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(54) **Title:** GAS LINE

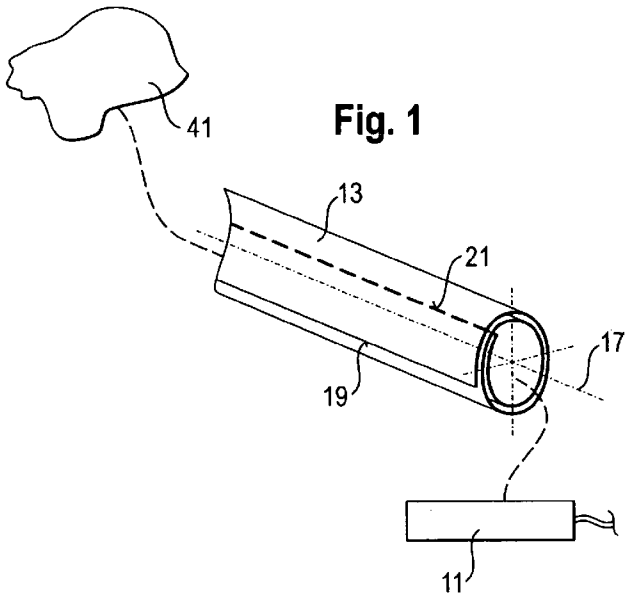

Fig. 1

(57) **Abstract:** The invention relates to a gas line for an airbag arrangement for motor vehicles which is made, and is in particular made flexible, ductile and/or soft, such that it can move from an installation configuration, in particular a shallow installation configuration, into an inflation configuration with an enlarged flow cross-section with respect to the installation configuration under the influence of gas released by means of a gas generator (11) and flowing through said gas line, wherein the gas line is manufactured by shaping, in particular winding, rolling, folding and/or laying, of a piece of material (13) which is areal in the starting state, is in particular of strip form and has a longitudinal direction (15) in the starting state, with the longitudinal direction (15) extending parallel to a longitudinal axis of the gas line.

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Gas line

The invention relates to a gas line for an airbag arrangement for motor vehicles.

It is known, for example, to fill so-called roof-rail airbags via flexible gas lines. The gas lines are able to bridge the distance between a gas generator serving for the inflation of the airbag an the airbag and are thus located at least partly outside the airbag.

Gas lines of this type must satisfy a number of demands, in particular due to the highly dynamic inflation process in airbag applications. In particular gas tightness, low weight, shape stability, flexibility and cost-effective manufacturability must be mentioned here. It is also important that the gas lines are designed in their interior such that they set a resistance against the gas flow which is as low as possible. Flow resistances which are too large could namely have the result that the airbag is filled with a time delay which cannot be tolerated. A further important criterion is therefore the speed at which the gas line enables the filling of the airbag. Generally, small flow cross-sections are aimed for since not only greater inflation speeds hereby result, but also, additionally, costs and weight are saved. However, with smaller flow cross-sections, the pressure prevailing inside the gas line increases, whereby the material of the gas line is put under greater strain.

A number of standard hoses exist for the most varied applications. For example, braided hoses or hoses woven in one piece in a round or flat manner are thus known. Hoses are likewise known which are wound

obliquely from a narrow material strip and in which therefore the longitudinal direction of the starting strip includes an angle different from zero with the longitudinal axis of the completely wound hose. It has been found that these known hoses are not in a position to satisfy the demands made on gas lines for airbag applications. For example, some of the known hoses would become shorter when put under pressure, which would not be acceptable for airbag applications.

It is the object of the invention to provide a gas line of the initially named kind which satisfies all the demands which arise, in particular in view of the highly dynamic inflation process in airbag applications, with a weight which is as small as possible and with manufacturing costs which are as low as possible.

This object is satisfied by the features of claim 1.

In accordance with the invention, the gas line is designed such that it can move out of an installation configuration into an inflation configuration with a flow cross-section increased with respect to the installation configuration under the influence of gas released by means of a gas generator and flowing through said gas line, with the gas line being manufactured by shaping of a piece of material which is areal in the starting state and which has a longitudinal direction in the starting state, with the longitudinal direction extending parallel to a longitudinal axis of the gas line in the shaped state.

