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F42B 3/10 (2006.01)(52) **U.S. Cl.** **102/530; 102/202.12**(57) **ABSTRACT**

An initiator includes an initiator main body, a connecting portion attached to the initiator main body, and a harness for distributing power connected to the initiator main body via the connecting portion. A hooking portion is attached to the initiator main body. The hooking portion hooks a middle portion of the harness in an extending direction.

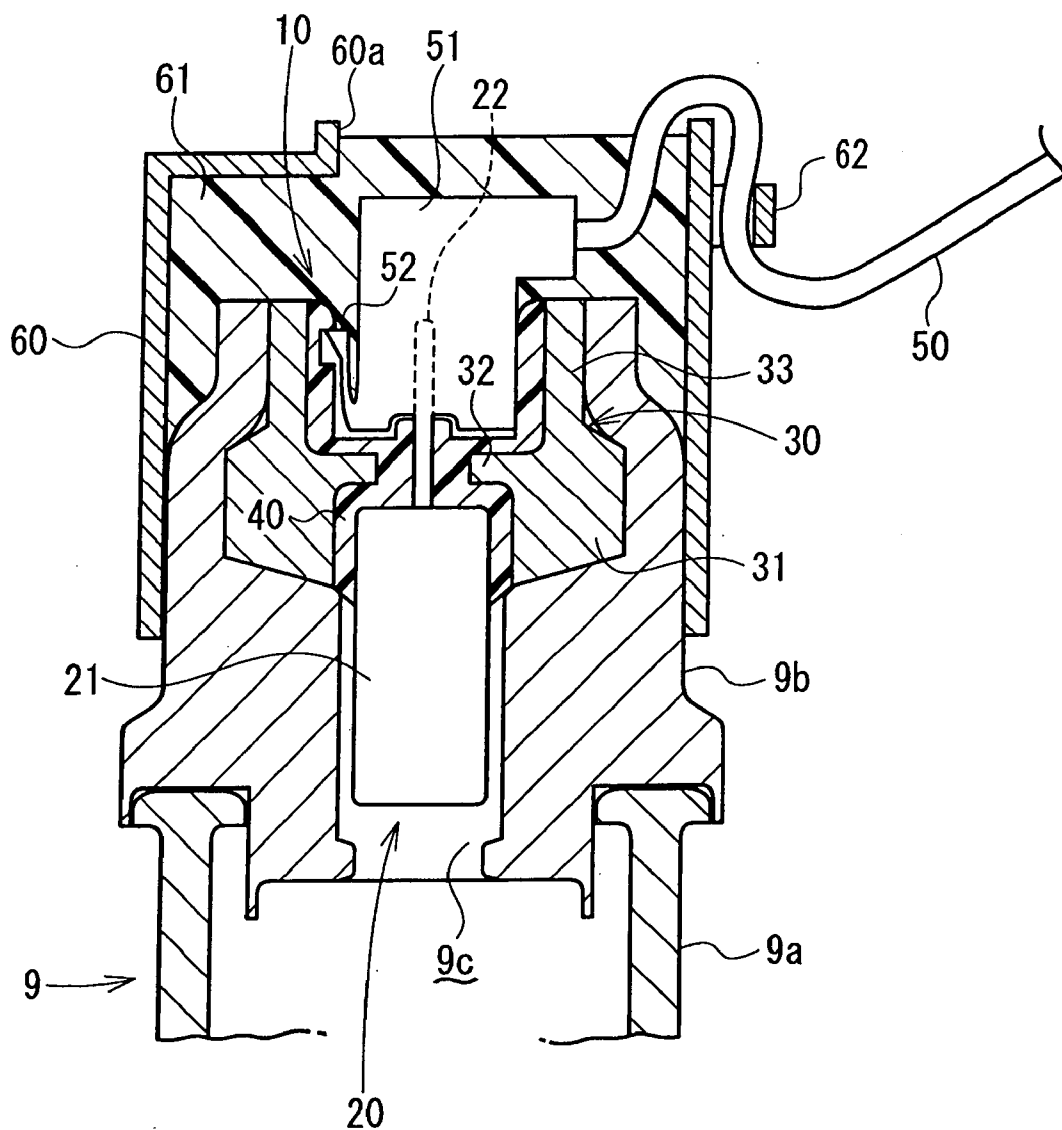
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Fig. 1

