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⑤④ **Antenna arrangement on a vehicle.**

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Description

The present invention relates to an antenna arrangement as defined in the introductory part of claim 1.

An antenna arrangement of the above type is disclosed by German patent application DE-A-2204448. With the prior art antenna arrangement the instrument space is very small and thus one disadvantage is that serving the antenna unit inside it requires stopping the vehicle and turning the antenna unit into its working condition. An other disadvantage is that it requires severe modifications of the vehicle at the location where the antenna arrangement is to be mounted. A still further disadvantage is that the antenna arrangement inside the instrument space is unprotected against weather or additional measures should be taken to provide such protection. Still a further disadvantage is that the antenna unit of the arrangement can take only few positions or can be aimed into only few directions without moving the vehicle.

It is an object of the invention to eliminate the drawbacks of the prior art antenna arrangement.

According to the invention said object is obtained by the antenna arrangement according to claim 1. By this the antenna arrangement is easy to install in a normal freight vehicle or a truck by simply attaching it to the ceiling close to the loading opening of the vehicle. No modifications on the construction of the truck are needed. No extra boxes have to be installed. The entire antenna arrangement can easily be serviced in the storage position of the antenna unit, even during travelling. Since the vehicle can be any normal truck it needs not to be dedicated only to transporting an antenna system, but it can transport at the same time also normal goods inside the freight space. The antenna system is as well protected against the weather as other goods inside such freight space.

Preferably the lever element has an angular shape in the plane perpendicular to the swivelling axis. This makes it possible to install and operate the antenna unit in a normal freight unit of a truck without effecting on the construction of the freight space. No cut outs or extra openings at all are needed. Just the ordinary door opening at the rear end of the truck will be sufficient.

Preferably a power means, e.g. an electric motor, is connected to the shaft of the lever element. The power means can be a motor belonging to the antenna operating equipment used for adjusting the antenna position. This shared use of this power means makes the arrangement less complex and thus cheaper to manufacture, to use and to maintain.

The Japanese patent application JP-A-60260204 discloses an antenna arrangement mounted on the roof of a vehicle. If not in operation an antenna unit of the arrangement is turned down against the outside roof. To obtain an operational state the antenna unit

is turned upwardly around a swivelling axis. Motors are controlled in the operational state to adjust the elevating angle and the azimuth angle of the antenna unit.

In the following, the invention is described by referring to the appended drawings, in which

Fig. 1 illustrates the antenna arrangement of the invention, fitted in a transport vehicle, in lateral view and partly sectioned, and

Fig. 2 shows the antenna arrangement of fig. 1 as seen from direction E-E.

The antenna arrangement comprises an antenna unit 1, which in this case consists of a paraboloidal mirror, suspension and operating equipment 2 supporting the antenna unit 1, and an instrument space 3 accommodating the antenna unit 1.

The suspension and operating equipment 2 comprises rotating and turning means, consisting of two power means such as electric motors 7, 8, an antenna support 9, a transmitter/receiver support 10 for holding the transmitter/receiver 11, a lever element 4 and a supporting element 5.

The instrument space 3 consists of a mobile space, in this case the freight space of a truck or trailer truck or a transportable container. The space 3 is provided with an opening 6 for the antenna unit 1. This opening may naturally consist of the normal loading opening provided in the rear wall of the carrier vehicle, which can be closed with the doors belonging to it.

The antenna unit 1, together with the antenna support 9 and electric motor 8, is mounted on the supporting element 5, which is attached to the ceiling of the instrument space 3 near the opening 6. The lever element 4 is turnably mounted on the supporting element 5. The swivelling axis D-D of the lever element is parallel to the edge 6a of the opening 6.

The lever element has an angular form, i.e. it consists of at least two parts with an angle between them as seen in the plane perpendicular to the swivelling axis D-D (fig. 1). The lever element is thus provided with a cut-out for the edge of the ceiling 3a of the instrument space 3. Alternatively, the lever element be at least partially curved in the plane perpendicular to the swivelling axis D-D.

The antenna arrangement of the invention works as follows. In fig. 1, the antenna unit 1 is in its storage/transport position C within the instrument space 3. By turning the lever element 4 about its swivelling axis D-D, the antenna unit 1 is turned from its storage/transport position to the working position within the working range between positions A and B, indicated by broken lines in fig. 1. Similarly, the antenna unit 1 can be turned back from the working position A,B to the transport position C when the unit is not being used or when it is to be prepared for transportation.

The lever element 4 can be turned using a power means 7 connected to its shaft D-D. In a preferable arrangement, this power means is the same as that

used for adjusting the antenna unit's position in the vertical plane. In this case, no separate power means for turning the antenna unit from its storage/transport position C to the working position and vice versa is needed. Within the working range, the angle of rotation, i.e. the azimuth angle of the antenna can be freely adjusted in the range 0 - 360° by means of the other electric motor 8.

