S. JOHNSON.

GOLD EXCAVATING AND WASHING MACHINE.

No. 19,930. Patented Apr. 13, 1858.

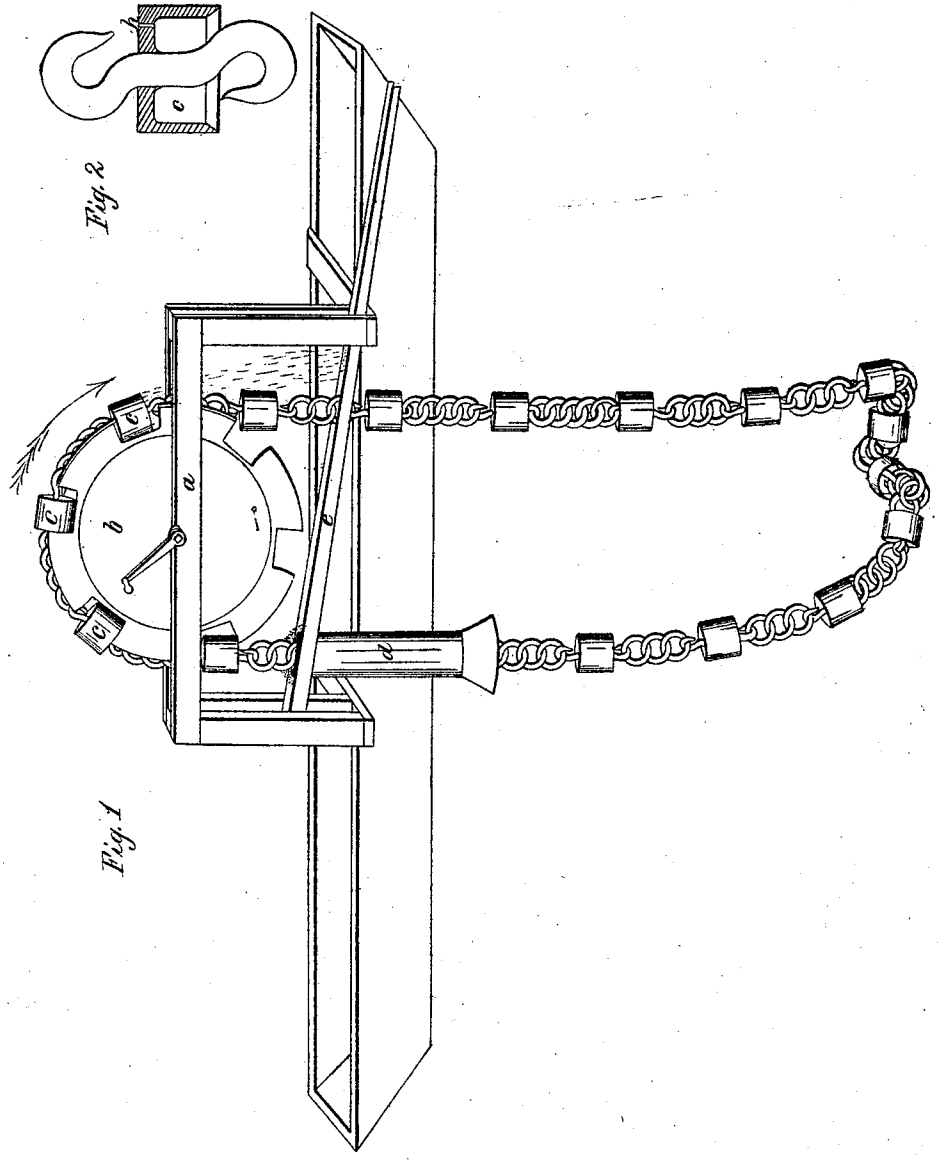


Fig. 2

Fig. 1

UNITED STATES PATENT OFFICE.

S. JOHNSON, OF NEW YORK, N. Y.

MACHINE FOR EXCAVATING AND WASHING GOLD.

Specification of Letters Patent No. 19,930, dated April 13, 1858.

To all whom it may concern:

Be it known that I, SOLOMON JOHNSON, of the city, county, and State of New York, have invented a new and Improved Machine for Excavating and Washing Soils Containing Gold; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings.

