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(54) **DISPENSING GUN**

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WO-A-98/43894 **DE-U- 9 001 274**

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EP 1 503 864 B1

Description

[0001] The invention relates to a dispensing gun, which is intended for preparing and distribution of liquidous or foam-like substances, which are available within appropriate container, which is filed at the one hand with components required for obtaining the said liquidous of foamed substances, and on the other hand with appropriate means for ensuring a required pressure within the said container, i.e. with a pressurized gas. The invention primarily relates to a gun for distribution of polyurethane foam, and the components used for obtaining such foam are stored within a can, in which also the pressurized gas is contained. In common, the invention can be applied also by any other dispensing gun intended for establishing appropriate coatings by means of paints or similar liquidous or foamed substances, which are available within similar containers. In accordance with the International Patent Classification, such inventions belong to appliances, which are furnished with a pressure container and are intended for distribution of liquidous of foamed substances, or also to containers intended for distribution of liquidous or at least partially fluidic substances by means of pressure, which is available within a container.

[0002] By this, the invention is dealing with a problem of improving a dispensing gun or a similar requisite intended for preparing and distribution of a liquidous or foam-like substances, which are available within appropriate container, which is at the same time also filled with appropriate pressurized gas and furnished with appropriate valve, which is mounted within the said container and surrounded by at least essentially thoroidal rim. The main purpose of invention is to improve such gun in order to enable attaching the said container directly to the gun exclusivelly by means of the said thoroidal rim, i.e. without any additional adapter or any similar requisite, which would have to be surmounted to each container over the said thoroidal rim like by the previously known solutions.

[0003] Various dispensing guns, especially for polyurethane foam, are known to those skilled in the art. Such guns are commonly adapted for attaching appropriate dose or can, which is filled with components required by obtaining a polyurethane foam, as well as with appropriate pressurized gas. During releasing the said components from the said can, the polyurethane foam is formed within the gun, which is then distributed towards a desired location, i.e. into various gaps between walls and windows or door during appropriate working steps in field of buiding construction or also in any other field. By means of such gun, releasing of components may be held under control, and herewith also a quantity of foam produced in such a way, and simultaneously, distribution of foam to any desired location may be controlled. One of such guns is described in EP 0 255 060 A3, and consists of a housing, in which a passage is available, which enables flowing the foam or the components intended for obtaining a foam, and is furnished with a valve for opening or closing the said passage, where the said valve may be actuated by means of a lever, which is pivotable attached to the housing and supported by appropriate spring. A nozzle is foreseen at the end of the said passage, which serves for regulation of flowing the foam outwards from the said passage. At the beginning of the said passage there is a seat, which is adapted for receipt of a tubular protrusion of the valve of the container, which is intended for connection to the gun and filled with pressurized gas and components required for preparing a desired polyurethane foam. The container can be attached to the gun by means of a circular ring, by which the gun is furnished above the said seat intended for receipt the tubular protrusion of the container valve. The said ring is furnished with an internal thread. Quite similar like the majority of widely used cans and doses, also the relevant container, which is adapted for co-operation with such gun, is equipped with at least essentially thoroidal rim, which is arranged arround the said container valve, and over which appropriate adapter is pressed, which comprises an external thread, which matches the said thread on the said circular ring on the dispensing gun. Upon placing the tubular protrusion of the valve into apprpriate seat adjacent to the passage of the gun, by screwing the adapter of the container into the ring of a gun, the said container is succesively moved towards the gun, by which the pressure occurs against the tubular protrusion of the valve, which is rested into the said seat, so that the outlet opening of the container is opened, upon which the substances flow from the container into the said passage of the gun and towards the outlet opening of the gun, depending on each desired position of the actuating valve of the gun.

[0004] Although such guns enable obtaining and also efficient distribution of polyurethane foam, there are still certain deficiencies related thereto. The main deficiency is this, that each container, i.e. each ordinary dose containing pressurized substances, has to be furnished after manufacturing thereof also with a special adapter, which has to be manufactured separately and after that pressed onto the dose. In parallel to additional expenses, such measure may be connected also with other risks. Containers are ordinary made of metal and manufactured by using technology of forming metal plates, by which some discrepancies may occur in the area of the thoroidal rim. On the other hand, adapters are manufactured by molding of plastics. The products or semi-products like doses or adapters are manufactured in mass, serial manufacturing processes under permanent pressure with respect to costs of manufacturing, use of recycled materials and other measures in course of rationality. Bearing in mind such circumstances, several problems may occur by pressing adapters onto containers or even after that. For example, during transport or storage in the winter time, adapters pressed onto containers may break due to different contraction of metal and plastics. On the other hand it may also happen, that the relationship between the dimensions of the adapter and the thoroidal rib of the container dose enables, that by screwing the adapter of

the container into the ring of the gun by releasing the pressurized substances the container is removed from the adapter, which remains connected to the gun, and similar.

[0005] A further possibility is suggested in DE 90 01 274 U, where the container is attached to the dispensing gun by means of two coupling elements. The first coupling element is characterized by an approximately cylindrical external surface and with at least two radially outwards extending protrusions. The second coupling element includes a cavity, in which appropriate recesses are foreseen, which are adapted for co-operation with said protrusions of the first coupling element. The first element is moreover adapted for pressing onto appropriate thorioidal rim of a container, and the second element is equipped with a screw or similar attaching means, and may be attached to the dispensing gun. After that, the coupling elements may be connected each to other by means of the so-called bayonet-joint, which simultaneously leads to establishing approipriate interconnection between the dispensing gun and the container. However, the coupling elements need to be manufactured separately and in addition to the container and the gun, and moreover, there are still further deficiencies, which have been actually described in more detail in relationship with EP 0 255 060 A3.

[0006] WO 98 43894 A discloses a coupling between a container and a corresponding gun, which consists of two coupling elements, which are placed on the container. One of them is pressed on the thoroidal rim of the container, and the other is connected to this first element and moreover includes an extremity for coupling this second element to the gun. Also these two coupling elements are connected each to other by means of a kind of the bayonet-joint, so that by turning the second element relatively to the first element the extremity is displaced towards the container, by which the valve of the container is then opened. Although such solution seems to be more much sophisticated, each container needs to be furnished with such additional parts, and despite to that, the previously mentioned deficiencies remain completely the same.

[0007] The present invention referrs to a dispensing gun, which is intended for preparing and distribution of liquidous or foamed substances, especially a polyurethane foam, and comprises a housing with a grip and a coupling adapter, by means of which such container, which is moreover filled with said liquidous or foamed substances including a pressurized gas, may be attached to the gun, and where in the interior of the said housing a passage is available, through which the said liquidous or foamed substances together with the pressurized gas may be released from the container towards the nozzle, which may be either opened or closed by means of a needle, which is actuated by means of an appropriate actuating unit, which is also foreseen within said housing. Furthermore, said container, preferrably a can, is attached to the gun and equipped with a valve, which is surrounded by an at least approximately thoroidal rim on said container, whereby the container further comprises an at least essentially tubular protrusion arranged outside of said container, through which upon pressing it in its axial direction and thanks to said pressurized gas, the substances contained therein are released. According to the invention, the housing comprises a coupling adapter, which is arranged adjacent to the passage for enabling flow towards the nozzle. The said coupling adapter comprises a guide as well as a resilient sleeve. The said guide is equipped with an opening, which is arranged in the gun-side surface thereof and coincides with said passage within the housing, and moreover with a conical portion, which is arranged on the internal surface of the outer end portion and converges towards the housing of the gun. The resilient sleeve in form of an elastic bush comprises on its external surface an at least essentially conical portion and on its internal surface a circumferentially extending groove, which is at least essentially semi-circular in profile and adapted for embracing at least essentially tubular rim of the container. The conical portion of the resilient sleeve converges towards the housing of the gun and is arranged in abutment with the internal conical portion of the guide, which also converges towards the housing of the gun. The resilient sleeve and also the guide comprise appropriate means for tensioning the sleeve towards the gun-side surface of the guide by simultaneously pressing the tubular protrusion of the valve of the container against the said gun-side surface of the guide and changing the diameter of the resilient sleeve at least in the area of its groove arranged on the inner surface thereof through abutment of said conical portions. In addition, the resilient sleeve consists of an elastic material and is equipped with longitudinal recesses, which are arranged at least on the end portion thereof, i.e. on a desired distance from the housing, where the said recesses are preferrably arranged axially symmetric, and most preferable in an equidistant distribution along the circumference of the said sleeve. Accordingly, the inner diameter of resilient sleeve in the area of its groove is changeable by means of displacement of the resilient sleeve in its axial direction, namely towards the housing or in the opposite direction, which is preferrably achieved by turning the sleeve relative to the guide.

