July 7, 1942. W. B. MACAULAY 2,288,816

DREDGE HULL

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Fig. 1

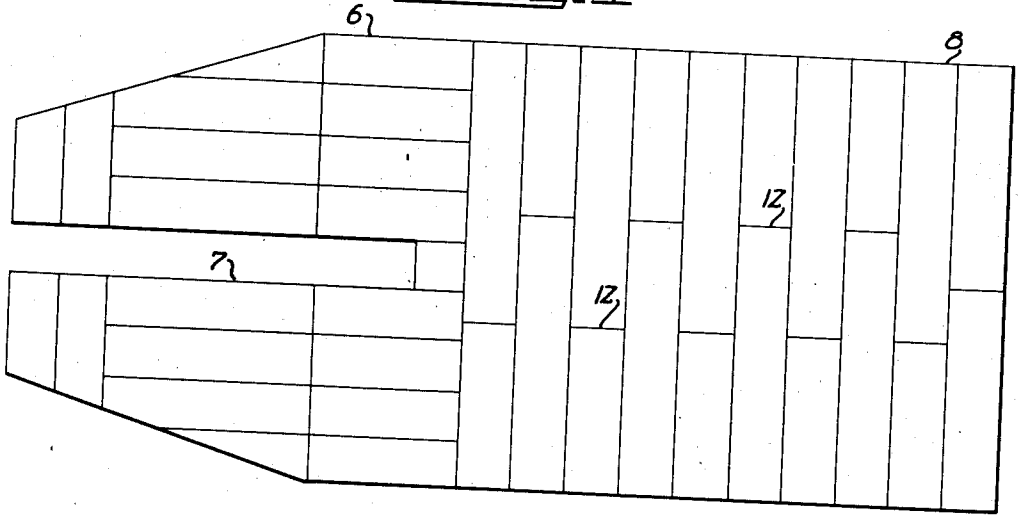
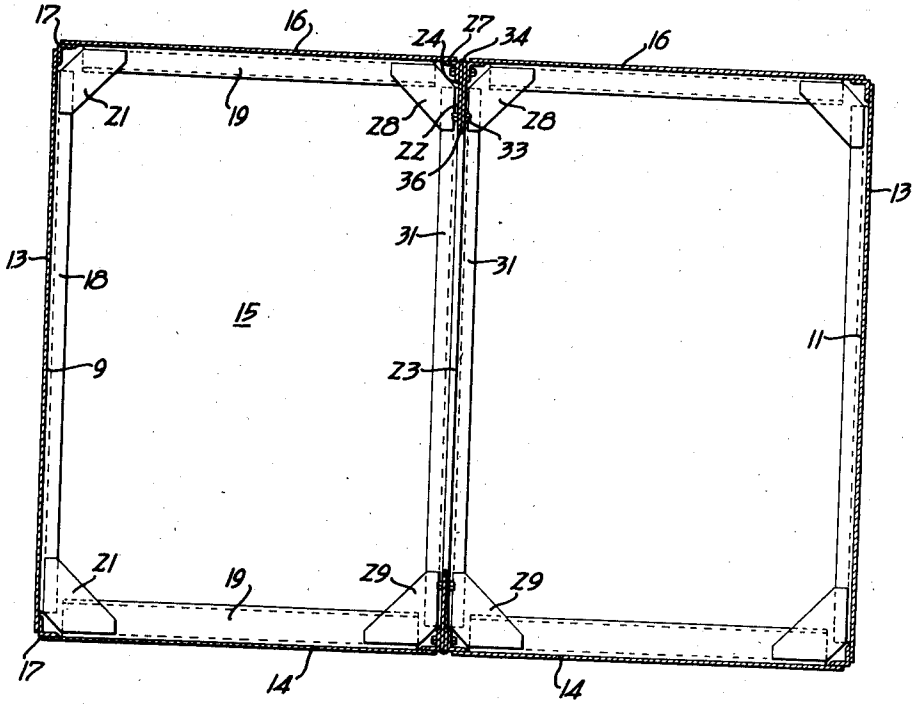


