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(54) **VISUAL MARKER FOR SMALL ARMS**

(57) The subject of the invention is a visual safety marker for firearms comprising a rear portion and a front portion, a signalling-gripping portion, a connecting extension and at least one guide for inserting into a firing chamber, characterised in that the signalling-gripping portion comprises a first planar element and a second planar element connected to each other at the right angle, and the first planar element contains a flat connecting extension, which is connected with at least one guide in the front portion of the marker for insertion into at least one firing chamber of a layout of firearm firing chambers, wherein the signalling-gripping portion contains a signalling portion and a gripping portion, wherein the marker in the front portion contains the signalling portion of the signalling-gripping portion and at least one guide, wherein the marker in the rear portion contains the gripping portion of the signalling-gripping portion.

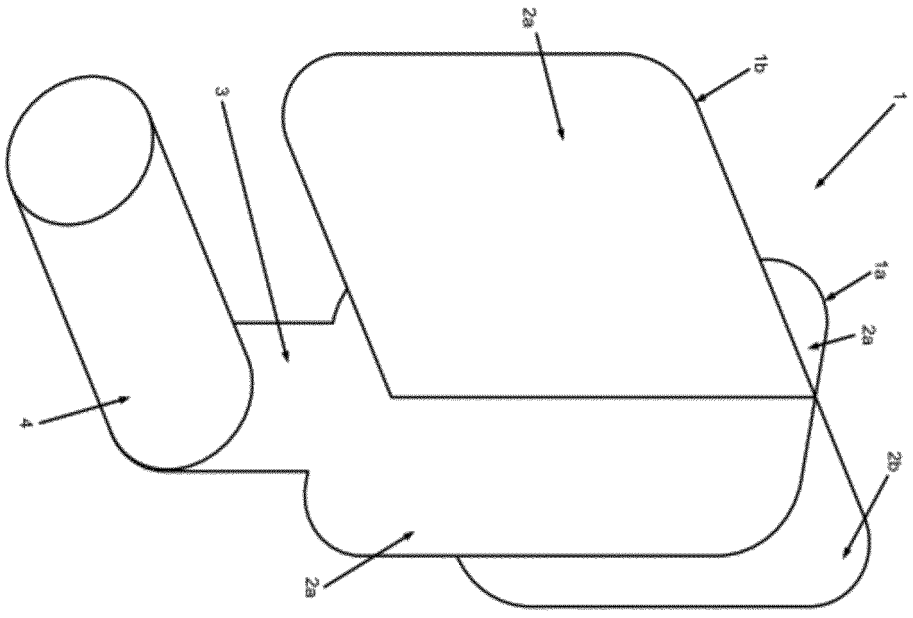

Fig. 2

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Description

[0001] The subject of the invention is a safety visual marker for firearms. The marker may be used to inform about the possibility of safe handling of the arms, e.g., transporting at sport facilities, placing on racks, displaying in shops, trade fairs or exhibitions.

[0002] The basic principle in terms of the safety of using firearms is to assume that the danger associated with the firearms does not result from their production, but from their combination with ammunition (the so-called human factor - it is not the firearm that shoots, but the man). Without a bullet or cartridge, a firearm is merely a neutral object incapable of firing, so it is not dangerous. The safety measures relevant at the place of storage or during transportation shall be adapted to the type and place of use of the firearm. Therefore, the safety measures vary depending on the practised type of shooting.

The world structure of shooting sport:

[0003]

◦ Worldwide - *International Shooting Sport Federation* - ISSF
◦ Europe - *European Shooting Confederation*
◦ Poland - Polish Sport Shooting Association (Polski Związek Strzelectwa Sportowego);
◦ France - French Ball-Trap Federation (*La Fédération Française de Ball-Trap FFBT),* French Shooting Sport Federation (*La Federation Française de Tir Sportive FFTS).*

Structure of shooting sport in France

[0004] Taking France as the example, at shooting sport facilities (precision shooting ranges and shooting ranges for Ball-Trap / Clay Pigeon shooting) associated with the above-mentioned organisations, the following strict rules concerning the safety and the use of firearms and ammunition apply:

- facilities that guarantee proper shooting activity (reception area separated from the shooting area, marked shooting positions to isolate the shooters from the audience, firearms storage zones, etc.);
- the shooters must have a valid permit issued by the appropriate shooting authority or federations;
- an appropriate document (a permit, patent or licence) signed by a physician, certifying the absence of health contraindications to practise given shooting discipline;
- after each shooting round, the firearm must be opened, unloaded and stored on a rack or other place designated for that purpose;
- a ban on leaving the shooting post, moving around on the shooting path or leaving it with the firearm unlocked or loaded;
- a ban on aiming with a firearm in a direction other than a shooting target;
- a ban on the use of shotgun bags that allow for carrying of unsecured and potentially loaded firearms;
- only licensed shooters and other authorised persons (referees, instructors or designated staff) may be present at shooting ranges.

[0005] Despite the application of the above principles, there are several situations that may lead to a security risk, and the introduction of this technical solution eliminates such risk.

[0006] This kind of situation occurs, among others, at Ball-Trap shooting ranges. Such a shooting range is an open and vast area. It is difficult to control as a whole because it allows practising several disciplines such as:

a) some static disciplines on adapted shooting stands (Olympic Trap, Universal Trap, American Trap, *Double Trap);*
b) other dynamic disciplines in the natural, usually wooded, environment, such as e.g. "hunting paths", moving target, boar shooting;
c) temporary Ball-Trap stands. These makeshift shooting ranges are a part of a longstanding tradition of hunting groups, which at the end of summer, before the start of the hunting season, organise an annual day of Ball-Trap shooting. During such an event a considerable number of participants, the shooters and spectators (audience) are gathering. The shooters' skills are presented in open conditions.

[0007] The organisation of the events mentioned in point c) is subject to safety rules determined by shooting organisations:

- the organiser is obligated to provide the participants with an individual day insurance and equip themselves with a liability insurance while organising the event;
- apart from the administrative permissions from the landowners and the prefecture, the FFBT provides guidance concerning the safety such as:

a) using the firearms without transportation bags / holsters;
b) holding an unlocked shotgun - even if it is unloaded - only at the shooting position and only in the settled firing direction;
c) moving only with the firearm angled down or with an open bolt without a bullet;
d) loading the firearm only directly before firing a shot;
e) ban on the shooters turning towards the audience, regardless of whether the firearm is loaded or not;
f) in case of a pause during firing, the firearm's

safety system shall be put on at the shooting position and emptied of ammunition.

[0008] Obviously, such events are not completely risk-free because of the topography of the location of the event, audience type, firearms used, the lack of experience in ball-trap shooting of some of the participants.

[0009] Another situation that should be considered is the use of firearms during hunting - which will be done on the example of France. There are more than a million hunters in France, with an average age of 57-58. The hunting season lasts for almost half a year and hunters use firearms of various calibres. A considerable part of the hunting firearms is characterised by high killing power and very long range. Currently, hunting is subject to the following safety rules:

- obtaining a hunting permit issued after passing an exam, which comprises a theoretical test and practical elements;
- in a vehicle the firearm should be transported unloaded and it cannot be loaded until the moment, when the hunter intends to fire;
- firing at human height is prohibited, as is shooting through a hedge or shrubbery, towards roads, paths, railway tracks, residential buildings or transmission power lines.

[0010] After a closer analysis a lot of these guidelines are hard to apply because of the wide range of used firearms. For hunting small animals (birds or hares and rabbits) most hunters use semi-automatic three-shot shotguns or double-barrel guns. Legal regulations impose the use of bullets on ungulate animals (wild boars, roe deer, chamois and deer), which means that large calibre shotguns with ammunition range well exceeding 1000 m are used. In this case, it shall be ensured, as far as possible, that the shot is fired in such a way that the projectile does not continue its trajectory for several hundred metres in the area beyond the hunter's line of sight. The difficulty is verifying if the shotguns and semi-automatic shotguns are properly disarmed (an open bolt and empty magazine) while not being used for hunting.

[0011] Despite all the safety guidelines issued by the departmental hunting associations, there have been 3325 accidents in the last twenty years, including 421 fatal ones: 70% of them are "self-accidents", largely caused by improper handling of firearms. The use of firearms in these different environments can lead to certain safety risks during training or recreational shooting involving potentially different groups of recipients (experienced or beginner shooters). The most common risks include unlocked shotguns during transportation or on racks without indication if they are loaded or not. This problem occurs less frequently at shooting sport stands, which have closed shooting zones, where the control of security activities is easier. Although current laws concerning firearms are restrictive, accidents are rarely associated with deliberate carelessness. Very often they are caused by "forgetting to unload" and later handling of a loaded firearm as if it was unloaded.

[0012] A safety feature for short- and long-barrelled firearms, in the form of a plug with protrusions inserted into the barrel, is known from Chinese patent application CN109855470. In the US patent US4835894 a plug was described as inserted into the firing chamber and with a small handle for quick removal. A similar form of protection is known from another American patent US5097613 or US6250008. In turn, in application US20160273877A1, a protection was described in the form of a strap attached to the outlet of the barrel of the gun. In the description of the international application PCT WO2021121966A1 a two-piece protection was revealed, with one of the elements in the shape of a cartridge with a hole directed towards the outlet and with the second element inserted into the barrel from the side of its outlet in such a way that its end sinks into the hole of the first element. In German patent DE102005021910B4 a protection for the revolver type firearms was described that is placed between the body and the clip (the cylinder), which prevents firing. This protection has a short handle for inserting and removing the protection. The US patent application US20180045480A1 describes a lock of the shell ejection window. The lock is in the form of an elongated plug inserted into the above mentioned window.

[0013] The invention faces the problem of providing a firearm safety marker to indicate an empty firing chamber, which would allow easy visual verification of the firearm protection by all persons within the visual range of the firearm unit. In addition, the construction of the marker should enable its easy placement in the firing chamber. However, after its placement, the marker should not fall out of the chamber during handling of the firearm, e.g. during transportation. What is more, the use of such a marker should be possible in different types of firearms.

[0014] The subject of the invention is a firearm visual safety marker comprising a rear portion and a front portion, a signalling-gripping portion, a connecting extension and at least one guide for inserting into a firing chamber, characterised in that the signalling-gripping portion comprises a first planar element and a second planar element connected to each other at the right angle, and the first planar element contains a flat connecting extension, which is connected with at least one guide in the front portion of the marker for insertion into at least one firing chamber of a layout of firearm firing chambers,

wherein the signalling-gripping portion contains a signalling portion and a gripping portion, wherein the marker in the front portion contains the signalling portion of the signalling-gripping portion and at least one guide,

wherein the marker in the rear portion contains the gripping portion of the signalling-gripping portion.

[0015] In a preferred embodiment of the invention, the

gripping portion of the visual marker comprises a notch for strapping.

[0016] In another preferred embodiment of the invention, the visual marker comprises a system of at least two guides.

[0017] In another preferred embodiment of the invention, the guide system corresponds to the layout of the firearm's firing chambers.

[0018] In another preferred embodiment of the invention, the first planar element comprises a side support surface.

[0019] In yet another preferred embodiment of the invention, the signalling-gripping portion comprises means for breaking the signalling-gripping portion for activating fluorescence.

[0020] In another preferred embodiment of the invention, the signalling-gripping portion comprises light sources, wherein the light sources are electrically connected to an electric power supply and to a switch.

[0021] In yet another preferred embodiment of the invention, the connecting extension comprises a straight portion and an arcuate portion.

[0022] In yet another preferred embodiment of the invention, a clearance needle bar is attached to the guide for inserting into the barrel of the firearm, wherein the clearance needle bar ends with a needle bar ball.

[0023] In another preferred embodiment of the invention, the first planar element comprises an aperture for locking the clearance needle bar.