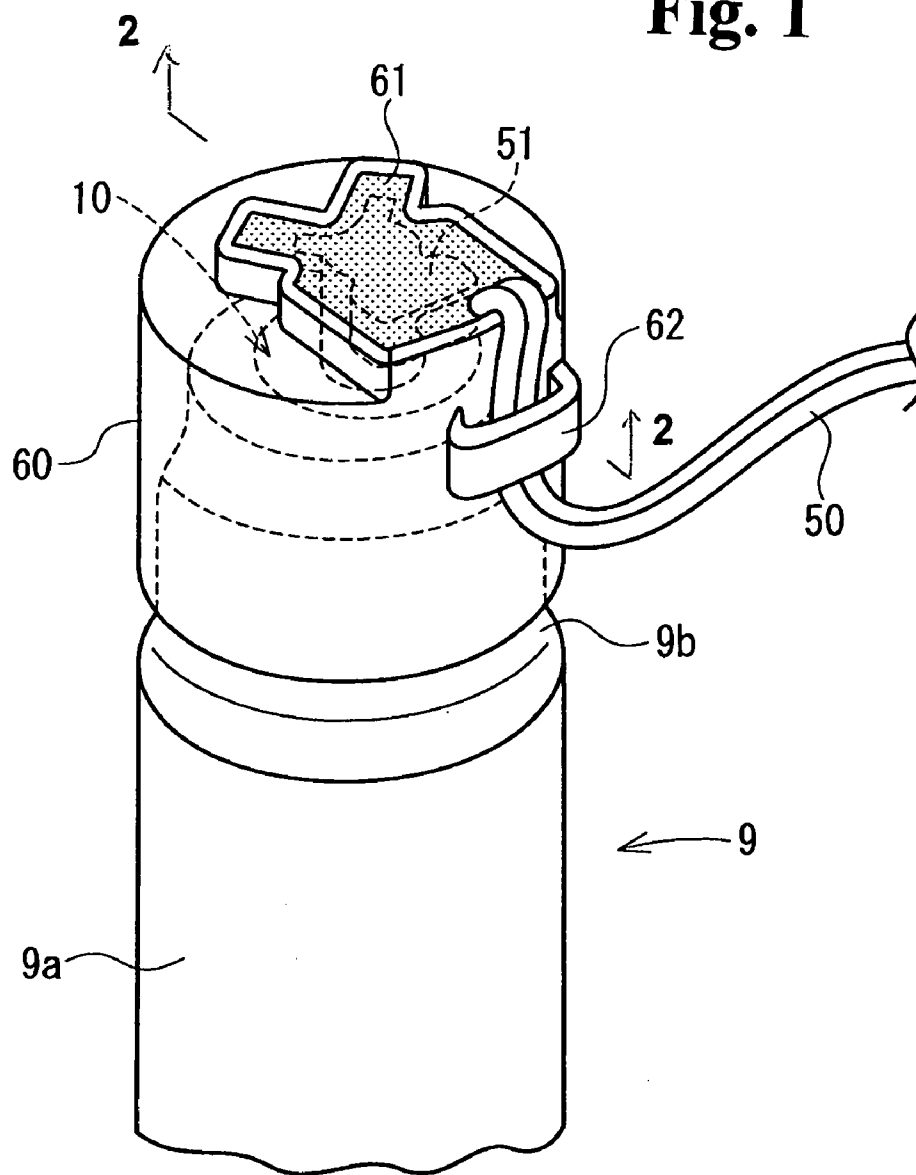


Fig. 2

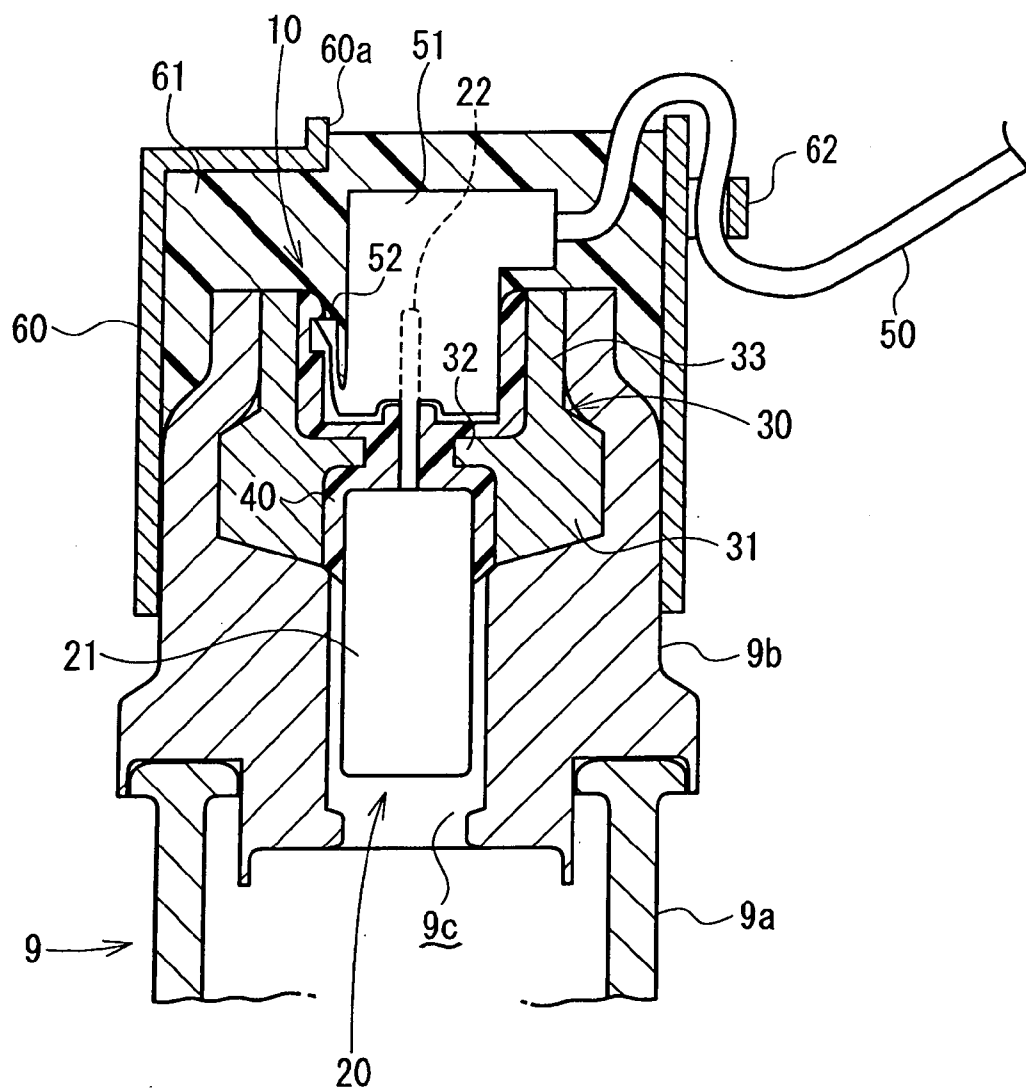


Fig. 3

