Jan. 13, 1970 S. E. J. BARKELING 3,488,968

BOAT LANDING STAGES AND THE LIKE

Filed July 14, 1967 3 Sheets-Sheet 2

Fig.5

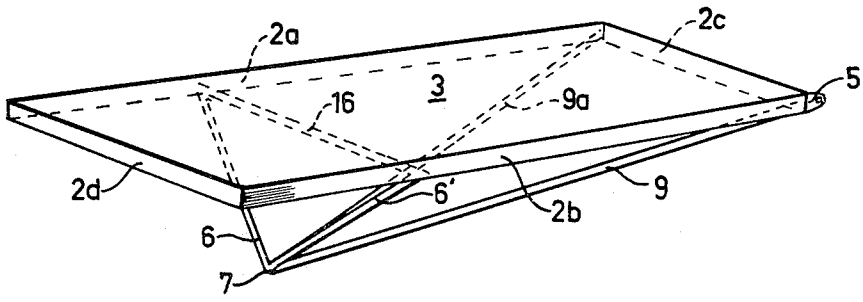


Fig.6

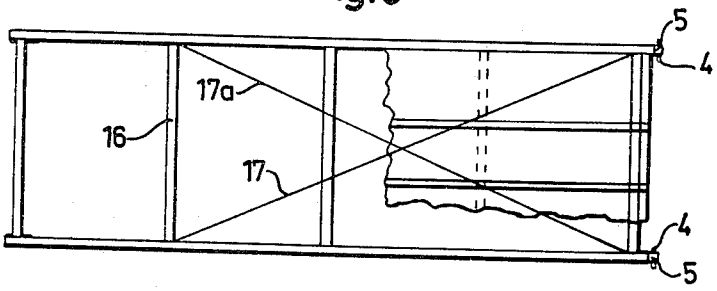
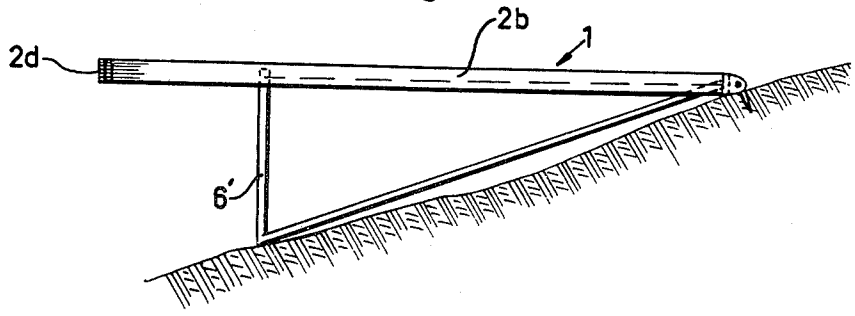


