March 8, 1966 H. J. KREIS 3,238,733

BOAT ELEVATOR FOR MARINE RAILWAY SYSTEM

Filed Oct. 25, 1963 2 Sheets-Sheet 1

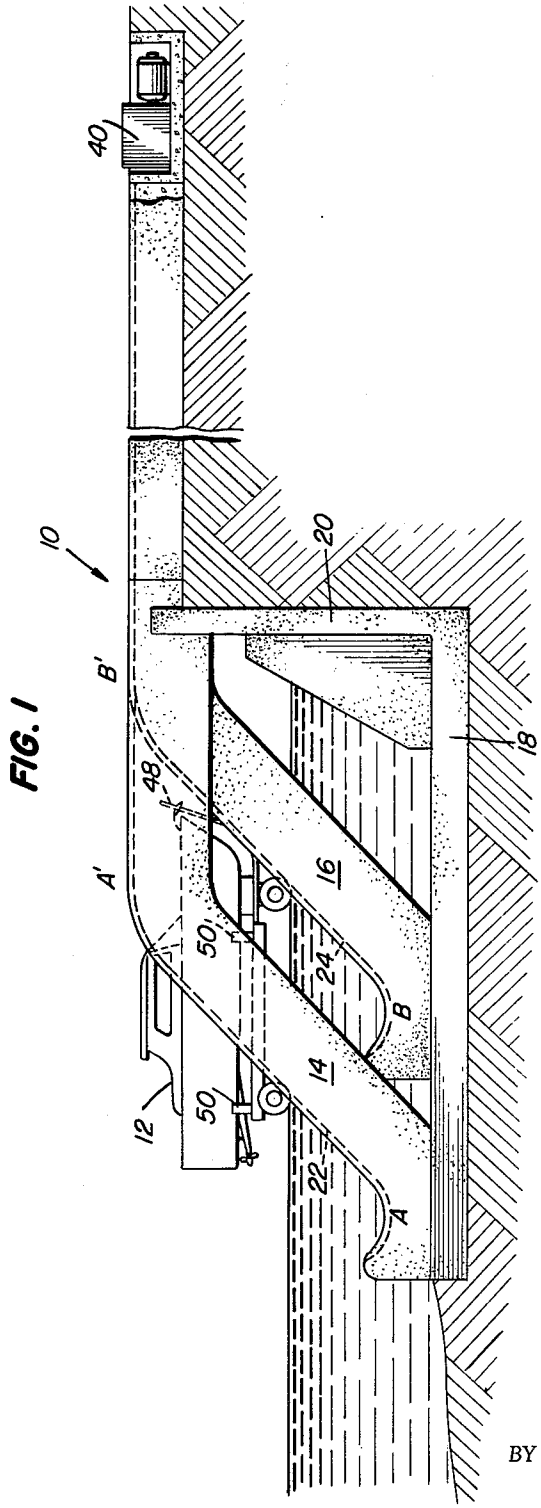


FIG. 1

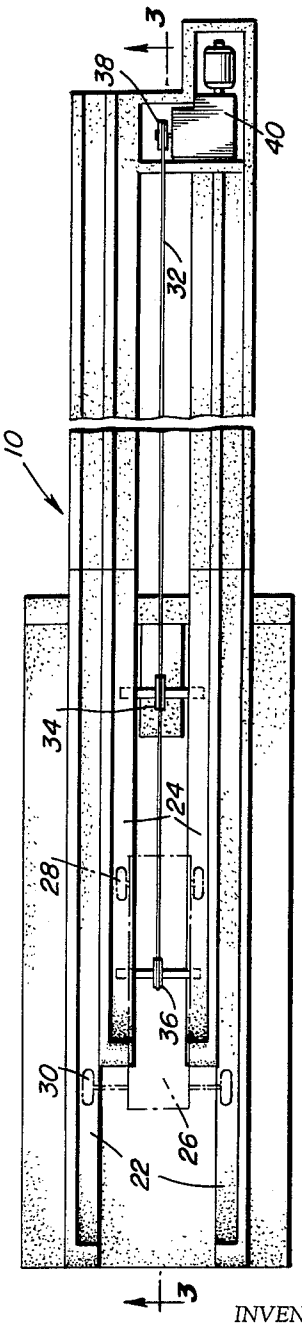


FIG. 2

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BOAT ELEVATOR FOR MARINE RAILWAY SYSTEM