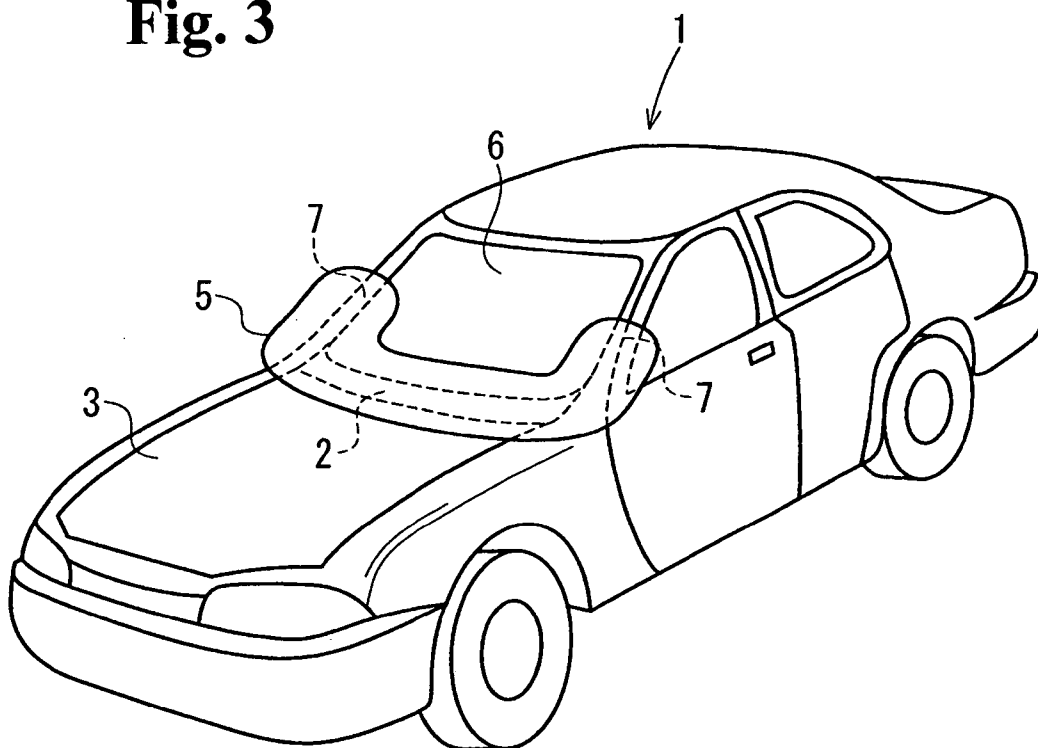


Fig. 4

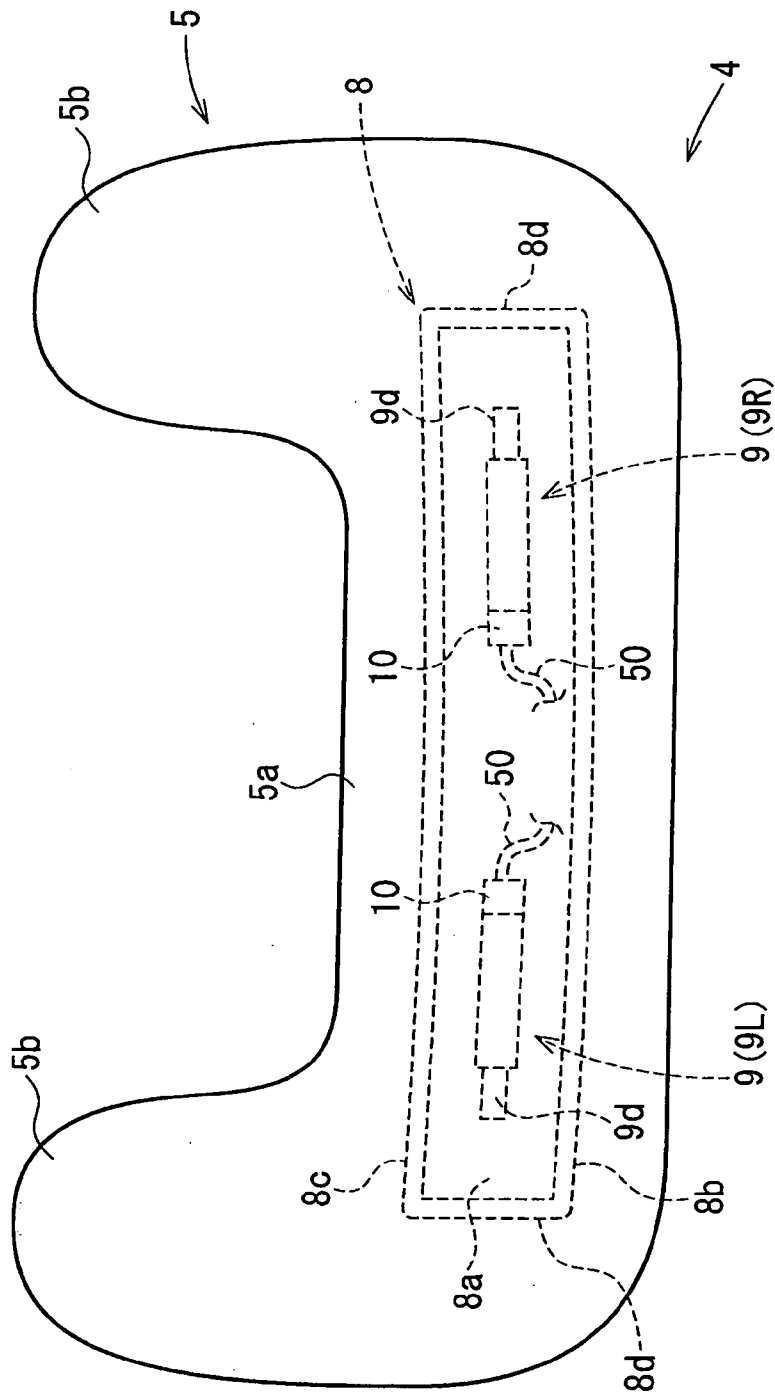
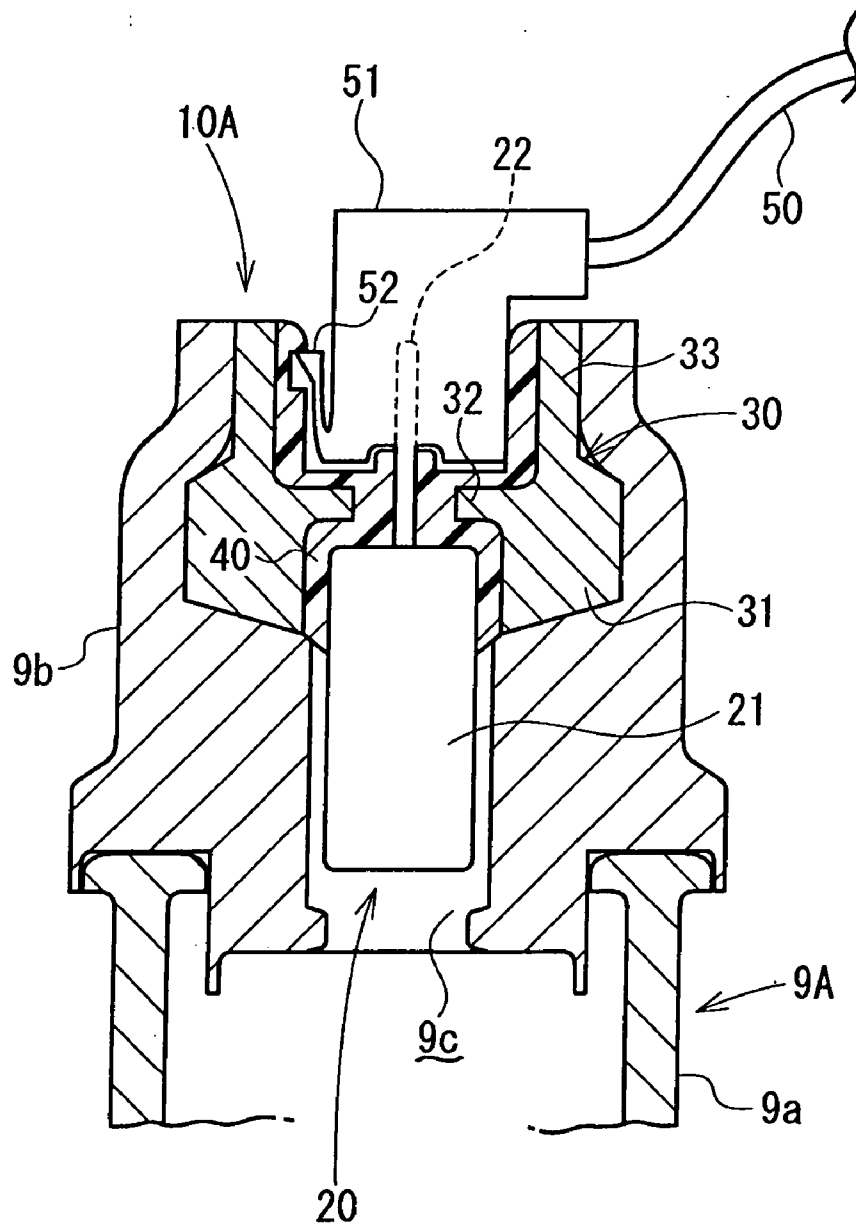


