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(54) **SAFETY SEAL FOR CLOSING RECEPTACLES OF VARIOUS CLOSING DIAMETERS**

SICHERHEITSVERSCHLUSS ZUM VERSCHLIESSEN VON BEHÄLTNISSEN MIT VERSCHIEDENEN VERSCHLUSSDURCHMESSERN

MANCHON D'INVIOLABILITE POUR FERMETURE DE RECEPTACLES DE DIVERS DIAMETRES DE FERMETURE

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Description

[0001] The present invention deals with a safety seal according to the preamble of the independent claim 1.

[0002] Many top sportsmen fear not self-caused doping. To avoid the, they need a simple and reusable safety seal for bottles of beverages of all kinds, which is simple to mount and to close. Also in the case of application of technical means for tampering with should the safety seal not be opened nor be closed going unnoticed. A safety seal on receptacles with dangerous chemical substances and cleaning agents should prevent access of unauthorized pensions to poisonous and dangerous substances. To these means also counts the known child safety lock for dangerous substances, which are however not provided with a key and which therefore cannot offer 100 percent protection. There are also not liquid substances like pills, tablets, powders, pastes and creams etc., which are held in receptacles with very different closing diameters, and there is a need to secure them against unauthorized opening.

[0003] Tf the safety seal has to be applied on greatly varying receptacles, it must encompass in the opened state the largest possible diameter of the original sealing system, but also clamp onto the opening neck of the smallest possible closure diameter. The closer shall therefore provide a large closing stroke.

[0004] Today, the market offers safety seals for champagne and other wine bottles, e.g. of the EGO type with a permutation or combination lock of Leopold. Such sealing systems are not designed to close bottles of varying diameters of collar and of original closure means. Moreover, they can only be used if the original closing means are removed, and such a system is just not applicable for bottles with is drinking device as used by sportsmen.

[0005] To perform scaling, the safety seal of document WO 03/024829 uses a rotating support plate screwed in an inner side of a concave portion, so as to move vertically. Such sealing system, due to its technical structure, encompasses a relatively limited range of catch diameters of bottles, so it is intended to lock an airtight container storing expensive samples or alcoholic liquors for private use. Moreover, Fig. 2 thereby shows that the seal is to be used for bottles which get screwed to the safety seal. The locking device is closely supported through not only the rotating support plate of the upper cover supported by the cap of the storage container but also the diaphraqm plate of the lower cover, so a non-allowed person cannot open the storage container. This prior art structure also strongly limits the type of bottles for which the prior art safety seal is suitable.

[0006] The firm Kwiktop offers reusable bottle closing means for bottles with beverages. However, such means close only PET-bottles of a very narrow range of diameters- Therefore, such reusable bottle closing means are not usable for bottles with a drinking device as used by sportsmen.

[0007] In the European Patent EP-B1-1 121 300 and in further related patents there is described a safety bottle cap which possesses an indentment which can be shifted inwardly and which for its opening needs a mechanical key means which lifts the indentment. This solution is also limited to a small closing stroke and is applied to a security means against theft and to means for electronic identification of bottles. And for many applications, it is not desirably to use a mechanical key in any form.

[0008] In order to overcome all these drawbacks of the prior art, the safety seal according to the preamble of the independent claim 1 is provided with the means as defined in the characterizinq part of independent claim 1, and preferred embodiments are defined in the dependent claims thereto.

[0009] Claim 4 defines the use of such a safety seal according to one or more of claims 1 to 3.

[0010] The invention will now be described in a more specific way as shown in a non-limiting way by the drawings. They show:

Fig. 1 a safety seal for a bottle
Fig. 2 a disk with spiral slots
Fig. 3 a disk with radial guide grooves and clamping wings
Fig. 4 a cut through a mechanical permutation or combination lock for illustrative purpose only
Fig. 5 a cut through an electronic permutation or combination lock according to the invention

[0011] The safety seal consists of a seal body 1 which contains the combination lock 2 and a disk 3 with spiral slots 4. Furthermore it consists of a locking ring 5 that comprises a disk 3 with radial guide grooves 6 and clamping wings 7 running in them. Onto the locking ring 5 are holes 19, in which a pusher 10 of the permutation or combination lock is pressed inside.

