CLAIMS

1. A method of maintaining a maritime fender assembly mounted to a berthing structure, the maritime fender assembly comprising:

a frame assembly for releasably receiving a substantially flat panel assembly, the panel assembly having at least one outwardly facing wear pad for contact with a vessel, the frame assembly comprising:

a pair of opposing channels into which the panel assembly is slidingly received, the pair of opposing channels being, in use, substantially vertical; and

a panel assembly securing means having a release configuration whereby the panel assembly is removable from the pair of opposing channels and an engaged configuration whereby the panel assembly is secured in the pair of opposing channels; and

a resilient fender element mounted between the frame assembly and the berthing structure, the resilient fender element for absorbing forces on the panel assembly and/or the frame assembly;

wherein the method comprises:

configuring the panel assembly securing means to the release configuration;

removing an existing panel assembly from the pair of opposing channelsby sliding the existing panel assembly out of the pair of opposing channels;

positioning a serviceable panel assembly into the pair of opposing channels; and

configuring the panel assembly securing means to the engaged configuration to secure the serviceable panel assembly to the frame assembly,

wherein the method is performed while the frame assembly and fender element are maintained in situ mounted to the berthing structure.

2. A method according to claim 1, further comprising:

replacing one or more worn outwardly facing wear pads on an existing panel assembly with one or more serviceable outwardly facing wear pads to provide the serviceable panel assembly.

3. A method according to claim 1 or claim 2, wherein the panel assembly is slidingly received into the pair of opposing channels along a substantially vertical axis, and wherein:

removing the existing panel assembly from the pair of opposing channels comprises lifting the panel assembly in a substantially vertical direction, and

the step of positioning the serviceable panel assembly into the pair of opposing channels comprises lowering the serviceable panel assembly into the pair of opposing channels in a substantially vertical direction.

4. A method according to any one of claims 1 to 3, wherein the frame assembly further comprises a stop means for assisting in positioning the panel assembly correctly within the pair of opposing channels, and wherein

positioning the serviceable panel assembly into the pair of opposing channels further comprises positioning the panel assembly against the stop means.

5. A method according to any one of claims 1 to 4, wherein the panel assembly securing means comprises a bracket assembly comprising a first bracket fixed to the frame assembly and a second bracket removably securable to the first bracket, and wherein:

configuring the panel assembly securing means to the release configuration comprises releasing the second bracket from the first bracket; and

configuring the panel assembly securing means to the engaged configuration comprises securing the second bracket to the first bracket.

6. A method according to any one of claims 1 to 5, wherein the fender assembly further comprises a release mechanism for facilitating separation of the panel assembly from the

frame assembly, and wherein the method further comprises operating the release mechanism to separate the panel assembly from the frame assembly.

7. A method according to claim 6, wherein the release mechanism comprises a plate with a threaded aperture carried by the panel assembly, and wherein operating the release mechanism comprises screwing a screw through the threaded aperture so the screw bears against an engagement surface of the frame assembly and urges the panel assembly away from the frame assembly.

8. A method according to any one of claims 1 to 7, wherein the panel assembly further comprises a lifting lug, and wherein the method further comprises attaching the lifting lug to a hoist for removal of the panel assembly from the frame.

9. A method according to any one of claims 1 to 8, further comprising:

providing a maintenance platform at the maritime fender assembly; and

securing the maintenance platform to one or more maintenance platform mounts provided on the fender assembly.

10. A method according to any one of claims 1 to 9, wherein the fender assembly further comprises:

a base mounted to the berthing structure, the fender element being mounted between the frame and the base;

one or more support chains, each support chain connected to and extending between a frame-side support chain mount provided on the frame and a base-side support chain mount provided on the base;

one or more frame-side detensioner mounts, each frame-side detensioner mount corresponding to a frame-side support chain mount; and

one or more base-side detensioner mounts, each base-side detensioner mount corresponding to a frame-side support chain mount; and wherein the method further comprises:

affixing a detensioner between a frame-side detensioner mount and a base-side detensioner mount;

activating the detensioner to draw the frame and base together, thereby detensioning a support chain,

removing the detensioned support chain from its respective frame-side and base-side support chain mounts;

affixing a serviceable support chain to the respective frame-side and base-side support chain mounts;

deactivating the detensioner; and

removing the detensioner from its frame-side and base-side detensioner mounts.

