

5 **Cargo bicycle which can be driven using muscle power and/or an electric drive**

10 The invention concerns a cargo bicycle which can be driven using muscle power
and/or an electric drive.

Cargo bicycles exist in various designs. For example, they may have a rickshaw
design in order to transport people or a cargo bicycle design for the transportation of
containers or other additional loads.

15 The cargo bicycles may be powered solely through muscle power or at least
minimally supported by an electric drive.

20 A manually staffed pick-up area is generally required for loading and unloading the
cargo bicycle. This has proven awkward in existing cargo bicycles, in particular from
the direction of the driver area, which essentially blocks access to the pick-up area.

Moreover, the cargo bicycles which have been developed have a limited capacity to
transport additional passengers.

25 One object of one embodiment of this invention is to present a cargo bicycle which
improves accessibility in the pick-up area.

30 This object was solved by a cargo bicycle which can be driven using muscle power
and/or an electric drive, with at least one pick-up area in or on which or at least one
interchangeable container and/or an additional load can be or is positioned and with
at least one driver area which is positioned in front of the pick-up area in regard to
the direction of travel of the cargo bicycle and which includes at least one seat unit,
one pedal unit, one steering unit, one overlapping roof element at least over the
35 driver area and floor means of a floor unit that at least partially bounds/limits the
driver area in the direction of the travel surface, whereby the floor means and roof

element have, in at least an area, a distance to one another which is at least the body size of an operator.

5 Due to the fact that the floor means and the roof element demonstrate at least an area by area distance to one another which is at least the body size of the operator, the pick-up area is also easily accessible from the driver area. This can simplify loading and unloading of the pick-up area.

10 For example, the cargo bicycle can be driven using muscle power and/or an electric drive. In such a case it can include a so-called load-pedelec.

If the floor means and the roof element only demonstrate distance to one another which is at least the body size of the operator in one area, it has proven advantageous if this area is positioned on the side of the driver area which faces the pick-up area.
15 This can guarantee that the operating person can stand upright in the driver area while the interchangeable container and/or additional load is being positioned or removed again in the pick-up area.

Cargo bicycle designs are conceivable where the distance between the floor plate and
20 roof element comprises at least 1.70 m, in particular at least 1.80 m, in particular 1.90 m, in particular 2.00 m.

The floor means can be developed in a crampon or step manner, for example, and only positioned in the driver area which faces the pick-up area. However, it has
25 proven advantageous if the floor means forms at least an almost closed surface, which can or does entirely or almost entirely close off the driver area to the travel surface.

If the floor means forms an almost entirely closed surface which closes off the driver
30 area to the travel surface is almost entirely, the floor means simultaneously provides a splash guard. This reduces the penetration of dirt and moisture at least in the driver area, for example, when riding the cargo bicycle on wet ground.

The design of the cargo bicycle anticipates that at least the seat unit and/or the
35 steering unit can be or are fixed to the floor means.

In such a case, the floor means serves as an additional supporting element, for example of a frame construction of the cargo bicycle. This means additional supporting struts which fix the seating unit and/or the steering unit in the driver area of the cargo bicycle are not required.

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In order to reduce the risk of an accident and/or the risk of injury to personnel operating the cargo bicycle, it proves advantageous if at least a section of the floor means on the driver area facing side includes a coating which increases the roughness.

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This makes it possible to increase the slip resistance of the floor plate, thereby reducing the chance of slipping or sliding of the operating personnel when standing, entering or leaving the driver area.

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Furthermore, it proves advantageous if the floor means includes at least one drainage facility through which the fluid can drain from the driver area.

This guarantees that if an operator exits and re-enters the driver area whilst it is raining, the water dripping from the operator can drain from the driver area.

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This reduces puddling in the driver area which makes it possible to further increase the safety of the operator.

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Furthermore, it is anticipated in the design of the cargo bicycle that the driver area includes an essentially externally closed off cabin which includes an opening which is slanted or diagonal to the direction of travel through which the driver area is accessible from outside.

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This further reduces the possibility of dirt and/or moisture penetrating into the driver area.

