No. 788,211. PATENTED APR. 25, 1905.

C. H. LEWIS.

COMBINED DREDGE AND MINING SLUICE.

APPLICATION FILED FEB. 10, 1905.

4 SHEETS—SHEET 1.

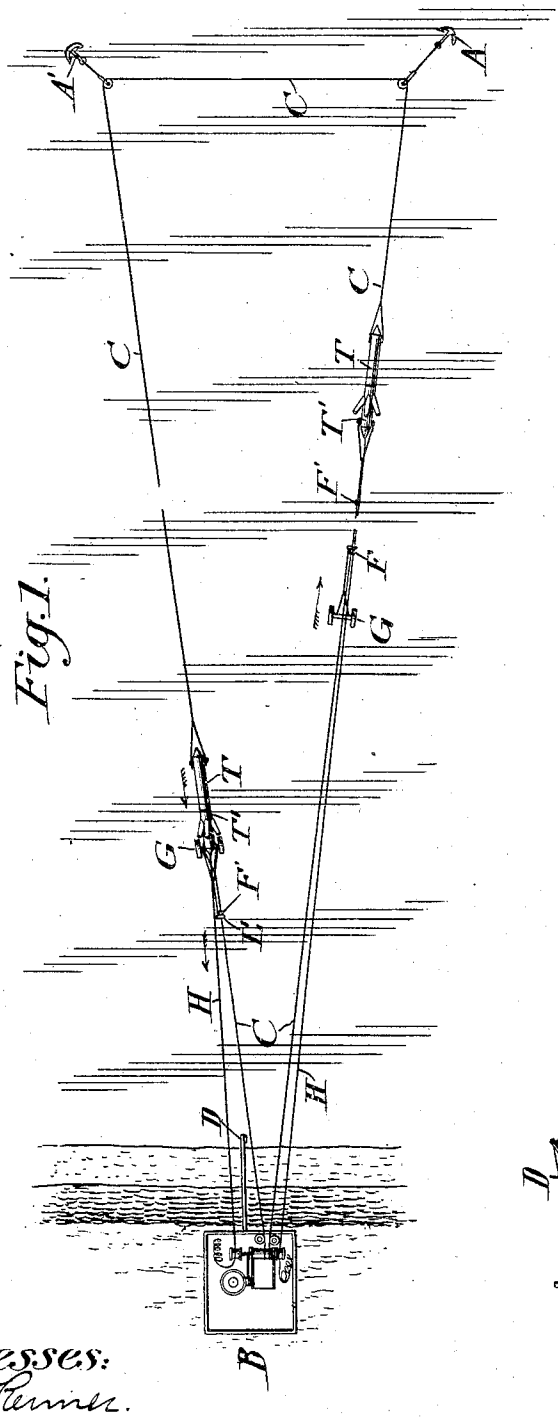


Fig. 1.

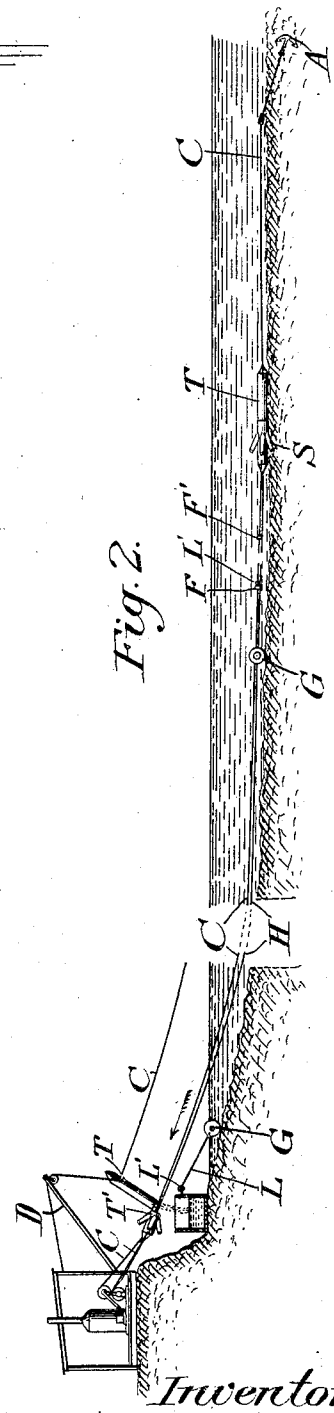


Fig. 2.