In accordance with the invention, the gas line comprises an areal starting material which was shaped with respect to its longitudinal direction such that this longitudinal direction extends parallel to the longitudinal axis of the gas line. This shaping is also called "longitudinal winding" in the

following to delineate it from an oblique winding. The shaping of the areal piece of material can take place, for example, by winding, rolling, folding or laying. It is not necessary in this connection for a structure having a circular cross-section to be present at the end of the shaping procedure. It is rather the case that the gas line can, for example, have a shallow configuration at the end of the shaping procedure which - depending on the respective manufacturing process - is particularly well-suited to close the shaped gas line in a gas tight manner in a further manufacturing step.

The areal starting material is in particular a strip-shaped piece of material. This strip of material is shaped, for example wound on or rolled on, such that the longitudinal edges of the strip extend parallel to the longitudinal axis of the finished gas line. The material strip is therefore in particular not wound obliquely. The length of the material strip thus corresponds to the length of the shaped gas line.

As regards the gas tightness, provision is in particular made in accordance with the invention for the gas line to be closed in a gas tight manner at the peripheral side only by adhesive bonding or by a thermal connection, in particular by welding (e.g. ultrasonic welding). This will be looked at in more detail in the following.

In a further embodiment, provision is made for the piece of material to comprise a fabric as the starting material, in particular a fabric whose strength carriers - in particular threads and/or fibers - are made from plastic. A fabric is used, for example, of PA 6.6 having 470 dtex. Such a fabric is, as is known, in particular also used for the airbags themselves. The piece of material can alternatively comprise a foil as the starting material.

Provision is furthermore in particular made for the material piece to have an applied, gas tight coating. The coating is in particular provided both at the inner side and at the outer side of the pieces of material.

It is particularly preferred for a fabric provided as the starting material for the piece of material to have a fabric structure with at least one identifiable preferred direction which coincides with the longitudinal direction of the piece of material, with the preferred direction in particular extending parallel to warp yarns or weft yarns.

It is achieved in this manner with a fabric provided with a gas tight coating that the strength carriers (threads or fibers) forming the fabric are also not displaced on a high gas pressure inside the gas line such as arises on the inflation of airbags after release of the gas by a gas generator. A displacement of the strength carriers would result in an excessive mechanical strain on the adhesion between the sealing coating, on the one hand, and the fabric, on the other hand. The gas tightness of the gas line would thus not be ensured at high internal pressures. If the strength carriers of the fabric are not displaced, advantageously also no unwanted longitudinal changes or cross-sectional changes of the gas line result during the inflation process.

The embodiment explained above is based on the idea additionally claimed independently to provide an areal starting material for the gas line in accordance with the invention which includes a fabric with a fabric structure and to ensure on the shaping of the gas line starting from the areal starting material that the fabric structure is matched in a suitable manner to the longitudinal axis of the gas line and is in particular aligned with the longitudinal axis of the gas line.

It has been found in a manner surprising for the skilled person that a gas line that satisfies all the demands and in particular withstands the high strains occurring in airbag applications can be provided simply in that an areal piece of material is wound longitudinally and is subsequently closed in a gas tight manner at the peripheral side - in particular by adhesive bonding or by a thermal connection, in particular by welding, at the marginal regions. It was surprisingly found in this process that a longitudinally wound piece of material can be provided with sufficient gas tightness solely by adhesive bonding or welding at the margins.

In a further embodiment of the invention, the gas line can be made with an overlap at least regionally. The overlap can extend over a peripheral region of less than 360°, with it also being possible, however, for the overlap to extend over more than 360°.

It was found in an unexpected manner that the edge of the piece of material disposed inside the gas line does not represent any problematic flow resistance for the gas. A bond provided in the overlap region is preferably formed such that it completely covers the marginal region, i.e. reaches up to the edge. "Loose" or "fluttering" material sections inside the gas line are reliably avoided in this manner. The bond can be made over the full area in the overlap region with a gas line shaped with an overlap in a possible embodiment.

It is alternatively possible to shape the gas line at least regionally without an overlap, with mutually facing edges of the piece of material abutting one another or with a gap being present between the edges. In this case, for the gas tight closing of the gas line, an additional piece of material can be provided which is in particular connected to the shaped material piece by adhesive bonding or welding, and indeed such that joints or gaps

between mutually facing edges of the piece of material are closed in a gas tight manner. The additional piece of material can thus simply be adhesively bonded over the joint or the gas, so-to-say like a patch, or can be connected to the piece of material there, with it having been found that this is possible both from the outside and from the inside. In particular in the case of the adhesive bonding, the closing of the gas line by means of an additional piece of material has the advantage that only the additional piece of material can be prepared with an adhesive such that no handling of a gas line provided with an adhesive is necessary since only the additional piece of material is provided as the carrier for the adhesive. The production of the gas line in accordance with the invention is thereby substantially simplified.

