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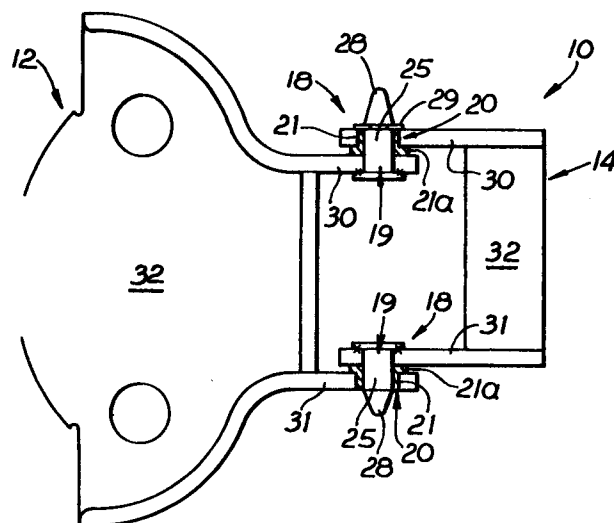
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(54)

Lift-off hinge assembly.

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A lift-off hinge assembly including a first hinge leaf (14) hingedly connected to a second hinge leaf (12), the hinge connection between the hinge leaves being defined by at least two hinge formations (18) spaced apart along the pivot axis of the hinge assembly, each hinge formation including a hinge pin (19) positioned on one hinge leaf and which is journaled in the other hinge leaf, the hinge pins of all the hinge formations being arranged to co-operate with their respective journal (20) to enable the hinge pins to be simultaneously withdrawn from their respective journals by moving the hinge leaves apart along the pivot axis.



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LIFT-OFF HINGE ASSEMBLY

The present invention relates to a lift-off hinge assembly for use in hingedly attaching vehicle doors to the vehicle body.

During the assembly of a vehicle, it is desirable to
5 attach doors to the vehicle body with hinge assemblies which enable the door to be correctly positioned by adjusting the position of the hinge leaves and thereafter enable the door to be removed by separating the hinge
10 leaves. The door may then be remounted in its correct position by attaching the hinge leaves together again.

One type of such a hinge assembly is a lift-off hinge assembly wherein the hinge leaves are separated by relative movement axially along the pivot axis of the hinge.

15 In certain applications, it is desirable that such relative movement is as small as possible in order to prevent the door from hitting the surrounding body during the separation process.

According to one aspect of the present invention
20 there is provided a lift-off hinge assembly including a first hinge leaf hingedly connected to a second hinge leaf, the hinge connection between the hinge leaves being defined by at least two hinge formations spaced apart along the pivot axis of the hinge assembly, each hinge
25 formation including a hinge pin positioned on one hinge leaf and which is journalled in the other hinge leaf, the hinge pins of all the hinge formations being arranged to co-operate with their respective journal to enable the hinge pins to be simultaneously withdrawn from their
30 respective journals by moving the hinge leaves apart along the pivot axis.

Preferably at least one hinge pin is provided with a removable stop which when mounted on the hinge pin prevents withdrawal of said hinge pin from its journal

and thereby prevents separation of the hinge leaves.

Various aspects of the present invention are hereinafter described with reference to the accompanying drawings, in which:-

Figure 1 is a schematic side view of one embodiment
5 of the present invention;

Figure 2 is a similar view to Figure 1 showing separation of the hinge leaves;

Figure 3 is a side view of a further embodiment of the present invention incorporating a check mechanism;
10 and

Figure 4 is a plan view of the embodiment shown in Figure 3.

Referring initially to Figure 1 there is shown a lift-off hinge assembly 10 including a hinge leaf 12
15 which is hingedly connected to a hinge leaf 14. In the illustrated embodiment, the leaf 12 is in use attached to the vehicle body and the leaf 14 is attached to the vehicle door. The leaves 12, 14 are hingedly connected to one another by two hinge formations 18 which are
20 spaced apart along the pivot axis of the hinge. Each hinge formation 18 includes a hinge pin 19 and a journal 20 for the associated pin 19; the pin 19 being mounted on one leaf and the journal being located on the other leaf. The pin 19 is preferably secured to its associated leaf
25 by welding.