[0012] With a rotation movement of the locking ring 5 against the seal body 1, the clamping wings 7 are moved due to the action of the spiral slots 4 along the radial guide grooves 6 in the desired direction away from the bottle top collar or onto the bottle top collar. Through the pitch of the spiral the necessary stroke can be dcmultiplied. By this, the rotation movement of the safety seal and the engaging of the pusher 10 in the locking ring 5 can be adjusted.

[0013] The seal body 1 and the locking ring 5 can only be rotated against each other, if the correct code combination is entered in the combination lock 2. In case of a mechanical combination lock which, however, does not form part of the present invention, the combination lock 2 consists of at least three handwheels 9, a pusher 10 and a compression spring 11. For each handwheel 9 the pusher 10 has a wedge 14 each lying on an axis. An additional surface on the pusher 10 prevents its rotation and exactly defines its position in the combination lock 2.

[0014] When the handwheels 9 are in the handwheels opened position 9a, the pusher 10 can be moved up and down and by this the safety seal can be opened or closed.

When the handwheel 9 is not in this position, but in the handwheels closed position 9b, then the pusher 10 sits tightly in one of the recesses 13, so that the seal body 1 and the locking ring 5 cannot be rotated against each other and thus the clamping wing 7 be blocked.

[0015] The pusher 10 can only be moved if, after inputting the correct code combination, all handwheels 9 arc in the correct position. By rotation in the opening direction, the clamping wing 7 in the safety seal retracts. The safety seal can then be pulled over the original sealing system and the original cover is accessible.

[0016] According to the presnt invention the safety seal is carrried out with an electronic combination lock (Fig. 5). The anchor viz. armature 16 of a linear actuator 15, e.g. a lifting magnet, takes the function of the pusher 10, an additional rotatable code ring 20 on the seal body 1 is used for code inputting, and a microelectronics control 17, which is fed by a battery 18 replaceable from the outside, checks the code input and triggers the linear actuator 15. The linear actuator 15 prevents a relative rotation of the seal body 1 and the locking ring 5. The linear actuator 15 is fitted into the seal body 1 and its anchor viz. armature 16 engages in a hole 19 of the locking ring 5. When the anchor viz. armature 16 is driven out, the seal body 1 and the locking ring 5 cannot any longer be rotated against each other.

[0017] It the combination lock 2 is open, a code with at least 1 up to a maximum of 16 digits, preferably 2-6 digits, can be programmed. The code is inputted by using the rotatable code ring 20. In functional analogy with a computer mouse, the direction of the rotation and the rotation angle of the rotatable code ring 20 are sensed and evaluated. To start inputting, a preferred coding starts with a whole turn of the rotatable code ring 20. Each new code digit is then initiated by a counter-rotation and a rotation angle preferentially measured in units of 36° in order to code the digit. Is the code input correct, the linear actuator 15 is actuated and the safety seal can be opened and removed.

[0018] By this novel and inventive safety seal it is now possible to safely lock receptacles with strongly varying catch diameters and also such receptacles with large closing strokes. Tn the applications intended, the range of catch diameters which is applicable is between a minimum of 5 mm and a maximum of 100 mm with a preferred range of 20 - 45 mm for bottles and a preferred range of 6 - 25 mm for tubes and a preferred range of 30 - 100 mm for cans. It is also possible to safely lock bottles with additional drinking means.

[0019] The safety seal is rapidly mountable, can rapidly be removed and is designed to be constantly closed and reopened.