In a further embodiment of the invention, an additional local reinforcement operative in the peripheral direction is provided. In this connection, "local" refers to the axial direction, i.e. one or more peripheral reinforcements can be provided along the gas line which provide the gas line with additional stability.

The local reinforcement can be formed in an embodiment by an additional piece of material which is connected to the shaped piece of material, in particular by adhesive bonding, by sewing or by a thermal connection, in particular by welding, and which extends at least over a partial peripheral region of the gas line. A strip of material can, for example, be adhesively bonded to the gas line from the outside in the manner of a cuff.

Alternatively or additionally, separate reinforcement elements can be provided which are pushed or placed onto the shaped piece of material and are furthermore preferably not connected to the piece of material, with connections e.g. additionally being possible by adhesive bonding or

welding to hold the reinforcement elements in their axial positions with respect to the gas line. Such reinforcement elements, which are pushed or placed on at least substantially "loosely" can e.g. be provided in the form of ring members, cuff members, clamp members or clip members. Viewed in the inflation configuration of the gas line, such a reinforcement element can therefore be seen e.g. as a napkin ring. The reinforcement elements are dimensioned such that they prevent a radial expansion of the gas line beyond a predetermined measure in the manner of a corset on the inflation of the gas line and thus act as expansion boundaries.

Alternatively or additionally, it is possible to provide one or more local reinforcements in the form of material sections made in one piece with the shaped piece of material and created by a corresponding cutting to size of the shaped piece of material. Such material sections can e.g. be provided in the form of lug-like extensions at the longitudinal edges of the areal starting piece. A local reinforcement can include a single material section on a longitudinal side of the piece of material, with it also being possible to form a local reinforcement of two mutually oppositely disposed material sections.

The invention also relates to an airbag arrangement for motor vehicles comprising at least one inflatable airbag, at least one gas generator for the inflation of the airbag arranged remotely from the airbag in the state installed at the vehicle and at least one gas line of the type set forth here via which the airbag can be inflated and which extends at least partly outside the airbag in the state installed at the vehicle.

Furthermore, the invention relates to a method for the manufacture of a gas line for an airbag arrangement for motor vehicles, in which a piece of material which is areal in the starting state is shaped to form a hose, in

particular by winding, rolling, folding and/or laying, with the piece of material having a longitudinal direction in the starting state and extending parallel to a longitudinal axis of the hose in the shaped state, and in which the hose is only being in a gas tight manner at the peripheral side by adhesive bonding or by a thermal connection, in particular by welding.

In an embodiment of the invention, a retaining bond can be provided inside the gas line which extends parallel to the longitudinal axis of the gas line and by which two narrow regions of the inner side of the gas line are adhesively bonded to one another and the gas line is held in a shallow configuration. Such a retaining bond can be designed such that it releases in the manner of a desired separation point on the inflation of the airbag without the piece of material forming the gas line being damaged and thus becoming leaky. The manufacture of the retaining bond can take place on the bonding of the marginal regions of the pieces of material extending in the longitudinal direction for the gas tight closing of the shaped gas line in that the gas line is directly acted on by pressure from the outside such that a quantity of adhesive applied directly in surplus and asymmetrically swells out of the intermediate space between the marginal regions to be adhesively bonded into the interior of the gas line and thus forms - between regions of the inner side of the gas line disposed opposite one another - an adhesive strip adhesively bonding these regions to one another.

In addition, the invention relates to the use of a gas line of the kind set forth here for the connection of at least one inflatable airbag of an airbag arrangement for motor vehicles having at least one gas generator arranged remotely from the airbag in the state installed at the vehicle and serving for the inflation of the airbag.

Further possible embodiments of the invention are set forth in the dependent claims, in the description and in the drawing.

The invention will be described in the following by way of example with reference to the drawing. There are shown:

Fig. 1	an embodiment of a gas line in accordance with the invention;
Figs. 2 and 2a	further views of the gas line of Fig. 1;
Fig. 3	a further embodiment of a gas line in accordance with the invention;
Figs. 4 and 5	further embodiments of a gas line in accordance with the invention;
Fig. 6	an areal piece of material for the manufacture of a gas line in accordance with the invention; and
Figs. 7 and 8	examples for local peripheral reinforcements of a gas line in accordance with the invention.