[0024] With reference to the subject of the invention, individual structural elements should be understood as:

1. **visual marker-an** equipment used to secure a single-and multiple-barrelled shotgun, rifles (hunting firearm) and pistols or revolvers, by placing it in the firing chamber or chambers of the secured firearm. It enables visual verification of the safety of the firearm;
2. **signalling module (signalling portion)** - a visual marker's element - located above the guide or guides. If it consists of four flat surfaces, in principle they are placed at 90° to each other. The angle of inclination of the surfaces to each other, as well as their size and number, may be variable;
3. **guide** - in principle a cylindrical element placed in the firing chamber or chambers. The number and size of guides shall be dependent on and adapted to the type of the secured firearm;
4. **connecting element** - a flat element, constituting an extension of the part of the signalling module, located between the signalling module and the guide. Its shape and size depend on the type of the secured firearm unit;
5. **grip module (gripping portion)** - an element located at the rear part of the visual marker in relation to the direction of the barrel that enables operating the marker. It can be a semi-open element. In a semi-open form, this element allows for simple and safe attachment (strapping) of the marker to the shooting vest or another part of the clothing element of the person using the secured firearm.

[0025] The proposed solution, according to the invention, includes a number of advantages. The safety visual marker for firearms, according to the invention, guarantees a very high level of safety and ensures that all firearms units with a properly installed marker are safe and unloaded - therefore, it is impossible to fire from them. An additional level of security is ensured by the ease of visual verification of firearm security by all persons within the visual range of the firearm unit with a properly installed visual marker. The insertion of a visual marker into the firing chamber makes it possible to visually check the security of the firearm easily and continuously.

[0026] The subject of the invention is illustrated in the figure with the following elements presented:

- fig. 1a - a visual marker for a horizontal double-barrelled shotgun - three-dimensional projection;
- fig. 1b - a visual marker for a horizontal two-barrelled shotgun - two-dimensional projection - side view;
- fig. 2 - a visual marker for a single barrel shotgun;
- fig. 3 - a visual marker for a vertical double-barrelled shotgun;
- fig. 4a - a visual marker for side-loading firearms (including shotguns, pistols, other side-loading firearms) - three-dimensional projection;
- fig. 4b - a visual marker for side-loading firearms (including shotguns, pistols, other side-loading firearms) - two-dimensional projection - front view;
- fig. 5a and 5b - exemplary guide layouts in a safety visual marker for a pistol;
- fig. 6a-6g - exemplary guide layouts in a visual marker in multi-barrelled shotguns;
- fig. 7a-7b - examples of a marker for a vertical double-barrelled shotgun (fig. 7a) and a horizontal double-barrelled shotgun (fig. 7b);
- fig. 8a-8g - examples of a marker with guides of various shapes;
- fig. 9 - a three-dimensional projection of the marker with seals on the guides;
- fig. 10-a three-dimensional projection of the marker with indicated break line;
- fig. 11-a three-dimensional projection of the marker with electrically powered light sources;
- fig. 12 - a three-dimensional projection of a marker for use in a firearm with a five-round ammunition cylinder;
- fig. 13a - a three-dimensional projection of a marker for use in a firearm with a six-round ammunition cylinder;
- fig. 13b - a three-dimensional projection of a marker for use in a firearm with a ten-round ammunition cylinder.

Example 1 Visual Safety Marker for Firearms

[0027] According to the invention, the visual safety marker for firearms 1 is made of two planar elements 1a and 1b. The first planar element 1a is connected to the second planar element 1b in such a way that the element 1a is oriented perpendicularly to the element 1b. The first element 1a is attached to the second element 1b, respectively, so that the upper edges of the first element 1a and of the second element 1b are at the same height relative to each other and face each other at 90° angle. The number of planar elements is not limited by the presented example of realisation and need not be limited to two. The angles of intersection of the planar elements may also be variable. The connection of the first planar element 1a and the second planar element 1b defines the signalling-gripping part 2 of the marker 1. Essentially, marker 1 contains a front portion and a rear portion. In the front portion of the marker 1, there is a signalling module 2a of the signalling-gripping portion 2, for signalling to a person within the visual range of the firearm about the absence of ammunition in the firing chamber of the secured firearm. In addition, at least one guide 4 for inserting into the firing chamber of the firearm is also provided in the front portion. In the rear portion of the marker 1, there is a grip module 2b for holding the marker 1 while using it. This element can also be used to attach (strap) the marker 1 to the shooter's clothing (e.g., shooting sports vest, ammunition belt used during hunting, key lanyard, other elements). A notch made in the grip module 2b as seen in fig. 1b may be used for strapping. The signalling module 2a of the marker 1 is constructed of the front surfaces of the first planar element 1a and the front surfaces of the second planar element 1b. The grip module 2b of the marker 1 is constructed of the rear surfaces of the first planar element 1a and the rear surfaces of the second planar element 1b. In fig. 1a and 1b, the given surfaces are marked with reference to respective modules, i.e., 2a and 2b. However, by comparing fig. 1a and fig. 1b, it will be apparent to an expert in this field that the variant realisations of the invention shown in fig. 2-5 comprise the same modules arranged in a structurally identical manner. The first planar element 1a in the lower part opposite the upper edge comprises a flat connecting extension 3, constituting a connector (connecting element) between the first element 1a and the guide 4. The extension 3 may be an extension of the first element 1a (fig. 1a) or be a separate structural element attached to the extension of the element 1a (fig. 4a, fig. 5). In each of the two cases mentioned, the extension 3 comprises at least one guide 4 for inserting into firing chamber of firearms, wherein the mentioned guide 4 is attached to the extension 3 from the side of the signalling module 2a of the planar element of the second visual marker 1 for the firearm. The guide 4 has essentially a cylindrical shape in the transverse section. Depending on the purpose of the marker 1, the extension 3 may comprise one guide (fig. 2, fig. 4a, fig. 5) or two guides (fig. 1, fig. 3), wherein in the case of a double-barrelled firearm, e.g., a double-barrelled shotgun, the guides 4 are attached vertically or horizontally on the extension 3, respectively. There are also firearms consisting of more than two barrels. Figures 6a-6g illustrate examples of the visual marker 1 for such type of firearm, in which the marker 1 comprises three to five guides 4, wherein all the guides 4 may have the same diameter (e.g., fig. 1a) or different diameters (e.g., fig. 6e). The guides 4 may have a diameter that is approximately 1 mm smaller than the diameter of the firing chamber of a given type of firearm for easy insertion of the guides 4 into the firing chamber of a given type of secured firearm unit. In this case, seals (fig. 9) may optionally be attached to the guides 4 to securely settle the marker in the firing chamber. In the case of multi-barrel shotguns (more than two barrels, fig. 6a-7b), one or two diameters of the guides 4 may correspond to the diameter of the barrel, or barrels, and the other guides may be significantly smaller in diameter than the diameter of the barrels secured by them. In each of the cases of the secured shotgun, in order for marker 1 to be correctly attached, all the chambers of the secured firearm unit must be empty, the firearm must be unloaded and, in the case of a shotgun, it must be opened ("break-open").

[0028] The shape of marker 1, i.e., the vertical surfaces (elements 1a and 1b) positioned perpendicularly above the protected firearm unit at 90° angle, ensures visibility at different angles of inclination (when the shotgun is "broken") as well as within a 360° radius regardless of the direction of the shotgun (long-barrelled firearm) or its operator, as well as the inclination of the firearm in relation to the person performing the visual verification. Marker 1 is visible to people around the person that uses the shotgun both at the time of placing the shotgun on the shoulder (a standard way of carrying the shotgun around an open shooting sports facility), carrying it in the position in which it is "placed over the forearm at hip height", and when the shotgun is placed on the rack/stand for shotguns at shooting stands (in the southern part of Europe called *fosse*) or inside the club building.

[0029] Regardless of the number of guides 4 in different variants of the realisation of the marker 1, said guides may have different shapes in transverse section and longitudinal section. Various shapes of the guides 4 provide a better fit to the firing chamber, which translates into a lower risk of spontaneous sliding out of the marker 1 from the barrel. Exemplary shapes of the guides are shown in fig. 8a-8h. However, the guide 4 may have a shape adapted to the barrels of different lengths.

[0030] In the case of short firearms, the visual marker comprises an additional structural support element 5 in the form of a side flat surface with perpendicular 90° inclination towards the direction of the barrel, and relative to and attached to the first planar element 1a. The support element 5 allows the pistol or rifle to be placed in a safe side lying position with the barrel facing the firing target with a vertically and horizontally visible signalling element. Although the variant of realisation of the marker 1

shown in fig. 9 relates primarily to a short-barrelled firearm, such a support element 5 may also be used in variants of the marker for long-barrelled firearms.

Material

[0031] The material used to produce the marker according to the invention should have the following characteristics:

a) plasticity-fine adjustment to the inside of the barrel;
b) smoothness (not causing excessive slippage) - this especially applies to guides placed in the barrel and it serves the purpose of eliminating the possibility of scratching the inner part of the barrel;
c) resistance to external factors - sun, rain, temperature variability.

[0032] Such material should not be prone to distortion during repeated and prolonged use. On the other hand, it should react to the relatively low pressure exerted on the visual marker during the process of placing it in the barrel. The type of material should eliminate the possibility of the marker sliding out of the barrel both when carrying the firearm, placing it on the rack or using it. There are situations when the rifle or shotgun is in a position other than parallel to the ground. Examples of the materials include proper types of plastic, gel material, silicone of appropriate hardness, caoutchouc or foam of appropriate hardness, (MyCoComposite mushroom mass (www.Ecovative.com) in the case the marker is made of ecological material).

Colour schemes

[0033] The colour of the visual marker for the purpose of fulfilling its role should be particularly bright and reflective in order to obtain the greatest possible visibility. Additionally, the colour of the marker should make it visible from the greatest possible distance. Examples of colours that may apply include bright colours: bright celadon, orange, green, yellow, red, pink.

[0034] It is possible to create the marker 1 according to the invention with the possibility of breaking the elements of the signalling module 2a in order to activate the illumination - fluorescent version (fig. 10). This feature would be particularly important when using the firearm in the dark - for example, at the end of hunting and the gathering of shooters after hunting, the movement of a group of shooters to vehicles or homes. The signalling module would incorporate chambers containing substances that, when mixed, would create a fluorescent effect. An element or elements separating these chambers, designed in such a way as to be easily broken or crushed, would allow the user to initiate a chemical process emitting light. The duration of the chemical reaction emitting light, its colour and intensity would depend on the needs of a specific model of the marker.

[0035] It is possible to make the marker 1 according to the invention equipped with active light elements supplied with power (a replaceable battery or a battery charged by means of a USB connection), as shown in fig. 11. The energy source located in the guide 4 would supply the light sources (or other light-emitting components - e.g., LEDs) located on the surface of the components of the signalling module 2. It should be pointed out that the energy source can be placed in another component of the marker 1, and the indicated solution is only an example. Thanks to such a solution, the visual marker according to the invention would be visible in the dark, increasing its safety qualities.

Training shooting cycle - ball-trap, long firearm, shotgun

[0036] Undertaking actions on the application of adequate safety measures related to trap shooting training should begin from the moment of arrival at the shooting sport stands. During transport, the shotgun must be dismantled into three elements (the fore-end, barrel and stock) and placed in a special locked transport case. Only after arriving at the shooting range can the shotgun be assembled in accordance with the safety rules. It should be noted that the shotgun must remain break-open when moving around the facility. After assembling the shotgun, the shooter is obliged to register their presence and only then can they go to the shooting posts. After setting out the equipment, putting on protective headphones and glasses, which is an absolute requirement of safety rules, the training may begin. The shooter either records a round of shots (match) using a magnetic card and an appropriate reader (automatic shooting posts), or, in any other safe manner accepted at the facility, alone or with other shooters can start a shooting round. Both Universal Trap and Olympic Trap consist of five posts for shooters. Six shooters moving between five shooting posts can participate at the same time in the 25-shot round. After firing one or two shots at the clay pigeon, the shooter moves to the next shooting post. In each round - during training or competition -the shooter shoots no more than 25 darts (five clay pigeons from five individual shooting posts). The shooter moving between the posts should carry a broken shotgun. Moving between the fifth post (last firing post on the right side of *the stand*) and the first post (last firing post on the left side of the stand), the shotgun must be brake-open and the firing chambers empty (in the case of a semi-automatic shotgun - the firing chamber and the magazine).

