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FLEXIBLE SECTIONAL MAT STRUCTURE

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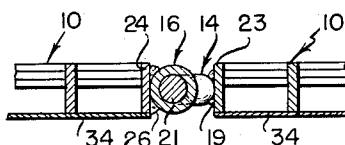
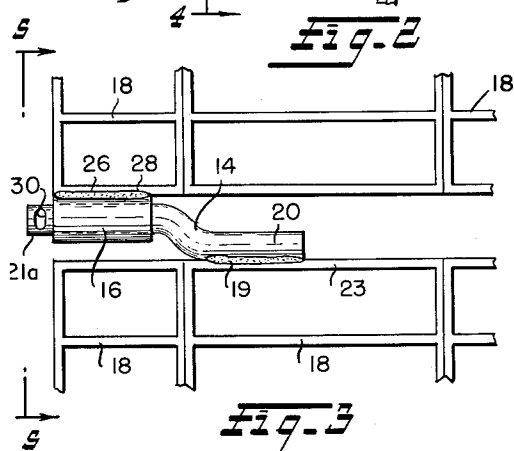
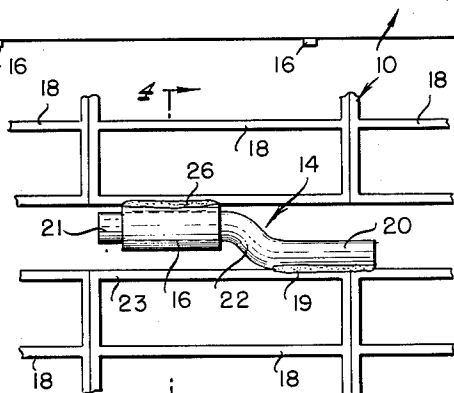
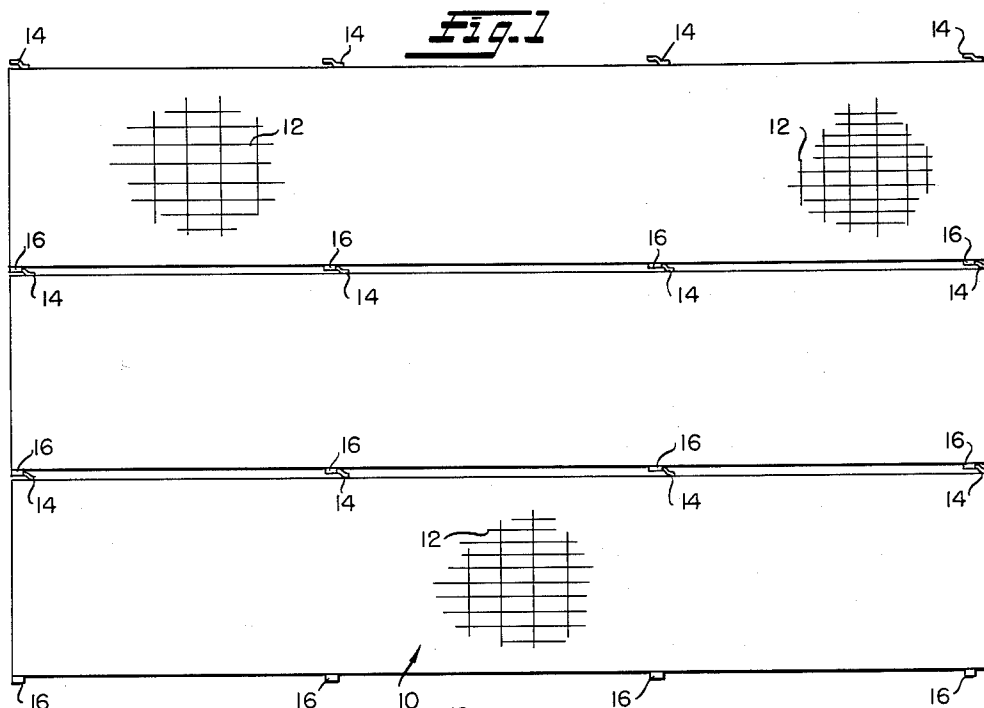


Fig. 4

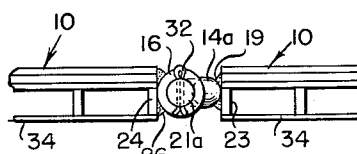


Fig. 5

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1

2

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FLEXIBLE SECTIONAL MAT STRUCTURE

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The present invention relates to flexible sectional mat structure such as a landing mat that may be used on river or ocean shores to facilitate landing of men and mobile or other equipment from a water craft.

It is a frequent occurrence in both civil or military amphibian operations that vehicles, equipment, men and animals have to embark from landing crafts in areas where there are no docks. Very often the shores in the landing area comprise extremely soft ground which may considerably hamper or even make impossible a successful landing, especially of the heavy equipment. For this reason metal mats have been proposed to lay upon the ground to provide a paving for the vehicles and/or equipment.

The present invention has for its main object to provide an improved, simplified beach or shore landing mat structure comprising a successive number of identical lightweight grating panels flexibly connected together in series to provide a continuous runway of a desired length.

Another object of the present invention is the provision of lightweight grating panels provided with cooperating hinge structure to enable two or more panels to be pivotally assembled together to form a novel continuous runway and wherein the hinged pivot connections between the individual panels allow the assembled runway to follow the contour of the ground upon which it is laid.

Still another object resides in the provision of a beach or like landing mat composed of a successive number of metal grating panels made of aluminum or other lightweight metal and hinged one to another in novel assembly.

