(No Model.)

E. DERBEC.

DRILL AND DREDGE.

No. 389,449. Patented Sept. 11, 1888.

Fig. 1.

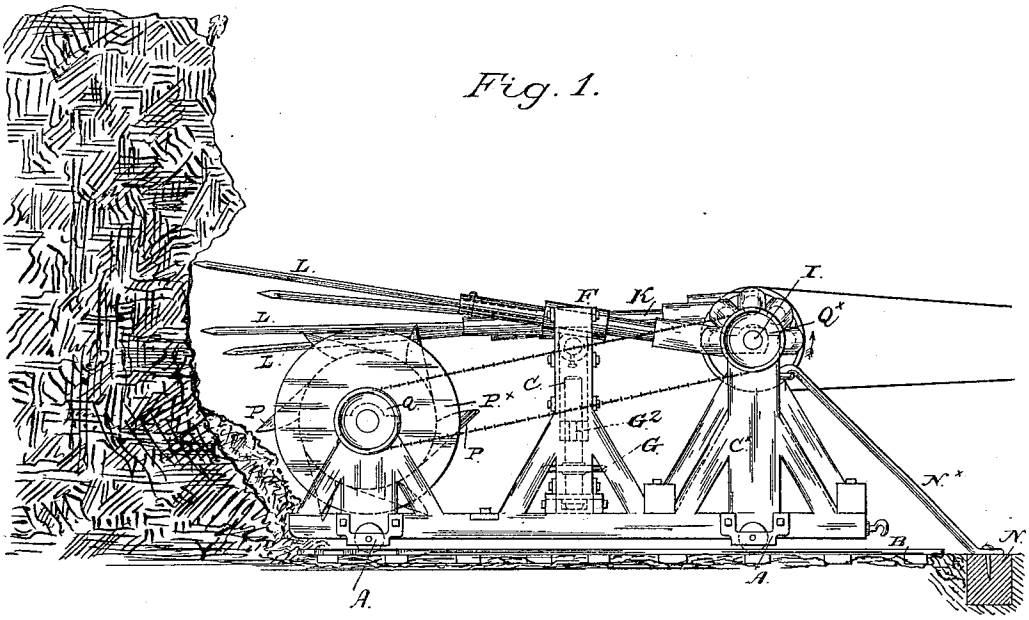


Fig. 4.

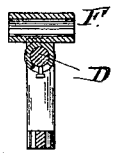


Fig. 2.

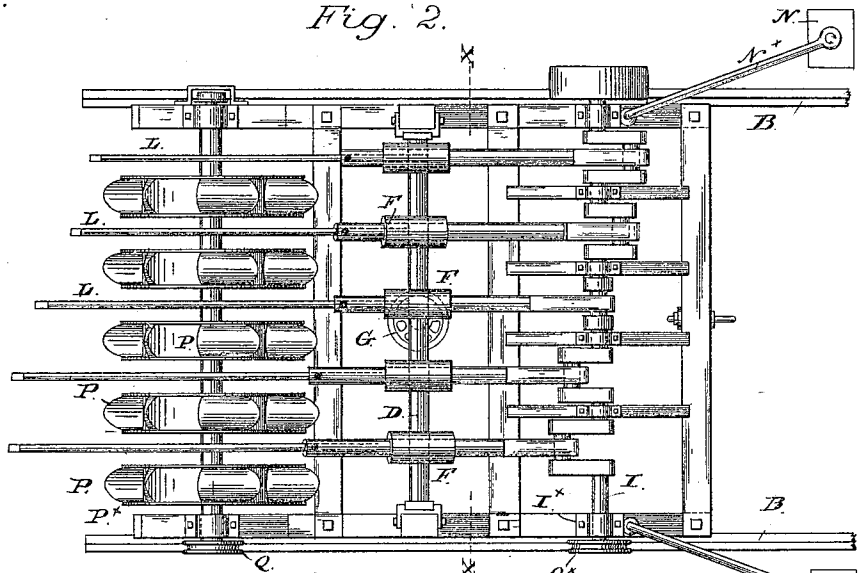
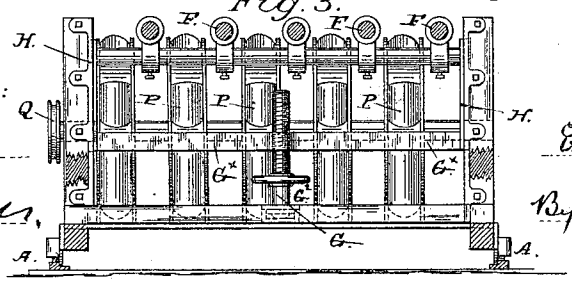


Fig. 3.