Witnesses:
C. J. E. Renner.
A. D. Bayley.

Inventor:
Charles H. Lewis,
by G. H. & W. T. Howard,
Attys

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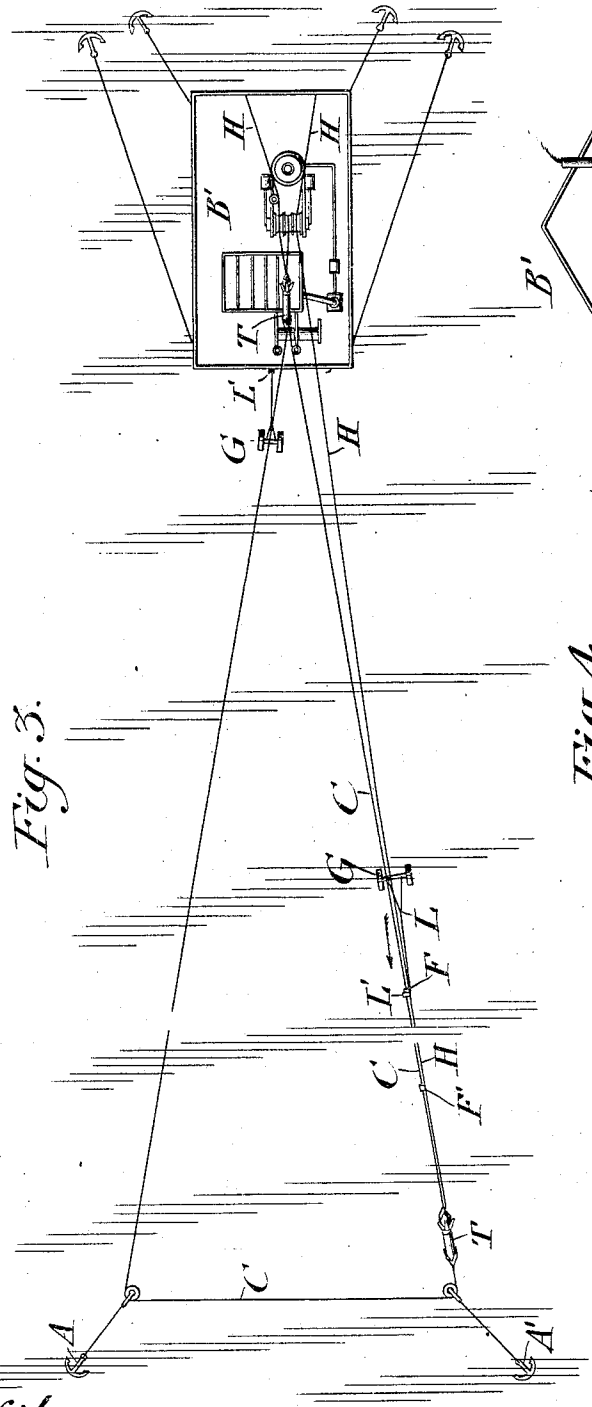


Fig. 3.

