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(54) **Device for assisting the installation and de-installation of an awning**

(57) The present invention refers to a device (22, 41) for assisting the installation and de-installation of an awning (19) at an awning rail (16) being destined for the reception of a beading (18) provided at an edge of the awning (19), wherein a bracket (24, 42) is provided, wherein a driving wheel (33) and a counter wheel (34) are arranged on the bracket (24, 42), the two wheels (33, 34)

extending in the same plane so that their circumferential surfaces (36, 37) are opposing forming a gap for receiving the beading (18), and that at least the driving wheel (33) is drivable by means of a manual handle and/or is driven by a motor (25) mounted on the bracket (24, 42) and combined with a control system for starting and stopping the motor (25).

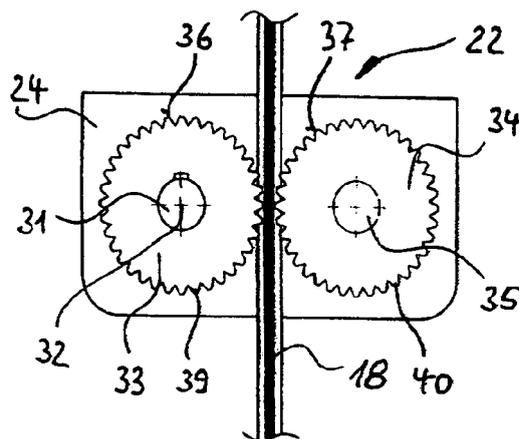


Fig. 2

Description

[0001] The invention refers to a device for assisting the installation and de-installation of an awning at an awning rail fixed on a wall for example of a vehicle like a caravan, the awning rail having a C-profile with a slot extending in its longitudinal direction and being destined for the reception of a beading provided at an edge of the awning, wherein a bracket is provided.

[0002] In general, awnings consist of tent-like structures made of flexible material such as canvas or plastics material. They are particularly used by caravaners to extend the living space or the usable space of a caravan or motor home or a similar vehicle.

[0003] To compensate for the lack of space available in the vehicle, caravaners typically install an awning at that side wall of the vehicle, where the vehicle door is situated. The awning typically has a roof and three covered side walls. The forth side is open and intended to face the wall, where the door is situated. For attaching the awning to the vehicle, these vehicles are provided with an awning rail consisting of a C-profile with a slot extending in its longitudinal direction. This awning rail is fixed at the edge formed at the connection of one of the side walls with the rear, roof and front walls of the vehicle.

[0004] The edge of the open side of the awning is provided with a cord like beading, the diameter of which is bigger than the width of the slot of the C-profile and smaller than the cross section of the channel enclosed by the awning rail. For fitting the awning rail to the vehicle, one end of the beading is inserted into one end opening of the awning rail and pushed at first upwardly, than sideways along the roof wall and finally downwards until its end. Simultaneously it is usually required to pull the beading from its opposite end. De-installation may be performed by reversing the foregoing operation.

[0005] For installation and de-installation of the awning, working of two persons is required. One person performs inserting and feeding of the beading into the opening end of the awning rail, while the other person is pulling the beading from the opposite end along the awning rail. To support and to simplify this work, it is suggested in GB 2 341 351 A, GB 2 271 089 A and EP 1 514 983 A1 to provide a pull cord system comprising a pull cord, which is inserted into and extending along the awning rail and is connected at one end with a winch like reel, on which the pull cord can be coiled up and uncoiled. The other end of the pull cord can be connected with one end of the beading of the awning. By coiling up the pull cord onto the reel, the beading is drawn along the awning rail. The reel can be operated by hand or by means of an electrical motor.

[0006] A similar suggestion is disclosed in EP 2 256 270 A1. According to this suggestion, the pull cord system should have a pull cord capable of transmitting both pulling and pushing forces, i.e. it should be sufficiently rigid for allowing the beading to be pulled during installation and pushed during de-installation. However, the disad-

vantages are the same as on the pull cord systems disclosed in the other cited publications. The pull cord has to be fitted for every installation process and afterwards removed or has to remain in the awning rail subjecting the cord to environmental influences such as rain water, dust etc. Moreover, pull cord systems are susceptible for jamming in the awning rail or even for brake down.

