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(54) **A DOOR LOCK**

(57) A door lock 10 is for retrofitting to a vehicle 12. The door lock 10 comprises a first unit 14a and a second unit 14b. The first unit 14a comprises a front face 16a and an opposite rear face 18a parallel to the front face 16a, the rear face 18a for connecting to the vehicle 12 and including screw holes 20a, the first unit 14a including a lock 22 and a locking bar 24 operated by the lock 22. The second unit 14b comprises a front face 16b and an opposite rear face 18b parallel to the front face 16b, the rear face 18b for connecting to the vehicle 12 and including screw holes 20b, the second unit 14b including a cav-

ity 26 to receive the locking bar 24 of the first unit 14a when operated by the lock 22 of the first unit 14a. The first unit 14a further comprises a slanted edge 28a connecting the front face 16a to the rear face 18a and comprising one or more teeth 30a and one or more holes 32a. The second unit 14b further comprises a slanted edge 28b connecting the front face 16b to the rear face 18b and comprising one or more teeth 30b and one or more holes 32b. The two slanted edges 28 are arranged, when in contact, such that each tooth 30 on one edge 28 engages with a hole 32 on the other edge 28.

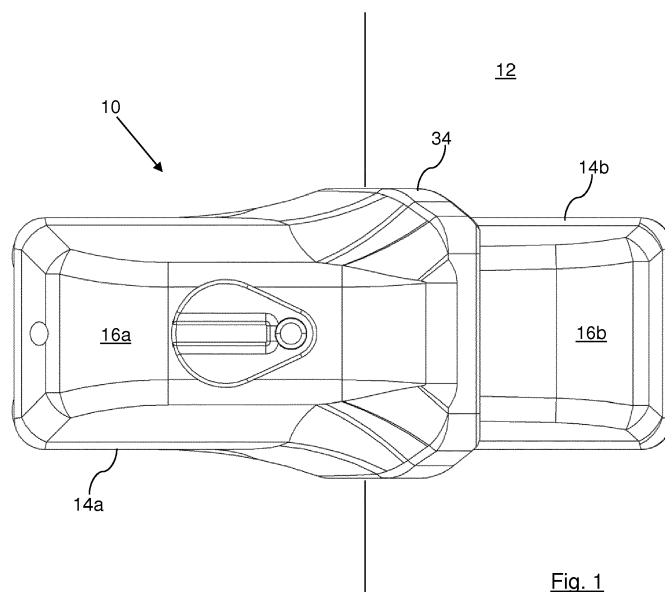


Fig. 1

Description

[0001] Vehicles such as vans are used commercially by many businesses of different sizes. For example, large businesses may have fleets of vans for deliveries and smaller businesses including many tradespeople use a van to store their equipment. It is known that vans contain commercially valuable contents, such as goods being delivered and the tools and equipment that people use in their trade. Unfortunately this has resulted in vans being targeted by thieves, particularly when vans have been left unattended, for example when the owner of the van is working or when the van is parked overnight. To combat theft from vehicles such as vans, the van owners will sometimes retrofit an additional lock to the van, particularly to the larger rear doors of the van that lead to the main interior of the van. Such locks are not always sufficiently secure and cannot always be used on sliding door arrangements, which are commonly provided on the side of larger vans.

[0002] It is therefore an object of the invention to improve upon the known art.

[0003] According to the present invention, there is provided a door lock for retrofitting to a vehicle, the door lock comprising a first unit comprising a front face and an opposite rear face parallel to the front face, the rear face for connecting to the vehicle and including screw holes, the first unit including a lock and a locking bar operated by the lock, and a second unit comprising a front face and an opposite rear face parallel to the front face, the rear face for connecting to the vehicle and including screw holes, the second unit including a cavity to receive the locking bar of the first unit when operated by the lock of the first unit, characterised in that the first unit further comprises a slanted edge connecting the front face to the rear face and comprising one or more teeth and one or more holes and the second unit further comprises a slanted edge connecting the front face to the rear face and comprising one or more teeth and one or more holes, the two slanted edges arranged, when in contact, such that each tooth on one edge engages with a hole on the other edge.