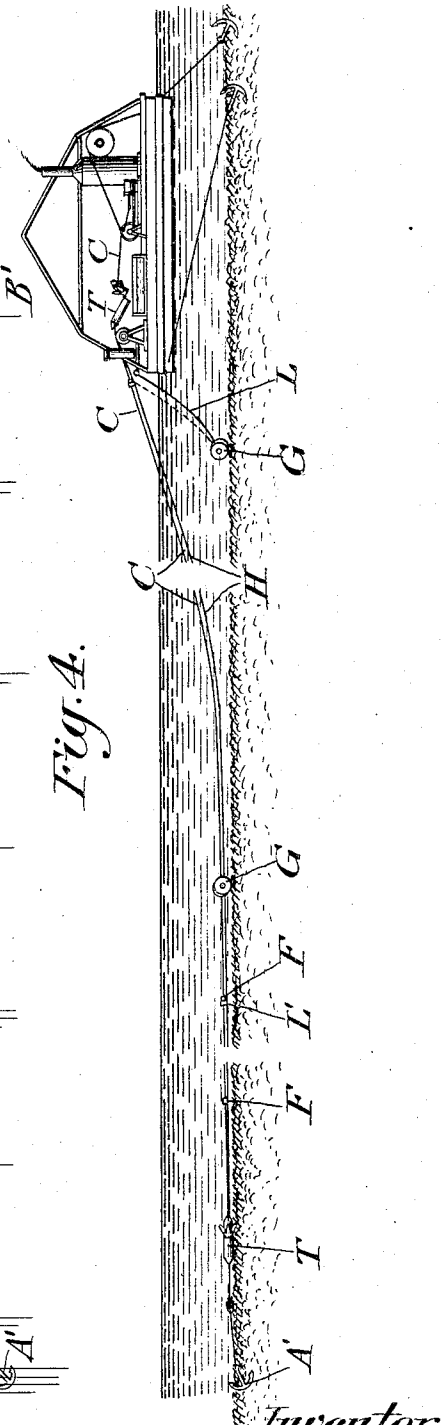


Fig. 4.

Witnesses:
C. J. E. Renner.
A. D. Bugley.

Inventor:
Charles H. Lewis,
by Y. H. & W. T. Howard, Attys.

PHOTO LITHOGRAPHED BY SACKETT & WILHELMS LITHO. & PTG. CO., NEW YORK.

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4 SHEETS—SHEET 3.

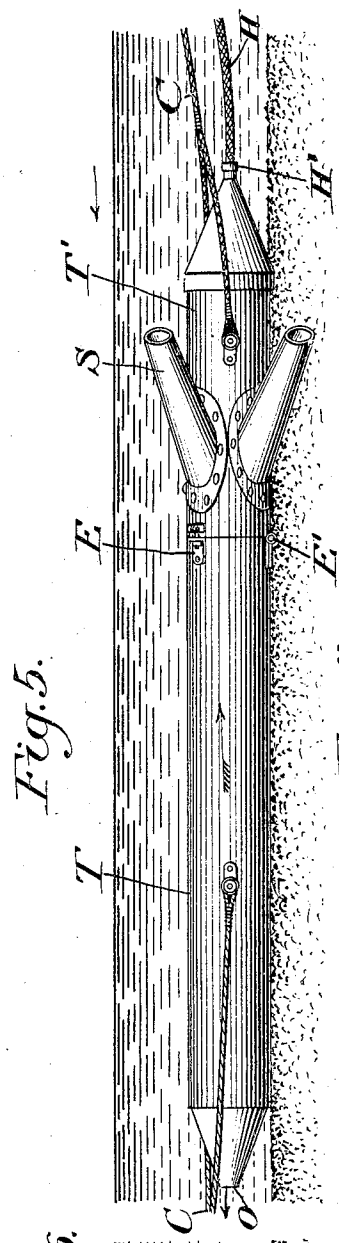


Fig. 5.

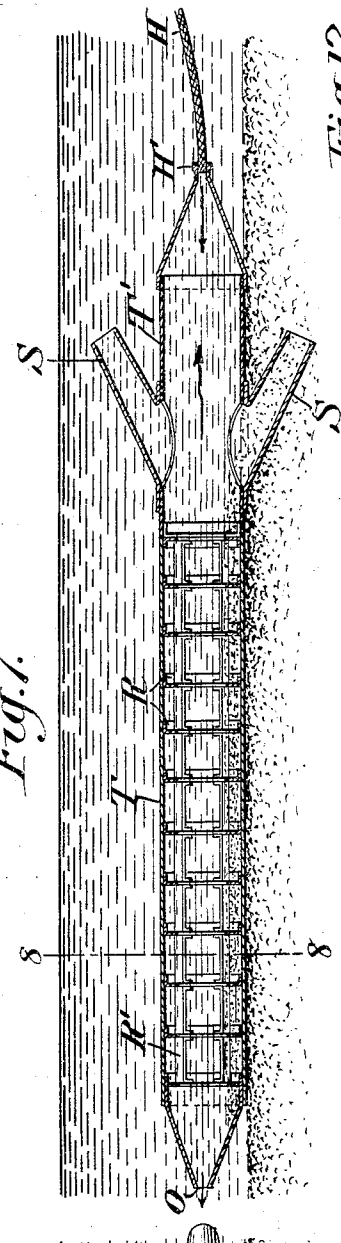


Fig. 7.

