

# United States Patent

[11] 3,590,587

- |      |           |                                                                       |
|------|-----------|-----------------------------------------------------------------------|
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| [73] | Assignee  | <b>N. V. Industriële Handelscombinatie<br/>Rotterdam, Netherlands</b> |
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| [33] |           | <b>Netherlands</b>                                                    |
| [31] |           | <b>6808497</b>                                                        |

- [50] **Field of Search**..... 61/46.5;  
115/9; 37/73

[56]

### References Cited

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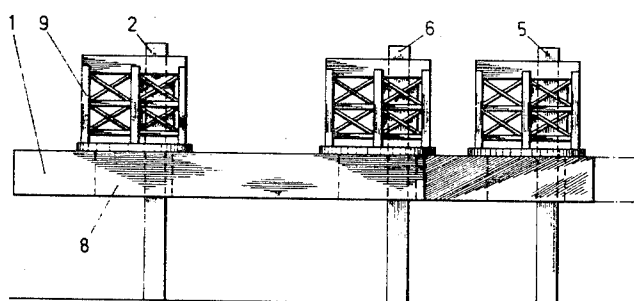
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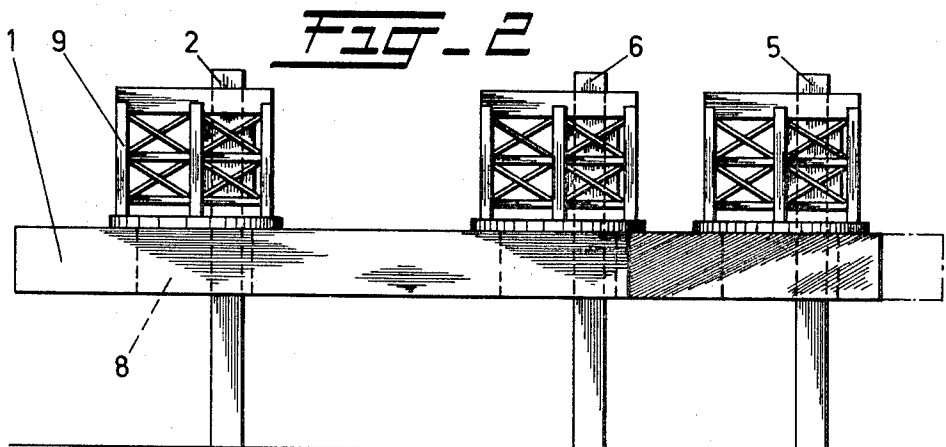
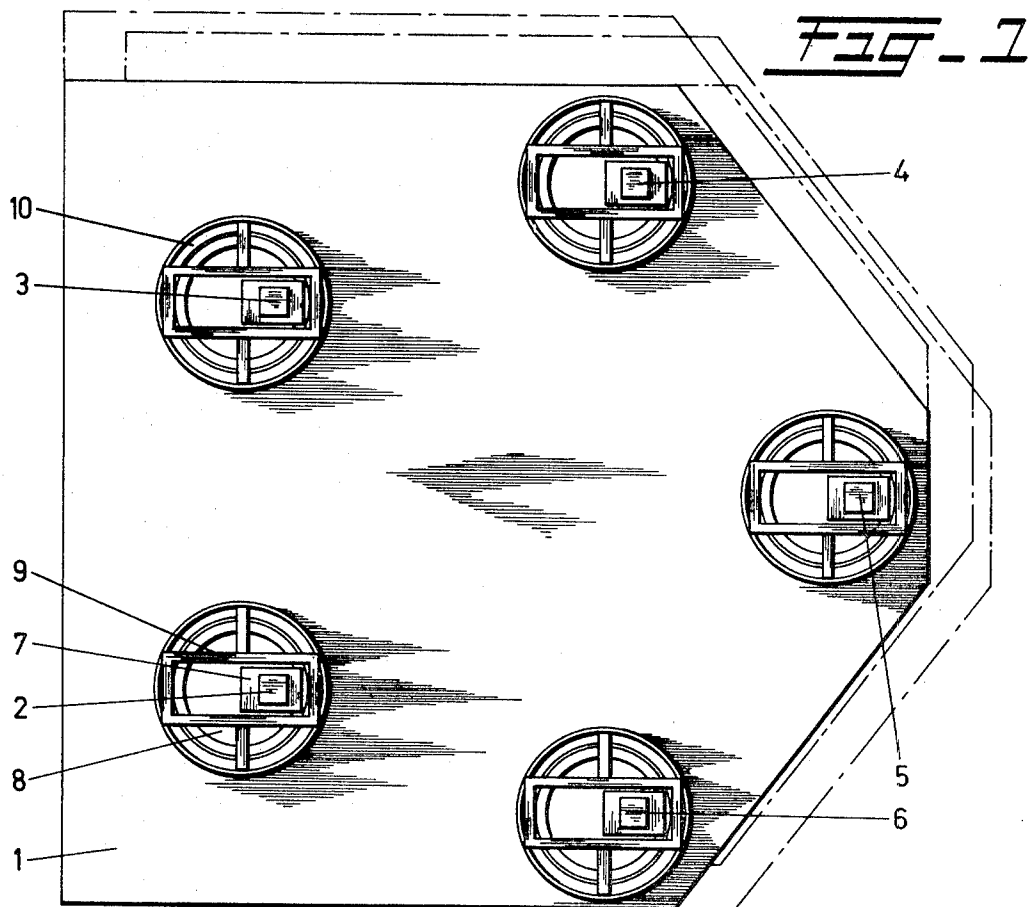
- [54] **FLOATING PLATFORM WITH HORIZONTALLY  
MOVABLE COLUMNS**  
2 Claims, 2 Drawing Figs.
- [52] U.S. Cl. .... 61/46.5,  
37/73, 115/9
- [51] Int. Cl. .... **E02b17/00**,  
E02f9/04, B65b21/50

