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Jármű teleszkópos beszállólétrával

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.

Jármű teleszkópos beszállólétrával

Description

Vehicle with telescopable entry ladder

The invention relates to a vehicle according to the precharacterising clause of claim 1.

Vehicles with extendable ladders are already known from the prior art. Thus for example fire extinguishing appliances of the fire service generally have an extendable ladder which is equipped with a drive to extend the ladder to its maximum length.

A tractor unit for an excavator, for example, is known from US 2012/0181109 A1. An access ladder can be transferred from an extended position, in which access to the tractor unit is possible, to a stowage position. The access ladder comprises an elongate first element with a first step, which extends laterally therefrom. An elongate second element is connected to said first element and can be displaced relative thereto. A second step extends laterally from the second element. The first element is hinged onto the tractor unit so that it can be rotated and can be pivoted from a lowered first position into the stowage position. In doing so, the second element is connected to the tractor unit via a hinge pin, such that the second element is extended in the access position and is retracted with respect to the first element in the stowage position.

A ladder for large construction machines, for example dump trucks or similar vehicles, is known from US 5,064,022, which have an operating station at a considerable distance from the floor. The extendable ladder has a fixed ladder part, which is permanently attached to the vehicle. A retractable ladder element is arranged such that it can be displaced in relation to a frame element of the ladder. The retractable ladder element is lowered and raised from the operating station of the vehicle by an electric winch.

US 3,774,720 discloses a boat ladder for pleasure boats, in order to facilitate a user moving from the boat into the water and vice versa. The ladder comprises a movable section and a fixed section, in relation to which the movable section can be displaced by



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hand.

In railway technology locomotives are usually equipped with entry ladders which are not extendable and are attached permanently to the side wall of the locomotive. The entry ladder makes it possible for the train driver to get into the driver's cabin even if the locomotive is parked in the open and not at a platform. The disadvantage of extendable entry ladders has proved to be that said ladders can only be extended manually with difficulty and subsequently moved back into their original position again.

AU2008202858A1 discloses a rail vehicle according to the precharacterising clause of claim 1. An entry ladder disposed below an entry door on the rail vehicle is extendable on its side facing away from the entry door.

The object of the invention is to provide a vehicle of the type described at the start which can be conveniently accessed, wherein the danger of accidents is minimised.

In accordance with the invention a vehicle with the features of claim 1 is therefore proposed. Consequently, a drive is provided, which transfers the entry ladder from a retracted position into an extended position. Furthermore, spring means is provided for holding the entry ladder in its retracted position, wherein the drive extends the entry ladder against the spring force of the spring means and wherein the spring means transfer the entry ladder into its retracted position in the absence of the drive, and wherein the spring means have at least one gas spring.

Within the framework of the invention the entry ladder no longer has to be moved to and fro manually between the different positions. Instead it is possible within the framework of the invention to use a drive for this purpose, wherein the drive can be put into action for example via a suitable remote control. A user can thus cause the entry ladder to extend even in impassable terrain or with large differences in height between the ground level of the terrain and the lowest rung of the entry ladder. The invention has proved advantageous in the area of rail traffic. The background is that a so-called loading gauge profile is defined for rail traffic. The rail vehicle should not have any components which extend beyond the loading gauge profile, since otherwise accidents would be the inevitable result. In accordance with the invention the entry ladder is disposed in its retracted position within the loading gauge profile. However in the extended position the entry ladder projects beyond the loading gauge profile. In order to avoid accidents spring means are provided in accordance with the invention which are fastened in or on the

entry ladder and/or the rail vehicle so that the entry ladder is transferred in the absence of the drive into its retracted position and/or is held in said position. The drive actually makes it possible to extend the entry ladder downwards. In such cases the drive must create a drive force however which overcomes the spring forces acting in opposition. The spring forces here are dimensioned so that the entry ladder can be moved between the retracted and the maximum extended position by the drive without any damage to the spring means occurring, such as for example irreversible deformations of said means or the like.

In accordance with the invention the spring means comprise at least one gas spring. Preferably two gas springs are provided, which are disposed for example within the hollow side rails of the entry ladder.

Within the framework of the invention there can basically also be any drive. Thus the drive is an electric drive for example.

Preferably however the drive is a hydraulic and preferably a pneumatic drive. A pneumatic drive is especially advantageous in conjunction with vehicles which, as a result of the compressed air supply present in any event to the brakes of the vehicle, do not need any additional motors or the like. The invention is thus especially cost-effective if the vehicle is a rail vehicle or a truck.

Advantageously the entry ladder is a telescopable entry ladder. A telescopable entry ladder is especially space-saving. This too has also proved especially advantageous in the field of rail traffic, since the installation space, especially of locomotives, is greatly restricted.