Fig. 5 Prior Art



INITIATOR, INFLATOR, AND AIRBAG APPARATUS

BACKGROUND OF THE INVENTION AND RELATED ART STATEMENT

[0001] The present invention relates to an initiator in which a harness for distributing power or electricity is connected to a main body of the initiator via a connecting portion such as an electrode, a connector, or the like, and to an inflator provided with the initiator. More specifically, it relates to an initiator and an inflator, in which outrageous force is hardly applied to the connecting portion of the initiator main body and the harness even when tensile force is applied to the harness. Further, the present invention relates to an airbag apparatus provided with the inflator.

[0002] An airbag apparatus mounted on a motor vehicle or the like is provided with an airbag inflated by gas supplied into the inside of the same, and an inflator for supplying the gas into the airbag. The inflator is provided with a gas-generating agent and an initiator for initiating gas-generating reaction of the gas-generating agent.

[0003] The initiator is provided with a reaction agent, an ignition device for a starting reaction of the reaction agent, and a harness for distributing power to the ignition device.

[0004] By distributing the power to the ignition device via the harness, the reaction agent is ignited, which results in generating high-temperature reaction gas, and the gas-generating agent in the inflator starts gas-generating reaction by the reaction gas. Therefore, a large amount of gas is generated from the inflator, and the airbag is inflated by the gas.

[0005] As a connecting structure for connecting the harness to a main body of the initiator, it is known that an electrode pin, which is conducted to the ignition device, is extended from the main body of the initiator, and the harness is connected to the electrode pin (refer to, for example, Japanese Unexamined Patent Application Publication No. 2002-90097). In this case, a connector is provided at a tip end of the harness, and the harness is connected to the electrode pin in a manner so as to insert the electrode pin into the connector.

[0006] An example of such an initiator will be explained more in detail with reference to FIG. 5. Incidentally, FIG. 5 is a longitudinal cross-sectional view, which illustrates an initiator according to a hitherto known example and a vicinity of an initiator-attaching portion of the inflator provided with the initiator under a condition where the initiator is attached to the inflator.

[0007] An initiator 10A is provided with a main body 20 of the initiator, about cylindrical collar 30, that holds the main body 20 of the initiator, a resin 40 that joins the main body 20 of the initiator with the collar 30, a harness 50 that distributes the power to the main body 20 of the initiator, and so forth.

[0008] The main body 20 of the initiator is provided with a head portion 21 housing the reaction agent and the ignition device (both of which are not shown) inside thereof, and an electrode pin 22 extending from the head portion 21. The electrode pin 22 is conducted to the ignition device in the head portion 21.

[0009] The collar 30 is provided with a main body 31 having a cylindrical shape, an inwardly protruding flange portion 32 that is circumferentially formed on an inner peripheral surface of the main body 31, and a cylindrical surrounding wall portion 33 extending from one end side

(rear end side) of the main body 31. A diameter of an outer circumference of the main body 31 is formed to be greater than that of the surrounding wall portion 33.

[0010] The initiator main body 20 is disposed in the main body 31, and the electrode pin 22 extends in the surrounding wall portion 33, while passing through an inner hole of the inwardly protruding flange portion 32. The resin 40 is filled in a space between the main body 20 of the initiator and the inner peripheral surface of the main body 31, and an inside of the inner hole of the inwardly protruding flange portion 32 by an injection molding process or the like. The resin 40 is then hardened, and the initiator main body 20 and the collar 30 are joined by the hardened resin 40.

[0011] A connector 51 is provided at a tip end of the harness 50, and the connector 51 is connected to the electrode pin 22 in a manner so as to insert a tip end side of the connector 51 into an inside of the surrounding wall portion 33. That is, in this hitherto known example, a connecting portion for connecting the main body 20 of the initiator and the harness 50 is constructed with the electrode pin 22 and the connector 51.