Claims

1. Safety seal for closing receptacles with a tapered opening neck of various catch diameters, which are attached over an original sealing system for protecting against unauthorized access to the substances kept therein, whose seal body (1) possesses a sufficiently large cavity to receive the original sealing system, which furthermore possesses a clamping mechanism with a plurality of organs acting upon the tapered opening neck and is provided with a combination lock (2) with adjustable code, which lock blocks a locking ring (5) through a pusher (10) and releases the locking ring (5) for manipulation only witch the correctly inserted code, **characterized in that** the clasping mechanism (1-14) possesses, as said plurality of organs, at least three clamping wings (7), which are radially movable, inwardly to close viz. outwardly to open, by manual rotation of a locking ring (5) against the seal body (1), to such an extent that they encompass receptacles having catch diameters between a minimum of 5 mm and a maximum of 100 mm and **in that** the clamping mechanism (1-14) combination lock is actuated by manually rotating a first disk (3) with at least three slots (4), which due to this turning are running inwards, which act as guidance for the clamping wings (7) against a second disk (3) having at least at three places on its periphery radial guide grooves (6), which act as counter-guidancc for the clamping wings (7), whereby either the first or the second disk (3) is situated in the seal body (1) and the respective other is situated in the locking ring (5), further **in that** the disk (3) in the locking ring 15) possesses holes (19) over the whole periphery, for locking the combination lock (2) by the action of the pusher (10), whereby the pusher (10) of the combination lock (2) is retracted from the hole (19) when the combination lock (2) is opened, so that by this the disks (3) can be freely rotated against each other, and is engaged in a hole (19) when the combination lock (2) is locked, so that then the disks (3) cannot any longer be moved against each other, and **in that** the combination lock is an electronic combination lock (2) with a rotatable code ring (20) on the seal body (1) for inputting a code with at least 1 up to a maximum of 16 digits, with a linear actuator (15), whose anchor viz. armature (16) actuates a pusher (10), with a microelectronics control (17), which is fed by a battery (18) which ist replaceable from the outsize, which microelectronics control recognize the coding, checks the coding and in the case of a correct result, actuates the linear actuator (15).

2. Safety seal according to claim 1, **characterized in that** said number of digits is 2-6 digits.

3. Safety seal according to claim 1 or 2, **characterized in that** said coding starts with a whole turn of the rotatable code ring (20), followed for each digit by a counter-rotation and a rotation angle preferentially measured in units of 36° in order to code the digit.

4. Use of a safety seal according to one or more of claims 1 to 3 for securing receptacles with either liquid type or non-liquid type substances like creams, pastes, powders, granulates, pills and tablets, which receptacles have catch diameters with a preferred range of 20 - 45 mm for bottles and a preferred range of 6 - 25 mm for tubers and a preferred range of 30 - 100 mm for cans, whereby also bottles with additional drinking means can be safely locked and secured.

