Title: PIRACY PREVENTION SYSTEM

Abstract: The current invention is related to a piracy prevention system, making use of trolling lines attached to both sides of a ship to be protected, whereby the trolling lines are rolled around a folding or extendable boom when not in use; said boom can be unfolded in a dangerous area and the trolling lines can be run out which can block the drive of the pirates' vessel. In general, the trolling lines have a length of around 50-1000 metres and a thickness of around 3-10 mm. The trolling lines can be equipped with twines or flosses and usually have a length of 0.5-2 metres. In general, the trolling lines are made of synthetics such as polyester, nylon, etc. Finally, the invention is related to a ship of which both the bow and the stern are equipped with piracy prevention systems in accordance with the invention.
Piracy prevention system

The current invention is related to a piracy prevention system that makes use of trolling lines attached to both sides of a ship that has to be protected. It is known that piracy poses a huge problem to the shipping industry in certain world seas, currently especially off the coast of Somalia. Ships are regularly attacked and besieged by pirates along the Somali coast, whereby crewmembers are taken hostage or even shot dead in order to obtain large sums of money from shipping companies and insurers.

In order to prevent piracy, shipping companies have addressed governments to, for example, take marines on board who could prevent or avert attacks of pirates. The governments, however, are extremely unresponsive and not prepared to do so for all sorts of reasons.

Still, ships are accompanied by marine vessels in order to prevent piracy.

Of course, this is a very expensive issue and a continuous search is on its way for a system that can be easily attached to ships, because of which accompaniment by marine vessels can be refrained from and the piracy can be prevented effectively by the crew.

The current invention intends to realise a simple and efficient piracy prevention system.

The invention therefore provides a piracy prevention system, making use of trolling lines attached to both sides of a ship to be protected, whereby the trolling lines are rolled around a folding or extendable boom when not in use; said boom can be unfolded or extended in a dangerous area and the trolling lines can be run out or rolled out - be it from the bridge or not - and can block the drive of the pirates' vessel. Therefore the run out trolling lines can block the drive propeller of the pirates' vessel.

For rolling out or up the trolling lines, it has proven profitable to make use of trolling lines that are
preferably woven, attached to the boom by means of reels that can be powered by means of an electric motor.

It should be noted that the trolling lines and/or mats could be operated from the bridge of the ship, be it separately or together, in such way that the location of the trap mats, compared to each other, can vary as desired.

The piracy prevention system sees to it that the propeller drive of the pirates’ vessel stops since it becomes entangled in a bundle of lines that are drawn by the ship through the water.

In general, the pirates will attempt to approach a ship in the wake so that changes untimely discovered are limited to the minimum. To this means, the pirates’ vessel will possibly cross the wake of the attacked ship several times.

The piracy prevention system, in accordance with the invention, sees to it that the pirates’ vessel is immobilised by running out trolling lines on starboard and portside of the ship along a length between 50-1,000 metres, depending on the type of vessel/ship, and furthermore the trap mats attached to the trolling lines on starboard and larboard will entangle themselves in run out position around the propeller, which is subsequently immobilised so that the pirates’ vessel comes to a halt.

The boom is unfolded by the time the ship arrives in a dangerous area. The trap mats are only run out by the time suspicious vessels approach the ship.

However, the trolling lines remain continuously run out during dangerous passages.

In order to prevent that the trolling lines can be noticed by pirates, they can be fabricated from synthetics with a natural colour, comparable to a fishing line, that is not or hardly visible in the water.

In general, trolling lines are made of synthetics such as polyester, nylon, etc., be it enhanced or not with a very strong yarn of another synthetics family. The thickness of the lines varies from at least 3 mm diameter to a thickness of 10 mm for the trolling lines. The
trolling lines can be provided with twines or flosses that are preferably woven through the trolling lines.

It should be noted that it is preferred that the lines are woven lines in order to prevent twisting and therefore to prevent that the lines become tangled.

Such twines and flosses have a length of 0.5-2 metres and are meant to pull the trolling line into the propeller drive when the propeller drive is provided with a basket or cage.

