



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
01.09.2021 Bulletin 2021/35

(51) Int Cl.:
E06B 9/13 (2006.01) A62C 2/10 (2006.01)
E06B 9/17 (2006.01)

(21) Application number: **21020065.5**

(22) Date of filing: **10.02.2021**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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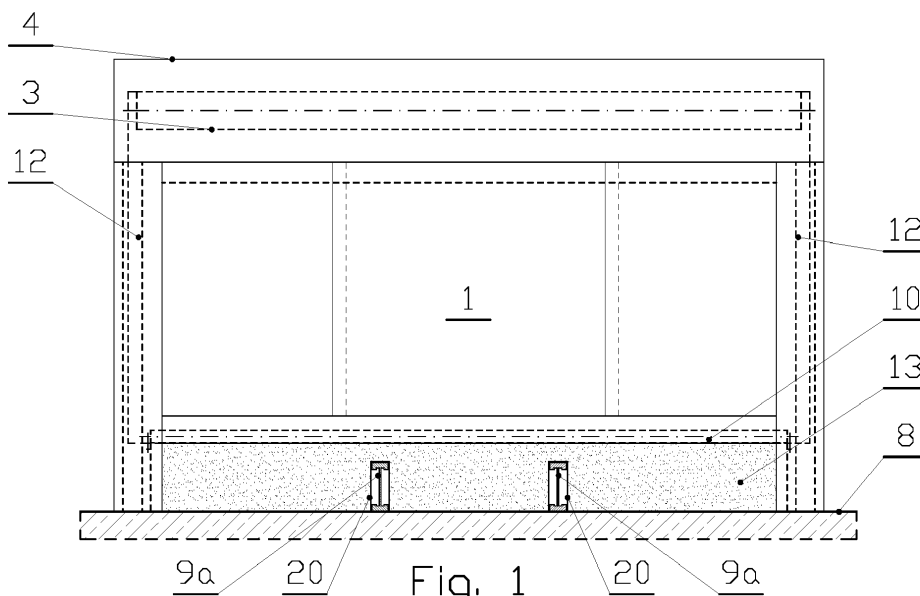
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(30) Priority: **27.02.2020 PL 43305920**

(54) **ROLL-UP FIREPROOF CURTAIN**

(57) A subject of the invention is a roll-up fireproof curtain with a flexible coat, designed for closing communication hole with linear transport elements in shape of rails, belt conveyor flights, pipelines, cables or other conductors spread crosswise the hole and protruding above its foundation.

A roll-up fireproof curtain with a flexible coat that is secured with its upper border to a rotational winding shaft that is bearing-mounted in the housing affixed to a head of communication hole being closed, and side coat borders are placed slidingly in permanent vertical groove guides with sealing elements, *characterized in that* it is equipped with a rigid seal plate (13) that, in unrolled condition of the coat (1), is spread longitudinally under its lower border (10) and adheres to it with its upper surface (14) while the lower surface (15) of the seal plate (13) adheres to the foundation (8) of the communication hole (6), wherein at least one linear transport element (9, 9a) is spread crosswise the hole and protrudes above its foundation (8), the seal plate (13) having at least one lateral open downwards cavity (20) that surrounds the linear transport element (9, 9a) protruding above the foundation (8) of the communication hole (6) and having a lateral outline matched to the profile of the linear transport element (9, 9a).



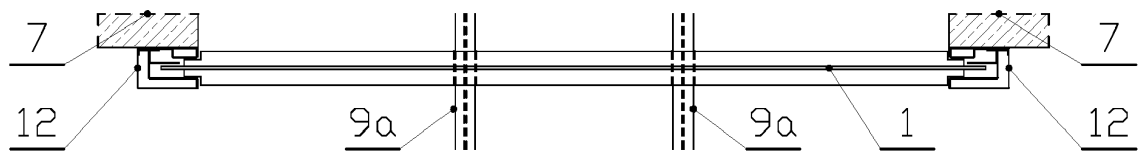


Fig. 2

Description

[0001] A subject of the invention is a roll-up fireproof curtain with a flexible coat, designed for closing communication hole with linear transport elements in shape of rails, belt conveyor flights, pipelines, cables or other conductors spread crosswise the hole and protruding above its foundation.