In accordance with a further development in this context, the entry ladder has two hollow side rails lying next to one another and rungs running between the side rails, wherein at least one ladder section is provided which has two hollow profiles lying next to one another which are connected via a rung to one another in a U shape, wherein the free ends of the hollow profiles extend in each case into the assigned side rail or into the assigned hollow profile. To avoid the section falling out of the side rails or out of the other ladder sections, expedient stop shoulders and thrust bearings are embodied in the side rails and/or the hollow profiles.

Further expedient embodiments and advantages of the invention are the subject matter

of the description given below of exemplary embodiments of the invention, which refer to the figures of the drawing, wherein the same reference numbers apply to components which have the same effect and wherein

Figure 1 shows a part view of an exemplary embodiment of the inventive rail vehicle, Figure 2 shows the entry of the rail vehicle in accordance with Figure 1 in a retracted state,

Figure 3 shows the entry ladder in accordance with Figure 2 in an extended state with the loading gauge profile drawn in, and

Figure 4 shows the ladder in accordance with Figure 3 in the extended state with the loading gauge profile drawn in.

Figure 1 shows a part view of an exemplary embodiment of the inventive vehicle 1, which involves a rail vehicle. The rail vehicle 1 has a vehicle body of which only a part of its side wall 2 is visible. An entry door 3 is visible in the side wall 2 which leads to an inner space, here a driver's cab of a locomotive. Disposed below the vehicle door 3 is an entry ladder 4 which makes it possible for the vehicle driver, even in terrain where there is no platform, to comfortably reach the driver's cab. The entry ladder 4 is extendable and has two side rails 5 lying next to one another, with which the entry ladder 4 is fastened to the side wall 2. Rungs 6 extend between the side rails 5, essentially at right angles. Also visible is a telescopable ladder section 7, which has two hollow profiles 8 lying next to one another. The hollow profiles 8 are also connected to one another by a rung 9. The hollow profiles 8 extend with their free end, i.e. facing away from the rung 9, into one of the hollow side rails 5 in each case. The ladder section 7 is thus embodied in a U shape. Stop shoulders and thrust bearings not shown in the figure prevent the two hollow profiles 8 falling out of the side rails 5.

Figure 2 shows the entry ladder 4 in a sectional view from the front. The entry ladder 4 is in its retracted position in Figure 2, in which the hollow profiles 8 are arranged almost completely within the hollow side rails 5. It can further be seen that the entry ladder 4 is equipped with spring means 10 and also with a drive 11. The spring means 10 comprise two gas springs 10 which are each partly disposed in a pneumatic cylinder 11 of the drive. In this case the gas spring 10 is connected in its upper end shown in Figure 2 with the respectively assigned side rail 5, wherein the other end of the gas spring 10 is permanently connected with the likewise permanently assigned hollow profile 8 of the ladder section 4. The pneumatic cylinder 11 is connected via a controllable drive valve to the main air container of the locomotive not shown in the figure.

In Figure 3 the entry ladder 4 is shown in its extended position. For this the pneumatic cylinder 11 has had compressed air applied to it from the main air container, through which the gas spring 10 is extended against its spring force. Thus a pneumatic drive is provided for transferring the entry ladder 4 from the retracted position into its extended position. If the air is withdrawn from the pneumatic cylinder by means of the drive valve not shown, the gas spring 10 provides a resetting force, through which the ladder section 7 is transferred into the retracted position shown in Figure 2.

In Figure 4 a loading gauge profile 12 of the rail vehicle 1 is indicated by a bold line. It can be seen that the ladder section 7, in the extended position, protrudes beyond the loading gauge profile 12.

Figure 4 shows the entry ladder 4 in accordance with Figure 3 in a view from the side. Here too the loading gauge profile 12 is illustrated by a bold line. In accordance with the invention it is insured that, in the absence of the drive, the loading gauge profile 12 will not be exceeded by the extended entry ladder. Thus accidents are avoided within the framework of the invention.

