No. 689,733. Patented Dec. 24, 1901.

O. M. LAWRENCE.

GOLD RECOVERING APPARATUS.

(Application filed Mar. 12, 1901.)

(No Model.)

Fig. 1.

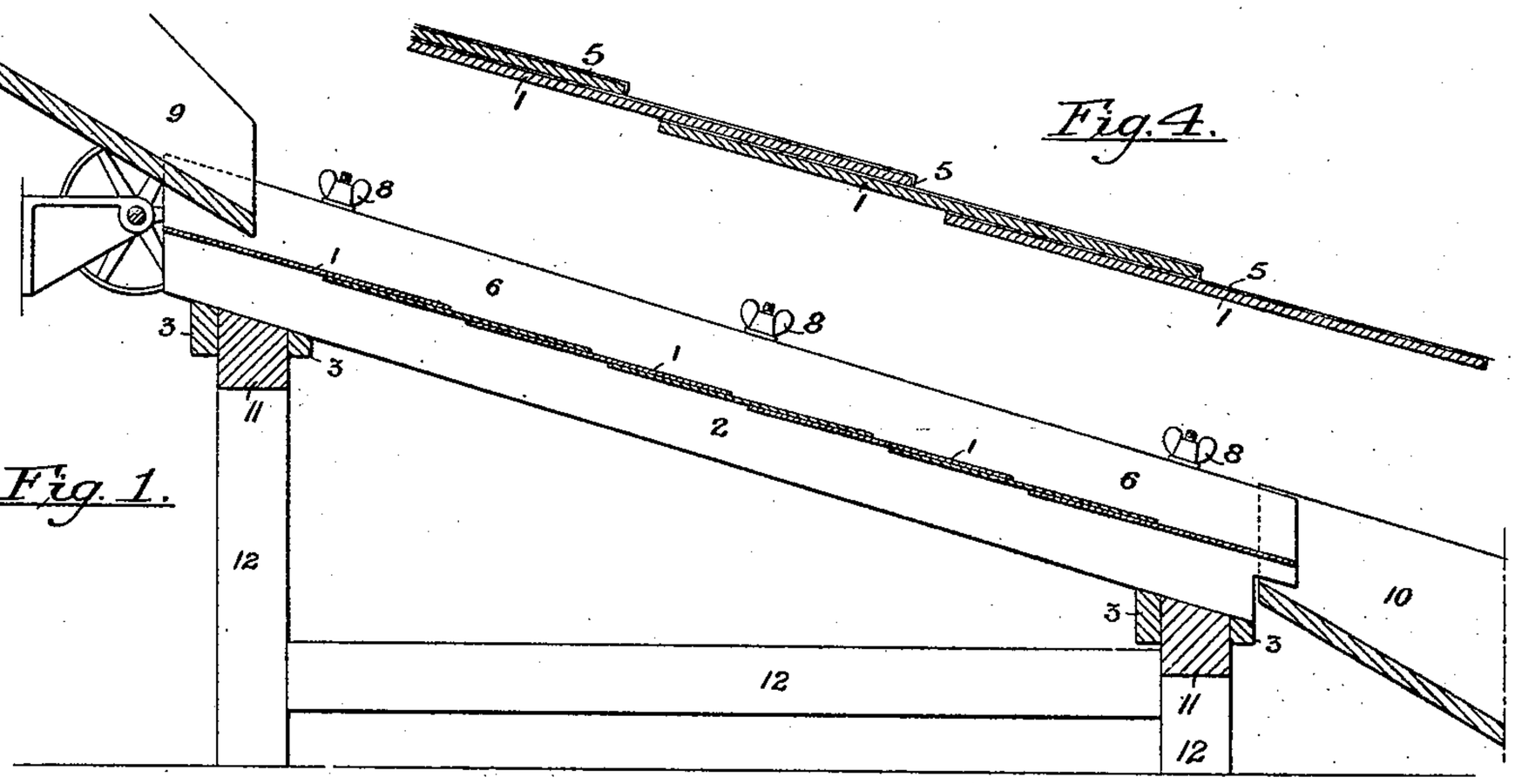


Fig. 4.