[0002] Difficulties related to communication hole protection against possible propagation of fire are commonly known in situation when linear transport elements are spread crosswise this hole and protrude above its foundation. Depending on spatial building conditions, well-known lowered or cantilever plate gates are used in general to close suchlike communication holes. If break of a transport line is not possible, but building conditions allow use of a well-known lowered gate, its lower border outline is matched more or less accurately to the transport line profile. When the line elements are situated relatively high above communication hole foundation, a permanent fire-wall is usually built below this line. Most difficulties, however, are added by situations when break of a transport line is not possible and, due to the building conditions, only a well-known roll-up gate with a flexible coat can be used to close communication hole. In this gate, the upper coat border is fastened to a rotational winding shaft that is bearing-mounted in a housing secured to a head of the communication hole being closed. Side coat borders are located slidingly in permanent vertical groove guides wherein sealing elements well-known from the patent specifications PL 221711 B1 and PL 222492 B1 are found.

[0003] A purpose of the invention is to develop a roll-up fireproof curtain that ensures tight closing of the communication hole in the event that linear transport elements are spread crosswise this hole and protrude above its foundation.

[0004] According to the invention, the roll-up fireproof curtain has a flexible coat fastened with its upper border to a rotational winding shaft that is bearing-mounted in a housing affixed to a head of the communication hole being closed. Side coat borders are located slidingly in permanent vertical groove guides inside which there are sealing elements. The curtain according to the invention is characterized in that it is equipped with a rigid seal plate that in unrolled coat condition is spread longitudinally under the lower border of the coat and adheres to it with its upper surface, while the lower seal plate surface adheres to the communication hole foundation, wherein at least one linear transport element is spread crosswise the hole and protrudes above its foundation, the seal plate having at least one lateral open downwards cavity that surrounds a linear transport element protruding above the hole foundation and having its lateral outline matched to the linear transport element profile. In a preferred embodiment of the invention, the seal plate is fastened to the coat by means of rocking hangers mounted on the plate ends and having a pivotal joint with the lower

coat border. Thanks to rotational fastening, the seal plate can be also used when the communication hole head is relatively low. If this is a case, the seal plate, in its upper rest position, is displaced from its natural vertical position to its horizontal position and it adheres to this hole head with its narrow upper surface. In another embodiment, the seal plate is placed slidingly in separate groove guides of which lower vertical sections adhere to the coat guides, while the upper sloping sections are deflected outside the communication hole, the seal plate, in its rest position, being situated at the level of the winding shaft housing and, in unrolled coat condition, being situated under lower coat border. Depending on the number of linear transport lines, the seal plate has a single cavity matched to an outline of a single linear transport element or several cavities formed side by side and matched to outlines of several linear transport elements. To ensure tightness of the communication hole being closed, a coating of material swelling under temperature increase is formed on the internal circumferential surface of each seal plate cavity.

[0005] The subject of the invention is shown as an embodiment in the drawing wherein Fig. 1 depicts a front view of the roll-up fireproof curtain in unrolled condition, Fig. 2 - a horizontal section of the unrolled curtain, Fig. 3 - a vertical view of the unrolled curtain, Fig. 4 - a vertical view of the curtain with the rolled up coat and the seal plate fastened to the coat and oriented vertically towards it, Fig. 5 - a vertical section of the curtain according to Fig. 4 with the seal plate oriented horizontally, Fig. 6 - a vertical section of the curtain with the rolled up coat and the seal plate placed in separate guides, Fig. 7 - a vertical view of the unrolled curtain and the lowered plate according to Fig. 6, Fig. 8 - a front view of the seal plate with two cavities, Fig. 9 - a cross-section of the plate according to Fig. 8, and Fig. 10 - an enlarged front view of a single seal plate cavity.

