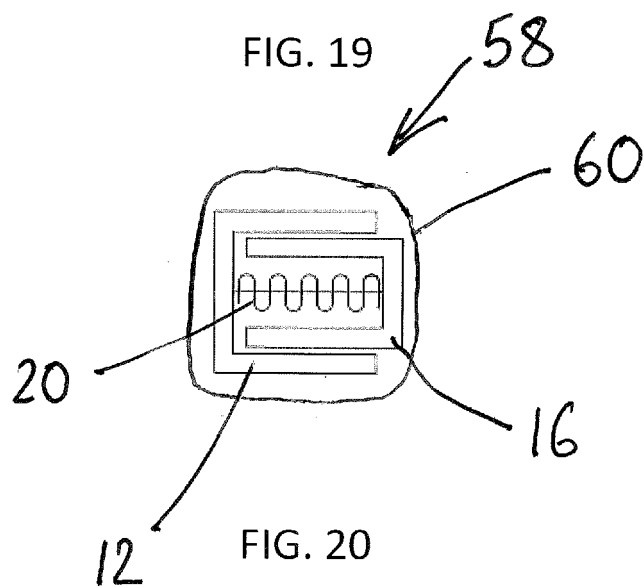
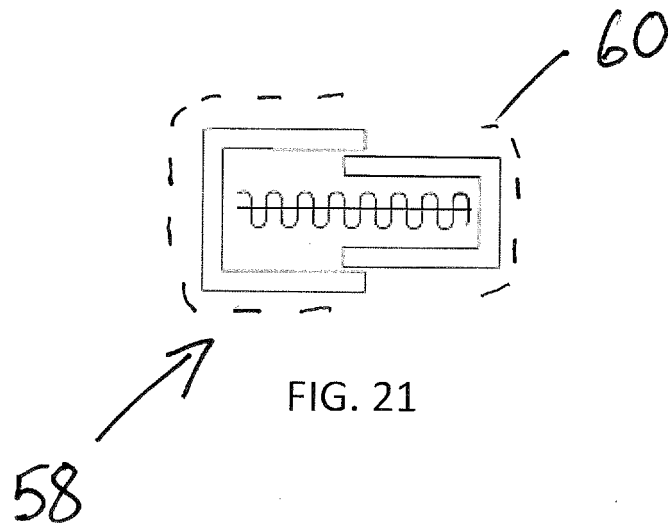


