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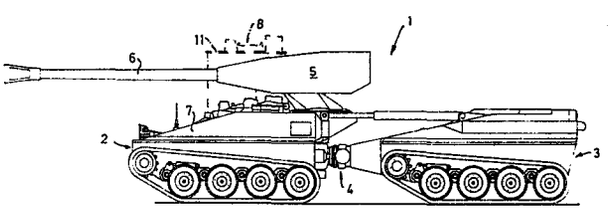
(54) Station for a crew member in a combat vehicle.

(57) In a combat vehicle having an outer shell there are crew stations within said shell, on top of which there is provided at least one weapon (6) in an unmanned turret (5). At least one (8) of said stations is vertically displaceable between a normal position and a raised position in which a roof portion (11) of the station reaches above the turret and the weapon, for enabling observation above the turret and the weapon, which is preferably a cannon.



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Station for a crew member in a combat vehicle

The invention relates to a combat vehicle having an outer shell inside which there are stations intended for crew members, there being provided above said outer shell at least one weapon, preferably a cannon, which is mounted in an unmanned turret.

A tendency can be perceived in the development of combat vehicles equipped with cannons to place the crew as low as possible and to place the cannon above the space for the crew. What is thus gained is that during battle the crew can utilize terrain formations to a great degree as protection against firing from the enemy. However, placing the cannon above the space for the crew causes considerable limitation in the possibility of sighting, as far as the crew is concerned, if only conventional observation means are used. For example, in driving up to a firing position behind a ridge there is the problem that the cannon will become visible for the enemy before the vehicle captain has any sighting possibility, with resulting risk of discovery. The vehicle captain has a sighting need all the way round the horizon at an elevation of at least $-5^{o}/+30^{o}$. Furthermore, he often needs good allround sight over the highest part of the vehicle, i.e. in this case above the cannon.

Up to now it has been sought to solve problems in this area by utilizing relatively complicated optical or electro-optical observation means with a rotatable view above the cannon. Such means have not won the approval of the users of combat vehicles.

The object of the invention is to improve the observation facilities in a vehicle with a low-placed crew.

This object is achieved in accordance with the invention

by at least one of said stations being vertically displaceable between a normal position and a raised position, said station comprising a roof portion to which is joined a peripheral wall that encloses said station, the arrangement being such that, in a normal position of said station, said roof portion constitutes a portion of said outer shell while said wall is located fully within said outer shell, said station being raisable to a position where its roof portion reaches above the turret and the weapon, for enabling observation above the turret and the weapon. It will thus be possible to vary the observation level according to requirements while still having available the equipment which the crew has to serve. Yet, good protection is available within the vehicle, when needed.

In a particularly advantageous embodiment, the station has regulating means for regulating the rate of vertical displacement. The roof portion can to advantage be provided with a plurality of prismatic periscopes mounted on a rotatable cowl for observation throughout a whole revolution, as well as a telescopic sight for directed observation. It is also a great advantage if means are incorporated in said station for directing and firing said weapon.

The invention will now be described in detail in the following with the aid of an embodiment example illustrated on the appended drawing where:

Fig. 1 is a side view of a vehicle in accordance with the invention,

Fig. 2 is a view from above of a vehicle in accordance with the invention,

Fig. 3 is a view from above and to an enlarged scale of a station for a crewman, and

Fig. 4 illustrates, partly in section, a side view of the station in Fig. 3.

As will be seen from Figs. 1 and 2, a vehicle in accordance with the invention is provided with a forward vehicle part 2 and a rear part 3, which are joined by an articulation 4. Above the forward vehicle part 2 there is a movable, unmanned turret 5 in which a weapon 6, e.g. a high pressure cannon is mounted.

The entire crew is placed in the forward vehicle part 2 and is normally inside the outer shell 7 thereof. The vehicle captain has a station 8, the driver a station 9 and the gunner a station 10. Of these different stations intended for the different crew members, the captain's station 8 is displaceable heightwise between a normal position where a roof portion 11 incorporated in the station constitutes a portion of the vehicle outer shell 7, and a raised position where the roof portion 11 is above its normal level. The station 8 is indicated in its highest position by chain-dotted lines in Fig. 1, and in this position observation above the weapon 6 and the turret 5 is possible. There is a conventional rotatable observation cowl 12 with an entry hatch 13 in the centre of the roof portion 11. The observation equipment may be such as prismatic periscopes for observation through a whole revolution, as well as a telescopic sight for directed observation. If necessary, it is naturally also possible to carry out observation with the entry hatch 13 open, independent of at what level the station 8 is.

