Naval platform of the type comprising a missile pit

The present invention relates to a naval platform.

More specifically, the invention relates to a naval platform of the type including a missile pit above the outer deck of the platform and defined by at least two side walls constituting bulwarks extending at the periphery of the platform.

These walls are also designed to mask, for an incidence close to the horizontal of the platform, one or more missiles arranged on at least one inclined ramp for the launching thereof above a bulwark of the platform.

Means for evacuating the gases or missiles are also provided in this pit.

One such naval platform is for example known from document FR-A-2,933,373.

In this prior document, the means for evacuating gases comprise a pipe emerging on an orifice provided in a side bulwark of the missile pit.

Such a system is also visible on ships of the FREMM type.

Other platforms are described in US 7 997 220 and US 2015/053073.

The aim of the invention is to further improve these platforms and to make them compatible with several missiles.

In particular, the aim of the invention is to further improve the protection of the missiles against asymmetrical threats such as, for example, small-caliber artillery or the like, while further improving the radar signature of this platform, and while satisfying the functional constraints imposed by the operational availability requirements of weapons systems on such a platform.

The aim of the invention is also to allow an adaptation on narrow ships while opting for a modular construction minimizing the interfaces with the ship.

The aim of the invention is lastly to be compatible with several missiles having acceleration propellers of different types.

To that end, the invention relates to a naval platform of the type comprising a missile pit above the outer deck of the platform and defined by at least two side walls constituting bulwarks extending at the periphery of the platform and masking, for an incidence close to the horizontal of the platform, one or more missiles arranged on at least one inclined ramp for the launching thereof above a bulwark of the platform, and means for evacuating the gases or missiles, characterized in that the means for evacuating the gases comprise at least one elbow duct forming a gas deflector, one end of which is positioned opposite the rear of the missile and another end of which is facing the upper portion of the missile pit above the deck of the platform, and in that said at least one missile launching ramp and the gas deflector-forming elbow duct include independent support and fastening means on the rest of the platform.

According to other features of the platform according to the invention, considered alone or in combination:

- the end of the deflector-forming duct oriented toward the upper part of the pit extends substantially vertically from the latter;

- the or each missile launching ramp includes associated missiles in a column and/or row;

- the deflector-forming elbow duct includes a tunnel for guiding the gases associated with each column and/or row of missiles;

- the tunnels for guiding the gases are delimited by at least one inner partition of the deflector-forming elbow duct;

- the other end of the duct, oriented toward the upper part of the pit, is integrated into a technical compartment housed against the corresponding bulwark of the platform;

- the other end of the duct, oriented toward the upper part of the pit, is located at a lower level than that of the walls of the platform;

- the pit includes at least two missile ramps, mounted opposite one another and offset in the pit, so as to be able to launch missiles on either side of the latter and therefore of the platform;

- elbow ducts forming identical deflectors are associated with the ramps.

The invention will be better understood upon reading the following description, provided solely as an example, and done in reference to the appended drawings, in which:

- figure 1 shows a partial top view of a platform of the state of the art, equipped with a missile pit;

- figure 2 shows a schematic perspective view illustrating a missile pit configured for a platform according to the invention;

- figure 3 shows a detailed view of means for evacuating gases included in the composition of a platform according to the invention;

- figure 4 shows a sectional view illustrating the installation of such a missile pit in a platform according to the invention; and

- figure 5 shows a perspective view of means for discharging gases included in the composition of a platform according to the invention.

Figure 1 in fact shows a naval platform, designated by general reference 1, which is for example formed by a ship of the frigate type, such as a frigate referred to as FREMM.

Such a platform for example includes a missile pit, designated by general reference 2 in this figure.

Such a missile pit is located above the outer deck of the platform and is delimited by at least two side walls, for example 3 and 4.

These walls constitute bulwarks extending at the periphery of the platform and masking, for an incidence close to the horizontal of the platform, one or more missiles arranged on at least one inclined ramp for the launching thereof above a bulwark of the platform.

In the example illustrated in this figure 1, the pit for example includes two missile ramps 5 and 6, mounted opposite one another and offset in the pit, so as to be able to launch missiles on either side of this platform.

Means for evacuating gases from the missiles are also provided and the latter comprise, for example, a duct emerging in a lateral orifice such as the orifice designated by general reference 7, arranged in the bulwark 3 of the platform.

As previously indicated, such a structure can have a certain number of drawbacks such as its low capacity to adapt to narrow ships and its strong interdependence with the structure of the ship.

Such a structure can be improved in terms of the protection of the missile(s) against asymmetrical threats and with respect to the radar signature by suppression of the emerging lateral duct.

To resolve these problems in the platform according to the invention, the means for evacuating gases from the missiles are compact and include at least one elbow duct, forming a deflector for the gases, one end of which is placed opposite the rear of the missile and as close as possible, and another end of which is oriented toward the upper part of the missile pit, above the deck of the platform with no duct emerging in the bulwark and with no interfacing with the latter.

Figure 2 for example shows a missile pit intended to be included in the composition of a platform according to the invention.

In this figure 2, this missile pit is designated by general reference 10 and is for example open above the outer deck of the platform.

This missile pit is delimited by at least two side walls, designated by references 11 and 12 in this figure 2, constituting bulwarks extending at the periphery of the platform.

These walls mask, for an incidence close to the horizontal of the platform, one or more missiles arranged on at least one inclined ramp for the launching thereof above a bulwark of the platform.

