No. 610,763. Patented Sept. 13, 1898.

G. F. KIBLING.

HYDRAULIC DREDGE FOR MINING PURPOSES.

(Application filed Feb. 4, 1898.)

(No Model.) 2 Sheets—Sheet 1.

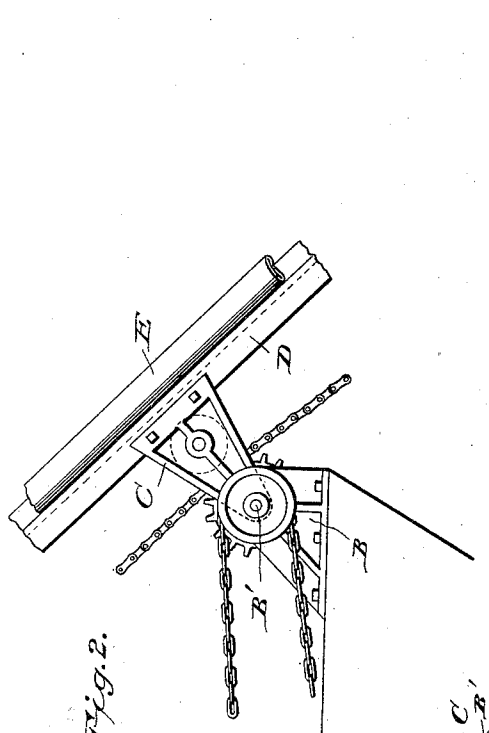


Fig. 2.

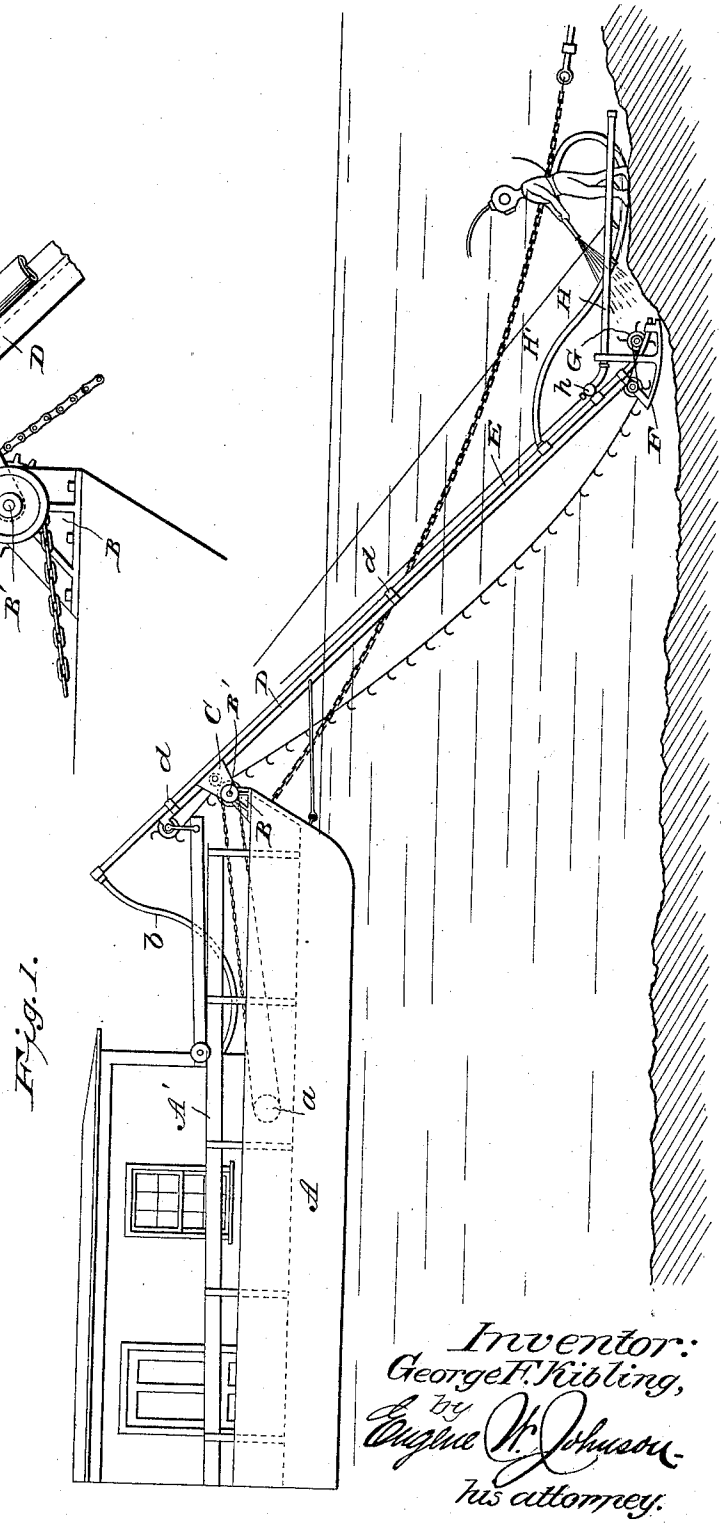


Fig. 1.

