April 8, 1924. 1,490,016

R. D. MACKENZIE

SLUICE FOR GOLD RECOVERY

Filed Dec. 8, 1922

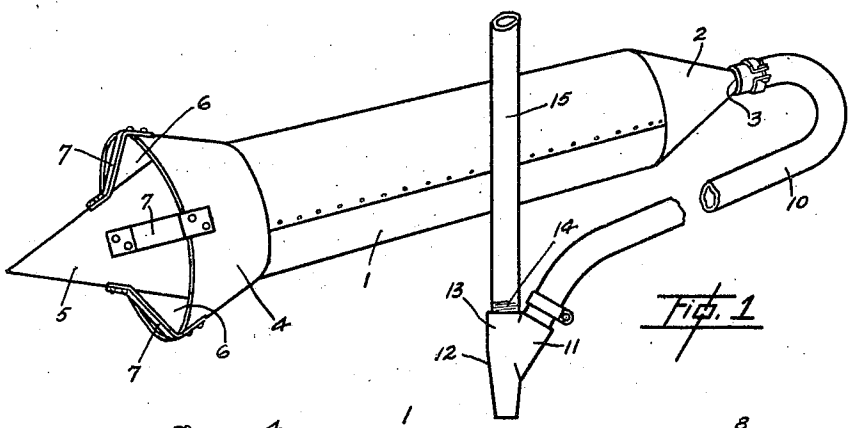


Fig. 1

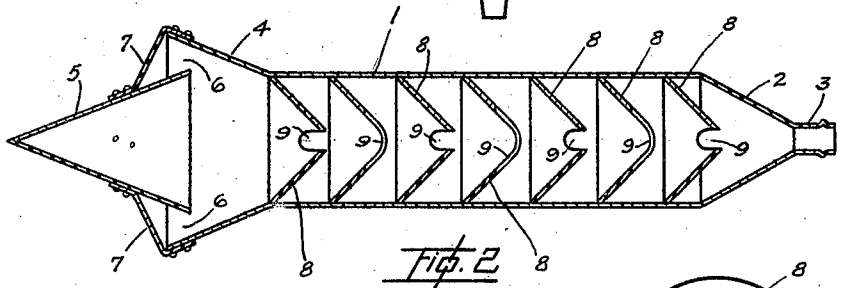


Fig. 2

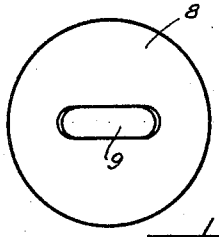


Fig. 3

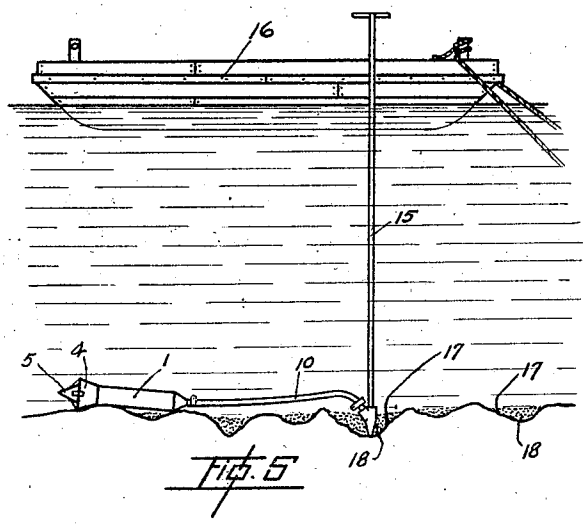


Fig. 5

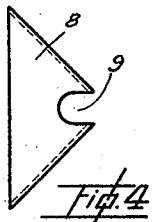


Fig. 4

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Patented Apr. 8, 1924. 1,490,016

UNITED STATES PATENT OFFICE.

ROBERT DAVID MacKENZIE, OF NEW WESTMINSTER, BRITISH COLUMBIA, CANADA.

SLUICE FOR GOLD RECOVERY.

Application filed December 8, 1922. Serial No. 605,713.

To all whom it may concern:

Be it known that I, ROBERT DAVID MacKENZIE, a subject of the King of Great Britain, and residing at the city of New Westminster, in the Province of British Columbia, Canada, have invented certain new and useful Improvements in Sluices for Gold Recovery, of which the following is a specification.

