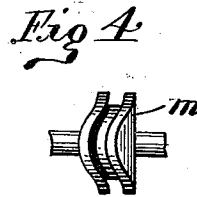
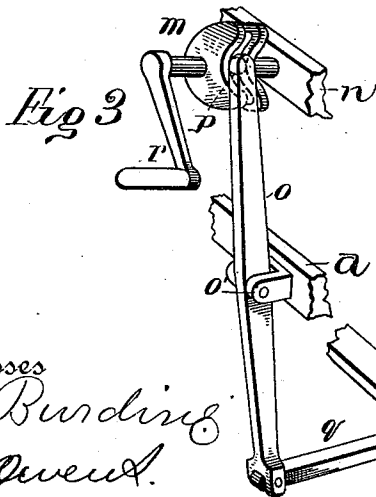
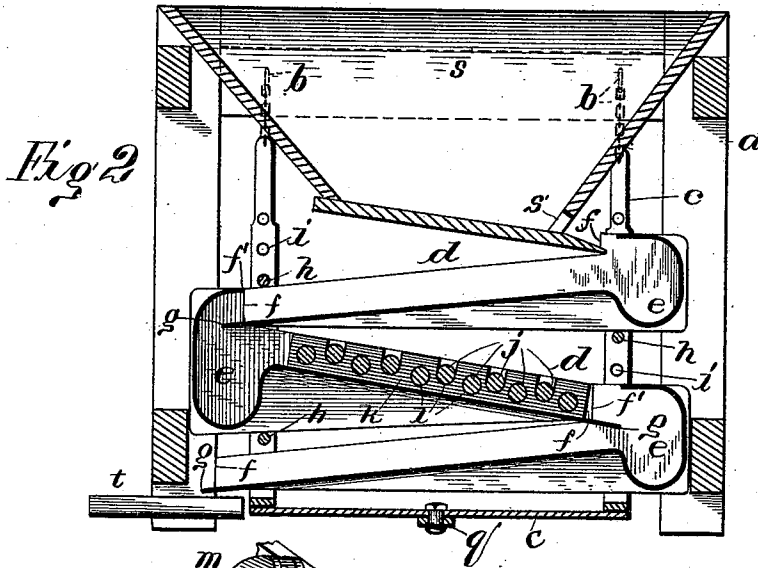
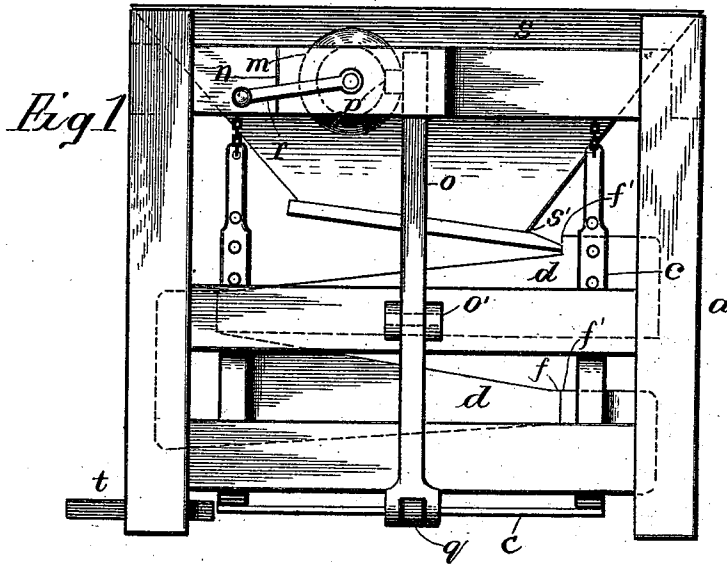


(No Model.)

H. W. MURDOCK.  
GOLD WASHER.

No. 519,506.

Patented May 8, 1894.



Witnesses  
*C. C. Burdine*  
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# UNITED STATES PATENT OFFICE.

HARVEY W. MURDOCK, OF OGDEN, UTAH TERRITORY, ASSIGNOR OF TWO-THIRDS TO MURRAY R. STEWART AND SAMUEL H. ABBOTT, OF SAME PLACE.

## GOLD-WASHER.

SPECIFICATION forming part of Letters Patent No. 519,506, dated May 8, 1894.

Application filed April 9, 1892. Renewed March 28, 1894. Serial No. 505,494. (No model.)

*To all whom it may concern:*

Be it known that I, HARVEY W. MURDOCK, a citizen of the United States, residing at Ogden, in the county of Weber and Territory of Utah, have invented certain new and useful Improvements in Gold-Washers; and I do 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 the letters of reference marked thereon, which form a part of this specification.

My invention has special reference to a machine for separating precious metals from their ores and more particularly to that class known as "ore washers."

The object sought by this invention is to produce a more durable and effective device than has heretofore been known, and one which may be manufactured cheaply and sold at a low cost.

To this end it consists of certain novel features and combinations of parts which will appear hereinafter and be pointed out in the claims.