11. A maritime fender assembly for mounting to a berthing structure, the fender assembly comprising:

a substantially flat panel assembly having at least one outwardly facing wear pad for contact with a vessel;

a frame assembly for releasably receiving the panel assembly, the frame assembly comprising:

a pair of opposing channels into which the panel assembly is slidingly received, the pair of opposing channels being, in use, substantially vertical; and

a panel assembly securing means having a release configuration whereby the panel assembly is removable from the pair of opposing channels and an engaged configuration whereby the panel assembly is secured in the pair of opposing channels,

the fender assembly further comprising a resilient fender element mounted between the frame and the berthing structure, the resilient fender element being for absorbing forces on the panel assembly and/or the frame assembly.

12. A maritime fender assembly according to claim 11, wherein the frame assembly further comprises a stop means against which the panel assembly bears when the panel assembly is correctly received within the pair of opposing channels.

13. A maritime fender assembly according to claim 12, wherein when the panel assembly securing means is in the release configuration the panel assembly is removable from the frame assembly without requiring removal of the frame assembly or the resilient fender element from the berthing structure.

14. A maritime fender assembly according to claim 11 or 12, further comprising a release mechanism for facilitating separation of the panel assembly from the frame assembly.

15. A maritime fender assembly according to claim 14, wherein the release mechanism comprises an apertured plate carried by the panel assembly and which, when the panel assembly is received in the frame assembly, extends over the frame assembly such that an opening of the aperture faces an engagement surface of the frame.

16 A maritime fender assembly according to claim 15, wherein the aperture of the apertured plate receives a jacking means for, in use, bearing on the engagement surface of the frame assembly and jacking the panel assembly away from the frame.

17. A maritime fender assembly according to claim 16, wherein the panel assembly is removable from the frame by being slid along a removal axis, the engagement surface is substantially perpendicular to the removal axis, and wherein in use the jacking means bears on the engagement surface to urge the panel assembly in a direction substantially parallel to the removal axis.

18. A maritime fender assembly according to any one of claims 15 to 17, wherein the aperture of the apertured plate is internally threaded and wherein the jacking means includes a screw receivable in the aperture.

19. A maritime fender assembly according to any one of claims 11 to 18, wherein the panel assembly further comprises a lifting lug for attaching the panel assembly to a hoist.

20. A maritime fender assembly according to any one of claims 11 to 19, wherein the panel assembly comprises a plurality of outwardly facing wear pads, and wherein the plurality of outwardly facing wear pads are releasably mounted to the panel assembly.

21. A maritime fender assembly according to any one of claims 11 to 20, wherein the frame assembly receives two or more panel assemblies, each panel assembly received in a pair of opposing channels.

22. A maritime fender assembly according to any one of claims 11 to 21, wherein the frame assembly further comprises one or more inner wear pads which face and bear against an inwardly facing surface of the panel assembly.

23. A maritime fender assembly according to claim 22, wherein the inner wear pads are manufactured from a low-friction material.

24. A maritime fender assembly according either claim 22 or claim 23, wherein the inner wear pads are visually distinct from the at least on outwardly facing wear pad of the panel assembly.

25. A maritime fender assembly according to any one of claims 11 to 24, wherein the panel assembly securing means comprises a bracket assembly comprising:

a first bracket fixed to the frame assembly; and

a second bracket removably securable to the first bracket, and wherein

in the engaged configuration the second bracket is secured to the first bracket to retain the panel assembly in position in the frame assembly, and in the release configuration the second bracket is released from the first bracket to allow the panel assembly to be removed from the frame assembly.

26. A maritime fender assembly according to claim 25, wherein the first and second brackets are provided with one or more complementary pairs of apertures, and wherein the second bracket is secured to the first bracket by one or more bolts passing through the one or more complementary pairs of apertures.

27. A maritime fender assembly according to any one of claims 11 to 26, wherein the fender assembly further includes one or more maintenance platform mounts for releasably securing a maintenance platform to the fender assembly.

28. A maritime fender assembly according to any one of claims 11 to 27, wherein the frame assembly comprises a frame-side support chain connector for connecting a support chain to the frame assembly, and a frame-side detensioner connector corresponding to the frame-side support chain connector, the frame-side detensioner connector for receiving a support chain detensioner operable to detension the support chain to allow for its removal.

29. A maritime fender assembly according to claim 28, further including a base adapted to be mounted to the berthing structure, the fender element being mounted between the frame and the base, and wherein the base includes:

a base-side support chain connector for connecting a support chain between a corresponding frame-side support chain connector and the base, and

a base-side detensioner connector corresponding to the a base-side support chain connector, the base-side detensioner connector for connecting a support chain detensioner

between a corresponding frame-side detensioner connector and the base, the support chain detensioner operable to detension the support chain to allow for its removal.

