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**Lökhárító**

Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmas az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.

## Description

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### Impact buffer

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#### Background of the invention

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The invention relates to an impact buffer for fitting to a loading ramp, comprising a retaining part for fitting to the loading ramp, a stop part for a vehicle to be loaded at the loading ramp to strike, and a buffer part for cushioning a movement by the stop part against the retaining part.

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When loading and unloading trucks at loading ramps and the like, the truck must drive up close to the loading ramp without damaging the latter. It is therefore known to fit loading ramps with impact buffers that the truck can strike. The impact buffers must cushion the impact of the truck such that the truck is not damaged. Since the number of loading events at such loading ramps is often very, very high, such impact buffers are subject to relatively high wear.

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U.S. Pat. No. 5,658,633 A discloses an impact buffer having two shells that are open on one side and whose interior is filled with resilient material. Two cross-members arranged above one another that may move in longitudinal holes across a limited segment prevent the stop part of the impact buffer that assumes the impact load from falling out of a retaining part of the impact buffer that is fitted to the loading ramp. In one alternative design, it is prevented from falling out with lateral, vertical lips on the two shells.

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EP 1 182 155 A discloses an impact buffer for fitting to loading ramps, dock levellers, and the like, having the following components: a first, sectionally C-profile-shaped, vertically  
5 extending part made of hard, impact-resistant material, a second, sectionally hat-profile-shaped, vertically extending part made of hard, impact-resistant material, the lateral flanges of which are arranged in the first part adjacent to its side flanges, and the bars of which extend out of the first part, and a core arranged inside the first and second parts that is made of an elastically deformable damping material, wherein either the first or  
10 the second part may be arranged stationary and the other part that absorbs the impact load is movable in the bar direction relative to the part that may be arranged stationary, and wherein the other part that absorbs the impact load is arranged such that it may be moved up and down relative to the part that may be arranged stationary.

15 U.S. Pat. No. 3,146,013 A discloses a generic impact buffer for the rear of a truck, which comprises a retaining part, a stop part and two springs fixed therebetween. The stop part is U-shaped and with its front end and two side elements surrounds the retaining part. The two side parts each have an elongated horizontal slot aligned opposite each other. A pin is passed through both elongated slots, which protrudes through a  
20 transverse opening of the retaining part thus connecting the retaining part to the stop part. In the event of an impact load in the direction of the retaining part, the stop part can move along the pin in its elongated slots.

DE 100 03 744 A1 discloses a buffer device for a truck loading station in which a flat  
25 spring is supported on a carrier plate by means of a fixed and a loose supporting point. A damping element is also arranged between the carrier plate and the flat spring. In the event of an impact load on the flat spring in the direction of the carrier plate, the flat spring, which also serves as a stop part, deforms as it lengthens or extends in the direction of the loose supporting point. For this purpose, the flat spring is mounted on  
30 the carrier plate in the region of the fixed supporting point by means of a bearing pin such that it can pivot about a horizontal transverse axis.

U.S. Pat. No. 5,658,633 A discloses an impact buffer comprising two non-elastic shells attached to each other which contain resilient material. Outer and inner shells are attached on both opposing sides thereof with a pair of screws passing through and extending at right angles between the sides. For this purpose, the individual screw is  
5 passed into associated elongated apertures in the sides of the inner shell such that the outer shell can move in the direction of the inner shell in the event of an impact load.

EP 2 604 556 A1 discloses an impact buffer, which in principle corresponds to a vertically arranged scissor lift table. For this purpose, the impact buffer comprises a retaining part,  
10 a movable stop part and damping means. A scissor type support is also provided on both sides of the retaining part, which creates an extendable and collapsible connection of the stop part on the retaining part. Each scissor type support has a pair of levers with levers arranged crosswise to each other. Each lever is fixed on the side at the top to the retaining part or stop part and on the opposite end thereof movably mounted in a guide  
15 slot on the side at the bottom of the stop part or retaining part. In the event of an impact load of the stop part in the direction of the retaining part, the levers move downwards in the guide slot.

#### Underlying object

20 The underlying object of the invention is to create an impact buffer of the type specified in the foregoing that has a longer service life compared to known impact buffers.

