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(54) **Engine hood guard**

(57) An engine hood guard for a carrier vehicle of a flange-mounted front-loader is described, which has, arranged to the side of the engine bonnet (1) at the rear region thereof, brackets (2) for receiving the coupling members (3) of the front-loader, having an impact guard (4) in the front region to prevent the engine hood (1) from being damaged when mounting and de-mounting the front-loader.

The guard extends, starting from the impact guard (4), along either side of the engine hood (1) at least as far as the brackets (2) and is designed to act as a lateral guiding aid for the coupling members.

The engine hood guard is suitable for all carrier vehicles which are designed to be mounted with de-mountable front-loaders.

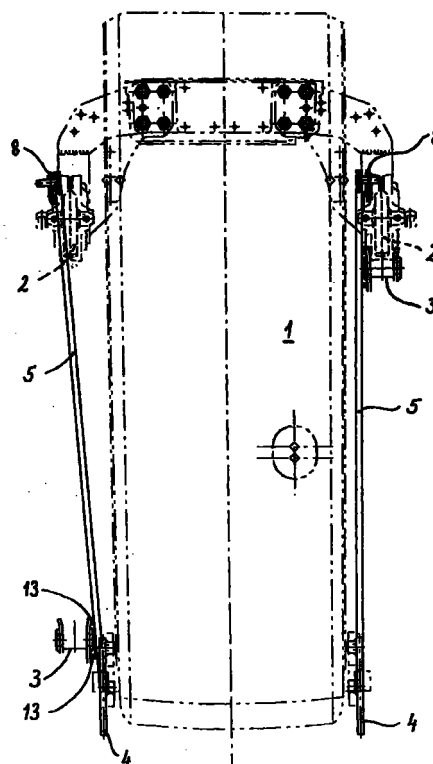


Fig. 1

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Description

[0001] The invention relates to an engine hood guard for a carrier vehicle of a flange-mounted front-loader, with brackets arranged to the side of the engine hood in the rear region thereof for receiving the coupling members of the front-loader, and in the front region an impact guard to protect against damage to the engine hood when mounting and de-mounting the front-loader.

[0002] Whilst loading work is being carried out with the front-loader, there is a considerable risk that the front part of the engine hood of the carrier vehicle will be damaged if the vehicle has to drive very close to a fixed object and the vehicle driver does not take the requisite care. For this reason, it is common practice to provide what is referred to as an impact guard in front of the front part of the engine hood, the purpose of which is to protect the engine hood from damage due to collision. However, when the front-loader is being mounted and de-mounted, an impact guard of this type can not protect the side regions of the engine hood against damage by the coupling members of the front-loader, on which the front-loader arm is mounted so that it can be pivoted upwards. The coupling members are moved along the entire length of the engine hood and it is no simple matter for the vehicle driver to control the carrier vehicle with the precision that is needed. Controlling the vehicle is particularly difficult if the front-loader arm is designed to be as slim as possible, as a means of providing a better view onto the work tool mounted on the free end of the front-loader arm, which will mean that the distance between engine hood and coupling member is very small.

[0003] The underlying objective of the invention is to improve an engine hood guard for a carrier vehicle of a flange-mounted front-loader.

[0004] The objective is achieved due to the fact that the hood guard extends, starting from the impact guard, along both sides of the engine hood at least as far as the brackets and is designed to act as a guiding aid for the coupling members.

[0005] As a result, when a front-loader is being mounted, or de-mounted, it is much easier for the driver to drive into and out from the front-loader without at the same time damaging the engine hood. In addition, when the front-loader is being mounted, the coupling members are aligned by means of the hood guard in such a way that they can be positioned on the brackets without difficulty.

[0006] The drive unit located under the engine hood is readily accessible due to the fact that, as specified in claim 2, a substantially horizontally extending slide rail is disposed on either side of the engine hood on a level with the coupling member of the de-mounted front-loader, supported on the carrier vehicle at its front and rear regions. The arrangement of claim 3 provides even better accessibility when the front-loader is not mounted, since the slide rails extend starting from the

impact guard in a divergent arrangement towards the rear.