FIG. 20



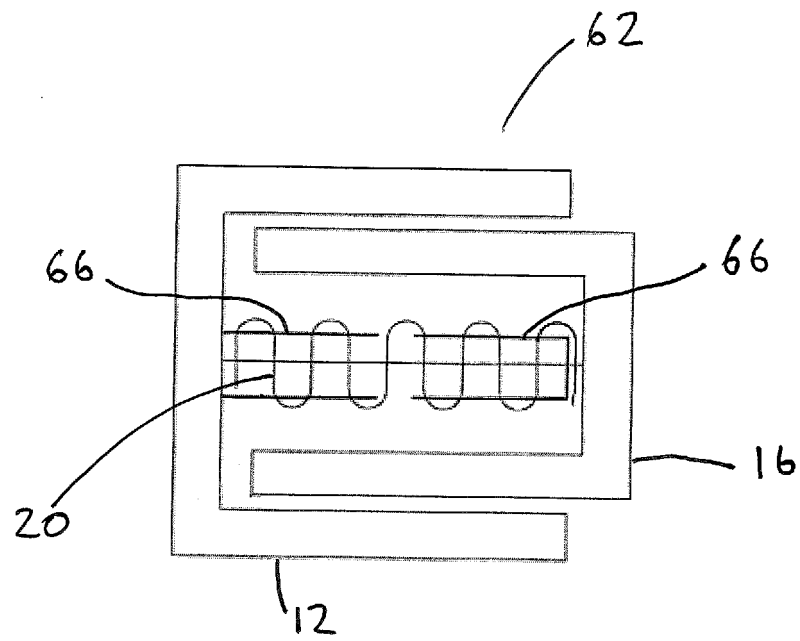


FIG. 22

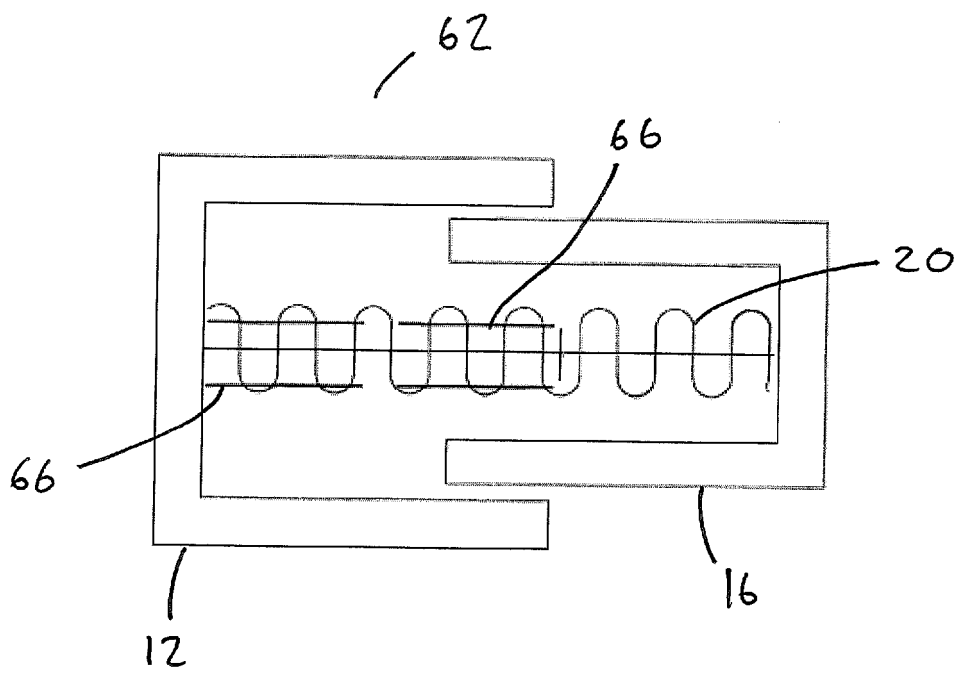


FIG. 23