Fig.7



INVENTOR.
SVEN ERIK JULIUS BARKELING
BY
Albert M. Parker

Jan. 13, 1970 S. E. J. BARKELING 3,488,968

BOAT LANDING STAGES AND THE LIKE

Filed July 14, 1967 3 Sheets-Sheet 1

Fig.1

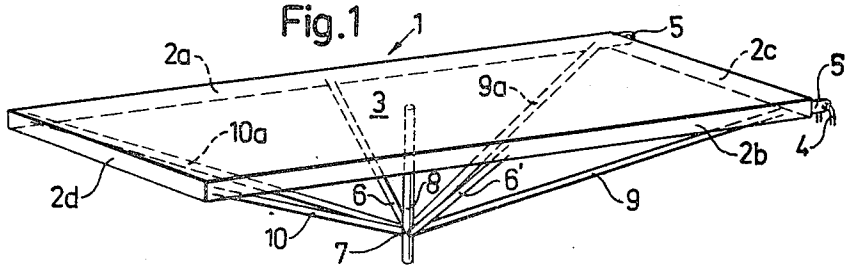


Fig.2

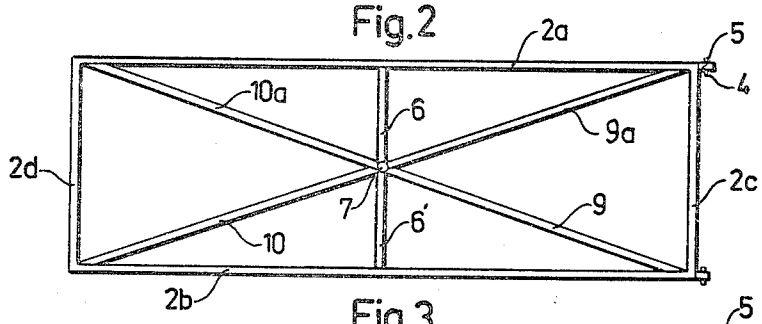


Fig.3

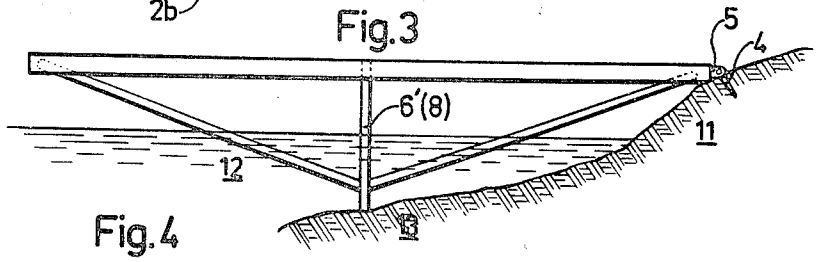


Fig.4

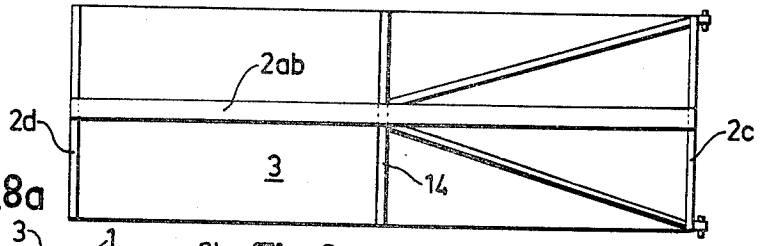


Fig.8a

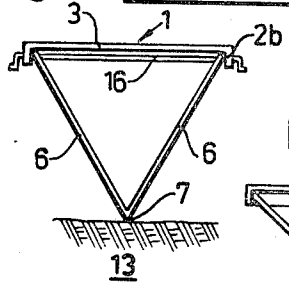


Fig.8c

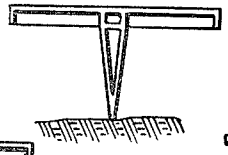


Fig.8b

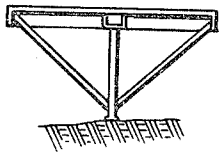
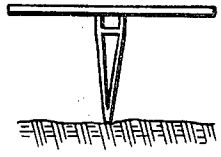


