L. R. CALDER.

CUTTER FOR DREDGERS.

APPLICATION FILED APR. 7, 1919.

1,316,349.

Patented Sept. 16, 1919.

2 SHEETS—SHEET 1.

Fig. 1.

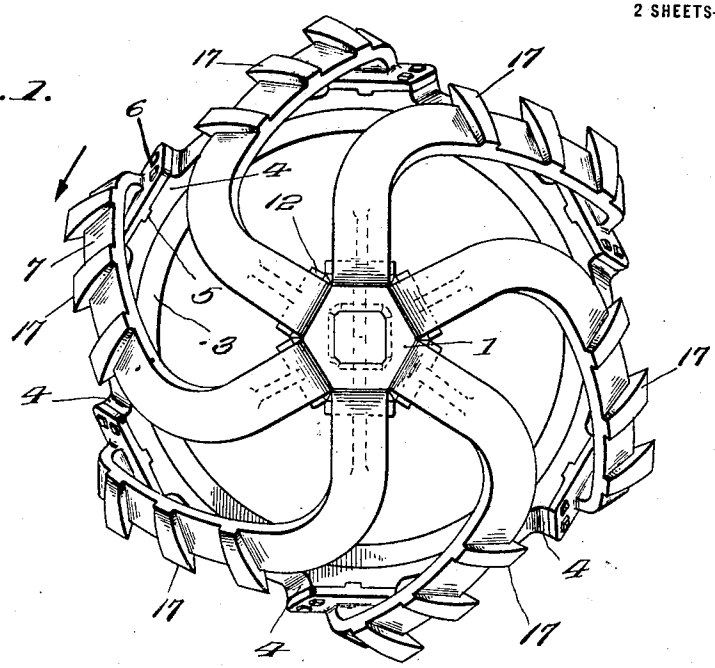
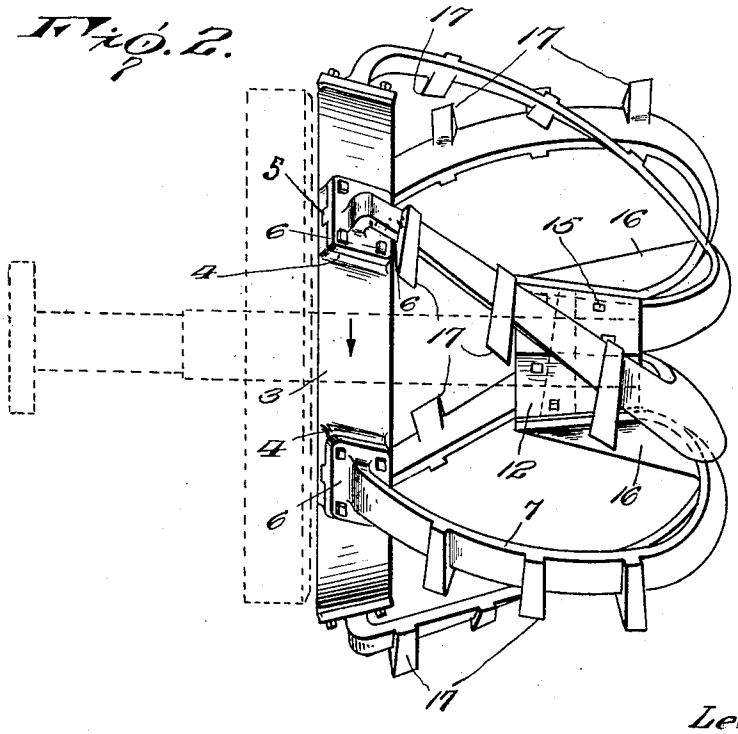


Fig. 2.



INVENTOR.

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2 SHEETS—SHEET 2.

Fig. 7.

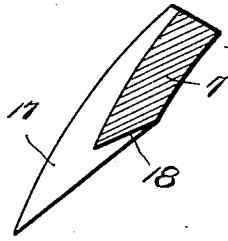


Fig. 3.