The observation cowl 12 has been removed in Fig. 3, whereby the vehicle captain's seat 14 is visible. To the right of the seat 14 there is an operating means 15 for regulating the rate of vertical displacement for the station. This regulation is suitably infinitely variable so that a very slow movement can be obtained. The operating means 15 is

also settable in a position where very rapid downward travel can be obtained, which is something which can be needful if there is a risk of being fired at. The operating means 15 actuates a vertical displacement means 16, in which there is incorporated a forward hydraulic cylinder 17 and a rear hydraulic cylinder 18, connected to a hydraulic system (not more closely illustrated) having a pressure accumulator. The station 8 is axially mounted by the rear hydraulic cylinder 18 running in a ball guide.

As will be seen from Fig. 4, the station 8 is laterally defined by a wall 19 going all the way round and being united with the roof portion 11, said wall 19 being downwardly joined to a floor 20. On the side of the station 8 facing towards the remaining crew there is a communication opening 21 in the wall 19, this opening being closable by means of a sliding hatch 22. When the station 8 is in its lowermost position, the communication opening 21 is open, by having the hatch 22 moved to one side. When the station 8 is to be moved upwards, the hatch 22 is automatically closed. All the equipment required by the vehicle captain to execute his task is available in the station 8, examples of such equipment, shown in Fig. 4, being a steering means 23 and a pedal set 24.

Since the station 8 for the vehicle captain is displaceable vertically, he can choose to have a low position in the vehicle when the need of good protection is greatest, i.e. in general when his vehicle is firing, simultaneously as he has the possibility of improving his vision on other occasions by assuming a higher position. As will be seen from Fig. 2, with the illustrated vehicle it will be necessary to turn the weapon 6 somewhat towards the left to allow vertical displacement of the station 8.

Firing normally takes place from the gunner's place, but the vehicle captain should also be able to fire, usually

from his lowered position. Firing should also be able to take place with the station 8 in a raised position. For good combat effectiveness it is important for the captain to be able to inform the gunner where there is a target, so that the latter can take over the fighting task and the captain can lower his station without the crew loosing contact with the target. This can be done by the gunner's sight being captive to the captain's sight/telescopic sight. It is further advantageous if the cannon can be made subordinate in the same way. A prerequisite for the captain being able to function optimally in his station 8 is naturally that the station is provided with the equipment, inter alia for communication, firing direction and observation, weapon sighting possibilities as well as means for firing weapons.

In the above example, the invention has been applied to a vehicle with articulated steering facilities, but it is also naturally possible to apply the invention to a vehicle consisting of a single vehicle part, for example, with or without a weapon.

CLAIMS

1. A combat vehicle having an outer shell (7) inside which there are stations intended for crew members, there being provided above said outer shell at least one weapon (6), preferably a cannon, which is mounted in an unmanned turret, characterized in that at least one (8) of said stations is vertically displaceable between a normal position and a raised position, said station comprising a roof portion (11) to which is joined a peripheral wall (19) that encloses said station, the arrangement being such that, in a normal position of said station, said roof portion constitutes a portion of said outer shell while said wall is located fully within said outer shell, said station being raisable to a position where its roof portion reaches above the turret and the weapon, for enabling observation above the turret and the weapon.

2. A combat vehicle as claimed in claim 1, characterized in that the station (8) has regulating means (15) for regulating the rate of vertical displacement.

3. A combat vehicle as claimed in claim 1, characterized in that in the roof portion (11) there is equipment (12) for observation, suitably in the form of prismatic periscopes mounted in a rotatable cowl for observation in a complete revolution, as well as a telecopic sight for directed observation.

4. A combat vehicle as claimed in claim 1, characterized by means incorporated in the station (8) for directing and firing said weapon.

5. A combat vehicle as claimed in claim 1, characterized in that the wall (19) of the station (8) has at least one opening (21) for enabling, in the normal position, direct communication with other crew members inside the vehicle.

6. A combat vehicle as claimed in claim 5, characterized in that the opening (21) is closable by means of a hatch (22) and that the hatch (22) is adapted for automatically being taken to its closed position when the station is moved upwards.

