

Description

The invention relates to turrets in armoured vehicles and comprising a saddle mounted on the vehicle via a bearing race enabling it to rotate around a vertical axis, and an oscillating member mounted on the saddle via trunnions so as to be able to oscillate around a horizontal axis.

In this kind of turrets, the gun, the means for loading ammunition and the aiming devices are borne by the oscillating member, so that loading can be automatic or semi-automatic and the rate of firing can be high.

In known turrets of this kind, the bottom surface of the oscillating member comprises a circular skirt which fits inside the saddle and co-operates therewith to protect the crew in any position of the oscillating member. A turret of this kind, comprising a spherical oscillating member and a circular saddle, is described in document FR-A 1 033 862.

The skirt has the general shape of a spherical surface centred on the pivoting axis and consequently narrowing downwards. Consequently the space at the skirt is restricted, which is uncomfortable for the crew and limits the amount of equipment in the oscillating member.

There is also a known turret, (US-A 2 594 198) of the kind defined in the preamble of claim 1, having a

saddle comprising a baseplate made up of a cage having a circular cross-section and resting on an abutment bearing on the floor of the carrying vehicle and held at the vehicle ceiling by a set of rollers disposed in a ring around the cage. The top part of the saddle, above the level of the ring of rollers, has front and rear walls forming portions of spherical surfaces having their bottom edge secured inside the cage to the top edge thereof, and flat side walls disposed along chords of the circle defined by the last-mentioned edge. The top part of the saddle is surmounted by the oscillating member, which at front and rear comprises portions of spherical walls sliding on the front and rear walls of the saddle. The space inside the turret is very limited and, owing to the use of spherical surfaces, the turret is complicated and expensive to make.

The object of the invention is to provide a novel turret of simple construction, with more available space inside the oscillating member and with better protection of the crew.

The turret according to the invention is characterised in that the baseplate of the saddle is disposed approximately in the plane of the bearing race, the front and rear walls of the saddle form portions of cylindrical surfaces having axes coinciding with the axis of the trunnions and cooperating with the side walls in the plane of the saddle baseplate to bound a polygon circumscribed around the circular opening of the baseplate

bounded by the bearing race, and the oscillating member surmounting the saddle is in elevation in the shape of two trapezia joined by their major bases, its side walls comprising inclined panels joined to form dihedral having a projecting edge.

The bottom front and rear walls of the operating member cooperate with the front and rear walls respectively of the saddle, giving effective protection for every position of the oscillating member.

When the turret is tilted backwards (aiming the gun at an angle of elevation) the rear wall of the saddle extends into the oscillating member and may knock against the equipment therein. To prevent this, the wall can be made in two or more parts, the bottom part being secured to the saddle whereas the top part will comprise a shutter connected to the oscillating member so as to be raised thereby when the oscillating member tilts forwards.

In known turrets, sealing-tightness between the oscillating member and the saddle and protection against extreme conditions in this area are provided by an annular bellows secured to the oscillating member and the saddle. The bellows, which is disposed outside the turret, is very vulnerable. According to another feature of the invention, sealing-tightness is provided by bellows disposed inside the oscillating member.

According to another preferred feature of the invention, the front of the oscillating member is a solid round part to which the panels forming the top

and bottom walls are welded.

Other advantageous features of the invention will be clear from the following description with reference to the accompanying drawings which, by way of non-limitative example, show an embodiment of the invention and in which:

Fig. 1 is an exploded perspective view of a turret constructed according to the invention;

Fig. 2 is a view in elevation of the turret, and

Figs. 3A and 3B are views in vertical section of the turret, showing the oscillating member tilted forward and backward respectively.

The drawings show a turret comprising an oscillating member 2 bearing a gun 1, and a saddle 3 and a cage 4 secured to the saddle. The oscillating member surmounts the saddle, i.e. surrounds it completely, and is mounted thereon via two trunnions 9 enabling it to pivot around a horizontal axis; the pivoting is controlled by one or more jacks 7. In plan and in elevation, the oscillating member has the shape of two trapezia joined by their major bases. The front of the oscillating member comprises a solid component 12 cast integrally with the gun barrel 8. Its upper wall 13 is made up of two flat panels forming a very open dihedron; its front and rear lower walls 14, 15 are likewise made up of flat panels. Its side walls 16 are made up of four inclined panels fitted together to form dihedra having jutting edges.

