Oct. 11, 1949. J. H. BECK 2,484,203

OSCILLATING PLACER SEPARATING MACHINE

Filed Oct. 21, 1947 2 Sheets-Sheet 1

Fig. 1

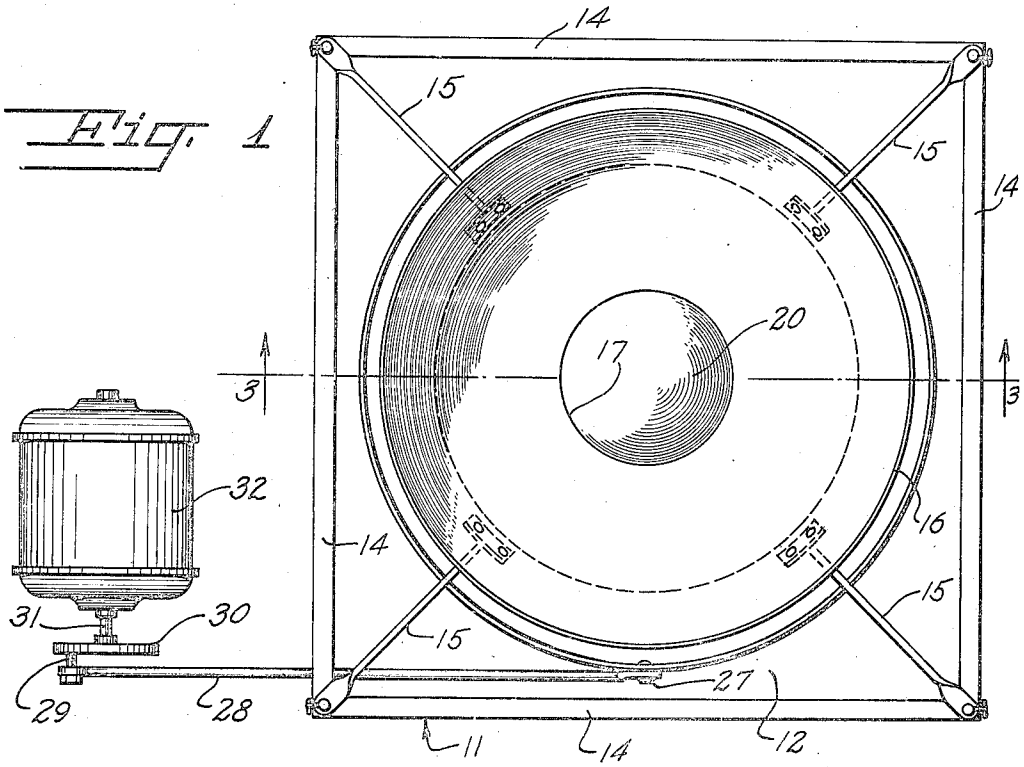
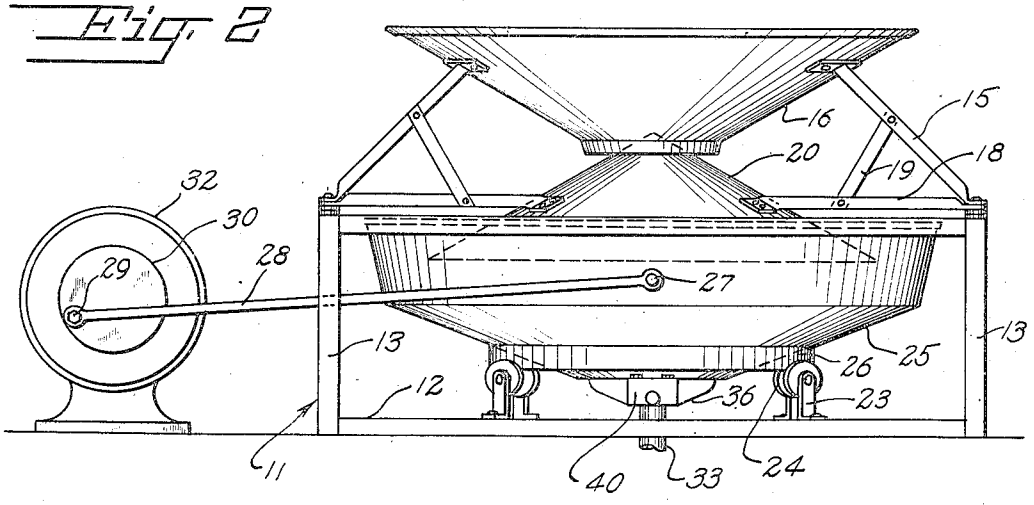