The trolling lines or trap mats that are run out from the boom are provided with thin lines – also called a mat pattern. These thin lines have a thickness of 1-5 mm.

Usually, the line that is closest along the hull of the ship has such a length that it runs amidships along the ship.

In order to obtain a more efficient operation of the system, the trap mats are positioned step-by-step towards the rear. It should be noted that the trolling lines of the outer two trap mats could run over a distance of 50 - 1 000 metres if desired.

For an even more efficient operation, it is also profitable that several trap mats are attached behind one another per trolling line.

The trap mats are usually attached to a bracket frame; said bracket frame is preferably designed in synthetics or light metal and is attached to the trolling line, where equal space occurs on both sides of the trolling line.

To the bracket frame or shaft, a shaft or another bracket frame is attached, to which usually ten or more thin lines are attached. The inner thin lines or trap mats have a length of around 50% of the vessel's length, whereby the lines that run closest along the ship’s casing will stop before the propeller of the vessel, so that they cannot end up in the vessel’s own propeller drive, whereas the lines that are further removed from the ship’s casing can be longer.

When a pirates' vessel becomes entangled in the
lines of a trap mat, it will be pulled off altogether with
the shaft or other bracket frame.

The shaft or other bracket frame is made of
flexible metal or synthetics, with the effect that this
should contribute to prolonged cutting out of the engine
of the pirates' vessel.

If the propeller drive of the engine of the
pirates' vessel becomes entangled in the trolling line, it
will break off at the boom, because of which the pirates'
vessel is not being towed by the ship.

Finally, when the danger has ceased and the ship
has left the dangerous area, the lines are rolled-up by
the boom and the boom is folded up again.

If desired, the trap mats at the stern can be
pulled in by means of a reel from the bridge of the ship,
after leaving the dangerous area.

The invention will now be further elaborated by
means of the attached drawings.

Figure 1 is a schematic display of the piracy
prevention system without combating provision at the stern.

Figures 2 shows the thin lines attached to both
sides of the ship, also called trap mates.

Figure 3 displays a ship that is provided with
thin lines at the stern, also called trap mats.

Figure 4 shows a design, in accordance with the
invention, whereby the lines can be rolled out and in by
means of reels, whilst making use of an electric motor.

Figure 5 displays a design of the invention,
whereby the stern is provided with lines that can be
rolled out and in like in Figure 4, by means of reels,
whilst making use of an electric motor.

Figure 6 shows a profitable design of the
invention, whereby the trolling lines are rolled out by
means of reels that are attached to the deck of the ship
in a reels cabinet.

The ship 1 to be protected in Figure 1 as a
portside 1a and a stern 1b.

At the bows, starboard and portside, the ship is
equipped with folding booms 2. When unfolded, the booms are anchored with run out lines 3.

On both sides of the ship, the booms in the design of Figure 1 are provided with four trolling lines 4, to which the number of lines is not limited, to which thin lines, so-called trap mats 6 are attached in varying distance towards each other, in such a way that the trap that is closest to the ship’s casing is shorter than the length of the ship, and is preferably 50% of the ship’s length.

The booms 2 can be folded at a folding point 5. The trolling lines 4 in general have a thickness of 3-10 mm and have a length of 50-1000 metres.

Usually, the trolling lines 4 are equipped with twines or floss that are preferably woven into the lines. The twines or flosses have a length of 0.5-2 metres. The twines or flosses are not displayed in the Figures.

The trolling lines 4 are made of synthetics. Suitable trolling lines are made of synthetics such as polyester, nylon, etc., whereby the colour of the lines is preferably natural, so that they cannot or hardly be observed with the naked eye in the seawater. The thin lines or trap mats are indicated with reference numbers 6.

Figure 2 is a detailed display of the thin lines or trap mats 6 that are attached to light metal, synthetic or wooden bracket frames 7, via lines 9′, which are subsequently attached to the bracket frame 8, also made of light metal, synthetics or wood, via lines 9 to the trolling line 4.

Figure 3 shows a ship 1, in accordance with the invention, that is both at the bow side and the stern 1b equipped with the piracy prevention system in accordance with the invention.

