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54 **Device for the automatic actuation particularly of ventilation flaps.**

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Description

The invention relates to a device for the preferably pneumatic automatic actuation particularly of ventilation flaps, ventilation louvres and the like in smoke and heat offtake installations, in a construction in accordance with the preamble to claim 1.

A device of this kind is known from DE-A-36 06 560. In this device, a glass fuse element is disposed inside a housing receiving a locking rod member, which housing is open at the bottom and top in the region of the glass element and so has inflow and outflow openings but bounds the glass bulb element laterally, which may lead to a delayed response behaviour of the fuse particularly if it is disposed in the roof region of a building.

It is the object of the present invention to provide, with structurally simple means, a device of the kind mentioned at the beginning having optimized response behaviour of the fuse element. For the solution to this problem, reference should be made to the features given in the characterising part of claim 1. With regard to further developments, reference should be made to claims 2 to 5 and also to claims 6 and 7. As a result of the supporting of the other end of the fuse by a U-shaped or L-shaped clamp having a longitudinal central plane inclined to the vertical and preferably formed by narrow square sections, the fuse can be blown against almost unhindered from all sides even in devices installed in the roof region of buildings so that transverse streams of air occurring particularly in the roof region are in a position to contribute to heating of the fuse element and to ensure the response necessary for fire protection.

In order to optimize the response behaviour further, particularly also for the case where a fuse element does not respond, for example as a result of the destruction of the capillary tube of a glass bulb, a predetermined bending point may be formed in the L-clamp, which predetermined bending point offers the device additional operational reliability.

On rising temperature in the event of fire and rising pressure in a conventional CO₂ compressed-air cartridge as an energy-carrying unit, the rupture disc usually provided in this cartridge breaks at a pressure which can be preset. This pressure acts, via the locking rod member and the fuse element, on the clamp so that, when a loading which can be predetermined is exceeded, the clamp bends or shears off at the predetermined bending point so that the piercing piston can be activated.

Some ways of carrying out the present invention will now be described in detail by way of example with reference to drawings showing specific embodiments of the present invention. In the drawings:

Figure 1 is a side view device according to the invention having an L-shaped clamp;

Figure 2 is a front view of the device of Figure 1;

Figure 3 is a plan view of the device of Figure 1; Figure 4 is a side view to a larger size of the L-shaped clamp of the device of Figure 1;

Figure 5 is an enlarged view of the region of the clamp shown in Figure 4 which is provided with the predetermined bending point;

Figure 6 is a side view similar to Figure 1, showing an alternative device according to the invention having a U-shaped clamp;

Figure 7 is a front view of the device of Figure 6, and

Figure 8 is a plan view of the device of Figure 6.

With reference now to the drawings, the device 1, for the automatic actuation of ventilation flaps for example, has a piercing piston unit 2 with a piercing piston 3 which has to be kept in a safety position through a locking unit 4 and has a locking rod member 5. In the event of fire, a compressed air cartridge 6 has to be pierced by the piercing piston 3 and caused to discharge. Supported on the end of the locking rod member 5 projecting out of the housing 7 of the locking unit is one end of a thermal glass-bulb element 8. The other end of this thermal glass-bulb element 8 is supported, via a screw element 9, against an L-shaped clamp 11 in Figure 1 and against a U-shaped clamp 12 in Figures 6 to 8. The arms 13 and 14 of the L-shaped clamp 11 or 15, 16, 17 of the U-shaped clamp 12 are formed by relatively narrow square sections. The clamps 11 and 12 have a longitudinal central plane which is arranged inclined at about 45° to the vertically extending longitudinal axis 18 so that the glass-bulb fuse element can be blown against laterally from below and obliquely from above and hence freely altogether. In the longitudinal region of the arm 13 or 15 engaging over the thermal glass-bulb fuse element 8, the arm is made circular with a flow space 19 so that the inflowing air can emerge unhindered through the flow space 19.

As can be seen in particular in the illustrations shown in Figures 4 and 5, the L-shaped clamp 11 has a predetermined bending point 21 in the region of its connection 20 to the housing, which predetermined bending point ensures that the device is in a position to work in an operationally reliable manner in the way already outlined, for example in the case where the capillary tube 22 of the thermal glass-bulb element has been damaged, for example during insertion, and the liquid 23 with which the thermal glass-bulb element is filled has emerged.

