

Willard Says.....

One of a series on the subject of practical hydraulic dredging.

Cutter for Clay & Sand

The existence of such a wide variety of rotary cutterhead cutters gives testament to the many problems that frustrate successful rotary cutter suction dredge operation.

The cutter, sometimes called a basket, is the rotating element, somewhat hemispherical in shape, which is mounted on the end of a powered shaft so as to cover the suction pipe inlet.

Cutters should:

- A. Loosen the solids to be dredged and mix them with water to make pumpable slurry.
- B. Screen out—without plugging—oversize particles that might lodge in the dredge system and cause downtime.

I have joined many others in attempts to design cutters that would solve production problems specific to a variety of solids deposits. A few of them have markedly improved production, some have caused some improvement and some have failed.

A persistent challenge, especially with sand and gravel mining dredges, has been to design a cutter that can cope with clay. It is quite common for layers of clay to be interspersed in sand and gravel deposits. Thin layers of clay are easily fragmented, mixed with aggregate and pass through the grid of openings in the cutter with no problem.

Serious problems arise when clay layers are thick enough to cause substantial amounts of pure clay to surround the cutter and plug the openings. In some deposits clay serves as a mortar to progressively plug cutter openings by “cementing” near-size rocks into the openings. Either situation requires shutdown and manual cleaning. Frustration is a handmaiden of the cleaning procedure because recurrence is certain.

*Willardsays.....*Cutter for Sand & Gravel



A sand & gravel screening style cutter basket plugged with clay and near-size material.



A typical bladed style cutter basket with sizing bars completely choked with clay and near-size material.

If you are familiar with either of the situations shown above you have a problem that has a solution.

The solution?

CLAYMATOR

The Universal Cutter

From **Twinkle Co**



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Recently an Illinois aggregate producer asked if we had a solution to his clay problem. We have heard this request many times before. This time we had an answer.

Many years ago I designed a cutter that resembled a five-foot-diameter bushel basket with thirteen-inch diameter holes in it for use on an airlift dredge and it worked well to screen out oversize. Our idea was to scale that design down to fit this customer's cutter drive and see if it could deal with clay as well as we thought it would.

The result is the CLAYMATOR Universal Cutter. It is a complete success.

It has **never** plugged since it was installed. The occasional rock that lodges in an opening is gone the next time the cutter is inspected. Self-cleaning it is. Production is excellent and uninterrupted.

A. CLAYMATOR has enough replaceable digger teeth to loosen solids, form slurry, prevent undue wear and support maximum production.

B. CLAYMATOR enables uninterrupted, full production by screening out oversize without plugging.

C. CLAYMATOR is bi-directional.

The exterior of the CLAYMATOR Universal Cutter constantly scrubs against solids as it rotates so:

- Clay that clings to the cutter's exterior is extruded into the cutter through its numerous openings. The cutter does not plug because the openings have no "walls" for clay or mud to cling to.
- Oversized rocks that lodge in the openings are constantly being jostled as the cutter turns and soon fall out.

Call Twinkle Co for more information if your cutter is not coping with oversize and clay.

Twinkle Co's CLAYMATOR Universal Cutter is the new kid on the rotary cutter dredging block.

Contact willard@willardsays.com for more information, comment or criticism.