

SPECIFICATION

Ambulance

- 5 The invention relates to an ambulance and is particularly suited to one intended to operate over a rugged terrain. Such an ambulance may be an air-transportable highly autonomous cross-country medical vehicle adapted to travel in particular in
- 10 desert regions which have no medical or dispensary centres, this vehicle serving to transport/or to treat injured persons or victims of accidents and enclosing the necessary equipment for a first-aid intervention.
- 15 The interior design of an ambulance is often poorly adapted to transport or load injured persons on stretchers. The stretchers are usually carried by nurses who, however careful they are in putting the stretcher in the vehicle, often cannot help jerking the
- 20 patient, which may have serious consequences if the injury of the patient requires complete immobility.

- In accordance with the present invention an ambulance having a rear door opening and containing a stand comprising two stretcher
- 25 supports at vertically spaced positions for receiving respective horizontal stretchers, the stand with both the stretcher supports being smoothly angularly movable as a whole in a horizontal direction
- 30 anchored with the stretchers extending substantially parallel to the longitudinal axis of the ambulance adjacent to one side of the ambulance, and a loading location at which the rear end of the stand faces the door opening enabling endwise loading of both the
- 35 stretchers through the opening to their respective positions in the stand.

- The stand is conveniently provided with tracks so that each stretcher, together with its patient, can be lifted to the correct height outside the ambulance to
- 40 enable it to be moved, preferably by rollers, but slides could also be used, endwise into its position in the stand. It can then be locked in its position and the stand moved to its transport position. The patient is thus subjected to little, if any, unpleasant movement
- 45 during this sequence.

Preferably the stand is provided on its base with rollers running on the ambulance floor.

- The ambulance of the invention may be designed to provide a cross-country medical vehicle capable
- 50 of travelling over long distances (1,600 km), in particular in desert regions, and of the type comprising a chassis carrying a cross-country drive unit and a closed body containing equipment for medical intervention and caring for the victims of
- 55 accidents or injured persons, in the rear of the body having two outwardly openable doors.

- The stand may be formed by a frame comprising uprights assembled by longitudinal members and cross-members, this frame supporting two
- 60 platforms at different levels for receiving stretchers.

- Suitably, the stand is mounted to be angularly movable on a pivot extending through a member having a part fixed to one of the longitudinal walls of the body of the vehicle and a part fixed to the stand,
- 65 the latter being locked in the transport position in

which it is applied against said wall by a manually actuatable lock.

- A better understanding of the invention will be had from the ensuing description of one embodiment
- 70 shown in the accompanying drawings in which:-

Figure 1 is a side elevational view of the body of an ambulance vehicle the outside dimensions of which permit the air-transport of the vehicle in cargo aircraft C130 and C160;

- 75 *Figure 2* is a plan view of the ambulance vehicle shown in *Figure 1*;

Figure 3 is a rear and elevational view of the body of the vehicle; and

- 80 *Figure 4* is a plan view of a spring-loaded pawl for locking stretchers to a stand of the vehicle.

As can be seen in *Figure 1*, the body of the vehicle (the drive unit has not been shown) encloses all the equipment required for transporting and providing first aid to an injured person or a victim of an

85 accident.

- This equipment mainly comprises (*Figure 3*) a washbasin 2 connected to a waste pipe 3 and supplied with water from an auxiliary tank 4 which draws the water from a main tank 5 fixed under the
- 90 floor of the body of the vehicle, by way of a pipe 6 and a suction and ram pump 7, this auxiliary tank 4 having a tap 8.

This equipment further comprises a reanimation and perfusion unit (not shown) and lighting means 9.

- 95 For transporting the patients, there are provided inside the body two stands 10 for supporting two pairs of superimposed stretchers 11. Each stand comprises two pairs of uprights 12 and 13 which are interconnected by longitudinal members 14 and cross-members 15, this framework serving to fix
- 100 receiving platforms 16 at two different levels as shown in *Figures 1* and 3.

- These stands have the feature of being smoothly movable between two different angular positions,
- 105 namely a "transport" location and a "loading" location.

- For this purpose, each stand is pivotably mounted on a journal 17 which extends through a fork 18 fixed to the inner face of the longitudinal wall 19 of the
- 110 body of the vehicle facing the corner 20 of the stand. The stand is thus angularly movable about this pivot 17 so as to take up a position either in a plane parallel to the wall 19 in which it is applied against the latter, or in an inclined plane making an angle
- 115 with the longitudinal wall 19, by a simple rotation about the pivot 17.