Patentansprüche

1. Sicherheitsverschluss zum Abschliessen von Behältnissen mit verjüngtem Öffnungshals mit verschiedenen Verschlussdurchmessern, welcher über ein Originalverschlusssystem angebracht wird zum Schutz gegen unbefugten Zugriff auf darin aufbewahrte Substanzen, dessen Verschlusskörper (1) einen genügend grossen Hohlraum für die Aufnahme des Originalverschlusssystems besitzt, welcher weiter einen Klemm-Mechanismus mit einer Mehrzahl von Organen besitzt, welche auf den verjüngten Öffnungshals einwirken und mit einem Codeschloss (2) mit einstellbarem Code versehen ist, das einen Verschlussring (5) über einen Stössel (10) blockiert und den Verschlussring (5) zur Betätigung erst dann freigibt, wenn der Code korrekt eingegeben wurde, **dadurch gekennzeichnet, dass** der Klemm-Mechanismus (1-14), als genannte Mehrzahl von Organen zumindest drei Klemmflügel (7) besitzt, welche radial beweglich sind, nach innen um zu schliessen bzw. nach aussen um zu öffnen, und zwar durch manuelle Drehung eines Verschlussrings (5) gegen den Verschlusskörper (1), und das in einem solchen Ausmass, dass sie Behältnisse mit Verschlussdurchmessern zwischen einem Minimum von 5 mm and a Maximum von 100 mm abschliessen, und **auch dadurch, dass** das Codeschloss des Klemm-Mechanismus (1-14) betätigbar ist durch manuelle Drehung einer ersten Scheibe (3) mit zumindest drei Nuten (4), welche wegen dieser Drehung sich nach innen bewegen, und als Führungen für die Klemmflügel (7) gegenüber einer zweiten Scheibe (3) wirken, die zumindest an drei Stellen ihres Umfangs radiale Führungsnuten (6) aufweist, als Gegenführung für die Klemmflügel (7), wobei entweder die erste oder die zweite Scheibe (3) sich im Verschlusskörper (1) befindet und die jeweils andere im Verschlussring (5) untergebracht ist, ferner **dadurch, dass** die Scheibe (3) im Verschlussring (5) Löcher (19) entlang dem ganzen Umfang besitzt, für die Verriegelung des Codeschlosses (2) durch die Betätigung des Stössels (10), wobei der Stössel (10) des Codeschlosses (2) beim Öffnen des Codeschlosses (2) aus dem Loch (19) herausgezogen wird, und damit die Scheiben (3) beliebig gegeneinander verdreht werden können, bei geschlossenem Codeschloss (2) jedoch in einem loch (19) einrastet, so dass die Scheiben (3) nicht mehr gegeneinander verdreht werden können, und **dadurch, dass** das Codeschloss elektronisch ausgeführt ist mit einem drehbaren Codering (20) auf dem Verschlusskörper (1) zur Eingabe eines mindestens 1 bis maximal 16-stelligen Codes, mit einem Linear-Aktuator (15), dessen Anker (16) einen Stössel (10) betätigt, mit einer Mikroelektronik-Steuerung (17), die durch eine Batterie (18) gespeist wird, die von aussen ausgewechselt werden kann, wobei die Mikroelektronik-Steuerung die Codierung erkennt, überprüft und im Falle einer korrekten Codierung den Linear-Aktuator (15) ansteuert.

2. Sicherheitsverschluss nach Patentanspruch 1, **dadurch gekennzeichnet, dass** die genannte Anzahl Ziffern 2-6 Ziffern beträgt.

3. Sicherheitsverschluss nach Patentanspruch 1 oder 2, **dadurch gekennzeichnet, dass** die genannte Codierung mit einer ganzen Umdrehung des drehbaren Coderings (20) beginnt, und pro Codestelle durch Drehrichtungsumkehr und den zurückgelegten Drehwinkel, vorzugsweise in Einheiten von 36 ° gemessenen Code, bewerkstelligt wird.

4. Verwendung eines Sicherheitsverschlusses nach einem oder mehreren der Patentansprüche 1 bis 3 für die Sicherung von Behältnissen sowohl für flüssige wie nichtflüssige Substanzen wie Cremen, Pasten, Pulver, Granulate, Pillen und Tabletten, wobei der Sicherheitsverschluss versehen ist mit Mitteln, um bei Behältnissen mit Verschlussdurchmessern in einem bevorzugten Bereich von 20 - 45 mm für Flaschen und einem bevorzugten Bereich von 6 - 25 mm für Tuben und einen bevorzugten Bereich von 30 - 100 mm für Kanister Verwendung zu finden, wobei Mittel verwendet werden, um auch Flaschen mit zusätzlichen Trinkansätzen sicher abzuschliessen und zu sichern.