[0037] Each time the shooter has the right to close the shotgun only directly before shooting the clay pigeons.

[0038] One of the main differences between double- and single-barrelled shotguns is the number of cartridges that fit in them. In accordance with the current safety standards, single-barrelled semi-automatic sports shotguns have the possibility of loading up to three cartridges

- there are two cartridges in the magazine and a third in the firing chamber.

[0039] In open shooting stands used for sport shooting (ball-trap shooting), it is allowed to place two cartridges in semi-automatic shotguns - one in the firing chamber and the other in the magazine. Due to the construction of this type of shotguns after firing the first shot, at the end of the shooting round or during the pause in the use of the shotgun, there is no possibility of "break-opening" it. The consequence of this is the inability to visually control the safety of the shotgun and the loading condition of the firing chamber and the magazine. This applies to both carrying around this type of shotgun, operating it, and placing it on a rack or stand.

[0040] Many people using this type of shotgun have a habit (contrary to safety requirements) of loading three cartridges (two in the magazine and a third in the firing chamber). After each shooting round or shooting down of the clay pigeon at the first shot, there is a high probability of leaving cartridges in the magazine and the firing chamber (if three cartridges were loaded into the shotgun before the shot was fired, which is not in accordance with the currently applicable safety standards), or only in the firing chamber. This can lead to accidental firing.

[0041] After the shooting round, the shotgun should be "brake-open" and the firing chambers checked to ensure they are empty - then marker 1. should be inserted into them. Visual marker 1 should be placed in the vertical position with the signalling module facing upwards. The guiding elements should be inserted into the firing chambers of the secured firearm. The marker should be pushed to the part connecting the guide element with the signalling module. Each guiding element should be placed in a separate firing chamber. Marker 1 placed in the firing chambers is a visible confirmation of the absence of cartridges in the firing chambers and is a technical protection of a firearm preventing it from firing. In the case of single-barrelled centre-loading shotguns or shotguns, the attached marker 1 prevents the insertion of the cartridge into the firing chamber, as well as the firing of the shot, due to the inability to use the lock in relation to the shotgun. The visibility of the marker 1 placed in the firearm is a visual signal that the firing chambers are empty.

Training shooting cycle - long firearm, hunting shotgun, shooting stand

[0042] In this case, the first phase related to the course of the training does not change until the moment of arrival at the shooting post. The character of this type of shooting training is associated with much greater distance to the shooting target and the location of appropriate shooting posts. After arriving at the training post - or, in case of lack thereof at the spot of firing - the shooter prepares themself and the shotgun to fire. Typically, the shooter must move to the target stand to place a shooting target there. In principle, the shooter should not leave the firearm at the shooting post - they should always have it with them. However, there are often cases when the firearm remains on the shooting table or at the shooting post. Shooting target is often placed at a distance of several dozen or even several hundred metres from the shooter. The shooter that moves to place the target walks in the open shooting area. It is difficult for both of them and for other people in sight to assess whether their firearm or firearms of other users of the shooting range is loaded. After placing the target, the shooter returns to the shooting post, prepares the shotgun, places the bullet in the firing chamber or inserts the magazine into the shotgun, and after closing the lock, the rifle is armed and ready to fire. The shooter takes a round of single shots (typically from three to five) and heads to the target stand in order to evaluate the result and determine the trajectory of the projectile. At the end of each shooting round or during the period of temporary pause in using the shotgun, the marker should be placed in the firing chamber, which prevents the loading of the firing chamber and proper usage of the lock.

Use of hunting firearm - the hunt

[0043] Statistically, the highest number of accidents occurs during hunting, especially in the phase before and after the hunt itself. Therefore, the marker 1 should be placed in the secured hunting firearm especially during these phases. If the hunt ends at night or after dusk and there is a phase called "catch sharing" and a large number of people are present, it is necessary to use a marker to reduce the risk of accidents.

Marker for firearms adapted for left-handed users

[0044] The figures show variants of the visual marker 1 intended to secure firearms used by right-handed persons. For the purpose of securing firearms used by left-handed persons, the visual marker shall be a mirror reflection of the above-described variants of the visual marker 1.

Handguns (fig. 4a, 4b and 5, 5a).

[0045] This variant of realisation of the invention is applicable to pistols. When placed in the barrel of the secured firearm, the clearance needle bar is a proof of the lack of any element in the barrel, and thus of the possibility of safely firing another shot. There are cases (especially in small-calibre firearms, i.e., .22 calibre (5.56 mm sport firearm, used in shooting sports league, shooting national competitions, masters' championships of Europe, the Olympics)) when the tip of the bullet (projectile) cracks under the force exerted on it, and a part of it remains blocked in the barrel. This, in turn, may lead to distension and explosion of the barrel when firing another shot. The functions of the additional elements are as follows:

- **clearance needle bar 6** - a straight element of cylindrical shape inserted into the barrel of the secured firearm, passing through the entire length of the barrel and visible at the end of the barrel element, when seen from the side of the firing chamber. The needle bar 6 is attached to the central outer part of the guide 4;
- **ball of the needle bar 7** - in accordance with the description, it enables reducing the marker size after training or after using the firearm by placing it in the locking slot 8. Such a way of placing the needle bar 6 has also influenced its protection against damage.
- **aperture locking the clearance needle bar 8** - its lower part, with dimensions larger than those of the ball of the needle bar 7, allows the ball 7 to be easily inserted into it. The upper part, corresponding to the diameter of the needle bar 6, is used to block ball 7.

Precision shooting club - **rifle, pistol, revolver**

[0046] After each shooting round (typically a round of 5 shots), the magazine should be removed, the firing chamber checked to ensure no cartridge remains in it (if it does, it should be removed) and the visual marker 1 placed in the firing chamber of the secured pistol/rifle. Then the secured firearm should be placed on the shooting table.

[0047] When firing a revolver, after each shooting round (typically a round of 5 shots) the cylinder should be opened, the cylinder chambers checked to ensure no bullets remain there (if they do, they should be removed) and the visual marker placed in the firing chambers of the cylinder. Then the secured firearm should be placed on the firing table. An example of a variant of the marker 1 for use in firearm with an ammunition cylinder for five revolver-type bullets is shown in figure 12. In the case of a marker used in revolvers, the connector 3 is extended and its extension is arcuate in shape to match the shape of the ammunition cylinder. The number of guides 4 and their diameter, the width of the connecting element 3, the radius of curvature of its arcuate part and the length of its straight part depends on the type of the secured revolver (fig. 12, fig. 13a-b). In addition, in the case of a revolver, the spacing of the guides 4 on the connector may vary depending on the capacity of the ammunition cylinder. For example, fig. 12 shows a marker to be used with an ammunition drum for five bullets, and fig. 13a - for six bullets. Whereas fig. 13b illustrates a marker to be used with an ammunition drum for 10 bullets.

Claims

1. A visual safety marker for firearms comprising a rear portion and a front portion, a signalling-gripping portion, a connecting extension and at least one guide for inserting into a firing chamber, **characterised in that** the signalling-gripping portion (2) comprises a first planar element (1a) and a second planar element (1b) connected to each other at the right angle, and the first planar element (1a) contains a flat connecting extension (3), which is connected with at least one guide (4) in the front portion of the marker (1) for insertion into at least one firing chamber of a layout of firearm firing chambers, wherein the signalling-gripping portion (2) contains a signalling portion (2a) and a gripping portion (2b), wherein the marker (1) in the front portion contains the signalling portion (2a) of the signalling-gripping portion (2) and at least one guide (4), wherein the marker (1) in the rear portion contains the gripping portion (2b) of the signalling-gripping portion (2).

2. The marker according to claim 1, **characterised in that** the gripping portion (2b) of the visual marker (1) comprises a notch for strapping.

3. The marker according to claim 1 or 2, **characterised in that** it comprises a system of at least two guides (4).

4. The marker according to claim 3, **characterised in that** the system of guides (4) corresponds to the layout of firearm firing chambers.

5. the marker according to claim 1, **characterised in that** the first planar element (1a) comprises a side support surface (5).

6. The marker according to any of the preceding claims, **characterised in that** the signalling-gripping portion (2) comprises means for breaking the signalling-gripping portion (2) for activating the fluorescence.

7. The marker according to any of the preceding claims, **characterised in that** the signalling-gripping portion (2) comprises light sources, wherein the light sources are electrically connected to an electric power supply means and a switch.

8. The marker according to any of the preceding claims, **characterised in that** the connecting extension (3) comprises a straight portion and an arcuate portion.

9. The marker according to any of the preceding claims, **characterised in that** a clearance needle bar (6) is attached to the guide (4) for inserting into the barrel of the firearm, wherein the clearance needle bar ends with a needle bar ball (7).

10. The marker according to any of the preceding claims, **characterised in that** the first planar element (1a) comprises an opening (8) for locking the clearance needle bar (7).