In the illustrated embodiment, each leaf is provided with one hinge pin 19 and one journal 20 but it will be appreciated that one leaf may be provided with both hinge pins whilst the other leaf may be provided with both
30 journals.

The journal 20 is preferably formed by a bush 21 having self lubricating properties such as a metal reinforced plastics bush, the bush 21 being received in an aperture formed in the hinge leaf.

The bush 21 also has an annular flange 21a which serves to slidingly space the hinge leaves apart.

In view of the fact that the hinge formations are spaced apart axially along the pivot axis of the hinge assembly short hinge pins may be used for supporting heavy loads. Thus the pin 19 has a constant diameter shank portion 25 which is preferably only long enough to protrude along the axis of the bush to provide an adequate pivotal connection; in the illustrated embodiment shank portion 25 protrudes along substantially the entire axial extent of the bush.

The terminal end 28 of the pin 15 is preferably sharply tapered as shown in order to facilitate entry of the pin into an associated bush particularly during the remounting of a door onto a vehicle body.

The upper pin 19 is provided with an annular groove which houses a removable circlip 29 which acts as a stop to prevent withdrawal of the upper pin 19 from its associated journal 20 and thereby prevents axial separation of the hinge leaves.

In order to separate the hinge leaves 12, 14, the circlip 29 is removed and the door (not shown) to which the leaf 14 is attached is raised sufficiently to withdraw the hinge pins from their associated journals. This situation is illustrated in Figure 2.

The door may then be moved laterally away from the vehicle body.

The distance necessary for raising the door is only the length of the protruding shank portion 25 plus the terminal end 28.

The hinge leaves 12, 14 are both conveniently formed as metal pressings and are each provided with spaced apart arms 30, 31 and body portions 32. The arms 30, 31 are provided with hinge formations 18 and the body portions 32 are provided with suitable formations to

enable the hinge leaves to be attached to the vehicle door/body.

It will be appreciated that more than two hinge formations may be provided spaced along the pivot axis. Additionally it is envisaged that the stop for preventing axial separation of the hinge leaves may be located on arms 30, 31 instead of pin 19.

In Figures 3 and 4 a further embodiment is illustrated wherein similar parts have been designated by the same reference numerals.

The embodiment shown in Figures 3 and 4 incorporates a check mechanism 60 which includes a detent 61 in the form of a length of bent resilient metal rod 62 mounted on leaf 12. The detent 61 includes a downwardly projecting arm portion 63 which on relative angular movement of the hinge leaves engages either with star wheel 65 or 66 both of which are rotatably mounted on hinge leaf 14. The portion 63 engages in a recess 67 formed in either star wheel 65 or 66 and on continued relative movement of the hinge leaves is deflected outwardly against the bias of the rod 62 and thereby resists said continued movement of the hinge leaves.