[0007] As specified in claim 4, the fact that the slide rails can be pivoted out about their front anchoring points against an expanding force from an outer position which they assume when the front-loader is not mounted into an inner position which they assume when the front-loader is mounted, means the front-loaders with very slim loading arms can be used which overlap the engine hood with only a slight lateral distance. When the front-loader is mounted, the drive unit nevertheless remains sufficiently accessible since the slide rails are spaced at a greater distance from the engine hood due to the expanding force.

[0008] A practical embodiment of the invention is specified in claim 5, in which the slide rails are joined to the impact guard, in which case the slide rails can be linked resiliently or by means of an articulated joint to the impact guard.

[0009] Other details of the invention are set out in the remaining claims.

[0010] The invention will be described in more detail with reference to the drawings. Of these:

- Figure 1 shows a plan view of the engine hood and a first hood guard,
- Figure 2 shows the hood guard of Figure 1 from a side view,
- Figure 3 shows a view of the hood guard along the line A-A of Figure 2 and
- Figure 4 shows a side view of a second hood guard

[0011] Figures 1 to 3 relate to a first embodiment of a hood guard. It is designed for use with a carrier vehicle, not illustrated, which has to the side of the engine hood 1 in the rear region thereof brackets 2 mounted on the vehicle for receiving a front-loader. It should be pointed out that the design of such a front-loader is known. It consists of a loader arm comprising two arm members, a loader tool being linked to one end region thereof and a coupling member 3 being linked to each of the arm members at the other end region thereof, designed for coupling with one of the brackets 2.

[0012] The hood guard essentially consists of a front-end impact guard 4 with a slide rail 5 at each side of the engine hood 1. The impact guard 4 is supported on the vehicle frame at the front to the side of the engine hood 1. It is of a sickle-shaped structure and extends vertically across the entire height of the engine hood 1. Located at the lower end region thereof are three bores 6 by means of which it is joined to the vehicle frame by means of screws.

[0013] On a level with the side region of the engine hood 1, which needs to be protected from damage by the coupling member 3 when the front-loader is being mounted or de-mounted, the slide rail 5 engages on the impact guard 4 by means of an articulated joint 7. The slide rail 5 extends along a substantially horizontal path

past the bracket 2 back into the rear end region of the engine, hood 1. As long as no front-loader is mounted on the carrier vehicle, the slide rail 5 diverges as it extends towards the rear - this is exaggerated on the left-hand side of the plan view of Figure 1 for the sake of clarity - and lies, due to the action of an expanding force, with its rear end region against a stop 8 mounted on the vehicle. Consequently, in the region at the front of the vehicle, the distance of the two slide rails 5 from one another is slightly smaller than the distance of the coupling members 3 of the front-loader from one another, whereas at the region to the rear of the vehicle, the distance of the slide rails 5 from one another is greater than the distance of the coupling members 3.

[0014] To produce the expanding force, a bolt 9 is attached to the slide rail 5 and extends through a bore in the stop 8, a pre-loaded compression spring 10 being mounted thereon on the side of the stop opposing that on which the bolt member is disposed. The compression spring 10 is supported at one end directly against the stop 8 and at the other in the interior of a spring sleeve 11 which protects the compression spring 10 from the effects of the weather. The spring sleeve 11 is prevented from sliding off the bolt 9 by means of a pin 12 passing transversely through the bolt 9. The length of the spring sleeve 11 is calculated such that the bolt 9 can be guided out against the force of the compression spring 10 over a specific longitudinal displacement before it comes to bear against the stop 8. When the bolt 9 is in this position, the slide rail 5 pivots in the direction of the engine bonnet 1 by a distance such that the two slide rails 5 run substantially parallel with one another.