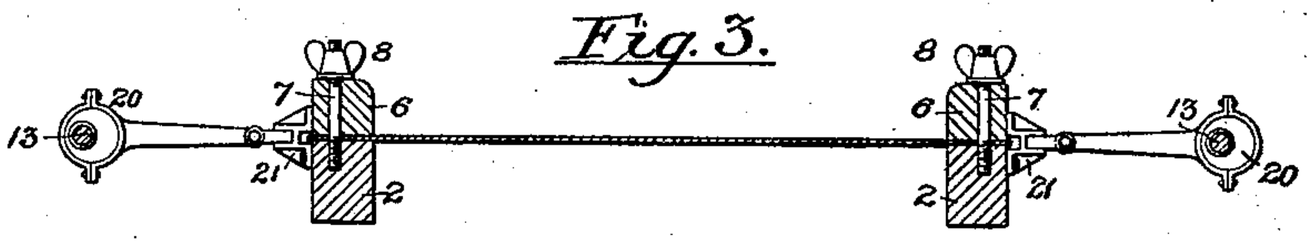
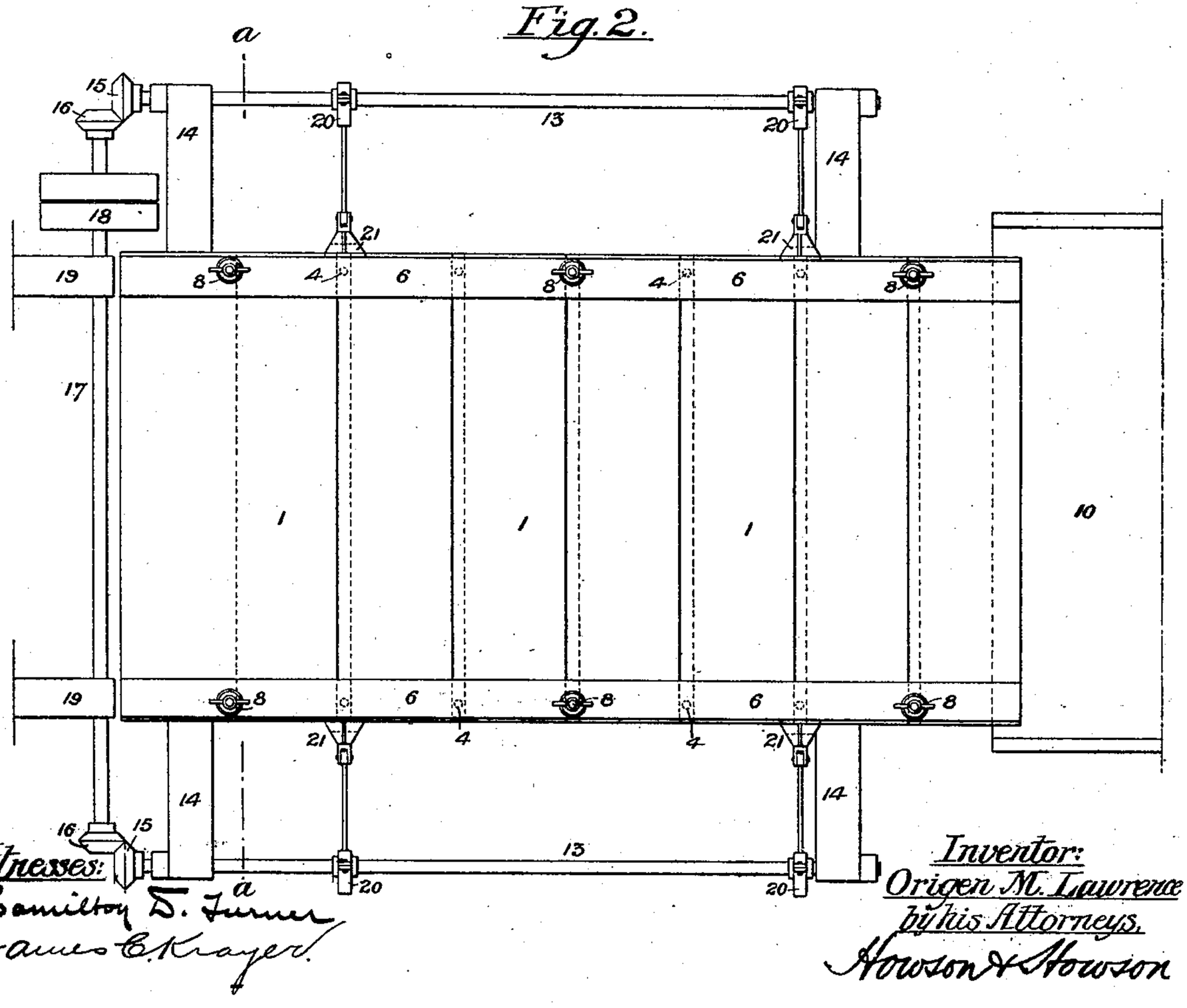


Fig. 3.

