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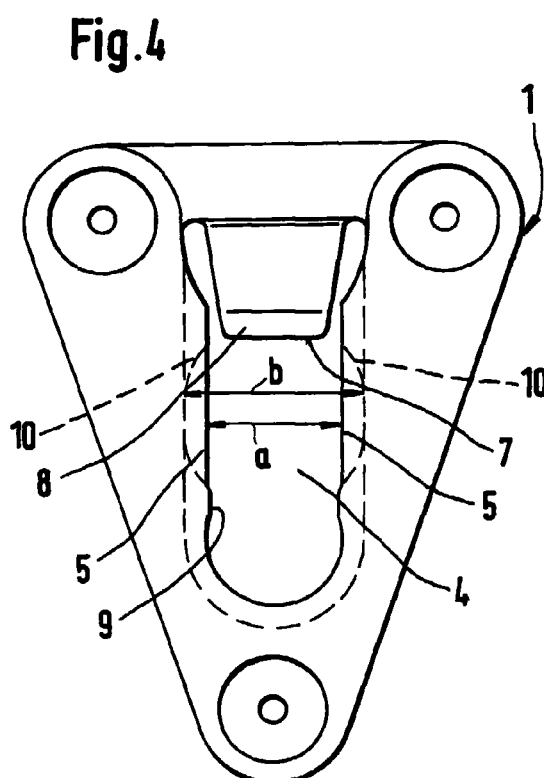
(71) Applicant: **YKK EUROPE LTD.
London NW1 3BG (GB)**

(72) Inventors:
• **Stodt, Frank**
42553 Velbert (DE)
• **Matthey, Jörg**
42117 Wuppertal (DE)

(74) Representative:
Patentanwälte
Leinweber & Zimmermann
Rosental 7
80331 München (DE)

(54) **Snap-in locking device**

(57) The snap-in locking device serves for securing holding elements for flashlights, mobile telephones, pistol holsters or similar special equipment in special articles of clothing, such as, for example, jackets, vests, trousers for craftsmen, police, border guards, watch personnel or the like. The device includes an anchor plate (1) securable to the article of clothing and a slide member (2) movable on the anchor plate approximately parallel to the principal plane of the anchor plate from a locking position into an unlocking position, wherein the slide member (2) is fixedly connected to the holding element. In order to avoid an unintentional separation of the slide member from the anchor plate, the anchor plate (1) is provided with a locking tongue (8) with a stop edge (7) which limits the release path for the slide member (2), wherein the locking tongue (8) is elastically deformable into a slide member release position when a force is applied to the locking tongue.



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Description

[0001] The invention relates to a snap-in locking device for securing holding elements for flashlights, mobile telephones, pistol holsters or similar special equipment in special articles of clothing, such as, for example, jackets, vests, trousers for craftsman, police, border guards, watch personnel or the like, with an anchor plate securable to the article of clothing and a slide member movable at the anchor plate from a locking position into an unlocking position approximately parallel to the principal plane of the anchor plate, wherein the slide member is fixedly connected to the holding element.

[0002] In a known device of this type, which has been manufactured and sold by the applicant for a long period of time, the slide member must overcome a constriction in the area of the travel path between the locking position and the unlocking position before the slide member reaches the released position in which it can be removed from the anchor plate together with the holding element which is connected to the slide member and supports the special equipment. However, it has been found to be disadvantageous in practice that, in the case of movements of the person provided with the special equipment, the slide member can frequently unintentionally overcome the constriction with the result that the slide member/holding element unit with the mobile telephone, the pistol holster or another special equipment is separated from the anchor plate and is lost in an uncontrolled manner.

[0003] The invention is based on the object of further developing the device of the above-mentioned type in such a way that the disadvantages mentioned above are eliminated and an unintentional separation of the slide member with the holding element from the anchor plate is prevented.

[0004] The device according to the invention in which this object is met is essentially characterized in that the anchor plate is provided with a locking tongue which limits the release path for the slide member and includes a stop edge, wherein the locking tongue is elastically deformable into a slide member release position when a force is applied on the locking tongue.