[0007] Moreover, a pull cord can only transmit pulling forces because they are not so stiff and rigid enough for transmitting pushing forces, which enables de-installation of the awning. If the pull cord is rigid enough for allowing pushing the beading along the awning rail, the pull cord has a strong resistance against bending in the curves of the awning rail causing high friction and against coiling up on the reel. The reel and the electrical motor are mounted on the outside of the vehicle and therefore are subject to environmental influences, even if they are covered by a dust proof housing as suggested in EP 2 256 270 A1. In any case, the housing has an opening for entrance of the pull cord, and this opening cannot be closed, if the pull cord remains in the awning rail during driving the vehicle.

[0008] Therefore, it is an object of the invention to provide a device, which simplifies the installation and de-installation of an awning to and from an awning rail. Another object is to provide a combination of this device with an awning rail and also a caravan provided with that combination.

[0009] The first part of this object is solved in accordance with the invention by a device, which is characterized in that a driving wheel and a counter wheel are arranged on the bracket with rotation axes being parallel to each other, the two wheels extending in the same plane so that their circumferential surfaces are opposing forming a gap for receiving the beading, and that at least the driving wheel is drivable by means of a manual handle and/or driven by a motor mounted on the bracket and combined with a control system for starting and stopping the motor.

[0010] The basic idea of this invention is to provide a device which is capable to clamp the beading of an awning between the circumferential surfaces of two wheels, namely a driving wheel and a counter wheel, and to transport the beading by actuation of the driving wheel. For installation of an awning, the device is placed in front of one of the open ends of the awning rail in a position so that the beading transported through the gap formed by the two wheels is introduced into the interior of the awning rail by actuation of the driving wheel and then pushed along this rail. If the beading is in its end position, the actuation of the driving wheel can be stopped. If the device is hand-held during the installation operation or if the device is mounted on the vehicle dismountable easily, the device can be removed from the awning rail for safe stowing in the vehicle. It can alternatively be maintained on the vehicle, particularly if the device is protected by a dust proof housing. De-installation may be performed by reversing the above operation, i. e. the device is again

installed, if necessary, and the adjacent end of the beading is guided into the gap formed by the two opposing wheels of the device. Then the driving wheel is actuated again, so that the end of the beading is pulled out of the end of the awning rail and through the gap between the two opposing wheels of the device, until the other end of the beading and hence, the entire beading has left the awning rail. Thereafter, the device can be removed again from its position nearby the open end of the awning rail and stowed away, or it can let be mounted on the vehicle.

[0011] In a simple embodiment of the invention, the device is only provided with a manual handle for actuation the driving wheel by the user himself or herself. It is more comfortable for installation and de-installation of the awning, if the driving wheel is actuated by a preferable electrical motor, which is mounted on the bracket and combined with a control system for starting and stopping the motor.

[0012] Due to the foregoing description, it is recognizable that the device according to the present invention is easy to handle and that installation and de-installation of the awning can be carried out by only one person. Having completed installation or de-installation of the awning, the device can be removed from the awning rail and hence, be protected by stowing away to a safe location.

[0013] The distance between the opposing surfaces of the two wheels of the device can be made constant and not adjustable. In this case, the distance is a slightly smaller than the diameter of an average beading, so that this beading is pressed between the opposing surfaces of the two wheels and hence, sufficient grip for driving the beading through the gap between the opposing surfaces is effected. This simple embodiment of the device considers that most of the awnings suitable for attaching to a vehicle like a caravan use beadings with the same dimensions so that an adaption of the distance between the two wheels is not necessary.