[0008] By one of possible embodiments of the tensioning means, the guide is equipped with at least two inwardly protruding pins, and the resilient sleeve is at least on its inner surface furnished by at least two at least approximately helical, in its circumferential direction extending grooves, into which the said pins of the guide are protruding, so that by each turning the sleeve relative to the guide the sleeve is consequently displaced in its axial direction of the sleeve or the guide, and consequently, by resting of an at least essentially conical portion of the external surface of the sleeve against an at least essentially conical portion of the internal surface of the guide, the diameter of the sleeve is changed at least in the area of its groove, which is adapted for embracing at least

essentially thoroidal rim of each belonging container.

[0009] In a further embodiment, the guide is furnished with a pivotable lever, which is arranged outwardly and comprises a groove, into which a pin is inserted, which belongs to the resilient sleeve, so that each displacement or turning of said lever results in displacement of the sleeve in the axial direction of the sleeve or the guide, and consequently, by resting of an at least essentially conical portion of the external surface of the sleeve against an at least essentially conical portion of the internal surface of the guide, the diameter of the sleeve is changed at least in the area of its groove, which is adapted for embracing at least essentially thoroidal rim of each belonging container.

[0010] In a still further embodiment, the guide is furnished with a pivotable lever, which is arranged outwardly and equipped with a groove, into which a pin is inserted, which belongs to the resilient sleeve, so that any displacement of said lever on the guide involves appropriate displacement of the resilient sleeve in the axial direction of this sleeve or the guide, and consequently, by resting of an at least essentially conical portion of the external surface of the sleeve against an at least essentially conical portion of the internal surface of the guide, the diameter of the sleeve is changed at least in the area of its groove, which is adapted for embracing at least essentially thoroidal rim of each belonging container.

[0011] In a further of possible embodiments, the guide is furnished with an internal thread, and the resilient sleeve is equipped with an external thread, which matches the said thread of the guide and is arranged on a required distance from the groove or the conical portion, and consequently, by resting of an at least essentially conical portion of the external surface of the sleeve against an at least essentially conical portion of the internal surface of the guide, the diameter of the sleeve is changed at least in the area of its groove, which is adapted for embracing at least essentially thoroidal rim of each belonging container.

[0012] In a further of possible embodiments, the resilient sleeve is connected with the excentric lever, which is foreseen on the guide, and consequently, by resting of an at least essentially conical portion of the external surface of the sleeve against an at least essentially conical portion of the internal surface of the guide, the diameter of the sleeve is changed at least in the area of its groove, which is adapted for embracing at least essentially thoroidal rim of each belonging container.

[0013] In common, a desired displacement of the resilient sleeve in the direction from the housing away may be achieved by means of elasticity of material, of which the sleeve consists.

[0014] The invention is described in more detail and without any limitation on the basis of several embodiments, which are depicted in the attached drawings, showing

Fig. 1 dispensing gun for preparing and distribution of liquidous or foamed substance contained in a container under the pressure;

Fig. 2 shematically a coupling adapter for attaching the container to the gun, i.e. a cross-section thereof along the line II - II according to Fig. 3;

Fig. 3 is a top view of a copupling adapter according to Fig. 2, with removed container;

Fig. 4 is a further embodiment of a coupling adapter for attaching a container to the gun;

Fig. 5 is a still further embodiment of a coupling adapter for attaching a container to the gun;

Fig. 6 is another possible embodiment of a coupling adapter; and

Fig. 7 is a still another embodiment of a coupling adapter for attaching a container to the gun.

[0015] A dispensing gun, which is intended for preparing and distribution of polyurethane foam, comprises a housing 1, in which in approximately tubular outlet portion 11 comprising a passage for directing a foam or compoments for preparing a foam there is a distributing tube 12, which is concluded by a nozzle 13. The said housing 1 further comprises a grip 14, and moreover an essentially radially extending coupling adapter 2, which is intended for attaching a container 16, which is filled with components used for preparing a desired polyurethane foam together with a pressurized gas, to the gun. In Fig. 1, the said adapter 2 is disclosed in a most simple manner, since the detailed disclosure is available in Figs. 2 and 3, and particular embodiments are separately shown in Figs. 4 to 7. Furthermore, a needle 9 is foreseen within said housing 1, extending thereby in the longitudinal direction thereof. The needle 9 is supported by a spring 8 and pressed thereby towards the nozzle 13, and at the same time it is sealed in appropriate manner by means of a sealing unit 3 in order to prevent flowing the foam or components for preparing thereof along the needle 9 out from the passage 10 towards the actuating unit 7 or the interior of the said housing 1, respectivelly. The actuating unit 7 is connected to the needle 9, and consists at least of a trigger 71 as well as of a pivot 72, by means of which the trigger 71 is pivotably mounted within said housing 1. By pushing the trigger 71, i.e. by pivoting thereof in a counterclockwise direction according to Fig. 1, the needle 9 is displaced in its axial direction away from the nozzle 13. In such a way, the substance contained within the passage 10 is allowed to freely flow outwards along the said needle 9 towards the left in accordance with Fig. 1.

[0016] The container 16, which is adapted for being attached onto the said gun according to the invention, is shown in the Fig. 2, is a classic approximatelly cylindrical metallic container provided with a valve 162 in the area of its tapered end portion, which is in Fig. 2 shamatically shown by means of dash line. Arround the said valve 162 an at least approximatelly thoroidal rim 160 is arranged, i.e. a protrusion, which is approximatelly semicircular in profile and extends in the circumferential direction. Practically complete valve 162 is mounted within the said con-

tainer 16, and only a coaxial, essentially tubular outlet is protruding therefrom, through which by pressing on it and thanks to the pressurized gas available within the container, the substances stored within this container start flowing therefrom.

[0017] Various dispensing guns known from the prior art are mostly equipped with a coupling adapter 2 in form of a short tubular member having an inner thread. Any desired container 16 may be attached to the gun by means of a special coupling adapter, which is not separately disclosed in the drawing, but is provided with an external thread, which at the one hand matches to the internal thread of the adapter 2 of the gun, and is on the other hand pressed over the said thoroidal rim 160 of the container 16.

[0018] According to the invention, attaching the container 16 to the gun is enabled by means of a characteristic coupling adapter 2, which comprises a resilient sleeve 20, which may on the one hand be placed over/around the thoroidal rim 160 of the container 16, and on the other hand by movement of the resilient sleeve 20 in the direction of arrow B towards the housing 1 of the gun the thoroidal rim 160 is embraced by the said resilient sleeve 20 and simultaneously the container 16 is pulled towards the housing 1 of the gun, by which also appropriate pressure towards the tubular protrusion 1620 of the valve 162 of the container 16 is established in axial direction, by which the substances contained within the container 16 start flowing towards to interior of the housing 1 of the gun, namely towards the passage 10 and further through the distributing tube 12 towards the nozzle 13 of the gun. Accordingly, the container 16 is simply and firmly attached to the gun without any additional adapter.