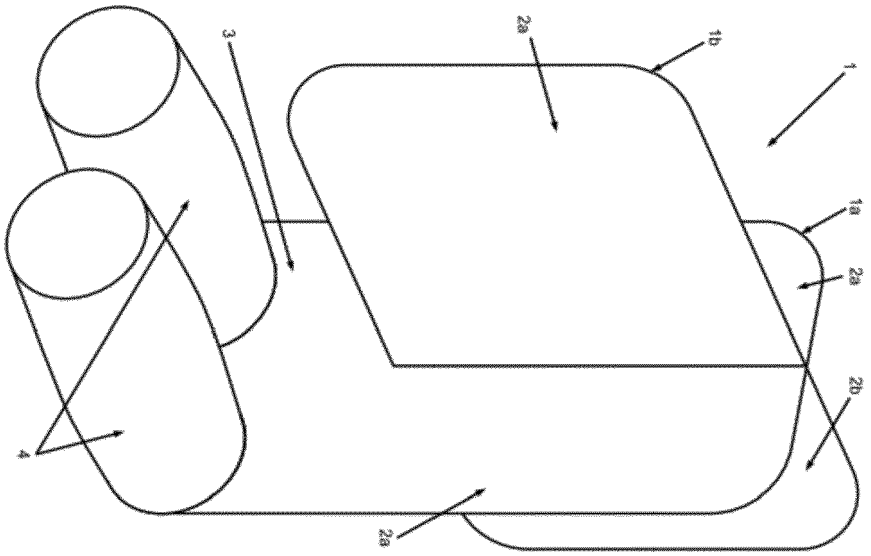

Fig. 1a

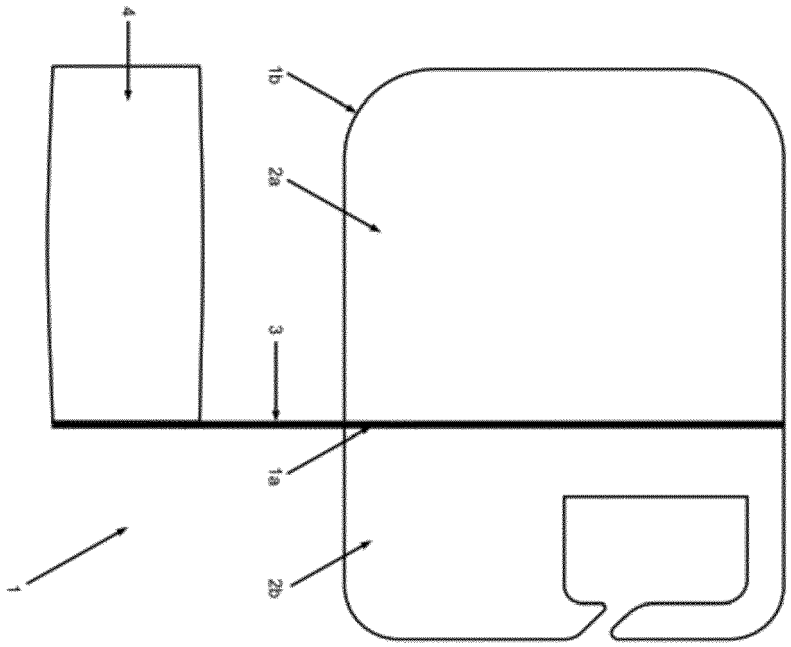

Fig. 1b

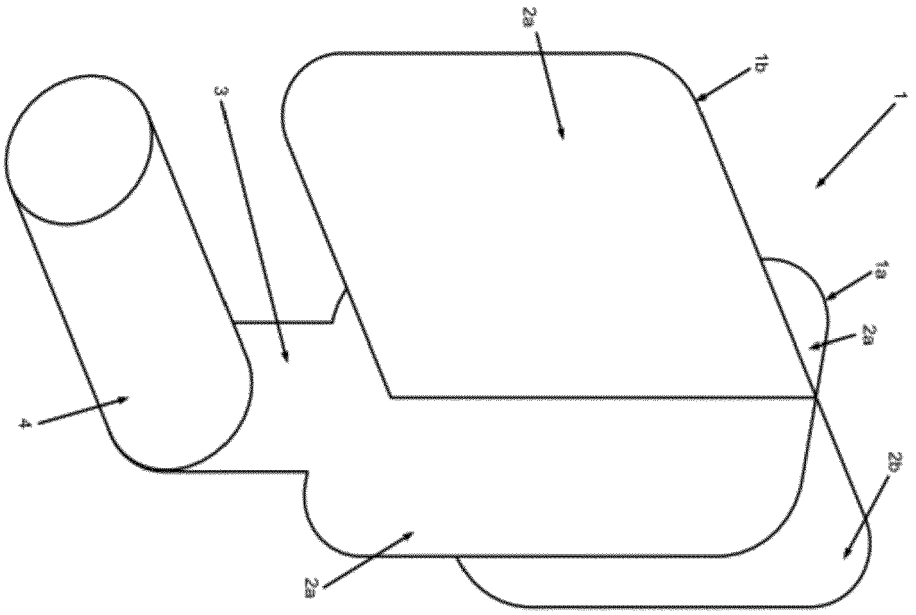

Fig. 2

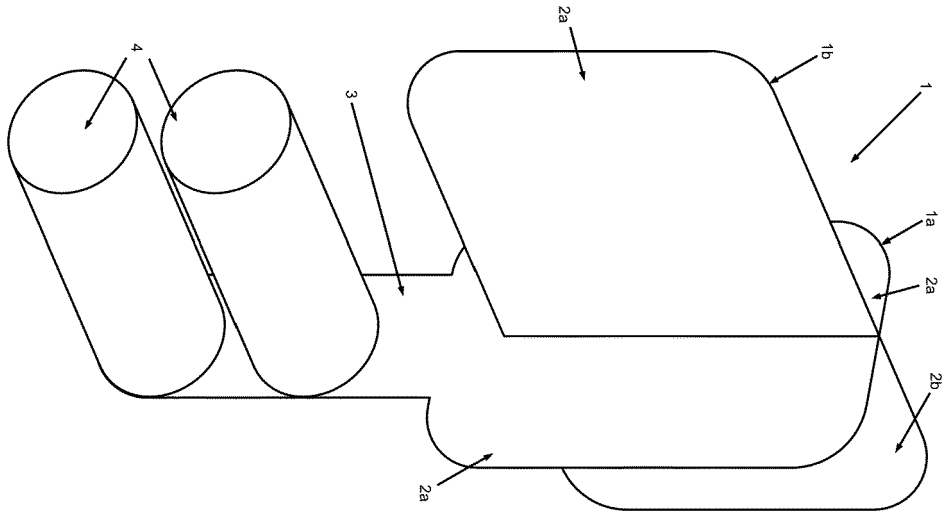

Fig. 3

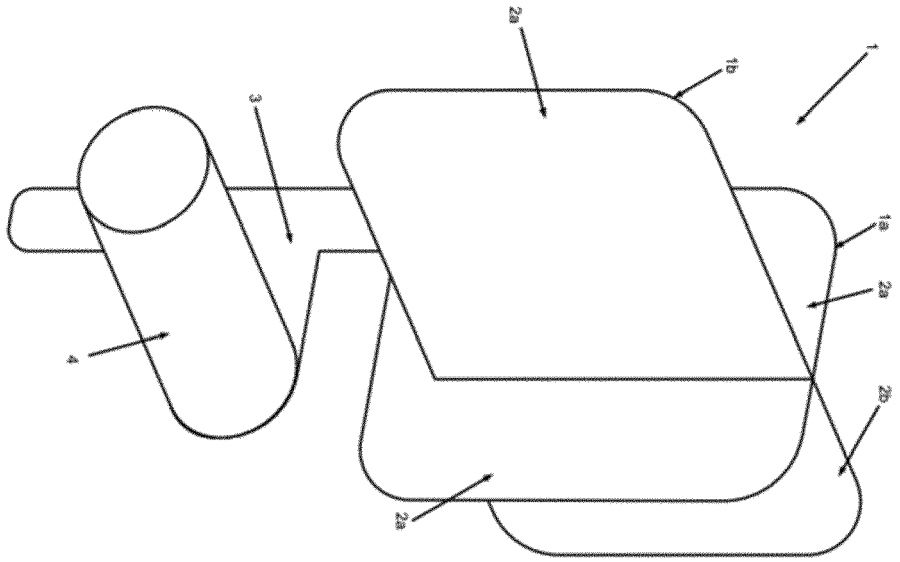

Fig. 4a

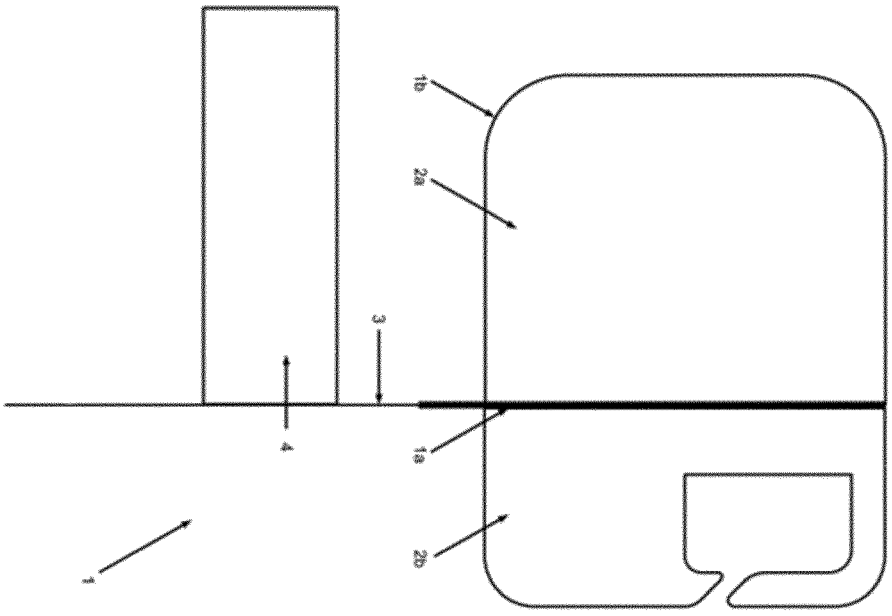

Fig. 4b

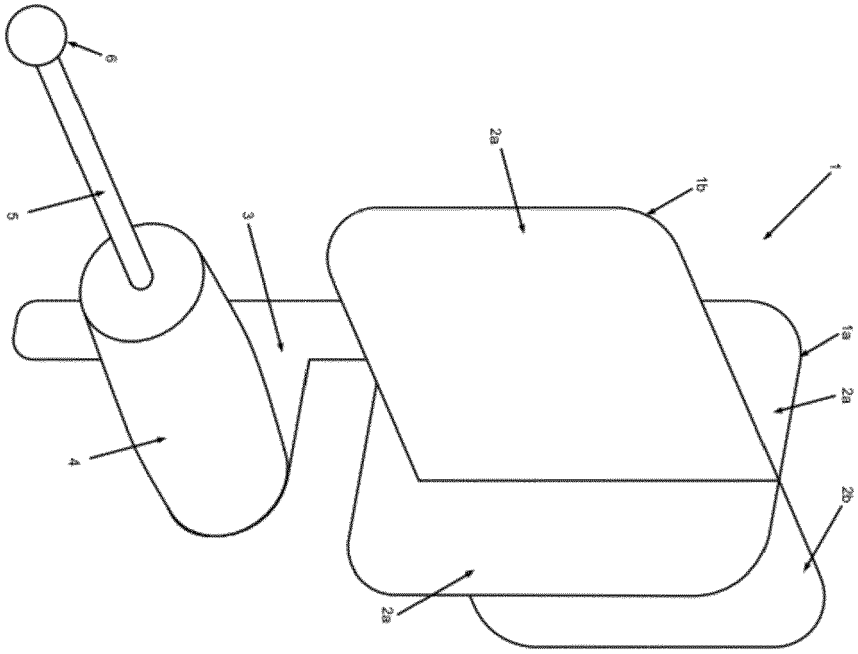

Fig. 4c

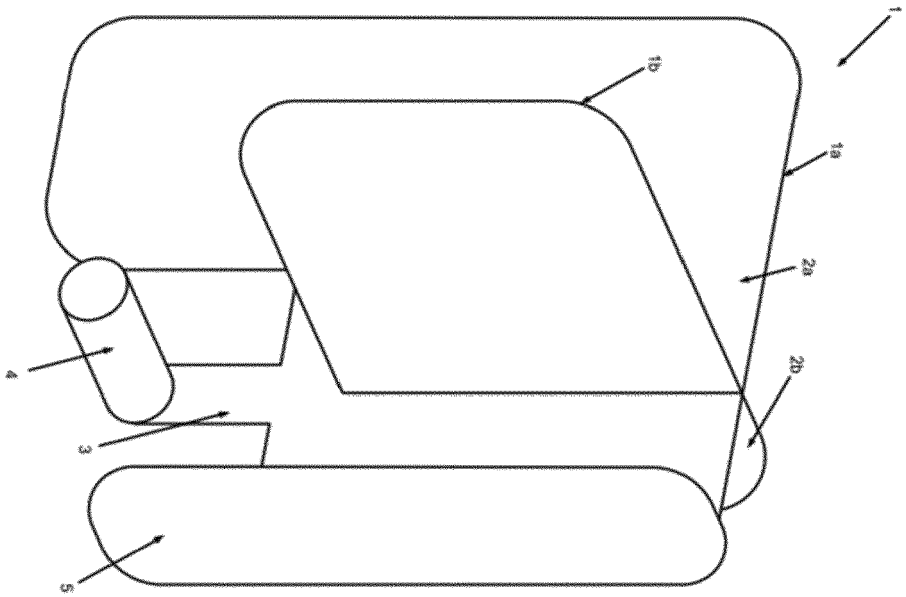

Fig. 5a

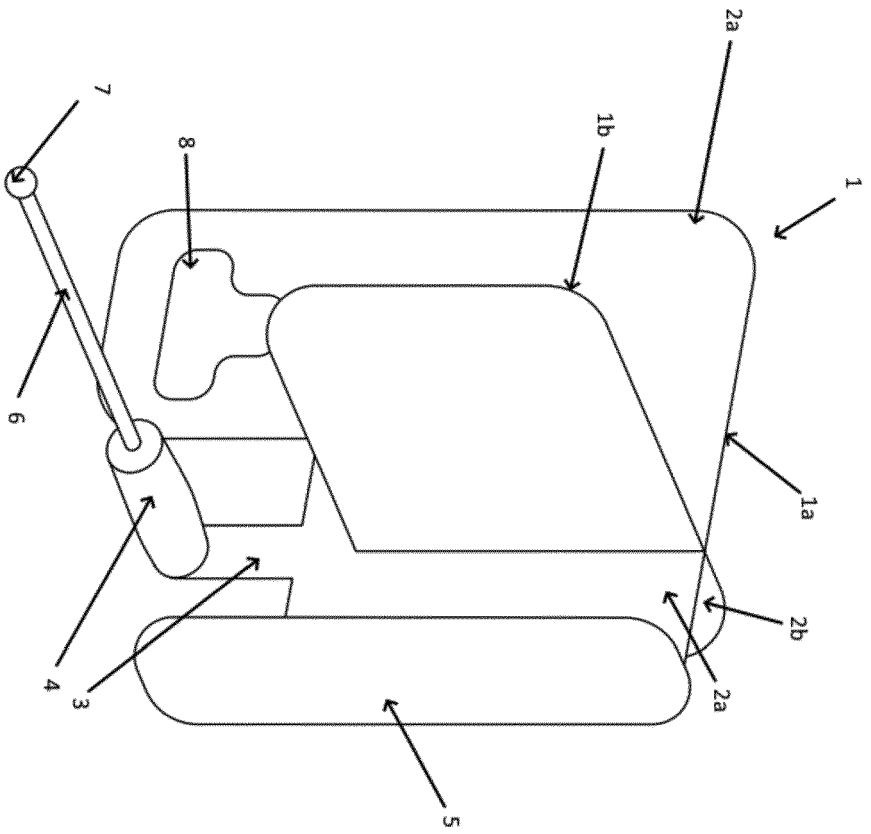

Fig. 5b

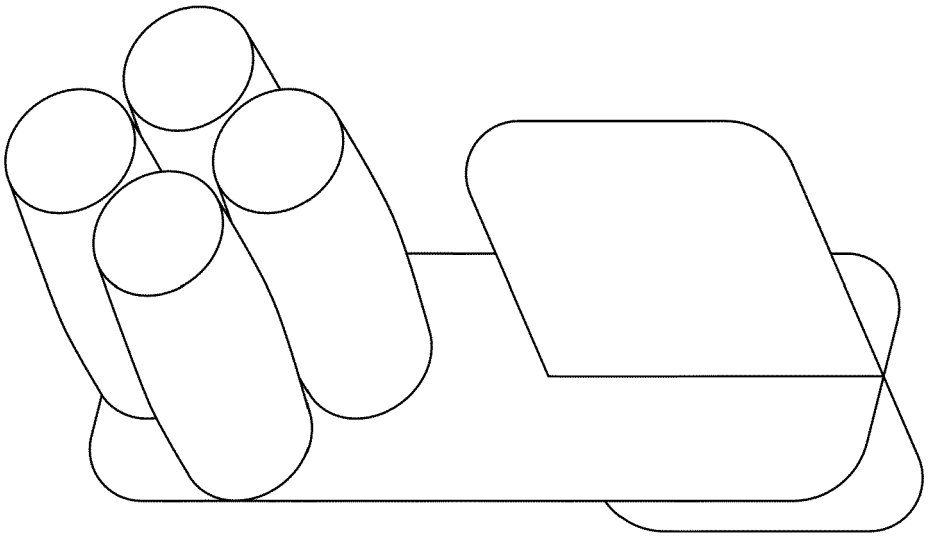

Fig. 6a

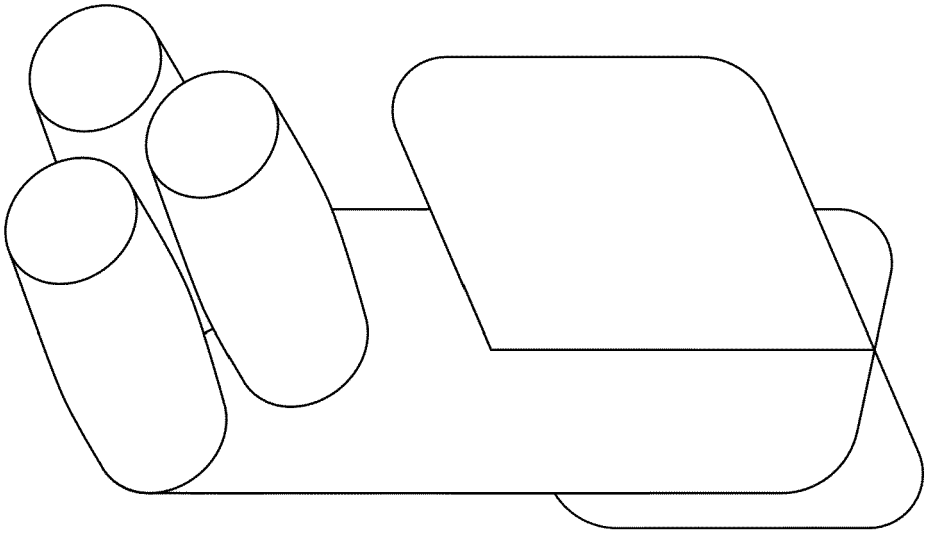

Fig. 6*b*