[0005] When an external force acts on the holding element and, thus, on the slide member, the slide member can move out of the locking position into the unlocking position, wherein the slide member has to overcome a constriction of the slide path. However, the slide member then makes contact with the stop edge of the locking tongue which safely prevents an uncontrolled separation of the slide member from the anchor plate.

[0006] The locking tongue which limits the slide path could be constructed as a structural component of the anchor plate which laterally protrudes into the slide path. However, a particularly simple and effective solution is obtained if the locking tongue is constructed in the form of a tab which is elastically deformable trans-

versely of its plane into the locking member release position.

[0007] In contrast to a conceivable construction with a separate metal and still elastically bendable locking tongue, a particularly high effectiveness of the locking tongue while simultaneously simplifying its manufacture is obtained if the locking tongue is constructed as a fixed structural component with the anchor plate.

[0008] The slide member could be constructed in the form of a polygon which is mounted in a guide path provided on the anchor plate. However, with respect to a particularly favorable possibility of fastening the slide member to the holding element, a solution has been found useful in which the slide member is constructed in the form of a wheel which has a first circumferential portion with a diameter which corresponds to a distance between guide edges which define a middle recess of the anchor plate, and a second circumferential portion which has a comparatively larger diameter and which interacts with the stop edge of the locking tongue which protrudes into the slide path. This round construction of the slide member as a wheel makes it possible to secure it to a textile holding element without having to take into consideration a specific alignment with respect to the later interaction of the slide member with the anchor plate.

[0009] It is advantageous in this connection if the wheel forming the slide member is provided with a central bore which, for securing the wheel to the support material of the holding element, serves to receive a rivet shaft so as to enclose the support material between the wheel and the rivet head. The wheel can also be secured to the support material by injection molding the wheel onto the support material.

[0010] In accordance with a further development of the invention, a symmetrical configuration results in a particularly advantageous manner if the anchor plate is formed in the shape of an isosceles triangle of synthetic material and is provided in the areas of the three rounded corners with a recess each which includes a bore each for securing to an article of clothing, for example, by means of a rivet formed, for example, by injection molding.

[0011] It should be mentioned at this point that, when a climatic diaphragm is used as the support material, the afore-mentioned type of riveting for securing the wheel as well as the anchor plate by means of a metal rivet is particularly advantageous for achieving water tightness.

[0012] A particularly secure snap-in locking device, which still facilitates a flat construction, is obtained if the locking tongue with its stop edge extends at a distance from the surface of the anchor plate which ensures that the wheel forming the slide member impinges with its second circumferential portion on the stop edge, and that, on both sides of the guide edges which define the middle recess of the anchor plate and through which the

first circumferential portion of the wheel extends, a step is indented in the surface with a width which corresponds at least to the diameter of the second circumferential portion, and with a depth which corresponds at least to the thickness of the second circumferential portion of the wheel minus the distance of the anchor plate surface from the stop edge of the locking tongue, and with a length which ensures that the wheel can be inserted with its second circumferential portion into the step and can be moved parallel to the surface of the anchor plate beyond the stop edge of the locking tongue.

[0013] As a result of this configuration, the user has the possibility of guiding the wheel transversely of the plane of the anchor plate into the step and beyond the stop edge in the step. As a result, the wheel can subsequently again be pushed transversely against the resistance of the locking tongue and against elastic deformation into a position above the step and out of the step, so that the wheel can be moved above the locking tongue until the anchor plate completely releases the wheel and the wheel together with the holding element and the special equipment which may be mounted thereon can be removed from the anchor plate.

[0014] Further details, advantages and features result from the complete description with the aid of the enclosed drawing. In the drawing:

Figs. 1 and 2 are a side view and a top view of a slide member;

Fig. 3 and 4 are a sectional view and a top view of an anchor plate of the snap-in locking device according to the invention which interacts with the slide member of Figs. 1 and 2;

Figs. 5 and 6, 7 and 8, 9 and 10, and 11 and 12, respectively, are a side view, partially in section, and a top view of an anchor plate according to Figs. 3 and 4 and of the slide member according to Figs. 1 and 2 for illustrating the interaction of the slide member and the anchor plate in the individual stages of operation; and

Figs. 13 and 14 are a sectional view and a top view of the anchor plate mounted on a carrier material.