[0019] As evident from Figs. 2 and 3, the resilient sleeve 20 is an elastic bush, which is cut in several locations of its circumference in the longitudinal direction, so that corresponding longitudinal recesses 201 lie preferrably in an equidistant or at least a symmetric mutual arrangement in the circumferential direction of the sleeve 20. In addition, the resilient sleeve 20 comprises on its internal surface 202 a circumferentially extending groove 203, which is at least approximatelly semicircular in profile and is adapted for receipt of the mentioned circumferential rim 160 of the container 16. Elasticity of the resilient sleeve 20 as well as the dimensions of the said groove 203 should be determined in such a way, that by releasing the resilient sleeve 20 the rim 160 of the container 16 may be pushed into the groove 203 or also removed thereofom without any additional requisites i.e. exclusively by hand.

[0020] Moreover, the resilient sleeve 20 is inserted into the appropriate guide 21, which is intended both for guiding and also for embracing or releasing the sleeve 20. The guide 21 is has a form of a cap, and an opening 211 is arranged in its bottom surface 210, by which on the one hand a required connection with the passage 10 in the interior of the gun is established, and on the other hand it serves as a shoulder for establishing a required pressure towards the valve 162 in its axial direction in order to enable discharging the substances, which are available within the container 16, throughout the opening 211 towards the passage 10 within the gun.

[0021] The guide 21 is therefore a part of the gun, and may be mounted onto a gun by means of screwing, which is in the embodiment according to Fig. 2 achieved by means of a hexagonal neck 213 and appropriate thread, which is not separately shown. In addition, the guide 21 is preferably equipped on its circumference by at least one gripping means 2105, which may consist of a plurality of gripping protrusions 2105' (Fig. 2) or even be available as a ring 2105" (Fig. 3) equipped with appropriate ribs.

[0022] An efficient guiding of the resilient sleeve 20 along the guide 21, namely displacing the sleeve 20 towards the housing 1 of the gun as well as from the said housing 1 away, is by the embodiment according to Figs. 2 and 3 achieved due to the fact, that the sleeve 20 comprises two helical recesses 206 on its external surface 204, which are in the Fig. 2 shown by means of dash-lines and within which two inwardly protruding guiding pins 216 are inserted. When the resilient sleeve 20 is coaxially inserted within the guide 21, appropriate rotation of the guide 21 for approx. 90 degrees clockwise i.e. in the direction of arrow D according to Fig. 5 due to presence of the said pins 216 in the guide 21 results in a desired displacement of the sleeve 20 in the axial direction thereof, namely in the direction of arrow B, towards the housing 1 of the gun, by which thanks to presence of the conical portions 205, 215 on the sleeve 20 or the guide 21, respectively, the diameter of sleeve 20 in the area of the groove 203 is then essentially reduced.

[0023] Accordingly, the container 16 filed with components required for preparing polyurethane foam and also with pressurized gas or also any other required foam-like or liquidous substances together with pressurized gas, may be quickly and simply attached to the gun according to the invention, especially without any adapters attached to the container 16. For this purpose, the container 16 needs to be brought adjacent to the coupling adapter 2, whereupon in the released state of the resilient sleeve 20 the belonging thoroidal rim 160 of the container 16 is pressed towards the groove 203 of the sleeve 20. In order to achieve quick and simple attachment of the container 16 onto the gun, the guide 21 needs to be turned relativelly to the resilient sleeve 20 (or vice-versa), by which simultaneously the resilient sleeve 20 is displaced towards the housing 1 of the gun, so that the tubular protrusion 1620 of the valve 162 of the container is pressed against the bottom surface 210 of the guide 21, by means of which the content of the container 16 starts flowing out from the container 16 througout the valve 160 into the passage 10 within the housing 1 of the gun. During the said rotation of the resilient sleeve 20 relatively to the said guide 21, the diameter of the said sleeve 20 at least in the area of the groove 203 is essentially reduced due to presence of conical portions 205, 215, so that the

thoroidal rim 160 of the container 16 is firmly held by the embraced sleeve 20, by which the container 16 is firmly attached to the dispensing gun.

[0024] Figs. 4 to 7 show further embodiments of the coupling adapter 2, where in all three embodiments the resilient sleeve 20 is shown quite schematically, so that the recesses 201 are not visible in the said drawings. However, the groove 203 is shown, which is adapted for co-operation with the rim 160 of the container 16. In all these embodiments, the conical portion 205 of the external surface 204 of the resilient sleeve 20 and the conical portion 215 of the internal surface 214 of the guide 21 are shown at least schematically. All these embodiments according to Figs. 4 to 7 differ each from annother in various principles of achieving a required displacement of the resilient sleeve 20 within the guide 21 in the axial direction thereof, i.e. in the direction of arrow B towards the housing 1, and due to elasticity of the said sleeve 20 also in the opposite direction.

[0025] In accordance with the embodiment as shown in Fig. 4, the resilient sleeve 20 is equipped with at least one groove 207, which extends in the circumferential direction thereof, and into which a pin 217 of an excentric lever 2170 is protruding, which is available on the guide 21. By pivoting the said excentric lever 2170 in the direction of arrow E, the position of the said pin 217 is changed, as a consequence of which the sleeve 20 is displaced in its axial direction, e.g. in the direction of arrow B, the result of which is then a desired reduction of the diameter of the sleeve 20 in the area of the groove 203. Functioning of any other elements may be practically the same as by the previously described embodiment.

[0026] In accordance with the embodiment as shown in Fig. 5, the guide 21 is equipped with an internal thread 219 arranged at a desired distance with respect to the conical portion 215, and simultaneously the sleeve 20 is equipped with an external thread 209, which matches to the said thread 219 of the guide 21. In this embodiment, the sleeve 20 is furnished with appropriate gripping locations, which are arranged on the circumferentual portion 2005 outwards of the guide 21 and may consist e.g. of ribbed surfaces or similar means.

[0027] In accordance with the embodiment as shown in Fig. 6, the resilient sleeve 20 is equipped with a pin 208, while on the guide 21 there is a lever 218, which is furnished with appropriate groove 2180, into which the said pin 208 of the sleeve 20 is inserted. Any displacement of the lever 218 e.g. in the direction of arrow F, involves adequate displacement of the pin 208, by which the sleeve 20 is displaced in its axial direction, e.g. in the direction of arrow B towards the housing 1 of the gun, or also from the said housing 1 away, respectively. Functioning of any other elements may be practically the same as by the previously described embodiments.

[0028] In accordance with the embodiment as shown in Fig. 7, the resilient sleeve 20 is equipped with a pin 208', while on the guide 21 there is a lever 218', which is furnished with a groove 2180', into which the said pin 208' of the sleeve 20 is inserted. By displacing i.e. pivoting the lever 218' in direction of arrow G, position of the pin 208' is changed, by which the sleeve 20 is moved in its axial direction e.g. in direction of arrow B towards the housing 1 of the gun, or from the said housing 1 away. Functioning of any other elements may be practically the same as by the previously described embodiments.

Claims

1. Dispensing gun, intended for preparing and distribution of liquidous or foamed substances, especially a polyurethane foam, and comprising a housing (1) with a grip (14) and a coupling adapter (2), by means of which a container (16), filled with the said liquidous or foamed substances including a pressurized gas, may be attached to the gun, wherein in the interior of said housing (1) a passage (10) is available, through which the mentioned liquidous or foamed substances together with the pressurized gas may be released from said container (16) towards the nozzle (13), which may be either opened or closed by means of a needle (9), which is actuated by means of an appropriate actuating unit (7), which is also foreseen within said housing (1), and wherein said container (16), preferrably a can, is attached to the gun and equipped with a valve (162), which is surrounded by an at least approximately thoroidal rim (160) on the said container (16), whereby the container (16) further comprises an essentially tubular protrusion (1620) arranged outside of said container (16), through which upon pressing it in its axial direction and thanks to said pressurized gas, the substances contained therein are released, **characterized in that**, the housing (1) comprises a coupling adapter (2), which is arranged adjacent to the passage (10) for enabling flow towards the nozzle (13) and comprises a guide (21) and a resilient sleeve (20), wherein said guide (21) is equipped with an opening (211), which is arranged in the gun-side surface (210) thereof and coincides with said passage (10) within the housing (1), and moreover with a conical portion (215), which is arranged on the internal surface (214) of the outer end portion and converges towards the housing (1) of the gun, and wherein said resilient sleeve (20) in form of an elastic bush comprises on its external surface (204) an at least essentially conical portion (205) and on its internal surface (202) a circumferentially extending groove (203), which is at least essentially semi-circular in profile and adapted for embracing at least essentially thoroidal rim (160) of the container (16), and by which said conical portion (205) of the resilient sleeve (20), which converges towards the housing (1) of the gun, is arranged in abutment with the internal conical portion (215) of the guide (21), which also converges towards the housing (1) of the gun, and at the same

time, the resilient sleeve (20) and the guide (21) comprise means for tensioning the sleeve (20) towards the gun-side surface (210) of the guide (21) by simultaneously abutting the valve (162) of the container (16) against said gun-side surface (210) of the guide (21) and changing the diameter of the resilient sleeve (20) at least in the area of its groove (203) arranged on the inner surface (202) thereof through abutment of the conical portions (205, 215).