Fig. 2



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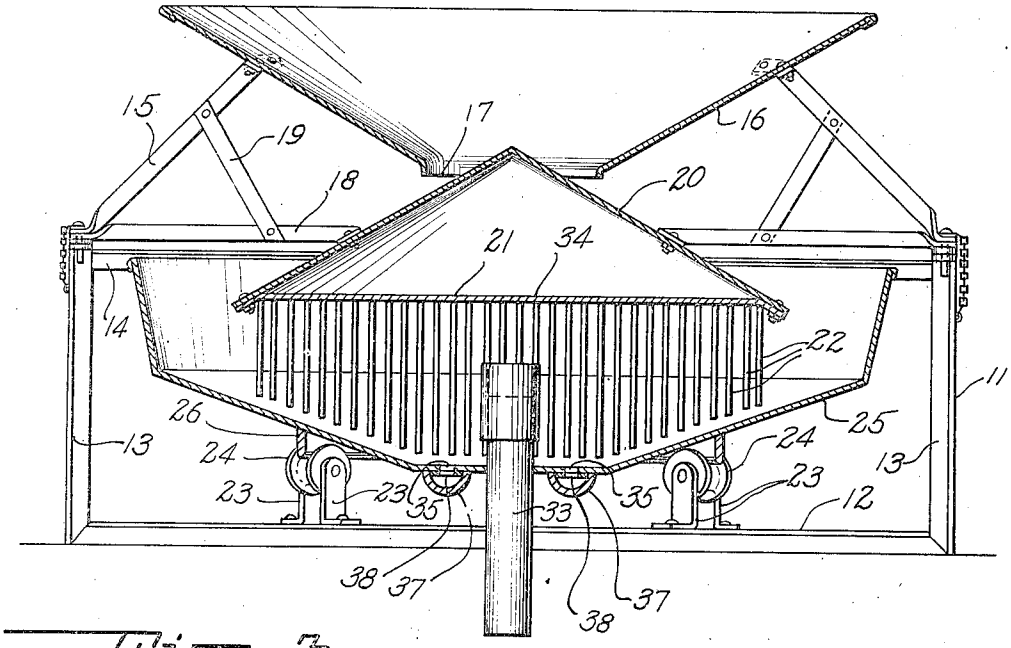