Fig. 4



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Fig. 2

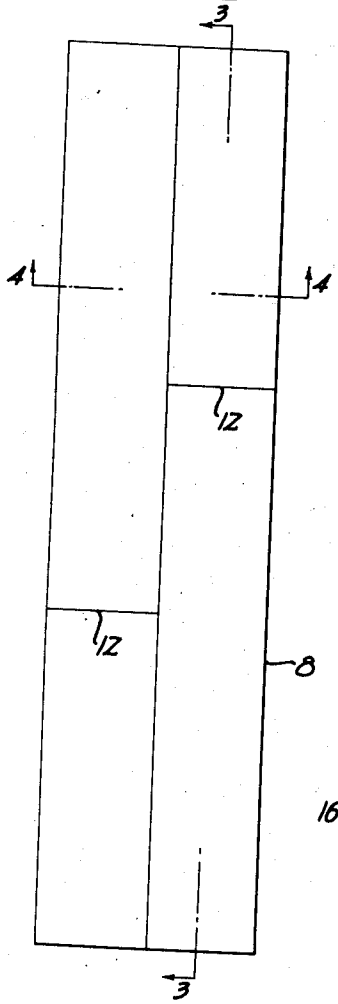


Fig. 3

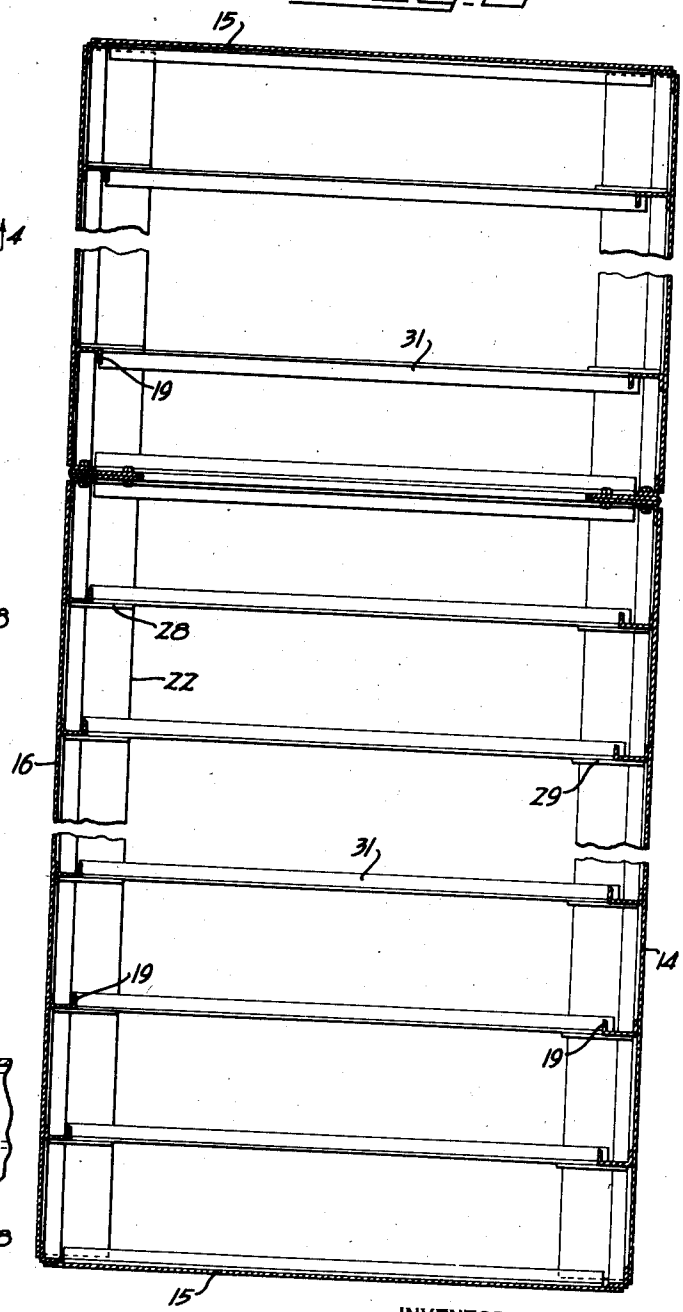
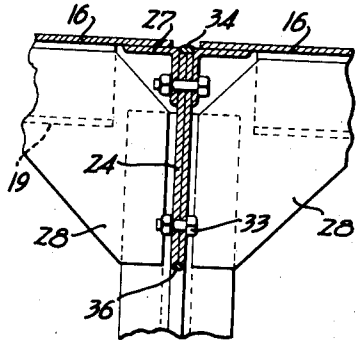


