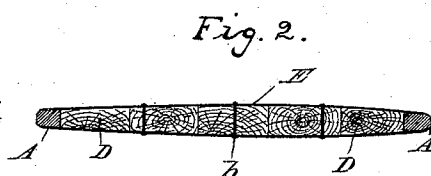
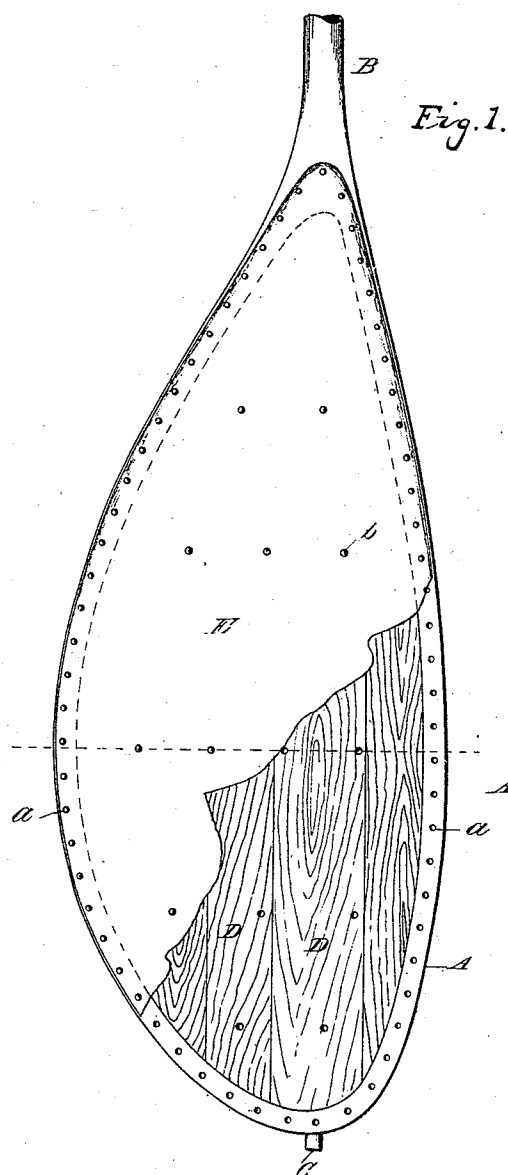


(No Model.)

A. McDOUGALL.
RUDDER.

No. 492,873.

Patented Mar. 7, 1893.



Witnesses

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UNITED STATES PATENT OFFICE.

ALEXANDER McDOUGALL, OF DULUTH, MINNESOTA.

RUDDER.

SPECIFICATION forming part of Letters Patent No. 492,873, dated March 7, 1893.

Application filed September 17, 1891. Serial No. 406,012. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER McDOUGALL, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Rudders; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to various new and useful improvements in the construction of rudders.

The principal object sought to be attained by the use of my invention is to produce a rudder which can be manufactured more economically than former rudders and which at the same time will be lighter and stronger than said former rudders.

Heretofore rudders have been composed of an outside iron or steel frame having one or more longitudinal or cross ribs which are placed where the greatest strain occurs, and with an interior surface of wood. In these rudders the wood is used simply as a packing and did not in any way increase the strength of the rudder, since it was necessarily cut at the cross ribs so that the strength of the rudder depended solely upon the cross ribs. In the present invention, I propose to dispense with the cross ribs or ribs and to make the wooden interior continuous so that the wood will add very materially to the strength of the rudder. I also propose to make use of an outside metallic covering over the wood which will also increase the strength of the rudder and add to its general appearance.

For a better comprehension of my invention, attention is directed to the accompanying drawings forming a part of this specification, and in which,

Figure 1—is an elevation partly in section of a balanced rudder made in accordance with my improved plan of construction, and Fig. 2—a sectional view of the same.

In both of the above views corresponding parts are designated by the same letters of reference.

Before beginning the description of my present invention it should be understood that not only balanced rudders but rudders of all varieties may be used in accordance with my invention.

A, is a heavy iron or steel frame which may be cast or worked into the proper shape. This frame is provided at its upper portion with a stock B, which may be either cast in position on the frame or welded or secured thereto in any suitable manner. At the lower end of the frame A is the usual pintle C.

D, D, are heavy hard wood planks which are fitted within the outside frame A, and which are preferably arranged in a vertical position. These planks are continuous throughout, and are preferably of a gradual thickness from each side to the center as shown in Fig. 2. It is also desirable that the planks be decreased gradually in thickness from the center to the top, and to the bottom, although if desired they may be of the same thickness throughout.

E, E, is heavy metal covering on each side of the planks D, and which is secured in place by means of rivets or bolts, *a, a*, passing through the edges of each covering or plate and through the outside frame A.

In order to further strengthen the rudder, I make use of additional bolts or rivets *b, b*, which extend through both coverings or plates E, E, and through the planks D, D. When in use, the interior planks D will swell under the action of the water so as to fit very tightly within the frame A, and between the coverings or plates E, E. This rudder may be made cheaper than other rudders because the usual cross ribs are dispensed with. It will be stronger than other rudders because the entire strength of the planks D, D, will be obtained and also the coverings E, E, will add strength to the rudder.

Having now described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

An improved rudder, consisting of a metallic continuous frame A, planks D, continuous throughout, arranged vertically within said frame and an outer metallic covering E, on each side of the planks D, and riveted thereto and to the continuous frame, substantially as described.

ALEXANDER McDOUGALL.

In presence of—

C. E. WACHTEL,
CHARLES W. LELAND.