[0006] The roll-up fireproof curtain according to the invention has a flexible coat **1** of a fireproof material that is secured with its upper border **2** to the rotational winding shaft **3** that is bearing-mounted in the longitudinal housing **4**. The housing **4** of the shaft **3** is fastened to the head **5** of the communication hole **6** being closed, formed in the building wall **7**. The communication hole **6** is limited below by the horizontal foundation **8**, at least one linear transport element **9** being spread crosswise this hole, mounted on the foundation **8** and protruded above its level. As shown in Fig 1 and 2, the linear transport elements **9** are two running rails **9a**. The side borders of the coat **1** are placed slidingly in the permanent vertical groove guides **12**, wherein well-known sealing elements, not shown in the drawing, are found. The curtain is equipped with the rigid longitudinal seal plate **13** of fireproof material, that, in unrolled condition of the coat **1**, is spread longitudinally under its lower border **10** and adheres to it with its upper surface **14**. The lower surface **15** of the seal plate **13** adheres then to the foundation **8**. According to Fig. 8 and 9, the plate **13** is secured to the

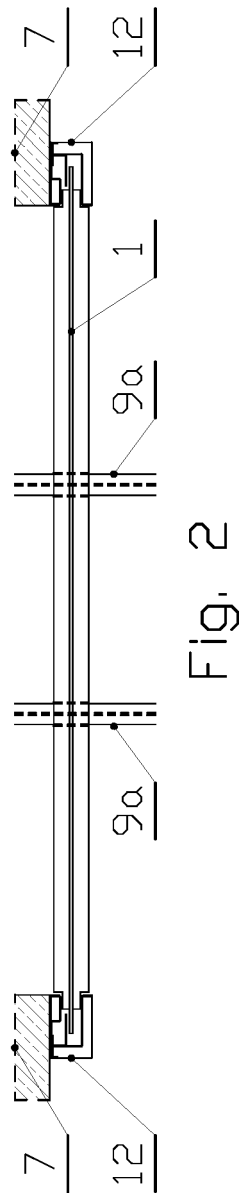
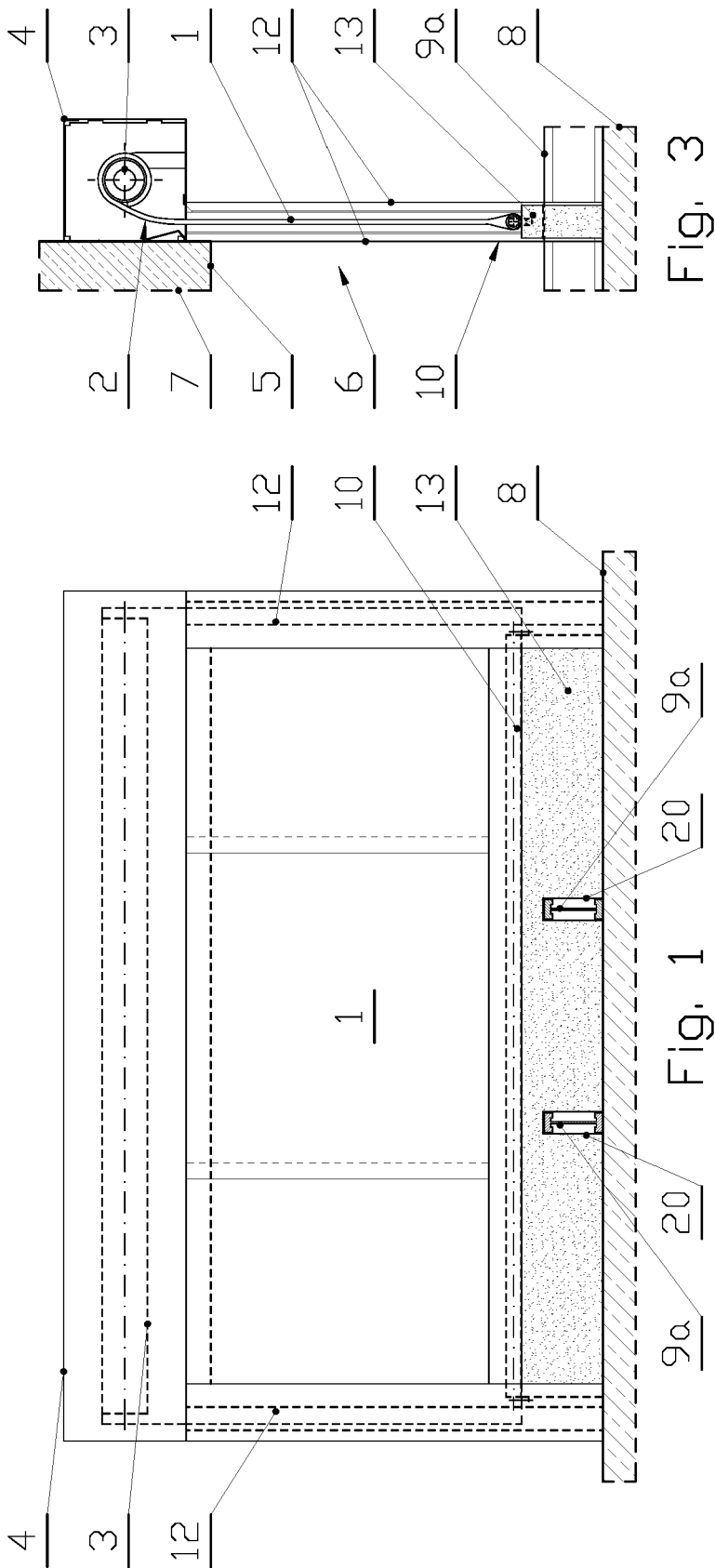
coat 1 by means of rocking hangers 16 mounted on the plate ends and having a pivotal joint with the lower border 10 of the coat 1 and allowing rotation of the plate 13 by the angle of 90 degrees. Thanks to such a solution, the plate 13, when in its upper position, can be oriented vertically or horizontally while adhering to the head 5 of the hole 6, and, when in its lower position after the coat 1 is unrolled, it is spread vertically under its lower border 10. When the head 5 of the hole 6 is very low, the plate 13 with its own not shown drive is used and it is placed slid-
 5 ingly in separate groove guides 17 according to Fig. 6. The lower vertical guide sections 18 adhere to the vertical guides 12 of the coat 1 while the upper sloping sections 19 are deflected outside the hole 6. In this embodiment, the seal plate 13 in the rest position is situated on the level of the housing 4 of the shaft 3 and, in unrolled position of the coat 1, it is situated under the lower coat border 10. Moreover, a horizontal weight 11 in shape of metallic rod is fastened longitudinally on the lower border 10 of the coat 1 to facilitate unrolling the coat 1. As it is shown in Fig. 10, in the lower part of the plate 13, a single lateral open downwards cavity 20 is formed