[0015] If the carrier vehicle drive into a de-mounted front-loader in order for it to be mounted, the coupling members 3 thereof slide along the slide rails 5 without damaging the engine hood. If during this driving-in procedure one of the spring sleeves 11 comes to bear against the stop 8, the front-loader will be aligned with respect to the carrier vehicle by means of the coupling members 3 as the procedure continues. This being the case, the slide rails (5) pivot out about their front anchoring points against the expanding force from the outer position assumed when the front-loader is not mounted into the inner position assumed when the front-loader is mounted. A low-friction protective guard 13 is mounted on each coupling member in order to reduce friction between coupling member 3 and slide rail 5 and in order to avoid damaging the paint. Towards the end of the driving-in procedure, the spring sleeves 11 of the two slide rails 5 are still at a small distance from the respective stops 8 and the coupling members 3 are located in such a position relative to the brackets 2 that they can be coupled with them without difficulty.

[0016] The engine hood illustrated in Fig 4 differs from the one described above due to a weld joint 14 between the impact guard 4 and the slide rail 5. Using a joint to this type in conjunction with a resilient slide rail 5 obvi-

ates the need for a articulated joint and additional means to generate an expanding force to move the slide rails outwards.

Claims

1. An engine hood guard for a carrier vehicle of a flange-mounted front-loader having, arranged to the side of the engine hood (1) in the rear region thereof, brackets (2) for receiving the coupling members (3) of the front-loader and, in the front region, an impact guard to protect the engine hood from damage when the front-loader is being mounted and de-mounted, wherein the hood guard comprises side members extending from the impact guard (4) along either side of the engine hood (1), characterised in that said side members act as a lateral guides for the coupling members (3) when the front-loader is being attached and/or detached from the said vehicle.
2. An engine hood guard as claimed in claim 1, characterised in that arranged on either side of the engine hood (1) on a level with the coupling member (3) of the non-mounted front-loader is a substantially horizontally extending slide rail (5), which is supported on the carrier vehicle at its front and rear end regions.
3. An engine hood guard as claimed in claims 1 and 2, characterised in that when the front-loader is not mounted, the slide rails (5) extend backwards in a divergent arrangement starting from the impact guard (4).
4. An engine hood guard as claimed in claims 1 to 3, characterised in that the slide rails (5) can be pivoted about their front anchoring points against an expanding force out from an outer position assumed when the front-loader is not mounted into an inner position assumed when the front-loader is mounted.
5. An engine hood guard a claimed in claims 1 to 4, characterised in that the slide rails (5) are joined to the impact guard (4).
6. An engine hood guard as claimed in claim 5, characterised in that the slide rails (5) are linked to the impact guard (4) by means of an articulated joint (7).
7. An engine hood guard as claimed in claim 5, characterised in that the slide rails (5) are resiliently linked to the impact guard (4).
8. An engine hood guard as claimed in claims 4 to 7, characterised by a preloaded resilient member for

producing an expanding force, which is supported against a stop (8) mounted on the vehicle and engages on the slide rail (5) by means of a spring sleeve (11) housing the resilient member, a pin (12) and a bolt (9).

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9. An engine hood guard as claimed in Claim 8, characterised in that the said resilient member comprises a compression spring (10).

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10. An engine hood guard as claimed in claims 1 to 8, characterised in that in order to reduce friction between the coupling member (3) and the slide rail (5) a low-friction protective guard (13) is mounted on each slide rail or coupling member.

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11. An engine hood guard according to any preceding claim, wherein the said side members extend at least as far as the brackets (2).