The gas line in accordance with the invention shown in Figs. 1, 2 and 2a, which is also called a hose in the following, is made from a piece of material 13 which is areal in the starting state, which is brought into a tubular configuration by shaping and which is adhered to marginal regions to establish the gas tightness. Alternatively to an adhesive bonding - and this applies to all embodiments - the gas tightness can also be established by welding of the marginal regions. In the examples shown

here, the piece of material 13 has been rolled up or wound up such that an overlap of approximately 90° is present between the two longitudinal edges 19, 21 of the pieces of material. The longitudinal edges 19, 21 extend parallel to the longitudinal axis 17 of the hose.

The gas line in accordance with the invention is a component of an airbag arrangement for motor vehicles which is here only shown schematically and includes an airbag 41 as well as a gas generator 11 which are connected to one another by the gas line. The gas released by the gas generator 11 flows through the gas line into the airbag 41, whereby the airbag 41 is inflated.

The piece of material 13 includes a fabric, for example made of PA 6.6. with 470 dtex, which has a grid-like fabric structure which is shown in Fig. 2a (detail D of Fig. 2). The grid structure consists of two grid lines which extend perpendicular to one another and which are formed by the longitudinal and transverse threads (warp yarns and weft yarns) forming the fabric. The fabric, and thus the piece of material 13, has two identifiable preferred directions due to this grid structure: The shaping of the piece of material 13 which is areal in the starting state to form the gas hose, for example by winding up or rolling up, takes place such that a preferred direction 15, that is either the warp yarns or the weft yarns, extends parallel to the longitudinal axis 17 of the gas hose in the shaped gas hose.

To ensure the gas tightness of the fabric, the fabric is coated with silicone. A one-sided coating is sufficient for the gas tightness.

To provide a gas tight closing of the hose formed from the areal piece of material 13, the hose is adhesively bonded at the marginal regions in

accordance with a possible embodiment. Silicone is likewise used as the adhesive. The silicone material is applied to the fabric for this purpose. The marginal regions are laid on top of one another to establish the adhesive connection. The cross-linking process thereby initiated can be accelerated by heating, with a sufficiently firm and gas tight connection, however, also resulting between the coating silicone and the adhesive silicone without an additional heating.

If a fabric coated on one side is used, the piece of material is preferably shaped such that the coated side of the fabric forms the inner side of the gas line. In an alternative procedure, it is possible to coat the fabric on both sides.

The material used for the gas line is preferably identical to the material which was used for the envelope of the airbag 41 and for which likewise a fabric coated with silicone and made from PA 6.6 with 470 dtex can be used. This material is sufficiently gas tight, has a low weight, has sufficient shape stability in the relevant directions of strain, is flexible, proven a multiple of times, comparatively cost-effective and can be adhesively bonded and welded as described above in a simple manner.

The areal piece of material 13 from which the gas line or the hose is made is in particular a strip-shaped piece of material which is at least substantially rectangular. The warp yarns and weft yarns of the fabric structure extend parallel and perpendicular to the longitudinal axis of this strip of material, i.e. to the longitudinal edges 19, 21 of the strip of material.

Whereas Fig. 1 shows a gas line with an overlap of approximately 90°, an embodiment is shown in Fig. 3 in which the material layers overlap by

more than 360°, namely by approximately 450°, i.e. the angular distance between the two longitudinal edges 19, 21 of the starting pieces of material 13 extending parallel to the longitudinal axis 17 of the gas line in turn amounts to approximately 90°. However, the gas line in this example includes "one turn more", i.e. a further material layer is located between the two marginal regions of the piece of material 13 adjacent to the longitudinal edges 19, 21 so that the gas line is made with three walls in this region.

Although an adhesive bonding over the whole area over the total overlap region covering 450° is generally possible, it has been found that the adhesive bond can also be interrupted - viewed in the peripheral direction. It is in particular sufficient for the material only to be adhesively bonded in the marginal regions adjacent to the longitudinal edges 19, 21. The adhesive bonding could take place only by way of example such that the middle layer is adhesively bonded to the respective marginal region over 45°, starting from the inner longitudinal edge 19, on its inner side and over 45°, starting from the outer edge 21, on its outer side.