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If the cargo bicycle is used to transport interchangeable containers or similar and an additional operator is anticipated to this end, it could prove advantageous if the floor means includes at least one step, which protrudes in particular in the area of the opening and out of the driver area.

The step can be in the shape of a running board.

It is conceivable in principle that the interchangeable containers are pushed into a pick-up area directly through the opening and fixed there. This enables the
5 interchangeable containers to be lifted for transport or include wheels or rollers with which the interchangeable containers can be moved with the cargo bicycle. It is anticipated in the design of the cargo bicycle that the floor unit includes a planar pick-up floor which is at least closed off from the pick-up area in the direction of the travel surface, through which the pick-up area can be or is entirely or at least almost
10 entirely closed off from the travel surface.

In such a case the interchangeable containers can be simply pushed onto the planar pick-up floor.

15 As a further development of the last mentioned design, it proves advantageous if the floor means and the pick-up floor comprise of a joint, one piece component.

In this case, the cargo bicycle can have a compact design with minimal components.

20 Moreover, it is anticipated in the design of the cargo bicycle that the floor plate and/or pick-up floor on the side facing towards or away from the travel surface is fixed to a support structure of the cargo bicycle to which at least one wheel unit can be or is positioned.

25 If the floor means and/or the pick-up floor is fixed to support structure of the cargo bicycle on a side facing the travel surface, the cargo bicycle is set deeper in relation to its height. This makes it possible to reduce the air resistance of the cargo bicycle.

In an alternative aspect, the invention provides a cargo bicycle which can be driven
30 using muscle power and/or an electric drive, with at least one pick-up area in or on which or at least one swap body and/or an additional load can be or is positioned and with at least one driver area which is positioned in front of the pick-up area in regard to the direction of travel of the cargo bicycle and which includes at least one seat unit, one pedal unit, one steering unit, one flashing roof element at least over the
35 driver area and one at least area by area limiting floor plate of a floor unit in the driver area in the direction of the travel surface, whereby the floor plate and roof

element include at least an area by area distance to one another which is at least the body size of an operator.

- 5 Further features, details and advantages of the invention will become apparent from the appended claims, the drawings and the following description of a preferred embodiment of the cargo bicycle.

The drawing shows:

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Figure 1 A perspective front view of an example of the design of the cargo bicycle;

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Figure 2 A perspective side view of a driver area of the cargo bicycle according to Figure 1.

The Figures show an embodiment of the cargo bicycle that is labelled with the reference number 2 as a whole. Cargo bicycle 2 can be driven using muscle power and/or an electric drive. Cargo bicycle 2 includes pick-up area 4 in which at least one
20 interchangeable container (not depicted in the Figure) and/or one additional load can be or is positioned. Moreover, cargo bicycle 2 includes driver area 6 which is positioned in front of the pick-up area 4 in relation to the driving direction 9 of cargo bicycle 2.

25 In driver area 6 there is seat unit 8, pedal unit 10, steering unit 12, overlapping roof element 14 over at least driver area 6 as well as a floor plate 18 which closes off at least an area in the direction of the travel surface 16 of floor unit 20 in driver area 6.

In the embodiment of cargo bicycle 2 shown in the Figures, floor plate 18 and roof
30 element 14 demonstrate a distance to one another which is at least the body size of the operator.

Floor plate 18 includes an almost closed surface. Here, driver area 6 is almost completely closed off to travel surface 18. Seat unit 8 and steering unit 12 are fixed
35 to floor plate 18.

Driver area 6 includes an almost completely externally closed cabin. This shows opening 22, diagonally to direction of travel 8, through which driver area 6 is accessible from outside.

5 In addition to floor plate 18, in pick-up area 4, floor unit 20 includes planar pick-up floor 24, which is closed off to pick-up area 4 in the direction of travel surface 16. A interchangeable container and/or additional load can be positioned on pick-up floor 24.

10 Figures 1 and 2 show an embodiment of cargo bicycle 2 in which pick-up floor 24 and floor plate 18 incorporate a joint, one-piece component. Floor plate 18 and pick-up floor 24 are fixed to a travel surface 16 facing side in relation to support structure 26 of cargo bicycle 2 to which at least wheel unit 28 can be positioned. This means cargo bicycle 2 has a particularly low height.