[0014] In an alternative thereto, the free distance between the opposing surfaces of the two wheels is adjustable by means of an adjustment mechanism. This additional mechanism allows to use the device in connection with awnings having beadings with different cross sections, i. e. different diameters. Moreover, it is possible by using the adjustment mechanism to adjust the pressure acting against the two sides of the beading in adaption to the roughness of the surface of the beading so that it can be insured that sufficient grip is caused between the driving wheel and the surface of the beading for safe moving of the beading through the gap between the two wheels. In one embodiment of an adjustment mechanism, the bracket is divided into two bracket parts, wherein the one bracket part bears the driving wheel and the other bracket part bears the counter wheel, and that the bracket parts are hingedly connected by an axis extending parallel to the axes of the two wheels and arranged with respect to these axes so that by pivoting the two bracket parts, the distance between the opposing

surfaces of the two wheels changes. Preferable, the circumferential surface of at least the driving wheel is provided with a groove extending around the driving wheel, the groove preferable having a semicircular cross-section. This groove enhances guiding of the beading through the gap. Of course, the counter wheel can be embodied in the same manner. Moreover, the circumferential surface of the driving wheel or of both of the two wheels is provided with projections, particularly embodied as teeth or in any other manner improving the grip between the driving wheel and the surface of the beading.

[0015] If a motor is provided on the device and if it is not reversible, it is necessary to turn the device about 180°, if the awning should also be de-installed by the device. In that case, one end of the beading is guided into the gap between the opposing surfaces of the two wheels, and by actuating the motor, the beading will be pulled through that gap and hence, the entire beading out of the awning rail gradually. Turning the device is easy to handle, if the device is hand-held. If the device is mounted for example on a caravan, it is recommendable to have a device with a reversible motor, because that would avoid any dismantling of the device, when the awning should be de-installed. Moreover, it doesn't matter, in which position the device is mounted provided that the orifice at the end of the awning rail is directed to the gap between die opposing surfaces of the two wheels.

[0016] For controlling the motor of the device it may be sufficient to have an electrical cable connection from the motor to a control switch, which can be hand- or foot-actuated. In an alternative, the control system comprises a remote control enabling to control the motor via wireless control signals as disclosed in EP 2 256 270 A1. A remote control avoids an electrical cable, which could get modeled with the awning during the installation or de-installation operation.

[0017] It is recommended that the motor is an electrical motor connectable with an electrical energy source. This energy source may be a battery or an accumulator, which should preferable rechargeable. That energy source can be located on the device itself, preferable removable mounted for recharging. In an alternative, the motor can be connected with the battery of the vehicle by an electrical cable.

[0018] The second part of the object of the invention is solved by a combination of an awning rail with the foregoing described device for the installation and de-installation of an awning, the awning rail having a C-profile with a slot extending in its longitudinal direction, the C-profile being destined for the reception of the beading provided at an edge of an awning, wherein the device is installable or installed in front of one end of the awning rail. Particularly, the device should be installed so that the orifice at the end of the awning rail is directed to the gap between the two wheels. It is preferable, that the axes of the driving wheel and the counter wheel are extending perpendicular to the longitudinal axis of the awning rail.

[0019] In an embodiment of the invention, the free distance between the opposing surfaces of the two wheels is adjustable by means of an adjustment mechanism at least between a distance, which is equal to the diameter of the interior of the awning rail, and a distance, which is smaller.

[0020] Finally the invention refers to a caravan provided with a combination of a device and an awning rail as disclosed above. Preferable the device should be installable and de-installable mounted at the caravan. The item caravan should cover caravan trailers to be connected with a motor vehicle as well as motor homes having a room similar to a caravan trailer, but constituting a motor vehicle.