to surround a single linear transport element 9 in shape of pipeline on the foundation 8 and it has its lateral outline matched to this linear element profile. According to Fig. 1 and 2, in the lower part of the plate 13, two cavities 20 are formed side by side to surround a pair of running rails 9a on the foundation 8 and their lateral outlines are matched to profiles of these rails. The internal circumferential surface 21 of each cavity 20 is covered with a coating 22 of the material swelling under temperature increase. Smoke detectors, not shown in the drawing, respond to smoke occurring in the initial phase of fire, which activates a not shown drive of the winding shaft 3 of the curtain coat 1. Finally, the coat 1 unrolls until the seal plate 13 secured to it rests on the foundation 8 of the communication hole 6 to surround the rails 9a or the pipeline 9 located on this foundation with the plate cavities 20. In the embodiment of the curtain, wherein the plate 13 is placed in separate guides 17, actuation of smoke detectors results in activation of the not shown drives of the plate 13 and the shaft 3 of the coat 1, wherein activation of the coat 1 drive occurs only when the plate 13 rests on the foundation 8 of the hole 6. When, as a result of the fire, ambient temperature of the curtain increases, the swelling coating 22 on the surfaces 21 of the cavities 20 of the plate 13 increases its volume many times and fills the internal spaces of these cavities while adhering tightly to the surfaces of the rails 9a or the pipeline 9 and to the foundation 8.

Claims

1. A roll-up fireproof curtain with a flexible coat that is secured with its upper border to a rotational winding shaft that is bearing-mounted in the housing affixed to a head of communication hole being closed, and side coat borders are placed slidably in permanent

vertical groove guides with sealing elements, **characterized in that** it is equipped with a rigid seal plate (13) that, in unrolled condition of the coat (1), is spread longitudinally under its lower border (10) and adheres to it with its upper surface (14) while the lower surface (15) of the seal plate (13) adheres to the foundation (8) of the communication hole (6), wherein at least one linear transport element (9, 9a) is spread crosswise the hole and protrudes above its foundation (8), the seal plate (13) having at least one lateral open downwards cavity (20) that surrounds the linear transport element (9, 9a) protruding above the foundation (8) of the communication hole (6) and having a lateral outline matched to the profile of the linear transport element (9, 9a).