[0015] The snap-in locking device illustrated in the drawing, which serves for securing holding elements for flashlights, mobile telephones, pistol holsters or similar special equipment in special articles of clothing, such as, for example, jackets, vests, trousers for craftsmen, police, border guards, watch personnel of the like, includes an anchor plate 1 securable to the article of clothing and a slide member 2 movable approximately parallel to the principal plane of the anchor plate 1, wherein the slide member 2 is fixedly connected to the holding element, not shown, for special equipment.

[0016] As can be seen in Figs. 1 and 2, the slide member 2 is constructed in the form of a wheel which has a first circumferential portion 3 with a diameter d_1 which corresponds to the distance a between guide edges 5 defining a middle recess 4 of the anchor plate 1, i.e., the diameter d_1 is somewhat smaller than the distance a . Furthermore, the wheel 2 has a second circumferential portion 6 with a comparatively larger diameter d_2 . This second circumferential portion 6 interacts with the stop edge 7 of a locking tongue 8 protruding into the slide path, wherein the locking tongue 8 is constructed as a fixed structural unit with the anchor plate 1 in the form of a tab which is elastically deformable transversely of its plane in order to reach a released position of the slide member when a force is applied on the tab.

[0017] As is apparent from the top views of the anchor plate 1 in accordance with Figs. 4, 6, 8, 10 and 12, a constriction 9 is provided in the area of the guide edges 5, wherein the constriction 9 separates the end portion provided in the middle recess 4 of the anchor plate 1, in which the wheel is located when in a locking position, from the adjacent portion in which, after overcoming the constriction, the wheel is located in the unlocking position and could be removed from the anchor plate if the locking tongue 8 with its stop edge 7 would not limit the movement of the wheel.

[0018] As can be seen particularly in Figs. 5 to 12, a step 10 is indented into the surface on both sides of the guide edges 5 which define the middle recess of the anchor plate 1 and through which the first circumferential portion 3 of the wheel extends. The step 10 has a width b which corresponds at least to the diameter d_2 of the second circumferential portion 6 of the wheel. Moreover, the step 10 has a depth t which corresponds at least to the width s of the second circumferential portion 6 of the wheel minus the distance c of the anchor plate surface from the stop edge 7 of the locking tongue 8. By a suitable dimension of the length of the step 10, it is ensured that the wheel can be inserted with its second circumferential portion 6 into the step 10, as seen in Fig. 7, and that the wheel can be moved parallel to the surface of the anchor plate 1 beyond the stop edge 7 of the locking tongue 8, as seen in Fig. 9.

[0019] These individual steps of movement of the wheel in relation to the anchor plate 1 are illustrated in the drawing. It is apparent that the wheel, as soon as it has reached, as a result of the freedom of movement provided by the step 10, the position of Fig. 9, can be moved into the position according to Fig. 11 by applying an axial force on, and, thus, deforming the locking tongue 8. In this position, the uppermost edge of the step 10 completely releases the second circumferential portion 6 of the wheel which is now located above the locking tongue 8, and the slide path, i.e., the opening of the anchor plate 1 on both sides of the root of the locking tongue 8 allows the wheel forming the slide member to pass and to completely emerge from the middle recess 4.

[0020] Figs. 13 and 14 show how the anchor plate 1 is secured to the support material 11 in the form of a prefabricated ribbon which can later be sewn to the article of clothing. For this purpose, the anchor plate 1 constructed in the form of an isosceles triangle of synthetic material is provided in the areas of the three rounded corners each with a recess 12. Each recess 12 has a bore 14 for securing the anchor plate 1 to an article of clothing, for example, by means of a rivet 13 which may also be formed by injection molding.

[0021] The same is true for the slide member 2 in the form of the wheel which, for securing to the support material of the holding element, is provided with a central bore 15, which serves for receiving a rivet shaft of synthetic material so as to enclose the support material between the wheel and the rivet head. Also in this case, it is possible to provide the rivet connection with the support material by injection molding instead of with a metal rivet.