The object sought to be obtained by this invention is first: to obtain from the beds of streams the auriferous sands &c. known to contain gold, in quantity comparatively large; and secondly to wash and separate the same by an incidental and simultaneous process. The means by which this is effected is as follows. I construct a frame (*a*, Fig. 1 in the drawings) which I place upon a boat or raft in such position that the chain works (hereafter described) can be operated at the sides, ends or through the center of the boat as may be desired. Upon the frame (*a*,) the chain wheel (*b*,) with a suitable shaft is placed, the wheel is grooved in its outer edge and otherwise adapted for receiving a chain and buckets in some respects like an ordinary chain pump. Over and upon this wheel an endless chain is made to pass, constituted of an ordinary iron chain, with, at suitable intervals, the buckets (*c*, *c*, *c*,). These buckets are constructed as shown in section at (*c*, Fig. 2,) they are chambered a suitable depth and the outer part of the opening is beveled inward, leaving the edges acute that they may the more readily act upon the sands &c., and they have a hook or eye at either end for convenience in attaching to the chain, in which they severally form links. The bucket should be about one and a half inches diameter and one inch deep, and the chain about one inch in diameter, the wheel (*b*,) should be about three feet diameter. A chain is thus formed of sufficient length to pass over the wheel above down to the bottom of the river or stream and up again, two or three feet of slack chain may be allowed upon the bottom for more effectual working.

d, is a tube through which the chain passes in its upward movement. It projects downward into the water a foot or more and has its lower end flared open that the buckets in passing may not catch or be obstructed; at its upper end it is attached to and passes through a sluiceway (*e*). The latter is an inclined trough which the chain passes both in its upward and downward movement and it extends downward and from the machine eight feet or more, it also has on its bottom a suitable number of projecting slats for obstructing and retaining any gold dust that may pass (with other substances) down its course. Its action is as follows: The wheel (*b*,) is put in motion in the direction of the arrow and the chain descends on the one side (with the buckets inverted) in a straight line or nearly so, to the bottom by its own weight or gravity; the same force will cause the chain to ascend from the bottom causing a lateral pull or drag to the chain sufficient to fill the buckets or partially so with sand, gravel, gold dust &c. that they may come in contact with, there being a tendency in the bucket to bury itself like the fluke of an anchor. Ascending with its contents the bucket reaches the tube (*d*,) and here it has another office to perform. It is here made to act as a valve in an ordinary chain pump, forcing the water successively through the tube and delivering it upon the sluice way (*e*,) and passing upward till the contents of the bucket (sand, &c.) are delivered over the wheel and into the sluice way below, there coming in contact with the water flowing down the sluice from above, is washed and the gold contained therein separated therefrom according to means well known. Each bucket is provided with a vent at the bottom (*h*, Fig. 2) to permit air to escape on entering the water.

Other means have been before tried for accomplishing the very desirable end of obtaining gold from the beds of streams, but in all known cases the means of excavating have been constructed substantially upon the principle of the well known "dredging machine" and consequently made to act arbitrarily or in definite positions in the bed of streams they have for this reason all failed viz., that any such machine when brought into unyielding contact with rocks, gravel, boulders &c. will be broken, and these are very generally encountered in gold bearing streams. In this invention the chain is free to accommodate itself to any obstruction that may present itself, the buckets being but slightly larger than the chain will glance from obstructing rocks, or the chain will even work around and between boulders where all other known means would prove impracticable. More lateral draft

may be given to the chain by increasing the diameter of the wheel or having two wheels at considerable distance apart, and an additional friction wheel may be placed at the lower part of the tube (*h*,) or even in line with the same near the bottom of the stream for increasing its efficiency. A "cradle" can also be used if desired in connection with the washing. The sizes above given are for a machine to be worked by hand, other motive power and proportions can obviously be used.

Having thus described my invention what I claim therein as new and desire to secure by Letters Patent is:

The chain and buckets in their peculiar form of construction and method of operation, in combination with the pump (*d*,) all substantially as set forth herein.

SOLOMON JOHNSON.

Witnesses:
I. S. SLAUSON,
NELSON BARLOW.