- In order to facilitate this angular movement of the stands, the bases of the two uprights 13 located adjacent to the rear door 21 of the body are provided
- 120 with rollers, 22 which are freely movable along guide tracks 23 in the form of sectors (*Figure 2*). The stands are locked in the transport location, that is, in the position shown in *Figure 2*, by spring-loaded pull members 23a the front end of each of which is
- 125 provided with a hooking nose which engages on one of the legs of the stand so as to immobilize the latter in the transport location. Slides are usable in place of rollers 22.

- The locking of the stand is intended to prevent the
- 130 latter from moving during transport and thereby

producing jerks or shocks harmful to the patient. These stands, each support a pair of vertically spaced stretchers 11, the latter having the feature of being removable and supported by rollers 24 mounted as shown in Figure 3 on shock-absorbers 25, for example coil springs.

This elastic suspension improves the comfort of the patient and attenuates any violent shaking which may have an adverse effect on his condition. The stretchers are also locked in the transport position on their respective stand by spring-loaded pawls 26 (Figure 4). Each pawl comprises an L-shaped member which is pivotably mounted on a pin 27, the branch 26₁ of the pawl being connected to a return spring 28 and the branch 26₂ being shaped as a hook 29 capable of hooking on a cross-member or one of the feet of the stretcher.

The spring-loaded pawl 26 is unlocked by a handle 30 connected to the pawl by a "Bowden" cable 31 which acts in opposition to the action of the return spring 28. A single pawl per stretcher is sufficient, but it will be understood that, for reasons of safety, the number of pawls may be increased.

Also in order to improve the comfort of the patient, each stretcher is provided with a head-rest 32 the inclination of which is adjustable by means of an adjusting cam 33.

The body of the vehicle is provided at the rear with a door opening 21 closed by two doors 21₁ and 21₂ which open to clear completely the access to the interior of the body and allow the stretchers to be slid onto the stands easily and without jerks.

The stretchers are loaded in the vehicle after unlocking the spring-loaded pull-members 23a and after pivoting the stands 10 to the inclined position 34 as shown in dot-dash line Figure 2.

It is sufficient to roll the stretchers onto tracks provided on the vertically spaced receiving platforms 16 and then lock the stretchers in this position by the spring-loaded pawls 26. The stand is then swung back to the transport location against the longitudinal walls 19 of the body shown in full lines in Figure 2, the pull-members 23 automatically locking onto the stand in the manner of a spring-loaded bolt of a lock.

For hygienic and ventilating reasons the vehicle body is provided with ventilation openings provided with a screen filter 35.

It will be noticed from Figure 2 that when one of the stands is in the loading location, there is access to both sides of the stretchers it carries while still giving access to one side of the other stand in the transport location.

CLAIMS

1. An ambulance having a rear door opening and containing a stand comprising two stretcher supports at vertically spaced positions for receiving respective horizontal stretchers, the stand with both the stretcher supports being smoothly angularly movable as a whole in a horizontal direction between a transporting location at which it is anchored with the stretchers extending substantially parallel to the longitudinal axis of the ambulance

adjacent to one side of the ambulance, and a loading location at which the rear end of the stand faces the door opening enabling endwise loading of the stretchers through the opening to their respective positions in the stand.

2. An ambulance as claimed in claim 1, wherein the stand comprises a frame formed by uprights connected by longitudinal members and cross-members, said stretcher supports comprising two platforms at different levels for receiving the stretchers.

3. An ambulance as claimed in claim 2, wherein the rear uprights of the frame are provided at the base thereof with rollers which roll along tracks in the shape of sectors secured to the floor of the body of the vehicle.

4. An ambulance as claimed in claim 1, claim 2 or claim 3, wherein the stand is mounted to be angularly movable on a pivot having a portion secured to one said longitudinal wall and a portion secured to the stand, the stand being locked in the transport location in which the stand is applied against said longitudinal wall, by a manually releasable lock.

5. An ambulance as claimed in claim 4, wherein the lock comprises a spring-loaded pull member.

6. An ambulance as claimed in claim 1, wherein each stretcher is provided with rollers which are mounted on sprung shock absorbers and run on tracks on the stand, the stretchers being immobilized on respective receiving platforms of the stand by manually releasable locking means.

7. An ambulance as claimed in claim 6, wherein the locking means for locking the stretchers to the stand include a spring-loaded pawl actuated by a handle which is connected to the pawl by a cable, the pawl having a hook-shaped end portion for engaging a fixed part of the stretchers in the locking position.

8. An ambulance as claimed in claim 6, wherein the stretchers are provided with headrests the inclination of which is adjustable.