Claims

1. Snap-in locking device for securing holding elements for flashlights, mobile telephones, pistol holsters or similar special equipment in special articles of clothing, such as, for example, jackets, vests, trousers for craftsmen, police, border guards, watch personnel or the like, with an anchor plate (1) securable to the article of clothing and a slide member (2) displaceable on the anchor plate approximately parallel to the principal plane of the anchor plate from a locking position into an unlocking position, wherein the slide member (2) is fixedly connected to the holding element, characterized in that the anchor plate (1) has a locking tongue (8) provided with a stop edge (7) for limiting the release path of the slide member (2), wherein the locking tongue (8) is elastically deformable into a slide member release position when a force is applied to the locking tongue (8).
2. Device according to claim 1, characterized in that the locking tongue (8) is constructed in the form of a tab which is elastically deformable transversely of its plane into the slide member release position.
3. Device according to claims 1 or 2, characterized in that the locking tongue (8) is constructed as a fixed structural unit with the anchor plate (1).
4. Device according to one of the preceding claims 1 to 3, characterized in that the slide member (2) is constructed in the form of a wheel which has a first circumferential portion (3) with a diameter (d1) which corresponds to the distance (a) between guide edges (5) defining a middle recess of the anchor plate (1), and a second circumferential portion (6) having a comparatively greater diameter (d2), wherein the second circumferential portion (6) interacts with the stop edge (7) of the locking tongue (8) protruding into the slide path.
5. Device according to claim 4, characterized in that the wheel forming the slide member (2) is provided with a central bore (15) which, for securing the wheel to the support material of the holding element, serves to receive a rivet shaft so as to enclose the support material between the wheel and the rivet head.
6. Device according to one of claims 1 to 6, characterized in that the anchor plate (1) is shaped in the form of an isosceles triangle of synthetic material and is provided in the areas of the three rounded edges thereof with a recess (12) which each has a bore (14) for securing to an article of clothing, for example, by means of a rivet (13) which may be formed by injection molding.
7. Device according to one of claims 1 - 6, characterized in that the locking tongue (8) with its stop edge (7) extends at a distance (c) from the surface of the anchor plate (1) which ensures that the wheel forming the slide member (2) impinges with its second circumferential portion (6) on the stop edge (7), and that on both sides of guide edges which define the middle recess (4) of the anchor plate (1) and through which the first circumferential portion (3) of the wheel extends, a step (10) is indented into the surface with a width which corresponds at least to the diameter (d2) of the second circumferential portion (6), and a depth (t) which corresponds at least to the thickness (s) of the second circumferential portion (6) of the wheel minus the distance (c) of the anchor plate surface from the stop edge (7) of the locking tongue (8), and a length which ensures that the wheel can be inserted with its second circumferential portion into the step (10) and can be moved in the step parallel to the surface of the anchor plate (1) beyond the stop edge (7) of the locking tongue (8).