Fig.8d



INVENTOR.
SVEN ERIK JULIUS BARKELING
BY
Albert M. Parker

Jan. 13, 1970 S. E. J. BARKELING 3,488,968

BOAT LANDING STAGES AND THE LIKE

Filed July 14, 1967 3 Sheets-Sheet 3

Fig.9

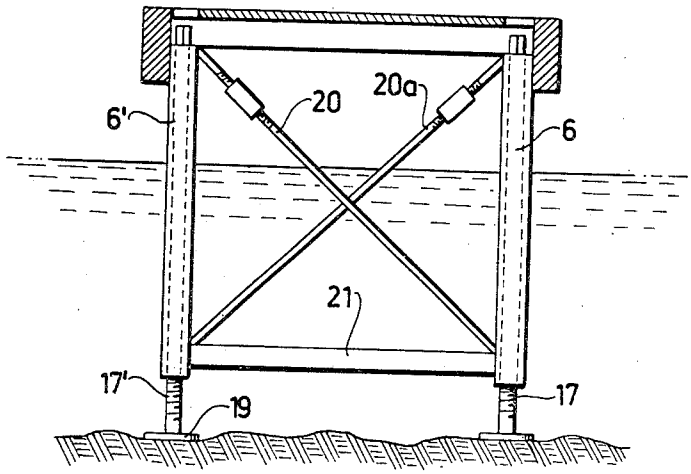
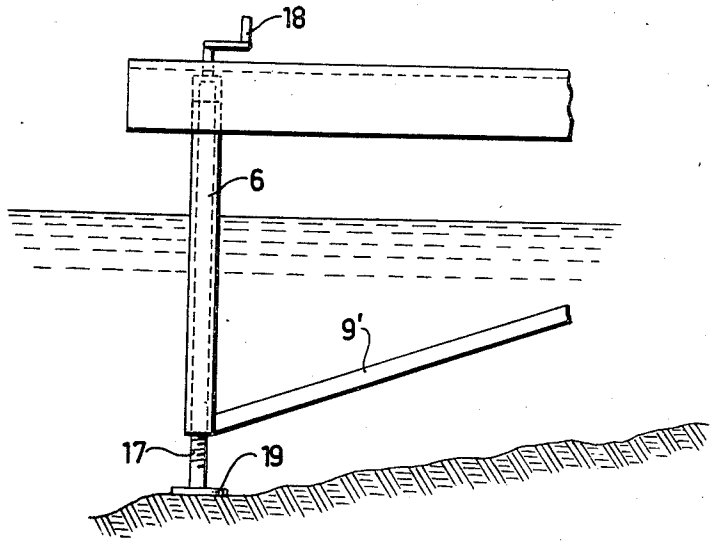


Fig.10



INVENTOR.
SVEN ERIK JULIUS BARKELING
BY Albert M. Parker

United States Patent Office

3,488,968

Patented Jan. 13, 1970

3,488,968

BOAT LANDING STAGES AND THE LIKE

Sven Erik Julius Barkeling, Batsmansvagen 1, Danderyd, Sweden

Filed July 14, 1967, Ser. No. 653,528
Int. Cl. E02b 3/20; E04b 7/16
U.S. Cl. 61—48 6 Claims

ABSTRACT OF THE DISCLOSURE

The present invention relates to a landing stage which may be used by boats, small sea and river crafts, for instance. The front end of such a stage is carried by a support structure, resting on the sea or river bed while the rear end of the stage is removably anchored to the foreshore. The landing stage is, furthermore, provided with a framework presenting a deck in the form of planks, a plate or the like. The framework is either anchored to the foreshore direct or via coupling means, in a manner known per se. According to the invention there is a supporting structure comprising at least two stays which are secured to the frame in spaced relationship, in a plane perpendicular to the longitudinal direction of the landing stage, said stays cooperating with supporting elements extending from the lower portion of the stays towards the fastening point of the framework.

BACKGROUND

In the case of landing stages which extend from the foreshore out over the water the common problem is to anchor the landing stage against lifting and lateral displacement, caused by the water and ice. Previous methods of anchoring landing stages have included stone chests constructed of vertical and/or horizontal timbers and filled with stones or some other heavy material. Such chests, however, are expensive because of the large quantities of material required which, furthermore, as a rule must be driven out to the chests during the winter time when the ice is thick enough to withstand the weight of the transporting vehicle. This method also presents the disadvantage that the sinking ability of the stones is reduced; first because they suffer a loss in weight in the water and, secondly, because of the lifting ability (buoyancy) of the wood. Further, water and ice present wide surfaces of attack, even though special arrangements be taken to reduce the forces of attack. Also, the timber which is placed in or immediately above the surface of the water is subjected to attack from fungii and other organisms which attack wood, thus necessitating close supervision and careful maintenance of the wood near the surface of the water.

To eliminate a large percentage of the work needed in the construction of stable and rugged boat landing stages it has been suggested to use small floating landing stages. These, however, present the disadvantage of being difficult to use in choppy water. The small floating landing stages are completely unservicable in rough water and heavy swells.

To eliminate the above disclosed disadvantages, a boat landing stage has been suggested which includes a frame presenting a deck portion and supporting and bracing members which extend between the frame and the sea or river bed; the frame being anchored direct to the foreshore or through the intermediary of coupling means. The supporting members used hitherto comprise two parallel, vertical beams positioned side by side and which supportingly abut the sea or river bed. However, these known landing stages present the disadvantage that the frame of the landing stage twists if one of the supporting member settles out of proportion with the other supporting member.

The main object of the present invention is to eliminate these disadvantages by making the stage sufficiently rigid and securely supported while still enabling it to be lifted and brought inshore when needed.