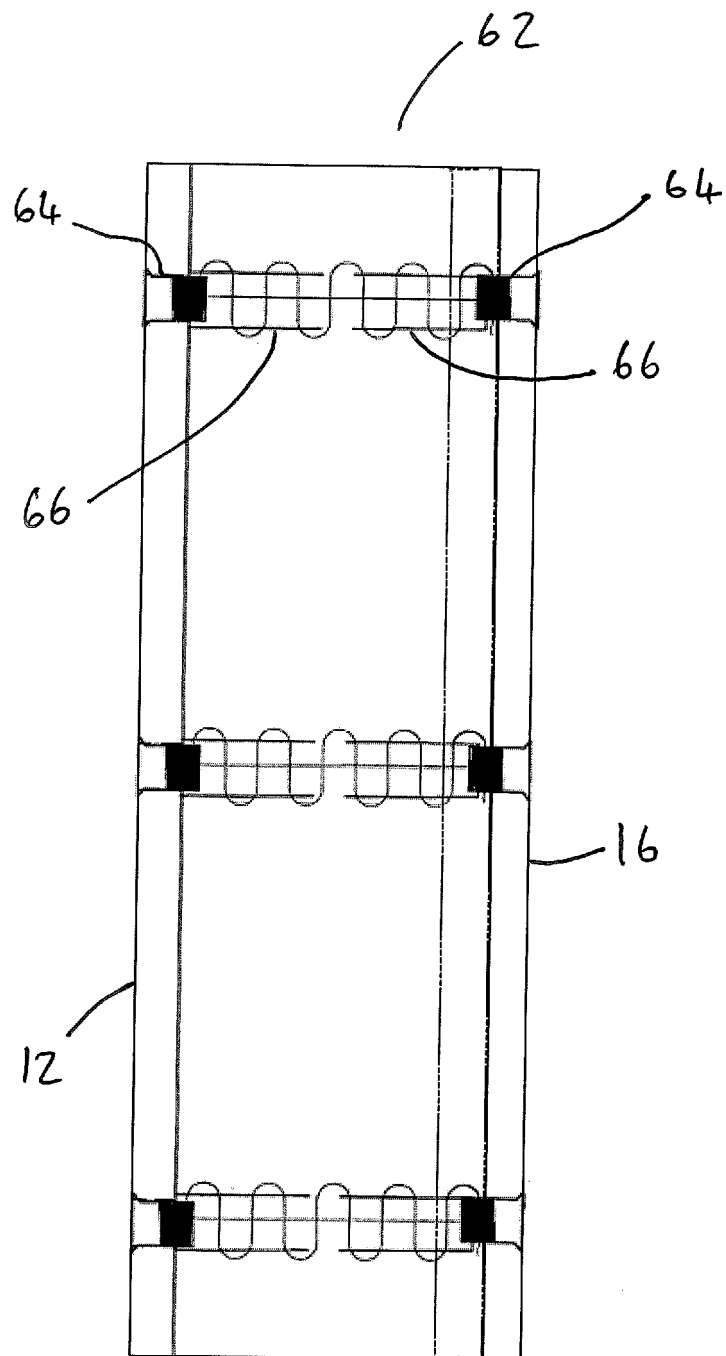


FIG. 24

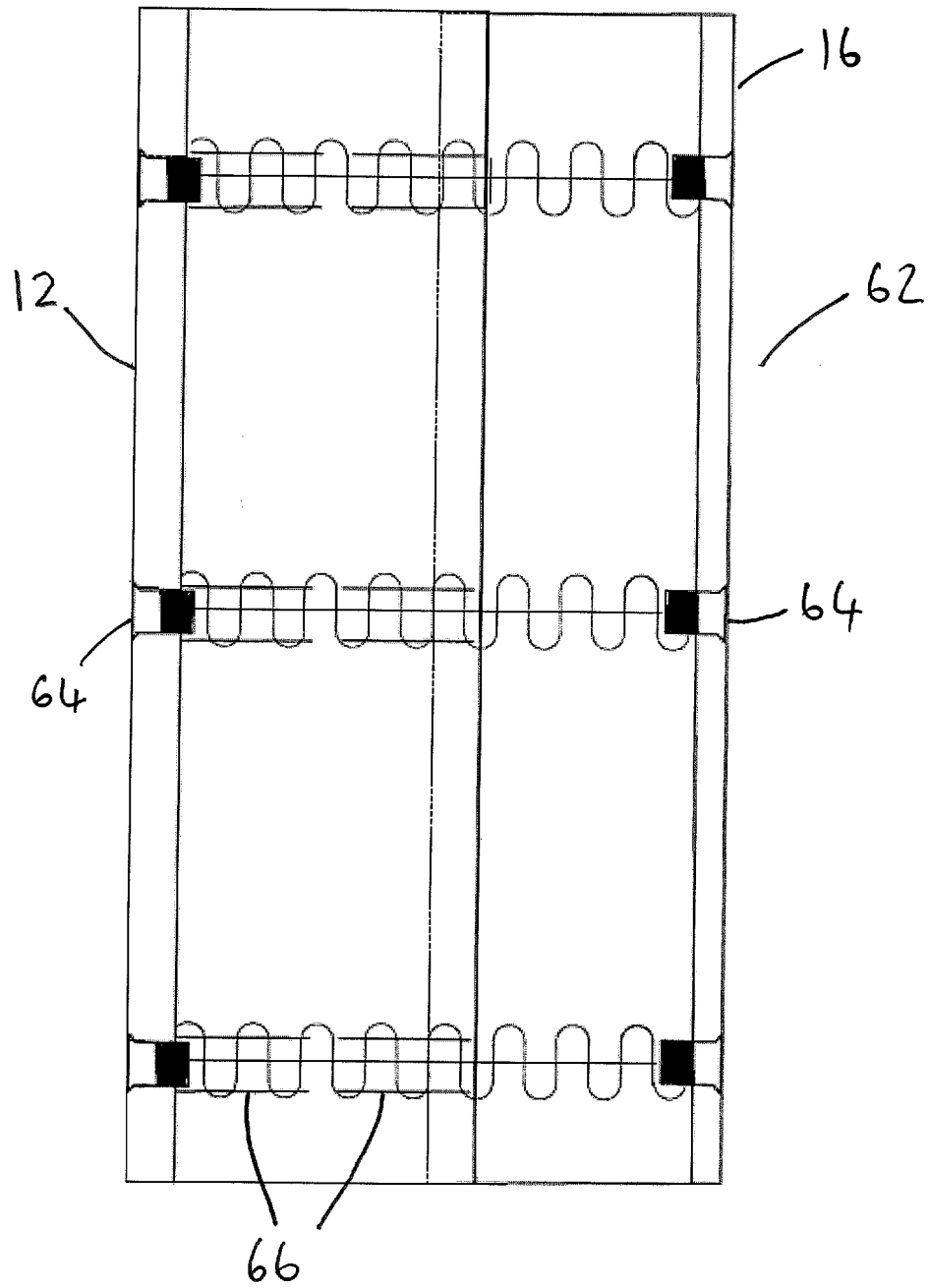


FIG. 25