[0004] Owing to the invention, it is possible to provide a door lock that can be retrofitted to a vehicle such as a van, which is more secure than a conventional lock and also can be used on sliding door arrangements provided on the side of vans. The provision of teeth and holes on the opposing edges of the two units that make up the lock provide a secure engagement between the two parts of the lock, in addition to the locking bar that is moved across to join together the two units. The fact that the edge is slanted allows relative movement between the two parts of the lock, even if the lock is mounted to provide additional security on a sliding door arrangement.

[0005] Preferably, the first unit further comprises a shield arranged to cover at least part of the second unit when the two edges of the two units are in contact. Additional security for the lock can also be provided by a

shield that extends from the first unit over the second unit, when the two units are fixed in position with their two slanted edges in contact. The shield helps to prevent unauthorised access to the small spacing between the two units, which could be used by a thief to attempt to lever apart the two units of the lock.

[0006] Advantageously, the lock further comprises a handle extending from the rear face of the first unit and connected to the locking bar of the first unit, the handle movable to move the locking bar. The provision of a handle on the rear face of the first unit means that the lock can be operated from the inside. This increases the usefulness of the lock, which will be mounted on a vehicle door and on the adjacent panel or door frame. Many vans have more than one way of accessing the interior of the van and therefore the provision of the internal handle allows a user to open the lock if they are inside the van and need to open the door that is locked by the additional door lock, from the inside.

[0007] Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a front view of a door lock mounted on a vehicle,

Figure 2 is an exploded view of the door lock from the front,

Figure 3 is a rear view of the lock, and

Figure 4 is a rear view of part of the door lock.

[0008] Figure 1 shows a door lock 10, which is for retrofitting to a vehicle 12 and comprises two separate units 14a and 14b. A vehicle 12 such as a van can be additionally secured by the addition of the door lock 10, which provides an additional deterrent and additional protection against unauthorised entry to the interior of the vehicle 12. One unit 14 is located on a door of the vehicle 12 and the other unit 14 is located on an adjacent panel or frame of the door of the vehicle 12. The first unit 14a has a front face 16a and the second unit 14b has a front face 16b. The front faces 16 of the units 14 are smooth and free from screw holes. The first unit 14a also has a shield 34 that is arranged to cover at least part of the second unit 14b when the two edges of the two units 14 are in contact.

[0009] Figure 2 shows an exploded view of the main components of the lock 10. The first unit 14a has a front face 16a and an opposite rear face parallel to the front face 16a, the rear face for connecting to the vehicle 12 and including screw holes. The first unit 14a also includes a lock 22 (shown here with a key 23) and a locking bar 24 operated by the lock 22 (when assembled). The second unit 14b has a front face 16b and an opposite rear face parallel to the front face 16b, the rear face for connecting to the vehicle 12 and including screw holes. The second unit 14b including a cavity 26 to receive the locking bar 24 of the first unit 14a when operated by the lock 22 of the first unit 14a.

[0010] The purpose of the lock 10 is to be retrofitted to

a vehicle 12 in a secure manner and then provide additional security, preventing the vehicle 12 from being accessed. The lock 10 is designed to be mounted using screws from the interior of the vehicle 12 that engage with screw holes on the rear of the units 14. The units 14 are mounted on the vehicle 12 with a very tight fitting between the units 14 and the panel or door on which each unit 14 is mounted. The lock 10, once fitted to a vehicle 12, cannot be removed and once the locking bar 24 is moved across to engage the second unit 14b, the lock 10 cannot be opened.

[0011] The first unit 14a has a slanted edge 28a which connects the front face 16a to the rear face and has two teeth 30a and the second unit 14b also has a slanted edge 28b connecting the front face 16b to the rear face and has one tooth 30b. The slanted edges 28 are also provided with holes that correspond to the teeth 30 on the other (opposite) unit 14. The two slanted edges 28 of the units 14 are arranged, when in contact, such that each tooth 30 on one edge 28 engages with a hole on the other edge 28. The teeth 30 and holes further increase the security of the lock as once they are engaged, lateral relative movement of the two units 14 is not possible.