[0012] Numeral 52 denotes a claw. The claw prevents the connector 51 from being pulled out. The claw 52 is latched to a groove (numeral is omitted) formed in an inner peripheral surface of the surrounding wall portion 33, which prevents the connector 51 from being pulled out from the electrode 22. The initiator 10A is attached to an inflator 9A.

[0013] In the hitherto known example, the inflator 9A is formed into a rod shape, and is provided with a cylindrical housing 9a housing the gas-generating agent (not shown). At one end side (rear end side) of the housing 9a in a center axis direction, an initiator-attaching portion 9b is provided. The initiator-attaching portion 9b has approximately cylindrical shape having an inner hole 9c that is allowed to communicate with an internal space of the housing 9a. At the other end side (tip end side) of the housing 9a, a gas outlet (not shown) is provided.

[0014] The initiator 10A is inserted into the inner hole 9c of the initiator-attaching portion 9b, with the head portion 21 as the leading end. In addition, a rear end side of the initiator-attaching portion 9b is crimped and is brought to contact an outer peripheral surface of the collar 30. Therefore, the initiator 10A is fixed in the initiator-attaching portion 9b and the rear end side of the initiator-attaching portion 9b is tightly sealed.

[0015] When the power is distributed to the ignition device via the harness 50, the connector 51 and the electrode pin 22, an operation of the ignition device is started resulting in igniting the reaction agent. Thus, a high-temperature reaction gas is generated. The reaction gas flows into the housing 9a passing through the inner hole 9c of the initiator-attaching portion 9b after rupturing the head portion 21. Therefore, the reaction gas is caused to contact the gas-generating agent in the housing 9a, and the gas-generating reaction is started.

[0016] An object of the present invention is to provide an initiator and an inflator provided with the initiator, and an airbag apparatus provided with the inflator, in which the harness for distributing power is connected to the initiator main body via a connecting portion such as an electrode, a connector or the like, and unreasonable force is hardly applied to the connecting portion of the main body of the initiator and the harness even when tensile force is applied to the harness.

[0017] Further objects and advantages of the invention will be apparent from the following description of the invention.

SUMMARY OF THE INVENTION

[0018] According to the first aspect of the present invention, an initiator is formed such that a hooking portion in which a middle portion of the harness in an extending direction is hooked is provided on an initiator main body in the initiator in which the harness for distributing power is connected to the main body of the initiator via a connecting portion.

[0019] According to the second aspect of the present invention, in the initiator according to the first aspect of the present invention, a cylindrically shaped cap is provided in a manner so as to surround the connecting portion, and the hooking portion is provided on the cap.

[0020] According to the third aspect of the present invention, in the initiator according to the first and second aspects, a sealing portion for covering the connecting portion is provided.

[0021] According to the fourth aspect of the present invention, in the initiator according to the third aspect of the present invention, the connecting portion includes an electrode provided in the initiator main body and a connector into which the harness extends, and the connector is connected to the electrode, and the sealing portion is provided in a manner so as to cover at least a space between the connector and the initiator main body.

[0022] According to the fifth aspect of the present invention, an inflator includes the initiator according to any one of the first aspect through the fourth aspect of the present invention.

[0023] According to the sixth aspect of the present invention, in the inflator provided with the initiator, the harness for distributing power is connected to the initiator main body via the connecting portion, and the hooking portion on which a middle portion of the harness in an extending direction is hooked is provided on an outer surface of the inflator.

[0024] According to the seventh aspect of the present invention, an airbag apparatus is provided with an airbag and an inflator for inflating the airbag, wherein the inflator is the inflator according to the fifth aspect of the invention and the sixth aspect of the invention.

[0025] As described above, the present invention has the following advantages. In the initiator and the inflator according to the present invention (first and fifth aspect of the present invention), since the middle portion of the harness in an extending direction is hooked on the initiator main body by the hooking portion in the vicinity of the connecting portion of the harness and the initiator main body, the tensile force is hardly transmitted to the connecting portion even when the tensile force is applied to the harness and thereby undesirable force is hardly applied to the connecting portion.

[0026] As described in the second aspect of the present invention, by mounting the cap so as to surround the connecting portion of the initiator main body and the harness, and by providing the hooking portion on the cap and hooking the harness thereon, a protecting effect for the connecting portion is improved.

[0027] In a configuration according to the third aspect of the invention, since the connecting portion of the initiator main body and the harness for distributing power is sealed

by means of the sealing portion, a waterproofing property of the connecting portion is good.

[0028] As described in the fourth aspect of the invention, in case that the connecting portion includes the electrode provided in the initiator main body and the connector attached to the harness, and that the connecting portion has a structure where the connector is connected to the electrode, the waterproofing property becomes good by sealing at least a space between the initiator main body and the connector with the sealing portion.

[0029] In the inflator according to the sixth aspect of the present invention, since the middle portion of the harness in the extending direction is hooked on the outer surface of the inflator by the hooking portion in the vicinity of the connecting portion of the harness and the initiator main body, the tensile force is hardly transmitted to the connecting portion, so that the undesirable force is hardly applied to the connecting portion even when tensile force is applied to the harness.