Fig.1

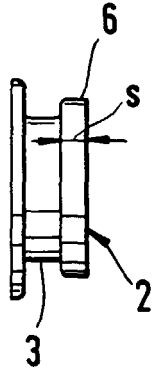


Fig.3

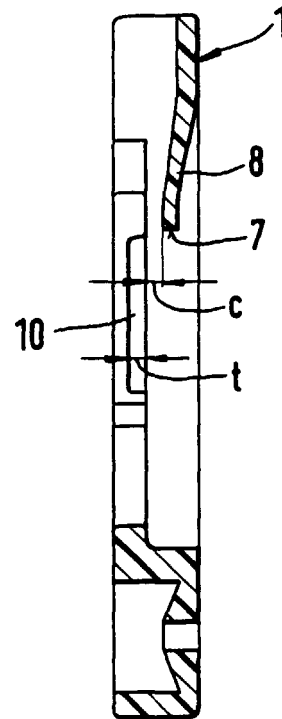


Fig.2

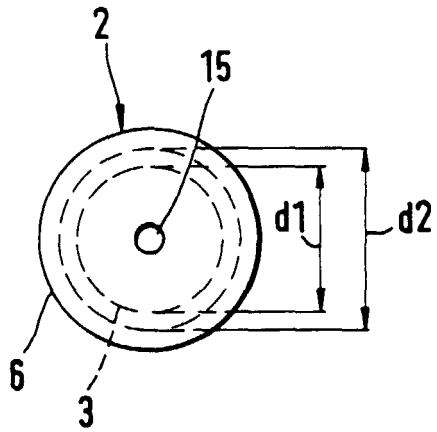


Fig.4

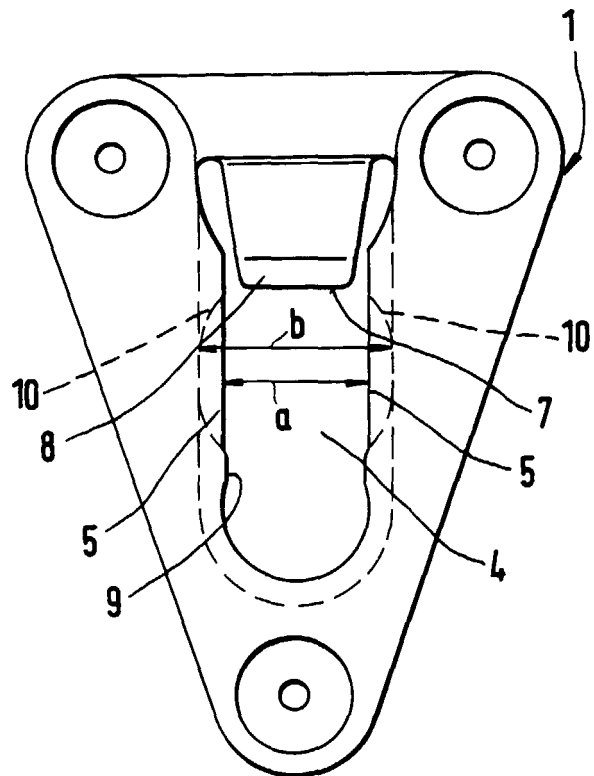


Fig.5

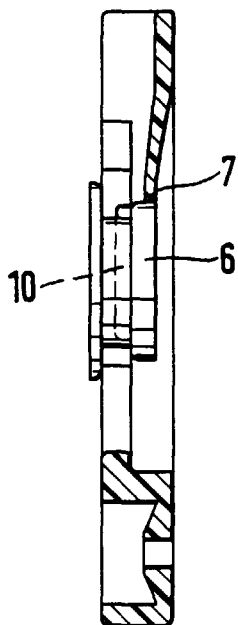


Fig.7

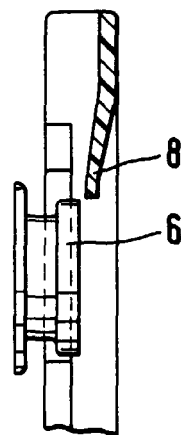


Fig.6

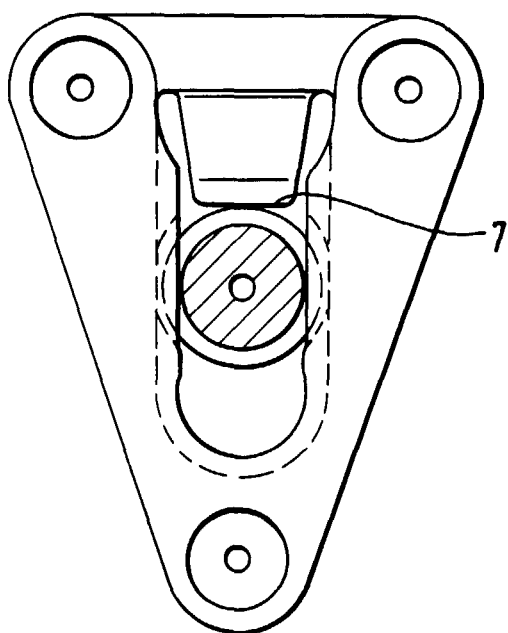