Fig. 2.



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GOLD-RECOVERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 689,733, dated December 24, 1901.

Application filed March 12, 1901. Serial No. 50,839. (No model.)

To all whom it may concern:

Be it known that I, ORIGEN M. LAWRENCE, a citizen of the United States, and a resident of Foster, Linn county, Oregon, have invented certain Improvements in Gold-Recovering Apparatus, of which the following is a specification.

My invention relates to apparatus employed for the recovery of gold; and it consists of certain improvements in amalgamating apparatus employing a series of lapping plates arranged and operating in a special manner, whereby I am enabled to recover the fine or flour gold which has heretofore been lost.

My invention is fully illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation of my improved recovery apparatus. Fig. 2 is a plan view of the same. Fig. 3 is a cross-section on the line *a a*, Fig. 2; and Fig. 4 is a sectional view, on an enlarged scale, illustrating the main feature of my invention.

My invention consists of an apparatus of this character in which I employ a series of amalgamated copper plates adapted to overlap each other, preferably about one-half of their width. These plates are suitably secured to a frame, and side pieces are provided, whereby a trough or sluice is formed, the overlapping plates forming the bottom of the same. This trough or sluice is arranged to receive the discharge from a stamp-mill, or it may be placed in any convenient position to receive gold-bearing earth, sand, &c., combined with a sufficient volume of water to make a flow. Covering these plates and disposed between the overlapping portions of the same is a body of semiliquid amalgam, which serves to absorb by diffusion the fine metal or flour-gold contained within the mass of material flowing over said plates, thereby prolonging the period of use without cleaning and renewing the amalgam, as well as protecting a large portion of the entrapped metal from loss by detachment under the scouring action of the pulp. The plates forming the bottom of the trough are fixed with relation thereto; but the trough is preferably arranged to be given lateral movement, so that the material flowing through the same will be thoroughly agitated. The thickness of the plates overlapping each other causes a slight riffle in the flowing material, which also tends to separate the gold from the sand, gangue, or other impurities. The trough is arranged at an angle, as shown, and I provide means for reciprocating the same laterally during the passage of the gold-bearing material. Each plate is held at the side by suitable pins, so that it will always have the same relative position to the rest, and the connection between the trough and the mechanism for reciprocating the same is such that the plates may be readily removed when it is desired to clean off the collected gold. The fine or flour gold is caught by the amalgam, and the latter, having a tendency to work its way under the overlapping plates, carries with it and retains this fine gold. When such amalgam becomes so charged with gold as to be thick and pasty, the plates may be removed and the combined amalgam and gold scraped off.

In the drawings herewith the amalgamated plates are represented at 1, and these plates are arranged at an angle overlapping each other and are supported by a suitable framework comprising the side pieces 2 and the cross-pieces 3. The plates are loosely arranged and are held in their relative positions with relation to each other by means of suitable pins 4, adapted to suitable apertures formed in said plates. Each plate is covered on its entire upper surface with a thick coating of amalgam 5. (More clearly shown in Fig. 4.)

To provide a trough or sluice having the lapping plates for a bottom, I arrange the side pieces 6, which may be secured to the side pieces 2, directly beneath the same, by any suitable means—as, for instance, the bolts 7 and thumb-screws 8, clearly shown in the drawings.

As shown in the drawings, the trough or sluice is arranged to receive material from a stamp-mill trough 9, and the excess of material which leaves the trough empties into a suitable spout 10, from which it may be conveyed to any desired point.