[0030] In the airbag apparatus according to the seventh aspect of the present invention, the hooking portion for the harness is provided in the initiator or the inflator in which the initiator is attached, and the harness is hooked on the hooking portion. Accordingly, the undesirable force is hardly applied to the connecting portion of the harness and the initiator main body when the tensile force is applied to the harness, even though the hooking portion for the harness is not separately provided on, for example, a case or the like for housing the airbag apparatus. Further, the flexibility of the layout for the airbag apparatus for protecting a pedestrian is improved because there is no need to separately provide the hooking portion for the harness on the case for housing the airbag apparatus as described above.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] FIG. 1 is a perspective view illustrating an initiator and a vicinity of an initiator-attaching portion of an inflator provided with the initiator, according to an embodiment;

[0032] FIG. 2 is a cross-sectional view taken along line 2-2 of FIG. 1;

[0033] FIG. 3 is a perspective view illustrating an automobile, on which an airbag apparatus for protecting a pedestrian is mounted, according to the embodiment;

[0034] FIG. 4 is a plan view illustrating the airbag apparatus for protecting a pedestrian, in FIG. 3; and

[0035] FIG. 5 is a perspective view illustrating a hitherto known initiator and a vicinity of an initiator-attaching portion of an inflator provided with the initiator.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0036] Hereunder, embodiments of the present invention will be explained with reference to the drawings. FIG. 1 is a perspective view illustrating an initiator according to the embodiment and a vicinity of an initiator-attaching portion of an inflator provided with the initiator, and FIG. 2 is a cross-sectional view along line 2-2 of FIG. 1. Incidentally, FIGS. 1 and 2 illustrate a condition in which the initiator is attached to the inflator. Further, FIG. 3 is a perspective view illustrating an automobile where an airbag apparatus for protecting a pedestrian provided with the inflator is mounted. FIG. 4 is a plan view illustrating the airbag

apparatus for protecting a pedestrian. In addition, FIGS. 3 and 4 are illustrating a condition in which the airbag is inflated.

[0037] In an explanation described below, a tip-and-rear direction is conformed to an upper and lower direction of FIGS. 1 and 2; an inflator side of the initiator, i.e., a lower side of the drawing is defined as a tip end; and a side opposite to the inflator side of the initiator, i.e., an upper side of the drawing is defined as a rear end.

[0038] An initiator 10 according to this embodiment is provided with an initiator main body 20, an approximately cylindrical collar 30 that holds the initiator main body 20, a resin 40 that joins the initiator main body 20 with the collar 30, a harness 50 that distributes power to the initiator main body 20, a hooking portion 62 for hooking a middle portion of the harness 50, and so forth.

[0039] A construction of the initiator main body 20, the collar 30, the resin 40, the harness 50, and the connecting portion for connecting the initiator main body 20 and the harness 50, in the initiator 10 is identical to those of the initiator 10A in FIG. 5, described above.

[0040] Namely, in this embodiment, the initiator main body 20 includes the head portion 21 housing a reaction agent and an ignition device (both of which are not shown) inside thereof, and the electrode pin 22 that extends from the head portion 21 and conducts to the ignition device in the head portion 21, as well. The initiator main body 20 is disposed in a main body 31 of the collar 30, and the electrode pin 22 extends from an inside of a surrounding wall portion 33 of a rear end side of the main body 31 while passing through an inner hole of an inwardly protruding flange portion 32 that is circumferentially formed in the main body 31. The resin 40 is filled in a space between the initiator main body 20 and the inner peripheral surface of the main body 31, and inside the inner hole of the inwardly protruding flange portion 32 by an injection molding process or the like. The resin 40 is then hardened, so that the initiator main body 20 and the collar 30 are joined by the hardened resin 40.

[0041] Further, a connector 51 is provided at a tip end of the harness 50, and the connector 51 is connected to the electrode pin 22 in a manner so as to insert a tip end side of the connector 51 into an inside of the surrounding wall portion 33. That is, in this embodiment, a connecting member for connecting the initiator main body 20 and the harness 50 is constructed with the electrode pin 22 and the connector 51.

[0042] In this embodiment, the initiator 10 is also attached to the rod-shaped inflator 9. A construction of the inflator 9 is identical to the inflator 9A, shown in FIG. 5, described above. Furthermore, an attaching structure of the initiator 10 to the inflator 9 is also identical to the attaching structure of the initiator 10A to the inflator 9A, shown in FIG. 5.

[0043] Namely, the inflator 9 also includes a cylindrical housing 9a that houses a gas-generating agent (not shown), and the initiator-attaching portion 9b having approximately cylindrical shape and including an inner hole 9c communicating with an internal space of the housing 9a is provided at one end side (rear end side) of the housing 9a in a center axis direction. At the other end side (tip end side) of the housing 9a, a gas outlet 9d (shown in FIG. 4) is provided.

[0044] The initiator 10 is inserted into the inner hole 9c of the initiator-attaching portion 9b, with the head portion 21 as the leading end. In addition, a rear end side of the initiator-

attaching portion 9b is crimped and is brought to contact the outer peripheral surface of the collar 30. Therefore, the initiator 10 is fixed in the initiator-attaching portion 9b and the rear end side of the initiator-attaching portion 9b is tightly sealed.

[0045] In this embodiment, a cap 60 surrounding a joining body of the electrode pin 22 and the connector 51 is mounted at a rear end side of the initiator 10. A sealing portion 61, which covers the joining body of the electrode pin 22 and the connector 51, is formed by filling a potting material in the cap 60 from an opening 60a at an upper surface of the cap 60.

[0046] Incidentally, as shown in FIG. 2, in this embodiment, a tip end side of the cap 60 is fitted to the outer side of the initiator-attaching portion 9b, and the potting material is also filled in a space between an inner peripheral surface of the cap 60 and an outer peripheral surface of the initiator-attaching portion 9b, and the space between both is sealed with the sealing portion 61. Further, the potting material is also filled in a space between an inner peripheral surface of the surrounding wall portion 33 and the connector 51.

[0047] In this embodiment, the entire connector 51 is buried in the sealing portion 61, and the harness 50 extending to the connector 51 is pulled out of the cap 60 from an inside of the sealing portion 61 passing through the opening 60a.

[0048] However, in the present invention, when at least a space between the connector 51 and the initiator main body 20 (a space between the connector 51 and the inner surface of the surrounding wall portion 33 in this embodiment), and preferably, a joining portion of the connector 51 and the harness 50 (a base portion of the harness 50 to the connector 51) are further covered with the sealing portion 61, a waterproofing property is sufficiently secured, and therefore, there is no need for the entire connector 51 to be buried in the sealing portion 61.

[0049] Incidentally, with regard to the potting material, although urethane resin or the like is listed, the potting material is not limited thereto. Further, with regard to a material of the cap 60, a PBT (polybutylene terephthalate) or the like is listed because of good joining characteristic with the potting material. However, the material of the cap 60 is not limited thereto. In the present invention, the sealing portion 61 may be formed from a sealing device other than the potting material.