Claims

1. A device for the preferably pneumatic automatic actuation particularly of ventilation flaps, ventilation louvres and the like in smoke and heat offtake installations, having a locking unit (4) which holds one or more piercing pistons (3) of an energy-carrying unit

(6) in their locked position, which comprises a fuse responding depending on temperature, particularly a thermal fuse element (8) which bursts when a critical temperature is exceeded, which fuse can be supported at one end on a longitudinally movable locking rod member (5) which is in operational communication with the piercing piston (3), or pistons, characterised in that a U-shaped or L-shaped clamp (11, 12), which engages over the fuse and has a central longitudinal plane inclined to the vertically extending longitudinal axis (18) of the locking unit (4), is provided to support the other end of the fuse (8).

2. A device according to claim 1, characterised in that the longitudinal central plane of the clamp (11, 12) is inclined at about 45° to the vertical (18).

3. A device according to claim 1 or 2, characterised in that the clamp (11, 12) is held on one or two lateral outer edge region(s) of a housing member (7) receiving the locking rod member (5).

4. A device according to any one of the claims 1 to 3, characterised in that the arms (13, 14, 15, 16, 17) of the clamp are substantially formed by narrow square sections.

5. A device according to any one of the claims 1 to 4, characterised in that the arm (13) of the clamp (11) engaging over the fuse (7) is made substantially circular with a flow space (19), in its longitudinal region bounding the fuse (8).

6. A device according to any one of the claims 1 to 5, with an L-shaped clamp (11) characterised in that one arm (13) of the L-shaped clamp (11) engaging over the fuse (8) is provided with a predetermined bending point (21).

7. A device according to claim 6, characterised in that the predetermined bending point (21) in the arm (13) engaging over the fuse (8) is provided in a region close to its connection (20) to the housing.

Patentansprüche

1. Vorrichtung zur vorzugsweise pneumatischen Zwangsbetätigung von insbesondere Lüftungsklapfen, Lüftungslamellen und dgl. in Rauch- und Wärmeabzugseinrichtungen einer einen oder mehrere Anstechkolben (3) einer Energieträgereinheit (6) in ihrer Sperrstellung haltenden Sperreinheit (4), die eine temperaturabhängig ansprechende, an einem Ende an einem längsbeweglichen, mit dem Anstechkolben (3), oder den Kolben, in Wirkverbindung stehenden Sperrstangenteil (5) abstützbare Sicherung, insbesondere ein bei Überschreiten einer kritischen Temperatur zerberstendes Thermosicherungselement (8), umfaßt, dadurch gekennzeichnet, daß zur Abstützung des anderen Endes der Sicherung (8) ein die Sicherung übergreifender U- oder L-förmiger Spannbügel (11,12) mit zur vertikal verlaufenden Längsachse (18) der Sperreinheit (4) geneigter

Längsmittlebene vorgesehen ist.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die Längsmittlebene des Spannbügels (11, 12) um in etwa 45° zur Vertikalen (18) geneigt ist.

3. Vorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der Spannbügel (11, 12) an einem bzw. zwei Seitenaußenkantenbereich(en) eines das Sperrstangenteil (5) aufnehmenden Gehäuseteils (7) gehalten ist.

4. Vorrichtung nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß die Spannhügelschenkel (13, 14, 15, 16, 17) im wesentlichen durch Vierkantschmalprofile gebildet sind.

5. Vorrichtung nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß der die Sicherung (7) übergreifende Schenkel (13) des Spannbügels (11) in seinem die Sicherung (8) begrenzenden Längsbereich im wesentlichen kreisförmig mit einem Durchströmraum (19) ausgebildet ist.

6. Vorrichtung nach einem der Ansprüche 1 bis 5, mit einem L-förmigen Spannbügel, dadurch gekennzeichnet, daß ein Schenkel (13) des die Sicherung (8) übergreifenden L-förmigen Spannbügels (11) mit einer Sollknickstelle (21) versehen ist.

7. Vorrichtung nach Anspruch 6, dadurch gekennzeichnet, daß die Sollknickstelle (21) in dem die Sicherung (8) übergreifenden Schenkel (13) in einem Bereich nahe seines Gehäusebefestigungsanschlusses (20) vorgesehen ist.

