No. 705,784. Patented July 29, 1902.

R. A. PERRY.

HYDRAULIC DREDGER CUTTER.

(Application filed Mar. 10, 1902.)

(No Model.)

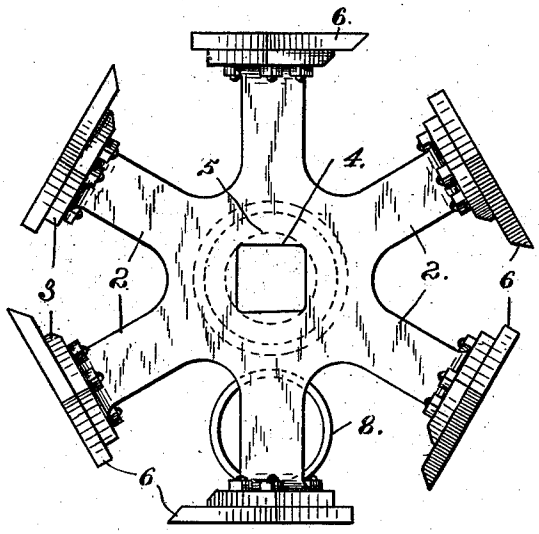


Fig. 1.

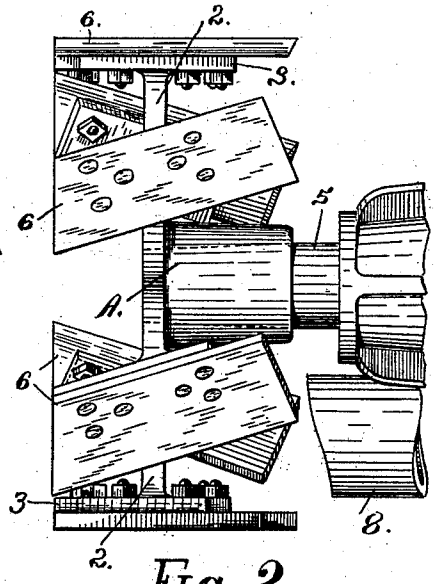


Fig. 2.

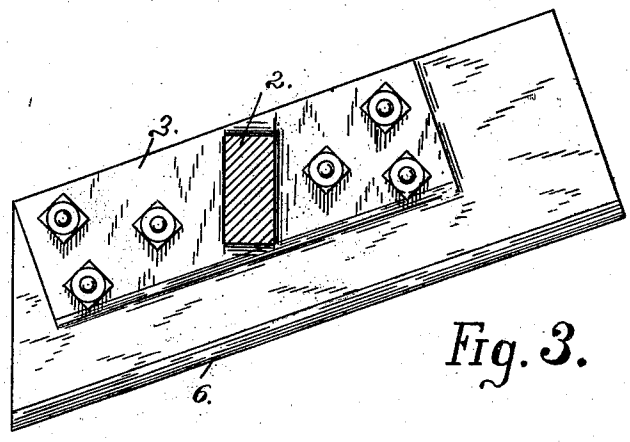


Fig. 3.

Witnesses,
[illegible]
[illegible]

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

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HYDRAULIC-DREDGER CUTTER.

SPECIFICATION forming part of Letters Patent No. 705,784, dated July 29, 1902.

Application filed March 10, 1902. Serial No. 97,457. (No model.)

To all whom it may concern:

Be it known that I, RAYMOND A. PERRY, a citizen of the United States, residing in Oakland, county of Alameda, State of California, have invented an Improvement in Hydraulic-Dredger Cutters; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to cutters which are especially designed for use upon hydraulic-dredging apparatus; and it consists of radial arms firmly attached to the revoluble actuating-shaft and having cutting teeth or blades at the outer ends of the arms, so as to loosen and break up the material which is then conditioned to be removed by the suction-pipe of the apparatus to which it is especially adapted.

My invention also comprises details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is an end view of my improved hydraulic-dredger cutter. Fig. 2 is a side view of same. Fig. 3 is an enlarged detail view of same.

In the employment of hydraulic suction-dredges, to which class my invention is especially applicable, revoluble cutters have been constructed having bottomless buckets with circumferential surrounding rings and tied together with longitudinal bars, these bars either being at right angles or some other angle from the circumferential rings. These rings and bars form a framework to which the buckets are attached, and this framework is in turn secured to the shaft. The great disadvantage of this class of excavators is that in sticky material the buckets and the framework offer such an obstruction to the passage of material that the cutter is often plugged up and the operation has to be suspended for the purpose of cleaning, which causes great delay and expense. It is the object of my invention to provide a cutter of such a character that this clogging of adherent material is avoided, and by doing away with all surrounding rings, bars, or supporting-framework and having the cutters at the ends of radial arms without other attachment I am enabled to excavate and break up any kind of material in which the dredge is called upon to work and prepare it for the suction-pipe, the mouth of which is located contiguous to or within the circle of revolution of the cutters.

In the construction of my cutter I have found a very suitable method is to make a suitable casting forming a hub A, with a plurality of radial arms 2 extending outwardly and having upon the outer ends the flat extended surfaces or plates 3, which are also cast with the central portion. The hub has made through it a hole adapted to fit the shaft. This hole may be circular to fit a cylindrical shaft and have a sufficient key or keys to secure it thereto. I have here shown it as made rectangular, as at 4, and adapted to fit upon a correspondingly-shaped end of the revoluble shaft 5, through which power is transmitted to drive it. Upon the ends 3 of the arms are the cutting-blades 6, which are made of steel or other suitable material and may be secured by countersunk rivets passing through the blades and the ends of the arms to which they are secured, or they may be cast or forged directly upon the arms. The blades may be set either parallel with the shaft, or, as shown in Fig. 2, at an angle therewith, and the outer ends of the blades may be beveled, so that when the blades are not parallel with the shaft the front ends of these cutters will be approximately parallel with the surface of the bank which is being excavated. The suction-pipe 8 generally extends below the shaft and may extend into the space inclosed by the revolving cutters, so that material which is excavated and broken up by the cutters may be drawn into the pipe in conjunction with a body of water sufficient to cause the material to flow freely through the pipes and be eventually discharged as in the manner of this class of dredges.

While I have shown the radial arms and hub made as of a single casting of steel, it will be understood that the arms might be separately bolted upon a hub or flange keyed or otherwise secured to the shaft and the cutter-blades formed with or secured to the

ends of the arms, as previously described. The arms may also be set in a plane at right angles transversely to the shaft or they may be slightly inclined forwardly with relation to the shaft, but no surrounding rings or close-sided buckets are employed.

It will be understood that in place of or in conjunction with the cutting-blades heretofore described I may employ teeth wherever the character of the material is such that they will be more efficient.

I have found this cutter to be most satisfactory for work in heavy or sticky and adhesive clay, also in hard-pan and other material where it has been found impossible to excavate it with the buckets ordinarily used.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a revoluble shaft, a hub and means for securing it to the shaft, arms extending radially outward from the hub and having their outer ends flattened to form a transversely-extended bearing-surface, cutters fitted flatwise against said surface, and a suction-pipe having its mouth located contiguous to the cutter.

2. The combination of a revoluble shaft, a hub and means for securing it to the shaft, arms extending radially outward from the hub, flat plates secured to the outer ends of the arms and extending transversely beyond the arms, cutters fitted flatwise against the flat plates, and a suction-pipe, having its mouth located within the circle of revolution and contiguous to the cutter.

In witness whereof I have hereunto set my hand.

RAYMOND A. PERRY.

Witnesses:
S. H. NOURSE,
JESSIE C. BRODIE.