(No Model.)

C. F. PIKE.

ORE SWEEPING AND RECOVERING DEVICE.

No. 532,183. Patented Jan. 8, 1895.

Fig. 1.

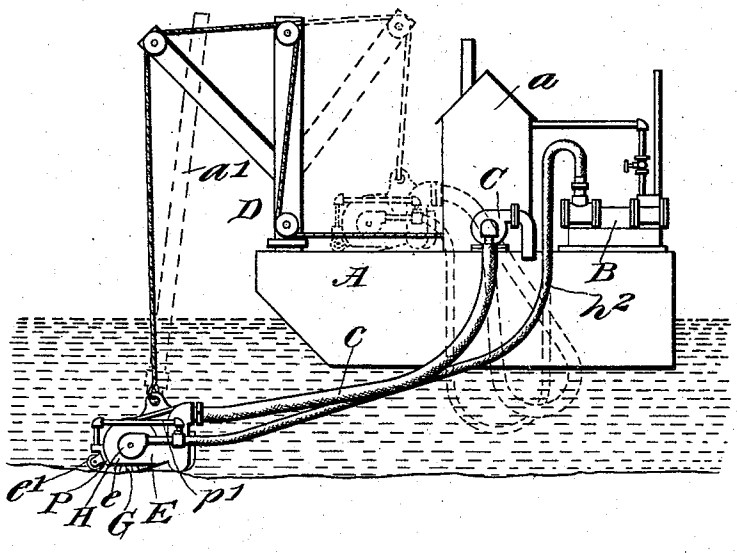


Fig. 2.

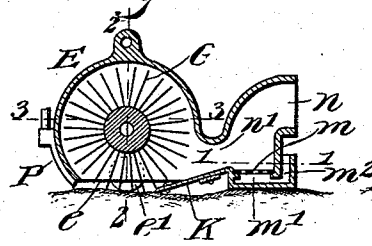


Fig. 7.

Fig. 3.

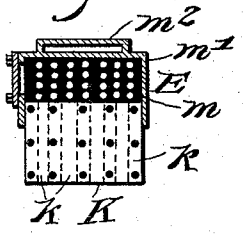


Fig. 4.

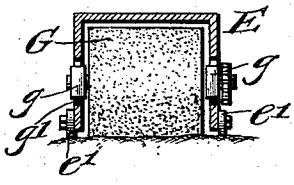


Fig. 6.

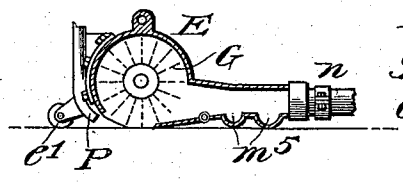
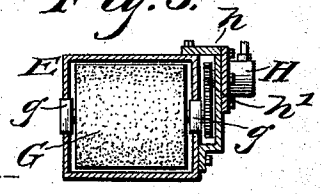


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES F. PIKE, OF PHILADELPHIA, PENNSYLVANIA.

ORE SWEEPING AND RECOVERING DEVICE.

SPECIFICATION forming part of Letters Patent No. 532,183, dated January 8, 1895.

Application filed December 1, 1894. Serial No. 530,539. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. PIKE, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Ore Sweeping and Recovering Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention has relation to devices for sweeping up and recovering the metal from the bed rock of river or other mining bottoms below water line, and it has for its object a simple and effective device for accomplishing such sweeping and recovery.

My invention accordingly consists of the combinations, constructions and arrangements of parts, and of the system of sweeping and recovering metals from the bed rocks below water, as more fully described in the specification and pointed out in the claims.

Reference is had to the accompanying drawings, wherein—

Figure 1 is a sectional elevation of a form of sweeping and recovering device embodying my invention. Fig. 2 is a vertical section of the sweeper detached from its propelling and actuating devices, and drawn to an enlarged scale. Fig. 3 is a section on line 1—1, Fig. 2. Fig. 4 is a section on line 2—2, Fig. 2. Fig. 5 is a section on line 3—3, Fig. 2. Fig. 6 is a vertical section, partly in elevation, similar to Fig. 2, showing another form of the sweeper and recoverer, and Fig. 7 is an edge view of the apron shown in Fig. 3, illustrating its automatic function of conforming transversely to the surface being swept.

A represents a scow or other suitable vessel equipped with a power house, a force pump B, suction pump C, and a carrying and propelling device D for the sweeper and recoverer E, all of which, save the latter, may be of any of the well known or other suitable constructions, and may be arranged relatively to one another as the requirements of service demand.

The sweeper and recoverer E may be of any suitable form having an open bottom sweeping chamber *e* in which is mounted a rotating or other moving brush G, which, as shown, is mounted in sliding boxes or bearings *g* so that it will adjust itself by gravity to the surface which it sweeps, as more plainly shown in Fig. 4. Suitable springs or other media may be used, as indicated at *g'* to prevent the weight of the brush from jamming it down upon the surface to be acted upon.