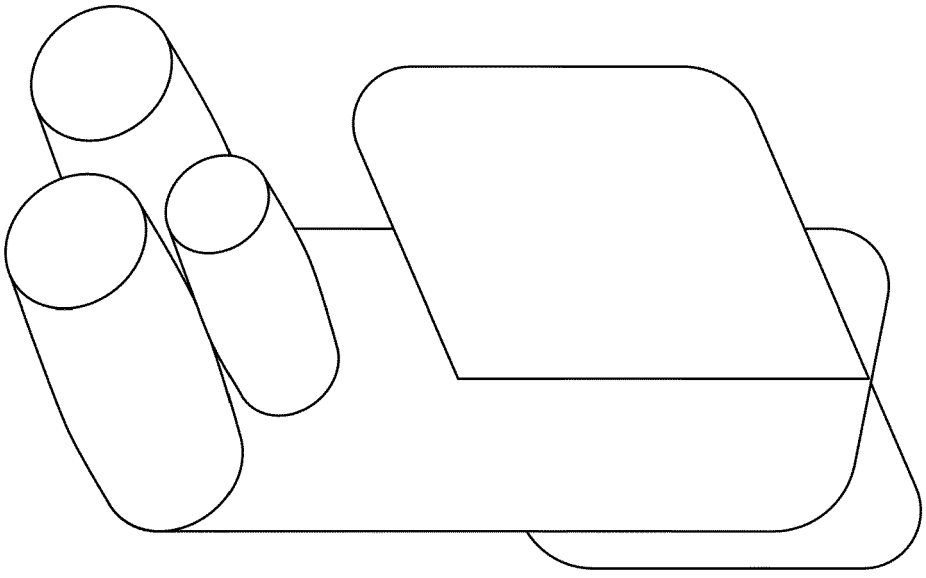

Fig. 6c

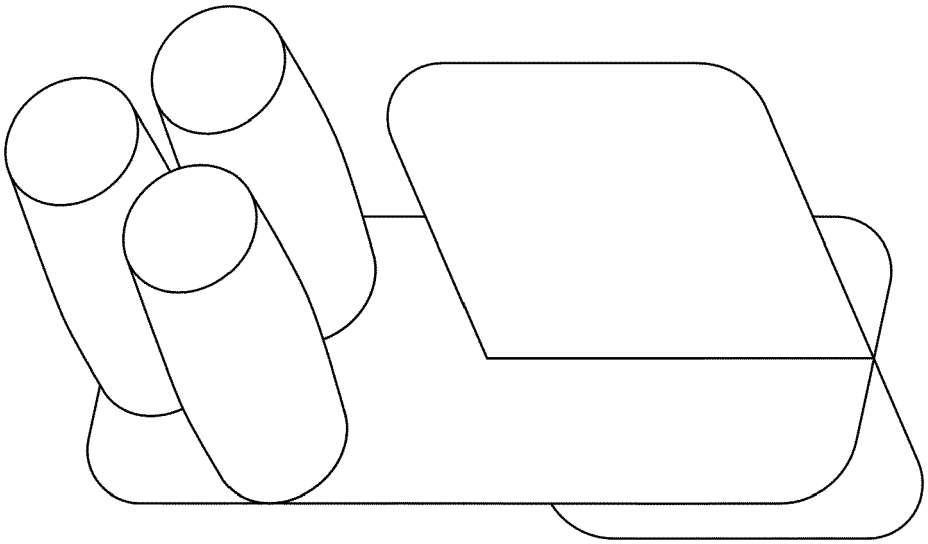

Fig. 6d

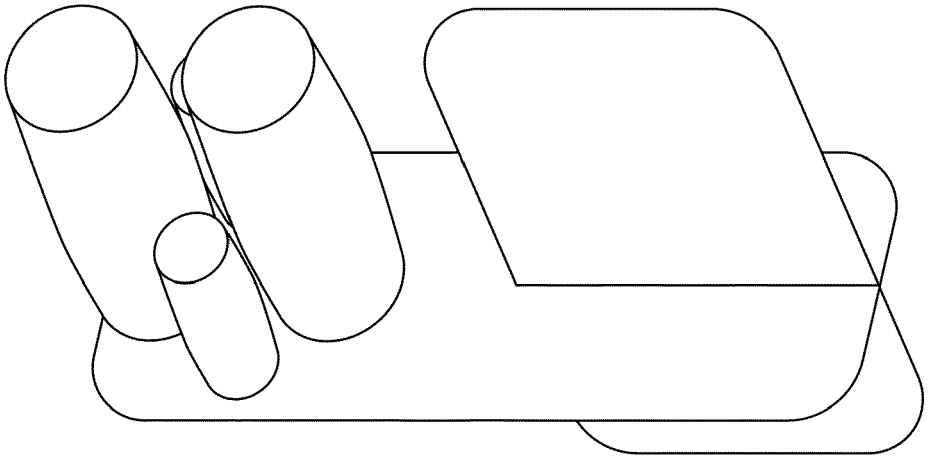

Fig. 6e

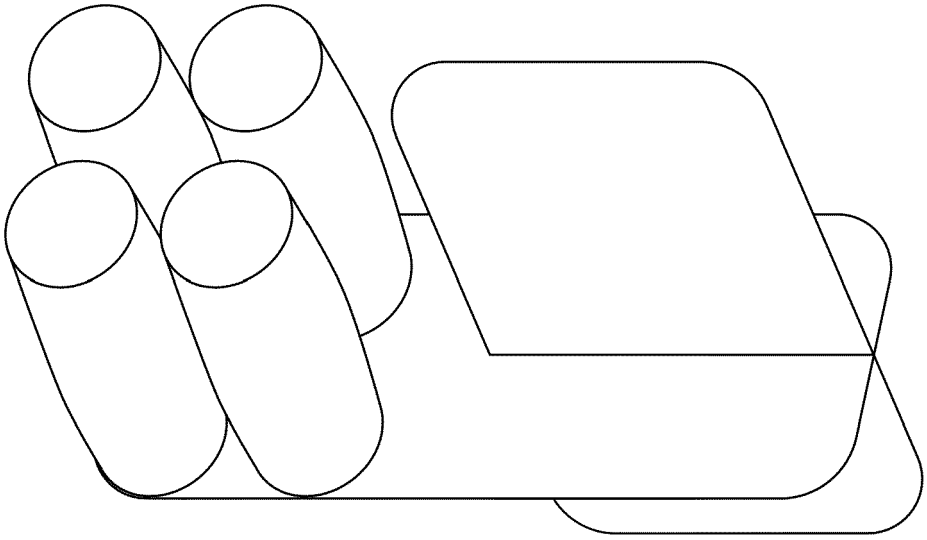

Fig. 6f

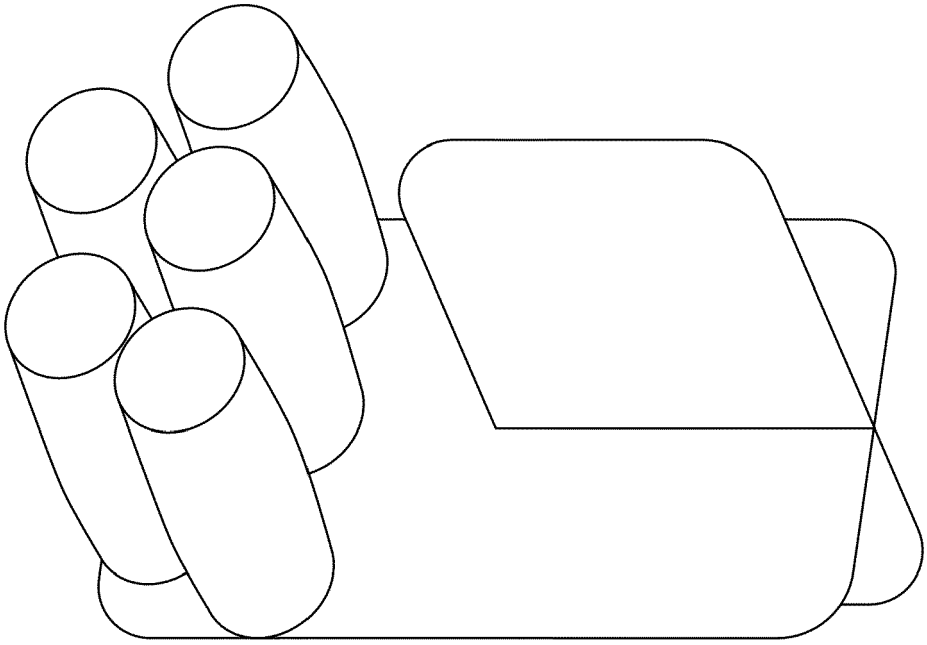

Fig. 6g

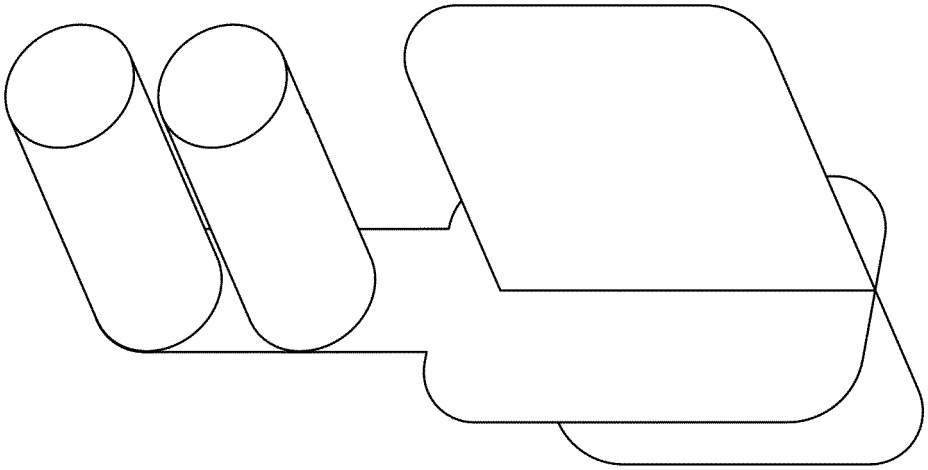

Fig. 7a

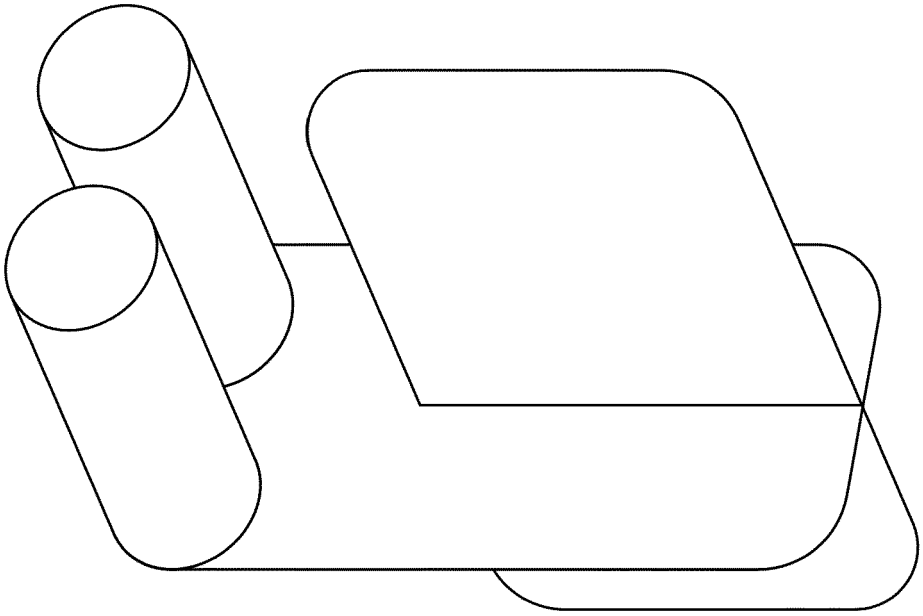

Fig. 7b

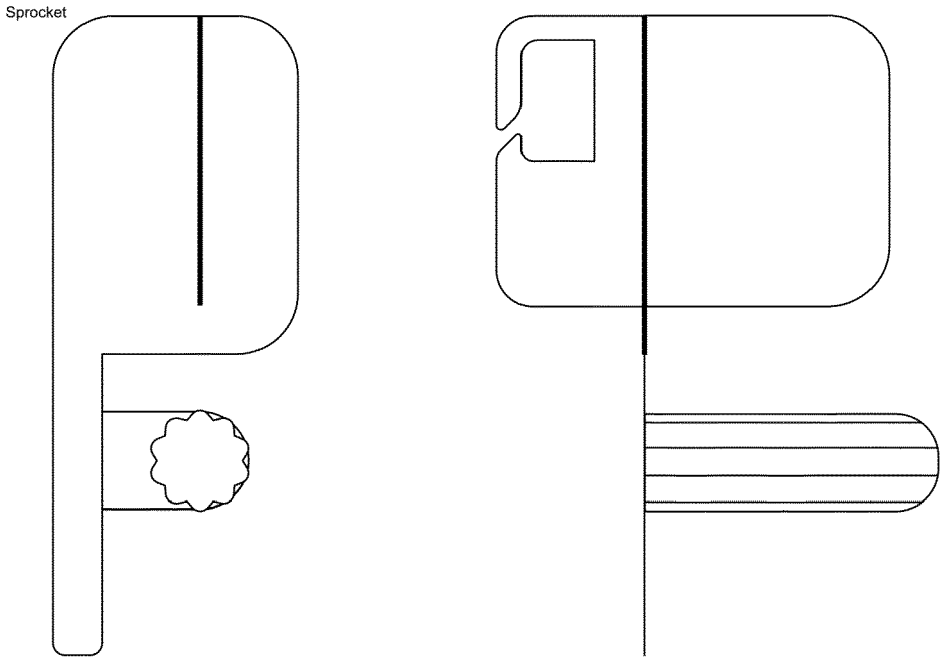

Fig. 8a

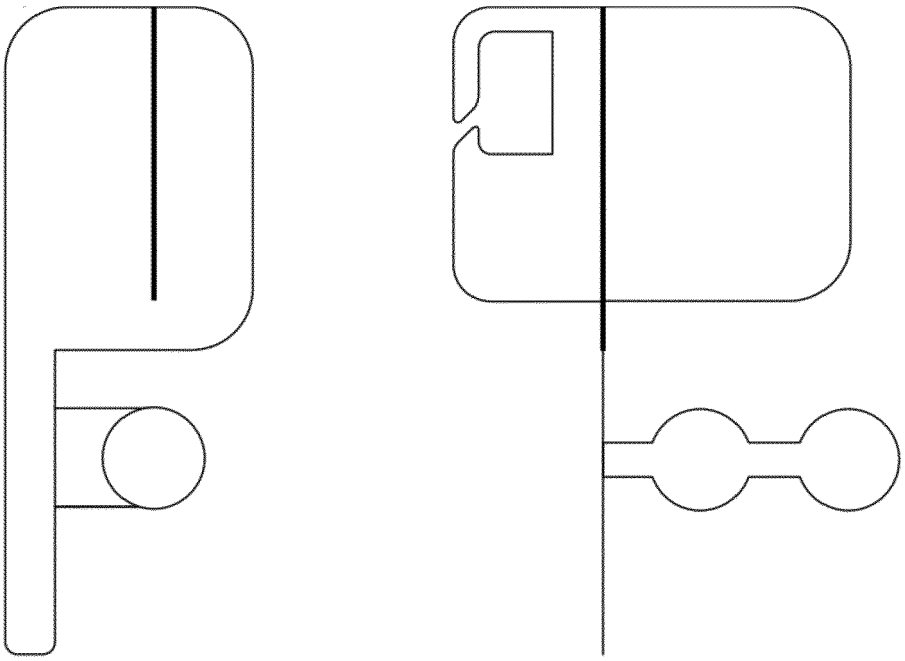

Fig. 8b

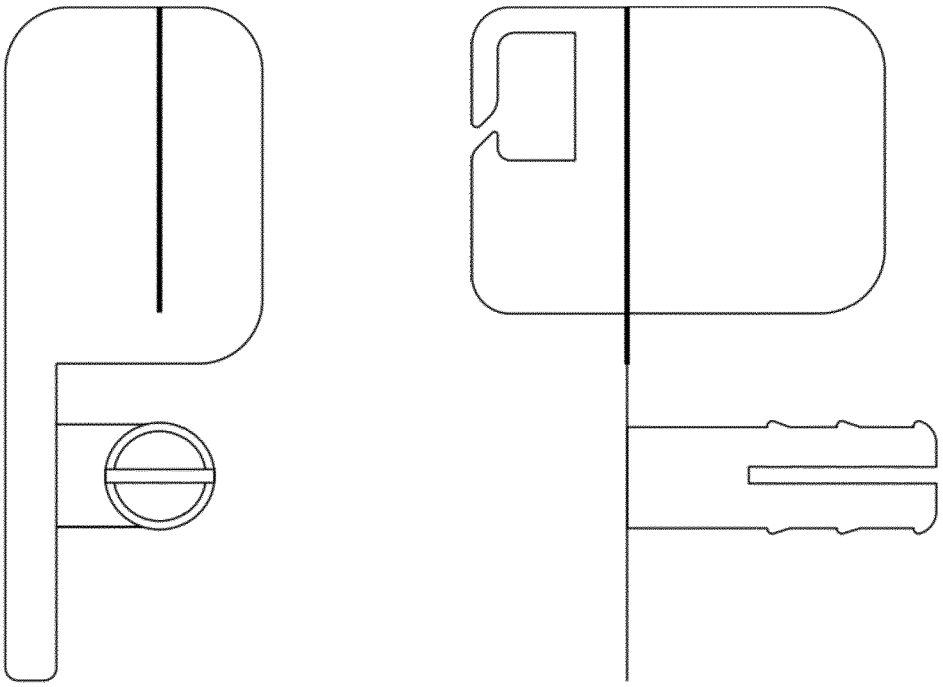

Fig. 8c

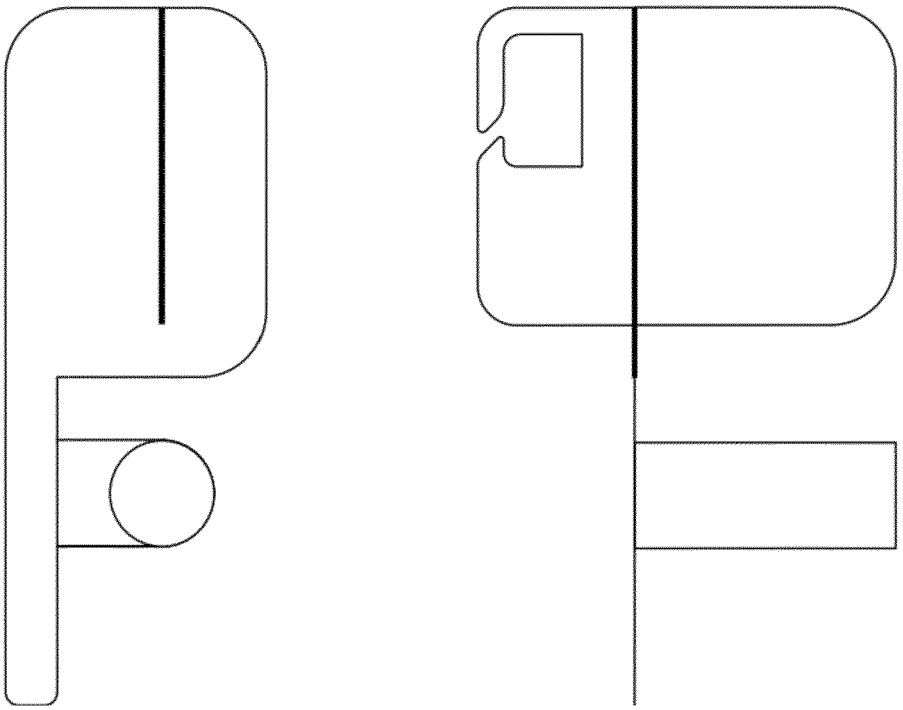

Fig. 8d