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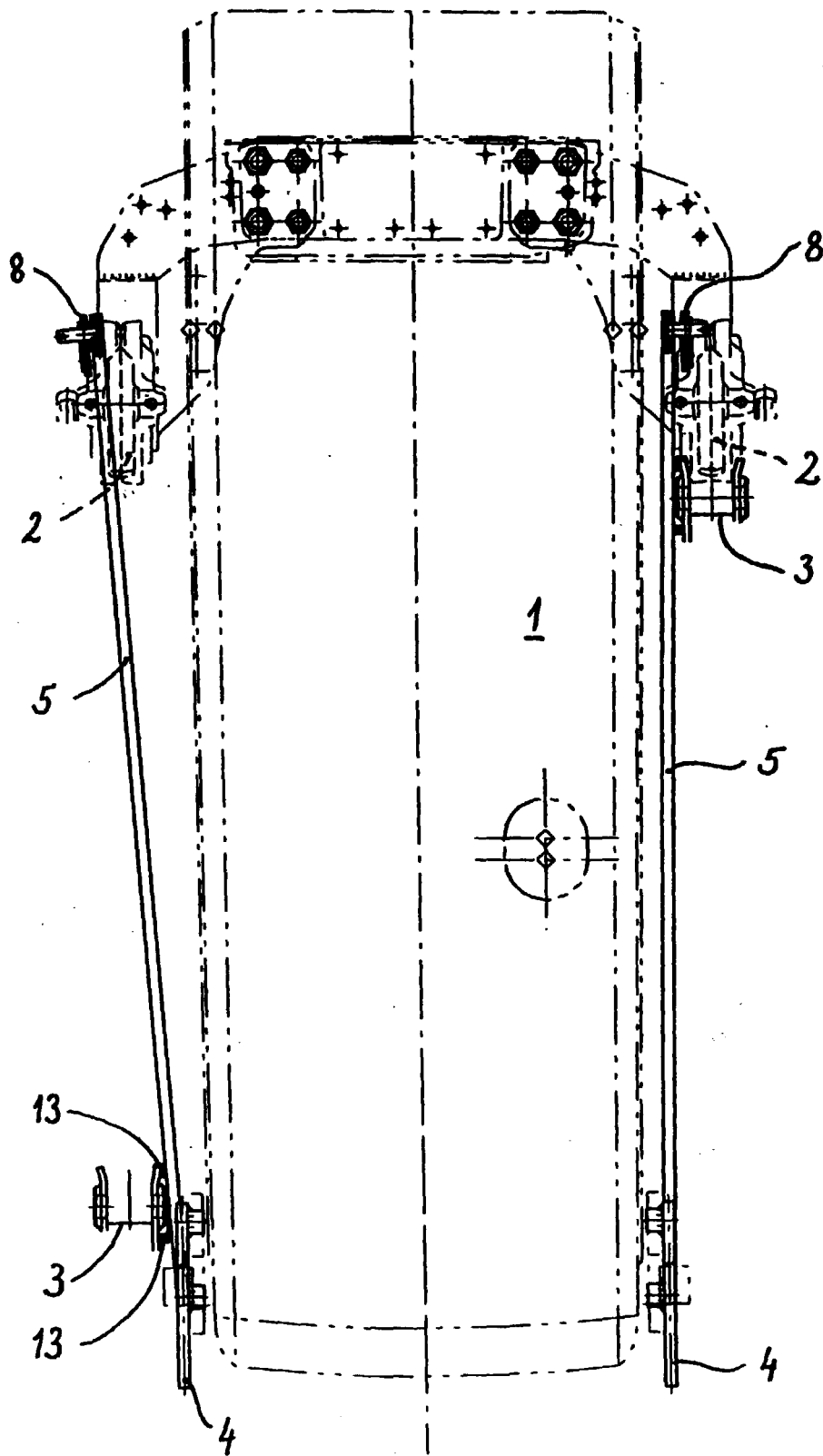