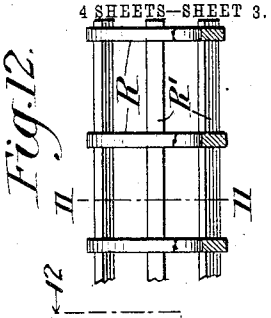


Fig. 12.

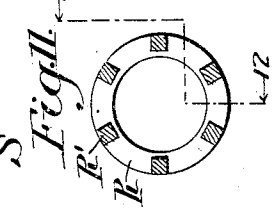


Fig. 11.

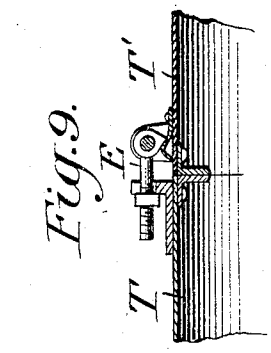


Fig. 9.

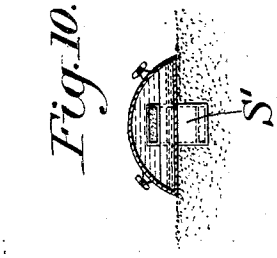


Fig. 10.

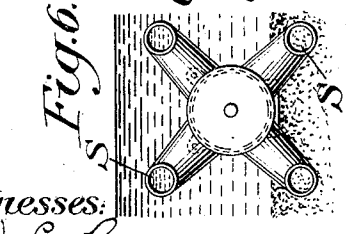


Fig. 6.

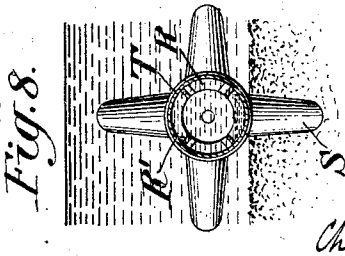


Fig. 8.

Witnesses:
C. J. E. Renner.
Ca. O. Bagley

Inventor:
Charles H. Lewis,
by Geo. H. T. Howlett,
Atty.

PHOTO-LITHOGRAPHED BY SACKETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 788,211. PATENTED APR. 25, 1905.

C. H. LEWIS.

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4 SHEETS—SHEET 4.

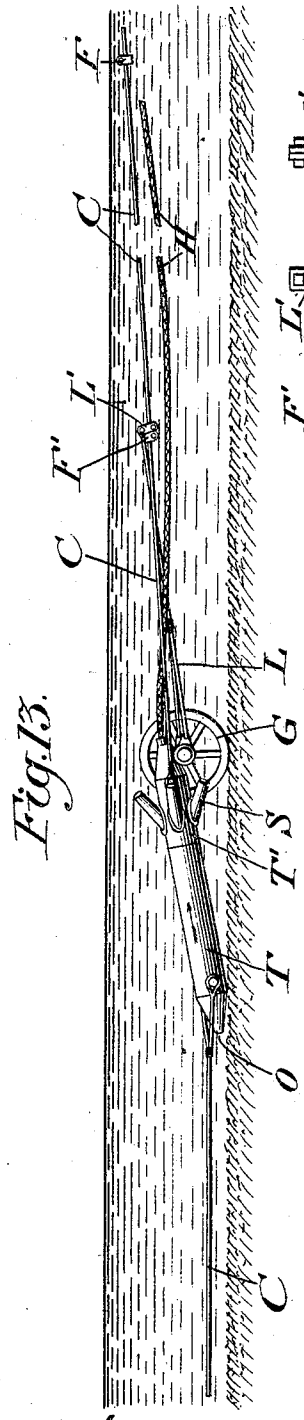


Fig. 13.

