(No Model.)

H. B. VAN NESS.

Machine for Breaking Phosphate Rock from the Bed of Streams and Lifting Same.

No. 229,213. **Patented June 22, 1880.**

Fig. 1.

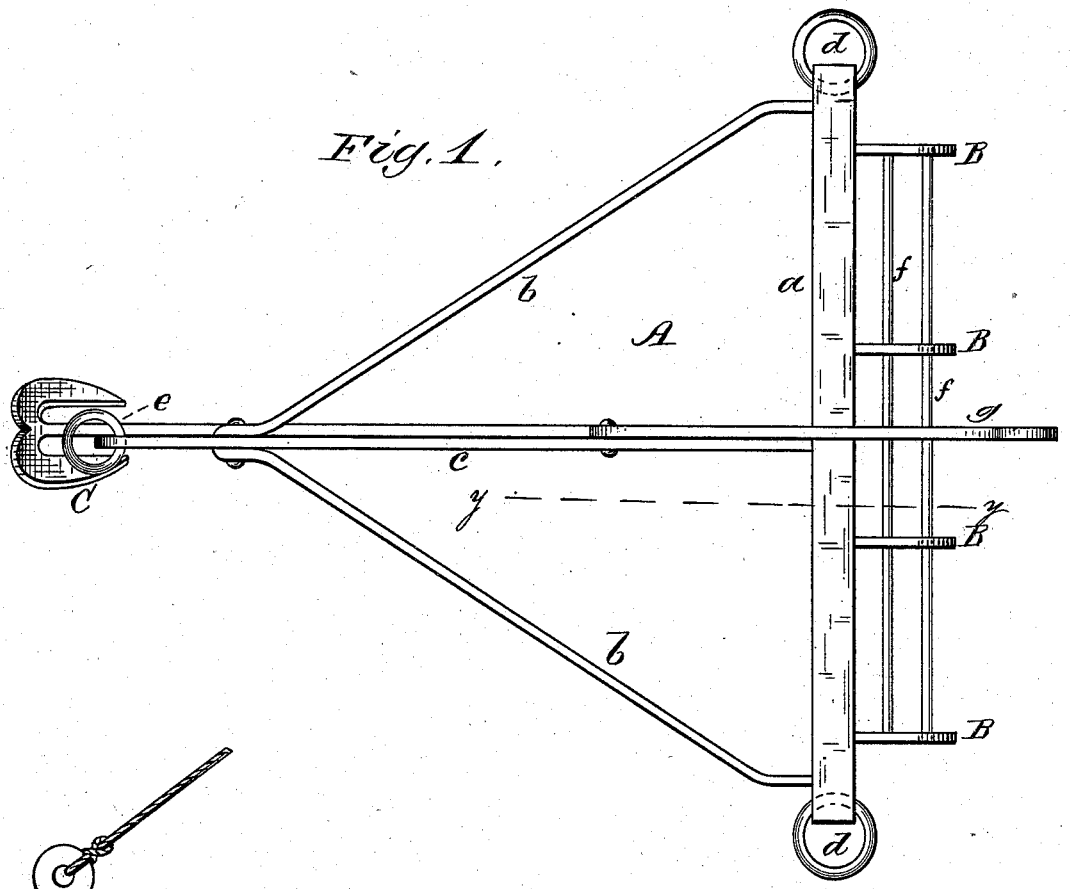
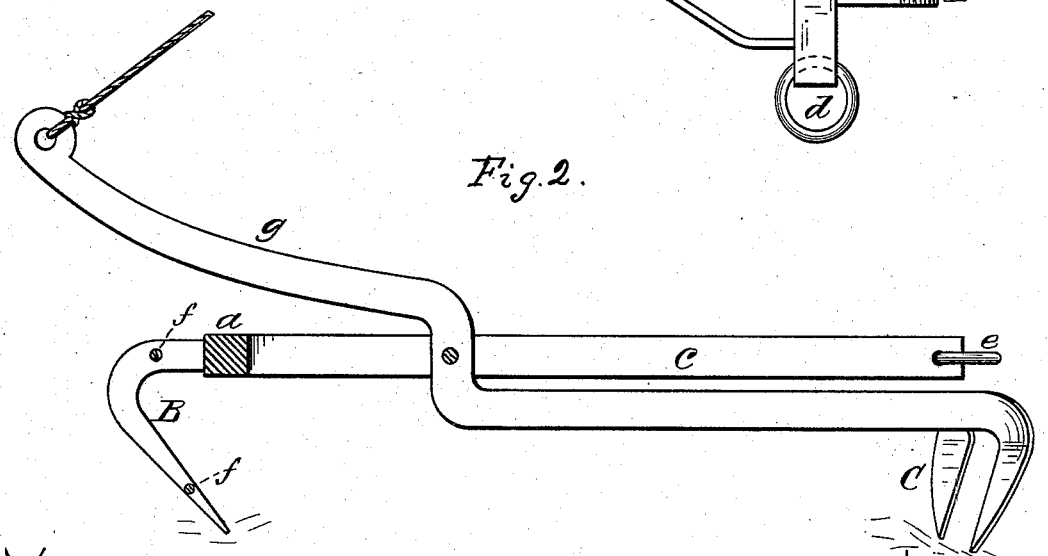