[0050] As shown in FIG. 1, in this embodiment, the hook-shaped hooking portion 62 is provided on an outer peripheral surface of the cap 60. The middle portion of the harness 50 that is pulled out of the cap 60 is hooked on the hooking portion 62. Although the hooking portion 62 is integrally provided with the cap 60 in this embodiment, the same may be provided as a separate body from the cap 60. Further, the hooking portion 62 is not limited to that having the hook-like shape and various constructions can be adopted therefor.

[0051] Other construction of the initiator 10 and the inflator 9 provided with the initiator 10 is identical to that of the initiator 10A and the inflator 9A, shown in FIG. 5, described earlier, and an explanation thereof is omitted by attaching the same numerals in FIG. 5 to the same elements in FIGS. 1 and 2.

[0052] When the power is distributed to the ignition device via the harness 50, the connector 51 and the electrode pin 22, an operation of the ignition device is started resulting

in igniting the reaction agent, and thus, a high-temperature reaction gas is generated. The reaction gas flows into the housing 9a passing through the inner hole 9c of the initiator-attaching portion 9b after rupturing the head portion 21. The reaction gas is caused to contact the gas-generating agent in the housing 9a, and the gas-generating reaction is started. Further, the gas generated by the gas generating reaction is blown out from the gas outlet 9d at the tip end side of the inflator 9. Hereinbelow, an operation from a starting motion of the power distribution to the initiator 10 (ignition device) to a blowing-out motion of the gas from the gas outlet 9d is called as gas blowing-out operation of the inflator 9.

[0053] In the initiator 10 and the inflator 9, since the middle portion of the harness 50 is hooked by the hooking portion 62 to the cap 60 surrounding the joining body of the electrode 22 and the connector 51, tensile force is hardly transmitted to the connector 51 and thereby undesirable force is hardly applied to the joining body of the electrode pin 22 and the connector 51 even when the tensile force is applied to the harness 50.

[0054] In this embodiment, since the joining body of the electrode pin 22 and the connector 51 is covered with the sealing portion 61, the good waterproofing property can be obtained in between the electrode pin 22 and the connector 51.

[0055] In this embodiment, the cylindrical cap 60 is provided in a manner so as to surround the joining body of the electrode pin 22 and the connector 51, and the sealing portion 61 for covering the joining body of the connector 51 and the electrode pin 22 is formed by filling the potting material inside the cap 60. Accordingly, a highly effective waterproof treatment can easily be performed.

[0056] In this embodiment, the hooking portion 62 is provided on the outer peripheral surface of the cap 60, and the harness 50 is hooked on the outer peripheral surface of the cap 60 by means of the hooking portion 62 in close proximity to a portion where the harness 50 extends from the sealing portion 61. Accordingly, even when the tensile force is applied to the harness 50, the tensile force is hardly transmitted to a portion in the harness 50 that extends inside the cap 60, and the harness 50 can be prevented from being peeled off from the sealing portion 61 that covers this portion, or the sealing portion 61 can also be prevented from being ruptured by the tensile force.

[0057] In this embodiment, the inflator 9 is mounted on an airbag apparatus 4 for protecting a pedestrian.

[0058] As shown in FIG. 3, in this embodiment, an automobile 1, on which the airbag apparatus 4 for protecting a pedestrian is mounted, is a four-door sedan. However, the present invention is not limited to a specific motor vehicle configuration. The airbag apparatus 4 is installed at a rear part of a hood 3. As shown in the drawing, when the airbag 5 of the airbag apparatus 4 for protecting a pedestrian is inflated, at least a part of a rear edge portion of the hood 3, a cowl louver 2, a windshield 6 and left and right A-pillars 7 are covered with the airbag 5.

[0059] Incidentally, the airbag 5 is formed into approximately U-shape and is provided with a cowl-covering portion 5a which covers the cowl louver 2 and a lower part of the windshield 6, and pillar covering portions 5b which extends to both left and right end sides of the cowl-covering portion 5a and covers at least a lower end side of the left and right A-pillars 7 while developing along each of the A-pillars 7. However, a developing shape of the airbag is not limited

to the above-described. For example, the airbag 5 may have approximately rectangular shape covering approximately entire body over the cowl louver 2, the windshield 6 and the A-pillars 7. Alternatively, the airbag 5 may have approximately H-shape or the like including a pair of fender-covering portions extending frontward in a manner so as to cover over the left and right end sides of the cowl-covering portion 5a and left and right fender portions.

[0060] The airbag apparatus 4 for protecting a pedestrian is provided with a case 8 for housing a folded airbag 5, the inflator 9 (9L and 9R) for inflating the airbag 5, a lid (not shown) that closes an airbag passing-through opening (not shown) in the hood 3 for allowing the airbag 5 to pass therethrough, or the like.

[0061] The case 8 has a long box shape extending in a vehicle body width direction. The case 8 is provided with a bottom portion 8a, a front wall portion 8b, a rear wall portion 8c and left and right end walls 8d and 8d, and a top surface thereof is open. The case 8 is disposed at a backside of the hood 3 so that a top surface opening portion thereof faces the airbag passing-through opening, and is attached to the hood 3 via a bracket (not shown).

[0062] In this case 8, the folded body of the airbag 5 is disposed from one end side to the other end side of the case 8 in a longitudinal direction.

[0063] In this embodiment, as shown in FIG. 4, inflators 9 (9L and 9R) are installed at both end sides of the case 8 in a longitudinal direction, respectively. The inflator 9L positioned at a left end side of the case 8 is arranged at a left half side of the cowl-covering portion 5a of the airbag 5, and the inflator 9R positioned at a right end side of the case 8 is arranged at a right half side of the cowl-covering portion 5a. As shown in the drawing, a longitudinal direction of each of the inflators 9L and 9R is conformed to the longitudinal direction of the case 8, and each of the inflators 9L and 9R is disposed in a manner such that each of tip end (gas outlet 9d) sides thereof faces both end sides of the case 8 in the longitudinal direction.