At the rear, the oscillating member is closed by panel 17. The various panels and the part 12 forming the oscillating body are assembled by welding. The oscillating member contains drums 6, an automatic or semi-automatic system for loading ammunition, and other accessories (not shown).

Saddle 3 comprises a baseplate 19, front and rear walls 18, 20 and and two side walls 21. The saddle, at baseplate 19, has a ball race 5 comprising one track secured to the carrying vehicle for rotating the turret through 360° around a vertical axis. The other track of race 5 is secured to the edge of the circular opening formed in baseplate 19 and substantially equal in diameter to cage 4. Walls 19,20 are in the form of portions of circular cylindrical surfaces having axes coinciding with the axis of trunnions 9 and consequently widening upwards from baseplate 19. Each side wall is in the form of a dihedron having a jutting edge, so that seen from above, the saddle is in the form of an irregular hexagon circumscribed round the circular opening of the baseplate bounded by the bearing race 5. The side walls can be flat.

Trunnions 19 are mounted at the top of the side walls of the saddle and of the oscillating member. Since the side walls of the oscillating member extend practically to the level of the saddle baseplate, this feature gives double lateral protection to the crew.

(B)

The inner edge of the bottom front wall 14 of the oscillating member is at a short distance from the front wall 18 of the saddle, a distance which remains constant irrespective of the oscillating member owing to the cylindrical shape of wall 18. The height of wall 18 is sufficient, in cooperation with wall 14 of the oscillating member, to give complete protection for every position of the oscillating member (Figs. 3A and 3B).

Sealing-tightness between walls 14 and 18 can be obtained by seals mounted on the inner edge of wall 14 and rubbing against the cylindrical surface of wall 18; alternatively the same purpose can be served by a bellows, advantageously placed inside the turret.

The slope of wall 14 is chosen so that it and wall 18 form a substantially continuous surface without re-entrant angles, thus giving optimum protection inter alia when the oscillating member is tilted to the rear (Fig. 3B).

The rear wall 20 of the saddle has a reduced height to prevent drums 6 or other accessories mounted in the oscillating member from knocking against the top edge thereof when the oscillating member is tilted towards the rear as shown in Fig. 3B. In order nevertheless to ensure effective protection in all positions of the oscillating member, wall 20 is associated with a sliding shutter 22 having the same shape as wall 20. The shutter, which is guided at its ends by slideways 23,

(14)

is urged downwards by its own weight or by springs.

It has a flange facing the exterior and disposed above the edge of the rear wall 15 of the oscillating member, so that when the oscillating member tilts forward, shutter 22 is raised and closes the space between wall 15 of the oscillating body and the top edge of wall 20 of the saddle, as shown in Fig. 3A.

Sealing-tightness between walls 15 and 20 can be obtained by sliding seals or by a bellows which can be placed inside the turret.

Sealing-tightness between the side walls of the saddle and of the oscillating member is provided by bellows 24.

Armour plates or other protective components can be placed between the side walls of the saddle and the oscillating member.



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Claims

1. A turret for an armoured vehicle comprising a saddle (3) mounted on the vehicle via a bearing ring (5) enabling it to rotate around a vertical axis, and an oscillating member (2) mounted on the saddle via trunnions (9) enabling it to oscillate around a horizontal axis, the saddle comprising a baseplate (19) and front, rear and side walls (18, 20, 21) and surmounted by the oscillating member, characterised in that the baseplate (19) of the saddle is disposed approximately in the plane of the bearing race (5), the front and rear walls (18, 20) of the saddle form portions of cylindrical surfaces having axes coinciding with the axis of the trunnions (9) and cooperating with the side walls (21) in the plane of the baseplate (19) to bound a polygon circumscribed around the circular opening of the baseplate bounded by the bearing race (5), and the oscillating member (2) in elevation is in the shape of two trapezia joined by their major bases, its side walls (16) comprising inclined panels joined to form dihedra having a projecting edge.

2. A turret according to claim 1, characterised by a shutter (22) associated with the rear walls (15, 20) of the oscillating member (2) and the saddle (3), the shutter being raised by the oscillating member



(16)

when it pivots forwards and closing the space between the oscillating member and the rear walls of the saddle.

3. A turret according to claim 1 or 2, characterised in that bellows disposed inside the oscillating member (2) provides a seal between the oscillating member and the saddle (3).

4. A turret according to claims 1, 2 or 3, characterised in that the front of the oscillating member (2) is a solid rounded part to which the front panel of the upper wall (13) and the front lower wall (14) are welded.