Szabadalmi igénypontok

1. Sínjármű (1), különösen mozdony beszállóajtóval (3), a beszállóajtó (3) alatt a sínjárművön (1) elrendezett beszállólétrával (4), amely a beszállóajtóval (4) ellentétes oldalán meghosszabbítható, azzal jellemezve, hogy a sínjárműnek (1) hajtása (11) van, amely a beszállólétrát (4) egy betolt helyzetből egy kitolt helyzetbe viszi át, és rugós elemei (10) vannak a beszállólétrára (4) betolt helyzetben tartására, ahol a hajtás (11) a beszállólétrát (4) a rugós elem (10) rugóereje ellenében hosszabbítja meg, miközben a rugós elemek (10) a beszállólétrát (4) hajtás hiányában a betolt helyzetbe viszik át, és a rugós elemeknek legalább egy gázrugója (10) van.
2. Az 1. igénypont szerinti sínjármű (1), azzal jellemezve, hogy a hajtás hidraulikus vagy pneumatikus hajtás (11).
3. Az előző igénypontok egyike szerinti sínjármű (1), azzal jellemezve, hogy a beszállólétrára egy teleszkópos beszállólétrára (4).
4. A 3. igénypont szerinti sínjármű (1), azzal jellemezve, hogy a beszállólétrának (4) két egymás mellett fekvő üreges rúdja (5) és a rudak közötti létrafokai (6) vannak, ahol legalább egy olyan létraszakasz (7) van, amely két egymás mellett fekvő üreges profillal (8) rendelkezik, amely U alakban össze van kötve egy létrafokkal (9), ahol az üreges profilok (8) szabad végei a rudakban (5) vagy egy másik létraszakasz (7) üreges profiljaiban (8) vannak elrendezve.
5. A 4. igénypont szerinti sínjármű (1), azzal jellemezve, hogy mindegyik rúdban (5) és mindegyik üreges profilban (8) egy gázrugó (10) helyezkedik el, amely egyrészt egy hozzátartozó rúdon (5) és másrészt a legbelső üreges profilon (8) van megtámasztva.



