it is known to increase the weight of an end of the heaving line to be thrown, such as by tying a large knot (known as a "monkey paw" or a "monkey's fist") in the heaving line. An example monkey's fist knot is shown in Figure 13. In some cases, additional weight, such metal objects e.g. bolts, is included in the knot to help the end of the heaving line to be thrown accurately. However, this is undesirable, since the AB could be injured if hit by a monkey's fist in the heaving line. Moreover, in extreme cases, the tugboat itself, such as its deck, may be damaged by the impact of a heavy monkey's fist.

[0005] Furthermore, conditions at sea or even in large harbours can make it difficult for tugboat crew members to get hold of a line of the tugboat, such as a messenger line, or to align and tie the line of the tugboat to a line of the other vessel, such as a heaving line.

[0006] Embodiments of the present invention aim to address the aforementioned problems.

SUMMARY

[0006a] According to a first aspect of the present invention, there is provided a line handling system for locating on a tugboat, wherein the tugboat is for assisting a marine vessel to manoeuvre and the tugboat comprises a hull having a perimeter; wherein the line handling system comprises a line guide mechanism that protrudes, or is positionable to protrude, away from the hull for guiding a line of the marine vessel towards a predetermined region of the perimeter, when the line handling system is located on the tugboat.

[0006b] According to a second aspect of the present invention, there is provided a tugboat for assisting a marine vessel to manoeuvre, the tugboat comprising: the line handling system as defined in the first aspect; and the hull having the perimeter.

[0007] There is disclosed a tugboat for assisting a marine vessel to manoeuvre, the tugboat comprising: a hull having a perimeter, and a line handling system comprising a line guide mechanism that protrudes, or is positionable to protrude, away from the hull for guiding a line of the marine vessel towards a predetermined region of the perimeter.

[0008] Since the line guide mechanism is for guiding the line of the marine vessel towards the predetermined region of the perimeter, it is possible for the line (such as a heaving line) to be thrown towards the line guide mechanism, rather than towards a deck of the tugboat or an AB or other crew member standing on the deck. Accordingly, crew members on the tugboat are less likely to be injured, and the tugboat itself it less likely to be damaged, by a line thrown from the marine vessel.

CLAIMS:

1. A line handling system for locating on a tugboat, wherein the tugboat is for assisting a marine vessel to manoeuvre and the tugboat comprises a hull having a perimeter;

wherein the line handling system comprises a line guide mechanism that protrudes, or is positionable to protrude, away from the hull for guiding a line of the marine vessel towards a predetermined region of the perimeter, when the line handling system is located on the tugboat.

2. The line handling system of claim 1, wherein the line handling system comprises an actuatable coupling mechanism for coupling the line of the marine vessel to a second line when the line of the marine vessel is at the predetermined region of the perimeter, when the line handling system is located on the tugboat.

3. The line handling system of claim 2, wherein the actuatable coupling mechanism is for coupling the line of the marine vessel to the second line by applying a connector to the line of the marine vessel and the second line.

4. The line handling system of any one of claims 1 to 3, wherein the line handling system comprises a line engager for engaging with the line of the marine vessel when the line of the marine vessel is at the predetermined region of the perimeter.

5. The line handling system of any one of claims 1 to 4, wherein the line guide mechanism comprises at least one guide device, the or each guide device comprising a guide arm that protrudes, or is positionable to protrude, away from the hull when the line handling system is located on the tugboat.

6. The line handling system of claim 5, wherein the guide arm is movable relative to the hull when the line handling system is located on the tugboat.

7. The line handling system of claim 5 or claim 6, wherein the at least one guide device comprises first and second such guide devices.

8. The line handling system of claim 7, wherein the first and second such guide devices are arranged so that the respective guide arms of the first and second guide devices are movable towards and away from each other.

9. The line handling system of any one of claims 5 to 8, wherein the or each guide device comprises a secondary guide that is movable relative to the guide arm of the respective guide device to drive the line along the guide arm of the respective guide device towards the predetermined region of the perimeter, when the line handling system is located on the tugboat.

10. The line handling system of claim 9, wherein the secondary guide is rotatable relative to the guide arm of the respective guide device to drive the line along the guide arm of the respective guide device towards the predetermined region of the perimeter, when the line handling system is located on the tugboat.

11. The line handling system of claim 9 or claim 10, wherein the at least one guide device comprises first and second guide devices arranged so that the respective secondary guides of the first and second guide devices are movable towards each other and relative to the hull, when the line handling system is located on the tugboat.

12. The line handling system of claim 11, wherein, during movement of the respective secondary guides of the first and second guide devices relative to the hull, when the line handling system is located on the tugboat, the secondary guides cross over each other at a cross over point that moves along one or both of the secondary guides.

13. The line handling system of claim 12, wherein each of the respective secondary guides of the first and second guide devices has a parabolic shape.

14. The line handling system of claim 6 or any claim dependent thereon, wherein the line guide mechanism comprises a drive mechanism for driving movement of the guide arm relative to the hull, when the line handling system is located on the tugboat.

15. The line handling system of claim 14, wherein the line guide mechanism comprises a user operable controller for controlling the drive mechanism.

16. The line handling system of claim 9 or any claim dependent thereon, comprising a drive device for driving movement of the secondary guide relative to the hull and the guide arm of the respective guide device, when the line handling system is located on the tugboat.

17. The line handling system of claim 16, comprising a user operable controller for controlling the drive device.

18. A tugboat for assisting a marine vessel to manoeuvre, the tugboat comprising:
the line handling system of any one of claims 1 to 17; and
the hull having the perimeter.

19. The tugboat of claim 18, wherein the line handing system is according to any one of claims 5 to 17, wherein the guide arm is rotatable relative to the hull about a pivot point so as to move an end of the guide arm distal to the pivot point towards and away from an axis that extends in a fore and aft direction of the tugboat.

20. The tugboat of claim 18 or claim 19, wherein the line guide mechanism is movable relative to the hull between a deployed position, at which the line guide mechanism protrudes away from the hull for guiding the line of the marine vessel towards the predetermined region of the perimeter, and a stowed position, at which the line guide mechanism does not protrude away from the hull or protrudes away from the hull to a lesser extent than in the deployed position.

21. The tugboat of any one of claims 18 to 20, wherein the line guide mechanism is movable relative to the hull to an operation position, at which the line guide mechanism is for guiding movement of a portion of a line of the tugboat towards the predetermined region of the perimeter.

22. The tugboat of claim 21, wherein the line handing system is according to claim 2 or claim 3, and wherein the second line is the line of the tugboat.

23. The tugboat of any one of claims 18 to 22, wherein the line handling system is movable relative to the hull so as to vary the predetermined region of the perimeter towards which the line guide mechanism is able to guide the line of the marine vessel.

24. The tugboat of claim 23, wherein the line handling system is rotatable relative to the hull about an axis that passes through the hull so as to vary the predetermined region of the perimeter towards which the line guide mechanism is able to guide the line of the marine vessel.