The invention will be more closely described in the following with reference to the accompanying drawings which illustrate the significant characterizing features of the present invention and wherein

FIGURES 1, 2 and 3 show various views of a particular embodiment of the landing stage according to the invention.

FIGURE 4 shows a modification of the landing stage shown in FIGURES 1 to 3.

FIGURES 5, 6 and 7 illustrate different views of another embodiment of the invention.

FIGURES 8*a* to 8*d* illustrate different embodiments of struts adapted as supporting means, and

FIGURES 9 and 10 show various views of still another embodiment of the present invention.

Shown in FIGURES 1, 2 and 3 is a boat landing stage comprising a frame including four parts, of which the parts **2***a*, **2***b* are disposed at right angles to the parts **2***c* and **2***d*. The frame parts **2***a*–**2***d* form a right-angled rectangular frame, covered by covering means **3**, say in the form of a plate or a number of spaced timbers of suitable dimensions.

The frame part **2***c* is secured, either directly or indirectly, i.e. through the medium of coupling means, to special land anchoring means **4**. The anchoring means **4** may cooperate in a known manner with a pin **5** arranged on the frame part **2***c*. It is to advantage if the portions **5** on the frame part **2***c* and the anchoring means **4** can be arranged to cooperate with one another in such a way that the frame **2** together with the plate **3** can be swung around an axle parallel to the portion **2***c*, the said axle extending through the means **4**; alternatively a short pivot bolt may also be used.

A supporting structure carrying the frame extends between the frame and the sea or river bed. The supporting structure comprises at least two braces **6**, **6′** which are attached to the frame in spaced relationship, perpendicular to the longitudinal direction of the landing stage. The braces **6**, **6′** form a triangle; the portions facing away from the frame **2** being connected together at a junction **7**. The said junction **7** can form a support against the sea or river bed but may naturally also be provided with a support plate which rests against said bed. Extending between the junction **7** at right angles to the frame **2** and plate **3** is another brace **8**, which also serves to support the plate **3**.

A brace or support rod **9** extends between the junction **7** of the braces and one corner of the landing stage, and another support rod **9***a* extends between the junction **7** of the braces and the adjacent corner of the landing stage. The said support rods **9**, **9***a* fix the junction point **7** relative to the land-anchoring means **4**, whereby the bracing and supporting means **6**, **7**, **8** are prevented from being displaced in the longitudinal direction of the landing stage.

Additional support means **10** may extend from the junction point **7** to the remaining corners of the frame or landing stage.

The mutual arrangement of the parts forming the landing stage **1**, namely the frame parts **2***a*, **2***b* and the frame parts **2***c* and **2***d* can be clearly seen from FIGURE 2. The two braces **6**, **6′** extend from the frame part **2***a* and the frame part **2***b*, respectively, towards their junction point **7**, with which the support rods **9**, **9***a*, **10**, **10***a* are also joined.

FIGURE 3 shows how the anchoring means **4** is secured to the foreshore **11** and how the braces **6**, **6'** and the additional brace **8** extend through the water **12** down towards the sea or river bed **13**.

Shown in FIGURE 4 is a modification of the landing stage according to FIGURES 1 to 3, where the frame parts **2***a* and **2***b* are combined to form a strut **2***ab* arranged in the central portion of the landing stage. It is, of course, necessary to join the outer portions of the strut **2***ab* to the previously described frame parts **2***d* and **2***c*, but it is also necessary to provide supporting means **14** in the centre of the landing stage for the plate **3**.

Shown in FIGURES 5, 6 and 7 is another embodiment of the invention which, similarly to the arrangement according to FIGURE 1, has a frame comprising the frame parts **2***a*, **2***b*, **2***c* and **2***d*. The support rods **9**, **9***a* also cooperate with the junction point **7** of the braces **6**, **6'**.

The portions of the braces **6**, **6'** which face towards the frame **2***a*, **2***b* are so arranged by means **16** connecting the ends thereof that they can be displaced towards and away from one another. This displacement is made possible in that the member **16** comprises a screw, the outer ends of which have opposing threads. These threads cooperate with threads tapped in those portions of braces **6**, **6'** which face toward the frame. By rotating the screw **16** in one direction the two ends will be displaced towards one another and vice versa, whereby the height of the frame **2** with plate **3** can be adjusted in a simple manner.

