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SHORING SYSTEM

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2 Sheets-Sheet 1

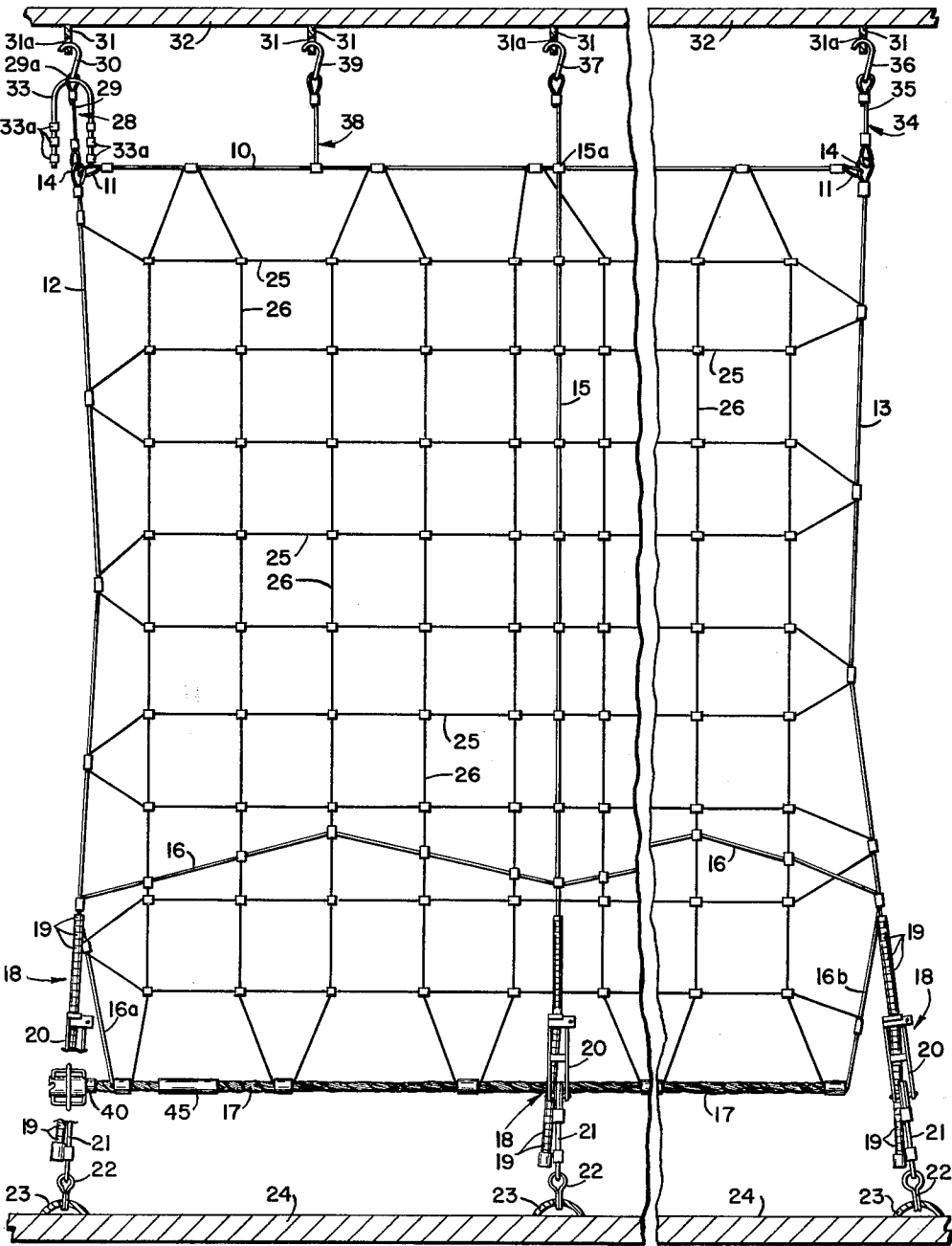


FIG. 1

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SHORING SYSTEM

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10 Claims. (Cl. 160-243)

This invention relates to devices for shoring general cargo in a cargo space, such as that between the decks of a ship, and is concerned more particularly with a novel net, which may be detachably mounted between upper and lower attaching members and used with similar nets to confine block stows of cargo, such as stacked cartons, bags, etc., against shifting. The new net may be readily mounted in position and placed under tension, so that it acts like a bulkhead of considerable rigidity and holds the cargo securely in place. When the cargo is to be discharged, the net may be quickly released from the lower attaching members, rolled up to expose the cargo, and secured in rolled-up condition. The rolled-up net may then be detached from the upper supporting members and transferred to a new location or unrolled and again connected to the lower attaching members and tensioned for use with a new lot of cargo, as desired.