[0021] The present invention will be described, by way of examples only, with a reference to the accompanying drawings, in which:

Figure 1 shows a side elevation of a caravan together with an awning at the beginning of an installation operation;

Figure 2 shows a view of the bottom side of a first embodiment of the device for assisting installation and de-installation of an awning;

Figure 3 shows a cross-sectional view of the device shown in figure 2 in a plane through the axis of the driving wheel and being turned about 90° with respect to the plane in figure 1;

Figure 4 a top view of the device shown in figures 2 and 3;

Figure 5 shows a view of the bottom side of a second embodiment of the device for assisting installation and de-installation of an awning, the device being in a start position; and

Figure 6 shows the view as shown in figure 5, however the device shown in figure 5 being in an end position.

[0022] Figure 1 of the drawings shows a typical caravan 1 having a housing formed by a front wall 2, a roof wall 3, a rear wall 4 and two vertical flat side walls 5, the one of which is visible in figure 1. The housing is deposited onto a bottom wall 6, which is resting on a frame 7. In the middle of the bottom wall 6, the frame 7 is suspended by an axis having a wheel 8 on each side. At the front end, the frame 7 continues to a draw bar 9 comprising a coupling 10, which is connectable to a towing vehicle such as a passenger car or a pickup truck (not shown). To the draw bar 9, an auxiliary wheel 11 is suspended vertically adjustable. It can be lowered for providing stability, when the caravan 1 is parking and risen when the caravan 1 is moving.

[0023] The side wall 5 is provided with windows 12, 13

and 14 and a door 15 between the windows 13, 14. An awning rail 16 is fixed along the edge of the side wall 5 beginning at a front location near the bottom wall 6, continuing upwardly to the roof wall 4, then rearwards along the roof wall 4 above the windows 12, 13, 14 and the door 15 towards the rear wall 4 and downwardly towards the rear end of the caravan 1 ending nearby the bottom wall 6 again. The awning rail 16 consists of a C-profile and is destined to receive and retain a beading 18 of an awning 19, which is in figure 1 spreaded out about the ground, which the caravan 1 is resting on. The awning rail 16 is open at its front end 20 and its rear end 21 so that the beading 18 can be introduced into one of these ends 20, 21 and also removed therefrom about these ends 20, 21.

[0024] It is recognizable in figure 1, that the awning 19 is connected with a device 22 at the end region of the beading 18. The device 22 is mounted on the caravan 1 in a position near the front end 20 of the awning rail 16. The device 22 is destined to assist a person who wants to install the awning 19 at the awning rail 16 in order to connect the awning 19 with the caravan 1.

[0025] Figures 2 to 4 show a first embodiment of the device 22. The device 22 has a device support formed as an angled bracket 24. On the top side of this bracket 24, a motor 25 is mounted, which is connected with a gearbox 26. This gearbox 26 is mounted on the top side of the bracket 24 via four bolts 27, 28, 29 and 30.

[0026] A shaft 31 extends through the gearbox 26 and the bracket 24 and is in driving connection with the motor 25 so that the motor 25 turns the shaft 27 about its axis 32 when actuated. At the lower end, a driving wheel 33 is fixedly connected to the shaft 31.

[0027] As shown particularly in figure 2, a counter wheel 32 is disposed under the bottom side of the bracket 24 and is free rotatable about its rotation axis in a bearing fixed in the bracket 24. The counter wheel 32 is arranged in the same plane as the driving wheel 33 so that their circumferential surfaces 36, 37 are opposing each other letting free a gap between them. The circumferential surfaces 36, 37 comprise grooves 38 having a semicircular cross-section and extending around the driving wheel 33 and the counter wheel 34 respectively. The surfaces 36, 37 are provided with a plurality of teeth 39, 40 extending parallel to the axis 32, 35 respectively.

[0028] The beading 18 of the awning 19 is passing the gap between the driving wheel 33, 34 in a direction perpendicular to the axis 32, 35. The gap is so narrow that the two wheels 33, 34 have pressing contact with the outer surface of the beading 18 causing enough grip between the driving wheel 33 and the beading 18 for pushing the beading 18 through the gap.