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The functionality of cargo bicycle 2 is described below:

An operator of cargo bicycle 2 in driver area 6 can be positioned for the loading and unloading of pick-up area 4 and stand upright to support the loading of pick-up area 4. The same applies for the unloading of pick-up area 4, where the operator of cargo
20 bicycle 2 can select the interchangeable container and/or additional load from driver area 6.

The features of the invention disclosed in the above description, in the claims and in the drawing, may be essential both individually and in any combination in the
25 realisation of the invention in its various embodiments.

Reference list

	2	Cargo bicycle
	4	Pick-up area
5	6	Driver area
	8	Seat unit
	9	Direction of travel
	10	Pedal unit
	12	Steering unit
10	14	Roof element
	16	Travel surface
	18	Floor plate
	20	Floor unit
	22	Opening
15	24	Pick-up floor
	26	Support structure
	28	Wheel unit

Claims

1. Cargo bicycle (2) which can be driven using muscle power and/or an electric drive, with at least one pick-up area (4) in or on which or at least one
5 interchangeably container and/or an additional load can be or is positioned and with at least one driver area (6) which is positioned in front of the pick-up area (4) in regard to the direction of travel (9) of the cargo bicycle (2) and which includes at least one seat unit (8), one pedal unit (10), one steering unit (12), one overlapping roof element (14) at least over the driver area (6) and floor
10 means(18) of a floor unit (20) that at least partially bounds/limits the driver area (6) in the direction of the travel surface (16), whereby the floor means (18) and roof element (14) have, in at least an area, a distance to one another which is at least the body size of an operator.
- 15 2. Cargo bicycle (2) according to claim 1, characterised by the distance between the floor means (18) and roof element (14) comprises at least 1.70 m, in particular at least 1.80 m, in particular 1.90 m, in particular 2.00 m.
- 20 3. Cargo bicycle (2) according to claims 1 or 2, characterised by the fact that the floor means (18) forms at least an almost closed surface, through which the driver area (6) is entirely or at least almost entirely closed off to the travel surface (16).
- 25 4. Cargo bicycle (2) according to at least one of the preceding claims, characterised by the fact that at least the seat unit (8) and/or steering unit (12) can be or are fixed to the floor means (18).
- 30 5. Cargo bicycle (2) according to at least one of the preceding claims, characterised by the fact that the floor means (18) incorporates a coating which increases roughness at least sectionally on the side facing the driver area (6).
- 35 6. Cargo bicycle (2) according to at least one of the preceding claims, characterised by the fact that the floor means (18) incorporates at least one drainage facility through which fluid can drain out of the driver area (6).
7. Cargo bicycle (2) according to at least one of the preceding claims, characterised by the fact that driver area (6) incorporates an essentially externally closed cabin

which includes an opening (22) which is slanted or diagonal to the direction of travel (9) through which the driver area (6) can be accessed from the outside.

- 5 8. Cargo bicycle (2) according to at least one of the preceding claims, characterised by the fact that the floor means (18) incorporates at least one step which protrudes in particular in the area of the opening (22) and the driver area (6).
- 10 9. Cargo bicycle (2) according to at least one of the preceding claims, characterised by the fact that the floor unit (20) at least includes a planar pick-up floor (24) which is at least closed off from the pick-up area (4) in the direction of the travel surface (16), through which the pick-up area (4) can be or is entirely or at least almost entirely closed off to the travel surface (16).
- 15 10. Cargo bicycle (2) according to claim 9, characterised by the fact that the floor means (18) and pick-up floor (24) incorporate a joint, one-piece component.
- 20 11. Cargo bicycle (2) according to at least one of the preceding claims, characterised by the fact that the floor means (18) and/or pick-up floor (24) on one of the sides facing towards or away from the travel surface (16) is fixed or can be fixed to a support structure of the cargo bicycle (2) to which at least one wheel unit (28) can be or is positioned.