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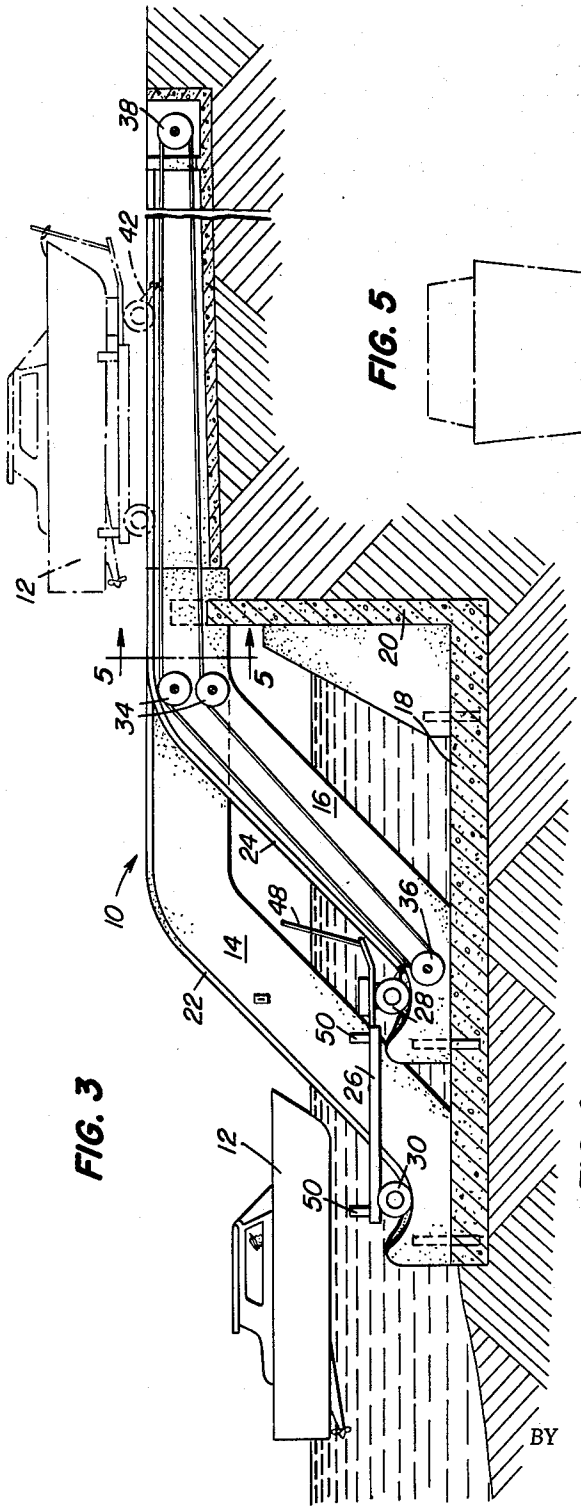


FIG. 3

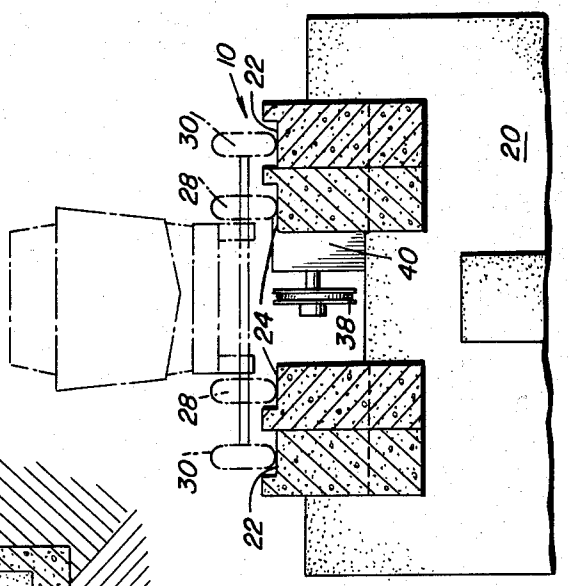


FIG. 5

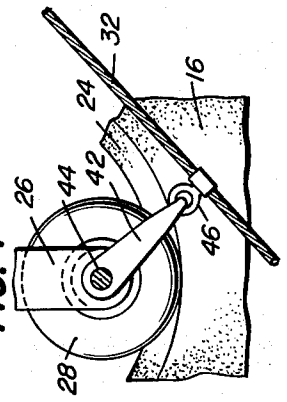


FIG. 4

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BOAT ELEVATOR FOR MARINE RAILWAY SYSTEM

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1 Claim. (Cl. 61—67)

This application is a continuation-in-part of application Ser. No. 128,841, filed Aug. 2, 1961, now abandaned.

This invention relates generally to marine railways, and more particularly it pertains to a boat elevator for removing water craft from a body of water to the shore.

In congested waterways there is not usually space to install a conventional marine railway to bring a boat upon the shore. Often it is not permitted to construct a shelter or even dockage for the craft.

It is an object of this invention to provide an arrangement of boat elevator which operates at a steep angle and so conserves and utilizes water and shore space.

Another object of this invention is to provide a marine railway which removes a boat from the water and deposits it on land maintaining a horizontal attitude thereof at all times during the process.

Still other objects of this invention are to provide a boat elevator system which is economical to manufacture, efficient and reliable in operational use and which is easy to install and maintain.

