

V. V. CLARK.
PLACER MINING APPARATUS.
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1,011,321.

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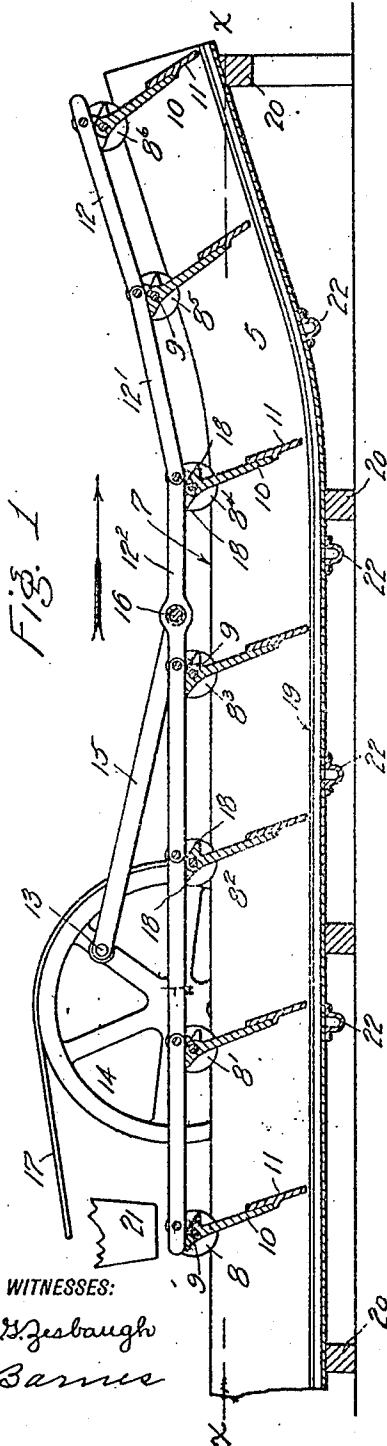


Fig. 1

WITNESSES:

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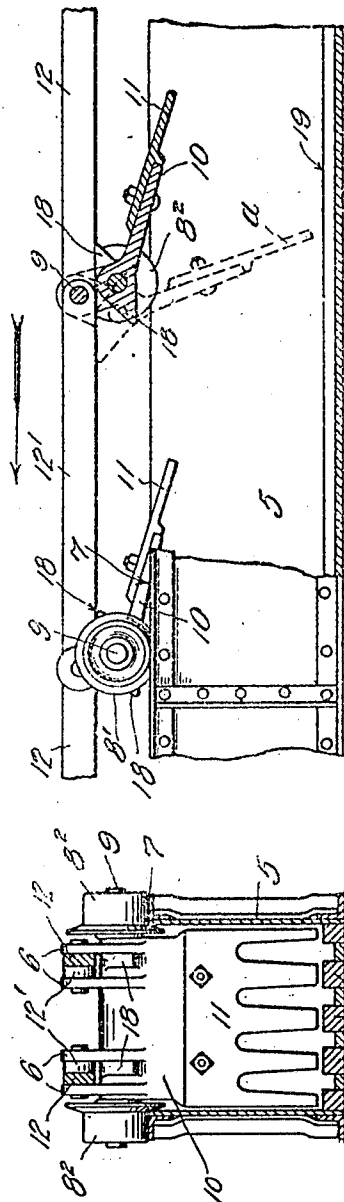


Fig. 3

Fig. 2

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PLACER-MINING APPARATUS.

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To all whom it may concern:

Be it known that I, VIVIAN V. CLARK, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Placer-Mining Apparatus, of which the following is a specification.

This invention relates to placer mining machinery whereby the auriferous earthy material, like gravel, clay and sand, all of which may contain stones of various shapes and sizes, can be operated upon with water to extract and save the gold or other valuable metal which such material may contain.

The objects of my invention are: First, to provide effective means for profitably operating on placer-mining grounds known to contain deposits of native gold but which grounds remain unworked because they are located where the supply of water is insufficient for extracting and saving the gold by methods and means heretofore employed for large operations on placer mining grounds.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a longitudinal vertical section. Fig. 2 is a vertical cross section thereof. Fig. 3 is a fragmentary view shown partly in side elevation and partly in vertical section.

Referring to the drawings, 5 is a trough or sluice box of iron or wood, the top edge of each side of which is adapted to afford continuous track-ways 7 and whereon are mounted pairs of wheels 8, 8', 8", etc. To the axle 9 of each pair of wheels is hingedly connected a "flight" 10 or "pusher" from the free or lower edge of which protrudes a detachable blade 11. Extending upwardly from each of these flights to a distance above the supporting axle 9 thereof are pairs of ears 6 located near each end of the flight as most clearly shown in Fig. 2. These ears are pivotally connected to pins which are employed for coupling the adjoining ends of links 12, 12', etc., of two bar-link chains, so to speak, which are located adjacent to the sides of the trough and supported in proximity to the juncture of the various links by the aforesaid wheels 8, 8', etc. This system of chains and flights is thus adapted for endwise travel on wheels which track upon the sides of the trough.