Fig.8

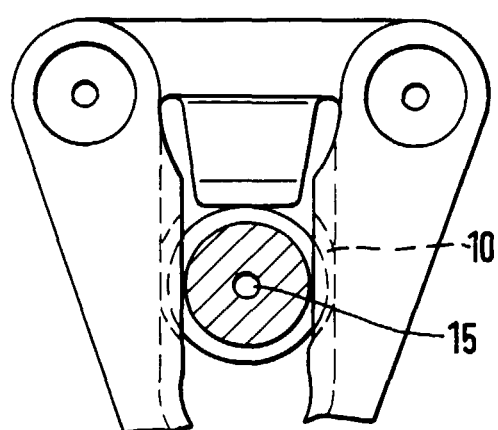


Fig.9

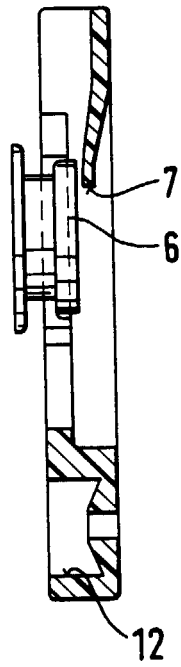


Fig.11

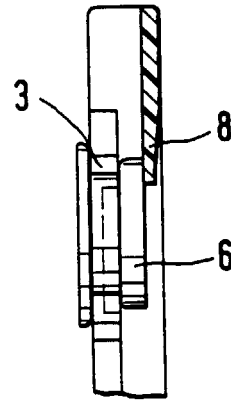


Fig.10

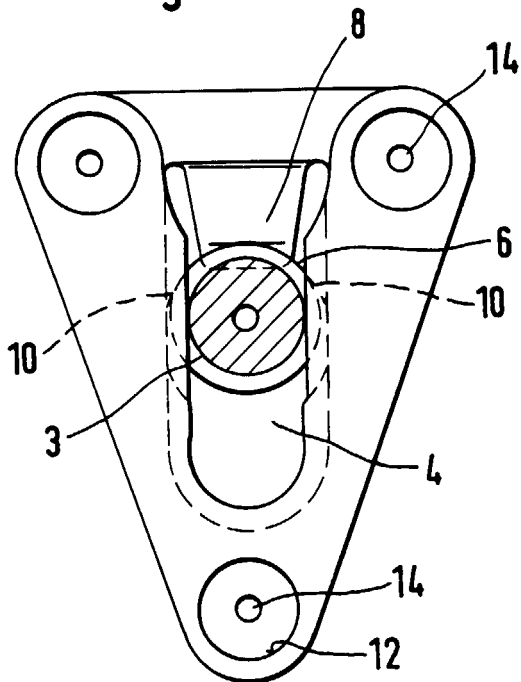


Fig.12

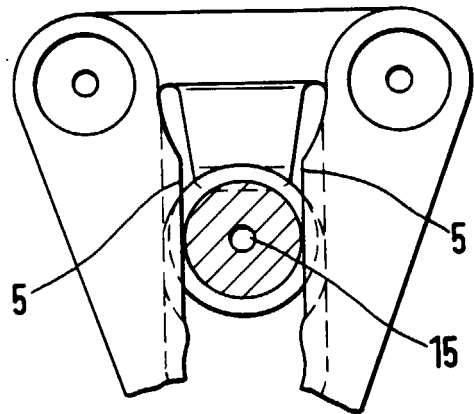


Fig.13

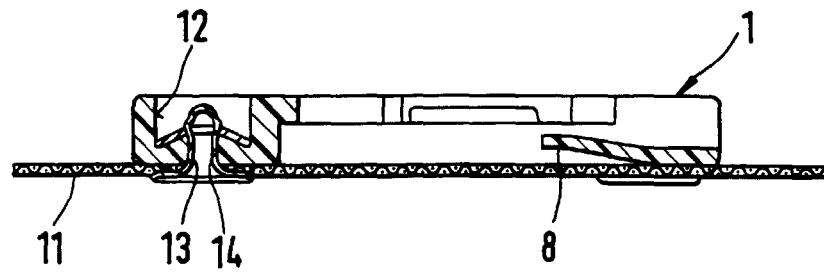


Fig.14