[0029] The device 22 is mounted on the caravan 1 so that the beading 18 leaves the gap between the two wheels 33, 34 of the device 22 in a direction more or less exactly for introduction into the orifice at the front end 20 of the awning rail 16 (see arrow in figure 1). Therefore, no bending of the beading 18 is necessary for introduction

into the awning rail 16. By actuating the motor 25, the beading 18 is pushed into and along the awning rail 16 gradually, until the front end of the beading 18 reaches the rear end 21 of the awning rail 16. Then the motor 25 is stopped, and the awning 19 can be erected further.

[0030] For de-installation of the awning 19 from the caravan 1, the motor 25 is actuated again, but in a reverse driving direction. Hence, the beading 18 is pulled through the gap between the two wheels 33, 34 and out of the awning rail 16 gradually, until the entire beading 18 has passed the gap. After de-installation of the awning 19 - and also between installation and de-installation -, the device 22 can be removed from the caravan and stowed away to a safe location. For providing the motor 25 with electrical energy, the motor 25 can be connected via an electrical cable with a battery of the caravan 1, or a battery or accumulator is located on the bracket 24. Starting and stopping of the motor 25 can be effected by control signals from a remote control, which is operated by the person, who is installing the awning 19 by means of the device 22.

[0031] The device 22 shown in figures 2 to 4 is rigid with respect to the distance between the axis 32, 35 and hence, with respect to the dimension of the gap between the two wheels 33, 34. Figures 5 and 6 shows a second embodiment of a device 41 according to the present invention. Since the device 41 is identical with device 22 except for the bracket 42, identical reference numbers are used for that parts and elements of the devices 22, 39, which are identical formed and have the same function. For description of these parts and elements, it is referred to the description of device 22.

[0032] The device 41 has a bracket 42, which is divided into identical bracket parts 43, 44, which overlap each other and are hingedly connected by a bolt 45 forming an axis extending parallel to the axis 32, 35. The left bracket part 43 bears the driving wheel 33 and the right bracket part 44 bears the counter wheel 34 both extending in the same plane so that a gap between their opposing surfaces 36, 37 is formed. The driving wheel 33 is connected with the motor 25 (Figure 3) in the same manner as described in connection with device 22, so that it can be driven by actuating the motor 25.

[0033] The bracket parts 43, 43 have parallel projections 46, 47 respectively. A tie bolt 47 is connected with the left projection 46 and extends through the other projection 47 having a screw thread there, onto which a wing screw 49 is screwed, which is supported on the projection 47. By turning the wing screw 49, the bracket parts 43, 44 are pivoted about the bolt 45 so that the distance between the circumferential surfaces 36, 37 of two wheels 33, 34 can be adjusted with regard to the diameter of the beading 18.

[0034] At the beginning of an installation operation, the wing screw 49 can be turned so that the distance is great enough for guiding the front end of the beading 18 into the gap between the two wheels 33, 34 easily (see figure 5). Then, the wing screw 49 is turned so that the distance

is reduced to an end position shown in figure 6 resulting in clamping the beading 18 with enough pressure, so that a grip between the driving wheel 33 and the outer surface of the beading 18 is caused which avoids slippage between them, when the motor 25 is actuated and the driving wheel 33 is turned.