As illustrated in Fig. 1 the members of

one pair of link-bars 12², are connected by a transverse pin 16 which, in turn, is connected with the crank pin 13 of a driving wheel 14 through the agency of a connecting rod 15. When the wheel 14 is rotated the system of flights will be caused to make an excursion forward and back in the trough with each cycle of the wheel's rotation. This wheel may be driven by means of a power driven belt 17, or otherwise.

18 represents lugs respectively extending forwardly and rearwardly from the various flights and are disposed to encounter the chains thereabove to limit the swinging movements of the flights. That is to say, the rearwardly directed lugs 18 encounter the chains to arrest the rearward swing of the flights prior to the latter's forward travel and similarly the forwardly directed lugs limit the forward swing thereof for the subsequent rearward travel, as will be understood from an inspection of Figs. 1 and 2.

In the drawings I have illustrated a trough as having its rear end substantially horizontal and connected by a curved portion with the front or outlet end which is inclined upwardly. In the bottom of the trough are provided riffles 19, of a form known to miners as "pole-riffles," in the manner usually employed with sluice-boxes, but any other forms of riffles may be substituted, if desired.

20 represents sill-supports for supporting the afore-described structure. Both ends of the trough are open whereby water or earthy matter may freely enter or leave the trough.

21 represents the discharge end of a hopper which may serve to conduct earthy matter into the trough. Such devices are varied according to the character of material worked and the conditions of each location.

22 represents gutter like receptacles secured to the under side of the trough for collecting the concentrates which settle on the bottom of the trough and find access to the receptacles through discharge openings provided in the trough bottom.

The operation of my invention is as follows: At a selected location, the trough is set on a firm foundation in a hollow or depression of the ground which is or can be supplied with water to a height approximately of the plane indicated by $x-x$ in Fig. 1; that is to say, with the rear end of

the trough substantially submerged and the other end protruding for a distance above the water level. When the wheel 14 is rotated at an appropriate speed, motion is transmitted therefrom by the connecting rod 15 to the bar-chains and thence the system of flights is caused to be alternately moved toward the front and rear ends of the trough while the supporting wheels 8, 8', 8", etc., track on the side walls of the trough. During such travel of the flights a charge or succession of charges of the material to be treated is deposited in the trough adjacent to its rear end. The material thus supplied is conveyed by the rearmost flight in its forward travel into a position to be conveyed by the next flight in the succeeding forward travel of the flights, then to the third flight and so on until the material, excepting the heavier portions thereof which are retained within the interstices of the riffle, is finally discharged from the front end of the trough. During the forward movements of the flights, the power transmitted from the connecting rod 15 to the links will, through the medium of the ears 6, cause the flights 10 to be swung downwardly until arrested by the rearwardly extended lugs 18 encountering the links thereabove, whereupon the various flights will occupy the relative positions in which they are represented in Fig. 1 and by broken lines *a* in Fig. 3. When the return movements of the flights occur, the links will then act to swing the flights into positions corresponding to that in which they are represented by full lines in Fig. 3, and whereat they are arrested by the forwardly extended lugs 18 being brought against the links above.

It is to be noted that the motion of the

connecting rod is first utilized to swing the flights until the arms 18 or 18' are employed, and the continued motion of the connecting rod will serve to push or pull the entire system of flights toward the front or rear of the trough.

It is also to be noted that by reason of the flexible or link-connections between the adjacent flights and by having the carrying wheels of the latter operate upon a supporting track only, that a boulder, or a large body of the material, which might become wedged under a flight, will effect the uplifting of the particular flight to allow the same to pass over the obstacle and thereby not derange or break the apparatus.

It is obvious that suitable means for removing the matter constituting the tailings, as it is ejected from the forward end of the trough, will readily suggest themselves; as, for instance, the employment of some form of "stacker," such as is used in connection with gold-dredgers, or other mechanical conveyer.

Now having described the construction and operation of my invention, what I claim as new and desire to secure by Letters-Patent, is:

A concentrating sluice having longitudinally disposed spaced riffles, a longitudinally reciprocable conveyer having transverse flights pronged on their lower portions, each prong overlying a longitudinal riffle and reciprocable longitudinally thereover, each flight being pivotally yieldable to obstacles during movement of the conveyer in one direction.

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Witnesses:

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