**ABSTRACT:** A floating platform comprises a pontoon and more than three vertical supporting columns which are individually vertically movable relative to the pontoon and are also individually horizontally movable relative to the pontoon so that the pontoon may be moved horizontally over small distances without the need for refloating it.



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3,590,587



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# FLOATING PLATFORM WITH HORIZONTALLY MOVABLE COLUMNS

The present invention relates to floating platforms, more particularly of the type comprising a buoyant pontoon and a plurality of vertical columns which are adapted to be moved vertically relative to the pontoon and selectively locked in a vertically adjusted position.

Platforms of this type are moved from place to place by towing them to their destination while they float on the pontoon. The columns are raised relative to the pontoon during transport; and when the worksite is reached, the columns are lowered and the pontoon is raised along the columns and locked in its desired position above the water, which is to say above the level at which the pontoon is buoyant in the water. However, such transport of the platform is complicated, and is especially inconvenient when it is desired to move the platform only a relatively short distance. The known method of transport is also difficult when the weather is bad.

It is an object of the present invention to provide a floating platform which can be moved from place to place without the necessity of lowering the pontoon and refloating the platform.

It is also an object of the invention to provide a novel method of moving floating platforms from place to place.

Another object of the present invention is the provision of a floating platform which will be relatively simple and inexpensive to manufacture, easy to operate, maintain and repair, and rugged and durable in use.

Other objects and advantages of the present invention will become apparent from a consideration of the following description, taken in connection with the accompanying drawing, in which:

FIG. 1 is a somewhat schematic plan view of a floating platform according to the present invention; and

FIG. 2 is a side elevational view of the platform shown in FIG. 1.

Referring now to the drawing in greater detail, there is shown a floating platform comprised by a pontoon 1 having five relatively vertically movable columns 2, 3, 4, 5 and 6. The floating platform shown in the drawing may be of the type of U.S. Pat. No. 3,343,372, to which reference is made for a more complete disclosure. The details of the construction and operation of the floating platform and of the raising and lowering of the pontoon relative to the columns and of locking the pontoons and columns in vertically adjusted position relative to each other, can all be ascertained from said U.S. patent and need not be further disclosed herein.