Revendications

1. Verrouillage de sécurité pour la fermeture de récipients à ouverture du col coniques et de diamètres différents, qui est fait pour être fixé sur un système d'étanchéité d'origine pour protéger le récipient contre tout accès non autorisé à des substances qui y sont conservées, verrouillage qui possède un corps d'étanchéité (1) avec une cavité suffisamment grande pour recevoir le système d'étanchéité d'origine, qui possède en outre un mécanisme de serrage avec une pluralité d'organes agissant sur l'ouverture du col conique et qui est muni d'une serrure à combinaison (2) à code réglable, serrure qui bloque un

anneau de blocage (5) grâce à un poussoir (10) et qui libère l'anneau de blocage (5) pour la manipulation seulement lorsque le code inséré est correct, **caractérisé en ce que** le mécanisme de serrage (1-14) possède, en tant que ladite pluralité d'organes, au moins trois ailes de serrage (7), qui sont mobiles radialement vers l'intérieur pour fermer, respectivement radialement, vers l'extérieur pour ouvrir, par rotation manuelle de l'anneau de blocage (5) contre le corps d'étanchéité (1), à un point tel qu'elles englobent des récipients d'un diamètre de capture entre un minimum de 5 mm et un maximum de 100 mm **et en ce que** la serrure à combinaison (2) dudit mécanisme de serrage (1-14) est actionné par une rotation manuelle d'un premier disque (3) avec au moins trois fentes (4), qui en raison de cette rotation se déplacent vers l'intérieur en agissent comme guidages pour les ailes de serrage (7) par rapport à un second disque (3) ayant au moins trois endroits sur sa périphérie portant des rainures radiales de guidage (6), qui agissent comme des contre guidages pour les ailes de serrage (7), tandis que soit le premier soit le second disque (3) est situé dans le corps d'étanchéité (1) et l'autre disque correspondant est situé dans l'anneau de blocage (5), **d'autre part en ce que** le disque (3) dans l'anneau de blocage (5) possède des trous (19) sur la périphérie entière, pour verrouiller la serrure à combinaison (2) par l'action du poussoir (10) de sorte que, lorsque le poussoir (10) de la serrure à combinaison (2) est retiré du trou (19) la serrure à combinaison (2) soit ouverte et donc que les disques (3) puissent être librement tournés l'un par rapport l'autre, et lorsque ce poussoir (10) est engagé dans un trou (19), que le serrure à combinaison (2) soit verrouillée, de sorte qu'alors les disques (3) ne puissent plus être déplacés l'un par rapport à l'autre , **et en ce que** ladite serrure à combinaison est un serrure à combinaison électronique (2) avec un anneau de codage orientable (20) sur le corps d'étanchéité (1) pour la saisie d'un code ayant au moins 1 jusqu'à un maximum de 16 chiffres, avec un actionneur linéaire (15), dont l'ancre ou l'armature (16) actionne le poussoir (10), avec un dispositif microélectronique de contrôle (17), qui est alimenté par une batterie (18) qui est remplaçable par l'extérieur, dispositif microélectronique de contrôle qui reconnaît le codage, vérifie le codage et dans le cas d'un résultat correct, actionne l'actionneur linéaire (15).

2. Verrouillage de sécurité selon la revendication 1, **caractérisé en ce que** ledit nombre de chiffres est de 2 à 6 chiffres.

3. Verrouillage de sécurité selon la revendication 1 ou 2, **caractérisé en ce que** le codage débute avec un tour entier de l'anneau de codage orientable (20), suivi pour chaque chiffre par une rotation en sens contraire et d'un angle de rotation préférentiellement mesuré en unités de 36 ° afin de coder le chiffre.

4. Utilisation d'un verrouillage de sécurité selon une ou plusieurs des revendications 1 à 3 pour protéger des récipients contenant des substances du type liquide ou des substances du type non liquide comme des crèmes, pâtes, poudres, granulés, des pilules et des comprimés, ces récipients comprenant une ouverture du col conique ayant des diamètres dans une plage préférée de 20 à 45 mm pour les bouteilles et dans une plage préférée de 6 à 25 mm pour les tubes et une plage préférée de 30 à 100 mm pour les canettes, dans lequel on utilise aussi des moyens avec lesquels des bouteilles comportant des organes supplémentaires permettant de boire peuvent être verrouillées et ainsi sécurisées.