My invention relates to improvements in sluices to be used for the recovery of gold, and particularly gold found at the bottom of rapidly flowing rivers and usually lying in pockets in the river bed, and the object of my invention is to devise an inexpensive, convenient, and easily handled sluice adapted to be submerged and sunk to the river botttom into which the gold may be drawn by suction created within the sluice by the natural current flowing past it, or by current induced artificially in still or slow flowing water, the gold being retained in the sluice so that it may be readily removed therefrom when the device is raised to the surface, thereby enabling gold at the bottom of rivers and in pockets formed in the same to be recovered in a simple, economical, and highly profitable manner.

I attain this object by the construction illustrated in the accompanying drawings in which—

Fig. 1 is a perspective view of the sluice.

Fig. 2 is a longitudinal side elevation, in cross section.

Fig. 3 is a face view of a riffle.

Fig. 4 is a side view of Fig. 3.

Fig. 5 is a view illustrating the practical application of my invention.

Similar numerals of reference indicate similar parts throughout the several views.

The device consists of a cylinder 1, of a suitable length and diameter having one end tapered, as at 2, and terminating in a tubular extension 3 so that this end of the cylinder is thus provided with a restricted orifice of small diameter, which is the inlet orifice. The opposite end of the cylinder is bell-mouthed as at 4, and in the bell-mouthed end is seated concentrically a cone 5 the apex of which extends exteriorly of the cylinder while its base is of less diameter than the mouth of the bell-mouthed end so that between the inner wall of the latter and the cone an annular passage 6 is formed, which passage, as will be noted, is in communication with the interior of the cylinder 1 and is the outlet passage. The cone 5 is held in position by means of supporting brackets 7, secured to both the cone and the cylinder.

The interior of the cylinder is occupied by a plurality of concentric cone-shaped partitions forming riffle members 8, these riffles being formed as open base hollow cones and spaced apart from each other, dividing the cylinder into a plurality of compartments, as shown, the apex of each cone facing the restricted end of the cylinder and being slotted, as at 9, the slot of one riffle being arranged transversely to the slot of the one next to it.

To the tubular extension 3 of the cylinder is connected one end of a flexible suction pipe or hose 10 and, while the opposite end of the hose may be furnished with any approved suction nozzle, it is preferably connected to a branch 11 formed on the side of a tubular member 12 the upper end 13 of which is interiorly threaded so that the correspondingly threaded lower end 14 of a pipe 15 may be screwed thereinto, this pipe being long enough to extend above the surface of the river when the sluice is sunk to the bottom of the same so that the hose may be manipulated during the recovery operations.

The entire interior surface of the cylinder and the surfaces of the riffles may be mercury coated, if desired.

The manner in which the device is used will be readily apparent on reference being had to Fig. 5 in which 16 indicates a scow or float anchored in the river from which the recovery operations are carried on while 17 indicates pockets formed in the river bed containing the auriferous material 18. In use the scow is positioned about the spot where such pockets are known or presumed to exist and the cylinder 1 is lowered to the bottom and suitably held there against displacement by the current, the bell-mouthed end 4 facing in the direction in which the current is flowing. The hose is manipulated by the pipe 15 from the scow and the end directed into a pocket whereupon the material therein consisting of sand, gravel, and gold, if it is gold bearing material, will be drawn through the hose into the cylinder by the suction created at the

bell-mouthed end 4 due to the rapid flow of the current past the passage 6, the action being substantially the same as that of ejectors used for raising and discharging fluids the effectiveness of which is well known. The gold is caught by the riffles and drops to the bottom of the cylinder while the lighter sand and gravel passes out through the passage 6. On hoisting the sluice to the surface after a predetermined interval the gold therein may be readily emptied out after which the device is ready to be lowered to the bottom again and the operation repeated.

By this simple device any gold lying in pockets or crevices in gold-bearing river bottoms may be recovered readily and with a minimum of expense so that the high cost associated with dredging or other expensive methods is eliminated, in fact, where dredging is resorted to the pocket gold cannot be recovered since the dredging buckets cannot operate in the pockets at all, whereas with the sluice described in the foregoing gold can be taken out of any crevice or pocket large enough to permit the insertion therein of the tubular end 12.