Revendications

1. Dispositif d'actionnement automatique, de préférence pneumatique, en particulier pour des volets de ventilation, des jalousies de ventilation et des dispositifs similaires, dans des installations d'évacuation de fumée et de chaleur, comportant une unité de verrouillage (4) qui maintient, dans leur position verrouillée, un ou plusieurs pistons de perçage (3) d'une unité (6) de transport d'énergie, ce dispositif comprenant un fusible sensible à la température, en particulier un élément thermofusible (8) qui explose lorsqu'une température critique est dépassée, ce fusible pouvant être supporté, à une extrémité, sur une tige de verrouillage (5) mobile longitudinalement, laquelle est en communication opérationnelle avec le ou les pistons de perçage (3), caractérisé en ce qu'une pince (11, 12) en forme de U ou de L, qui s'étend par-dessus le fusible et qui a un plan longitudinal central incliné par rapport à l'axe longitudinal (18), s'étendant verticalement, de l'unité de verrouillage (4), est prévue pour supporter l'autre extrémité du fusible (8).

2. Dispositif suivant la revendication 1 caractérisé en ce que le plan longitudinal central de la pince (11, 12) est incliné d'environ 45° par rapport à la verticale

(18).

3. Dispositif suivant l'une quelconque des revendications 1 ou 2 caractérisé en ce que la pince (11, 12) est maintenue sur une ou deux zones latérales du bord externe d'un boîtier (7) recevant la tige de verrouillage (5).

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4. Dispositif suivant l'une quelconque des revendications 1 à 3 caractérisé en ce que les bras (13, 14, 15, 16, 17) de la pince sont sensiblement formés par des sections carrées étroites.

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5. Dispositif suivant l'une quelconque des revendications 1 à 4 caractérisé en ce que le bras (13) de la pince (11) s'étendant au-dessus du fusible (7) est rendu sensiblement circulaire avec un espace d'écoulement (19), dans sa région longitudinale bordant le fusible (8).

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6. Dispositif suivant l'une quelconque des revendications 1 à 5, comportant une pince (11) en forme de L, caractérisé en ce qu'un bras (13) de la pince (11) en forme de L, s'étendant par-dessus le fusible (8), est prévu avec un point de flexion prédéterminé (21).

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7. Dispositif suivant la revendication 6 caractérisé en ce que le point de flexion prédéterminé (21) dans le bras (13) s'étendant par-dessus le fusible (8) est prévu dans une région proche de son point de liaison (20) avec le boîtier.