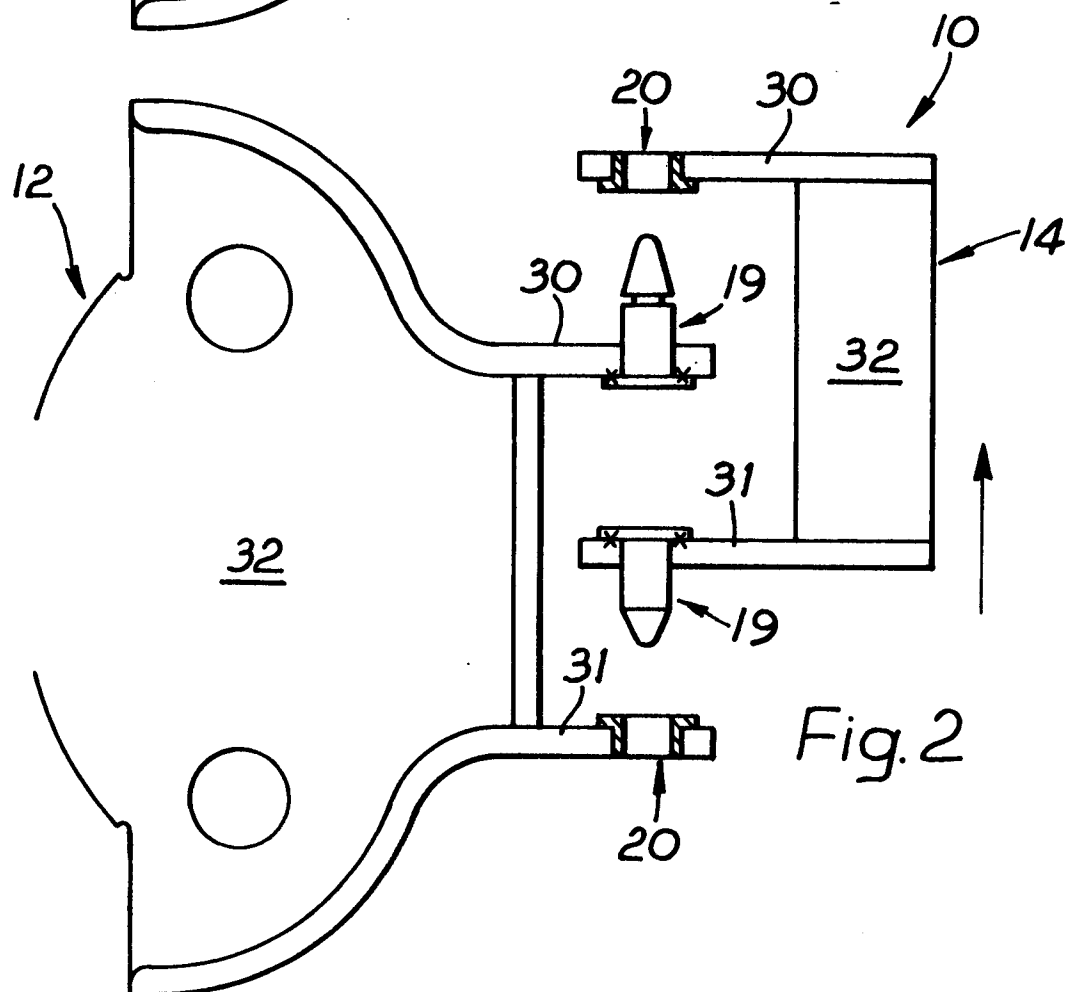
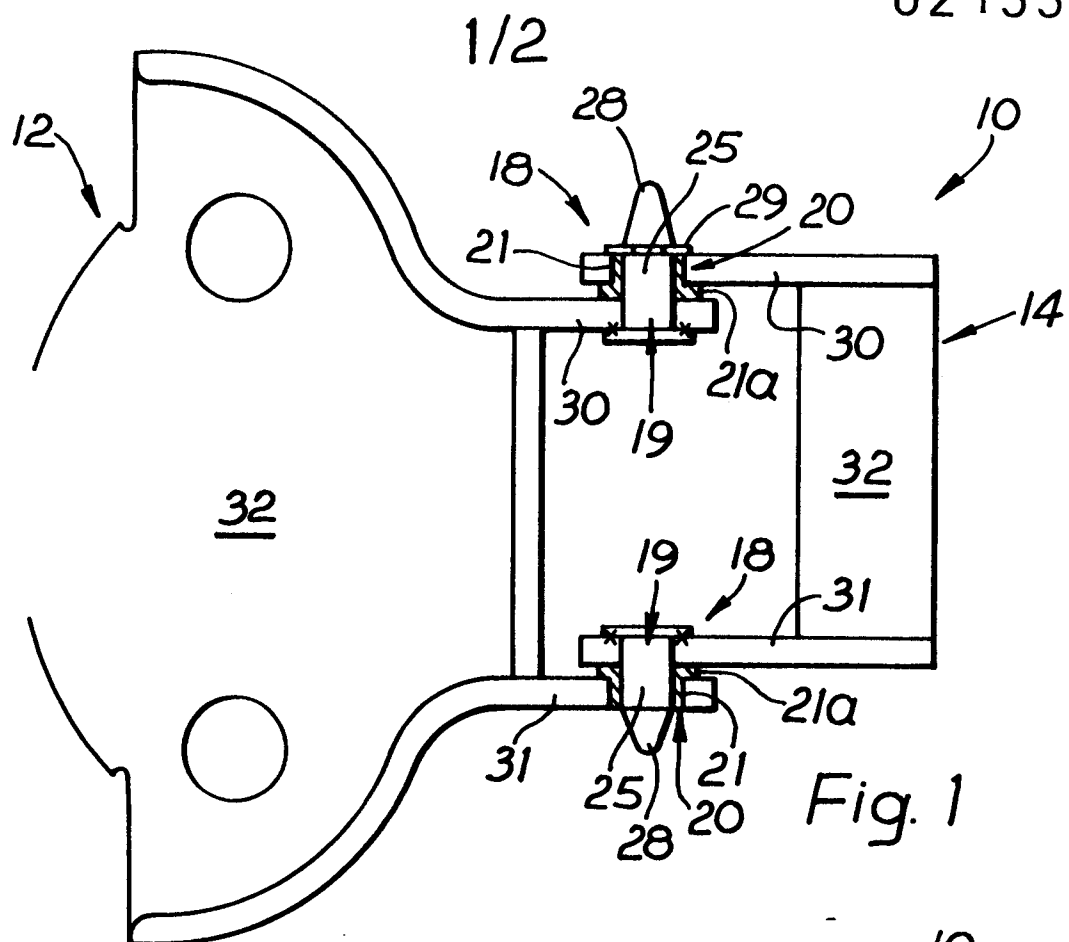
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