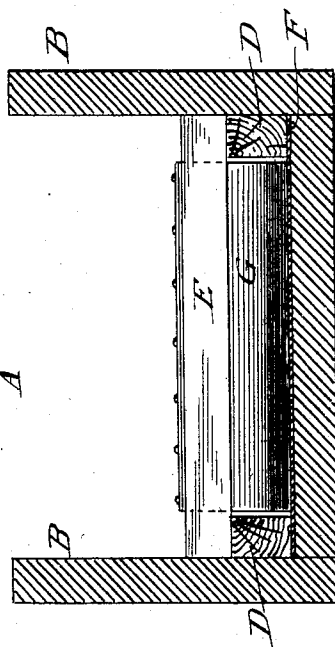
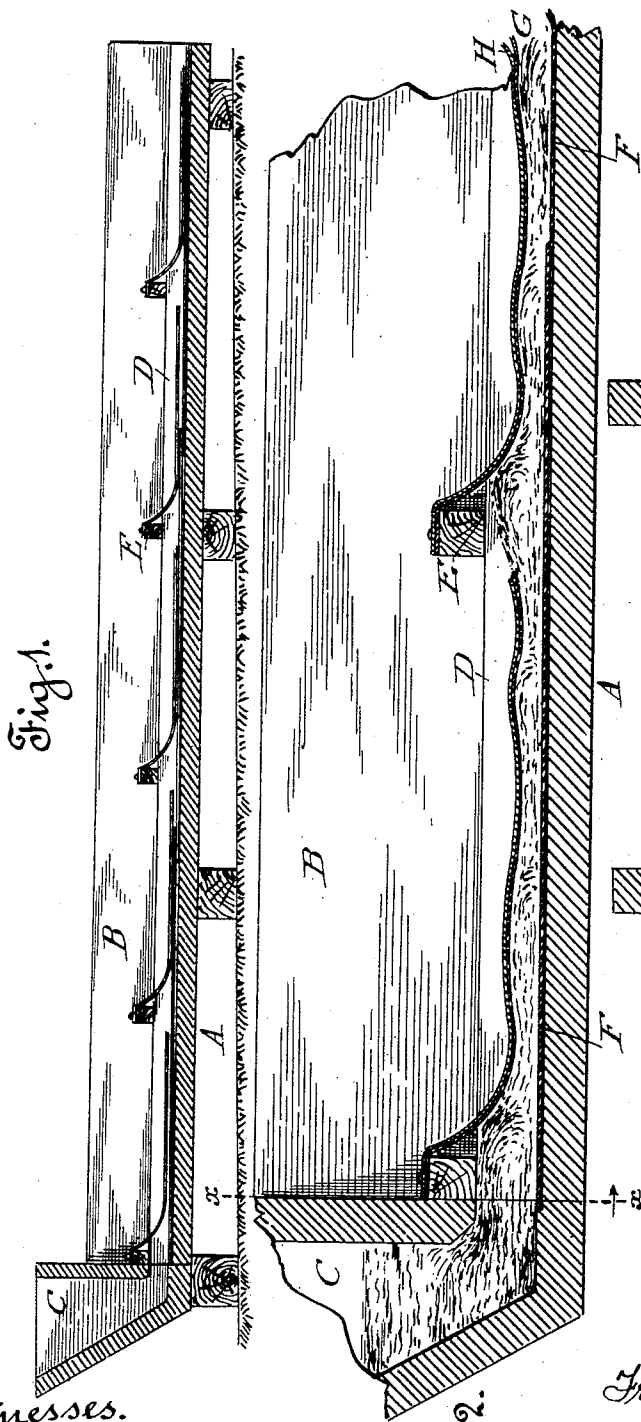


F. M. JOHNSON.
SLUICE BOX.

(Application filed May 22, 1901.)

(No Model.)



Witnesses.
H. H. Houteverde.
J. W. Burt

Fig. 2.

Inventor.
Frederick M. Johnson
by *Spears Seely*
Attorneys.

UNITED STATES PATENT OFFICE.

FREDERICK M. JOHNSON, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO
ROSE GOLD RECLAMATION COMPANY, OF SAN FRANCISCO, CALIFORNIA,
A CORPORATION OF ARIZONA TERRITORY.

SLUICE-BOX.

SPECIFICATION forming part of Letters Patent No. 702,956, dated June 24, 1902.

Application filed May 22, 1901. Serial No. 61,433. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK M. JOHNSON, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Sluice-Boxes, of which the following is a specification.

My invention relates to the separation of precious particles of gold or other relatively precious metals and their recovery from the body of pulp, gangue, and other material with which they are allied.

The object of my invention is to make a practically complete recovery of the gold.

The principle of the invention can be applied in different forms of apparatus and can be used with or without amalgamation, as may be preferred. As a convenient illustration of its use I have shown as the separating-surface upon which the material is carried and caused to travel an ordinary sluice-box. This well-known device is, however, illustrative of other forms of separators, and it is evident that in said sluice-box, as well as in other forms, amalgamating-plates or other devices may form a part, although in the present instance they are not shown.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a longitudinal section of a sluice containing my improvements. Fig. 2 is a similar section, but on an enlarged scale, to show the invention in greater detail. Fig. 3 is a cross-section on the line xx of Fig. 2.