Claims

1. Device (22, 41) for assisting the installation and de-installation of an awning (19) at an awning rail (16) fixed on a wall (5) for example of a vehicle (1), the awning rail (16) having a C-profile with a slot extending in its longitudinal direction and being destined for the reception of a beading (18) provided at an edge of the awning (19), wherein a bracket (24, 42) is provided, **characterized in that** a driving wheel (33) and a counter wheel (34) are arranged on the bracket (24, 42) with rotation axes (32, 35) being parallel to each other, the two wheels (33, 34) extending in the same plane so that their circumferential surfaces (36, 37) are opposing forming a gap for receiving the beading (18), and that at least the driving wheel (33) is drivable by means of a manual handle and/or is driven by a motor (25) mounted on the bracket (24, 42) and combined with a control system for starting and stopping the motor (25).
2. Device according to claim 1, **characterized in that** the free distance between the opposing surfaces (36, 37) of the two wheels (33, 34) is adjustable by means of an adjustment mechanism (48, 49).
3. Device according to claim 1 or 2, **characterized in that** the bracket (42) is divided into two bracket parts (43, 44), wherein the one bracket part (43) bears the driving wheel (33) and the other bracket part (44) bears the counter wheel (34), and that the bracket parts (43, 44) are hingedly connected by an axis (45) extending parallel to the axes (32, 35) of the two wheels (33, 34) and arranged with respect to these axes (32, 35) so that by pivoting the two bracket parts (43, 44) the distance between the opposing surfaces (36, 37) of the two wheels (33, 34) changes.
4. Device according to one of claims 1 through 3, **characterized in that** the circumferential surface (36, 37) at least of the driving wheel (33) is provided with a groove (38) extending around the driving wheel (33), the groove (38) preferable having a semicircular cross-section.
5. Device according claims 1 through 4, **characterized in that** the circumferential surface (36, 37) at least of the driving wheel (33) is provided with projections, particularly embodied as teeth (39, 40).

6. Device according to one of claims 1 through 5, **characterized in that** the driving direction of the motor (25) is reversible.
7. Device according to one of claims 1 through 6, **characterized in that** the control system comprises a remote control enabling the control of the motor (25) via wireless control signals. 5
8. Device according to one of claims 1 or 7, **characterized in that** a battery or an accumulator is located at the device (22, 41) for providing electrical energy for the motor (25). 10
9. Combination of an awning rail (16) with a device (22, 41) according to one of claims 1 through 8 for the installation and de-installation of an awning (10), the awning rail (16) having a C-profile with a slot extending in its longitudinal direction, the C-profile being destined for the reception of the beading (18) provided at an edge of the awning (19), wherein the device (22, 41) is installable or installed at least in front of one end of the awning rail (16) . 15
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10. Combination according to claim 9, **characterized in that** the axes (32, 35) of the driving wheel (33) and the counter wheel (34) are extending perpendicular to the longitudinal axis of the awning rail (16). 25
11. Combination according to claim 9 or 10, **characterized in that** free distance between the opposing surfaces (36, 37) of the two wheels (33, 34) is adjustable at least between a distance, which is equal to the diameter of the interior of the awning rail (16), and a distance, which is smaller. 30
35
12. Combination according to one of claims 9 through 11, **characterized in that** the driving direction of the motor (25) is reversible. 40
13. Combination according to one of claims 9 through 12, **characterized in that** the control system comprises a remote control enabling the control of the motor (25) via wireless control signals. 45
14. Caravan (1) provided with a combination according to one of claims 9 through 13.
15. Caravan according to claim 14, **characterized in that** the device is installable and de-installable mounted at the caravan (1). 50