In the illustrated example, at least two missile ramps, mounted opposite one another and offset in the pit, are illustrated in designated by references 13 and 14 and

therefore make it possible to launch missiles on either side of this pit, and therefore of the platform.

In the illustrated example, each ramp includes associated missiles in columns and/or rows, for example four.

Of course, other arrangements of these missiles may be considered.

These missiles are for example missiles of the sea-to-sea or other type.

These ramps 13 and 14 are fixed on the deck of the platform by support means for example designated by general references 15 and 16.

These support means can for example be stationary or movable and screwed on the deck or the like.

The pit also includes means for evacuating the gases from the missiles.

Figures 2, 3, 4 and 5 show, in more detail, the means for evacuating the gases, designated by general reference 17, associated with the rear end of the missiles arranged in the ramp 14.

Indeed, and as illustrated in these figures, the means for evacuating gases 17 include at least one elbow duct 18 forming a deflector for the gases, one end 19 of which is placed opposite the rear of the missile and another end 20 of which is oriented toward the upper part of the missile pit, above the deck of the platform.

This other end 20 of the duct, oriented toward the upper part of the pit, is for example located at a lower level than that of the walls of the platform.

Indeed, and unlike the platforms of the state of the art, in which the gases were evacuated through an orifice arranged in a bulwark of the platform, in the platform according to the invention, the evacuation of the gases is done toward the upper part of the pit, above the deck of the platform.

As illustrated, the end of the deflector-forming duct 18, oriented toward the upper part of the pit, can extend, for example, substantially vertically from the deck of the latter.

The duct may or may not have discontinuous sections and may or may not be interfaced with the missiles.

These evacuation means 18 are also fixed on the deck of the platform by support means, designated by general reference 21 in these figures, for example distinct and separate from the support means 16 of the corresponding missile ramp.

These support means 21 can also be fixed, for example, by screwing or the like, on the deck of the platform.

As shown in particular in figures 3, 4 and 5, the elbow duct 18 for evacuating the gases may include a tunnel for guiding the gases associated with each column and/or row of missiles.

Thus, for example, inner partitions of the elbow duct can be used to define these corresponding tunnels for guiding the gases and to separate the disturbances caused upon firing one missile on the other missiles.

Two partitions, for example 22 and 23, are thus visible in figures 3 and 5 and partially in figure 4, and make it possible to define these different tunnels associated with the different missiles.

As illustrated in particular in figure 2, the ramps and the deflector-forming elbow ducts can be identical on each side of the pit.

Thus, it is possible to find a symmetrical structure with identical parts (modules) mounted opposite one another.

Furthermore, and as also illustrated in these figures, the end of the duct oriented toward the upper part of the pit can also be integrated into a technical compartment housed against the corresponding bulwark of the platform.

These technical compartments are for example designated by general references 24 and 25 in figure 2, and for example comprise access ladders, guardrails, etc.

One can then see that such a structure has a certain number of advantages, in particular in terms of the protection of the missiles.

Indeed, these missiles are fully protected behind the bulwarks of the platform, the latter no longer having any side orifice.

Such a structure also makes it possible to improve the radar and visual signature of the platform by doing away with a duct in the bulwark.

Furthermore, identical parts can be used to fasten the missile ramps and the means for evacuating the gases on the platform. These parts are interchangeable.

These different members can also be embedded and fixed on the platform at the end of assembly and mounting thereof.

Of course, other arrangements may be considered.

CLAIMS

1.- A naval platform of the type comprising a missile pit (10) above the outer deck of the platform and defined by at least two side walls (11, 12) constituting bulwarks extending at the periphery of the platform and masking, for an incidence close to the horizontal of the platform, one or more missiles arranged on at least one inclined ramp (13, 14) for the launching thereof above a bulwark of the platform, and means (17) for evacuating the gases or missiles, characterized in that the means (17) for evacuating the gases comprise at least one elbow duct (18) forming a gas deflector, one end (19) of which is positioned opposite the rear of the missile and another end (20) of which is facing the upper portion of the missile pit (10) above the deck of the platform and in that said at least one missile launching ramp (13, 14) and the gas deflector-forming elbow duct (18) include independent support and fastening means (15, 16, 21) on the rest of the platform.

2.- The naval platform according to claim 1, characterized in that the end (20) of the deflector-forming duct (18) oriented toward the upper part of the pit (10) extends substantially vertically from the latter.

3.- The naval platform according to any one of the preceding claims, characterized in that the or each missile launching ramp (13, 14) includes associated missiles in a column and/or row.

4.- The naval platform according to claim 3, characterized in that the deflector-forming elbow duct (18) includes a tunnel for guiding the gases associated with each column and/or row of missiles.

5.- The naval platform according to claim 4, characterized in that the tunnels for guiding the gases are delimited by at least one inner partition (22, 23) of the deflector-forming elbow duct (18).

6.- The naval platform according to any one of the preceding claims, characterized in that the other end (20) of the duct (18), oriented toward the upper part of the pit, is integrated into a technical compartment (24, 25) housed against the corresponding bulwark of the platform.

7.- The naval platform according to any one of the preceding claims, characterized in that the other end (20) of the duct, oriented toward the upper part of the pit, is located at a lower level than that of the walls of the platform.

8.- The naval platform according to any one of the preceding claims, characterized in that the pit includes at least two missile ramps (13, 14), mounted opposite one another and offset in the pit, so as to be able to launch missiles on either side of the latter and therefore of the platform (10).

9.- The naval platform according to claim 8, characterized in that elbow ducts (18) forming identical deflectors are associated with the ramps (13, 14).