2. The curtain according to the claim 1, **characterized in that** the seal plate (13) is secured to the coat (1) by means of rocking hangers (16) mounted on the plate ends and having a pivotal joint with the lower border (10) of the coat (1).
3. The curtain according to the claim 1, **characterized in that** the seal plate (13) is placed slidably in separate groove guides (17) of which lower vertical sections (18) adhere to the groove guides (12) of the coat (1) while the upper sloping sections (19) are deflected outside the communication hole (6), the seal plate (13) in the rest position being situated on the level of the housing (4) of the shaft (3) and, in unrolled condition of the coat (1), being situated under its lower border (10).
4. The curtain according to the claim 1, **characterized in that** the seal plate (13) has a single cavity (20) matched to the outline of a single linear transport element (9).
5. The curtain according to the claim 1, **characterized in that** the seal plate (13) has several cavities (20) formed side by side and matched to outlines of several linear transport elements (9a).
6. The curtain according to the claim 1 or 4 or 5, **characterized in that** a coating (22) of material swelling under temperature increase is formed on the internal circumferential surface (21) of each of cavities (20) in the seal plate (13).



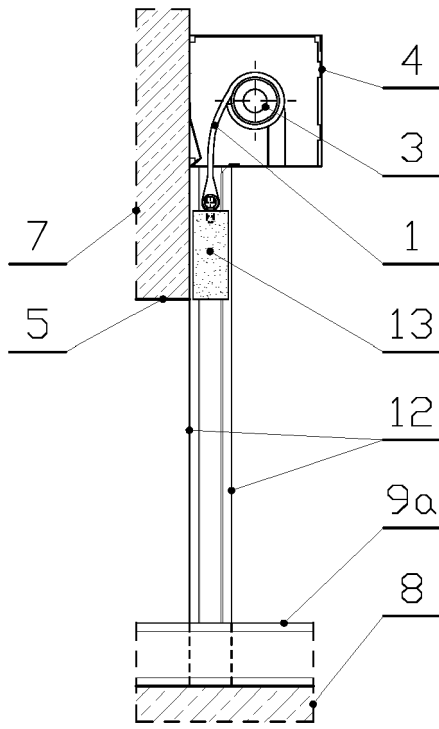


Fig. 4

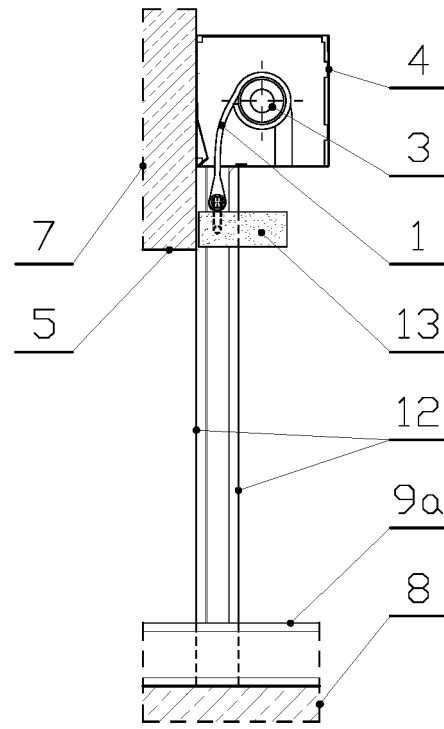


Fig. 5

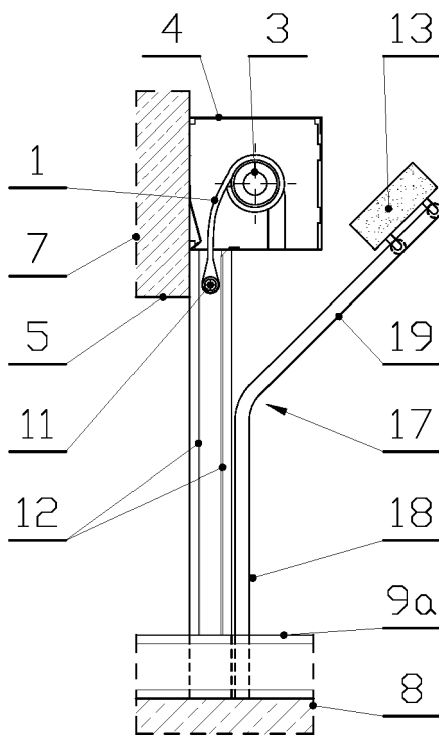


Fig. 6

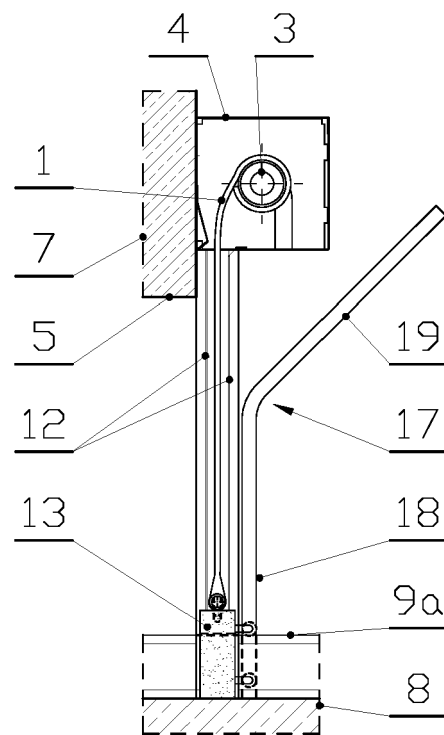


Fig. 7

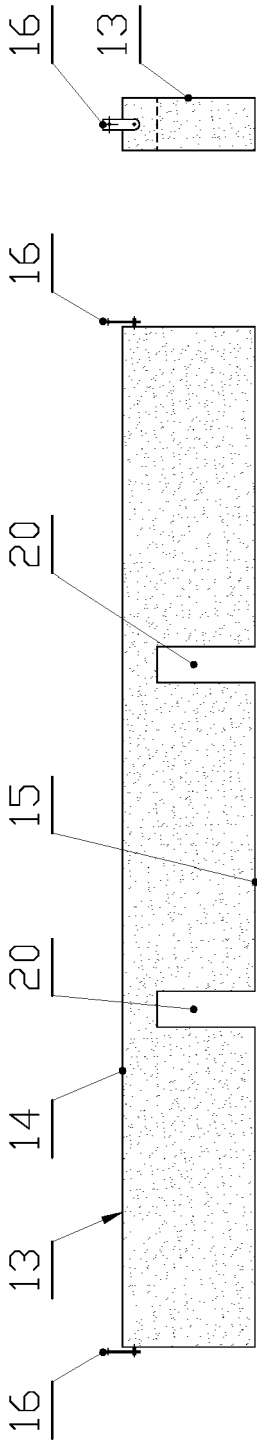


Fig. 8

Fig. 9

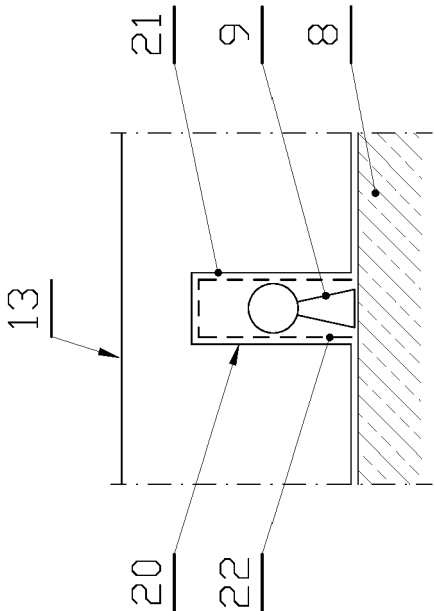


Fig. 10



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Application Number
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 13 July 2021	Examiner Tänzler, Ansgar
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