In the above, the invention has been described by referring to one of its preferred embodiments.

Claims

1. Antenna arrangement of a vehicle, comprising an antenna unit (1), consisting of one or more elements, a suspension and operating equipment (4, 5) to which the antenna unit is connected, and an instrument space (3), the suspension and operating equipment consisting of a lever element (4) and a supporting element (5), the former being rotatably mounted on the latter through a swivelling axis (D-D) of the lever element (4), such that the antenna unit (1) can be turned from its storage or transport position (C) to a working position (A, B) and vice versa by turning the lever element (4) about its swivelling axis (D-D), **characterized in that** the instrument space (3) is provided with a loading opening (6) of the transporting vehicle for the antenna unit (1), which loading opening (6) is closable by means of door means, that the supporting element (5) is placed inside said instrument space (3) attached to the ceiling (3a) of the instrument space (3) near said opening (6), that the swivelling axis (D-D) runs parallel to the edge (6a) of the opening (6), that the antenna unit (1) in its storage or transport position (C) is situated under shelter inside the instrument space (3), and that the lever element (4) is at least partially curved in the plane perpendicular to the swivelling axis (D-D).
2. Antenna arrangement according to claim 1, **characterized in that** the lever element (4) has an angular shape in the plane perpendicular to the swivelling axis.
3. Antenna arrangement according to claim 1 or 2, **characterized in that** a power means (7), e.g. an electric motor, is connected to the shaft (D-D) of the lever element.

Patentansprüche

1. Antennenanordnung eines Fahrzeugs, umfassend eine Antenneneinheit (1), die aus einem oder mehreren Elementen besteht, eine Halte-

und Betätigungsvorrichtung (4, 5), mit der die Antenneneinheit verbunden ist, und ein Vorrichtungsraum (3), wobei die Halte- und Betätigungsvorrichtung aus einem Hebelement (4) und einem Tragelement (5) besteht, wobei ersteres an letzterem durch die Schwenkachse (D-D) des Hebelements (4) drehbar befestigt ist, so daß die Antenneneinheit (1) aus ihrer eingefahrenen oder Transportposition (C) in eine Arbeitsposition (A, B) und umgekehrt durch Verschwenken des Hebelements (4) um seine Schwenkachse (D-D) verschwenkt werden kann, **dadurch gekennzeichnet**, daß der Vorrichtungsraum mit einer Ladeöffnung (6) des Transportfahrzeugs für die Antenneneinheit (1) versehen ist, wobei die Ladeöffnung (6) mittels Türeinrichtungen schließbar ist, das das Tragelement (5) innerhalb des genannten Vorrichtungsraums (3) angeordnet und an der Decke (3a) des Vorrichtungsraums (3) nahe der genannten Öffnung (6) angebracht ist, daß die Schwenkachse (D-D) parallel zu dem Rand (6a) der Öffnung (6) verläuft, daß sich die Antenneneinheit (1) in ihrer eingefahrenen oder Transportposition (C) geschützt innerhalb des Vorrichtungsraums (3) befindet und daß das Hebelement (4) wenigstens teilweise in der Ebene senkrecht zu der Schwenkachse (D-D) gekrümmt ist.

2. Antennenanordnung gemäß Anspruch 1, **dadurch gekennzeichnet**, daß das Hebelement (4) eine winkelige Form in der Ebene senkrecht zu der Schwenkachse hat.
3. Antennenanordnung gemäß Anspruch 1 und 2, **dadurch gekennzeichnet**, daß eine Antriebseinrichtung (7), beispielsweise ein Elektromotor, mit der Welle (D-D) des Hebelements verbunden ist.

Revendications

1. Arrangement d'antenne d'un véhicule, comprenant une unité d'antenne (1), constituée d'un ou plusieurs éléments, une suspension et un appareillage de commande (4, 5) auquel l'unité d'antenne est raccordée, et un espace pour instruments (3), la suspension et l'appareillage de commande étant constitués d'un élément levier (4) et d'un élément support (5), le premier étant monté mobile en rotation sur le dernier par l'intermédiaire d'un axe de pivotement (D-D) de l'élément levier (4), de sorte que l'unité d'antenne (1) peut être tournée, depuis sa position de stockage ou de transport (C) vers une position de travail (A, B) et vice versa en faisant tourner l'élément levier (4) autour de son axe de pivotement (D-D), caractérisé en ce que

