ABSTRACT OF THE DISCLOSURE

A structural member or beam which can be rolled up for transportation or storage. It is a sheet of resilient material preformed with longitudinal corrugations to provide longitudinal rigidity. The sheet may be preformed to coil into a tubular form when unwound and flatten out when wound-up. Or alternatively, without the preforming to coil into the tubular form when unwound, several of said corrugated sheets may be secured together with the corrugations staggered laterally with respective troughs and crests fastened together forming longitudinal voids. Such a structure can be wound up into a roll and when unwound provides a rigid deck.

BACKGROUND OF THE INVENTION

In my prior U.S. Pat. No. 3,252,173 dated May 24, 1966 and 3,258,800 dated July 5, 1966, I have disclosed roll-up structures in which a resilient sheet is preformed to automatically coil into a tubular form when unwound from a coiled-up position and to automatically flatten out when rewound. Some of the advantages and uses of such a structure are set forth in the said patents.

OUTLINE OF THE INVENTION

The present invention increases the longitudinal rigidity of the structural member or beam such as described in the above patents by providing a roll-up sheet made of resilient material such as steel, aluminum, plastic and the like, the sheet being preformed with longitudinal resilient corrugations that flatten out when the sheet is rolled up and will reform when the sheet is unwound.

The sheet may be used in a normally flat plane when unwound and if a single sheet does not provide the rigidity for the purpose intended, several sheets can be stacked, one above the other, as herein described in my said prior patents, the single corrugated sheet can be preformed to coil about its longitudinal axis into the tubular shape.

DESCRIPTION OF THE INVENTION

Features and advantages of the present invention will now be described with reference to the accompanying drawings which show, for purposes of illustration only, two embodiments in accordance with the present invention and wherein:

FIG. 1 illustrates a first embodiment of a corrugated, single-layered, roll-up structure, partially rolled on a drum; and

FIG. 2 illustrates a second embodiment of a corrugated roll-up structure, partially rolled on a drum and employing a number of corrugated layers.

The extensible structure illustrated in FIG. 1 comprises a strip 10 of thin, resilient material preformed to coil about its longitudinal axis to form into a tube when unwound from drum 11. The strip 10 is made from resilient material such as spring steel, aluminum or resilient plastic. When rewound the sheet material returns to the flat condition. The drum, of course, is not essential since the material can be wound into the coil without it.

The sheet 10 is also preformed with a plurality of longitudinally extending parallel corrugations 12. When the sheet is wound into a roll, the corrugations flatten out since they are resilient. When unwound from the drum the corrugations will reform and at the same time the sheet will assume a tubular form with lateral edges 13, 14 overlapping.

It may be of advantage to provide reinforcing strips 15, 16 along edges 13, 14 respectively, the strips being applied so that they will not interfere with the overlapping of the edges in the tubular form.

The structure of FIG. 2 is basically the same as the one shown in FIG. 1 except that the sheet is not preformed to assume a tubular form. To obtain greater rigidity a plurality of sheets are stacked, one above the other, with their corrugations all running in the same direction.

The embodiment illustrated in FIG. 2 shows three sheets 17, 18, 19 each made of resilient material and each preformed with a plurality of longitudinally extending resilient corrugations similar to those described with reference to FIG. 1. For the purpose of illustration only, each sheet is shown with two parallel corrugations. The corrugated sheets are stacked with the corrugations of one sheet being reversed with respect to an adjacent sheet, as shown, so that their respective troughs and crests are in contact thus permitting adjoining sheets to be joined together by rivets 20 at their respective crests and troughs with voids between the contacting crests and troughs respectively along which the sheets are joined.

This arrangement does not interfere with the flattening of the corrugations when the sheet is rolled-up.

The foregoing structure can be used for decks, for bridges or other structures where it is convenient to have it brought to a site as a compact unit and unrolled into a rigid member.

It is obvious that the present invention is not limited to the details described and illustrated herein but is susceptible of numerous changes and modifications as known to any person skilled in the art.

What I claim is:

1. A corrugated roll-up structure comprising at least three thin sheets of resilient material in stacked relationship, each sheet having a plurality of longitudinal resilient corrugations which flatten when the structure is rolled-up and reform into corrugations when unrolled, contiguous sheets being a mirror image of each other with respective crests in contact, and connected together to form a rigid unitary structure having a multi-cellular structure of uniform resistance to bending throughout the width and length thereof when unrolled.

References Cited

UNITED STATES PATENTS

3,258,800 7/1966 Robinsky 14—27

WILLIAM T. DIXSON, Jr., Primary Examiner

U.S. Cl. X.R.