[0012] Figure 3 shows the lock 10 from the rear. The rear faces 18 of the two units 14 are provided with screw holes, shown here with screws 40 located therein. The rear faces 18 of the units 14 are flat. The shield 34 of the first unit 14a is arranged to cover at least part of the second unit 14b when the two edges 28 of the two units 14 are in contact. Two gaskets 38 of a size equivalent to the rear faces 18 of the units 14 are provided and include holes matching the location of the screw holes in the rear faces 18 of the units 14. The gaskets 38 provide waterproofing of the interior of the lock 10 and also ensure that a tight fit can be achieved between the units 14 and the body of the vehicle 12 mounting the door lock 10.

[0013] The lock 10 also comprises a handle 36 extending from the rear face 18a of the first unit 14a and connected to the locking bar 24 of the first unit 14, the handle 36 movable to move the locking bar 24. The locking bar 24 includes a hole therein and handle 36 is located through the hole in the locking bar 24. The provision of the handle 36 on the rear face 18a of the first unit 14a means that the lock 10 can be operated from the inside. This increases the usefulness of the lock 10, once one unit 14 is mounted on a vehicle door and the other unit 14 is mounted on the adjacent panel or door frame. The provision of the internal handle 36 allows a user to open the lock 10 if they are inside the vehicle and need to open the door that is locked by the door lock 10, from the inside.

[0014] Figure 4 shows a view of the lock 10, this time taken from the rear, of the two units 14. The screw holes 20a and 20b in the rear faces 18 of the two units 14 can be seen, with four screw holes 20a and 20b being provided on each of the two units 14. The screw holes 20 are located at the opposite end of the units 14 from the slanted edges 28. The rear view of the units 14 also

shows the teeth 30a on the first unit 14a and the holes 32b in the opposite edge 28b of the second unit 14b which mate with the teeth 30a. The back of the tooth 30b on the second unit 14b can also be seen, which mates with a hole 32a on the first unit 14a. The cavity 26 on the second unit 14b can also be seen. This cavity 26 is to receive the locking bar 24 of the first unit 14a when operated by the lock 22 of the first unit 14a.

[0015] The slanted edge 28 of each unit 14 is at angle of 45 degrees to the longitudinal axis of the units 14. The effect of the slanted edge 28 is that the front face 16a of the first unit 14a is larger than the rear face 18a of the first unit 14a and the front face 16b of the second unit 14b is smaller than the rear face 18b of the second unit 14b.

Claims

1. A door lock (10) for retrofitting to a vehicle (12), the door lock (10) comprising:

- a first unit (14a) comprising a front face (16a) and an opposite rear face (18a) parallel to the front face (16a), the rear face (18a) for connecting to the vehicle (12) and including screw holes (20a), the first unit (14a) including a lock (22) and a locking bar (24) operated by the lock (22), and

- a second unit (14b) comprising a front face (16b) and an opposite rear face (18b) parallel to the front face (16b), the rear face (18b) for connecting to the vehicle (12) and including screw holes (20b), the second unit (14b) including a cavity (26) to receive the locking bar (24) of the first unit (14a) when operated by the lock (22) of the first unit (14a),

characterised in that the first unit (14a) further comprises a slanted edge (28a) connecting the front face (16a) to the rear face (18a) and comprising one or more teeth (30a) and one or more holes (32a) and the second unit (14b) further comprises a slanted edge (28b) connecting the front face (16b) to the rear face (18b) and comprising one or more teeth (30b) and one or more holes (32b), the two slanted edges (28) arranged, when in contact, such that each tooth (30) on one edge (28) engages with a hole (32) on the other edge (28).

2. A door lock according to claim 1, wherein the first unit (14a) further comprises a shield (34) arranged to cover at least part of the second unit (14b) when the two edges (28) of the two units (14) are in contact.