Each of the columns 2-6 is mounted for vertical sliding movement in and relative to a vertically arranged frame 7. Each frame 7, in turn, is horizontally movable in a rectangular upwardly and downwardly open frame 9 located over a large opening 8 that extends vertically through the pontoon. Power means (not shown) are provided for moving the frames 7 horizontally inside the frames 9. The frames 7 are slidably guided for horizontal movement in and relative to frames 9 but are secured against vertical movement relative to frames 9.

Each frame 9 is carried by a circular frame 10 which is mounted in pontoon 1 for rotation about its vertical axis by means of bearings (not shown). Power means (not shown) are provided for rotating each frame 10 about its vertical axis.

In operation, with the columns resting at their lower ends in the seabed and the pontoon thus supported above the water, all the columns but three are raised so that the support of the pontoon is by the three remaining columns, for example, 2, 3 and 5. The raised columns are then translated horizontally by moving their associated frames 7 horizontally in the associated frames 9. The frames 10 can be rotated so that the columns will advance horizontally in the desired direction. The raised and horizontally translated columns are then lowered again

until they resume a portion of the support of the pontoon.

Next, a different set of columns is raised, again leaving three columns supporting the pontoon. For example, in a five-column platform as shown in the drawing, in which columns 2, 3 and 5 initially support the platform while columns 4 and 6 are horizontally translated, it would be possible during the second stage to leave the pontoon resting on columns 2, 4 and 6 and raise and horizontally translate and then lower again the columns 3 and 5. Finally, in a third stage, it would be necessary to translate the column 2.

When all the columns are thus horizontally moved, the power means for moving frames 7 relative to frames 9 can again be actuated, but in the reverse direction, to move the pontoon itself horizontally relative to the columns, in the direction in which the columns advanced.

Of course, the invention can be practiced with any number of columns in excess of three. If the platform has four columns, then only one would be translated at a time and the cycle of horizontal movement would have four stages. But if the platform has six columns, then three could be translated at a time and the entire cycle of horizontal movement would have only two stages.

The raising and translation and lowering of the columns is useful not only to translate the pontoon rectilinearly, but also to turn it. By changing the direction of movement of one or more of the columns by rotating the associated frame 10, the pontoon may be swung in a horizontal plane relative to a previous position.

In view of the foregoing disclosure, therefore, it will be evident that all of the initially recited objects of the present invention have been achieved.

Although the present invention has been described and illustrated in connection with preferred embodiments, it is of course to be understood that modifications and variations may be resorted to without departing from the spirit of the invention, as those skilled in this art will readily understand. Such modifications and variations are considered to be within the purview and scope of the present invention as defined by the appended claims.

What I claim is:

1. A floating platform comprising a pontoon, more than three spaced frames rotatably mounted on the pontoon for rotation of each frame about its own vertical axis relative to the pontoon, a vertical column mounted in each frame for movement of the column parallel to the length of the column relative to the pontoon and the associated said frame, means mounting each column in the frame for horizontal movement of the column relative to the frame, and means for selectively individually moving each column horizontally relative to its associated said frame.

2. A method of moving over a body of water a floating platform which is comprised by a buoyant pontoon and more than three vertical columns, comprising supporting the pontoon on the columns above the level at which the pontoon is buoyant in the body of water, and raising at least one column relative to the pontoon out of supporting relationship with the pontoon while maintaining the pontoon supported above said level on at least three columns, rotating said at least one column horizontally relative to the pontoon about an axis parallel but eccentric to the raised column and lowering the horizontally moved at least one column again into supporting relationship to the pontoon, thereafter raising and horizontally rotating about a parallel eccentric axis and again lowering at least one other column until all the columns supporting the pontoon have been horizontally moved relative to the pontoon, and then horizontally moving the pontoon relative to the columns thereby to translate the pontoon horizontally relative to the body of water while maintaining the pontoon above said level.