#### Solution according to the invention

25 This object is achieved in accordance with the invention with an impact buffer for fitting to a loading ramp, comprising a retaining part for fitting to the loading ramp, a stop part for a vehicle to be loaded at the loading ramp to strike, and a buffer part for cushioning the stop part against the retaining part, in which the stop part is supported on the  
30 retaining part with at least one pivot lever.

In the inventive impact buffer, the stop part is embodied movable relative to the retaining part. The buffer part is disposed between the stop part and the retaining part.

In this way, both the buffer part and the stop part are held location-fast or stationary at the loading ramp using the retaining part. When a vehicle strikes the impact buffer, the buffer part may be elastically deformed and thus kinetic energy from the impact or collision of the vehicle converts to internal friction energy. Thus, the impact is buffered.

5 In accordance with the invention, the movement of the stop part relative to the retaining part is precisely guided by means of at least one pivot lever or pivot part for the service life of the impact buffer. At the same time, with the at least one pivot lever the stop part is movably retained on the retaining part, and the buffer part is also retained precisely in position between the retaining part and the stop part.

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The retaining part is preferably embodied longitudinally and according to the invention with two opposing lateral surfaces. According to the invention, two pivot levers that extend parallel to one another are provided on the two lateral surfaces of the retaining part to support the stop part.

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In an advantageous embodiment, the retaining part and/or the stop part are furthermore embodied with a U-shaped cross-section and the at least one pivot lever is arranged inside the U-shape. Furthermore, the retaining part and the stop part are preferably embodied in a U-shaped cross-section and the U-shape of the stop part is embodied overlapping the U-shape of the retaining part.

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The stop part preferably has a cover surface or head surface with which it may be supported suspended on the retaining part. The retaining part advantageously has a bottom surface or base surface with which the buffer part is supported on the retaining part. The buffer part is preferably embodied in a rectangular shape.

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#### Brief description of the drawings

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An embodiment of the solution according to the invention is explained in detail below using the attached schematic drawings.

Fig. 1 is a sectional top view of a first exemplary embodiment of an inventive impact buffer.

Fig. 2 is a sectional front view of the impact buffer in accordance with Fig. 1.

Fig. 3 is a side view of the impact buffer in accordance with Fig. 1.

Fig. 4 is a sectional top view of a second exemplary embodiment of an inventive impact buffer.

5 Fig. 5 is a sectional front view of the impact buffer in accordance with Fig. 4.

Fig. 6 is a side view of the impact buffer in accordance with Fig. 4.

Fig. 7 is a sectional top view of a third exemplary embodiment of an inventive impact buffer.

Fig. 8 is a sectional front view of the impact buffer in accordance with Fig. 7.

10 Fig. 9 is a side view of the impact buffer in accordance with Fig. 7.

#### Detailed description of the embodiment

15 Figs. 1 to 9 depict impact buffers 10 in which a retaining part 14 is bolted location-fast to an associated loading ramp 12. A stop part 16 is movably retained on the retaining part 14, wherein disposed between the retaining part 14 and the stop part 16 is a buffer part 18 that may be elastically deformed when a vehicle strikes the impact buffer 10 during a loading or unloading process at the loading ramp 12. During this buffer movement, the stop part 16 is retained and guided on the retaining part 14 by means of a total of four  
20 pivot levers 20. The pivot levers 20 are disposed as two lever pairs, whose levers run parallel to one another, on each side of the plate-like retaining part 14 and likewise plate-like stop part 16. The buffer part 18, which is made of elastic material, particularly elastomer, is disposed as a substantially rectangular body in the interior of the arrangement.

25 Both the retaining part 14 and the stop part 16, seen in cross-section (see Figs. 1, 4, and 7), are substantially embodied in U-shapes.

The U-shape of the retaining part 14 is formed with a retaining surface 22 that faces the loading ramp 12 and from which a lateral surface 24 projects from each side as a leg.  
30 The lateral surfaces 24 in the exemplary embodiment in accordance with Figs. 1 to 3 are each embodied in an S-shape and thus terminate with a bar section 26 that faces outward. Two bolts 28 pass transversely through the U-shape; on these two of the pivot

levers 20 are pivotably mounted on the retaining part 14. Furthermore, the retaining part 14 has a bottom surface 30 on which the buffer part 18 stands and is supported.