Fig. 1

Fig. 2

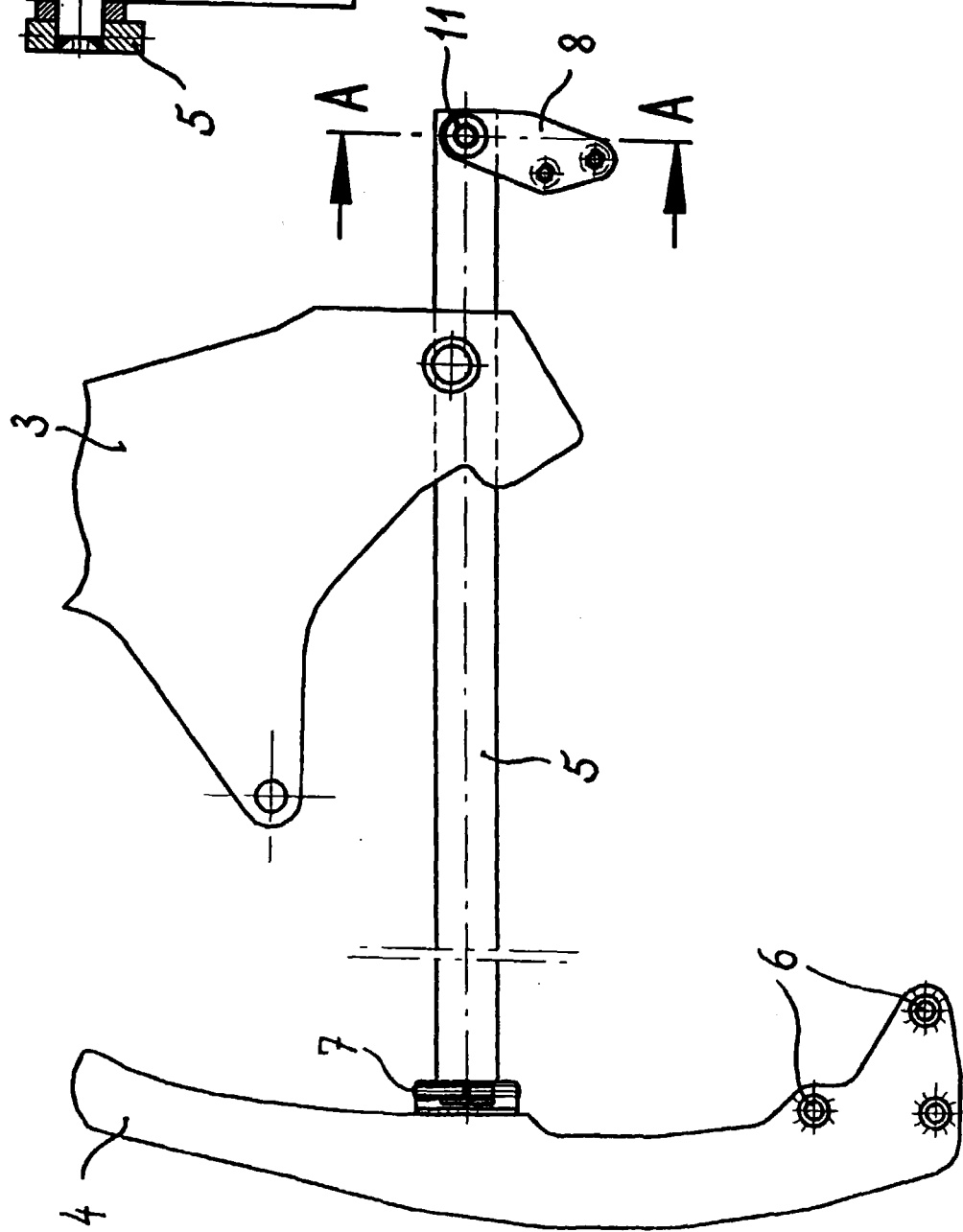


Fig. 3

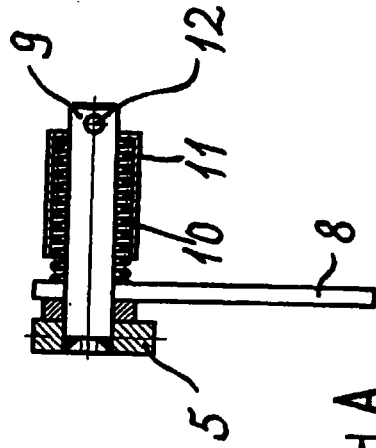


Fig. 4