2. Dispensing gun according to Claim 1, **characterized in that** the resilient sleeve (20) consists of an elastic material and is equipped with longitudinal recesses (201), which are arranged at least on the end portion thereof, which is further away from the housing (1).

3. Dispensing gun according to Claim 2, **characterized in that** the resilient sleeve (20) consists of an elastic material and is equipped with longitudinal recesses (201), which are axi-symmetrically arranged at least on the end portion thereof, i.e. on a desired distance from the housing (1).

4. Dispensing gun according to Claim 2, **characterized in that** the resilient sleeve (20) consists of an elastic material and is equipped with longitudinal recesses (201), which are equidistant in its circumferential direction arranged at the end portion furthest away from the housing (1).

5. Dispensing gun according to Claim 1, **characterized in that** the inner diameter of the resilient sleeve (20) in the area of its groove (203) is changeable by means of displacement of the resilient sleeve (20) in its axial direction, namely towards the housing (1) or in the opposite direction.

6. Dispensing gun according to Claims 1 and 5, **characterized in that** the inner diameter of the resilient sleeve (20) in the area of its groove (203) is changeable by means of displacement of the resilient sleeve (20) in its axial direction, namely towards the housing (1) or in the opposite direction, which is a consequence of proving the sleeve towards and away from the gunside surface of the guide by turning the sleeve (20) relative to the guide (21).

7. Dispensing gun according to any of the preceeding Claims, **characterized in that** the guide (21) is equipped with at least two inwardly protruding pins (216), and the resilient sleeve (20) is at least on its inner surface (202) furnished by at least two at least approximately helical, in its circumferential direction extending grooves (206), into which said pins (216) of the guide (21) are protruding, so that by each turn of the sleeve (20) relative to the guide (21) displaces the sleeve (20) in the axial direction and consequently, by resting the at least essentially conical portion (205) of the external surface (204) of the sleeve (20) against the at least essentially conical portion (215) of the internal surface (214) of the guide (21), the diameter of the sleeve (20) is changed at least in the area of its groove (203), which is adapted for embracing the at least essentially thoroidal rim (160) of the container (16).

8. Dispensing gun according to one of Claims 1 to 5, **characterized in that** the guide (21) is furnished with a pivotable lever (218), which is arranged outwardly and comprises a groove (2180), into which a pin (208) is inserted, which belongs to the resilient sleeve (20), so that each displacement or turning of the said lever (218) results in a displacement of the sleeve (20) in the axial direction of the sleeve (20) or the guide (21), and consequently, by resting the at least essentially conical portion (205) of the external surface (204) of the sleeve (20) against the at least essentially conical portion (215) of the internal surface (214) of the guide (21), the diameter of the sleeve (20) is changed at least in the area of its groove (203), which is adapted for embracing at least essentially thoroidal rim (160) of container (16).

9. Dispensing gun according to one of the Claims 1 to 5, **characterized in that** the guide (21) is equipped with a pivotable lever (218'), which is arranged outwardly and equipped with a groove (2180'), into which a pin (2180') is inserted, which belongs to the resilient sleeve (20), so that any displacement of the said lever (218') on the guide (21) involves appropriate displacement of the resilient sleeve (20) in the axial direction of this sleeve (20) or the guide (21), and consequently, by resting at of an least essentially conical portion (205) of the external surface (204) of the sleeve (20) against an at least essentially conical portion (215) of the internal surface (214) of the guide (21), the diameter of the sleeve (20) is changed at least in the area of its groove (203), which is adapted for embracing at least essentially thoroidal rim (160) of the container (16).

10. Dispensing gun according to one of Claims 1 to 6, **characterized in that** the guide (21) is furnished with an internal thread (219), and the resilient sleeve (20) is equipped with an external thread (209), which matches the said thread (219) of the guide (21) and is arranged on a required distance from the groove (205) or the conical portion (205), so that consequently, by resting of an at least essentially conical portion (205) of the external surface (204) of the sleeve (20) against an at least essentially conical portion (215) of the internal surface (214) of the guide (21), the diameter of the sleeve (20) is changed at least in the area of its groove (203), which is adapted for embracing at least essentially thoroidal rim (160) of the container (16).

11. Dispensing gun according to one of Claims 1 to 6, **characterized in that** the resilient sleeve (20) is connected with an excentric lever (2170), which is foreseen on the guide (21), and consequently, by resting of an at least essentially conical portion (205) of the external surface (204) of the sleeve (20) against an at least essentially conical portion (215) of the internal surface (214) of the guide (21), the diameter of the sleeve (20) is changed at least in the area of its groove (203), which is adapted for embracing at least essentially thoroidal rim (160) of each belonging container (16).

12. Dispensing gun according to any of the preceeding Claims, **characterized in that** the displacement of the resilient sleeve (20) in the direction away from the housing (1) is achieved by the sleeve (20)

Patentansprüche

1. Spenderpistole zur Vorbereitung und Verteilung flüssiger oder aufgeschäumter Substanzen, insbesondere eines Polyurethanschaums, welche ein Gehäuse (1) mit einem Griff (14) und einem Koppeladapter (2) aufweist, mittels dessen ein Behälter (16), der mit den flüssigen oder aufgeschäumten Substanzen gefüllt ist, zu denen ein unter Druck stehendes Gas gehört, an der Pistole anbringbar ist, wobei im Inneren des Gehäuses (1) ein Durchlass (10) zugänglich ist, durch welchen die erwähnten flüssigen oder aufgeschäumten Substanzen gemeinsam mit dem unter Druck stehenden Gas aus dem Behälter (16) in Richtung der Düse (13) abgebbar sind, die mittels einer Nadel (9), welche mittels einer geeigneten Betätigungseinheit (7) betätigt wird, zu öffnen oder zu schließen ist, wobei die Betätigungseinheit ebenfalls im Gehäuse (1) vorgesehen ist, und wobei der Behälter (16), vorzugsweise eine Dose, an der Pistole anbringbar und mit einem Ventil (162) versehen ist, das mit einer zumindest ungefähr toroidförmigen Seitenfläche (160) auf dem genannten Behälter (16) umgeben ist, wobei der Behälter (16) weiterhin einen im Wesentlichen röhrenförmigen Vorsprung (1620) aufweist, der außerhalb des genannten Behälters (16) angeordnet ist, durch welchen die darin enthaltenen Substanzen beim Drücken in seiner axialen Richtung und auf Grund des unter Druck stehenden Gases abgebbar sind, **dadurch gekennzeichnet, dass** das Gehäuse (1) einen Kopplungsadapter (2) aufweist, der benachbart zu dem Durchlass (10) angeordnet ist, um einen Fluss zu der Düse (13) zu ermöglichen, und der eine Führung (21) und eine federnde Hülse (20) aufweist, wobei die Führung (21) mit einer Öffnung (211), die in der pistolenseitigen Oberfläche (210) derselben angeordnet ist und mit dem Durchlass (10) innerhalb des Gehäuses (1) zusammenfällt, und weiterhin mit einem konischen Abschnitt (215) versehen ist, der auf der inneren Oberfläche (214) des äußeren Endabschnitts angeordnet ist und zum Gehäuse (1) der Pistole hin konvergiert, und wobei die federnde Hülse (20) in Form einer elastischen Buchse auf ihrer äußeren Oberfläche (204) einen zumindest im Wesentlichen konischen Abschnitt (205) und auf ihrer innernen Oberfläche (202) eine sich ringsherum erstreckende Nut (203) aufweist, welche zumindest im Wesentlichen im Profil halbkreisförmig und dazu angepasst ist, die zumindest im Wesentlichen toroidförmige Seitenfläche (160) des Behälters (16) zu umfassen, und durch welche der konische Abschnit (205) der federnden Hülse (20) der zum Gehäuse (1) der Pistole hin konvergiert, an den innernen konischen Abschnitt (215) der Führung (21) anstoßend angeordnet ist, welcher ebenfalls zum Gehäuse (1) der Pistole hin konvergiert, und wobei zur gleichen Zeit die federnde Hülse (20) und die Führung (21) Einrichtungen aufweisen, um die Hülse (20) zu der pistolenseitigen Oberfläche (210) der Führung (21) hin unter gleichzeitigem Anstoßen des Ventils (162) des Behälters (16) an der pistolenseitigen Oberfläche (210) der Führung (21) und Ändern des Durchmessers der federnden Hülse (20) zumindest in dem Bereich ihrer Nut (203), die an ihrer inneren Oberfläche (202) angeordnet ist, durch Anstoßen der konischen Abschnitte (205, 215) vorzuspannen.