Fig. 2.



Witnesses

Nat. E. Oliphant.

Geo. A. Porter.

Inventor

Harman B. Van Ness

per

Chas. H. Fowler,

Attorney.

UNITED STATES PATENT OFFICE.

HARMAN B. VAN NESS, OF BEAUFORT, SOUTH CAROLINA.

MACHINE FOR BREAKING PHOSPHATE-ROCK FROM THE BED OF STREAMS AND LIFTING SAME.

SPECIFICATION forming part of Letters Patent No. 229,213, dated June 22, 1880.

Application filed April 23, 1880. (No model.)

To all whom it may concern:

Be it known that I, HARMAN B. VAN NESS, a citizen of the United States, residing at Beaufort, in the county of Beaufort and State of South Carolina, have invented certain new and useful Improvements in Machines for Breaking Phosphate-Rock and Lifting Same; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 is a top-plan view of my invention, and Fig. 2 a sectional view taken on line *y y* of Fig. 1.

This invention has relation to machines for breaking and elevating phosphate-rocks from the bottom of rivers; and it consists in certain new and useful improvements therein, as illustrated in the drawings and hereinafter described.

In the accompanying drawings, A represents the metal frame, consisting of the cross-beam *a*, angular arms *b*, and central tongue, *c*. These parts, constituting the frame, may be variously modified, and may be connected together by welding or riveting, as found most desirable; or the frame may be made of any suitable shape or form found most convenient.

The beam *a* is provided at its ends with rings *d*, or other similar means for attaching thereto chains or ropes to lower the drag down upon the rock-beds, the free end of the tongue *c* being also provided with a ring, *e*, or device for attaching one end of a cord or chain, the other end being connected to an engine or winch to draw the drag over the bed of rock.

The horizontal beam *a* has any suitable number of teeth, B, to break and lift the rock, and they are provided with horizontal rods *f*, to adapt them, after breaking the rock, to hold and take up the small pieces.

To the tongue *c* is pivoted the grab C, having an arm, *g*, to which is connected by any suitable means a rope, cord, or chain from the engine or winch, the purpose of the grab C being to assist the drag in lifting large stone that could not be otherwise raised by the teeth B alone, which is accomplished by pulling the arm of the drag in a direction toward the free end of the tongue *c*, when the grab C will be brought against the rock, and, with the assistance of the teeth B, the rock will be held firmly between the two and elevated.

Although I have described the device for elevating and breaking phosphate-rocks from the beds of rivers and streams, I do not desire to be understood as confining myself to such use, as it may be employed for recovering sunken freight, &c., from wrecks, or for submarine excavations and other purposes to which it is found adapted; but it is especially constructed for breaking and raising phosphate-rock, as previously described. Its simplicity of construction, great strength, and facility of operation render it admirably adapted to the purpose.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A machine or device for breaking and raising phosphate-rock from the beds of rivers and streams, consisting of the frame A, tongue *c*, and the beam *a*, having teeth B and rods *f*, in combination with the grab C, having arm *g*, said grab being pivoted to the tongue and operating substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

HARMAN B. VAN NESS.

Witnesses:

W. I. VERDIER,

J. J. FRIPP.