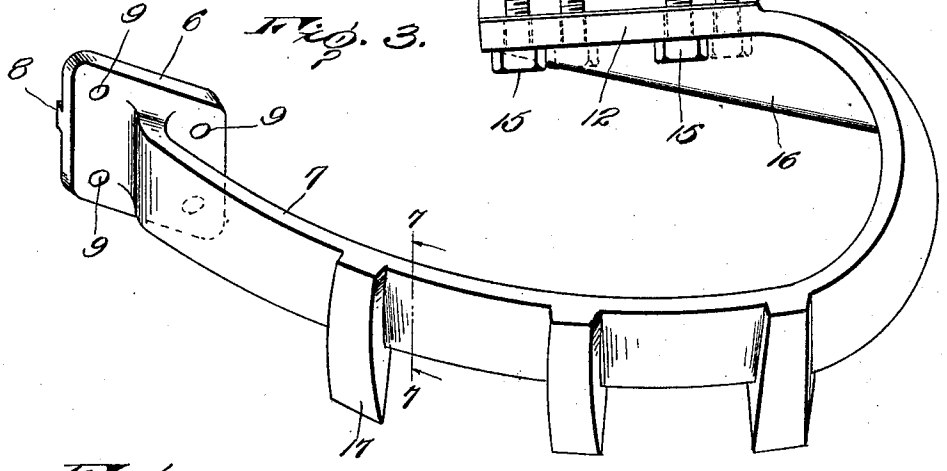


Fig. 4.

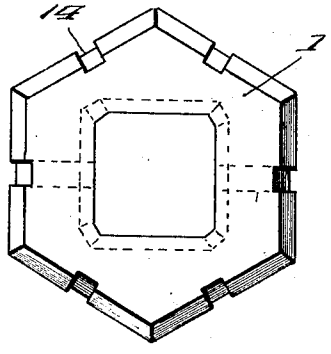


Fig. 5.

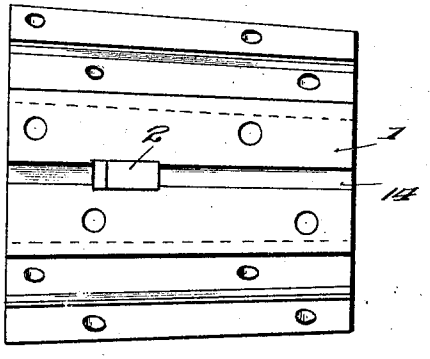
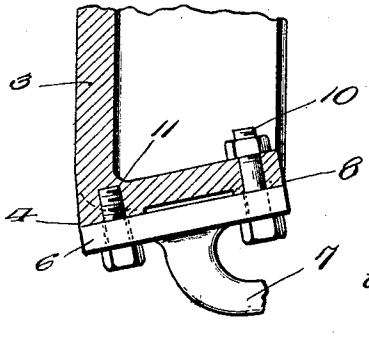


Fig. 6.



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UNITED STATES PATENT OFFICE.

LEO R. CALDER, OF CHARLESTON, SOUTH CAROLINA.

CUTTER FOR DREDGERS.

1,316,349. Specification of Letters Patent. Patented Sept. 16, 1919.

Application filed April 7, 1919. Serial No. 288,182.

To all whom it may concern:

Be it known that I, LEO R. CALDER, a citizen of the United States, residing at Charleston, in the county of Charleston and State of South Carolina, have invented certain new and useful Improvements in Cutters for Dredgers, of which the following is a specification.

This invention relates to cutters for suction dredging machines and has for its object the provision of a cutter head by which the bed of a stream will be effectually loosened and broken up so that the material to be withdrawn may flow readily into the suction pipe. The device is intended particularly for use in cutting into marl or other hard refractory substances and seeks to provide a device which will be strong and durable and which will not be apt to get out of repair.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is an end view of a cutter embodying my invention;

Fig. 2 is a side view of the same;

Fig. 3 is a detail view of one of the cutter arms or blades;

Fig. 4 is a detail end view of the end or head block or casting;

Fig. 5 is a side view of the same;

Fig. 6 is a detail section on the line 6—6 of Fig. 2;

Fig. 7 is a detail section on the line 7—7 of Fig. 3.