Fig. 1

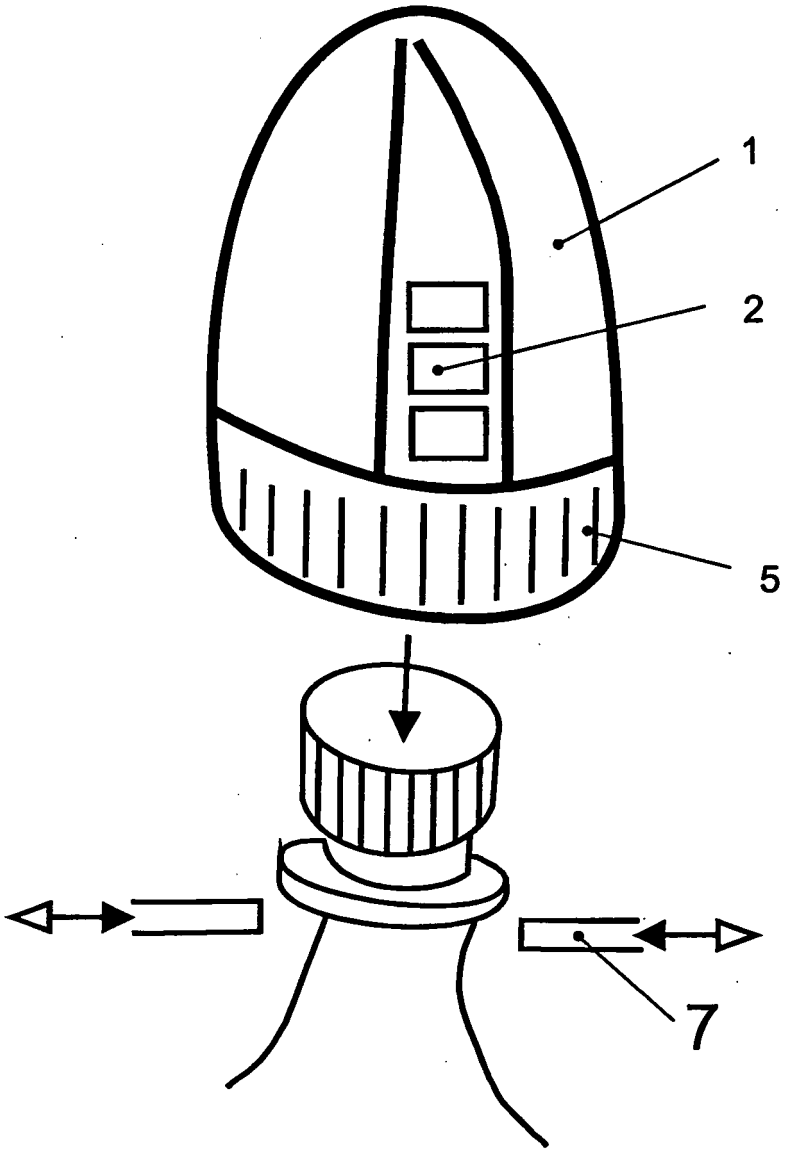


Fig. 2

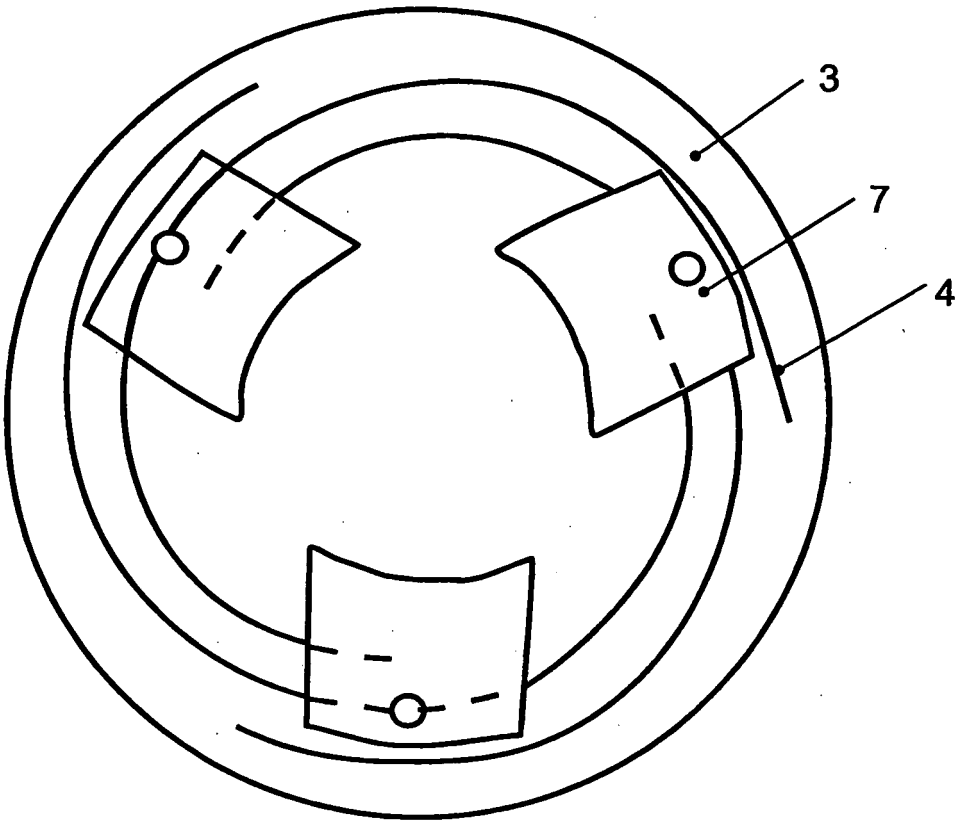


Fig. 3