- l'espace pour instruments (3) est muni d'une ouverture de chargement (6) du véhicule de transport pour l'unité d'antenne (1), laquelle ouverture de chargement (6) peut être fermée au moyen de dispositifs de porte, en ce que l'élément support (5) est placé à l'intérieur dudit espace pour instruments (3), fixé au plafond (3a) de l'espace pour instruments (3) près de ladite ouverture (6), en ce que l'axe de pivotement (D-D) s'étend parallèlement au bord (6a) de l'ouverture (6), en ce que l'unité d'antenne (1) dans sa position de stockage ou de transport (C) est située sous abri à l'intérieur de l'espace pour instruments (3), et en ce que l'élément levier (4) est, au moins en partie, incurvé dans le plan perpendiculaire à l'axe de pivotement (D-D).
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2. Arrangement d'antenne selon la revendication 1, caractérisé en ce que l'élément levier (4) présente une forme angulaire dans le plan perpendiculaire à l'axe de pivotement.
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3. Arrangement d'antenne selon la revendication 1 ou la revendication 2, caractérisé en ce que un moyen d'alimentation en énergie (7), par exemple un moteur électrique, est raccordé à l'arbre (D-D) de l'élément levier.
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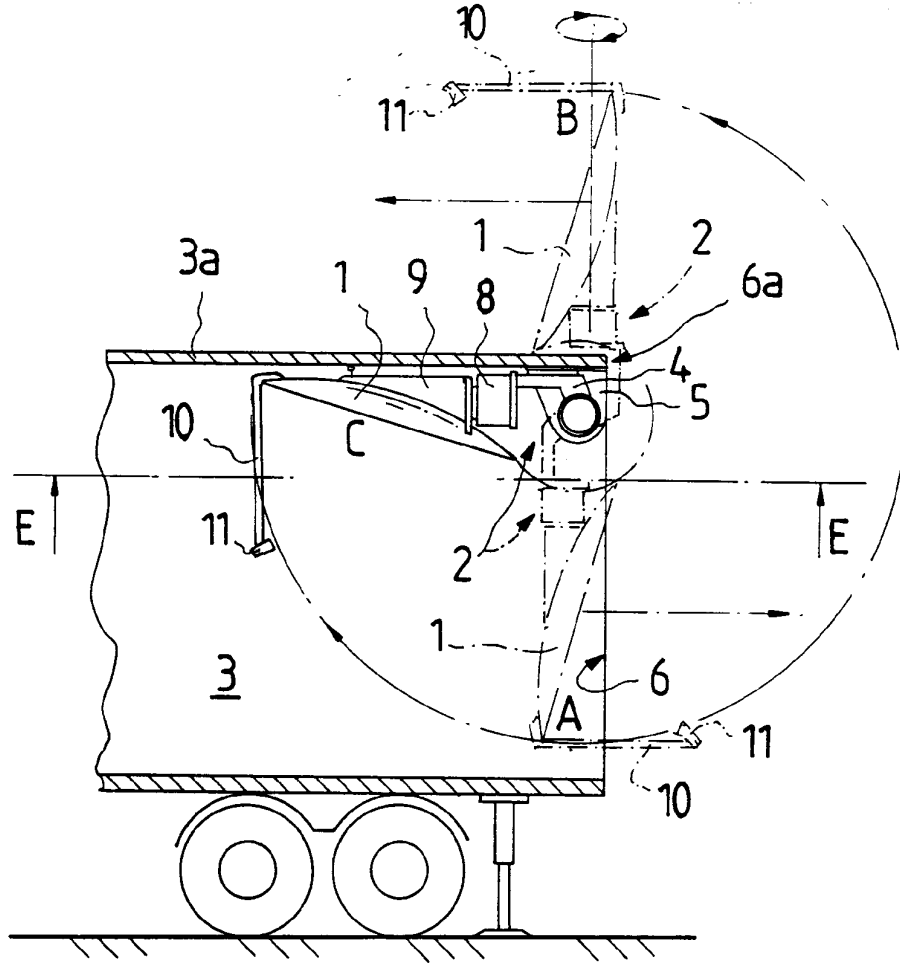


Fig.1

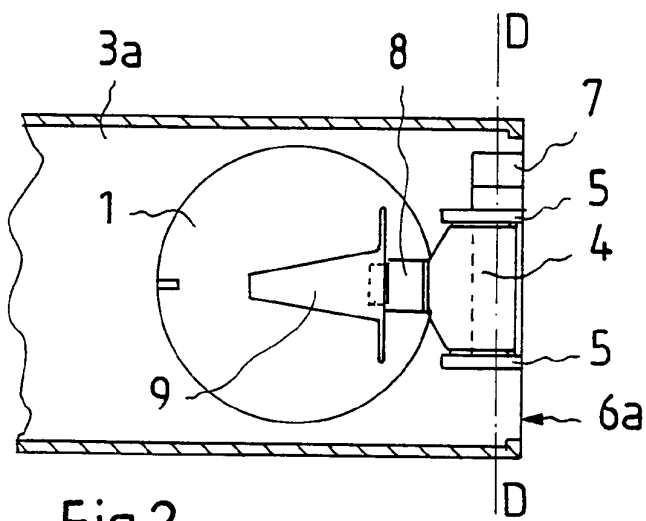


Fig.2