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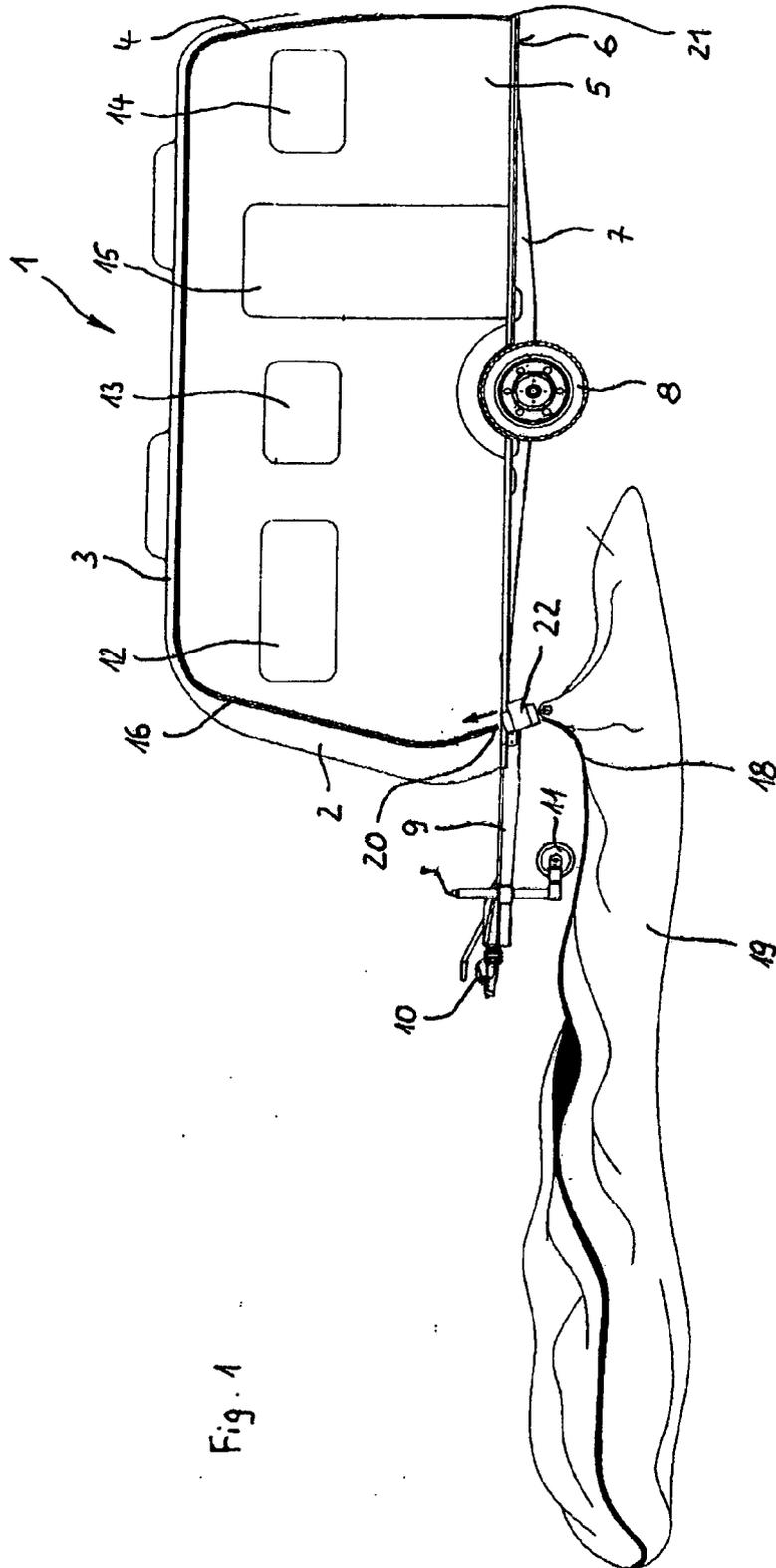