FIGURES 6 and 7 illustrate different sections of the embodiment according to FIGURE 5. The structure of the frame **2** proper is also apparent from this figure. Further, special members **17**, **17***a* are arranged to reinforce the frame structure. One of these members **17***a* extends from one securing point **5** obliquely across the frame to the securing point of the stay **6**, while the second member **17** extends from the other securing point **5** across the landing stage and to the securing point of the stay **6'**.

FIGURE 8*a* illustrates a landing stage according to FIGURES 5, 6 and 7 viewed from the front, and shows clearly how the level-adjusting means **16** functions. This figure also shows that the junction point **7** lies in direct contact with the sea or river bed.

FIGURE 8*b* shows a similar view of the embodiment according to FIGURES 1 to 3, FIGURE 8*c* shows a corresponding view in the embodiment according to FIGURE 4, and the same is applicable to the arrangement according to FIGURE 8*d*.

Shown in FIGURES 9 and 10 is a further embodiment having a frame structure substantially similar to that according to FIGURES 1 to 3. The support, in this instance, comprises two wooden stays **6**, **6'**, which extend between the sea or river bed and the frame and which are parallel to one another. Each stay presents a centrally arranged level-adjusting means **17** in the form of a screw, which can be rotated by means of a crank **18**. The screw **17** is provided with a plate **19** abutting the bed **13**. The level adjusting means enables the frame to adopt a position completely independent of the nature and configuration of the sea or river bed. A supporting rod **9'**, which extends from the lower portion of the stay **6'** to the fastening point of the frame, cooperates with each stay **6**.

Crossing supporting means **20**, **20***a*, are arranged to reinforce the stays **6**, **6***a*. The length of the supporting means can be adjusted by means of a screw, for instance. The stays **6**, **6***a* are joined together at their lower portions, via a distance means **21**.

It is particularly important that the frame and plate are rigid and for this purpose the frame is provided with a plurality of stiffening elements. Thus, according to the embodiment of FIGURE 4 the central part on **2***a* may be designed as a tortion-rigid tube, which prevents twisting of the stay and frame.

The above described structures are well suited for factory manufacture and can be assembled rapidly. Further, they can be assembled and positioned at any time of the year. The risk of the landing stage being broken by ice is eliminated since the said landing stage can be easily lifted and brought in-shore. In all events, even if the landing stage is left in position, the attack surfaces presented to ice and sea are limited.

What I claim is:

1. In a landing stage for small craft having the front end thereof supported by supporting means resting on the sea or river bed and having the rear end mounted on the shore, said stage including a frame carrying a deck, and said frame having means at the inner end thereof for removably anchoring said frame to the shore, a supporting structure for said stage having a forward portion consisting of two stays, means for securing said stays adjacent opposite sides of said frame, said stays converging downwardly and lying in a plane perpendicular to the longitudinal direction of said stage, said stays meeting at a common supporting position, and supporting elements extending from said supporting position toward the anchored end of said frame and being secured to said frame.

2. A landing stage according to claim **1** wherein the lower end portions to said stays are joined together directly.

3. A landing stage according to claim **2**, there being two of said supporting elements, one of said supporting elements being secured to said frame at a corner thereof adjacent said anchored position and the other of said supporting elements being secured to said frame at the opposite corner thereof adjacent said anchored position.

4. A landing stage according to claim **1** and including level adjusting means arranged between said stays for adjusting the vertical position of said frame.

5. A landing stage according to claim **4**, said adjusting means including means for displacing the upper ends of said stays toward and away from each other.

6. A landing stage according to claim **5**, said adjusting means comprising a screw, said stays being formed with oppositely threaded portions, said oppositely threaded portions being received by said screw.

References Cited

UNITED STATES PATENTS

963,061	7/1910	Noullet	61—48
1,243,981	10/1917	Ross	61—48
2,948,121	8/1960	Karst	61—48
3,354,590	11/1967	Gilroy	52—73

FOREIGN PATENTS

851,280	1939	France.
394,051	11/1965	Switzerland.

JACOB SHAPIRO, Primary Examiner

U.S. Cl. X.R.

52—73