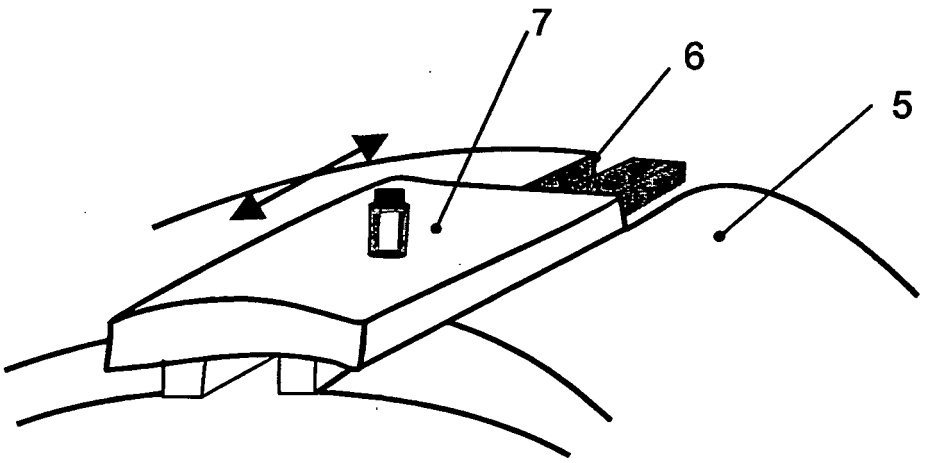


Fig. 4

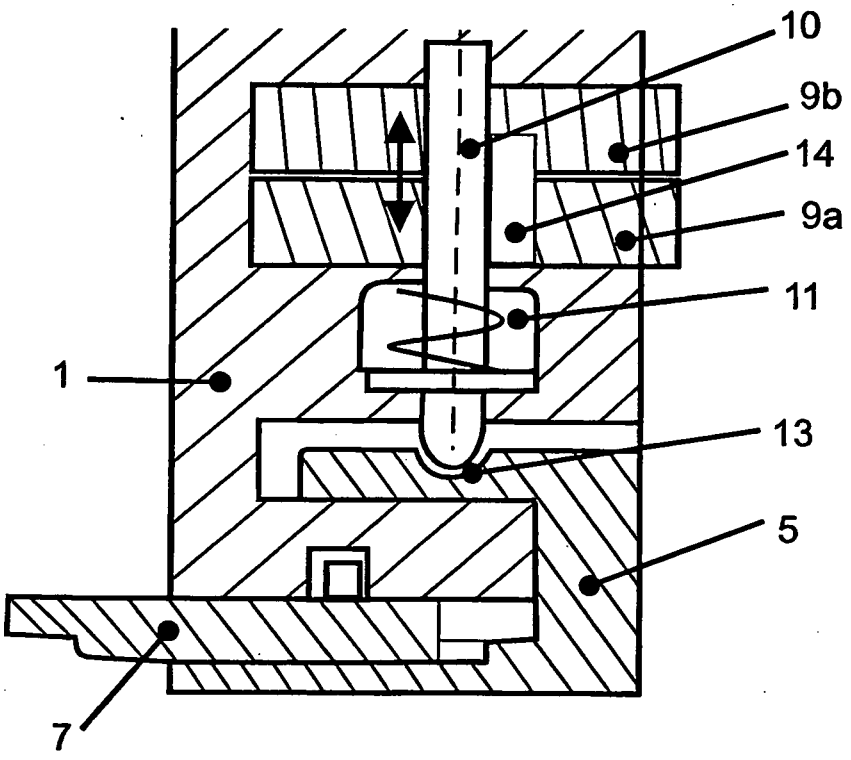
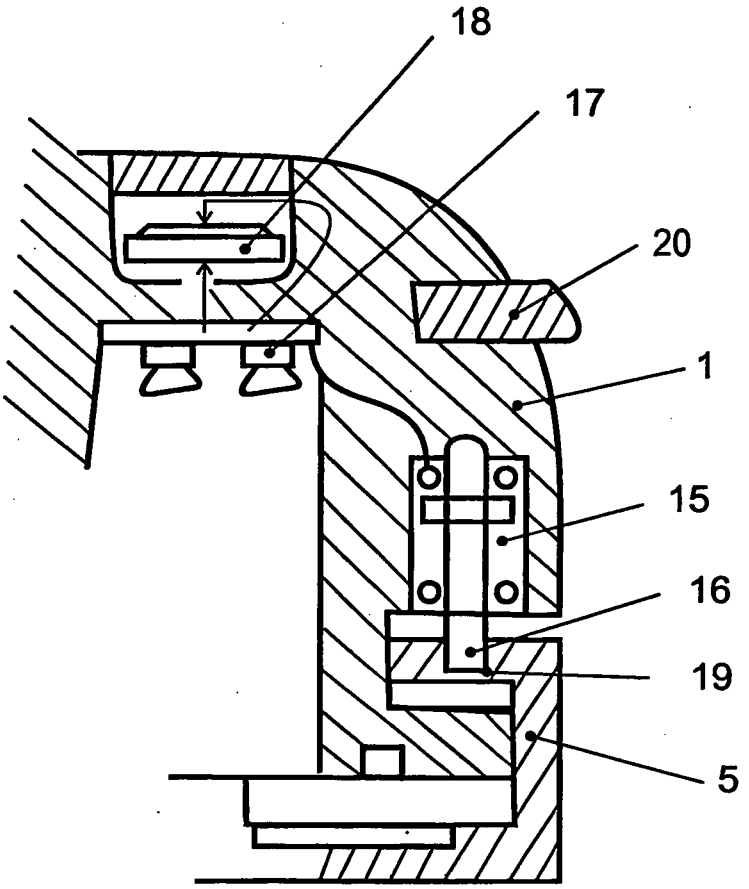


Fig. 5



REFERENCES CITED IN THE DESCRIPTION

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