2. Spenderpistole nach Anspruch 1, **dadurch gekennzeichnet, dass** die federnde Hülse (20) aus einem federnden Material besteht und mit länglichen Aussparungen (201) versehen ist, die zumindest an dem Endabschnitt derselben, das bedeutet, in einem gewünschten Abstand vom Gehäuse (1) angeordnet sind.

3. Spenderpistole nach Anspruch 2, **dadurch gekennzeichnet, dass** die federnde Hülse (20) aus einem federnden Material besteht und mit länglichen Aussparungen (201) versehen ist, die axialsymmetrisch zumindest an dem Endabschnitt derselben, das bedeutet, in einem gewünschten Abstand vom Gehäuse (1) angeordnet sind.

4. Spenderpistole nach Anspruch 2, **dadurch gekennzeichnet, dass** die federnde Hülse (20) aus einem federnden Material besteht und mit länglichen Aussparungen (201) versehen ist, die in ihrer Umfangsrichtung im gleichen Abstand voneinander zumindest an dem Endabschnitt derselben, das bedeutet, in einem gewünschten Abstand vom Gehäuse (1) angeordnet sind.

5. Spenderpistole nach Anspruch 1, **dadurch gekennzeichnet, dass** der innere Durchmesser der federnden Hülse (20) in dem Bereich ihrer Nut (203) mittels einer Verschiebung der federnden Hülse (20) in ihrer

Axialrichtung, insbesondere hin zum Gehäuse (1) oder in der Gegenrichtung änderbar ist.

6. Spenderpistole nach einem der Ansprüche 1 und 5, **dadurch gekennzeichnet, dass** der innere Durchmesser der federnden Hülse (20) in dem Bereich ihrer Nut (203) mittels einer Verschiebung der federnden Hülse (20) in ihrer Axialrichtung, welche eine Folge des Drehens der Hülse (20) relativ zu der Führung (21) ist, insbesondere hin zu dem Gehäuse (1) oder in der Gegenrichtung änderbar ist.

7. Spenderpistole nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Führung (21) mit mindestens zwei nach innen vorstehenden Stiften (216) ausgestattet ist und die federnde Hülse (20) zumindest auf ihrer inneren Oberfläche (202) mit mindestens zwei zumindest annähernd schraubenförmigen, sich in ihre Umfangsrichtung erstreckenden Gräben (206) versehen ist, in welche die genannten Stifte (216) der Führung (21) so vorstehen, dass bei jeder Drehung der Hülse (20) relativ zu der Führung (21) eine Verschiebung der Hülse (20) in der axialen Richtung der Hülse (20) oder der Führung (21) folgt und folglich der Durchmesser der Hülse (20) zumindest im Bereich ihrer Nut (203), die dazu angepasst ist, die zumindest im Wesentlichen toroidförmige Seitenfläche (160) jedes zugehörigen Behälters (16) zu umfassen, durch Aufliegen eines zumindest im Wesentlichen konischen Abschnitts (205) der äußeren Oberfläche (204) der Hülse (20) auf einem zumindest im Wesentlichen konischen Abschnitt (215) der inneren Oberfläche (214) der Führung (21) änderbar ist.

8. Spenderpistole nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** die Führung mit einem kippbaren Hebel (218) ausgestattet ist, der nach außen angeordnet ist und eine Nut (2180) aufweist, in die ein Stift (208) eingefügt ist, welcher zu der federnden Hülse (20) gehört, so dass jede Verschiebung oder Drehung des Hebels (218) zu einer Verschiebung der Hülse (20) in der axialen Richtung der Hülse (20) oder der Führung (21) führt und folglich bei jeder Drehung der Hülse (20) relativ zu der Führung (21) eine Verschiebung der Hülse (20) in der axialen Richtung der Hülse (20) oder der Führung (21) folgt und folglich der Durchmesser der Hülse (20) zumindest im Bereich ihrer Nut (203), die dazu angepasst ist, die zumindest im Wesentlichen toroidförmige Seitenfläche (160) jedes zugehörigen Behälters (16) zu umfassen, durch Aufliegen eines zumindest im Wesentlichen konischen Abschnitts (205) der äußeren Oberfläche (204) der Hülse (20) auf einem zumindest im Wesentlichen konischen Abschnitt (215) der inneren Oberfläche (214) der Führung (21) änderbar ist.

9. Spenderpistole nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** die Führung mit einem kippbaren Hebel (218') ausgestattet ist, der nach außen angeordnet und mit einer Nut (2180') versehen ist, in welche ein Stift (208') eingefügt ist, so dass jede Verschiebung des Hebels (218') entlang der Führung (21) eine geeignete Verschiebung der federnden Hülse (20) in der axialen Richtung der Hülse (20) oder der Führung (21) involviert und folglich der Durchmesser der Hülse (20) zumindest im Bereich ihrer Nut (203), die dazu angepasst ist, die zumindest im Wesentlichen toroidförmige Seitenfläche (160) jedes zugehörigen Behälters (16) zu umfassen, durch Aufliegen eines zumindest im Wesentlichen konischen Abschnitts (205) der äußeren Oberfläche (204) der Hülse (20) auf einem zumindest im Wesentlichen konischen Abschnitt (215) der inneren Oberfläche (214) der Führung (21) änderbar ist.

10. Spenderpistole nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** die Führung (21) mit einem Innengewinde (219) versehen ist und die federnde Hülse (20) mit einem Außengewinde versehen ist, das zu dem Innengewinde (219) der Führung (21) passt und in einem benötigten Abstand von der Nut (203) oder dem konischen Abschnitt (205) so angeordnet ist, dass folglich der Durchmesser der Hülse (20) zumindest im Bereich ihrer Nut (203), die dazu angepasst ist, die zumindest im Wesentlichen toroidförmige Seitenfläche (160) jedes zugehörigen Behälters (16) zu umfassen, durch Aufliegen eines zumindest im Wesentlichen konischen Abschnitts (205) der äußeren Oberfläche (204) der Hülse (20) auf einem zumindest im Wesentlichen konischen Abschnitt (215) der inneren Oberfläche (214) der Führung (21) änderbar ist.