In the drawings, the main shaft of the cutter is indicated by dotted lines in Fig. 2. The forward extremity of the driving shaft is tapered and of angular cross section to engage in the tapered angular bore of a hub or head block 1, the angular form of the hub and the shaft preventing relative rotation of the said members. A longitudinal slot 2 is formed in the hub to register with a similar slot in the shaft and a wedge-shaped key, shown in dotted lines in Fig. 2, is fitted in said slots to hold the hub against longitudinal movement. At a suitable point in rear of the hub 1, I secure to the driving shaft by radial arms or otherwise an annular support or hub ring 3 which is provided at intervals on its outer circumference with projections 4 having grooves 5 extending obliquely thereof. A foot or base plate 6 is formed with or secured to the rear end of the cutter bar 7 and corresponds in form and area to the projection 4 upon which it is intended to rest. A central longitudinal rib 8 is formed on the plate to fit in the groove 5 and thereby aid in bringing the cutter bar into proper position. The plate is provided adjacent each corner with an opening 9 through which a bolt 10 or a cap screw 11 is inserted into the hub ring 3 to secure the plate rigidly in place. At the front end of the cutter bar is a similar base or foot plate 12 provided with a longitudinal rib 13 to engage a longitudinal groove 14 in an outer face of the hub 1. Cap screws 15 secure this foot plate to the hub and a web 16 is provided in the angle formed by the plate and the cutter bar to reinforce the same. The hub ring 3 is of greater diameter than the hub 1 and the same blades or cutter bars are arranged spirally around the same, each bar or blade extending somewhat in advance of the forward hub 1 and then bending rather sharply back to the same. At intervals along each cutter bar or blade, I provide teeth 17 which are tapered or beveled, as clearly shown in Fig. 7, and have one face extending to the inner or rear face of the blade, it being noted that the advance edge of the blade or cutter bar is also beveled, as shown in Fig. 7 at 18, so that a long cutting edge is furnished. This construction causes the cutters to sharpen themselves inasmuch as the wear or abrasion will all occur on the upper or outer side of the cutter. The end thrust upon the cutter will be received by the driving shaft and owing to the spiral converging arrangement of the cutting arms will be effectually distributed so that the hard unyielding material which is frequently encountered in the use of such machines will be readily and thoroughly cut up. The manner in which the cutter arms are secured in position provides a firm and rigid fastening and resists all tendency of the arms to twist while in use, but at the same time permits their ready removal when repairs or renewals are necessary.

It will be readily noted that the form of my cutter is such that it will, in effect, bore into the material to be excavated and the marl and clay will not accumulate on the end of the cutter and create such a back pressure on the spuds of the dredger as to break the same. The blades and teeth will keep sharp so as to cut successfully at all times and if any one part should be broken it can be renewed quickly and easily.

It will be understood that the cutter is

rotated in the direction indicated by the arrows in Figs. 1 and 2, the points of the teeth and the beveled edges of the cutter bars penetrating and breaking up the hard material.

The device is very simple in the construction and arrangement of its parts and may be produced and operated at a low cost.

Having thus described the invention, what is claimed as new is:

1. A cutter head for dredgers comprising a forwardly tapered head, a hub ring in rear of said tapered head, spaced base plates secured upon the outer periphery of said hub ring, spaced base plates secured upon the tapered head, and cutter bars secured to and extending between the base plates on the hub ring and the base plates on the head.

2. A cutter head for dredgers comprising spaced supports, a plurality of cutter bars having their ends secured respectively to said supports, and teeth projecting laterally from each bar beyond the advance edge thereof approximately in the plane of the bar, the edge of the bar being beveled and disposed entirely between the opposite surfaces of the teeth.

3. A cutter head for dredgers comprising a hub having flat faces provided with longitudinal grooves, a hub ring in rear of said hub provided externally with spaced projections having obliquely disposed grooves in their outer faces, spiral blades provided at their ends with foot plates having ribs to engage the grooves in the hub and the projections on the hub ring respectively, means for securing the foot plates to the hub and the hub ring respectively, and teeth projecting at intervals from the advance edges of the blades.

In testimony whereof I affix my signature.

LEO R. CALDER. [L. S.]

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."