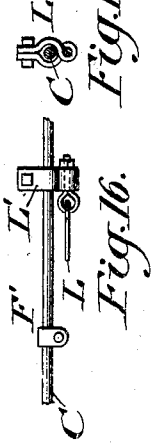


Fig. 17.

Fig. 16.

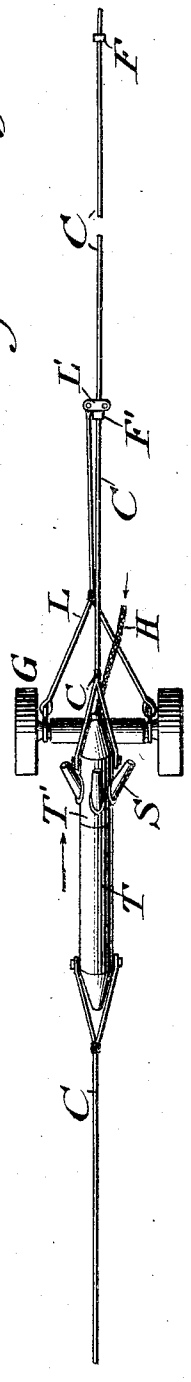


Fig. 14.

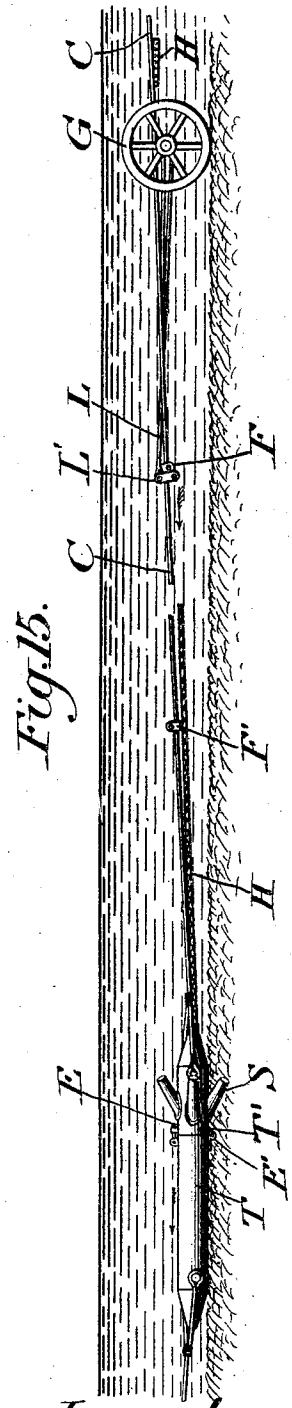


Fig. 15.

Witnesses:
C. J. E. Renner
A. O. Bagley

Inventor:
Charles H. Lewis,
by G. H. & W. T. Howard,
Attys.

No. 788,211. Patented April 25, 1905.

UNITED STATES PATENT OFFICE.

CHARLES H. LEWIS, OF BALTIMORE, MARYLAND.

COMBINED DREDGE AND MINING-SLUICE.

SPECIFICATION forming part of Letters Patent No. 788,211, dated April 25, 1905.

Application filed February 10, 1905. Serial No. 245,007.

To all whom it may concern:

Be it known that I, CHARLES H. LEWIS, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented a new and useful Combined Dredge and Mining-Sluice, of which the following is a specification.

My invention relates to improvements in dredging and sluicing machines, and is intended to operate under water and also under the surface of the sand or other alluvial bottom under the water, the dredge part dredging in and under the sand and the sluice part washing the gold in and under the water and on the surface of the sand. It is especially intended for use in meeting the local conditions and in dredging for gold on the seacoast of Alaska and other places where gold is to be found either on the surface or under the surface of the sand or gravel, below or beyond low-water mark, and on sea, river, or lake beaches or shores. It is also intended to begin and to partially or wholly complete the separation of the sand and gravel from the gold preparatory to the possession of the latter by the miner. It is well known that gold exists in many such places in considerable and in some places in large quantities and along extended coast-lines, but below or beyond low tide and out of the reach of ordinary beach placer-mining devices or dredging apparatus, especially on exposed and stormy coasts, where the action of the water, the waves, the tides, and the wind causes the gold, together with the sand, to be swept along or back and forth and the former to sink or become deposited or find a resting-place for greater or lesser but within reachable depths below the surface.