At portside and starboard side, thin lines 4 or trap mats 6 are attached, as displayed in Figure 2, which, if desired, can be run out or pulled in from the bridge as well.

These thin lines or trap mats 6 contribute to a
more efficient piracy prevention system in accordance with the invention, and especially in case the pirates' vessels approach the ship from behind.

The thin lines or trap mats 6 are attached to the stern 1b by means of attachment points 10.

Figure 4 shows a ship 1 that is provided on both sides with a boom 2 on which reels 12 are attached for rolling the lines off and on. Rolling off and rolling up the lines 14. Rolling the lines 14 off and up can take place by means of an electric motor 11.

During normal passage, meaning without the threat of pirates, the boom 2 is inboard, completely with the rolled-up reels 12. In case of a threat by pirates, or in a dangerous area, the booms 2 are turned outboard, completely with rolled-up reels 12, along the folding point 5. When the boom 2 is correctly fixed, the end of the boom 2 is supported by some run out lines 3. Hereafter, the reels 12 are fully rolled off so that the lines 14 end up at the correct place in the water. Rolling off is done by driving the turning part of the boom to which all reels are attached, by means of the motor 11 that turns outside together with the fixed part of the boom 2.

When the threat is no longer there, the lines 4 are rolled-up by means of the reels 12 and motor 11, and the boom 2 is turned inboard around the folding point 5.

Figure 5 shows a design of the invention in which the stern 1b of the ship 1 is also equipped with the piracy prevention system in accordance with the invention. As such, the system is attached to the stern 1b of the ship 1 by means of lines 13. For the operation of the system, we refer to the description of Figure 4.

Figure 6 shows a ship 1 that is equipped with a bow side 1a and a stern 1b. For the other parts we refer to the description of Figure 1. The reels other than in Figure 5 are attached to the deck in a cabinet 15. From there, the lines 4 can be rolled out or up if desired by means of a non-displayed electric motor.

The lines 4 respectively run via guide 17 on the
stern and the boom 2 along the ship 1. The length of the lines 4 and the material they are made of have already been indicated in the description.

On both sides, the boom 2 is provided with retainers/conductors 14 that see to tightening the trolling lines 4 at a certain distance compared to the seawater. Furthermore, the retainer 14 sees to it that the lines 4 are released into the water as soon as possible; after all, the lines 4 are only effective if they are inside the water.

Similar retainers 14 are also attached to the stern of the ship. At the stern, the trolling lines are guided by means of reels (not displayed) and guide 17 to the retainer 14. An adjustable cable 16 is attached to the retainer 14 and stern 1b of the ship 1, which sees to it that the retainer 14 - when not in use - can be fully hoisted upwards. During use, it is also possible to adjust the height depending on the surge.

If desired, the retainer 14 can be made heavier with water.

The reels are attached in reel cabinets 15 on deck. This construction simplifies the operation and control of the reels and enhances the rolling off of the lines 4.

The trolling lines 4 are different in length compared to one another, because of which a better functioning of the trolling lines 4 is enhanced and thus a more reliable system is available.

Furthermore, the ship 1 is equipped with trolling lines 4 as well as with booms 2 that can be folded and unfolded by means of folding point 5.

Needless to say that the current invention is not limited to the designs of the invention as displayed in Figures 1, 2, 3, 4, 5 and 6.
List of reference numbers

1. Ship
1a. Stem
5 1b. Stern
2. Boom
3. Run out line
4. Trolling line
5. Folding point boom
10 6. Thin lines, trap mats
7. Bracket frame
8. Bracket frame
9,9a Lines
10. Attachment points for thin lines to stern
15 11. Electric motor
12. Reel
13. Attachment lines
14. Retainer
15. Reels cabinet
20 16. Adjustable cable
17. Guide
CLAIMS

1. Piracy prevention system making use of trolling lines attached to both sides of the ship to be protected, characterised in that the trolling lines are rolled-up when out of use on or around a foldable or extendable boom; said boom can be unfolded in a dangerous zone and the trolling lines can be run out that could block the drive of the pirates' vessel.

2. Piracy prevention system in accordance with claim 1, characterised in that the trolling lines have a length of around 50-1000 metres.