3. A door lock according to claim 1 or 2, and further comprising a handle (36) extending from the rear face (18a) of the first unit (14a) and connected to the

locking bar (24) of the first unit (14a), the handle (36) movable to move the locking bar (24).

4. A door lock according to claim 3, wherein the locking bar (24) includes a hole therein and handle (36) is located through the hole in the locking bar (24). 5
5. A door lock according to any preceding claim, and further comprising two gaskets (38) of a size equivalent to the rear faces (18) of the units (14) and including holes matching the location of the screw holes (20) in the rear faces (18) of the units (14). 10
6. A door lock according to any preceding claim, wherein the front faces (16) of the units (14) are smooth and free from screw holes. 15
7. A door lock according to any preceding claim, wherein the rear faces (18) of the units (14) are flat. 20
8. A door lock according to any preceding claim, wherein the slanted edge (28) of each unit (14) is at angle of 45 degrees to the longitudinal axis of the units (14).
9. A door lock according to any preceding claim, wherein the front face (16a) of the first unit (14a) is larger than the rear face (18a) of the first unit (14a) and the front face (16b) of the second unit (14b) is smaller than the rear face (18b) of the second unit (14b). 25

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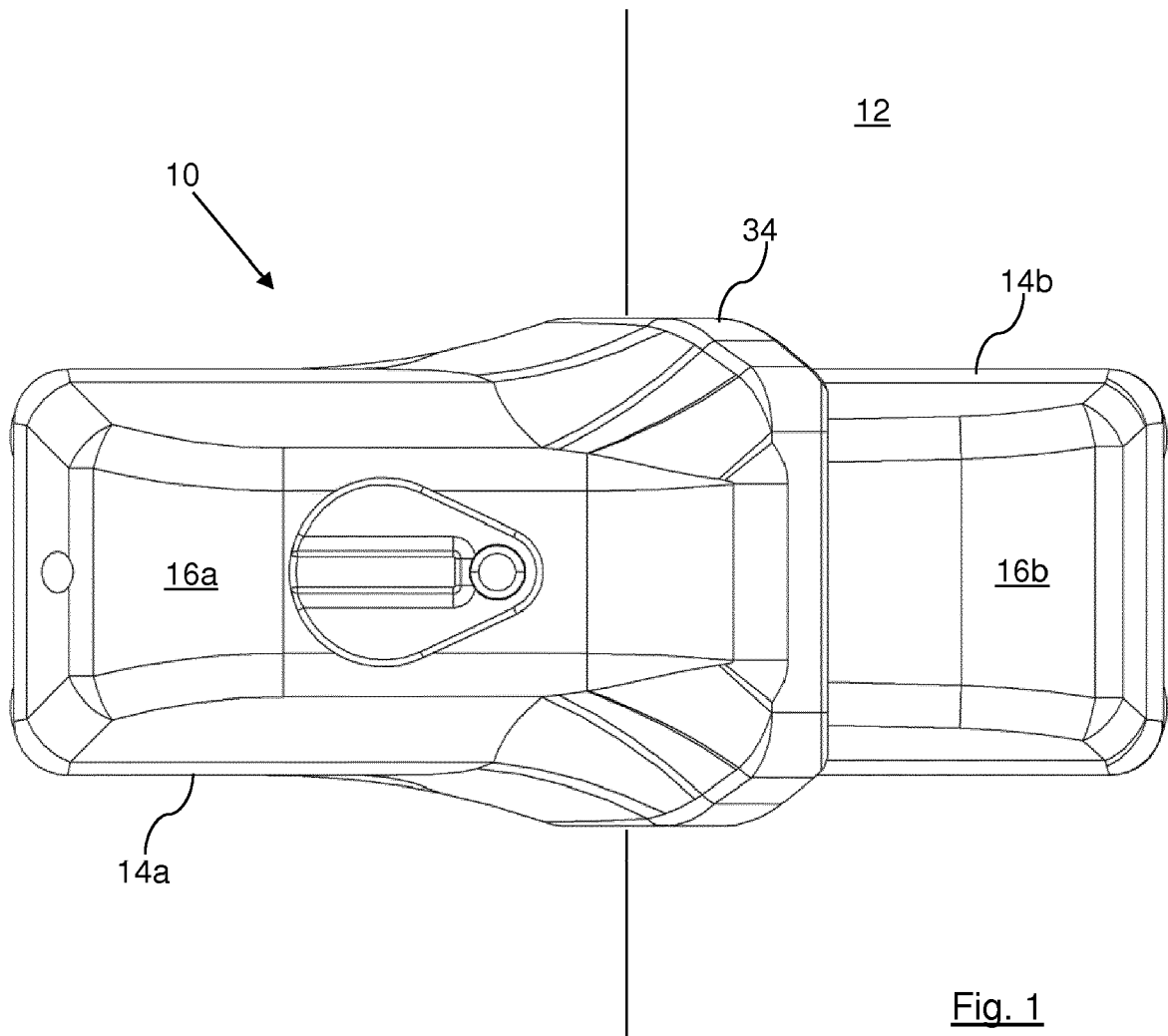
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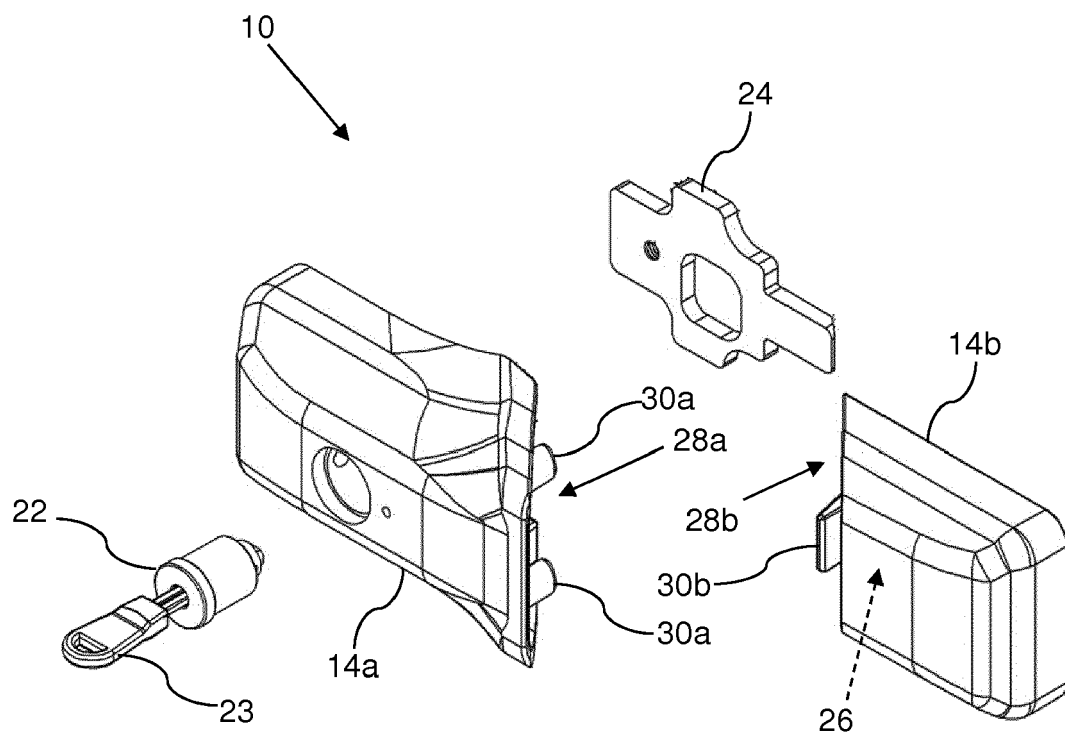