5 The U-shape of the stop part 16 is embodied in a similar manner with a stop surface 32 that extends substantially parallel to the retaining surface 22 and from the sides of which two lateral surfaces 34 project laterally. In the exemplary embodiment in accordance with Figs. 1 to 3, the lateral surfaces 34 each terminate with an inwardly facing bar section 36 that locks to the associated bar section 26 of the retaining part 14.

10 Also disposed on the stop part 16 are a total of four bolts 38 that are oriented transverse to the U-shape and each is retained on the stop part 16 by means of a bolt support 40. One of the pivot levers 20 is oriented on an upward incline at an angle of approx. 45° between a bolt support 40 and a lateral surface 34 of the stop part 16 and is pivotably fitted to the stop part 16. This design with bolt supports and associated short  
15 bolts that do not completely pass through the U-shape may also be advantageously selected as an alternative for the bolts 28 on the retaining part 14. Furthermore, disposed on the stop part 16 is a cover surface 42 with which the stop part 16 is supported/suspended on the retaining part 14.

20 In the exemplary embodiment in accordance with Figs. 4 to 6, the lateral surfaces 24 of the retaining part 14 are not S-shaped, but rather are embodied straight with bar sections 26 oriented inward. In this exemplary embodiment, the stop part 16 does not lock to the retaining part 14, but is nevertheless precisely retained and guided thereon by means of the pivot lever 20 and also the cover surface 42.

25 The exemplary embodiment in accordance with Figs. 7 to 9 is embodied with lateral surfaces 24 and 34 that are embodied completely straight (that is, without inwardly or outwardly oriented bar sections). The U-shape of the stop part 16 is selected much larger than the U-shape of the retaining part 14 such that the stop part 16 overlaps the  
30 retaining part 14.

## Reference list

|    |    |                                                          |
|----|----|----------------------------------------------------------|
|    | 10 | Impact buffer                                            |
| 5  | 12 | Loading ramp                                             |
|    | 14 | Retaining part                                           |
|    | 16 | Stop part                                                |
|    | 18 | Buffer part                                              |
|    | 20 | Pivot lever                                              |
| 10 | 22 | Retaining surface of the retaining part                  |
|    | 24 | Lateral surface of the retaining part                    |
|    | 26 | Bar section of the lateral surface of the retaining part |
|    | 28 | Bolt on the retaining part                               |
|    | 30 | Bottom surface on the retaining part                     |
| 15 | 32 | Stop surface of the stop part                            |
|    | 34 | Lateral surface of the stop part                         |
|    | 36 | Bar section of the lateral surface of the stop part      |
|    | 38 | Bolt on the stop part                                    |
|    | 40 | Bolt support on the stop part                            |
| 20 | 42 | Cover surface on the stop part                           |

## SZABADALMI IGÉNYPONTOK

## LÖKHÁRÍTÓ

1. Rakodórámpához (12) illesztett lökhárító (10), egy rakodórámpához (12) történő illesztéshez kialakított tartórésszel (14), egy rakodni kívánt járműnek a rakodórámpához (12) történő ütközéséhez kialakított megállító résszel (16), és egy, a megállító rész (16) tartórésszel (14) szemben történő lökhárítását szolgáló ütközőrésszel (18), ahol a megállító rész (16) a tartórészen (14) legalább egy lengőkarral (20) van megtámasztva, és a tartórész (14) két egymással szemben elhelyezkedő oldalfelülettel (24) van ellátva,

azzal jellemezve, hogy a tartórész (14) mindkét oldalfelületén (24) két-két egymással párhuzamosan kiterjedő lengőkar (20) van kialakítva, a megállító rész tartására.

2. Az 1. igénypont szerinti lökhárító, amelynél a tartórész (14) hosszúkasan van kialakítva.

3. Az 1. vagy a 2. igénypont szerinti lökhárító, amelynél a tartórész (14) és/vagy a megállító rész (16) egy U alakú keresztmetszettel van kialakítva, és legalább egy lengőkar (20) az U alakon belül van elrendezve.