The brush G is shown as operated by a water motor H suitably mounted upon the frame of the sweeper, as indicated at *h*, Fig. 5, and has a gear or other power transmitting connection *h'* with the shaft of the brush G, but if desired, any other suitable motor may be substituted for such water motor. To the rear of the brush G is an inclined apron K, of any suitable construction. In the drawings it is shown as being automatically adjustable and leads to a perforated receiving plate *m* forming the top of a chamber or pocket *m'* having an inflow pipe or duct m^3. Above chamber *m'* is a tube or outlet *n* contracted at *n'* to which the suction pipe *c* from pump C is coupled, see more plainly Fig. 1, and to motor H a pipe h^2 is coupled from pump B, or other source of power.

The apron K may be of any suitable flexible or other suitable material, and may be weighted or provided with longitudinally or otherwise located downwardly acting separate spring bars or plates *k*, so that said apron will transversely at its outer lower edge conform to the inequalities of the surface being swept, so as to make a tight or closed joint or contact therewith. See Fig. 7.

The operation is obvious. The sweeper and its actuating appliances coupled thereto are lowered to the surface to be swept and moved over the same by the propelling and carrying device D. The rotation of brush G sweeps the metal or other material up the incline K to perforated plate *m* through which heavy particles of metal fall to and are retained in the pocket *m'* from which they are emptied when the sweeper is raised to the scow, A. The flow of water entering pocket *m'* and passing upwardly through the plate *m* agitates or comminutes the gangue or ore tending to de-

posit itself thereon, and thereby provides for a rapid and effective separation and deposit of the metal from the ore or gangue and also facilitates or assists the suction in chamber n to discharge the gangue to pipe c. Whenever necessary, a force jet or jets P having a branch supply pipe p' from pipe h^2 may be located in front of the brush G to assist the latter in sweeping or propelling the ore to and up the incline K, or if desired, these pressure jets may alone be used for effecting the sweeping or cleaning of the surface, in which case the brush G and its motor H may be dispensed with. An electric motor supplied from a dynamo in the power house a may be substituted for the motor H and pump B.

If desired, the sweeper E may be manually propelled or dragged along the river or other bottom by the bar or rod a'. See Fig. 1. So too, the apron K may be hinged to the sweeper as indicated in Fig. 6, and a series of open top pockets or riffles m^5 may be substituted for the single pocket.

The sweeper may be provided with rollers or wheels e' at one or both ends to facilitate moving it when in action.

As the construction and arrangement of the novel features of my invention may be greatly changed without departing from the nature and spirit thereof, I do not desire to limit myself strictly to what is shown and described, but

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

1. A water bottom sweeper and recoverer, consisting of a rotating brush, a suction outlet, an inclined automatically adjusting apron between said brush and outlet, substantially as set forth.

2. A water bottom sweeper and recoverer, consisting of a rotating brush, a suction outlet, an inclined automatically adjusting apron between said brush and outlet, a pocket at the end of said apron and an inflow of water for said pocket, substantially as set forth.

3. The combination in the sweeper E, of force or pressure jets or pipes P, oppositely located suction pipe or chamber n, and an open apron between said force and suction appliances, substantially as set forth.

4. The combination of roller or wheel mounted sweeper E, rotating brush G vertically automatically adjustable, automatically adjustable apron K, pocket or pockets m' and suction pipe or chamber n, substantially as set forth.

5. The combination in a sweeper E, the brush G, motor H for rotating said brush, apron K and suction chamber n, substantially as set forth.

6. A water bottom sweeper or recoverer, consisting of a rotating brush, a suction outlet, an inclined apron between said brush and outlet, and a pocket at the end of said apron, substantially as set forth.

7. A water bottom sweeper or recoverer, consisting of a rotating brush, a suction outlet, an inclined apron between said brush and outlet, a pocket at the end of said apron, and an inflow of water for said pocket, substantially as set forth.

8. The combination in a portable sweeper E, a rotating brush G, automatically adjustable vertically, adjustable apron K, pocket or pockets m' at the end of said apron, and a suction pipe or chamber n, substantially as set forth.

9. A sweeper having a closed casing open at its bottom, a rotating brush revolving through said opening, an inclined apron or way for said brush to sweep upon, a suction pipe or chamber communicating with said way, and a motor for the brush, substantially as set forth.

10. In a device for sweeping river or other water bottoms, the combination of a rotating brush, a suction chamber to one side of said brush, a platform between the brush and suction chamber, and a force jet at the opposite side of the brush having its line or path of force adjacent to and across the sweeping side of the brush, substantially as set forth.

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