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FIG 1

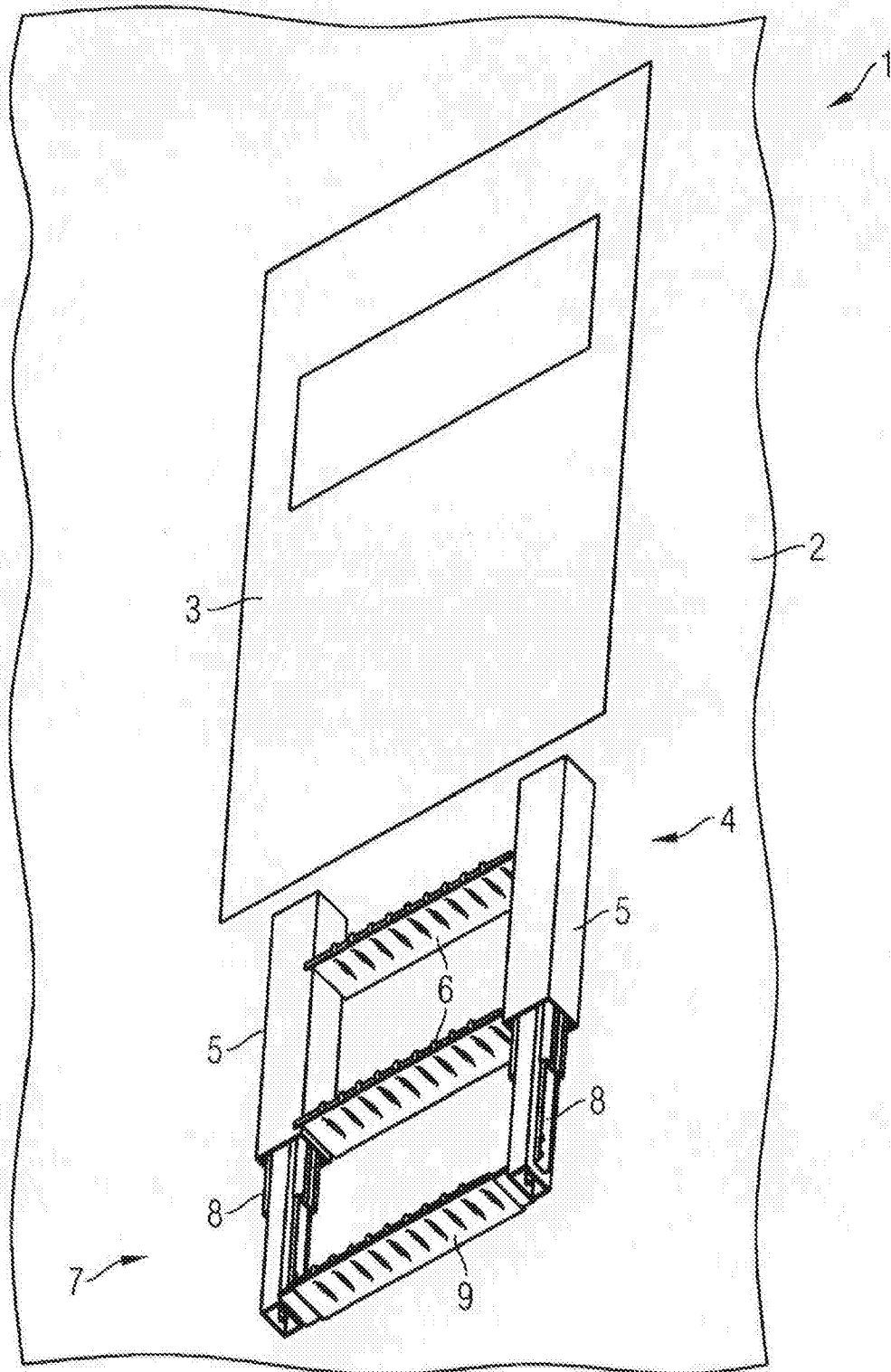


FIG 2

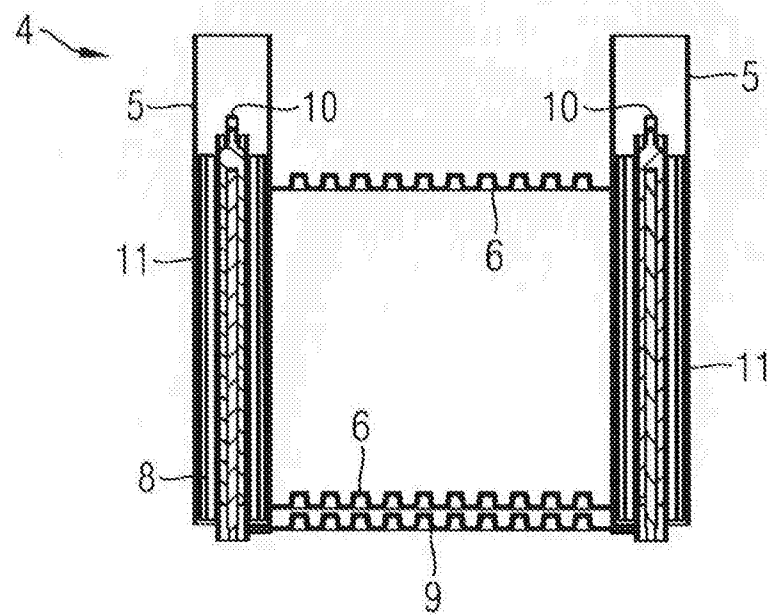


FIG 3

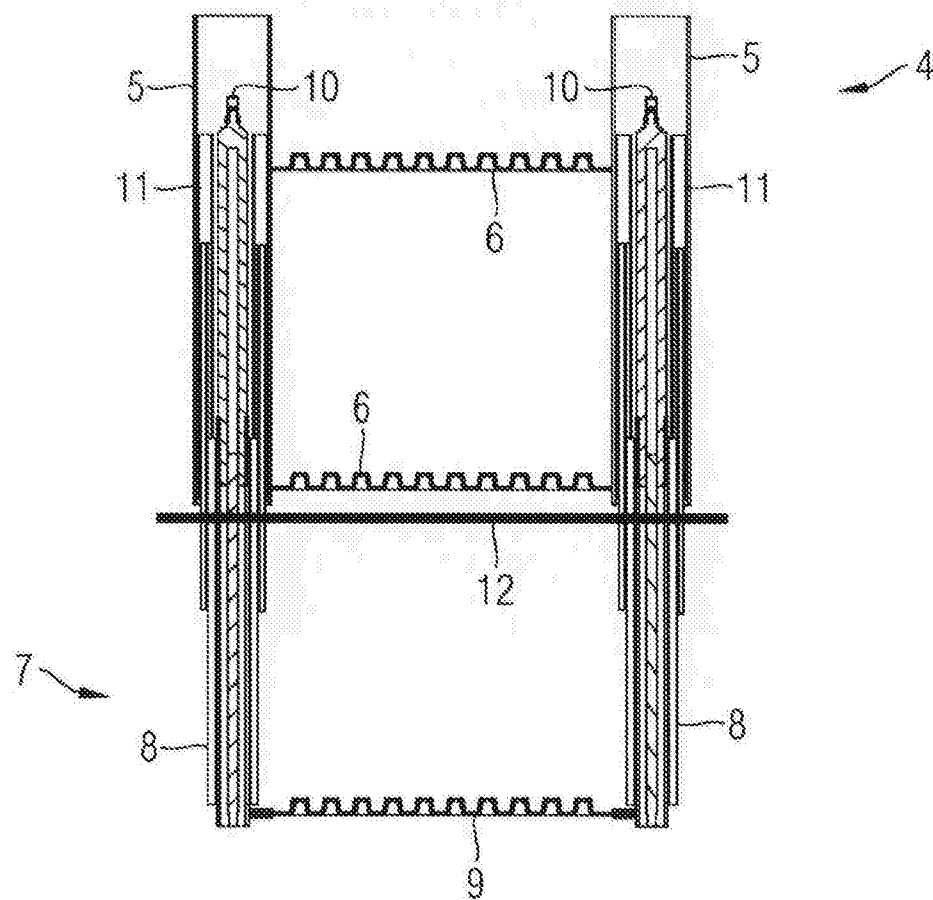


FIG 4