For a better understanding of the invention, reference may be made to the accompanying drawings, in which

FIG. 1 is an elevational view of the net of the invention in use;

FIG. 2 is a fragmentary perspective view showing the net of FIG. 1 rolled up;

FIG. 3 is a fragmentary elevational view showing one end of the roll-up member and the means for rotating it;

FIG. 4 is an elevational view on the line 4-4 of FIG. 3;

FIG. 5 is a fragmentary perspective view of a lower attaching member; and

FIG. 6 is an elevational view of an upper attaching member provided with means for preventing the unrolling of the net.

The net of the invention, which is illustrated in FIG. 1, includes a top frame wire 10 having thimbles 11 at its ends and side frame wires 12, 13 provided at their upper ends with thimbles 14, which are interlinked with the thimbles 11. The net may also include one or more vertical rib wires 15, which are connected to the top frame wire 10 by swaged clips 15a and extend downwardly therefrom.

A horizontal tension wire 16 is attached to the side frame wires and the rib wires by clips similar to the clips 15a and the tension wire preferably rises between its points of connection to the respective side frame wires and the rib wire. The side frame wires 12, 13 are connected at their lower ends to a roll-up member 17 and, if desired, the tension wire 16 may have integral end sections 16a and 16b, which extend downward from the points of connection of the wire with the frame wires 12, 13 to the roll-up member. The end sections are clipped to the roll-up member and serve as extensions of the side frame wires.

Tensioning devices 18 are connected to the side frame wires 12, 13 adjacent to their connections to the tensioning wire 16 and the devices may be of the type disclosed in Peck and Balmer Patent 2,472,026. The patented devices are shown and such a device includes a cable enclosed within a plurality of spacers 19 and connected to the lower end of one of the side frame wires. The cable is received within a yoke 20 containing a toggle and the yoke is connected by a cable 21 and a hook 22 to a lower attaching member 23. The member 23

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may take the form of an upwardly convex plate secured to the deck 24 in any suitable way, as by welding, and having spaced openings 23a to receive the hook. By inserting the yoke between a pair of spacers in such a way as to take up slack in the connection between the side frame wire and the plate 23, the toggle may be operated to tension the cables and thus apply tension to the side frame wire. Similar tensioning devices are connected to the lower ends of the rib wires.

The net includes mesh wires 25 extending between and connected by clips to the side frame members 12, 13 and mesh wires 26 extending between and connected by clips to the top frame wire 10 and the roll-up member 17. The vertical and horizontal components of the mesh are connected together where they cross by clips and may be formed of single continuous wires. The mesh wires are also clipped to the rib wires 15 and the tension wire 16.

The net includes means 28 for securing the upper end of the side frame wire 12 to an upper attaching member and such means include a cable 29 having a thimble at its lower end interlocked with the thimble 14 on the frame wire. At its upper end, the cable has a thimble 29a secured to a hook 30 receivable in openings 31a in an attaching member 31, which may take the form of a plate secured, as by welding, to the under surface of the overhead deck 32. A U-shaped locking member 33 having enlargements 33a on its legs is rigidly secured, as by welding, to the hook 30.

The thimble 14 at the upper end of the side frame wire 13 is connected to a suspension member 34 which includes a wire 35 connected by a thimble to a hook 36 receivable in one of the openings 31a in an attaching member 31. The upper end of the rib wire is connected by a hook 37 to another attaching member 31 and suspension members 38 in the form of wires with hooks 39 may be connected at intervals by clips to the top frame wire 10 with the hooks receivable in openings in upper attaching members 31.