Referring to the accompanying drawings which represent a machine embodying the essential features of my invention: Figure 1 represents a side elevation; Fig. 2 a longitudinal section, and Fig. 3 a view in perspective of the operating mechanism; Fig. 4 a detail view of cam *m*.

The reference letter *a* represents the frame of my machine, which is of any preferred design, and may be constructed of either wood or metal. Hooks *b* are fixed to the inner side of the frame from which the shaking frame *c* is suspended. This frame is formed of three downwardly extending sheet metal sections *c'* which are connected to each other by means of a longitudinal strip *c''* secured on their bottom, this may be clearly seen by reference to Fig. 2. Located in this frame are the separator sections *d* formed preferably of sheet copper and amalgamated with quicksilver on that portion of their surface over which the ore passes. These sections when in position are inclined at such an angle as to allow the ore to freely slide down their side aided by

the rocking motion imparted to them. A pocket *e* is formed in their highest end into which the ore from the section above is emptied, this pocket serves to hold the metal extracted from the ore until removed by an attendant. Each side piece of these sections has a shoulder *f* and *f'* formed on it, the former when the two are in position being adapted to register with the latter, while the end *g* extends into the pocket *e*. By this means a tight and continuous passage for the ore is provided. These sections are adjustably held between the vertical sides of the frame *c* by means of the rods *h* which pass through the holes *i* formed in the frame. Thus by adjusting the inclination of the separator sections the ore may be made to pass through the machine with more or less rapidity to suit the exigencies of the occasion, or the nature of the ore treated. As a means for further breaking and agitating the ore, transverse copper bars *j* alternately elevated, one above the other, to form a riffle, may be placed in each separating section or any of them as shown in Fig. 2. To carry this into effect side pieces or racks *k* having bearings or openings *l* formed therein are fixed to the side of the separator sections. The copper bars are fitted in the holes formed in these racks and may also be amalgamated with quicksilver to catch the metal, for which purpose the sections *d* are amalgamated. As the ore is jostled down the incline surface of the separator sections it necessarily comes into contact with these bars and is agitated sufficiently to cause the metal to be extracted from it.

The operating parts of the machine are given the rocking motion referred to by means of the mechanism illustrated by Fig. 3. This mechanism consists of the grooved eccentric *m* mounted in bearings *n* fixed to the frame. A rocking lever *o* fulcrumed at *o'* is operated by this eccentric through the medium of friction roller *p* which fits into the groove in the eccentric. Pivoted to the lower arm of the lever *o* is a connecting link *q* which is fixed to the frame *c*. By revolving the eccentric by means of the crank *r* it will be seen that an intermittent lateral reciprocating motion will be imparted to the separating frame. If

it is desirous to employ power to operate the machine this may be done by mounting a pulley in place of the crank *r*.

To use the machine, the hopper *s* should be  
 5 filled with ore and water and the chute *s'* so  
 located that it will empty into the pocket of  
 the upper separating section. As the ore is  
 dumped into the separating sections the loose  
 10 metal among it is deposited into the pocket  
 and on account of its weight remains there,  
 the balance of the ore however, is shaken out  
 and rolls down the incline to the next pocket  
 where the operation is repeated. A trough  
 or chute *t* is located below the last separating  
 15 section and receives the refuse, conducting it  
 to such receptacle that may be provided for  
 it. This operation continues until all the  
 metal is extracted from the ore.

Having thus described my invention, what  
 20 I claim as new and original with me is—

1. In an ore separating machine, a series of  
 separator sections inclined in opposite direc-  
 tions and having a pocket formed in their  
 upper ends, said sections being arranged in  
 25 a true vertical line so that the lower end of  
 one will empty directly into the pocket of the  
 one below it, and a series of riffle-bars located  
 in the sections and arranged alternately one  
 above the other, substantially as described.

2. In an ore separating machine, a series of 30  
 separator sections inclined in opposite direc-  
 tions and located in a true vertical line, each  
 section having the shoulders *f*, and *f'*, and  
 pockets *e* formed thereon and so arranged  
 that when the parts are assembled such should- 35  
 ders will register with each other and the  
 chute *g* will project into the pocket *e* of the  
 section below it, substantially as described.

3. In an ore separating machine, the combi-  
 nation with a stationary frame, of a swinging 40  
 frame hung therefrom, a series of inclined  
 separator sections located in the swinging  
 frame and arranged in a true vertical line, a  
 pocket formed in the inner end of each sec- 45  
 tion into which the chute of the section above  
 it empties, a grooved disk or eccentric mount-  
 ed on the side of the frame, a lever actuated  
 thereby, a link located under the machine  
 connecting the lever and swinging frame, and  
 a chute at the lowest point on the stationary 50  
 frame for receiving the tailings, all substan-  
 tially as described.

In testimony whereof I affix my signature in  
 presence of two witnesses.

HARVEY W. MURDOCK.

Witnesses:

THOS. V. O'DONNELL,  
 C. N. CUSTEAD.