(No Model.)

D. N. LONG.

HYDRAULIC EXCAVATING.

No. 404,852. Patented June 11, 1889.

Fig.1.

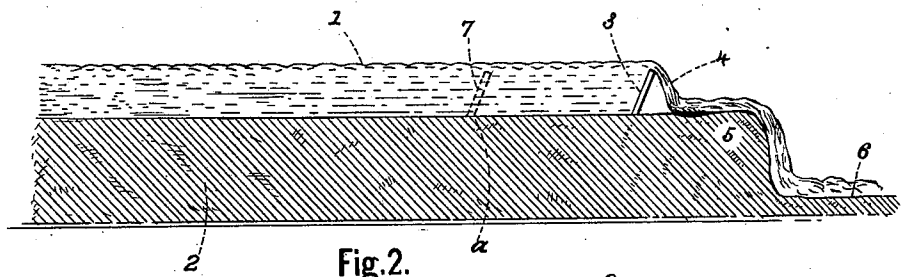
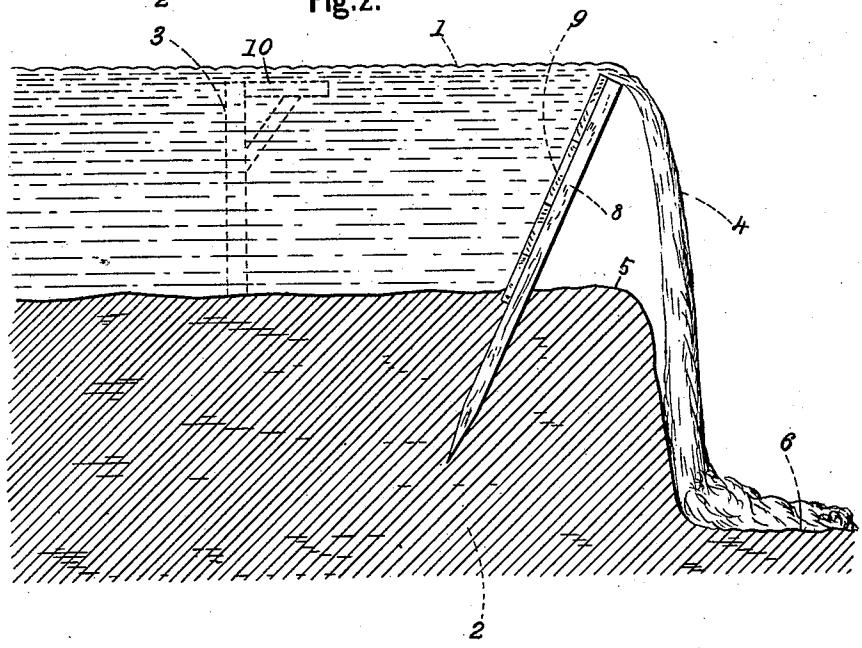


Fig.2.



Witnesses.
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UNITED STATES PATENT OFFICE.

DAVID N. LONG, OF WILLIAMSVILLE, NEW YORK.

HYDRAULIC EXCAVATING.

SPECIFICATION forming part of Letters Patent No. 404,852, dated June 11, 1889.

Application filed November 26, 1888. Serial No. 291,886. (No model.)

To all whom it may concern:

Be it known that I, DAVID N. LONG, a citizen of the United States, residing in Williamsville, in the county of Erie and State of New York, have invented certain new and useful Improvements in Hydraulic Excavating, of which the following is a specification.

My invention relates to certain new and useful improvements in excavating earth by hydradulic erosion, and will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional elevation. Fig. 2 is an enlarged sectional elevation showing some details of the construction of the dams.

This invention consists in a new mode of taking up and carrying off the soil or excavating for ditches, canals, or other purposes, by means of an unconfined stream of running water and one or more removable dams for directing the force of the water to the desired point, until a sufficient quantity of earth is removed, and then removing the dam back to any required point and securing it, so as to permit the water to flow over it until another similar quantity of earth is carried away, which operation is continued and the earth successively removed step by step backward until the desired excavation is made.

Any stream of water running through removable earth or soil, having a natural and sufficient fall, may be deepened or otherwise enlarged, or a separate and distinct channel may be thus excavated by the employment of a surface-ditch having a sufficient supply of water from any suitable source and the necessary fall and outlet.

In said drawings, 1 represents a stream of water, 2 the earth below it, and 3 is the dam over which the water 4 flows until the earth 5 is removed or washed away down to or near the level 6. In this way the full force of the water is directed to and against the exact point required until a sufficient quantity of soil is removed. The dam 3 is either now removed, or another dam 7 is placed and secured at some proper point—the point *a*, for instance—(shown in dotted lines in Fig. 1,) and the dam 3 then removed. The excavation now goes on as before, until another quantity of earth 5 is removed, after which the dam is again removed, and the process repeated as often as may be required.

In Fig. 2 I have shown, on a large scale, a dam of suitable construction for the purpose. A series of posts 8 are driven a suitable distance apart across the stream, and planks 9 are secured rigidly to them, as shown; but any other well-known construction may be used. It will be noticed that the posts are driven down in an inclined position. The object of this is to keep their holding-points in the ground back away from the action of the falling water 4, so that the dam will keep its place until it becomes necessary to remove it. This same result can be accomplished by making the dam 3 stand vertical and providing it at the top with an overhanging projecting portion 10, as shown by the dotted lines in said Fig. 2.

The water in the surface-ditch or other stream being held at the highest practicable level by the dam—say within six inches (more or less) of the surface—causes the water to flow over, and gives a fall equal to the distance between the bottom of the ditch or stream and the top of the dam, thereby increasing the effectiveness of its action upon the soil. For instance, in the surface-ditch, if the water were five feet deep and the dam extended to within six inches of the surface, it would at once give a fall of four feet six inches upon the soil to be removed, which distance would increase as the soil is excavated.

I claim as my invention.

The herein-described method of excavating for ditches, canals, or other purposes, consisting in excavating the soil by hydraulic erosion by causing the water to flow over a dam upon and over a portion of the soil until removed, and then moving the dam upstream and securing it until another similar portion of soil is removed, which operation is repeated until the desired excavation is made, substantially as described.

DAVID N. LONG.

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