30. A maritime fender assembly for mounting to a berthing structure, the maritime fender assembly comprising:

a frame carrying at least one outwardly facing wear pad for contact with a vessel, the frame including at least one frame-side support chain mount and at least one frame-side detensioner mount;

a base mounted to the berthing structure, the base including at least one base-side support chain mount and at least one base-side detensioner mounts;

a resilient fender element mounted between the frame and base; and

one or more support chains connected to and extending between a base-side support chain mount and a corresponding frame-side support chain mount, wherein

the at least one frame-side detensioner mount and at least one base-side detensioner mount include at least one corresponding pair of detensioner mounts, the or each corresponding pair of detensioner mounts positioned to connect a detensioner between, the detensioner actuable to detension at least one support chain.

31. A maritime fender assembly according to claim 30, wherein the one or more support chains includes a plurality of support chains, each support chain connected to and extending between a frame-side support chain mount and a corresponding base-side support chain mount, each support chain having a corresponding frame-side detensioner mount and a base-side detensioner mount for connecting a detensioner therebetween, the detensioner actuable to reduce tension in the support chain.

32. A method of maintaining a maritime fender assembly mounted to a berthing structure, the maritime fender assembly comprising:

a frame carrying at least one outwardly facing wear pad for contact with a vessel, the frame including at least one frame-side support chain mount and at least one frame-side detensioner mount;

a base mounted to the berthing structure, the base including at least one base-side support chain mount and at least one base-side detensioner mounts;

a resilient fender element mounted between the frame and base; and

one or more support chains connected to and extending between a base-side support chain mount and a corresponding frame-side support chain mount, wherein the method includes:

affixing a detensioner between a frame-side detensioner mount and a corresponding base-side detensioner mount;

activating the detensioner to draw the frame and base together, thereby detensioning a support chain,

removing the detensioned support chain from its respective frame-side and base-side support chain mounts;

affixing a serviceable support chain to the respective frame-side and base-side support chain mounts;

deactivating the detensioner; and

removing the detensioner from its frame-side and base-side detensioner mounts.

CLAIMS

1. A method of maintaining a maritime fender assembly mounted to a berthing structure, the maritime fender assembly comprising:

a frame assembly for releasably receiving a substantially flat panel assembly, the panel assembly having at least one outwardly facing wear pad for contact with a vessel, the frame assembly comprising:

a pair of opposing channels into which the panel assembly is slidingly received, the pair of opposing channels being, in use, substantially vertical; and

a panel assembly securing means having a release configuration whereby the panel assembly is removable from the pair of opposing channels and an engaged configuration whereby the panel assembly is secured in the pair of opposing channels; and

a resilient fender element mounted between the frame assembly and the berthing structure, the resilient fender element for absorbing forces on the panel assembly and/or the frame assembly;

wherein the method comprises:

configuring the panel assembly securing means to the release configuration;

removing an existing panel assembly from the pair of opposing channelsby sliding the existing panel assembly out of the pair of opposing channels;

positioning a serviceable panel assembly into the pair of opposing channels; and

configuring the panel assembly securing means to the engaged configuration to secure the serviceable panel assembly to the frame assembly,

wherein the method is performed while the frame assembly and fender element are maintained in situ mounted to the berthing structure.

2. A method according to claim 1, further comprising:

replacing one or more worn outwardly facing wear pads on an existing panel assembly with one or more serviceable outwardly facing wear pads to provide the serviceable panel assembly.

3. A method according to claim 1 or claim 2, wherein the panel assembly is slidingly received into the pair of opposing channels along a substantially vertical axis, and wherein:

removing the existing panel assembly from the pair of opposing channels comprises lifting the panel assembly in a substantially vertical direction, and

the step of positioning the serviceable panel assembly into the pair of opposing channels comprises lowering the serviceable panel assembly into the pair of opposing channels in a substantially vertical direction.

4. A method according to any one of claims 1 to 3, wherein the frame assembly further comprises a stop means for assisting in positioning the panel assembly correctly within the pair of opposing channels, and wherein

positioning the serviceable panel assembly into the pair of opposing channels further comprises positioning the panel assembly against the stop means.

5. A method according to any one of claims 1 to 4, wherein the panel assembly securing means comprises a bracket assembly comprising a first bracket fixed to the frame assembly and a second bracket removably securable to the first bracket, and wherein:

configuring the panel assembly securing means to the release configuration comprises releasing the second bracket from the first bracket; and

configuring the panel assembly securing means to the engaged configuration comprises securing the second bracket to the first bracket.

6. A method according to any one of claims 1 to 5, wherein the fender assembly further comprises a release mechanism for facilitating separation of the panel assembly from the frame assembly, and wherein the method further comprises operating the release mechanism to separate the panel assembly from the frame assembly.