Fig. 1

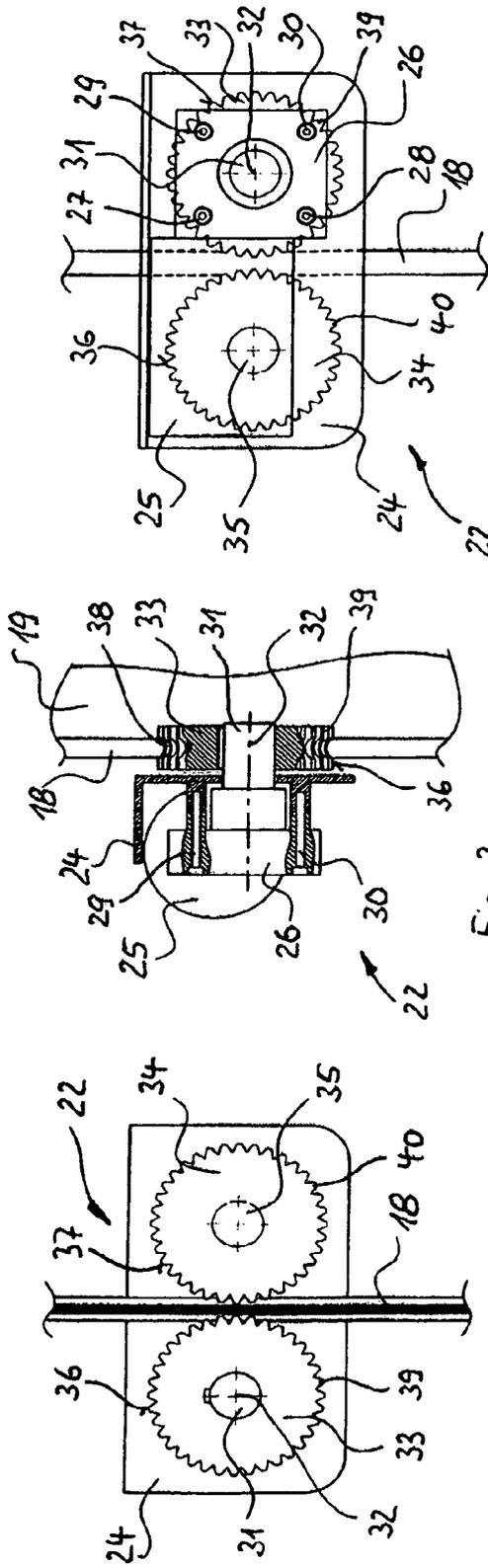


Fig. 2

Fig. 3

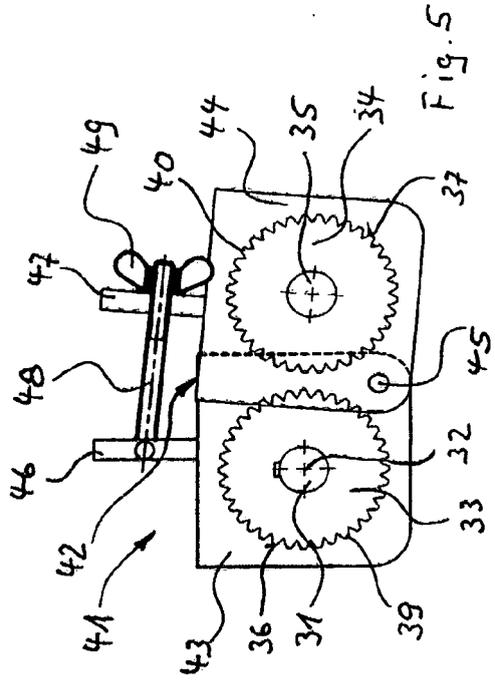


Fig. 4

Fig. 5

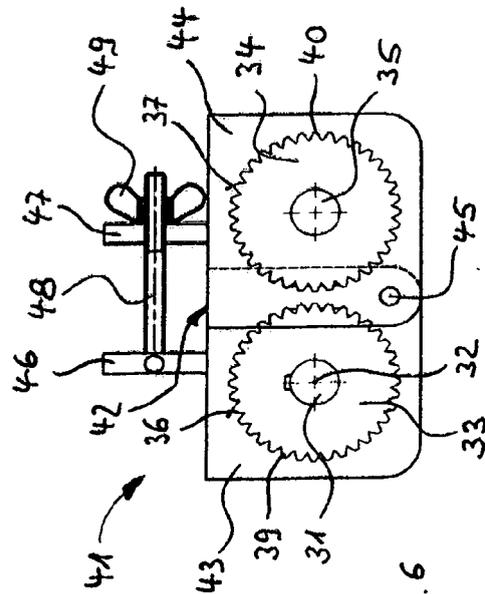


Fig. 6



EUROPEAN SEARCH REPORT

Application Number
EP 11 15 0256

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			E04H B63H E06B B61B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		7 July 2011	Hellberg, Jan
CATEGORY OF CITED DOCUMENTS			
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 15 0256

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07-07-2011

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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