For the purpose of thoroughly agitating the material as it passes over the overlapping plates I provide means for giving the trough lateral movement. The trough will be guided

during this movement by means of the cross-pieces 3, which are arranged on both sides of the cross-pieces 11 of the trough-supporting frame 12. To give the trough the lateral movement, the following mechanism is employed: 13 13 represent counter-shafts arranged on each side of the frame 12 and journaled in suitable brackets 14, secured to said frame 12. These shafts are driven by means of the bevel-gears 15 and 16 from the driving-shaft 17, which receives its motion from a suitable pulley 18. The driving-shaft is journaled in brackets 19, mounted in proper relation to the frame 12. The side pieces 2 are connected to the shafts 13 by means of eccentrics 20, which are provided with securing-pieces 21, whereby they may be readily attached to the side pieces 2. The securing-pieces 21 are shaped so as to contact with the side pieces 2, to which the plates are secured, as well as the side pieces 6, forming the trough. They are fastened, however, only to the side pieces 2.

I have discovered by actual experience that the fine or flour gold found in certain gold-bearing earth or sand and which has heretofore been almost entirely lost may be recovered by the use of the apparatus employing the lapping plates which I have shown and described herein. The amalgam has a tendency to work up under the lapping portions of each preceding plate and carries with it the fine or flour gold readily absorbed by such amalgam.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination in an apparatus of the character described, of a series of plates adapted to lap each other, and means for holding said plates in position, said plates fitting loosely over each other and having a semi-liquid body of amalgam covering the same and interposed between their overlapping portions, substantially as and for the purpose set forth.

2. The combination in an apparatus of the character described, of a series of plates adapted to lap each other, means for holding said plates in position, and side pieces detachably secured to said lapping plates whereby a trough or sluice is formed, said plates lying loosely upon each other and having a semi-liquid body of amalgam covering the same and interposed between their overlapping portions, substantially as and for the purpose set forth.

3. The combination in an apparatus of the character described, of a series of plates adapted to lap each other, means for holding said plates whereby the lapping portion is constantly the same, and side pieces detachably secured to said lapping plates whereby a trough or sluice is formed, said plates lying loosely upon each other and having a semiliquid body of amalgam covering the same and interposed between their overlapping portions, substantially as and for the purpose set forth.

4. The combination in an apparatus of the character described, of a series of plates adapted to lap each other, such lap extending substantially one-half the width of the plates, means for holding said plates whereby the lapping portion is constantly the same, a supporting-frame for said plates, and detachable side pieces adapted to form a sluice or trough, said plates lying loosely upon each other and having a semiliquid body of amalgam covering the same and interposed between the overlapping portions, substantially as and for the purpose set forth.

5. The combination in an apparatus of the character described, of a series of perfectly flat plates adapted to overlap each other, means for holding said plates in their relative position to each other, and a heavy coating of amalgam carried by said plates, said amalgam covering the entire upper surface of each plate thereby providing a layer of the amalgam between the overlapping portions of the plates, substantially as and for the purpose set forth.

6. The combination in an apparatus of the character described, of a series of perfectly flat plates adapted to overlap each other, means for holding said plates in their relative position to each other, and side pieces detachably held in place whereby a trough or sluice is formed, said side pieces serving also to hold the plates in position, said plates having their entire upper surface coated with a layer of amalgam whereby a thick coating is disposed between the overlapping portions of the plates, substantially as and for the purpose set forth.

7. The combination in an apparatus of the character described, of a series of perfectly flat plates adapted to overlap each other, means for holding said plates in relative position to each other, so that the lapping portion will be constantly the same, side pieces detachably secured to said lapping plates whereby a trough or sluice is formed and the said plates are prevented from accidental displacement, and a heavy coating of amalgam entirely covering the upper surface of each plate, such disposition of the amalgam insuring a thick layer between the overlapping portions of the same, substantially as described.

8. The combination in an apparatus of the character described, of a series of perfectly flat plates adapted to overlap each other, means for holding said plates in relative position to each other whereby the overlapping portion is constantly the same, side pieces detachably secured in place overlying the edges of the plates and serving to form, with said plates, a trough or sluice for the material under treatment, driving-shafts and eccentrics connecting the supports for the plate with said driving-shafts whereby the plates may be given lateral movement, the upper surface of each of said plates being thickly

coated with amalgam, whereby a layer of the same is disposed between the overlapping portions of each plate, the lateral movement of said plates not disturbing the relative position of the same and hence not interfering with the layer of amalgam carried thereby.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ORIGEN M. LAWRENCE.

Witnesses:
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