Figs. 4 and 5 show further embodiments in which the gas line in accordance with the invention is shaped without overlap. The two longitudinal edges 19, 21 of the piece of material 13 thus face one another or are disposed opposite one another, with them either abutting while forming a joint 27 or being disposed directly next to one another (Fig. 4) or extending with a spacing from one another while forming a gap 23 in accordance with Fig. 5. In both cases, the gas tightness can be established by means of an additional piece of material 25, in particular of strip shape, which is placed over the joint 27 or the gap 23 like a patch and is adhesively bonded to the marginal regions of the piece of material 13 adjacent to the longitudinal edges 19, 21. In both cases, the additional

piece of material 25 can be applied either from the inside or from the outside. In this respect, the variants shown in Figs. 4 and 5 are only to be understood as examples.

Whereas Figs. 1 to 5 show the gas line in accordance with the invention in an inflation configuration, in Figs. 6 to 8, the piece of material 13 used for the shaping of a gas line in accordance with the invention is shown in the areal starting state. The piece of material 13 is a strip which is only shown over a part of its length which amounts to a multiple of the width of the strip. The two longitudinal edges 19, 21 of the strip extend parallel to the warp yarns or weft yarns (identifiable preferred directions of the fabric structure) of the coated fabric only shown in Fig. 6 which the piece of material 13 is made from. Consequently, the longitudinal direction 15 of the piece of material 13, which extends parallel to the longitudinal axis of the gas line with a shaped gas line, extends parallel to the longitudinal edges 19, 21 of the piece of material 13.

Figs. 7 and 8 show purely by way of example two possibilities for a local reinforcement - seen in the longitudinal direction- of the gas line in the peripheral direction. In the variant shown in Fig. 7, an additional strip of material 33 is provided which is adhesively bonded around the gas line from the outside in the manner of a cuff. This material strip can be adhesively bonded to the piece of material 13 before it is shaped to form the gas line. The strip of material 33 does not have to extend over the total periphery of the gas line. A relatively short strip of material 33 is sufficient which extends, in the shaped state, over the outwardly disposed longitudinal edges 19 or 21 of the piece of material 13. Alternatively - as mentioned in the introduction part - "loose" reinforcement elements can be pushed or placed onto the gas line.

Alternatively, in accordance with Fig. 8, the piece of material 13 can be cut to size such that, for example, lug-like extensions 35 are present at the longitudinal edges 19, 21 and thus represent material sections formed in one piece with the piece of material 13. These material sections 35 provide additional surfaces via which the shaped piece of material 13 can e.g. be adhesively bonded or welded.

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Reference numeral list

11	gas generator
13	piece of material
15	longitudinal direction
17	longitudinal axis
19	edge
21	edge
23	gap
25	additional piece of material
27	joint
29	marginal region
31	marginal region
33	local reinforcement: additional piece of material
35	local reinforcement: material section, lug
41	airbag

Claims

1. A gas line for an airbag arrangement for motor vehicles, which is made, and is in particular made flexible, ductile and/or soft, such that it can move from an installation configuration, in particular a shallow installation configuration, into an inflation configuration with an enlarged flow cross-section with respect to the installation configuration under the influence of gas released by means of a gas generator (11) and flowing through said gas line, wherein the gas line is manufactured by shaping, in particular winding, rolling, folding and/or laying, of a piece of material (13) which is areal in the starting state, is in particular of strip form and has a longitudinal direction (15) in the starting state, with the longitudinal direction (15) extending parallel to a longitudinal axis (17) of the gas line.

2. A gas line in accordance with claim 1, characterized in that the gas line is closed in a gas tight manner only by adhesive bonding or by a thermal connection, in particular by welding.

3. A gas line in accordance with claim 1 or claim 2, characterized in that the piece of material (13) includes a fabric as the staring material, in particular a fabric made from plastic threads or plastic fibers, or a foil.

4. A gas line in accordance with any one of the preceding claims, characterized in that a fabric provided as the starting material for the piece of material (13) has a fabric structure with at least one identifiable preferred direction which coincides with the longitudinal

direction (15) of the piece of material (13), with the preferred direction (15) in particular extending parallel to warp yarns or weft yarns forming the fabric.

5. A gas line in accordance with claim 3 or claim 4, characterized in that the piece of material (13 has an applied coating.

6. A gas line in accordance with any one of the claims 3 to 5, characterized in that a coating is in each case provided on the inner side and on the outer side of the piece of material (13).

7. A gas line in accordance with claim 5 or claim 6, characterized in that the same material or a similar material, in particular a silicone material, is used for the coating as for an adhesive which is provided for the gas tight closing of the gas line.

8. A gas line in accordance with any one of the preceding claims, characterized in that the gas line is shaped with overlap at least regionally.

9. A gas line in accordance with claim 8, characterized in that the overlap extends over a peripheral region of less than 360°.