11. Spenderpistole nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** die federnde Hülse (20) mit einem exzentrischen Hebel (2170) verbunden ist, der an der Führung (21) vorgesehen ist, und folglich der Durchmesser der Hülse (20) zumindest im Bereich ihrer Nut (203), die dazu angepasst ist, die zumindest im Wesentlichen toroidförmige Seitenfläche (160) jedes zugehörigen Behälters (16) zu umfassen, durch Aufliegen eines zumindest im Wesentlichen konischen Abschnitts (205) der äußeren Oberfläche (204) der Hülse (20) auf einem zumindest im Wesentlichen konischen Abschnitt (215) der inneren Oberfläche (214) der Führung (21) änderbar ist.

12. Spenderpistole nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** eine Verschiebung der federnden Hülse (20) in der Richtung weg von dem Gehäuse mittels der Elastizität des Materials erreichbar ist, aus dem die Hülse (20) be-

steht.

Revendications

1. Pistolet de distribution destiné à préparer et à distribuer des substances liquides ou mousseuses, en particulier la mousse de polyuréthane, et qui comprend:

   un boîtier (1) doté d'une poignée (14) et d'un adaptateur d'accouplement (2) au moyen duquel un récipient (16) rempli desdites substances liquides ou mousseuses et d'un gaz sous pression peut être fixé sur le pistolet, dans lequel à l'intérieur dudit boîtier (1) est prévu un passage (10) par lequel lesdites substances liquides ou mousseuses et le gaz sous pression peuvent être libérés dudit récipient (16) vers l'ajutage (13) qui peut être ouvert ou fermé au moyen d'une aiguille (9) qui est actionnée au moyen d'une unité d'actionnement appropriée (7) et qui est également prévue dans ledit boîtier (1), et ledit récipient (16), de préférence une boîte, étant fixé sur le pistolet et étant doté d'une soupape (162) qui est entourée par un rebord (160) au moins approximativement toroïdal prévu sur ledit récipient (16), le récipient (16) comprenant en outre une saillie (1620) essentiellement tubulaire qui est agencée à l'extérieur dudit récipient (16) et par laquelle les substances contenues dans ce dernier sont libérées lorsqu'elle est repoussée dans sa direction axiale et à l'aide dudit gaz sous pression, **caractérisé en ce que** le boîtier (1) comprend un adaptateur d'accouplement (2) agencé en position adjacente au passage (10) pour permettre l'écoulement vers l'ajutage (13) et qui comprend un guide (21) et un manchon souple (20), ledit guide (21) étant doté d'une ouverture (211) agencée dans sa surface (210) située du côté du pistolet et qui coïncide avec ledit passage (10) situé dans le boîtier (1) et en outre d'une partie conique (215) qui est agencée sur la surface intérieure (214) de la partie d'extrémité extérieure et qui converge vers le boîtier (1) du pistolet, ledit manchon souple (20) qui présente la forme d'une bague souple comprenant, sur sa surface extérieure (204), une partie (205) au moins essentiellement conique et, sur sa surface intérieure (202), une rainure (203) qui s'étend périphériquement, dont le profil est au moins essentiellement semi-circulaire, qui est adaptée pour entourer le rebord (160) au moins essentiellement toroïdal du récipient (16), et sur laquelle ladite partie conique (205) du manchon souple (20), qui converge vers le boîtier (1) du pistolet, est placée en butée contre la partie conique intérieure (215) du guide (21), qui converge également vers le boîtier (1) du pistolet, le manchon souple (20) et le guide (21) comprenant en même temps un moyen qui tend le manchon (20) vers la surface (210) du guide (21) située du côté du pistolet en faisant buter simultanément la soupape (162) du récipient (16) contre ladite surface (210) du guide (21) située du côté du pistolet et en modifiant le diamètre du manchon souple (20) au moins dans la zone de la rainure (203) agencée sur sa surface intérieure (202) par l'intermédiaire de la mise en butée des parties coniques (205,215).

2. Pistolet de distribution selon la revendication 1, **caractérisé en ce que** le manchon souple (20) est constitué d'un matériau souple et est doté de creux longitudinaux (201) agencés au moins sur sa partie d'extrémité, c'est-à-dire à une distance souhaitée du boîtier (1).

3. Pistolet de distribution selon la revendication 2, **caractérisé en ce que** le manchon souple (20) est constitué d'un matériau souple et est doté de creux longitudinaux (201) agencés à symétrie axiale au moins sur sa partie d'extrémité, c'est-à-dire à une distance souhaitée du boîtier (1).

4. Pistolet de distribution selon la revendication 2, **caractérisé en ce que** le manchon souple (20) est constitué d'un matériau souple et est doté de creux longitudinaux (201) équidistants dans la direction de la périphérie et agencés au moins sur sa partie d'extrémité, c'est-à-dire à une distance souhaitée du boîtier (1).

5. Pistolet de distribution selon la revendication 1, **caractérisé en ce que** le diamètre intérieur du manchon souple (20) peut être modifié dans la zone de la rainure (203) en déplaçant le manchon souple (20) dans sa direction axiale, c'est-à-dire vers le boîtier (1) ou dans la direction opposée.

6. Pistolet de distribution selon les revendications 1 et 5, **caractérisé en ce que** le diamètre intérieur du manchon souple (20) peut être modifié dans la zone de la rainure (203) en déplaçant le manchon souple (20) dans sa direction axiale, c'est-à-dire vers le boîtier (1) ou dans la direction opposée, en faisant tourner le manchon (20) par rapport au guide (21).

7. Pistolet de distribution selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le guide (21) est doté d'au moins deux goujons (216) qui débordent vers l'intérieur et **en ce qu'**au moins sur sa surface intérieure (202), le manchon souple (20) est doté d'au moins deux rainures (206) au moins sensiblement hélicoïdales qui s'étendent

dans la direction de sa périphérie et dans lesquelles lesdits goujons (216) du guide (21) débordent de telle sorte que chaque fois que le manchon (20) tourne par rapport au guide (21), le manchon (20) est ainsi déplacé dans la direction axiale du manchon (20) ou du guide (21) et par conséquent amène la partie (205) au moins essentiellement conique de la surface extérieure (204) du manchon (20) contre la partie (215) au moins essentiellement conique de la surface intérieure (214) du guide (21), ce qui modifie le diamètre du manchon (20) au moins dans la zone de sa rainure (203) adaptée pour entourer le rebord (160) au moins essentiellement toroïdal du récipient (16) correspondant.

8. Pistolet de distribution selon les revendications 1 à 5, **caractérisé en ce que** le guide (21) est doté d'un levier pivotant (218) agencé à l'extérieur et qui comprend une rainure (2180) dans laquelle est logé un goujon (208) qui fait partie du manchon souple (20), de telle sorte que chaque déplacement ou tour dudit levier (218) entraîne le déplacement du manchon (20) dans la direction axiale du manchon (20) ou du guide (21) et par conséquent amène la partie (205) au moins essentiellement conique de la surface extérieure (204) du manchon (20) contre la partie (215) au moins essentiellement conique de la surface intérieure (214) du guide (21), ce qui modifie le diamètre du manchon (20) au moins dans la zone de sa rainure (203) adaptée pour entourer le rebord (160) au moins essentiellement toroïdal du récipient (16) correspondant.

9. Pistolet de distribution selon les revendications 1 à 5, **caractérisé en ce que** le guide (21) est doté d'un levier pivotant (218') agencé à l'extérieur et doté d'une rainure (2180') dans laquelle est logé un goujon (2180') qui fait partie du manchon souple (20), de telle sorte que tout déplacement dudit levier (218') sur le guide (21) entraîne un déplacement approprié du manchon souple (20) dans la direction axiale de ce manchon (20) ou du guide (21) et par conséquent amène la partie (205) au moins essentiellement conique de la surface extérieure (204) du manchon (20) contre la partie (215) au moins essentiellement conique de la surface intérieure (214) du guide (21), ce qui modifie le diamètre du manchon (20) au moins dans la zone de sa rainure (203) adaptée pour entourer le rebord (160) au moins essentiellement toroïdal du récipient (16) correspondant.