As compared with placer-mining on or near the banks of streams what may be called "tidal" or "sea" placer-mining has had almost no practical and satisfactory development, owing to the peculiarities and special difficulties of the location and surroundings of the gold, and this notwithstanding the known presence or existence of vast quantities of gold under such conditions and difficulties of access.

So the object of the invention is chiefly to reach and dredge below the surface of the sand or gravel for the purpose of carrying or forcing the gold, mixed with the sand or gravel, into the interior of the dredge and sluice, where the further operation of separating the gold therefrom is begun or carried on, partly by the aid of and under the water of the sea or river aided by the motion of the dredge-sluice and either partly or principally by the aid of a stream of water pumped through the dredge and sluice, the latter being provided with riffles to catch the gold and also with an outlet at its rear end for the escape of the sand with and in the water. To enable and help this combined gold dredge and sluice to do its work, it is provided with means for drawing the same back and forth, for pumping or otherwise forcing a current of water through it, for removing it from the sand and water, and also for dumping or depositing its more or less washed and separated contents on shore or within reach of the necessary or usual apparatus for completing the separation of the gold from the sand and the water, and the combined apparatus may be operated either from shore or from an anchored float of any kind.

I attain the objects of my invention by the mechanism illustrated in the accompanying four sheets of drawings, in which—

Figure 1 is a plan view of a shore operating-station, a looped cable having two anchorages in the water and provided with two dredge-sluices arranged to be reciprocally operated back and forth from the shore-station. Fig. 2 is a sectional view of the same. Fig. 3 is a plan view, and Fig. 4 a sectional view, showing an anchored platform or floating station arranged and provided with means to operate a looped cable and two dredges in a similar manner. Fig. 5 is a side view of the apparatus and connection in position on the sand and under water ready for dredging. Fig. 6 is a transverse sectional view cut in front of the dredging-scoops and looking toward its rear end. Fig. 7 is a longidudinal sectional view of the apparatus. Fig. 8 is a horizontal sectional view looking from the rear end forward toward the scoops or tubes. Fig. 9 is a sectional detailed view showing the method of fastening the front or dredging

part of the device to the washing or sluicing part and for opening the apparatus and dumping the contents of the riffles. Fig. 10 is a horizontal sectional view of an alternative form semicircular in cross-section and provided with a flat bottom instead of a rounded bottom. Fig. 11 is a horizontal part-sectional view on line 11 11, Fig. 12, of the removable riffle-crate. Fig. 12 is a longitudinal part-sectional view on line 12 12, Fig. 11, of the same. Fig. 13 is a side view, part sectional, with the dredge part resting on the carriage, showing the bridle-ring and cable-stops. Fig. 14 is a top view of the same. Fig. 15 is a side view of the apparatus and carriage separated. Fig. 16 is a side view of the bridle-ring and a cable-stop, and Fig. 17 is a sectional view of the detachable bridle-ring.

T is a tube, preferably but not necessarily, made of metal and also provided with riffles R and R′, high or deep enough to catch the gold and at the same time permit the sand to be washed over them and out of the rear end of the tube at the opening O. The part T′, constituting the forward and working end of the apparatus, is the dredge part of the apparatus and is provided with tubular scoops or nozzles S, that are intended to penetrate below the surface of the sand and reach the gold-bearing portion. This forward or dredge end of the apparatus is also provided with means for attaching a hose H thereto, preferably at the point or joint H′.

C is a looped cable, or a cable with a bight or loop, preferably anchored by two anchors A and A′, each provided with a pulley and connection to receive and carry the looped cable, so as to be moved reciprocally—that is, back and forth—for the purpose of operating the duplicated apparatus—that is, the two combined dredge and sluice machines—in the process of dredging and sluicing, and that alternately at or on the opposite sides of the loop, the apparatus on one side of the loop being operated for dredging and sluicing purposes, while that on the other side is being retreated to position for performing or repeating the same operation or operations.