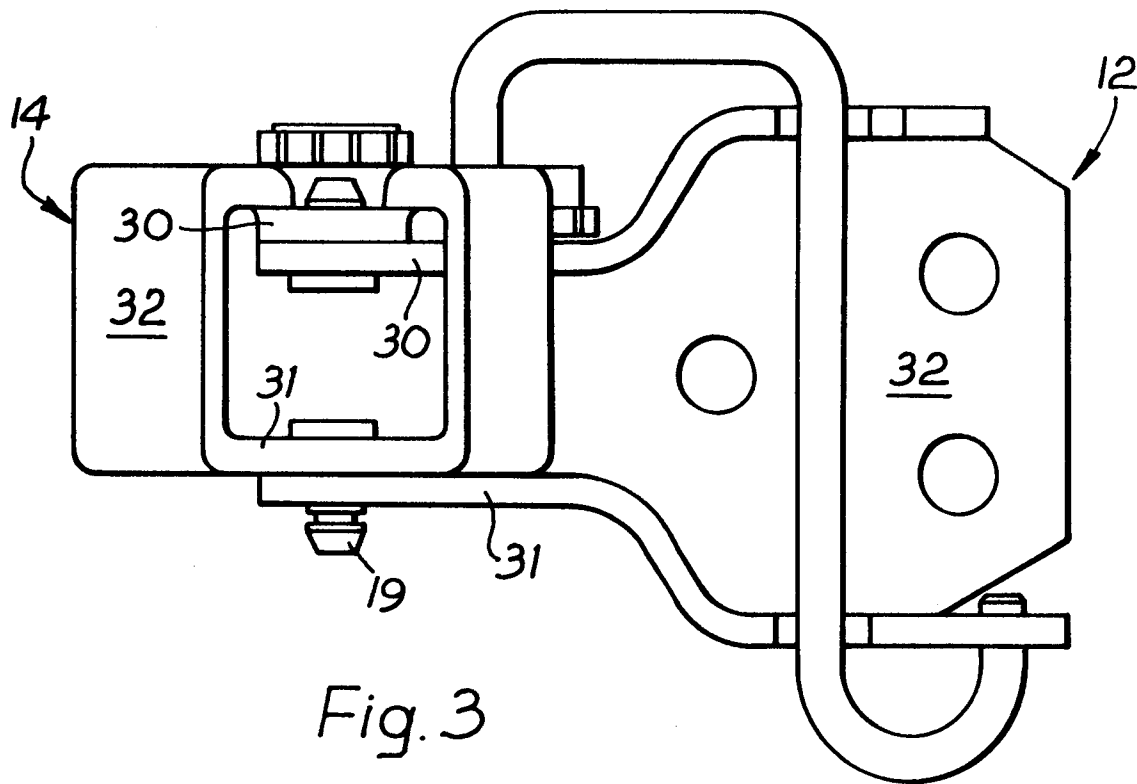
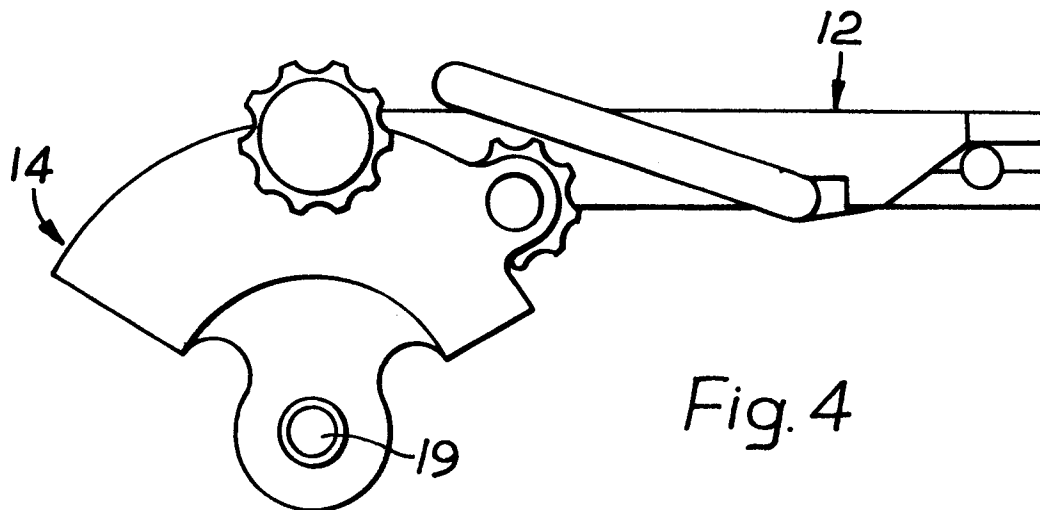
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CLAIMS