3. Piracy prevention system in accordance with claims 1 or 2, characterised in that the trolling lines have a thickness of 3-10 mm.

4. Piracy prevention system in accordance with claims 1-3, characterised in that the trolling lines are provided with twines or flosses.

5. Piracy prevention system in accordance with claim 4, characterised in that the twines or flosses are woven into the trolling line.

6. Piracy prevention system in accordance with claims 4 or 5, characterised in that the twines or flosses have a length of 0.5-2 metres.

7. Piracy prevention system in accordance with claims 1-6, characterised in that the trolling lines are made of synthetics, if desired made heavier at the end.

8. Piracy prevention system in accordance with claims 1-7, characterised in that the trolling lines are made of synthetics such as polyester, nylon, etc., if desired enhanced with strong thread of another synthetics family.

9. Piracy prevention system in accordance with claims 1-8, characterised in that the colour of the lines is natural.

10. Piracy prevention system in accordance with claims 1-9, characterised in that the trolling lines on both sides of the ship are equipped with one or more thin
lines or trap mats placed in line or not.

11. Piracy prevention system in accordance with claim 10, characterised in that the thin lines or trap mats are attached to the separate trolling lines at various distances from one another.

12. Piracy prevention system in accordance with claims 10 and 11, characterised in that the thin lines or trap mats have a thickness of 1-5 mm, made heavier at the end or not.

13. Piracy prevention system in accordance with claims 10-12, characterised in that the trap mats are connected to the trolling lines by means of bracket frames.

14. Piracy prevention system in accordance with claim 13, characterised in that the bracket frames are made of light metal, wood or synthetics.

15. Piracy prevention system in accordance with claim 14, characterised in that shafts are attached the bracket frame.

16. Piracy prevention system in accordance with claim 15, characterised in that, for example, ten or more thin lines or trap mats are attached to the shaft.

17. Piracy prevention system in accordance with claim 16, characterised in that the thin lines or trap mats have a length that is shorter than the length of the ship and preferably 50% of the ship’s length.

18. Piracy prevention system in accordance with one of the previous claims 1-17, characterised in that the stern of a ship is on both sides equipped with thin lines or trap mats that cannot be run out or pulled in from the bridge of the ship.

19. Piracy prevention system in accordance with claim 18, characterised in that the thin lines or trap mats can separately be run out or pulled in from the bridge of the ship or not.

20. Piracy prevention system in accordance with claims 1-19, making use of trolling lines attached to both sides of and/or the stern of a ship to be protected, whereby the trolling lines are rolled-up when not in use
on or around a folding or extendable boom; said boom can be unfolded or extended when arriving in a dangerous zone and the trolling lines can be run out, which can block the drive of the pirates’ vessel, characterised in that the trolling lines, which are preferably woven, are attached to the boom by means of reels, whereby the trolling lines can be rolled off or up whilst making use of an electric motor by powering the turning part of the boom.

21. Piracy prevention system in accordance with claims 1-9 making use of trolling lines (4) attached to both sides of and/or on the stern (1b) of a ship (1) to be protected, whereby the trolling lines (4) are rolled-up on a reel when not in use, which reels can be located in reel cabinets (15) on the deck and the lines (4) are rolled out or pulled in by means of the reels.

22. Piracy prevention system in accordance with claim 21, whereby the stern is equipped with reel cabinets (15) for the reels, with which the lines (4) can be rolled out or pulled in by means of the guide (17).

23. Piracy prevention system in accordance with claims 21 or 22, whereby retainers (14) are attached for keeping the lines (4) parallel and for keeping the lines (4) above a certain distance from the sea level.

24. Ship of which both bow and stern are equipped with piracy prevention systems in accordance with one of the previous claims 1-23.
### INTERNATIONAL SEARCH REPORT

**A. CLASSIFICATION OF SUBJECT MATTER**

**INV.** B63G13/00  
**ADD.**

According to international Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

B63G B63B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of database and, where practical, search terms used)

EPO-Internal

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C.

**X** See patent family annex.

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**INTERNATIONAL SEARCH REPORT**

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