10. A gas line in accordance with claim 8, characterized in that the overlap extends over a peripheral region of more than 360°.

11. A gas line in accordance with any one of the claims 8 to 10, characterized in that the bond is made over the full area in the overlap region with a gas line shaped with an overlap.

12. A gas line in accordance with any one of the claims 8 to 10, characterized in that, with a gas line shaped with an overlap, the bond is made interrupted in the peripheral direction and at least, in particular only, in marginal regions (29, 31) adjoining edges (19, 21) of the piece of material (13).

13. A gas line in accordance with any one of the preceding claims, characterized in that the gas line is shaped at least regionally without an overlap, with mutually facing edges (19, 21) of the piece of material (13) abutting one another or a gap (23) being present between the edges (19, 21).

14. A gas line in accordance with claim 13, characterized in that, with a gas line shaped without an overlap, an additional piece of material (25) is connected to the shaped piece of material (13), in particular by adhesive bonding or by a thermal connection, in particular by welding, which closes joints and/or gaps between mutually facing edges (19, 21) of the material piece (13) in a gas tight manner from the inside or from the outside.

15. A gas line in accordance with any one of the preceding claims, characterized in that at least one additional local reinforcement (33, 35) operative in the peripheral direction is provided.

16. A gas line in accordance with claim 15, characterized in that the reinforcement (33, 35) is made by at least on additional piece of material (33) which is connected to the shaped piece of material (13), in particular by adhesive bonding, by sewing or by a thermal connection, in particular by welding, and extends at least over a partial peripheral region of the gas line, or which is provided in the

form of a ring member, cuff member, clamp member or clip member only pushed or placed onto the shaped piece of material (13).

17. A gas line in accordance with claim 15, characterized in that the reinforcement is made by material sections (35) formed in one piece with the shaped piece of material (13) and created by corresponding cutting to size of the shaped piece of material (13).

18. Use of a gas line
which is made, and is in particular made flexible, ductile and/or soft, such that it can move from an installation configuration, in particular a shallow installation configuration, into an inflation configuration with an enlarged flow cross-section with respect to the installation configuration under the influence of gas flowing through said gas line and which is manufactured by shaping, in particular winding, rolling, folding and/or laying, of a piece of material (13) which is in particular of strip shape and has a longitudinal direction (15) in the starting state, with the longitudinal direction (15) extending parallel to a longitudinal axis (17) of the gas line in the shaped state,
for the connection of at least one inflatable airbag (41) of an airbag arrangement for motor vehicles having at least one gas generator (11) arranged remotely from the airbag (41) in the state installed at the vehicle and serving for the inflation of the airbag (41).

19. Use in accordance with claim 18, characterized in that a gas line having the features of one of the claims 2 to 17 is used.

20. An airbag arrangement for motor vehicles comprising at least one inflatable airbag (41), at least one gas generator (11) for the inflation

of the airbag (41) arranged remotely from the airbag (41) in the state installed at the vehicle, and at least one gas line in accordance with any one of the claims 1 to 17, via which the airbag (41) can be inflated and which extends at least partly outside the airbag (41) in the state installed at the vehicle.

21. A method for the manufacture of a gas line, in particular in accordance with any one of the claims 1 to 17, for an airbag arrangement for motor vehicles,
wherein a piece of material (13) which is areal in the starting state is shaped, in particular by winding, rolling, folding and/or laying, to form a hose, with the piece of material (13) having a longitudinal direction (15) in the starting state and the longitudinal direction (15) extending parallel to a longitudinal axis (17) of the hose in the shaped state; and
wherein the hose is closed in a gas tight manner at the peripheral side only by adhesive bonding or by a thermal connection, in particular welding.