10. Pistolet de distribution selon les revendications 1 à 6, **caractérisé en ce que** le guide (21) est doté d'un filet intérieur (219) et **en ce que** le manchon souple (20) est doté d'un filet extérieur (209) qui correspond audit filet (219) du guide (21) et qui est agencé à une distance requise de la rainure (205) ou de la partie conique (205) de telle sorte que, lorsque la partie (205) au moins essentiellement conique de la surface extérieure (204) du manchon (20) repose contre la partie (215) au moins essentiellement conique de la surface intérieure (214) du guide (21), le diamètre du manchon (20) est par conséquent modifié au moins dans la zone de sa rainure (203) adaptée pour entourer le rebord (160) au moins essentiellement toroïdal du récipient (16) correspondant.

11. Pistolet de distribution selon les revendications 1 à 6, **caractérisé en ce que** le manchon souple (20) est relié à un levier excentrique (2170) prévu sur le guide (21) et par conséquent, lorsque la partie (205) au moins essentiellement conique de la surface extérieure (204) du manchon (20) repose contre la partie (215) au moins essentiellement conique de la surface intérieure (214) du guide (21), le diamètre du manchon (20) est modifié au moins dans la zone de sa rainure (203) adaptée pour entourer le rebord (160) au moins essentiellement toroïdal du récipient (16) correspondant.

12. Pistolet de distribution selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le déplacement du manchon souple (20) dans la direction orientée vers l'extérieur du boîtier (1) est obtenu grâce à l'élasticité du matériau dont est constitué le manchon (20).