The sluice-box is composed of the usual bottom piece A and side pieces B B and is usually formed in sections, of which one or any number can be used to make the complete sluice. It is set at a sufficient inclination to obtain the necessary flow of the material and is shown as provided at the head end with a hopper C, from which the material mingled with water is received. I have shown no means for introducing the material or the water to this hopper. Such devices are well known and form no part of my invention. Upon the bottom of the sluice and extending across its entire width are placed lengths of burlap, wire-screen cloth, or other

material adapted to engage and retain particles of precious metal which descend upon it by their own weight or are forced down in contact with it. These strips of burlap or other material extend along the bottom of the sluice, overlapping from the head end downwardly, as shown, so as to make a complete covering. They are held in place by longitudinal strips D D, which are laid upon the sluice-bottom and are removable therefrom in order that the sections of burlap may be taken up at any time for the recovery of the precious material carried by them. At right angles to these strips are cross-bars E, spaced at intervals along the course of the sluice and which are preferably secured to the sides of the sluice by screws or in any other way which enables them to be removed with facility.

Sluice-boxes constructed substantially as hereinbefore described have been used for many years with considerable success, and the percentage of gold saved by them has been in some cases quite satisfactory. It is nevertheless a fact that in California extensive deposits of tailings from such sluice-boxes are now being worked to profit by modern methods, showing that at the best the separation of gold was incomplete and that quantities of the latter were carried over the retaining-sections on the bottom of the sluice with the tailings. Among part of this precious material was wasted the exceedingly light float-gold not heavy enough to resist the flow of water and which therefore could not settle upon the burlaps or blankets, but escape with the sand. The improvements which I shall now describe are designed and have been successfully used to accomplish the saving of all these lighter particles of precious material. These improvements consist practically in confining the flow of water and the material carried by it between two surfaces instead of allowing it to travel freely over but one, as in former practice. Secured to each of the cross-pieces E is a flexible section G of burlap, blanket, cloth, or any other suitable material, which normally lies loosely upon the bottom of the sluice and extends approximately from one cross-piece to the

next, the lower ends being free. When the flow of water and pulp is admitted to the sluice, as shown in Fig. 2, it is compelled to travel between the sluice and this floating section G, and the action of the latter is to partly compress and attenuate this stream and so force the light particles, which would otherwise float upon the surface, down through the current and upon the sluice-bottom.

To some extent the floating sections are also retainers of precious particles which come into contact with them, and hence it is desirable to remove them at intervals in order to clear them of any valuable material they may carry. These floating sections are further rendered waterproof, and hence more effective as pressure devices upon the surface of the current, by covers H, of oil-cloth, rubber cloth, or other suitable material, which overlie them, as shown in the drawings.

The operation of the device is well illustrated in Fig. 2. The stream of water and pulp or other material flows from the hopper into the sluice, where it is immediately confined and attenuated by the floating sections, beneath which it is compelled to pass. Escaping from beneath the free ends of each section the current is permitted to expand somewhat and to form a whirl or eddy between such free end and the next floating section, the result being an agitation of the current which tends to carry the gold downwardly toward the bottom of the sluice. Thereupon the current is again confined beneath the next section, the operation of which is similar, and this is repeated throughout the length of the sluice. In practical operation and using material containing fine flour or float gold I have been unable to obtain a color from material discharged at the end of a short sluice provided with only four of these floats. The advantages of the device and the improvement over the old style of sluice which permitted a free flow of the current are therefore apparent and need not be enlarged upon.

As intimated at the beginning of this description, floats of a similar character may

be employed in connection with other separating-surfaces, and it is of course perfectly practicable to use amalgamation either along the entire separating-surface or at intervals therein. It is evident that with a current flowing over the amalgamating-plates, or over a surface provided with amalgamating sinks or depressions, or over riffles, or even upon a belt, such floats can be used to confine and attenuate the flow in a manner hereinbefore described.

My construction has been found of special value in treating the auriferous black sand found in great quantities on the Pacific Coast.

I do not limit myself to exact details of construction herein described, and shown in the drawings, as I desire to avail myself of such modifications and equivalents as fall properly within the spirit of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a separating-surface provided with means for holding and retaining precious material passing over it, of one or more floating flexible sections of fibrous or textile material separated from said surface, so that the flow of material is caused to pass beneath it or them, such sections having a rough or open lower surface to retain material mechanically, but having a waterproof impenetrable upper surface.

2. The combination with a separating-surface provided with means for holding and retaining precious material passing over it, of one or more floating flexible sections of fibrous material above the said surface adapted to receive and retain precious particles, and an independent waterproof flexible covering for and above each floating section.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 14th day of May, 1901.

FREDERICK M. JOHNSON.

Witnesses:

L. W. SEELY,
F. M. BURT.