Fig. 2

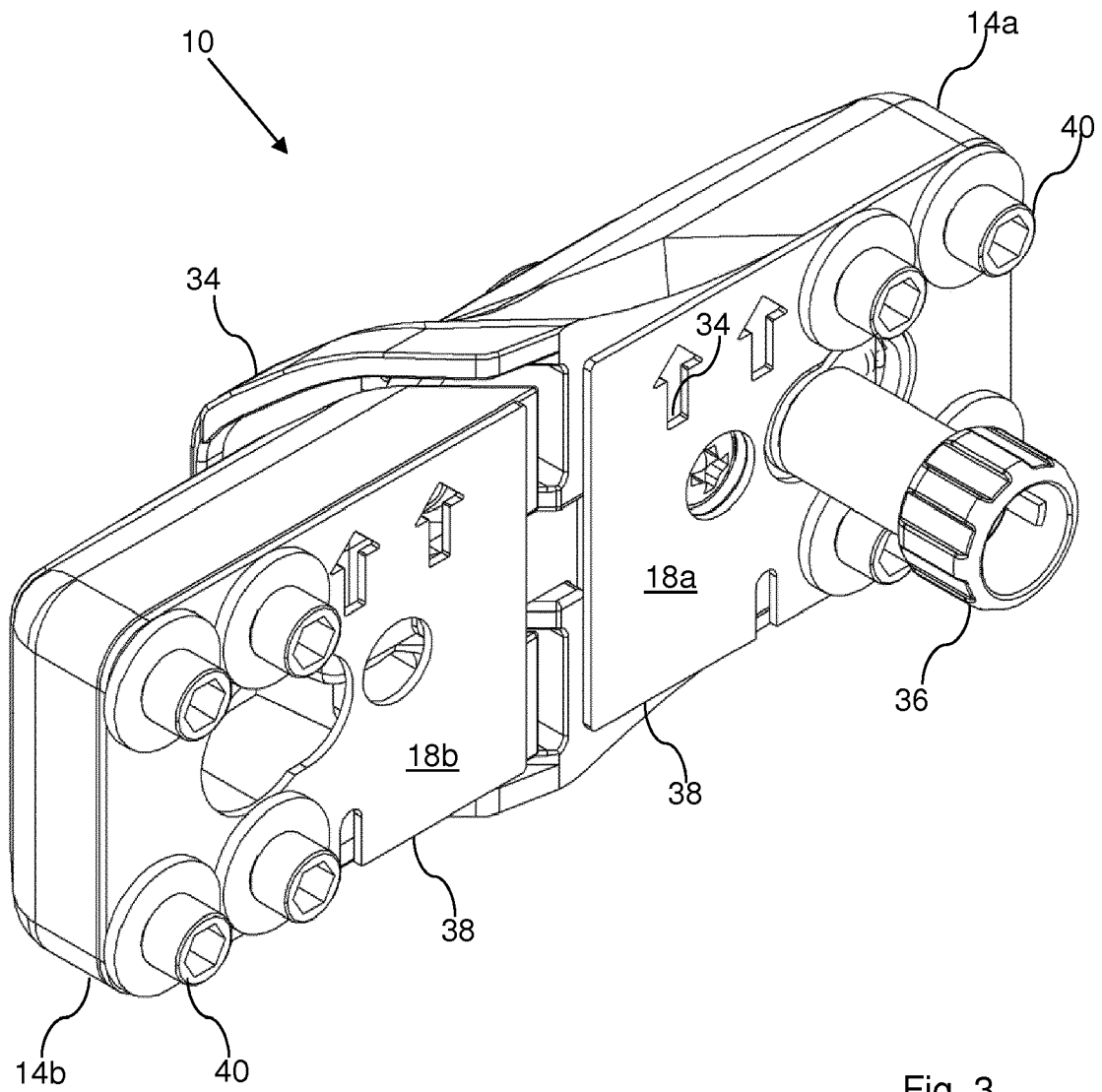


Fig. 3

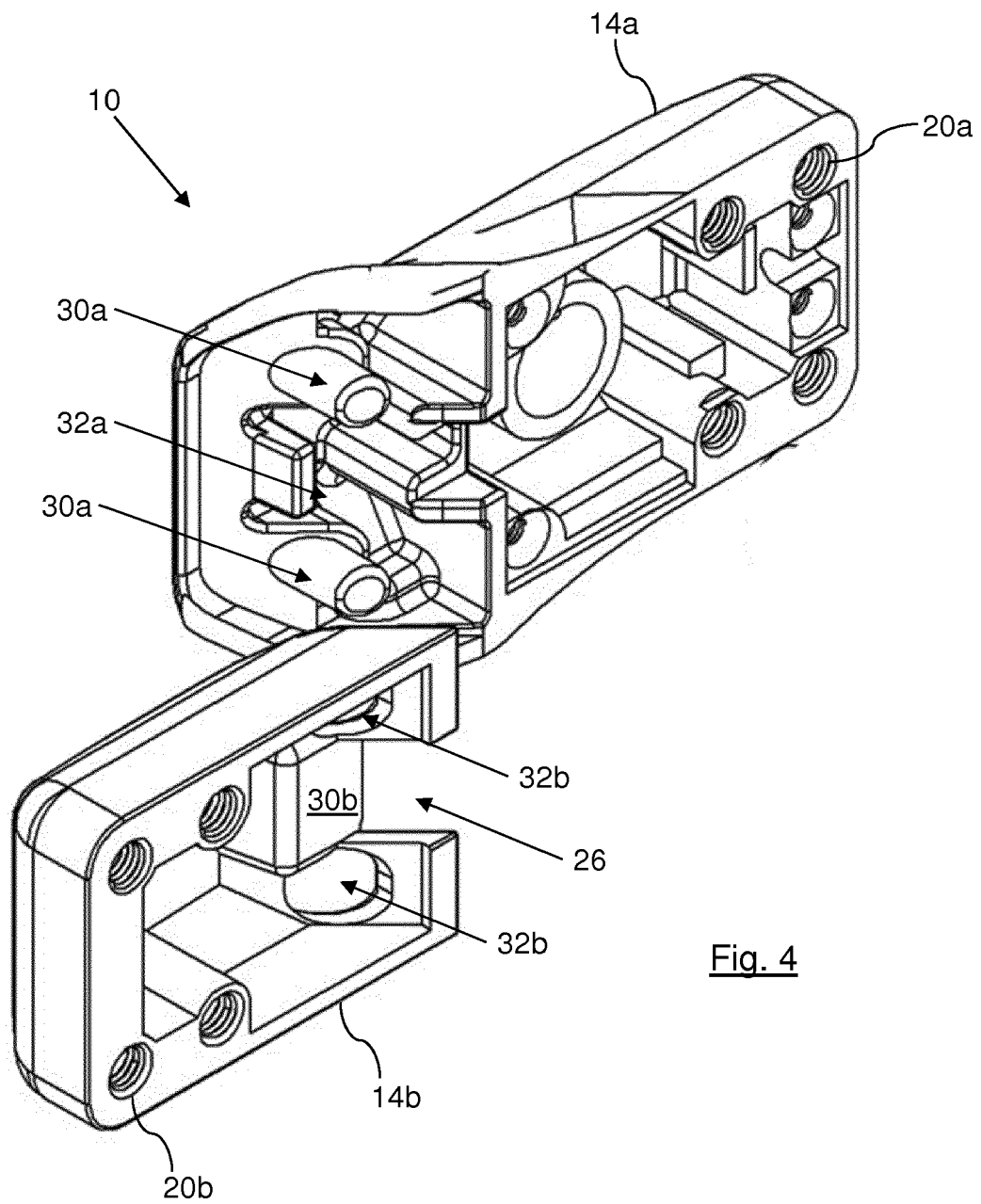


Fig. 4



EUROPEAN SEARCH REPORT

Application Number
EP 18 19 0553

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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 21 January 2019	Examiner Goddar, Claudia
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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