These and other objects and attendant advantages of this invention will become more readily apparent and understood from the following detailed specification and accompanying drawings in which:

FIG. 1 is a vertical section through a shoreline depicting the side elevation of a boat elevator system embodying features of this invention;

FIG. 2 is a plan view of the boat elevator shown in FIG. 1 with the boat omitted and the carriage in phantom for clarity;

FIG. 3 is a vertical section taken along the line 3—3 of FIG. 2 and illustrating the conveyance of a boat from the water to land;

FIG. 4 is a detail view, much enlarged, of the hoisting shackle arrangement on the front axle of the carriage; and

FIG. 5 is an enlarged cross section taken on the line 5—5 of FIG. 3.

Referring now to the details of the drawings, there is shown depicted in FIG. 1 a boat elevator **10** which, in the nature of a marine railway, is designed to lift a boat **12** from water to land but with a minimum of dockyard. For this purpose, there is provided a pair of ramps **14** and **16** preferably of reinforced masonry extending from a footing **18** in the bed of a body of water to the top of a shoreline bulkhead **20**.

As best shown in FIG. 2, these ramps **14** and **16** are both split into right and left halves and are each provided with wheel channels or tracks **22** and **24**, respectively.

The tracks **22** and **24** on the ramps **14** and **16** originate beneath the surface of the water from spaced points A and B respectively, in a common horizontal plane and rise at approximately 45 degree angle in parallel spaced relationship one to the other to points designated A′ and B′, respectively, in a common upper horizontal plane.

Both ramps **14** and **16** then carry the tracks **22** and **24** shoreward over the bulkhead **20** in a common plane. This is possible because, as shown best in FIG. 2 the tracks **22** are of greater gauge than tracks **24** and thus can straddle the latter. This shoreward portion of the trackage can be extended as far as desired as indicated by the broken lines in the drawings.

A wheeled carriage **26** is provided as shown in FIG. 1 and in phantom in FIG. 2. As best shown in FIG. 5, the front wheels **28** are adapted for the narrower gauge of tracks **24** whereas the rear wheels **30** conform to the wide gauge tracks **22**. The gauge of the latter must also be great enough to permit the passage of the boat **12** between the halves of ramp **14**.

The front wheels **28** are spaced from the rear wheels **30** a distance equal to A–B (A′–B′) which permits the carriage **26** to ascend the ramps **14** and **16** with the boat **12** in a horizontal position.

An endless driving rope **32** extends between the rails of tracks **24** from a drive wheel **38** of a power winch **40** to a pair of upper sheaves **34** and thence to a lower sheave **36** near the footing **18**.

As shown in FIG. 4, a hoisting shackle **42** is mounted on the axle **44** between the front wheels **28** of the carriage **26** and attached to an eye **46** which is clamped to the driving rope **32**.

With the carriage **26** submerged at its lowest point, as shown in solid lines in FIG. 3, the boat **12** is moored to a staff **48** which extends above the water line from the front of carriage **26**. This places the boat **12** directly over cradle blocks **50** which are secured on the carriage **26** and correctly aligned between the halves of ramp **14**. When the winch **40** is operated, the eye **46** of drive rope **32** lifts the shackle **42** and the carriage **26** moves upwardly along the tracks **22** and **24**. This movement continues as the boat **12** settles in the cradle blocks **50** and, thus supported on the carriage, the boat **12** is lifted from the water without being tilted from the horizontal.

The eye **46** passes readily over the uppermost upper sheave **34** and continues to pull the carriage onto the shoreward extension of the tracks **22** and **24** which are now in a common plane if the ground is level. It is obvious that should the shore be sloping a corresponding depression or elevation of one track with relation to the other will still maintain the boat **12** and carriage **26** in a horizontal attitude.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claim the invention may be practiced otherwise than as specifically described.

What is claimed is:

A marine railway for removing watercraft from a body of water, comprising, inside and outside pairs of tracks rising at an angle of about 45° in parallel planes and horizontally spaced relationship from a lower common horizontal plane beneath the surface of the water to a common upper horizontal plane thereabove, horizontal extensions of said inside and outside tracks in said common upper horizontal plane, horizontal extensions of said inside and outside tracks in said common lower horizontal plane, a boat supporting carriage having front and rear axles with wheels mounted thereon, with the horizontal distance between said inside and outside angularly rising spaced tracks in said parallel planes being

equal to the distance between said front and rear axles of said carriage so that said carriage rides on said spaced tracks in a horizontal attitude, winch means including a cable formed into an endless loop for moving said carriage at a constant attitude along said angularly rising spaced tracks, a driving sheave positioning one end of said loop between said horizontal extensions of said inside and outside tracks in said common upper plane, an idler sheave positioning the other end of said loop between said inside and outside tracks beneath said water, a pair of vertically spaced idler sheaves positioned between and at the crest of said inside and outside tracks rising from said water to receive the upper and lower strands of cable forming said loop thereof, and means connecting said carriage to said loop, whereby movement of said cable is positively transmitted to said carriage.

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EARL J. WITMER, *Primary Examiner.*