4. Az 1-3. igénypontok bármelyike szerinti lökhárító, amelynél a tartórész (14) és a megállító rész (16) egy U alakú keresztmetszettel van kialakítva, és a megállító rész (16) U alakja és a tartórész (14) U alakja egymásba összekapaszkodó módon van kialakítva.

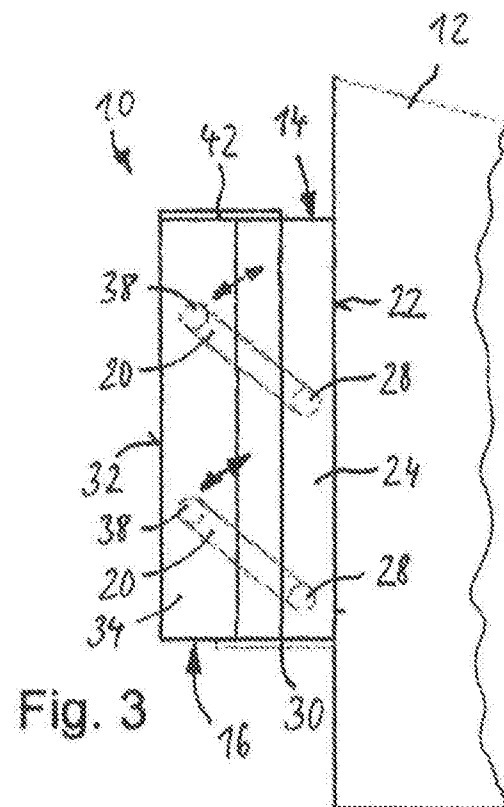
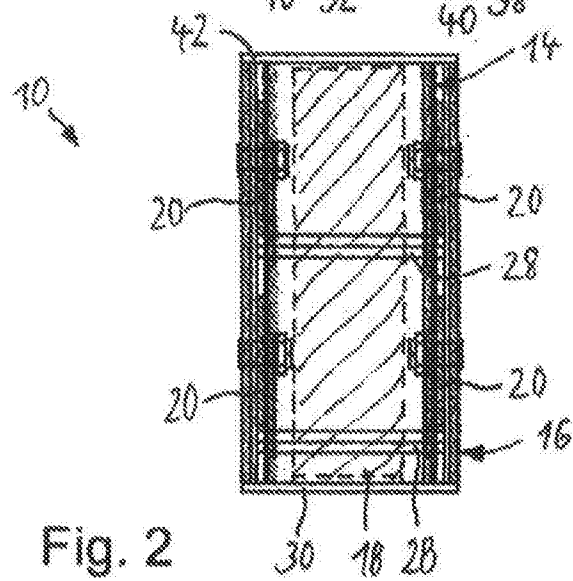
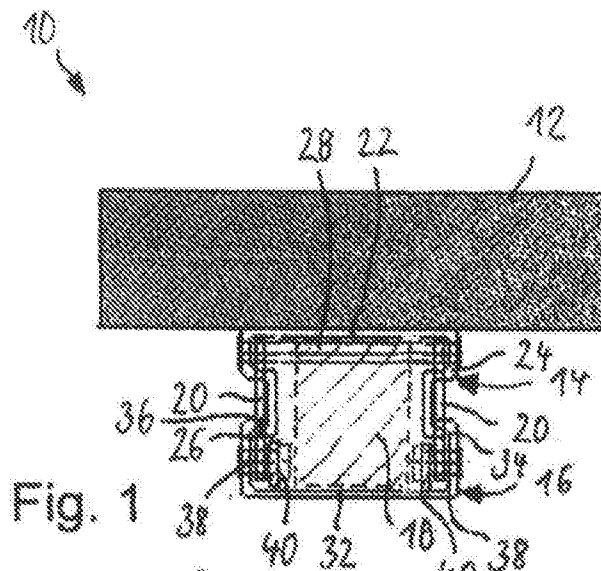
5. Az 1-4. igénypontok bármelyike szerinti lökhárító, amelynél a megállító rész (16) egy fedőfelületet (42) tartalmaz, amellyel a megállító rész a tartórészhez (14) megtámasztható.