The roll-up member 17, which may be a wire of somewhat heavier size than used elsewhere in the net, is provided at the end adjacent to the frame wire 12 with means for rotating the member to roll up the net. Such means may include a socket member 40 receiving and secured to one end of the roll-up member and provided at its other end with a socket 40a for receiving the end of a crank 41. At its end, the wall of the socket is formed with one or more notches 40b which may be entered by a hook 42 on the crank to connect the crank to the socket member. The socket member is surrounded by a cage consisting of four U-shaped rods 43 extending longitudinally of the socket member and having their ends secured thereto and a ring 44 encircling and secured to the rods. A stiffening sleeve 45 may be mounted on the roll-up wire adjacent to the socket member 40.

In the use of the net for the shoring of cargo, the net is first suspended by insertion of the hooks 30, 36, 37, and 39 in openings in upper attaching members 31 at the proper locations relative to the block of cargo to be shored. The hooks 22 of the tensioning devices 18 are then inserted in openings 23a in lower attaching members 23 and the devices are operated to apply tension to the side frame and rib wires. Other nets may then be used as desired to engage the other sides of the block.

When the cargo is to be discharged, the tensioning devices 18 are released and their hooks 22 freed from the lower attaching members 23. The end of the crank 41 is then inserted in the socket 40a of the socket member 40 with the hook 42 entering one of the notches 40b in the member 40 and the crank is rotated to rotate the roll-up

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member and wind the net about it. At the proper time, the tensioning devices are swung to lie parallel to the roll-up member and, as the rotation of the latter continues, the tensioning devices are enclosed within the rolled net. When the net has been rolled up to the level of the top frame wire 10, one of the legs of the locking member 33 is inserted into the cage formed by the rods 43 and the ring 44. When the leg of the locking member is in place in the cage and the roll-up member is released, one of the rods 43 will engage an enlargement 33a on the locking member so that further rotation of the cage and roll-up member is prevented.

The rolled-up condition of the net is illustrated in FIG. 2, in which it will be seen that the net may be rolled close to the overhead deck and held in that position by the locking member 33. The rolled-up net may be readily removed from the overhead deck by disengagement of the hooks on the net from the attaching members 31 and the net may then be stored in rolled-up condition or transported for use elsewhere. If only part of the block of cargo is to be discharged and the net is to be employed again in the same location, the roll-up member is rotated slightly to permit release of the locking member 33 from the cage, after which the net may be allowed to descend by gravity to its original position. It is then restored to useful condition by engaging the hooks 22 of the tensioning devices 18 with the lower attaching members and operating the devices to tension the frame and rib wires.

While the term "wires" has been used to describe components of the net, it is to be understood that these components are ordinarily wire cables varying in size in accordance with the purpose they serve.

We claim:

1. A net for shoring cargo in a cargo space provided with sets of spaced upper and lower attaching members, which comprises a top frame wire, a roll-up member at the lower end of the net, side frame wires connected to the top frame wire and extending downwardly therefrom and connected to the roll-up member, horizontal mesh wires extending between and connected to the side frame wires, vertical mesh wires extending between and connected to the top frame wire and the roll-up member, upper means connected to the upper ends of the side frame wires for securing them to the upper attach-

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ing members, lower means connected to the side frame wires above their lower ends for securing them to the lower attaching members, means at one end of the roll-up member for rotating it on its axis to roll up the net, and means attached to the upper securing means connected to the side frame wire at such end of the roll-up member for engaging the rotating means and preventing its rotation and the unrolling of the rolled up net.

2. The net of claim 1, in which the roll-up member is a wire.

3. The net of claim 2, in which the roll-up wire is provided with stiffening means near the rotating means.

4. The net of claim 1, in which the rotating means is a cage having an axial socket member receiving and secured to the end of the roll-up member.

5. The net of claim 4, in which the socket member is provided with means for engagement with a crank for rotating the roll-up member.

6. The net of claim 1, in which the means for securing the side frame wires to the lower attaching members are operable to place the wires under tension.

7. The net of claim 1, which includes a vertical rib wire connected to the top frame wire, means for securing the upper end of the rib wire to an upper attaching member, and means for securing the lower end of the rib wire to a lower attaching member.

8. The net of claim 7, in which the means for securing the lower end of the rib wire to a lower attaching member is operable to place the rib wire under tension.

9. The net of claim 1, which includes a tension wire extending between the side frame wires and connected to such frame wires and to the vertical mesh wires, the lower securing means being connected to the side frame wires at their connections to the tension wire.

10. The net of claim 9, in which the tension wire has integral end sections connecting the lower ends of the side frame wires to the roll-up member.

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