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UNITED STATES PATENT OFFICE.

ETIENNE DERBEC, OF SAN FRANCISCO, CALIFORNIA.

DRILL AND DREDGE.

SPECIFICATION forming part of Letters Patent No. 389,449, dated September 11, 1888.

Application filed January 27, 1888. Serial No. 262,180. (No model.)

To all whom it may concern:

Be it known that I, ETIENNE DERBEC, of San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Drills and Dredges, combined for hydraulic mining purposes, of which the following is a specification.

My invention relates to an improved device for excavating and disintegrating banks of auriferous cements and gravels to prepare the same for hydraulic or other treatment for obtaining the gold contained therein; and the object of my invention is to dispense with the ordinary "piping" of the bank now in practice.

To attain this end my invention consists in a movable truck-frame upon which is mounted a system of picks or drills operated by a crank-shaft, which engages the breast of the bank at different points and breaks down the gravel or cement, when a rotary dredge removes the disintegrated material away from the machine.

In the accompanying drawings, which form part of this specification, Figure 1 is a side elevation of my drill and dredge. Fig. 2 is a plan or top view. Fig. 3 is a section on line *x x*, Fig. 2. Fig. 4 is a transverse section of sliding guide and socket or sleeve for drill-rod.

Similar letters refer to similar parts throughout the several views.

The machine is mounted upon the trucks A, and all made movable upon the the tracks or rails B B. In suitable bearings on the uprights C C of the frame is connected the rock-shaft D, carrying the sockets or sleeves F, which carry the drills or picks L, is capable of vertical adjustment by means of the hand-wheel and screw G, operating in the transverse bar $G^{\times}$, which, together with the set-nut G^{2}, raises or lowers the rock-shaft on the guides H H in the uprights aforesaid.

Across the frame of the machine, back of the rock-shaft, is disposed the crank-shaft I, having its bearings in the boxes $I^{\times}$ $I^{\times}$ of the uprights C^{2}. The cranks of this shaft carry the arms of the drill-stocks K, the latter passing through the sockets or sleeve F on the rock-shaft, so that when the crank-shaft is operated the drill-stocks will swivel in the sockets forward and backward and move upward or downward in conformity with movement of the rock-shaft in regular order.

The ends of the drill-stocks are chambered to receive the shanks of the drills L, in which position they are held by set-screws. By this construction and arrangement it will be seen that the drills will strike against the breasting of the bank at different points along the line of their operation and disintegrate or loosen the earth, so that it will break away and fall down in masses for washing or reduction purposes.

Power is applied to the crank-shaft by a belt, connection with the pulley M, and the machine is anchored to the posts or upright timbers N by the rods $N^{\times}$.

In order to dispose of the material as fast as it is segregated from the bank, I have arranged upon a transverse shaft, O, in front of the drills, and so as not to interfere with these, a series of scoops, P P. These scoops are arranged at suitable angles, as shown by the dotted lines, between the projecting flanges $P^{\times}$ $P^{\times}$, forming the sides of the wheels or dredges, also shown by the dotted lines. These dredging-wheels are disposed and keyed upon the shaft at suitable distances apart, and the shaft driven by a chain or belt on the grooved pulley Q, connected with the grooved pulley $Q^{\times}$ on the end of the crank-shaft, and the scoops operate upon the material that has been caved down by the action of the drills and carry it down beneath the machine as required for washing.

The machine may be operated on a track that is elevated, so as to provide space for the material being excavated beneath it against the breasting of the bank, as occasion requires.

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

1. In a machine for drilling and dredging, the combination, with a movable frame, a vertically-adjustable shaft, and a crank-shaft, of a series of drills operating in sockets or sleeves adjustably keyed upon the rock-shaft and operated by the crank-shaft, as set forth.

2. The combination, with an earth-drilling machine suitably mounted on trucks and pro-

vided with a transverse rock-shaft carrying a series of drills operated by a crank-shaft to which the drill-stocks are connected, of a system of dredging-wheels having a system of scoops connected to the flanges or periphery of said wheels and adapted to remove the earth in front of the machine broken down by the drills in the manner described.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

ETIENNE DERBEC. [L. S.]

Witnesses:
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