G is a carriage supported on two wheels resting upon the bottom, over and upon the axle of which the looped cable rides and is operated, one object of which is to furnish means for lifting the dredge and scoop part of the apparatus out of the sand and out of action at any desired point for the purpose of carrying it to the point where the contents of the apparatus are to be discharged. This operation is effected by placing the carriage in front of and a short distance away from the apparatus and so operating the cable as to cause the dredge part of the apparatus to be lifted upward with the scoops out of the sand and in whole or in part upon the axle of the carriage to be carried thereon and thereby toward the operating-station until lifted from the carriage in, at, or by the elevated portion of the cable, and later the whole apparatus is to be lifted by a derrick, as shown, or by any other usual or suitable means for the purpose of emptying the contents. The axle may be provided with a long tube loosely inclosing most of the axle and capable of rolling around thereon, and the cable, as well as the dredge, may ride and roll thereon.

When the apparatus is drawn away from the station to the ground to be worked, the cable C passes freely through the ring L′ of the bridle L on the carriage G until the adjustable stop F, located at the proper point on the cable, comes in contact with the ring L′, when the carriage will be drawn to the desired point or distance behind the apparatus. After the apparatus has completed the dredging or working operation and is being drawn toward the station the cable C plays through the carriage-bridle ring L′ until the end of the dredge part of the apparatus rests upon the axle of the carriage, and the stop F′, located at the proper point on the cable C, at the same time comes in contact with the bridle-ring L′, when the carriage supporting the dredge will be drawn toward the station. The ring L is constructed, as shown in Fig. 17, so that the cable C may be detached therefrom and the apparatus hoisted for unloading, the carriage-bridle being made of a suitable length to permit of the ring being reached readily for that purpose.

B, Figs. 1 and 2, represents a land-station for the boiler, engine, windlass, pump, and other devices necessary for the operation of the cable, the dredge, and the sluice, and for emptying the apparatus when brought to the shore, and handling the gold, sand, and gravel.

B′, Figs. 3 and 4, is an alternative float or floating station intended to be used when the ground to be worked over, through, and under is too far from the shore and a shore-station to permit of easy operation of the apparatus therefrom. The float is also provided with similar apparatus consisting of a boiler, engine, windlass, pump, and receiving-tank and other devices necessary for receiving the contents of the dredge and sluice and completing the washing of the sand from the gold or the gold from the sand.

D is a derrick for more easily lifting and handling the apparatus. Any other suitable means may be used for the necessary purposes.

The station from which the apparatus is operated is to be provided with means for pumping water, which is connected with the apparatus by the hose H, to be used for forcing water through the dredge and sluice both for the purpose of washing away the sand and gravel and for separating the gold therefrom either while the apparatus is being operated and in motion or when it is stationary and intermittently at will.

E, Fig. 9, shows a form of fastening device

for holding the parts T and T' of the apparatus together and which may be of any usual or suitable construction. One side of the apparatus is preferably provided at the point of jointure with a hinge E', Fig. 5, for holding the parts together and preventing separation during the act of dumping. (Illustrated in Fig. 2.)

As shown, the body of the apparatus consists of a tube or chamber, either round, as shown, or of any other desirable contour, preferably with conical terminals at both ends. Instead of being made in the form shown it may be flattened on one side, as shown in Fig. 10, or on more than one side, and at the same time the scoops or nozzles may be rectangular in form, as shown at S', or the whole apparatus may have any other suitable shape externally and internally adapted to the work to be done thereby.