[0064] However, the arrangement of the inflator 9 is not limited to the above-described. The harness 50 extending out from the initiator 10 of each of the inflators 9 is pulled out from the airbag 5, respectively, and is connected to a control circuit (not shown) of the airbag apparatus 4 for protecting a pedestrian.

[0065] Although not shown, in the automobile 1 on which the airbag apparatus 4 for protecting a pedestrian is mounted, various sensors are provided for detecting that the automobile 1 has collided against a pedestrian or the like, or for predicting that the automobile 1 will collide against the pedestrian or the like. Incidentally, both the detecting sensor and the predicting sensor may also be provided. The control circuit distributes power to the initiator 10 (the above-described ignition device) of each of the inflators 9 via the harness 50, on the basis of a detecting signal or a predicting signal from these sensors.

[0066] Operation of the airbag apparatus 4 for protecting a pedestrian having such a construction is described as follows.

[0067] In a case that a collision of the automobile 1 against the pedestrian or the like is detected by the sensor, or in a case that the collision of the automobile 1 against the pedestrian or the like is predicted by the sensor, the power is distributed to the initiator 10 (ignition device) of each of the inflators 9 from the control circuit via the harness 50, on

the basis of the detecting signal or the predicting signal. Therefore, each of the inflators 9 starts a gas-blowing-out operation as described above, and the airbag 5 starts to inflate by the gas from each of the inflators 9. The airbag 5 pushes the above-described lid to open and is developed along an outer surface of the vehicle body, as shown in FIG. 3.

[0068] In the airbag apparatus 4 for protecting a pedestrian, since the middle portion in an extending direction of the harness 50 connected to the initiator 10 is hooked on the cap 60 attached to the inflator 9 by the hooking portion 62, the undesirable force is hardly applied to the joining body of the electrode pin 22 and the connector 51 when the tensile force is applied to the harness 50, even though a hooking portion for hooking the harness 50 is not provided on, for example, the case 8 or the like. Further, since there is no need to provide the hooking portion for the harness 50 on the case 8 or the like, high flexibility of a layout can be obtained for the airbag apparatus 4 for protecting a pedestrian.

[0069] Although the airbag apparatus 4 for protecting a pedestrian is installed outside a vehicle interior, the joining body of the electrode pin 22 and the harness 51 is covered with the sealing portion 61 in the initiator 10 of the inflator 9 mounted on the airbag apparatus 4 for protecting a pedestrian in this embodiment, and thus, an intrusion of rain water or the like into a space therebetween is prevented and therefore weather proof ability of the initiator 10 is high.

[0070] The aforementioned embodiment describes an example of the present invention, and the present invention is not limited to the aforementioned embodiment.

[0071] In the aforementioned embodiment, although the hooking portion 62 for the harness 50 is provided on the outer peripheral surface of the cap 60 surrounding the electrode pin 22 and the connector 51, the hooking portion 62 for the harness 50 may be provided on a top portion, an inner peripheral portion, or the like of the cap 60. Further, the hooking portion 62 for the harness 50 may be provided at a place of the initiator 10 or the inflator 9 other than the above-described (for example, at the collar 30 of the initiator 10, the initiator-attaching portion 9b of the inflator 9, or the like). The hooking portion 62 for the harness 50 may be provided at a plurality of places.

[0072] In the aforementioned embodiment, although the sealing portion 61 is formed in a manner so as to fill in the cap 60 with the potting material, a method for forming the sealing portion 61 is not limited thereto. For example, the sealing portion 61 may be formed only at an important part, by directly applying a sealing material to at least the space between the connector 51 and the surrounding wall portion 33, preferably, to the joining portion of the harness 50 and the connector 51 further, or like manner. However, in the present invention, the sealing portion 61 may be omitted.

[0073] A detailed construction of the initiator 10 (the initiator main body 20, a shape of the collar 30, a holding structure thereof, or the like) may be changed to a structure other than that illustrated in the drawings.

[0074] An attaching structure of the initiator 10 to the inflator 9 may be changed to a structure other than that illustrated in the drawings.

[0075] A construction of the inflator 9 is not also limited to that illustrated above. For example, the inflator 9 may not have a rod shape but a disk shape, or the like.

[0076] In the aforementioned embodiment, although the cap 60 also covers the initiator-attaching portion 9b of the inflator 9, the cap 60 may have a construction that covers only the joining body of the electrode pin 22 and the connector 51. In the present invention, the cap 60 may be omitted.

[0077] In the aforementioned embodiment, although the airbag apparatus is made for protecting a pedestrian, the present invention is not limited thereto and can be applied to various airbag apparatuses, such as an airbag apparatus for protecting an occupant that is installed in the vehicle interior, or the like.

[0078] The disclosure of Japanese Patent Application No. 2006-136633, filed on May 16, 2006, is incorporated in the application.

[0079] While the invention has been explained with reference to the specific embodiments of the invention, the explanation is illustrative and the invention is limited only by the appended claims.

What is claimed is:

1. An initiator comprising:
 - an initiator main body,
 - a connecting portion attached to the initiator main body,
 - a harness for distributing power connected to the initiator main body via the connecting portion, and
 - a hooking portion attached to the initiator main body, said hooking portion hooking a middle portion of the harness in an extending direction.
2. The initiator according to claim 1, further comprising a cylindrically shaped cap for surrounding the connecting portion, the hooking portion being provided on the cap.
3. The initiator according to claim 1, further comprising a sealing portion for covering the connecting portion.
4. The initiator according to claim 3, wherein the connecting portion includes an electrode provided in the initiator main body and a connector from which the harness extends; the connector is connected to the electrode; and the sealing portion is arranged to cover at least a space between the connector and the initiator main body.
5. The initiator according to claim 2, further comprising a sealing portion for covering the connecting portion, said cap having an opening at a top thereof through which the harness extends outwardly.
6. An inflator comprising the initiator according to claim 1.
7. An inflator comprising:
 - an initiator including an initiator main body, a connecting portion attached to the initiator main body, and a harness for distributing power connected to the initiator main body via the connecting portion, and
 - a hooking portion formed on an outer surface of the inflator, said hooking portion hooking a middle portion of the harness in an extending direction.
8. An airbag apparatus comprising: an airbag and the inflator for inflating the airbag according to claim 6.

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