Witnesses:
L. S. Elliott.
W. S. Dewale

Inventor:
George F. Kibling,
by Eugene W. Johnson
his attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 610,763. Patented Sept. 13, 1898.

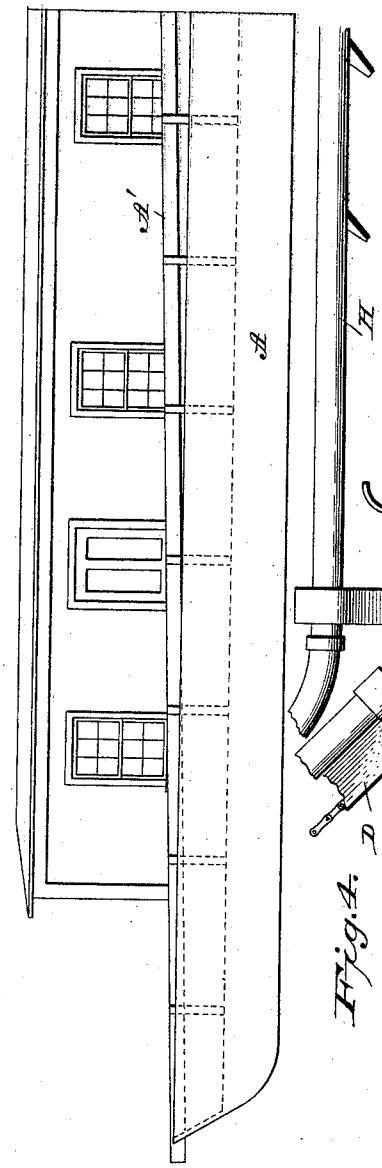
G. F. KIBLING.

HYDRAULIC DREDGE FOR MINING PURPOSES.

(Application filed Feb. 4, 1898.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 1a



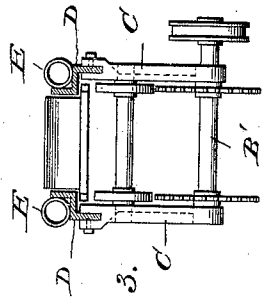


Fig. 3.

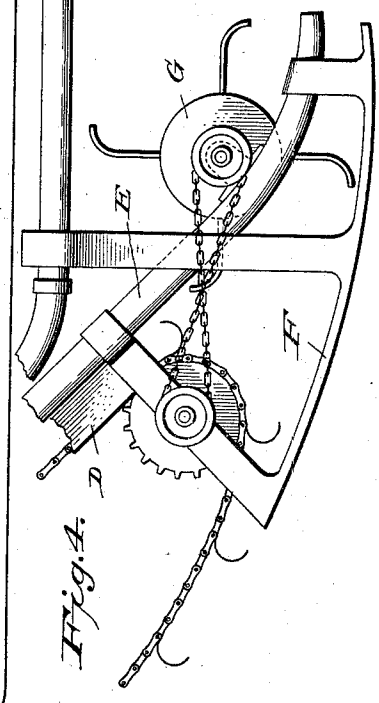


Fig. 4.

Witnesses:
L. S. Elliott.
W. S. Duvall

Inventor:
George F. Kibling,
by Eugene F. Johnson
his attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE F. KIBLING, OF HANOVER, NEW HAMPSHIRE.

HYDRAULIC DREDGE FOR MINING PURPOSES.

SPECIFICATION forming part of Letters Patent No. 610,763, dated September 13, 1898.

Application filed February 4, 1898. Serial No. 669,081. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. KIBLING, a citizen of the United States, residing at Hanover, in the county of Grafton and State of New Hampshire, have invented new and useful Improvements in Hydraulic Dredges for Mining Purposes, of which the following is a specification.

This invention relates to certain new and useful improvements in hydraulic dredges for mining purposes.

The object of my invention is to provide a dredge having an endless carrier with means whereby water under pressure will be caused to impact upon the soil or gravel, so as to loosen the same and force it upon a shoe, where it is taken up by the endless conveyer and deposited in a suitable separator.

In carrying out my invention I make use of an endless conveyer with buckets, which is mounted on a suitable adjustable frame, so that the frame and conveyer can be raised and lowered. The side bars of the endless conveyer are provided with pipes, the upper ends being connected with suitable pumps for forcing water under pressure therethrough. The lower ends of the pipes carry a shoe and an auxiliary pipe, which is adapted to cause jets of water to be impacted against the gravel, so as to loosen the same and cause it to be deposited upon the shoe, from whence it is taken by the endless elevator and carried upward and deposited in a suitable separator.

My invention also embodies the use of a rotary cutter, which coacts with the water-jets for loosening the gravel, so that it may be raised by the endless conveyer.

My invention also embodies the use of an auxiliary pipe or hose, which is adapted to be operated manually by a diver.