In operating or making use of the apparatus each combined dredge and sluice is to be given chiefly two movements—viz., an advancing and a retreating movement—between its anchorage and the station and point of deposit of the contents, the apparatus on one side of the cable-loop retreating toward one anchorage as the apparatus on the other side advances toward the station, alternately. Where the elevation of the station end of the cable can be made sufficient for the purpose, the combined apparatus may be elevated and gradually raised and lifted out of the sand without the aid of a carriage—that is, when the movement is to be a continuous movement from end to end of the course. It may, however, and doubtless will be found desirable in some instances to dredge and work over and through a particularly rich section of the space between the anchorage and the working station on account of superior richness of the deposit, and in that case it will not be necessary or advisable to carry the apparatus over the whole space between the station and the anchorage, the carriage being provided and given such a location as to permit the withdrawal of the dredging-scoops S from below the surface of the sand or gravel at any desired point. During the movement of the apparatus the pumping-engine may be forcing water through the dredge and sluiceway as well as when the apparatus is stationary, and of course it will become necessary to provide at the station means for taking in and letting out the slack of the hose. In retreating the apparatus, which is connected with the cable at its rear as well as at its front end, it is drawn back over the sand or gravel surface and course to the proper distance, according to the will and wish of the operator. The carriage may be provided with a cable or other independent connection for controlling its movement back and forth in line of the movement of the combined dredge and sluicing apparatus, and this independent cable or connection may have a connection either with the main anchorage or with the combined apparatus for these purposes.

For the purpose of assisting in securing the fine gold particles quicksilver in or on plates or disposed in any usual way may be employed in the mining-sluice part of the apparatus.

The riffles may be constructed in the form of a crate, as shown in Figs. 11 and 12, to fit inside the sluice-tube and to be removed therefrom at the station for the purpose of washing out or otherwise removing the gold, or they may be formed on the inner surface of a removable cylinder and be removed therewith.

Depending more or less upon the nature, consistency, &c., of the sand, gravel, or earth and upon the method of operating the device, the scoops S may enter below the surface either in the way shown in Fig. 6 or in that shown in Fig. 8, and where one of the scoops becomes well engaged while the other is not engaged or is less engaged it may be expected that one of the scoops will enter the ground in the position shown in Fig. 8, leaving the two scoops at right angles therewith in position on or near the surface of the sand or ground, and in that case the three uppermost scoops will take in water as the dredge is caused to move along, while the undermost scoops will receive the sand or gravel and cause it to pass up into the dredge and to pass thence into the sluice, where the washing or sluicing will begin. The opening O at the rear end of the sluice may be made of any desirable size or dimensions so as to properly control the outward movement of sand and water and give them the requisite speed of motion to cause the separation of the sand from the gold and the gold to be deposited in or against the riffles.

As shown, the combined apparatus may fall upon the bottom of the water in any position whatever, and yet when drawn forward by the cable at least one of the scoops will be caused to penetrate below the surface of the sand or gravel. In other words, in whatever position the apparatus reaches the bottom it will be ready for its work, and even if it revolves or turns the other side up it will still do its work, and at times there may be an advantage in permitting or causing it to do so. The apparatus in repeatedly passing over the same surface or line of movement may be expected to form a channel and gradually work deeper and deeper below the surface and into new deposits.

I claim as my invention—

1. A combined dredge and mining-sluice, which comprises a rotatable vessel provided at or near its forward end, with a series of angularly-placed and projecting scoops in communication with the interior of the vessel, and having at its rear end, an outlet-opening, substantially as specified.

2. A combined dredge and mining-sluice, which comprises a rotatable vessel provided

at or near its forward end, with a series of angularly-placed and projecting scoops in communication with the interior of the vessel, and having at its rear end, an outlet-opening, together with appliances whereby the device may be drawn along a bed of sand beneath water, substantially as specified.

3. A combined dredge and mining-sluice, which comprises a rotatable vessel having at or near its forward end, a series of angularly-placed scoops in communication with the interior of the vessel, which scoops extend laterally beyond the vessel, and having at its rear end an outlet-opening, the said sluice being provided with removable riffles, substantially as specified.

4. In a combined dredge and mining-sluice, the dredge portion thereof having a conical head and the series of scoops arranged circumferentially around the dredge in the rear of the conical head and which project in an angular position and beyond the circumference of the dredge, substantially as specified.

5. A dredge and mining-sluice which are hinged together and provided with fastenings whereby the two parts of the device may be held in a closed condition, the said dredge having radially-projecting and angularly-placed scoops which extend beyond the longitudinal wall of the dredge and are in communication with the interior of the dredge, substantially as specified.

CHARLES H. LEWIS.

Witnesses:
OREGON MILTON DENNIS,
WM. T. HOWARD.