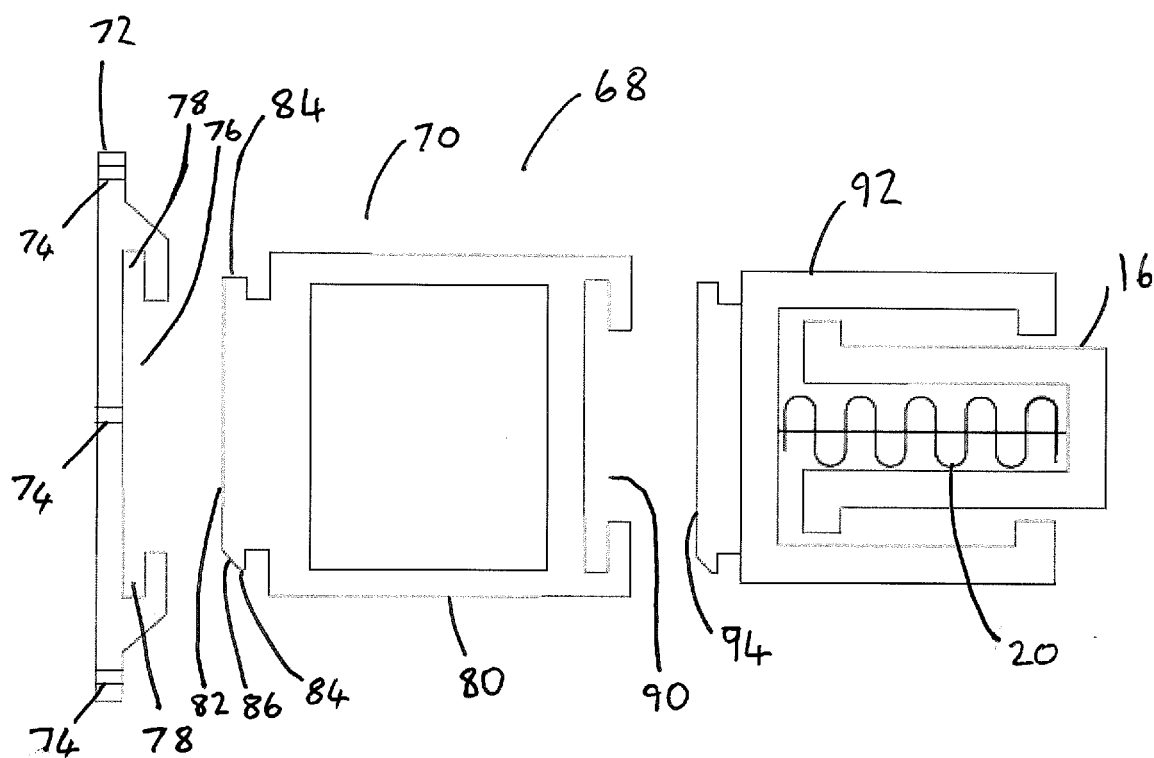


FIG. 26

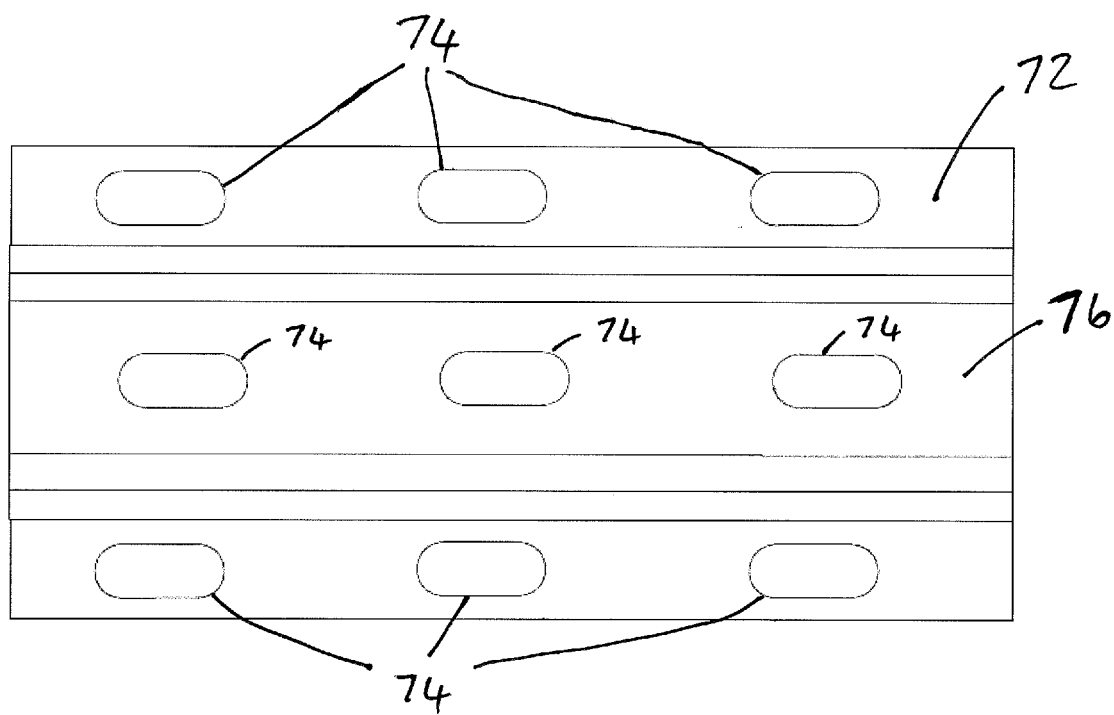


FIG. 27