7. A combat vehicle as claimed in claim 1, characterized in that two hydraulic cylinders (17,18) are incorporated in a vertical displacement means (16), one of said cylinders running in a ball guide for axially mounting the station.

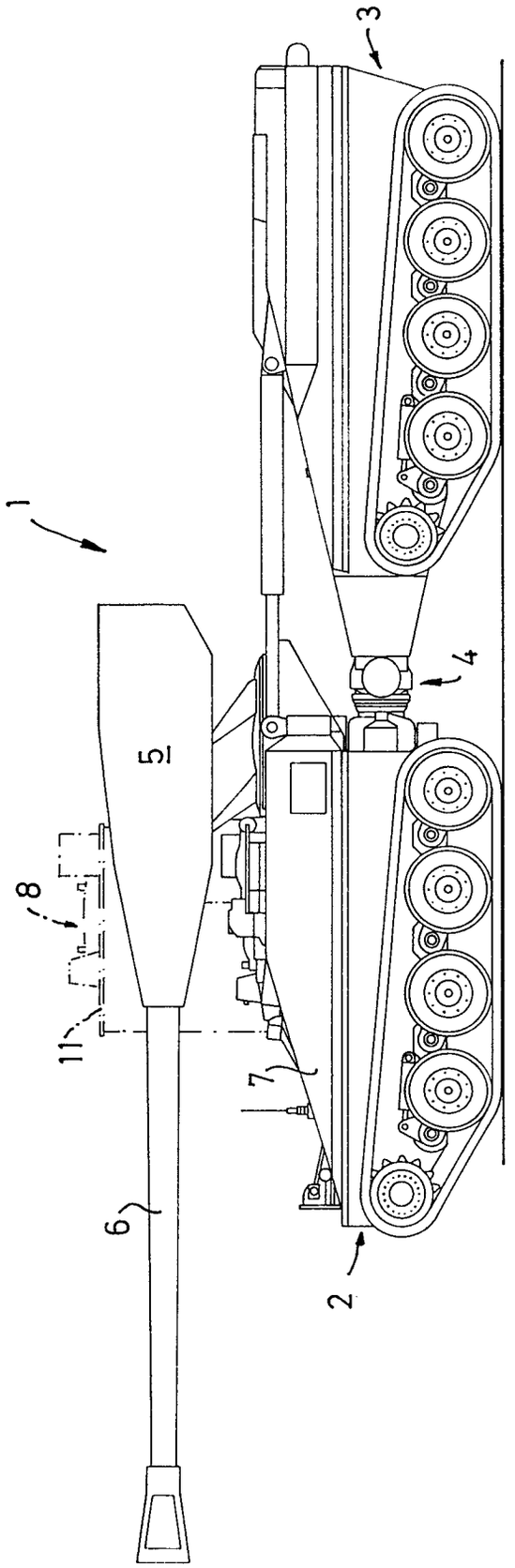

FIG.1

FIG.2

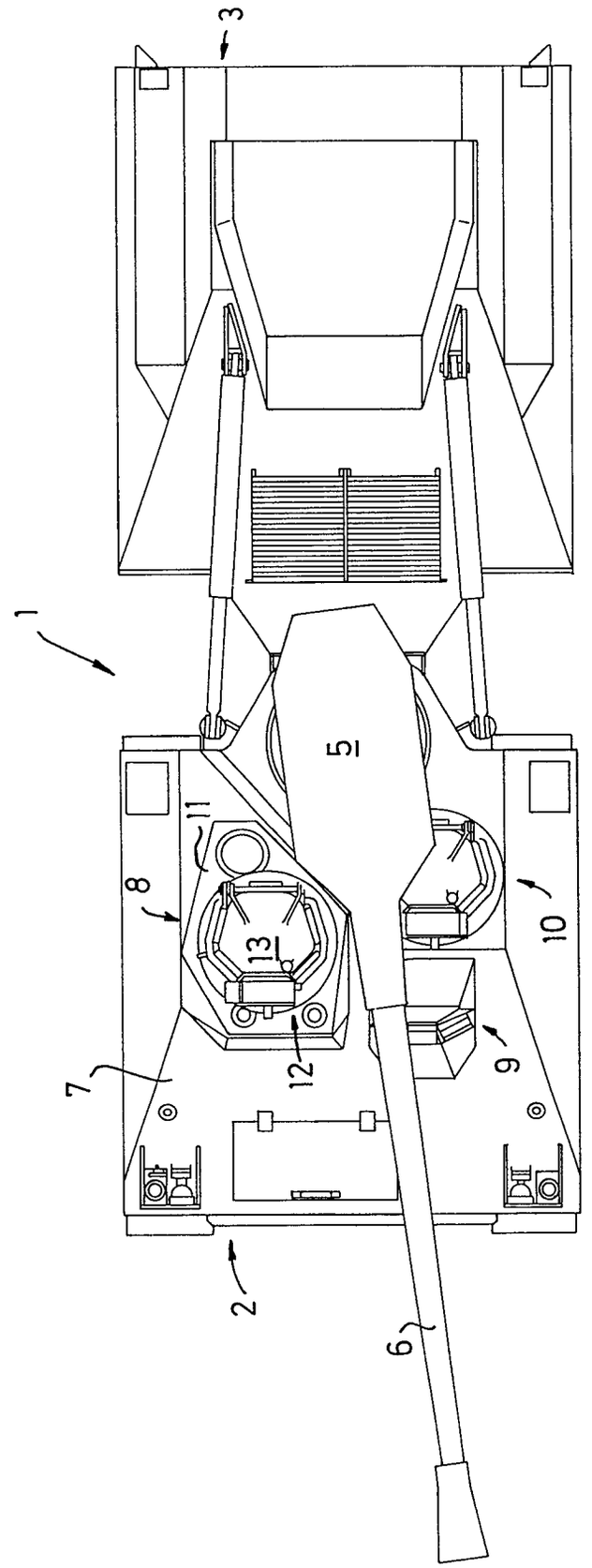

FIG.4

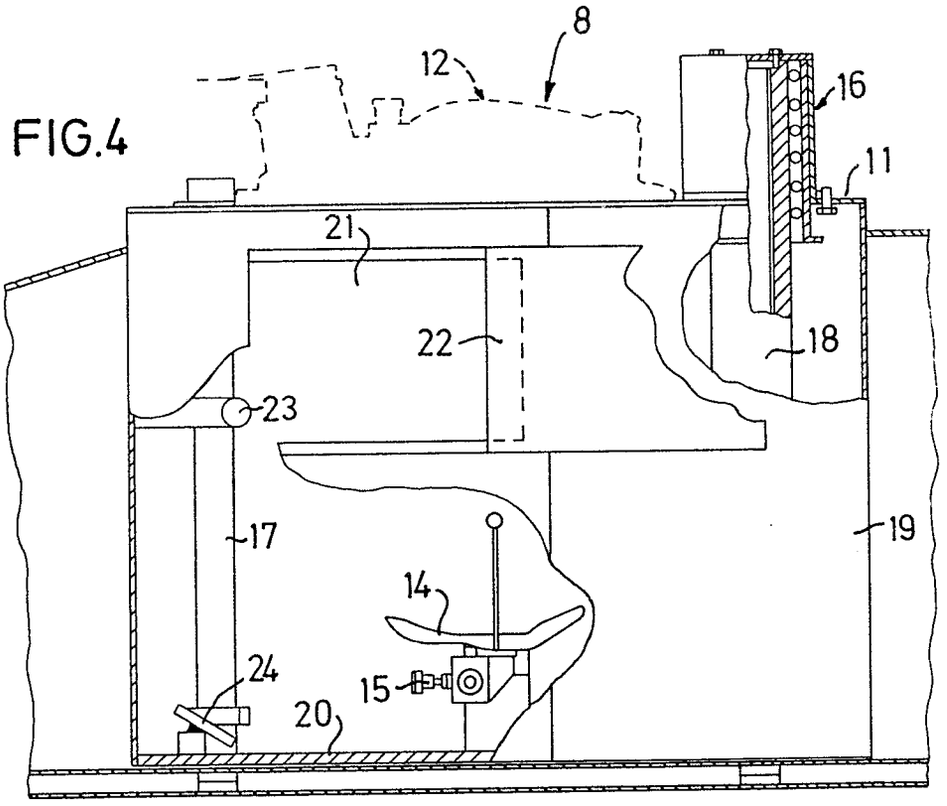

FIG.3