Fig. 5



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DREDGE HULL

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Application December 12, 1939, Serial No. 308,835

1 Claim. (Cl. 114—26)

My invention is concerned particularly with boat hulls and is designed primarily for use in connection with dredges. A dredge hull normally is assembled in the field from a plurality of parts which are more or less prefabricated at a factory and shipped to the field for erection. While some dredge fields are of such a character and are so located with respect to the factory as to impose no structure or design limitations upon the fabrication of the hull, other fields are so remote and have such special characteristics as to impose very severe limitations upon the design. Particularly in the case of Arctic and Antarctic fields is it necessary not only to transport parts of the dredge by ship or rail partway to the site of operations, but also to complete the journey of the parts by travel where there are no roads and often over vast expanses of snow and ice. It is therefore necessary to provide parts which can be transported by rail or by boat and can be subsequently transported over snow and ice.

It is virtually necessary that a large part of the field erection take place at or near the terminus of the rail or water shipment which may be many miles from the dredging site. In such localities, Alaska for instance, labor is scarce and expensive and the season is short, so that a given job of field erection must be promptly completed, otherwise it must wait until the following year for transportation to the dredge site. This transportation may be for a distance of twenty or twenty-five miles over snow and ice fields, hence the field-erected parts must be adaptable to this condition as well as to a minimum of field labor costs. It is therefore an object of my invention to provide a dredge hull which can be fabricated in such a way as to make it capable of transport by rail or boat and over ice fields.

Another consideration under many circumstances, particularly in very remote fields, is to reduce as much as possible the amount of field work necessary for assembling and also to simplify the kind or character of field work so that relatively unskilled laborers can perform the necessary final erection operations. It is therefore another object of my invention to provide a dredge hull which can readily be assembled by unskilled labor with the help of a minimum amount of skilled supervision and labor.

The foregoing and other objects are attained in the embodiment of the invention illustrated in the drawings, in which

Fig. 1 is a form of a dredge hull constructed in accordance with my invention;

Fig. 2 is a plan of a pontoon as included in the hull shown in Fig. 1;

Fig. 3 is a cross-section the plane of which is indicated by the line 3—3 of Fig. 2;

Fig. 4 is a cross-section the plane of which is indicated by the line 4—4 of Fig. 2; and

Fig. 5 is an enlarged cross-section, similar to Fig. 4, but showing in detail the abutting pontoon flanges welded together.

In its preferred form, the dredge hull comprises a plurality of assembled pontoons, each pontoon including a pair of facing metal boxes having inturned marginal flanges which are placed in abutment and are held temporarily by removable fastenings, following which they are peripherally welded together, both externally and internally, to provide a water-tight enclosure.

While the dredge hull of my invention is of course susceptible of embodiment in a large number of different forms, it is illustrated herein as it has been embodied in one instance, for shipment to a distant field part of the journey to which is over ice and snow.

In this form of my invention there is provided a floating hull 6 which is in one portion generally rectangular in plan and is in another portion tapered to converge in the general direction of a central well 7. While the particular contour of the hull is immaterial, the one disclosed is representative and illustrates that the hull is made up preferably of a plurality of individual pontoons 8. A single one of the pontoons is especially shown in plan in Fig. 2, and in the representative instance is itself rectangular in plan although, as disclosed in Fig. 1, some of the pontoons are of irregular shapes. The general principle of construction of all of them is the same, however, so that the description of a rectangular pontoon is intended to cover any variation of such shape.