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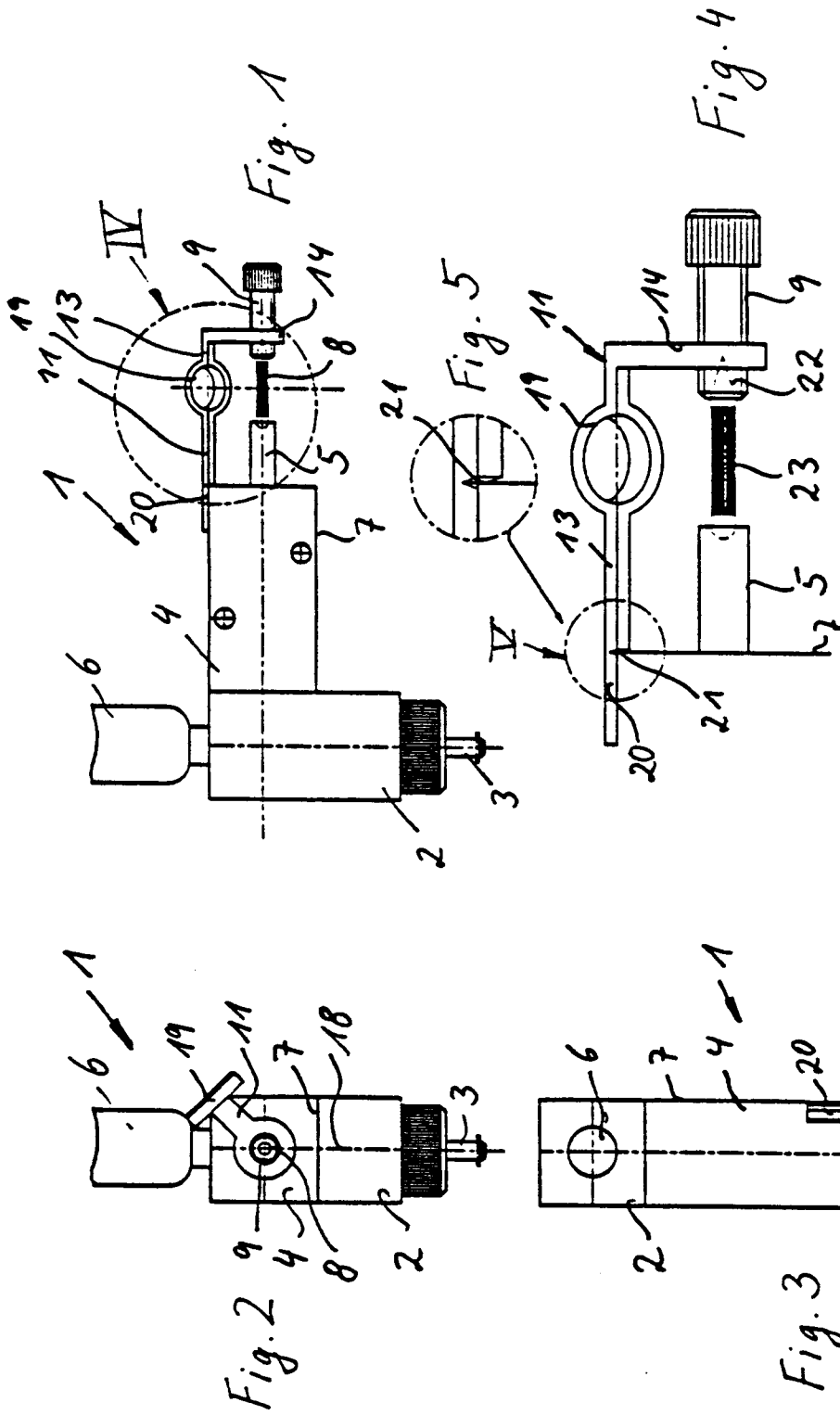
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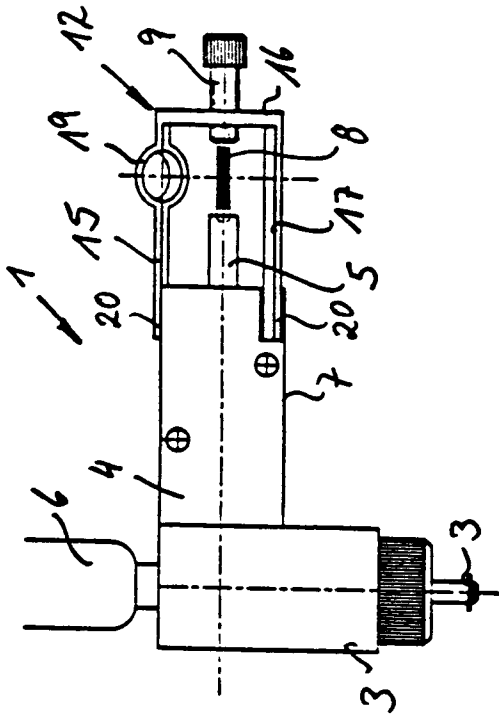


Fig. 6

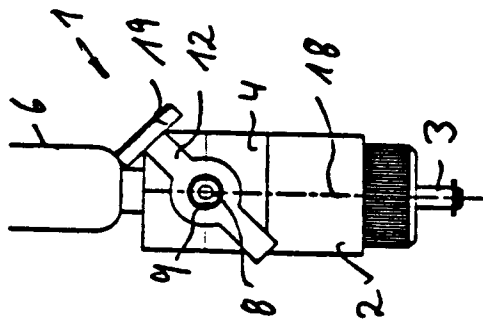


Fig. 7

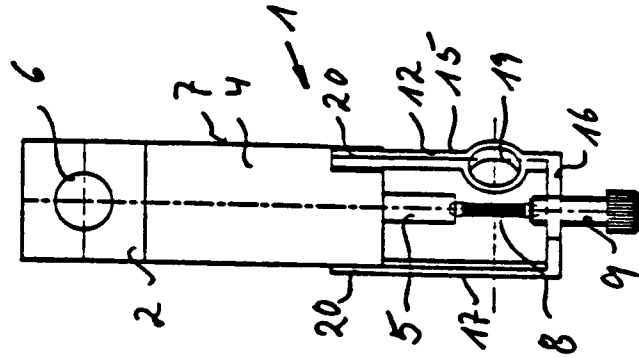


Fig. 8