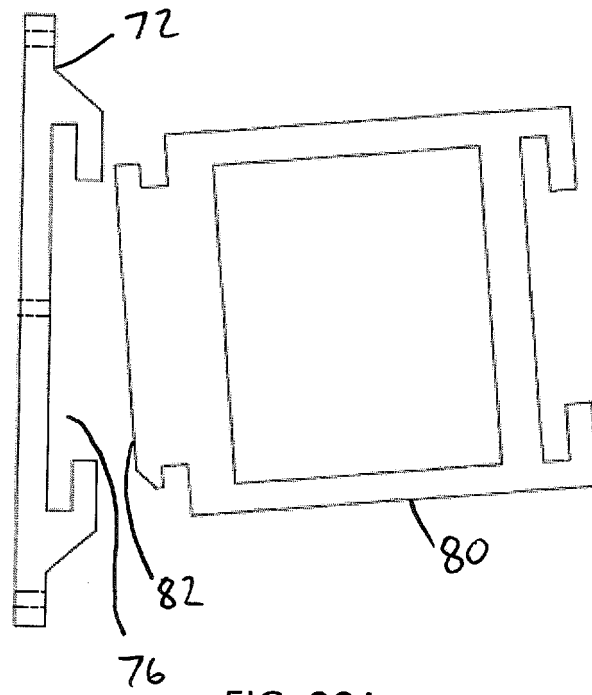


FIG. 28A

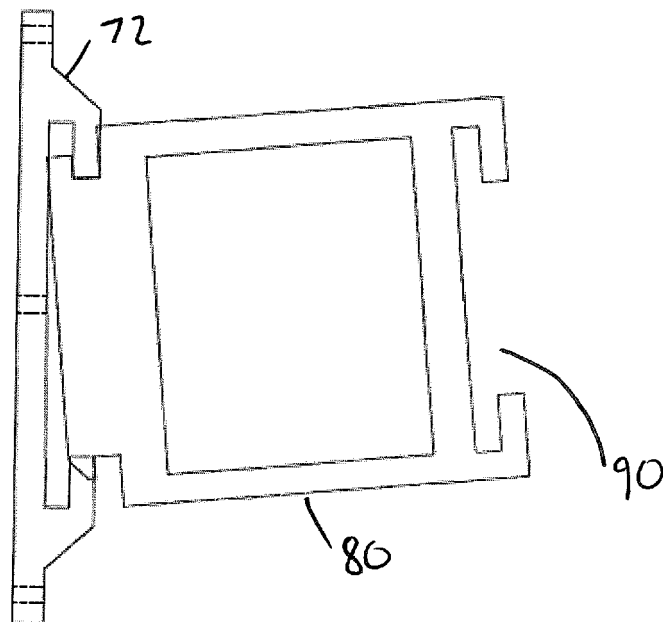


FIG. 28B

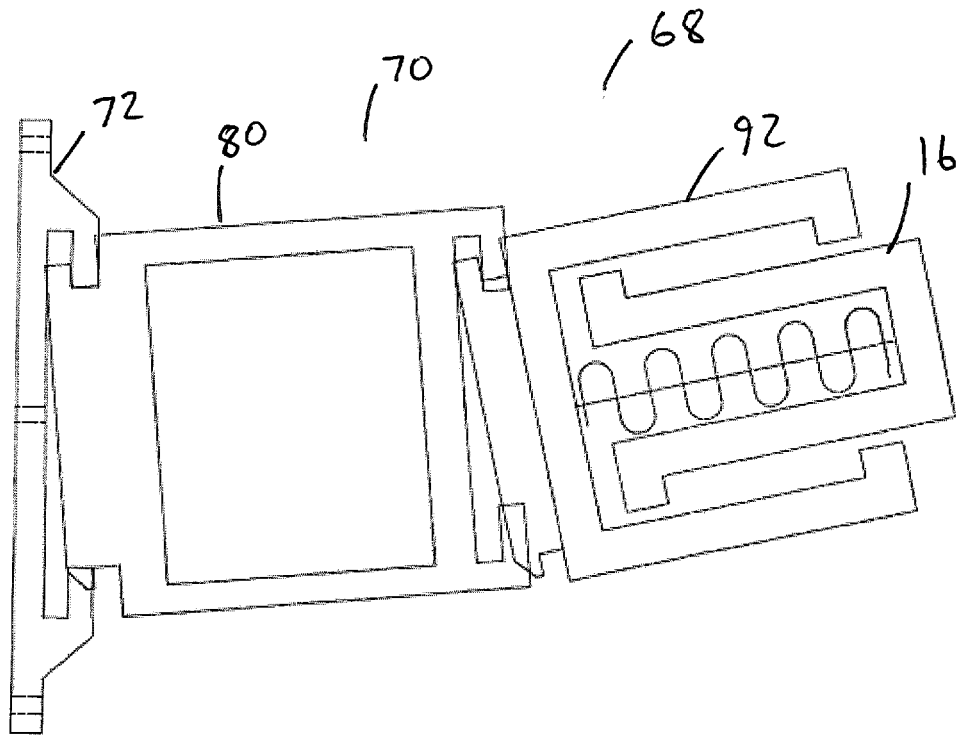


