

(No Model.)

W. M. DOUGLAS.  
DREDGING APPARATUS.

No. 491,723.

Patented Feb. 14, 1893.

Fig. 1.

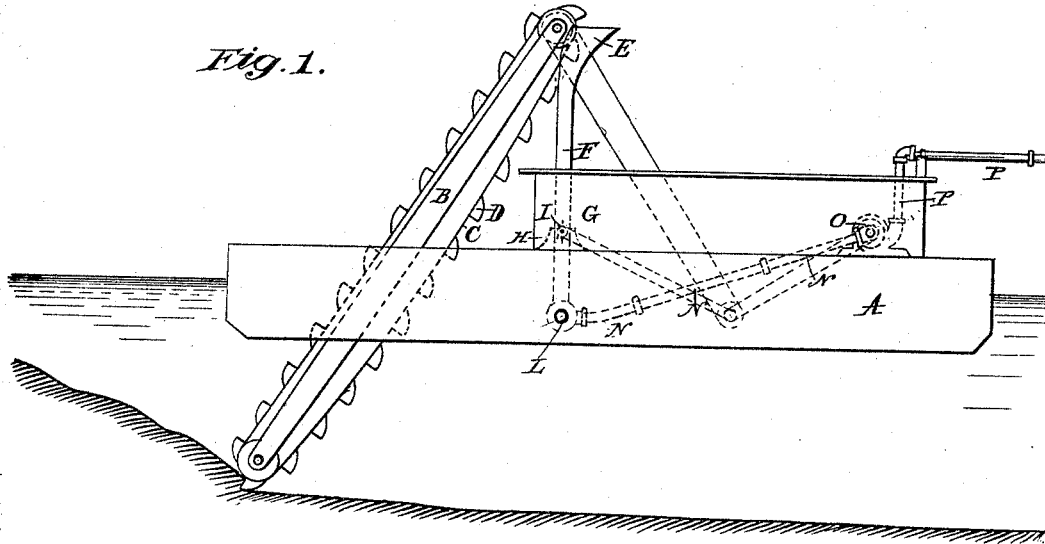
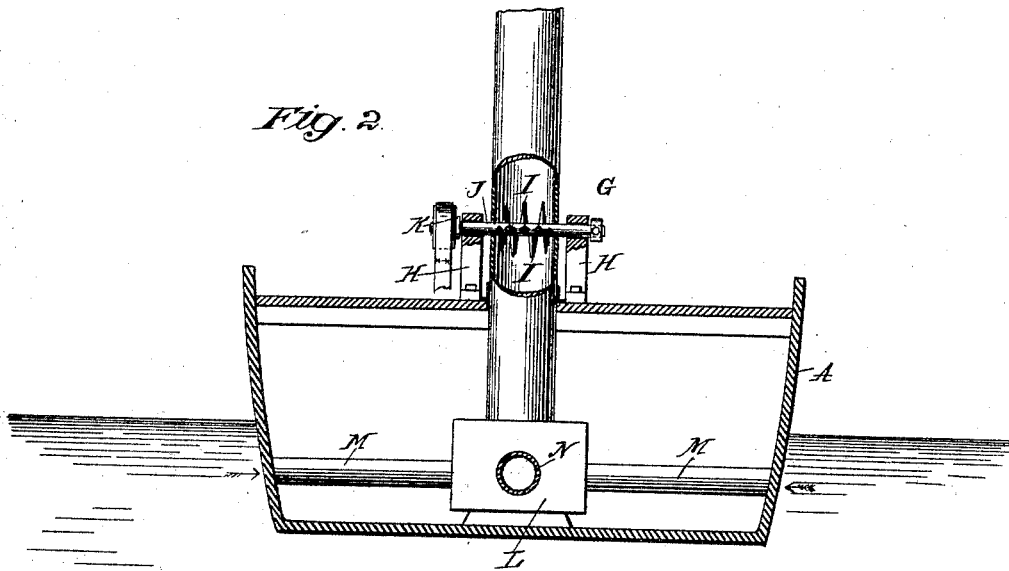


Fig. 2.



WITNESSES:

Edward C. Rowland.  
Thos. A. Nolan

INVENTOR

Wm. M. Douglas  
BY Phillips Abbott  
his ATTORNEY

# UNITED STATES PATENT OFFICE.

WILLIAM M. DOUGLAS, OF GALVESTON, TEXAS, ASSIGNOR OF ONE-HALF TO  
THE BUCYRUS STEAM SHOVEL AND DREDGE COMPANY, OF BUCYRUS,  
OHIO.

## DREDGING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 491,723, dated February 14, 1893.

Application filed January 26, 1892. Serial No. 419,296. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM M. DOUGLAS, a citizen of the United States, and a resident of Galveston, in the county of Galveston and State of Texas, have invented certain new and useful Improvements in Dredging Apparatus, of which the following is a specification.

My invention relates to improvements in dredging apparatus and it consists in combining with the well known bucket chain form of excavator a suction pipe provided with a hopper and a crushing or breaking device so that the material being deposited in the hopper by the continuously moving buckets will be carried under the action of gravity to the breaking or crushing device and thence through a suction pipe and pump and delivery pipe to the place of deposit.

In the drawings hereof, Figure 1 illustrates an elevation of the apparatus. Fig. 2 illustrates a detail of the breaker.

A is the float. B is the boom. C is the endless chain. D are the buckets. These parts are or may be the same as ordinarily used in this form of apparatus.

E is a hopper preferably of metal which connects with a vertical chute F.

G is the breaking apparatus which comprises fingers I set upon a shaft J which is supported upon bearings H.

K is a pulley or gear wheel as the case may be, fast on the end of the shaft J which is suitably connected to motive power whereby the shaft J and its breaker fingers I are rotated.

L is a chamber at the base of the vertical tube F into which the material after having been broken up by the breaker drops.

M, M, are two pipes which connect with the water on the outside of the float below the water line and convey water to the chamber L.

N is a suction pipe which connects the chamber L with the eye of the pump O and P is a discharge pipe which extends overboard to the place of delivery. The pump, the breaker device and the buckets are or may be all operated by the same motive power or independent motors may be provided for them.

The operation is as follows: The buckets being in continuous operation as usual lift the material and deposit it under the action of gravity in the hopper E. Gravity then carries the material downwardly and brings it into contact with the breaker. This revolves with more or less rapidity and thoroughly disintegrates such compacted masses as may be present in the material. From the breaker the material drops into the chamber L from which it is drawn through the suction pipe N. by the pump O. Water from the outside entering through the pipes M, M, increases the fluidity of the material at the chamber L, so that it readily passes through the suction pipe, the pump and discharge pipe. The pump O in a well known manner draws the material in at the eye of the pump and discharges it through the discharge pipe P which connects with the periphery of the pump.

I do not limit myself to the details of construction shown and described since it will be apparent to those who are familiar with this art that alterations may be made therein without departing from the spirit of my invention.

I claim:—

The combination in a dredging apparatus of devices to lift the material, a hopper into which the material is deposited by the said devices, a conduit connecting with said hopper, a breaker in said conduit and a chamber below the breaker into which the material drops, a pipe connecting the chamber with a source of water supply, a suction pipe, a pump and a discharge pipe, substantially as set forth.

Signed at Galveston, in the county of Galveston and State of Texas, this 18th day of January, A. D. 1892.

WILLIAM M. DOUGLAS.

Witnesses:

H. C. LIMKE,  
W. B. MILTON.