What I claim as my invention is:—

1. A sluice for gold recovery comprising a cylinder adapted at one end to provide for the creation of suction in the cylinder by water flowing rapidly past the said end whereby material under the influence of the suction is drawn into it through its opposite end.

2. A sluice for recovering gold from river beds comprising a cylinder adapted at one end to provide for the creation of suction in the cylinder by water flowing rapidly past the said end whereby material under the influence of the suction is drawn into it through its opposite end, and means for establishing communication between the said opposite end and a pocket in the river bed.

3. A sluice for gold recovery comprising a cylinder having one end provided with an inlet orifice and its opposite end partially closed whereby an annular outlet passage is formed between the closure and the cylinder wall, flexible tubular extension connected at one end to the said inlet orifice, and means for manipulating the free end of the said extension.

4. A sluice for gold recovery comprising a cylinder having one end provided with an inlet orifice and its opposite end partially closed whereby an annular outlet passage is formed between the closure and the cylinder wall, a flexible tubular extension connected at one end to the said inlet orifice, a tubular nozzle having a side branch to which the free end of said tubular extension is connected, and a rod connected to the upper end of said nozzle for manipulating it.

5. A sluice for gold recovery comprising a cylinder having one end provided with an inlet orifice and its opposite end partially closed whereby an annular outlet passage is formed between the closure and the cylinder wall, a tubular extension connected to the said inlet orifice, and a plurality of spaced apertured partitions occupying the interior of the cylinder.

6. A sluice for gold recovery comprising a cylinder having one end provided with an inlet orifice and its opposite end partially closed whereby an annular outlet passage is formed between the closure and the cylinder wall, a tubular extension connected to the said inlet orifice, and a plurality of spaced cone-shaped partitions forming riffles occupying the interior of the cylinder, the apexes of the partitions being apertured and facing the inlet end of the cylinder.

7. A sluice for gold recovery comprising a cylinder having one end provided with an inlet orifice and its opposite end partially closed whereby an annular outlet passage is formed between the closure and the cylinder wall, a tubular extension connected to the said inlet orifice, and a plurality of spaced cone-shaped partitions forming riffles occupying the interior of the cylinder, the apexes of the partitions being slotted and facing the inlet end of the cylinder with the slots of alternate partitions arranged transversely to the slots of the remaining ones.

8. A sluice for gold recovery comprising a cylinder having a tapering end terminating in a tubular extension forming an inlet orifice, its opposite end being bell-mouthed, a cone seated concentrically in the said bell mouth, the base of the cone being of less diameter than the mouth of the bell mouth whereby an annular outlet passage from the cylinder is formed between the cone and the bell mouth wall, and a flexible tubular extension connected at one end to the said inlet orifice.

9. A sluice for gold recovery comprising a cylinder having a tapering end terminating in a tubular extension forming an inlet orifice, its opposite end being bell-mouthed, a cone seated concentrically in the said bell mouth, the base of the cone being of less diameter than the mouth of the bell mouth whereby an annular outlet passage from the cylinder is formed between the cone and the bell mouth wall, a flexible tubular extension connected at one end to the said inlet orifice, and a plurality of cone-shaped partitions forming riffles occupying the interior of the cylinder the apexes of which are apertured and face the inlet end of the cylinder.

10. A sluice for gold recovery comprising a cylinder having a tapering end terminating in a tubular extension forming an inlet orifice, its opposite end being bell-mouthed, a cone seated concentrically in the said bell mouth, the base of the cone being of less

diameter than the mouth of the bell mouth whereby an annular outlet passage from the cylinder is formed between the cone and the bell mouth wall, a plurality of cone-shaped partitions forming riffles occupying the interior of the cylinder the apexes of which are apertured and face the inlet end of the cylinder, a flexible tubular extension connected at one end to the said inlet orifice, and means for manipulating the free end of the said extension.

In testimony whereof I hereunto affix my signature, at the city of Vancouver, B. C., Canada, this 28th day of November, 1922.

ROBERT DAVID MacKENZIE.