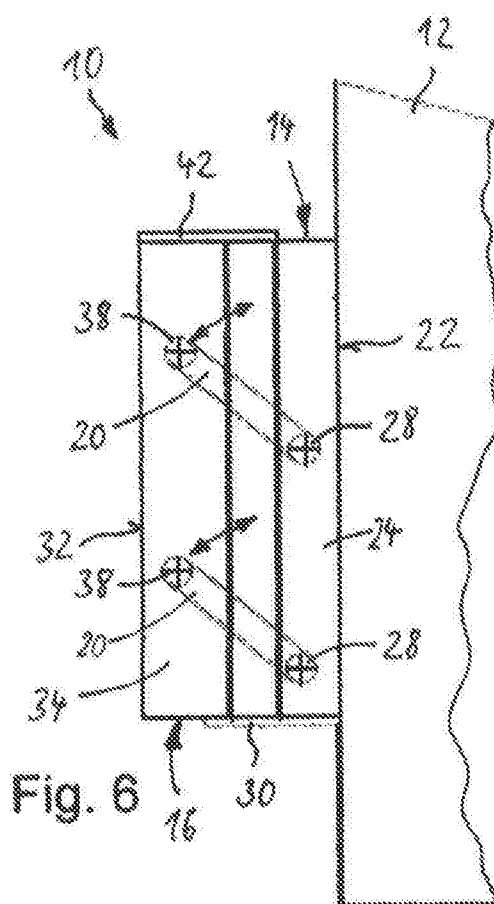
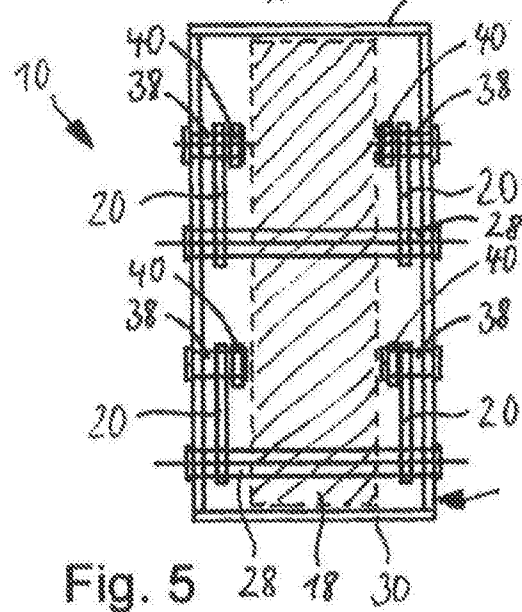
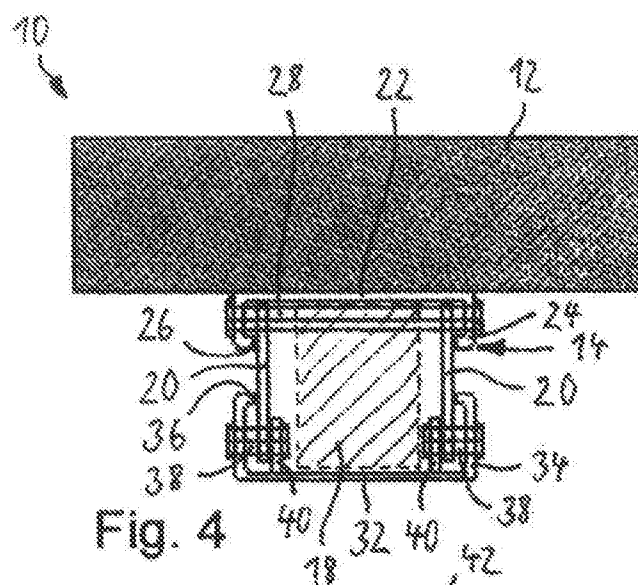
6. Az 1-5. igénypontok bármelyike szerinti lökhárító, amelynél a tartórész (14) egy alapfelületet (30) tartalmaz, amellyel az ütközőrész (18) a tartórészen (14) van megtámasztva.