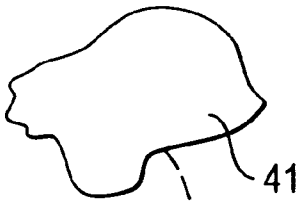


Fig. 1

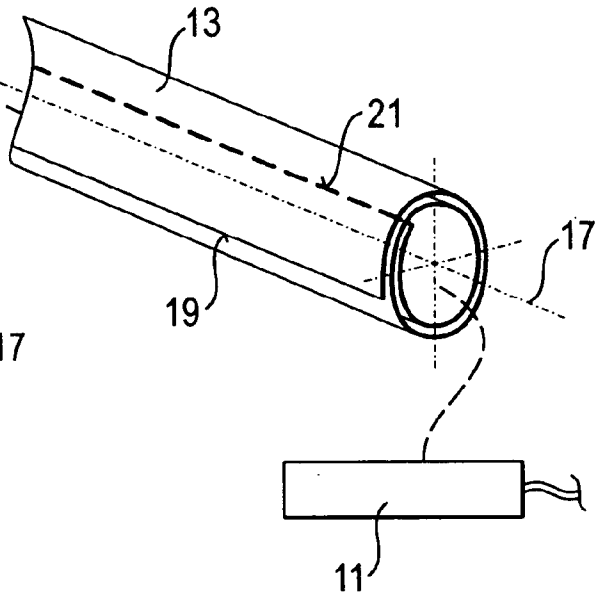
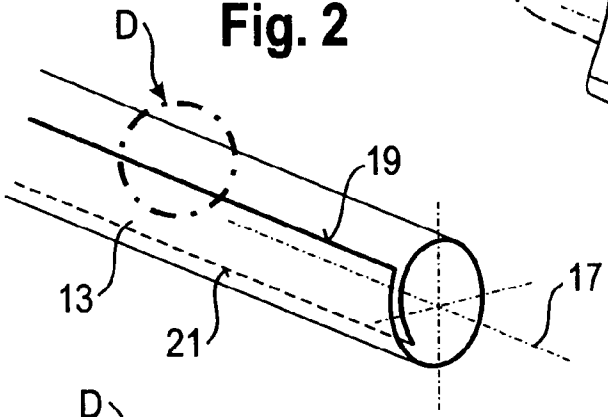