FIG. 28C

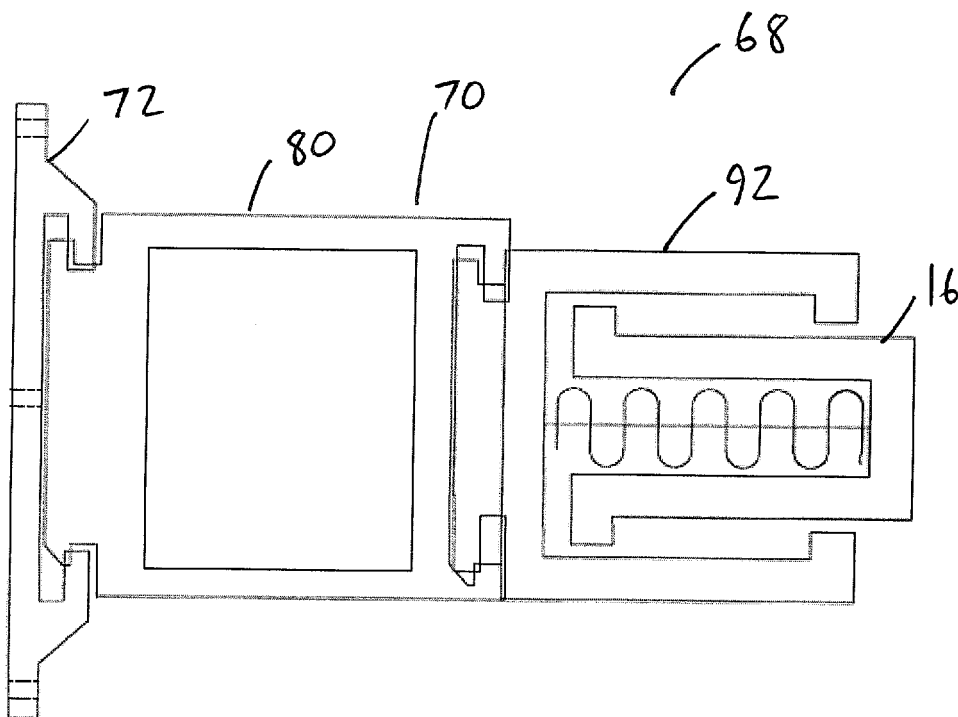


FIG. 28D

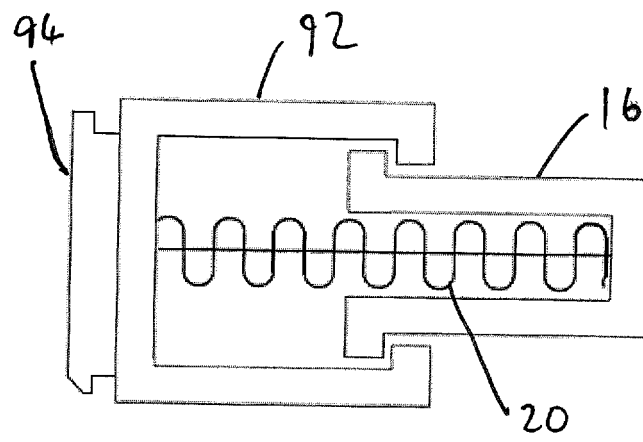