Each of the pontoons 8 is preferably fabricated of a plurality—a pair—of metal boxes 9 and 11. The boxes 9 and 11 are substantially identical and are closed parallelepipedons except for adjacent sides. Each box may be of such a length, however, as to make it desirable to provide an intermediate joint, yet I prefer that each of the boxes meet in a joint 12 which is not exactly in the center of the length thereof but rather is offset so that the several joints 12, when the boxes 9 and 11 are placed adjacent each other, are staggered or are out of line, thereby distributing the stresses.

Since each of the pontoons is relatively large, it is fabricated of a plurality of smaller struc-

tural shapes. An example of one size, which is that illustrated, is a pontoon substantially 12 ft. high or deep, about 17 ft. wide, and approximately 70 ft. long. Each of the boxes 9 and 11 is comprised of outside structural plates 13 and bottom plates 14 and end plates 15, as well as top plates 16, which, at corresponding corners, are joined to each other through the intermediary of angles 17 and are internally braced by structural shapes 18 and 19 joined by gusset plates 21. This construction affords a pair of boxes which are open on their adjacent sides yet have their marginal edges in substantial registry or abutment.

In accordance with my invention, I preferably provide each of the boxes 9 and 11 with an inturned marginal flange. This flange 22 forms a rectangular border or margin around the side opening 23 and is comprised of a plate 24 joined to the plates 16 and 14, as well as to the end plates 15, by angles 27. Not only are the flanges held in place, but likewise the general rigidity of the structure is augmented by gussets 28 and 29 joining the braces 19 to additional braces 31.

All of the fabrication so far described is feasible of construction at a central erecting factory and provides structures in the nature of boxes having open sides which are well capable of rail or boat transport. Furthermore, each of the boxes fabricated as so far described is a substantially finished article and, if turned with the side 13 lowermost, for example, is water-tight and is of a weight which is satisfactory for ordinary handling and transport.

Since the two boxes 9 and 11 are substantially finished, they can be shipped to the field for erection and, when received there, can be assembled with the flanges 22 in immediate abutment, as shown in Fig. 4, and held in such abutted or registered position by means of removable fastenings 33, such as bolts and nuts, which are passed through previously provided holes in appropriate locations. Access to the interior of the boxes 9 and 11 is had through suitable manholes provided with closures, not shown, but in accordance with the usual fashion of dredge hulls. When the two boxes 9 and 11 are held in position by the fastenings 33, the adjacent edges of the flanges 22 are externally secured together by a peripheral weld 34 which extends entirely around the outside meeting edges of the flanges or the meeting edges of the boxes 9 and 11, to provide a continuous closure and fastening therefor. Similarly, and to supplement the weld 34, the internal edges of the flanges are provided with a peripheral weld 36 extending entirely around the interior of the marginal flanges, so that both boxes 9 and 11 are permanently related together in the position shown in Fig. 4, and a water-tight connection is provided so that the boxes together constitute a pontoon 8. The fastenings 33 can be left in position if desired, for any additional strength that may be necessary, or can be removed if that seems to be desirable. The peripheral welding is of a nature which can readily and simply be fabricated in the field and completes the assembly of the units for final erection as shown in Fig. 1.

I claim:

A dredge hull comprising a pontoon including a pair of generally closed boxes having open abutting sides, each of said boxes being fabricated of a plurality of spaced rectangular frames made of structural shapes spaced at the corners of the rectangular frames, gussets secured to the structural shapes and spanning the spaces between the structural shapes at the corners, plates secured to said spaced rectangular frames on all sides but one, means for securing said plates together in water tight relationship, plates constituting inturned flanges disposed on said abutting sides surrounding the openings therein and secured to said frames, and welds extending around the adjacent edges of said flange plates to constitute a water tight connection between said pair of boxes.

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