7. A method according to claim 6, wherein the release mechanism comprises a plate with a threaded aperture carried by the panel assembly, and wherein operating the release mechanism comprises screwing a screw through the threaded aperture so the screw bears against an engagement surface of the frame assembly and urges the panel assembly away from the frame assembly.

8. A method according to any one of claims 1 to 7, wherein the panel assembly further comprises a lifting lug, and wherein the method further comprises attaching the lifting lug to a hoist for removal of the panel assembly from the frame.

9. A method according to any one of claims 1 to 8, further comprising:

providing a maintenance platform at the maritime fender assembly; and

securing the maintenance platform to one or more maintenance platform mounts provided on the fender assembly.

10. A method according to any one of claims 1 to 9, wherein the fender assembly further comprises:

a base mounted to the berthing structure, the fender element being mounted between the frame and the base;

one or more support chains, each support chain connected to and extending between a frame-side support chain mount provided on the frame and a base-side support chain mount provided on the base;

one or more frame-side detensioner mounts, each frame-side detensioner mount corresponding to a frame-side support chain mount; and

affixing a detensioner between a frame-side detensioner mount and a base-side detensioner mount;

activating the detensioner to draw the frame and base together, thereby detensioning a support chain,

removing the detensioned support chain from its respective frame-side and base-side support chain mounts;

affixing a serviceable support chain to the respective frame-side and base-side support chain mounts;

deactivating the detensioner; and

removing the detensioner from its frame-side and base-side detensioner mounts.

11. A maritime fender assembly for mounting to a berthing structure, the fender assembly comprising:

a substantially flat panel assembly having at least one outwardly facing wear pad for contact with a vessel;

a frame assembly for releasably receiving the panel assembly, the frame assembly comprising:

a pair of opposing channels into which the panel assembly is slidingly received, the pair of opposing channels being, in use, substantially vertical; and

a panel assembly securing means having a release configuration whereby the panel assembly is removable from the pair of opposing channels and an engaged configuration whereby the panel assembly is secured in the pair of opposing channels,

the fender assembly further comprising a resilient fender element mounted between the frame and the berthing structure, the resilient fender element being for absorbing forces on the panel assembly and/or the frame assembly.

12. A maritime fender assembly according to claim 11, wherein the frame assembly further comprises a stop means against which the panel assembly bears when the panel assembly is correctly received within the pair of opposing channels.

13. A maritime fender assembly according to claim 12, wherein when the panel assembly securing means is in the release configuration the panel assembly is removable from the

frame assembly without requiring removal of the frame assembly or the resilient fender element from the berthing structure.

14. A maritime fender assembly according to claim 11 or 12, further comprising a release mechanism for facilitating separation of the panel assembly from the frame assembly.

15. A maritime fender assembly according to claim 14, wherein the release mechanism comprises an apertured plate carried by the panel assembly and which, when the panel assembly is received in the frame assembly, extends over the frame assembly such that an opening of the aperture faces an engagement surface of the frame.

16 A maritime fender assembly according to claim 15, wherein the aperture of the apertured plate receives a jacking means for, in use, bearing on the engagement surface of the frame assembly and jacking the panel assembly away from the frame.

17. A maritime fender assembly according to any one of claims 11 to 16, wherein the panel assembly further comprises a lifting lug for attaching the panel assembly to a hoist.

18. A maritime fender assembly according to any one of claims 11 to 18, wherein the panel assembly comprises a plurality of outwardly facing wear pads, and wherein the plurality of outwardly facing wear pads are releasably mounted to the panel assembly.

19. A maritime fender assembly according to any one of claims 11 to 18, wherein the frame assembly receives two or more panel assemblies, each panel assembly received in a pair of opposing channels.

20. A maritime fender assembly according to any one of claims 11 to 19, wherein the frame assembly further comprises one or more inner wear pads which face and bear against an inwardly facing surface of the panel assembly.

21. A maritime fender assembly according to any one of claims 11 to 20, wherein the panel assembly securing means comprises a bracket assembly comprising:

a first bracket fixed to the frame assembly; and

a second bracket removably securable to the first bracket, and wherein

in the engaged configuration the second bracket is secured to the first bracket to retain the panel assembly in position in the frame assembly, and in the release configuration the second bracket is released from the first bracket to allow the panel assembly to be removed from the frame assembly.

22. A maritime fender assembly according to any one of claims 11 to 21, wherein the frame assembly comprises a frame-side support chain connector for connecting a support chain to the frame assembly, and a frame-side detensioner connector corresponding to the frame-side support chain connector, the frame-side detensioner connector for receiving a support chain detensioner operable to detension the support chain to allow for its removal.