Fig. 2



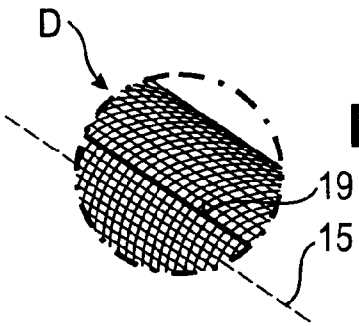


Fig. 2a

Fig. 3

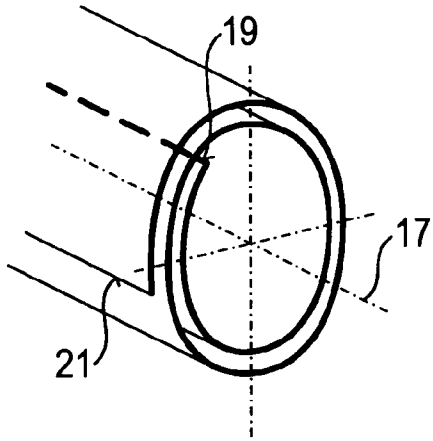


Fig. 4

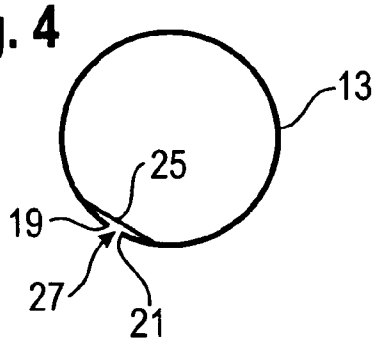


Fig. 5

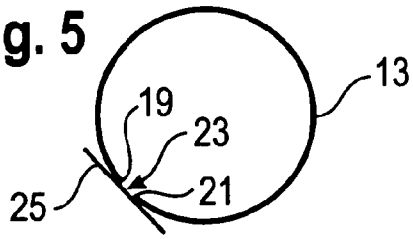


Fig. 6

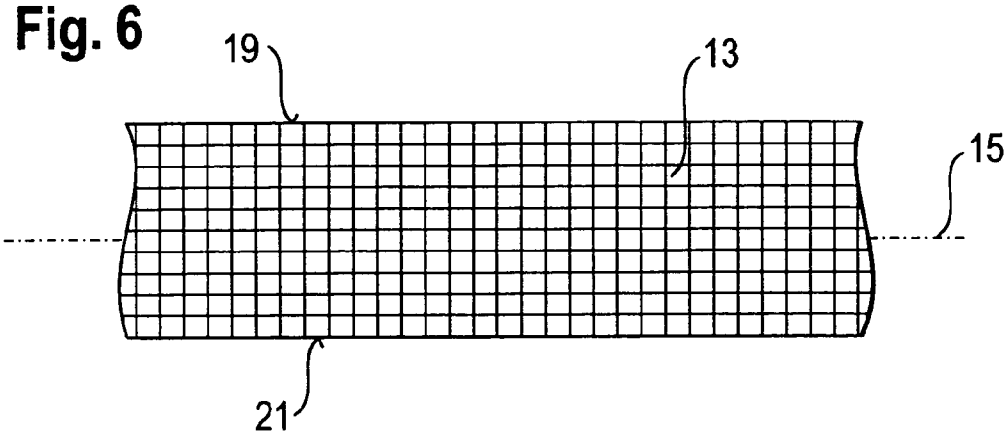


Fig. 7

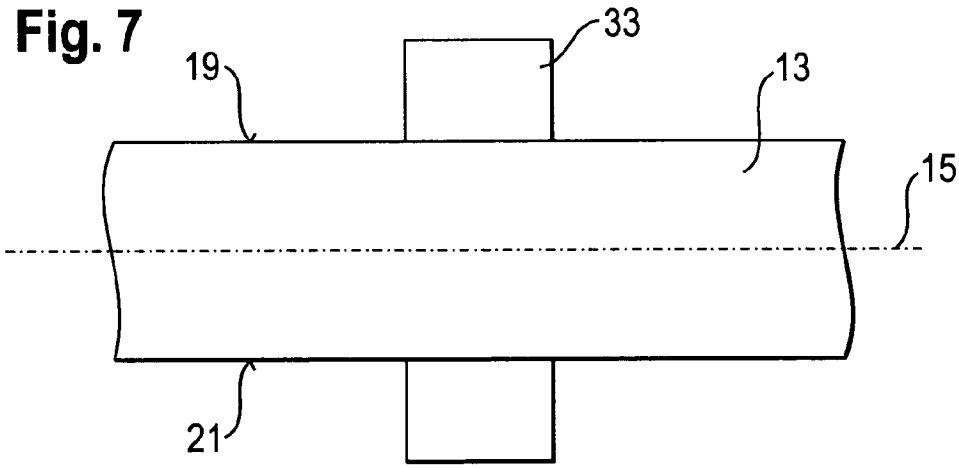
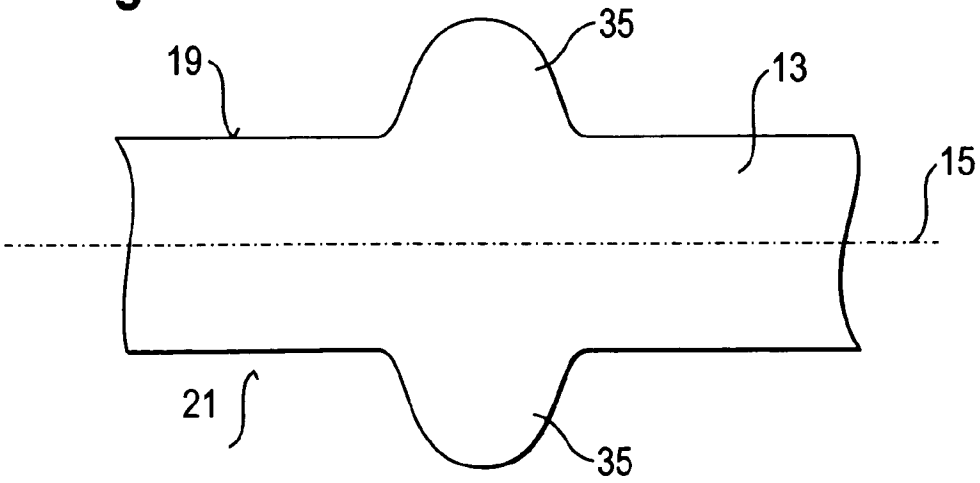


Fig. 8



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2008/005457

A. CLASSIFICATION OF SUBJECT MATTER
INV. B60R21/237 B60R21/231

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B60R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/092226 A (AUTOLIV DEV [SE]; BROUGH MATTHEW [GB]; MCGREGOR DOUGLAS [GB]; JACONELL) 8 September 2006 (2006-09-08) page 3, line 31 - page 4, line 12 page 6, line 20 - page 7, line 30 page 8, line 19 - line 25	1-3,8, 10,11, 14-16, 18,20,21
X	WO 02/00476 A (BREED AUTOMOTIVE TECH [US]) 3 January 2002 (2002-01-03) page 13, line 16 - line 28 page 6, line 3 - line 8 figure 13	1,3,8,9, 12,18,20
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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
20 October 2008	30/10/2008

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Standring, Michael

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2008/005457

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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