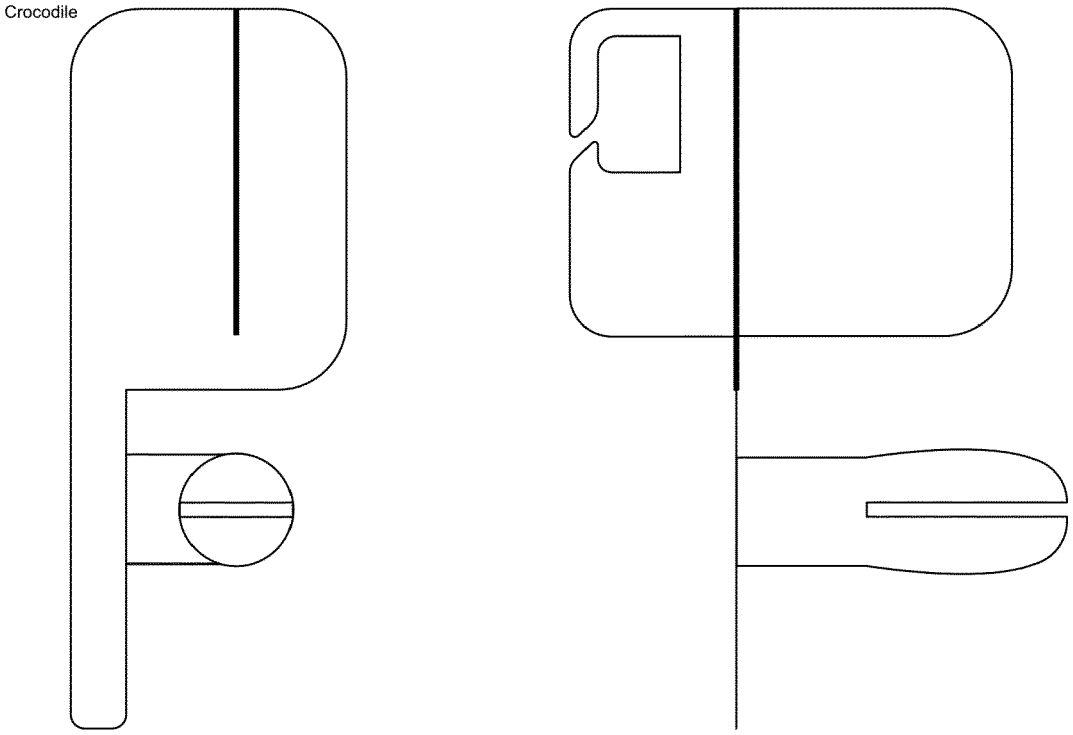

Fig. 8e

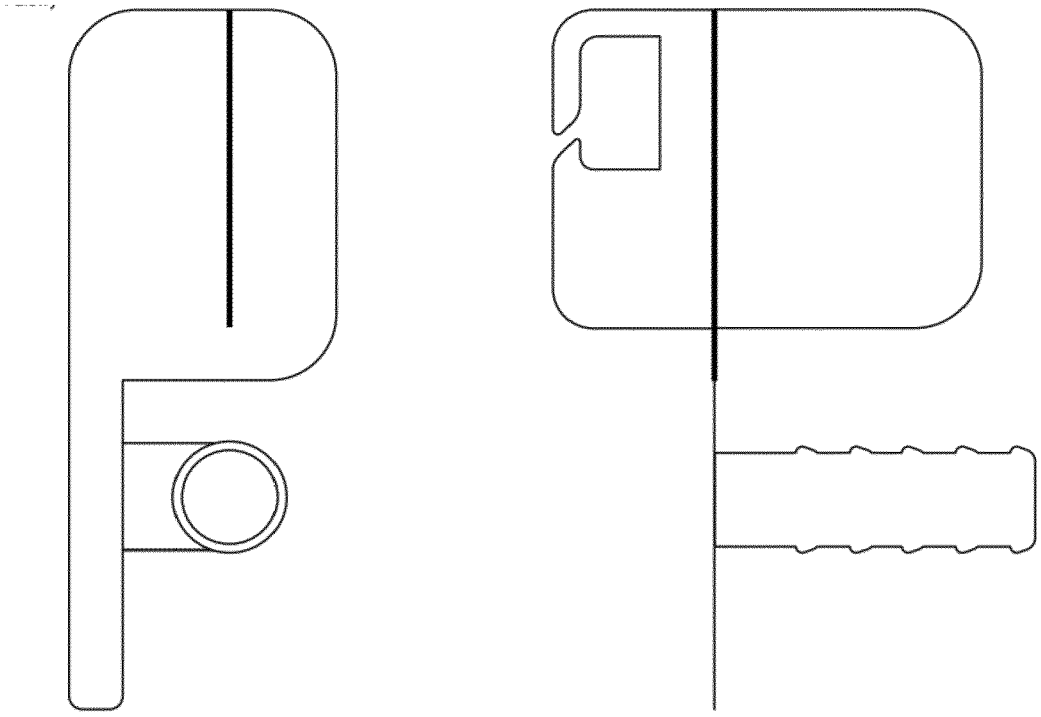

Fig. 8f

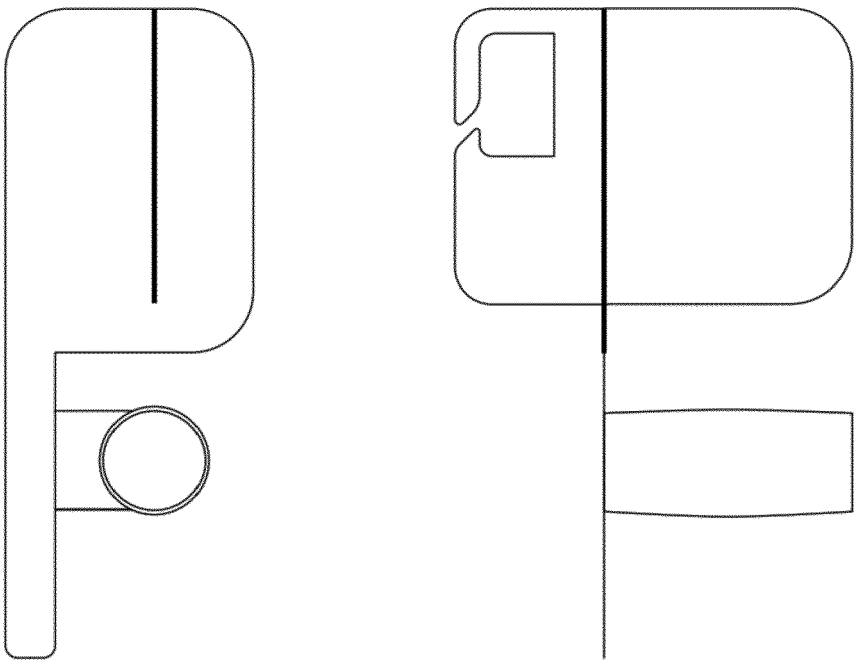

Fig. 8g

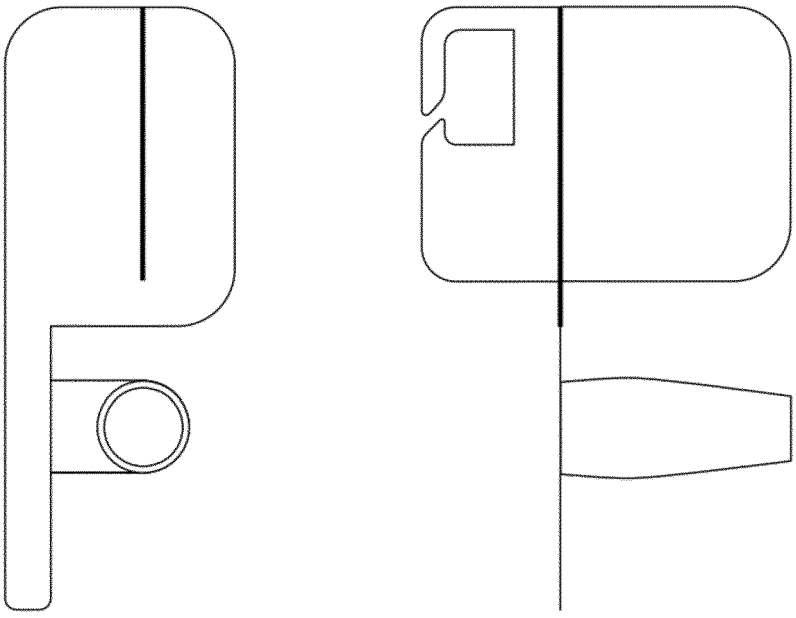

Fig. 8h

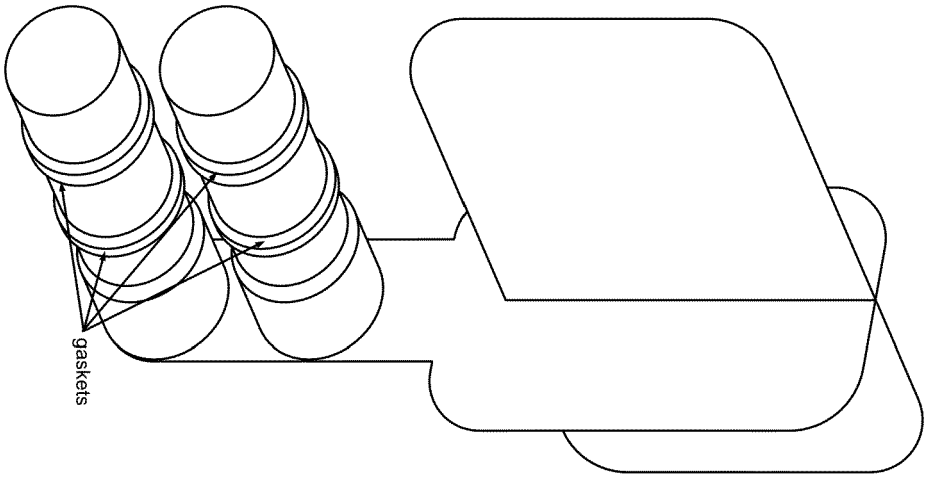

Fig. 9

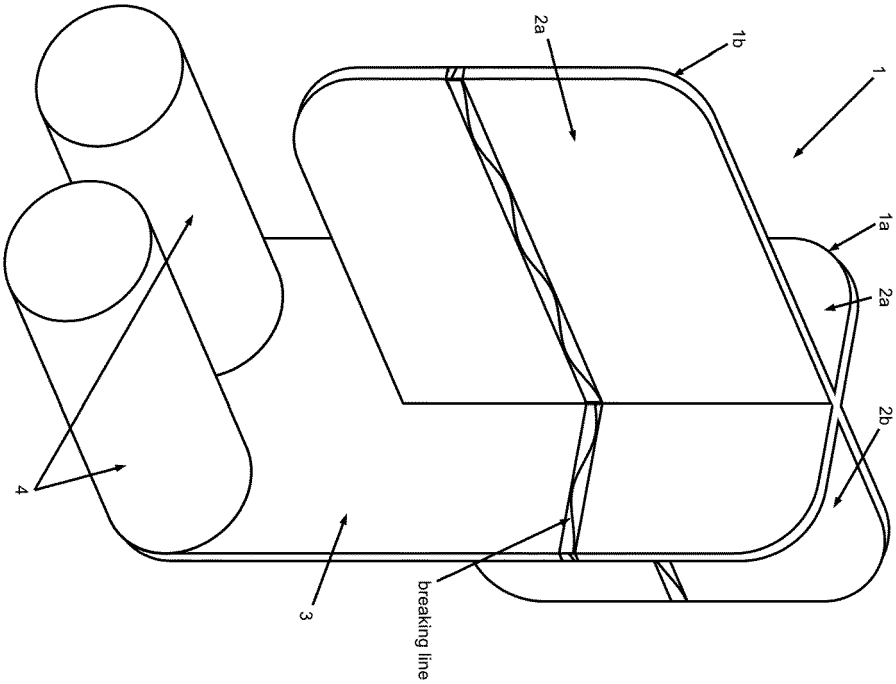

Fig. 10

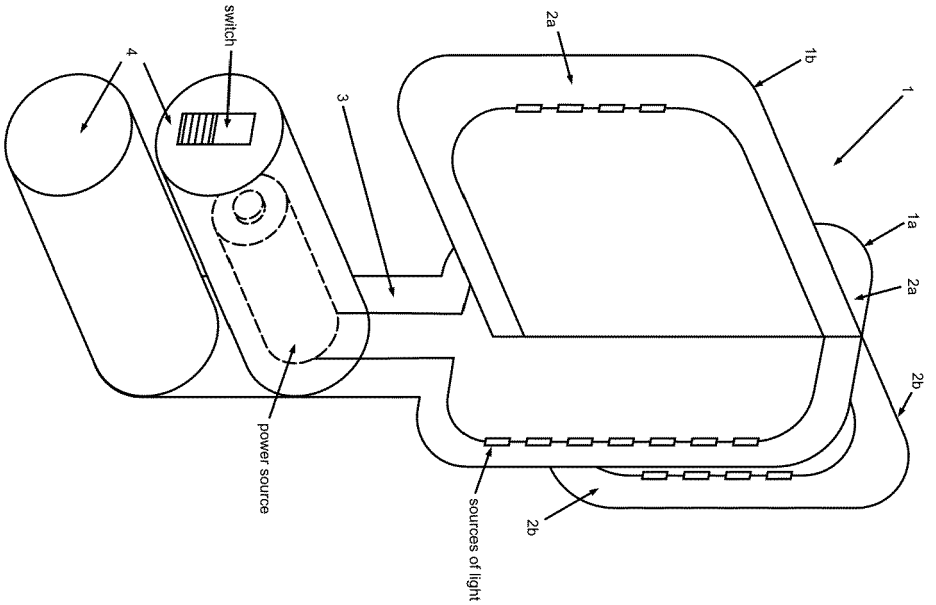
switch
4
2a
1b
1
3
1a
2a
2b
power source
sources of light
2b

Fig. 11

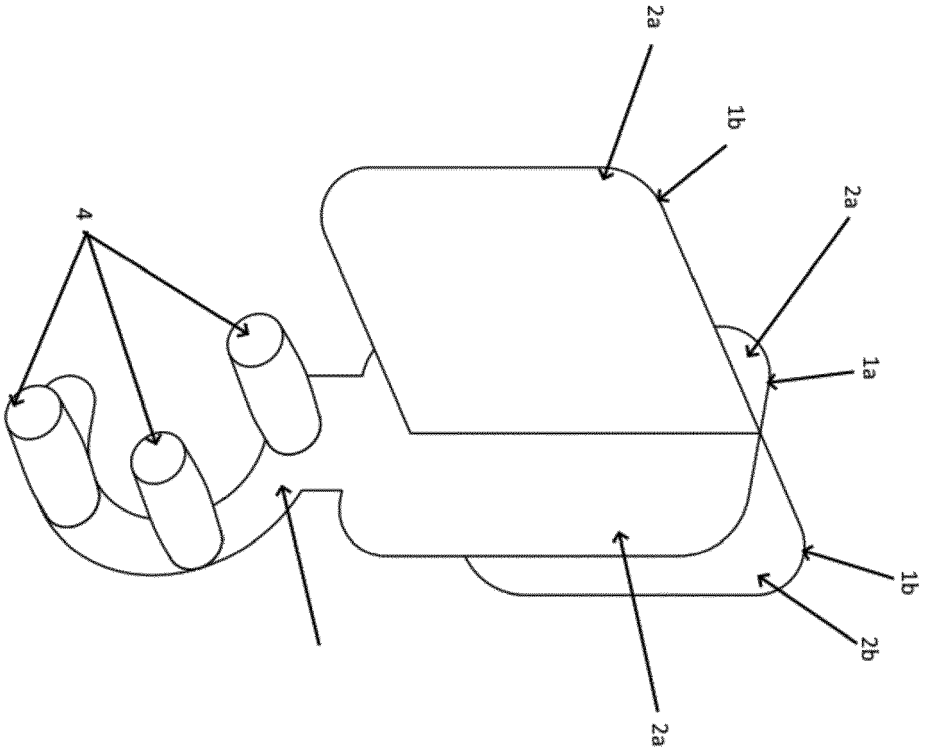
2a
1b
2a
4
1a
1b
2b
2a

Fig. 12

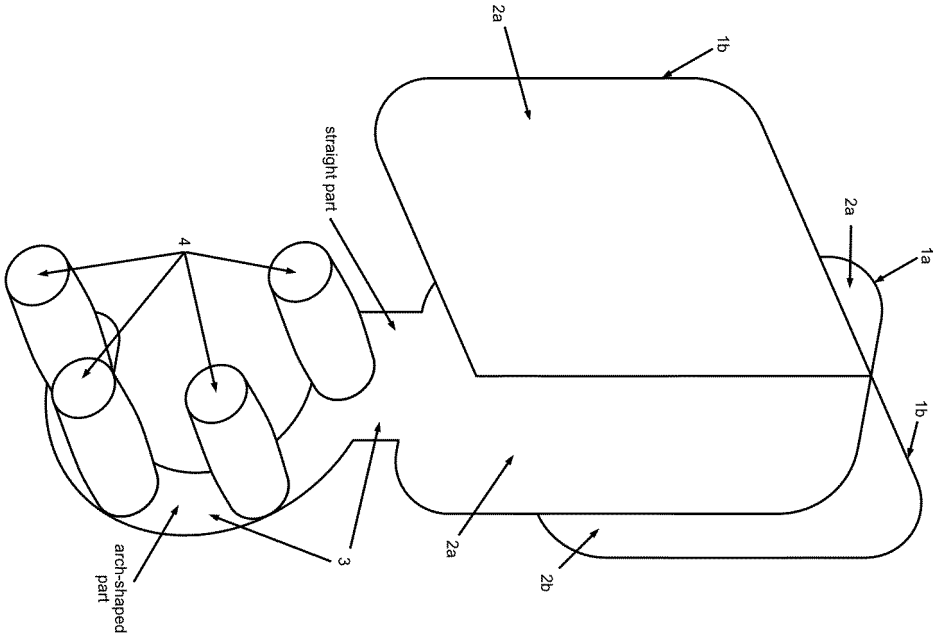

Fig. 13a

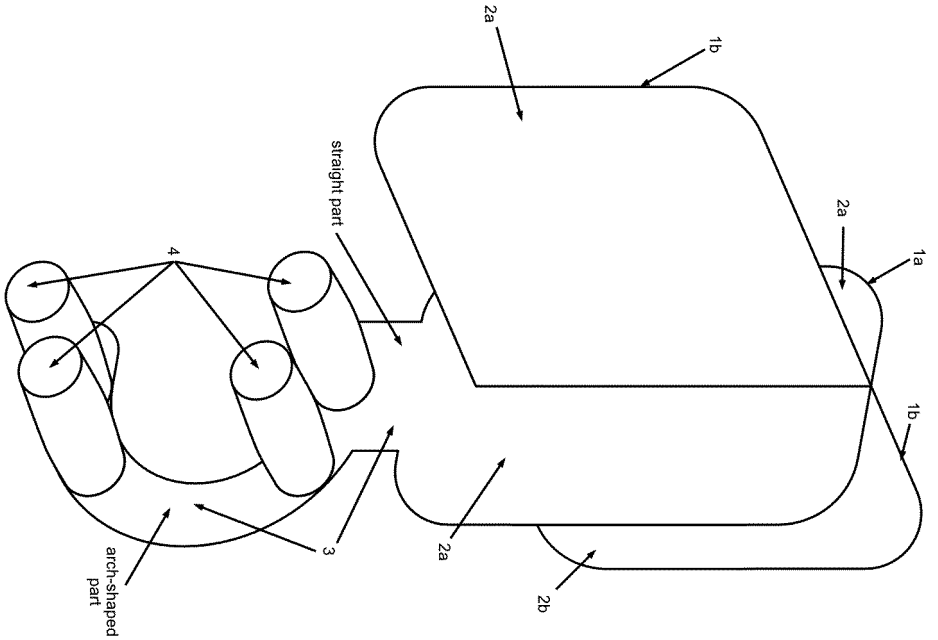