7. Az 1-6. igénypontok bármelyike szerinti lökhárító, amelynél az ütköző rész (18) téglatestként van kialakítva.



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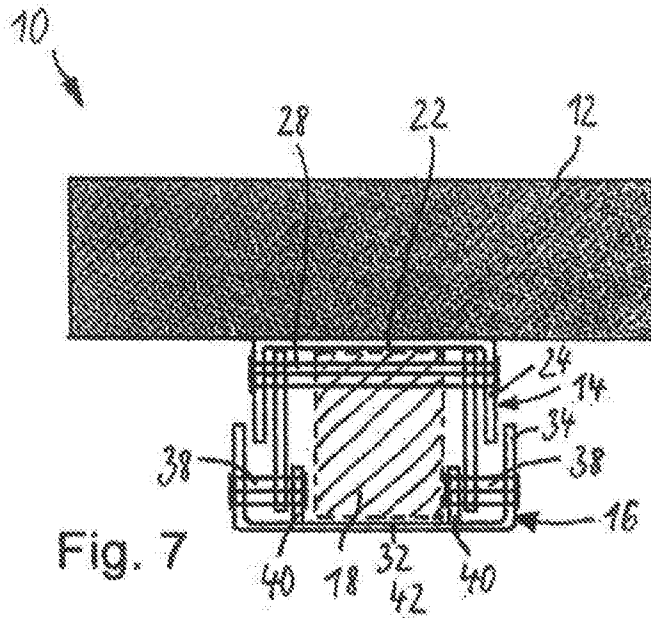


Fig. 7

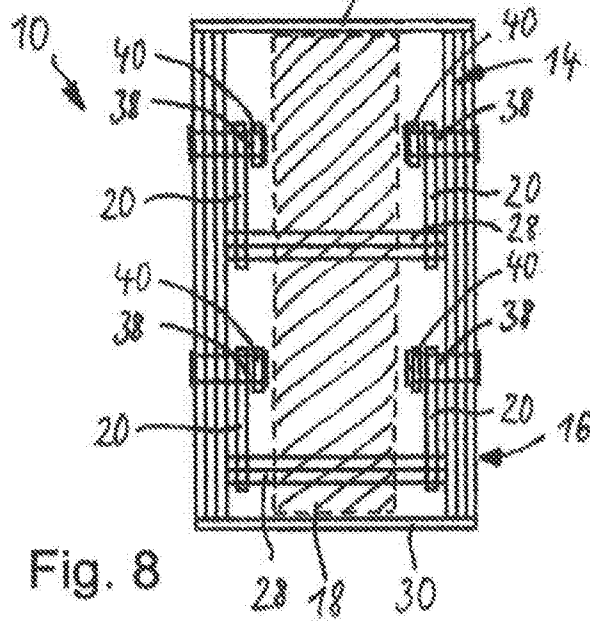


Fig. 8

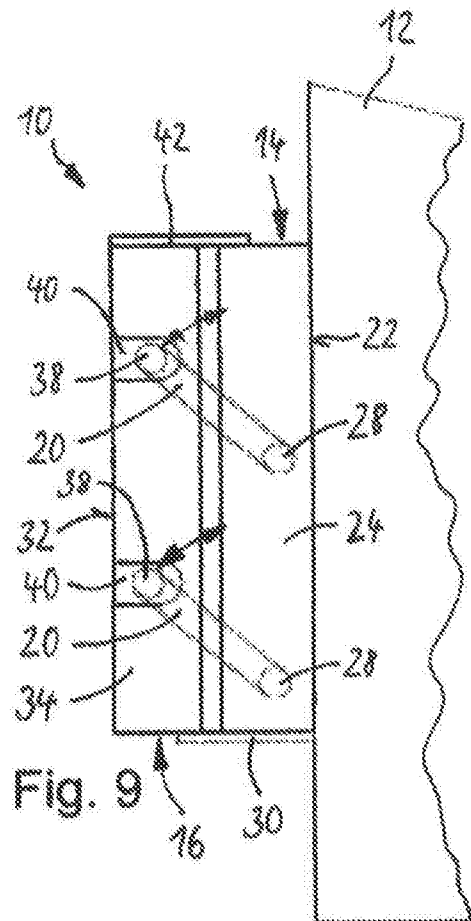


Fig. 9