A further object of the present invention is the provision of a novel portable metal runway structure composed of a number of grating panels which can be easily assembled and disassembled in situ whereby the individual panels may be conveniently stored and transported without taking up too much space.

The present invention will now be described in the following detailed specification in connection with the appended drawings in which:

FIGURE 1 shows schematically a plan view of a section of a landing mat according to a preferred embodiment of the invention;

FIGURE 2 is an enlarged fragmentary view showing an inner hinge area in detail;

FIGURE 3 is a view similar to FIGURE 2 but showing an outer hinge area;

FIGURE 4 is a section through the inner hinge of FIGURE 2 substantially along line 4-4; and

FIGURE 5 is an end view of an outer hinge substantially along line 5-5 of FIGURE 3.

FIGURE 1 illustrates a section of a beach landing mat composed of a number of metal grating panels 10 (three being shown in the present instance) which may be made of aluminum or other lightweight metal, aluminum being preferred due to its corrosion and rust preventing properties. The rectangular opening grating contour which is shown more in detail in FIGURES 2 and 3 is schematically indicated at 12 in FIGURE 1. The grating panels 10 are all preferably identical and have preferably a width dimension considerably exceeding that of the length as illustrated to provide a roadway of sufficient width as to accommodate a heavy truck and they are each equipped along one longer edge with a number of hinge pins 14 and along the other longer edge with complementary

hinge sockets 16 adapted to receive the hinge bars of the next adjacent panel when assembled.

With further reference to FIGURES 2 to 5, the grating panels 10 are individually rigid in a plane and may each comprise boxed sections 18 welded or otherwise permanently rigidly secured together as shown, but equivalent grating shapes and constructions may be utilized. Spaced from the side edges of the panel 10 are inner rigid hinge rods 14 (FIGURE 2). Each hinge bar is a continuous length of cylindrical metal stock with parallel end sections 20 and 21 displaced from alignment and connected by a transition section 22. One end section 20 is welded as at 19 to one outer load bearing bar 23 of the associated panel, so that effectively a plane through the axis of the hinge pin 14 lies in the plane of that panel.

Hinge sockets 16 are rigid hollow cylindrically bored sleeves slidably receiving the free end sections 21 of hinge pins 14, each socket 16 being welded as at 26 to the edge bar 24 of its associated panel so that its axis lies in the plane of that panel. Hinge bar sections 21 all project in the same direction so that a simple sliding action will pivotally connect two adjacent panels.

With specific reference to FIGURES 3 and 5 each outermost hinge pin section 21a along one side edge of the panels points outwardly of the panel side and is provided at its end beyond the panel edge with an aperture 30 to receive a stop in the form of a cotter pin 32 or like fastener by which the hinge connections between any two adjacent panels 10 will be secured so that they will not become disconnected, but they can be easily disconnected for disassembly without using tools.

It is furthermore preferred to attach as by welding to the underside of each of the grating panels 10 spaced closure strips of sheet metal 34, as illustrated in FIGURES 4 and 5, to prevent the panels from completely sinking into the ground when heavy load is being applied thereupon. This greatly facilitates removal of the mat after it has served its purpose which otherwise when the mat sinks into the ground is very difficult.

The invention thereby provides a relatively inexpensive, lightweight metal beach landing mat which can be made up in any lengths and is easily folded, rolled up or completely disassembled for transportation and storage. Due to its flexible construction the mat may be laid out on substantially any terrain of whatever shape. The multiple hinge connection provides stability and exceptionally good load bearing characteristics.

The present invention may be embodied in other specific forms without departing from the essential characteristic or spirit thereof, therefore, the present embodiment is to be considered in all respects as illustrative only and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description.

What is claimed and desired to be secured by Letters Patent is:

1. A flexible sectional mat structure adapted to be laid on the ground for the passage of equipment and the like thereover comprising a plurality of individually rigid grating panels having opposite parallel rigid longitudinal edge bars, hinge means pivotally connecting adjacent panels comprising a plurality of hinge pins rigidly secured upon the outer side of one edge bar of each panel, each hinge pin having an offset integral cylindrical section extending substantially parallel to and in outwardly spaced relation to its associated edge bar and all of said cylindrical hinge pin sections being axially aligned and projecting in the same direction, and a plurality of open-ended cylindrical bore socket members rigidly projecting laterally from the outer side of the other edge bar of each said panel with their axes in alignment and receiving said offset cylindrical pin sections, so that ad-

3

jacent panels may be assembled into hinged connection by relative lateral motion in one direction with said socket members and offset hinge pin sections in alignment, and means in the assembly maintaining assembled panels from such relative lateral shift as to disengage said hinge pins and socket members while permitting free pivoting at said hinge means, said hinge means being disposed substantially wholly in the space between the adjacent outer sides of the edge bars of the respective panels.

2. The sectional mat structure defined in claim 1, wherein said hinge pins and socket members are welded upon the outer sides of the respective panel edge bars.

3. In the sectional mat structure defined in claim 1, said means maintaining said panels against relative lateral shift comprising fastener means between the ends of the end hinge pins and respective socket members along one side of the mat structure.

4. In the sectional mat structure defined in claim 3, each said end hinge pin being long enough to project through the associated socket member, and a stop element de-

4

tachably secured to the projecting end of said pin to prevent its withdrawal from the socket member.

5. In the sectional mat structure defined in claim 1, each hinge pin being a single length of rod having parallel non-coaxial end sections with one end section welded to the associated mounting panel and the other end section fitting within the associated socket.

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