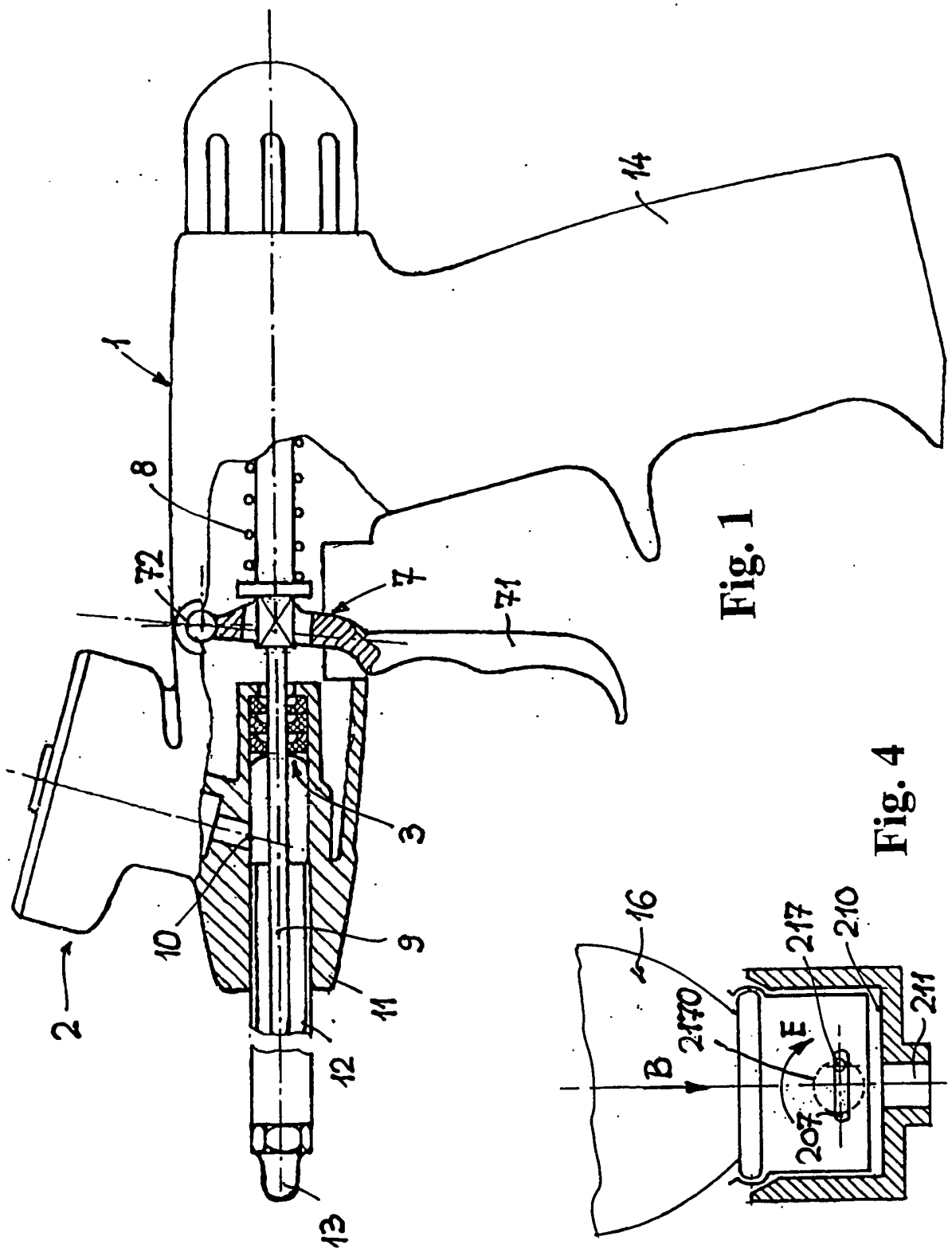


Fig. 1

Fig. 4

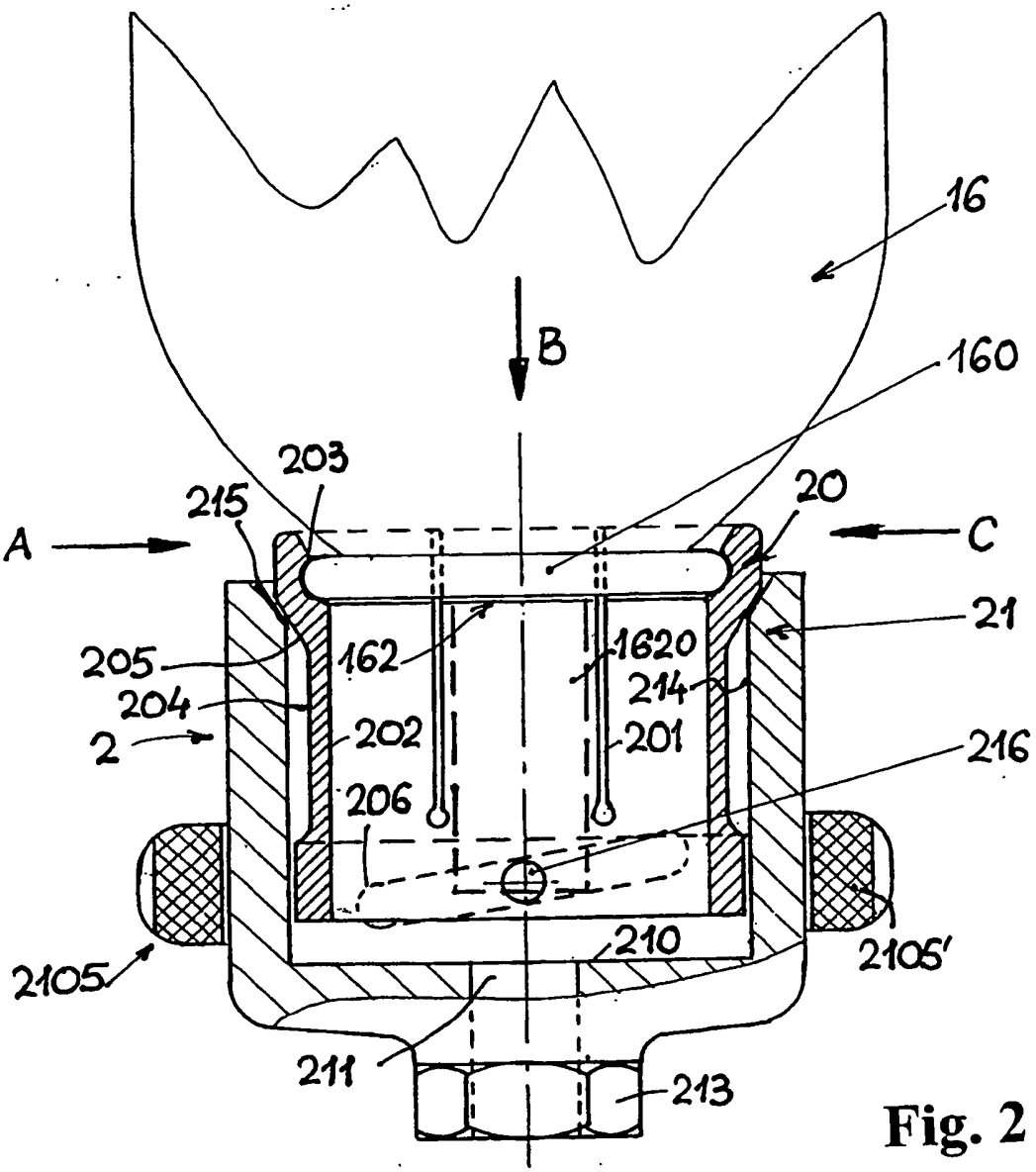

16
B
160
203
215
A
20
C
21
205
162
1620
214
204
202
201
2
206
216
210
2105
2105'
211
213

Fig. 2

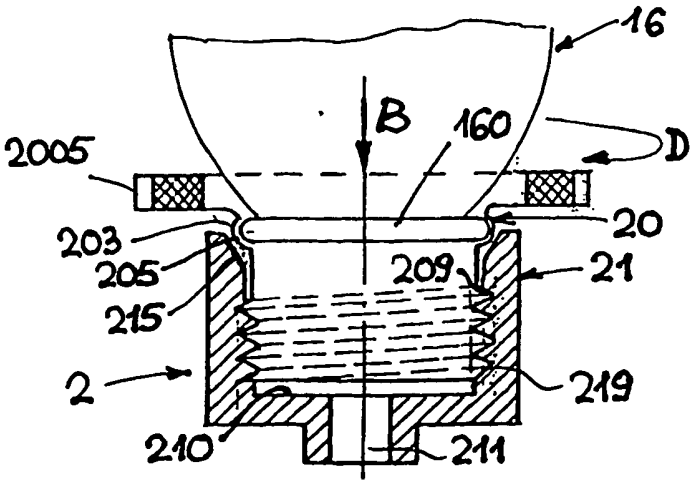

16
B
160
D
2005
20
203
205
209
21
215
2
219
210
211

Fig. 5

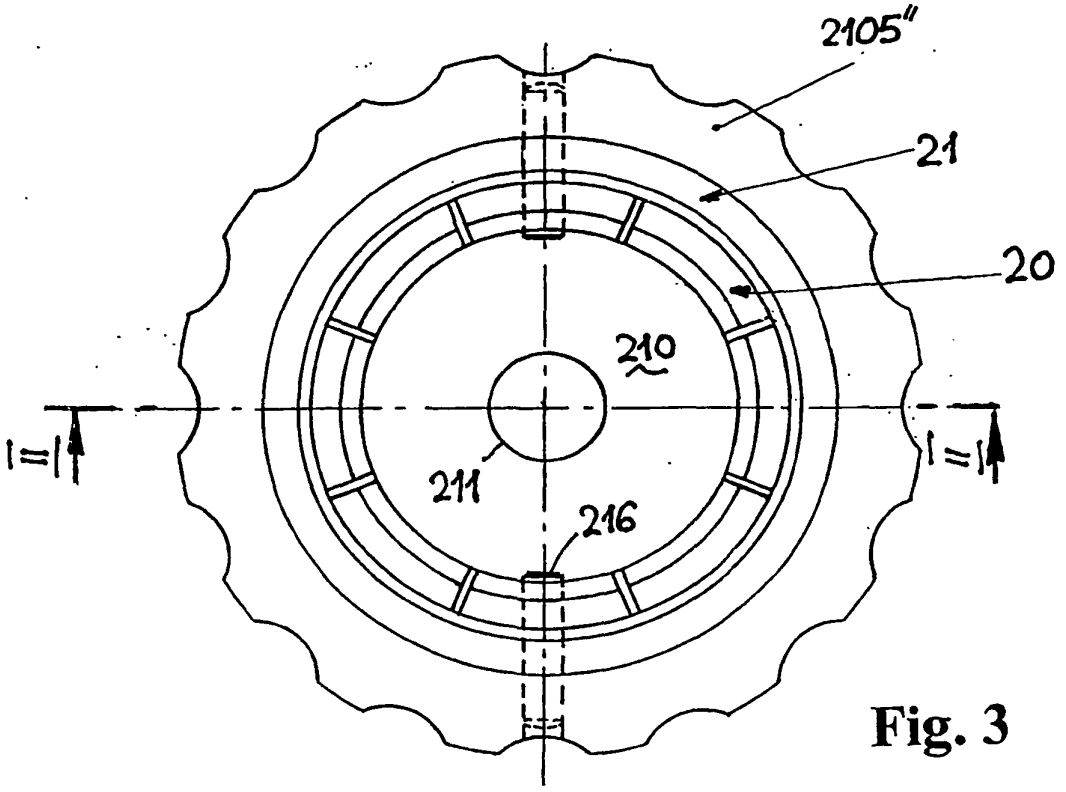


Fig. 3

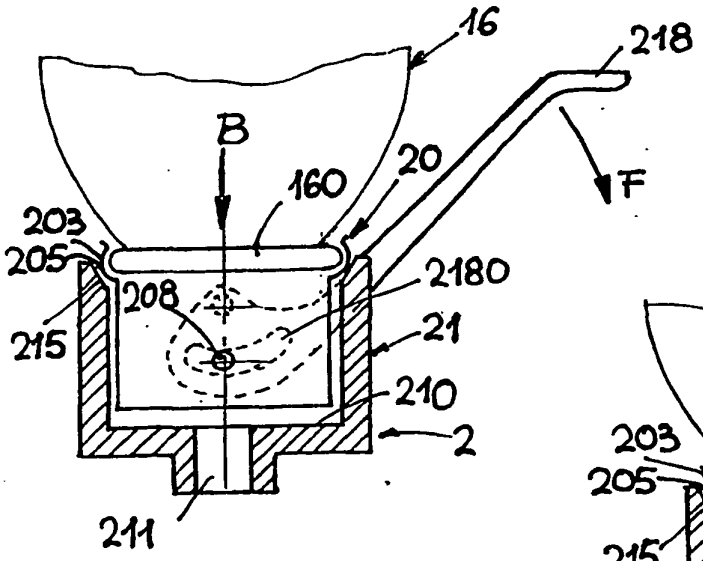


Fig. 6

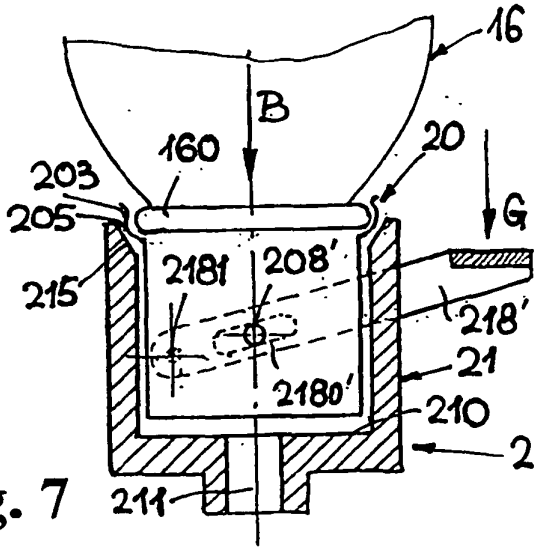


Fig. 7