9. An ambulance as claimed in any one of the preceding claims, wherein the equipment for medical intervention comprises a re-animation and perfusion unit, a washbasin, a large-capacity drinking water tank, a pump, a secondary drinking water tank for supplying the water to the washbasin and drawing the water from the large-capacity tank being secured under the floor of the vehicle, and lighting and ventilating means.

10. An ambulance as claimed in any one of the claims 1 to 9, including a further stand for supporting at least one further stretcher, said further stand being smoothly angularly movable in a horizontal direction between a transporting location at which it is anchored with the stretcher extending substantially parallel to the longitudinal axis of the ambulance adjacent to the opposite side of the ambulance, and a loading location at which the rear end of the further stand faces the door opening, said stands leaving a passageway between them when in said transporting location.

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15 spring 28 and the branch 26₂ being shaped as a hook 29 capable of hooking on a cross-member or one of the feet of the stretcher.

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20 which acts in opposition to the action of the return spring 28. A single pawl per stretcher is sufficient, but it will be understood that, for reasons of safety, the number of pawls may be increased.

Also in order to improve the comfort of the patient,

25 each stretcher is provided with a head-rest 32 the inclination of which is adjustable by means of an adjusting cam 33.

The body of the vehicle is provided at the rear with a door opening 21 closed by two doors 21₁ and 21₂

30 which open to clear completely the access to the interior of the body and allow the stretchers to be slid onto the stands easily and without jerks.

The stretchers are loaded in the vehicle after

unlocking the spring-loaded pull-members 23a and

35 after pivoting the stands 10 to the inclined position 34 as shown in dot-dash line Figure 2.

It is sufficient to roll the stretchers onto tracks

provided on the vertically spaced receiving

platforms 16 and then lock the stretchers in this

40 position by the spring-loaded pawls 26. The stand is then swung back to the transport location against the longitudinal walls 19 of the body shown in full

lines in Figure 2, the pull-members 23 automatically

locking onto the stand in the manner of a

45 spring-loaded bolt of a lock.

For hygienic and ventilating reasons the vehicle

body is provided with ventilation openings provided

with a screen filter 35.

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50 the stands is in the loading location, there is access to both sides of the stretchers it carries while still giving access to one side of the other stand in the transport location.

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65 parallel to the longitudinal axis of the ambulance

adjacent to one side of the ambulance, and a loading location at which the rear end of the stand faces the door opening enabling endwise loading of both the stretchers through the opening to their respective

70 positions in the stand.

2. An ambulance as claimed in claim 1, wherein the stand comprises a frame formed by uprights connected by longitudinal members and cross-members, said stretcher supports comprising

75 two platforms at different levels for receiving the stretchers.

3. An ambulance as claimed in claim 2, wherein the rear uprights of the frame are provided at the base thereof with rollers which roll along tracks in the shape of sectors secured to the floor of the body of the vehicle.

4. An ambulance as claimed in claim 1, claim 2 or claim 3, wherein the stand is mounted to be angularly movable on a pivot having a portion

85 secured to one said longitudinal wall and a portion secured to the stand, the stand being locked in the transport location in which the stand is applied against said longitudinal wall, by a manually releasable lock.

5. An ambulance as claimed in claim 4, wherein the lock comprises a spring-loaded pull member.

6. An ambulance as claimed in claim 1, wherein each stretcher is provided with rollers which are mounted on sprung shock absorbers and run on

95 tracks on the stand, the stretchers being immobilized on respective receiving platforms of the stand by manually releasable locking means.

7. An ambulance as claimed in claim 6, wherein the locking means for locking the stretchers to the stand include a spring-loaded pawl actuated by a

100 handle which is connected to the pawl by a cable, the pawl having a hook-shaped end portion for engaging a fixed part of the stretchers in the locking position.

8. An ambulance as claimed in claim 6, wherein the stretchers are provided with headrests the inclination of which is adjustable.

9. An ambulance as claimed in any one of the preceding claims, wherein the equipment for

110 medical intervention comprises a re-animation and perfusion unit, a washbasin, a large-capacity drinking water tank, a pump, a secondary drinking water tank for supplying the water to the washbasin and drawing the water from the large-capacity tank

115 being secured under the floor of the vehicle, and lighting and ventilating means.

10. An ambulance as claimed in any one of the claims 1 to 9, including a further stand for supporting

120 being smoothly angularly movable in a horizontal direction between a transporting location at which it is anchored with the stretcher extending substantially parallel to the longitudinal axis of the ambulance adjacent to the opposite side of the ambulance, and a loading location at which the rear end of the further stand faces the door opening, said stands leaving a passageway between them when in said transporting location.