1. A lift-off hinge assembly including a first hinge leaf hingedly connected to a second hinge leaf, the hinge connection between the hinge leaves being defined by at least two hinge formations spaced apart along the pivot axis of the hinge assembly, each hinge formation including a hinge pin positioned on one hinge leaf and which is journaled in the other hinge leaf, the hinge pins of all the hinge formations being arranged to co-operate with their respective journal to enable the hinge pins to be simultaneously withdrawn from their respective journals by moving the hinge leaves apart along the pivot axis.
2. A hinge assembly according to Claim 1 wherein at least one hinge pin is provided with a removable stop which when mounted on the hinge pin prevents withdrawal of said hinge pin from its journal and thereby prevents separation of the hinge leaves.
3. A hinge assembly according to Claim 1 or 2 wherein both hinge leaves are pressings from a metal sheet.
4. A hinge assembly according to Claim 3 wherein the journal for each pin is defined by an aperture in an arm formed on the hinge leaf, the axial extent of the aperture being defined by the thickness of the metal sheet.
5. A hinge assembly according to Claim 4 wherein each pin has a shank portion which in axial length is the same or less than the axial length of its associated journal.
6. A hinge assembly according to Claim 5 wherein each pin has a tapered terminal end portion to facilitate entry of the pin into its associated journal.
7. A hinge assembly according to any preceding claim wherein a check mechanism is mounted on both hinge leaves.



*Fig. 3**Fig. 4*



European Patent
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EUROPEAN SEARCH REPORT

0215568

Application number

EP 86 30 6145

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
X	FR-A-2 300 197 (ITW FASTEX ITALIA S.P.A.) * Whole document *	1	E 05 D 7/10
A		2, 4, 5, 6	
X	US-A-4 043 000 (BUNKER) * Column 1, lines 27-35; figure 5 *	1	
A		2, 4, 5	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			E 05 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 16-12-1986	Examiner NEYS B.G.
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			