FIG. 29

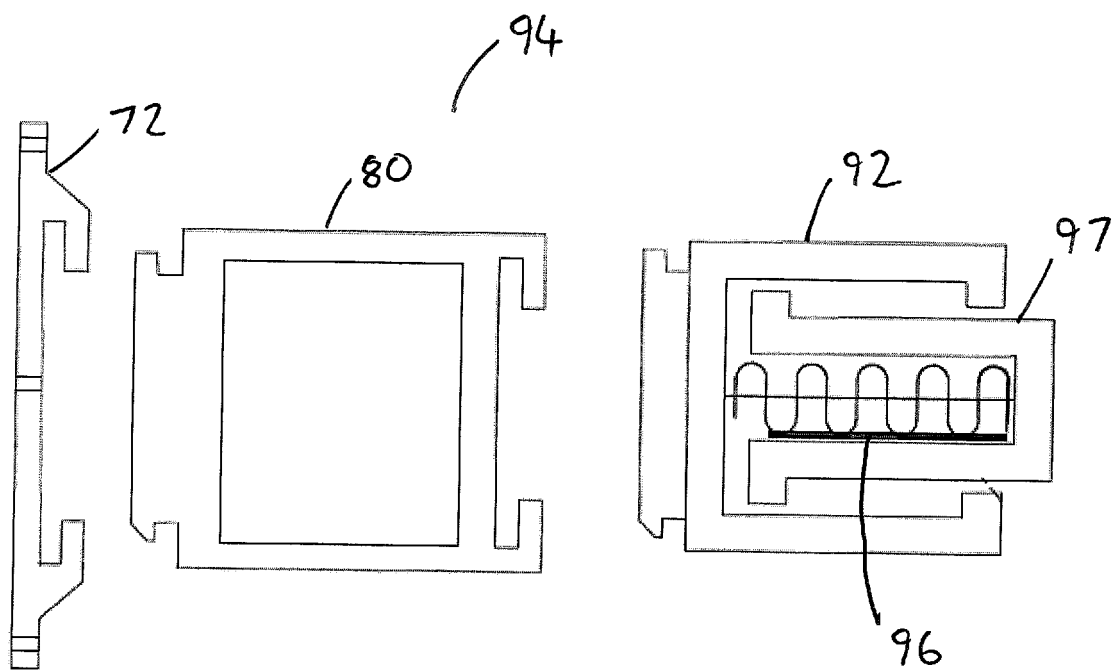


FIG. 30

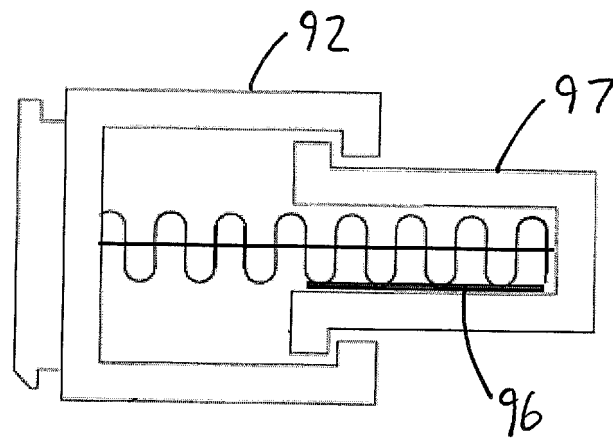


FIG. 31

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- DE 3239177 A1 [0003]
- KR 20100097997 A [0004]