Fig. 13b

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EUROPEAN SEARCH REPORT

Application Number
EP 22 46 1598

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	GB 2 200 438 A (TIBBITT KENNETH) 3 August 1988 (1988-08-03) * abstract * * pages 1-2 * * figures 1,2 *	1,2,5-10	INV. F41A9/53 F41A17/44
X	US 2015/168090 A1 (BITSACK NED T [US]) 18 June 2015 (2015-06-18) * abstract * * paragraph [0067] * * figure 9A *	1,2,5-10	
X	US 2017/356711 A1 (LESSARD ETHAN [US] ET AL) 14 December 2017 (2017-12-14) * abstract * * paragraphs [0022], [0028] * * figures 1-6 *	1,5-10	
X	US 1 537 517 A (WHEELING FRANK L) 12 May 1925 (1925-05-12) * figures 5,6 *	1,3-7,9, 10	TECHNICAL FIELDS SEARCHED (IPC)
X	US 4 802 298 A (BAUGUS RONALD G [US]) 7 February 1989 (1989-02-07) * abstract * * column 2, line 21 - column 3, line 15 * * figures 1,3,5 *	1,3-7,9, 10	F41A

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 January 2023	Menier, Renan

CATEGORY OF CITED DOCUMENTS

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16-01-2023

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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