In the accompanying drawings, which illustrate my invention, Figure 1 is a side elevation; Fig. 1ª, Sheet 2, a continution of the same; Fig. 2, a detail view; Fig. 3, a transverse sectional view, and Fig. 4 a detail view of the lower portion of the excavating apparatus.

My device is designed for mining in rivers or waters, the object being to raise the gravel, sand, and ore from the bed of the river or stream and carry it to a boat or float having suitable separators and sluices.

A refers to a boat or float, which is constructed so as to provide a suitable sluice A′, there being mounted above the sluice a screen, to which is imparted a vibratory movement in any suitable manner, and from this screen there may extend a suitable way or supplemental sluice for running overboard the coarse gravel. The float A is provided with suitable engines and pumps, the engine being connected to a drive-pulley *a*, over which passes a chain for operating the endless conveyer, and the pumps are connected by a flexible hose *b* to pipes attached to and forming a part of the side frames of the conveyer.

To the bow of the float or vessel are attached castings B, in which is journaled a shaft B′, having mounted thereon a drive-pulley, over which passes a chain connected with the pulley *a*, and also sprocket-wheels, which engage with the endless chains of the conveyer. Upon the shaft B are also journaled fixtures C, with which engage the angle-bars or main side pieces D of the frame of the conveyer, which is adjustably attached thereto, so that the same can be raised and lowered. The angle-bars of the conveyer are attached to each other at their upper and lower ends and by intermediate cross-bars, if desired, and these angle-bars at suitable points are provided with straps *d* for connecting thereto pipes E, said pipes extending considerably above the side bars of the conveyer-frame, the upper ends thereof being connected to the pumps by means of the hose-sections *b*. The lower ends of the pipes are formed into nozzles, which are curved so that the water forced therethrough will be ejected in substantially horizontal lines.

To the lower portion of the pipes and frame of the conveyer is attached a shoe F, and the frame carrying the shoe has guide pulleys or rollers, over which the endless conveyer passes, and the shaft upon which said pulleys are mounted is also provided beyond the side pieces of the frame with a pulley, over which passes a crossed belt, said belt being adapted to drive a pulley carried by a shaft upon which is mounted a rotary cutter or bladed cylinder G, which is adapted to work above the forward portion of the shoe and carry the soil or gravel toward the excavator.

The shoe is provided, as shown in Fig. 4,

with an upward-projecting frame, to which is connected a water-pipe H, said pipe being connected with the tubes E and provided with a valve *h*, which can be operated from the float by means of a suitable rod, and said water-pipe when lowered will project horizontally, but when raised will lie on the same plane as the side bars which support the frame, and when in such position the valve will be closed. The pipe H has a series of water-outlets which project toward the shoe. One of the pipes E may also be provided with a coupling for attaching thereto a section of hose H′, adapted to be operated and guided manually by a submarine diver.

The device when operated under ordinary conditions is lowered so that the shoe will rest upon the bed of the river, and when the pumps are in operation the water will be forced through the pipes and projected in front of the shoe, so as to loosen the soil, the rotary excavating-wheel also assisting in carrying the material so loosened upon the shoe, from which it is taken by the buckets of the endless conveyer and carried upward, being deposited in a shaker or screen, which separates the coarse gravel from the ore-bearing soil. The ore-bearing soil is then treated in the usual manner on board of the vessel.

Various changes or modifications can be made in this invention without departing from the essential features thereof.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a mining or hydraulic excavating apparatus, the combination with a conveyer, pipes attached to the frame thereof and a shoe carried by the conveyer and pipes, means for forcing water through the pipes to loosen the soil in advance of the shoe, substantially as shown and for the purpose set forth.

2. In an excavating apparatus, the combination with the hydraulic pipes having forwardly-projecting nozzles, a shoe positioned below the discharge ends of the pipes and an endless conveyer operating above the shoe, substantially as shown and for the purpose set forth.

3. In an excavating apparatus, the combination with an endless conveyer-belt and its supporting and driving means, of pipes attached to the side bars of the conveyer-supporting frame the lower ends of said pipes being formed into forwardly-projecting nozzles, the conveyer-belt operating rear of said nozzles and a rotary excavator operated by the conveyer-belt, the same being positioned between the nozzles, for the purpose set forth.

4. In an excavating apparatus having hydraulic pipes, of a pipe H connected therewith said pipe having a series of rearwardly-projecting discharge openings or nozzles and a conveyer-belt positioned rear of said pipe, substantially as shown and for the purpose set forth.

5. In a dredging or mining apparatus, the combination of a frame an endless conveyer, water-pipes attached to the conveyer-frame, auxiliary pipes with nozzles connected to the pipes carried by the frame of the conveyer, a shoe carried by the frame so as to extend below the same, a rotary excavator positioned above the shoe and a support for the conveyer-belt located above the shoe and rear of the rotary excavator; together with a screen in which the material carried by the conveyer-belt is deposited and a sluice beneath said screen, substantially as shown and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE F. KIBLING.

Witnesses:
E. J. COLBY,
I. G. KIBLING.