Fig. 3

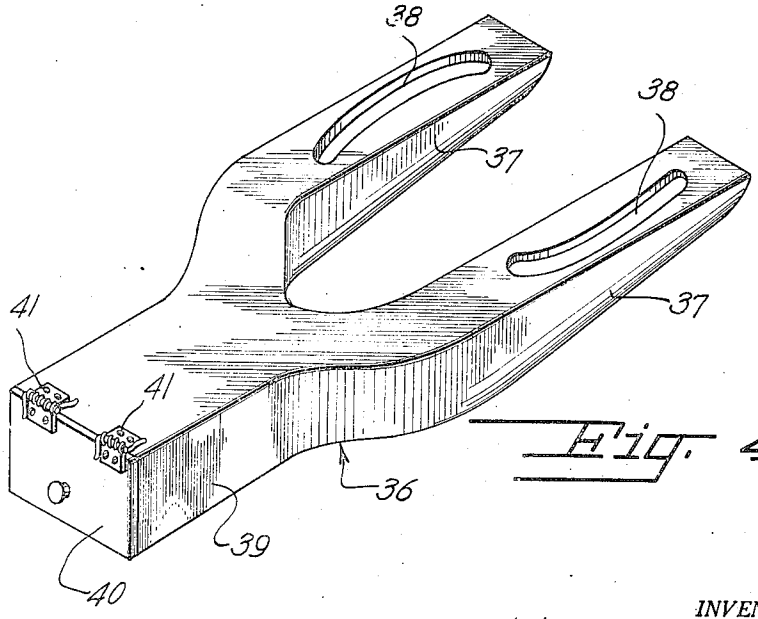


Fig. 4

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OSCILLATING PLACER SEPARATING MACHINE

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Application October 21, 1947, Serial No. 781,154

1 Claim. (Cl. 209—446)

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This invention relates to placer mining machines, and more particularly to a machine of the oscillating or vibratory type which may be employed to separate particles of gold or other precious metals from sand and the like, either with or without the use of water.

A main object of the invention is to provide a novel and improved placer mining machine of the oscillatory or vibratory type for separating particles of precious metal from desert sands and the like by vibrating the sands so that the precious metal particles separate out by gravity from the remainder of the ore and the worthless residue is carried off, said machine being very simple in construction and automatic in operation.

A further object of the invention is to provide an improved placer mining machine which is inexpensive to manufacture, efficient in performance and wherein the material under treatment is thoroughly agitated and stirred to release the metal particles therein in a more rapid and efficient manner than machines of like character in the prior art.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a top plan view of a placer mining machine constructed in accordance with the present invention.

Figure 2 is an elevational view of the mining machine of Figure 1.

Figure 3 is an enlarged cross-sectional view taken on line 3—3 of Figure 1.

Figure 4 is an enlarged perspective view of the hollow base portion of the oscillating pan of the machine of Figure 1 in which the separated precious metal particles are collected.

Referring to the drawings, 11 designates a generally square frame comprising a square bottom plate 12 to the corners of which vertical posts 13 are secured. The top ends of posts 13 are connected by respective horizontal bars 14 to define a rigid framework.

Secured to the corners of the framework by upwardly and inwardly inclined struts 15 is a downwardly tapering funnel-like conical hopper 16 formed with a bottom aperture 17. Also secured to said corners by inwardly directed struts 18 braced to struts 15 by connecting bars 19 is an upwardly tapering hollow conical baffle member 20 whose apex is centered in the aperture 17 and projects slightly into the hopper 16, whereby granular material placed in said hopper may

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discharge laterally and downwardly through aperture 17 along the conical surface of member 20. Member 20 is provided with a horizontal bottom wall 21 to which are secured a large number of closely spaced depending agitator prongs 22.

Secured to the bottom plate 12 are four pairs of spaced angle brackets 23, 23 arranged on the circumference of a circle concentric with the vertical axis of members 16 and 20. Rotatively journaled in each pair of brackets 23, 23 is a grooved roller 24, the rollers being oriented to define a circular trackway also concentric with said vertical axis.

Designated at 25 is a pan member having a downwardly tapering bottom wall formed with an annular depending flange 26 which is engaged in the grooved rollers 24 whereby said pan member 25 is supported for substantially free angular oscillation around the vertical axis above defined. Connected to said pan member at 27 is one end of a link bar 28, the other end of said link bar being loosely and pivotally connected to an eccentric pin 29 carried on a disc 30. Disc 30 is axially secured to the shaft 31 of an electric motor 32. When motor 32 is energized, the rotation of disc 30 causes link rod 28 to reciprocate and causes pan member 25 to oscillate angularly around the aforementioned vertical axis.

Secured centrally in pan member 25 is a vertical overflow tube 33 projecting downwardly below the frame 11 and provided at its upper end with an adjustable sleeve 34 which is frictionally held on tube 33 and may be adjusted upwardly or downwardly thereon to vary the overflow level of material in the pan member.

The prong elements 22 terminate adjacent the bottom of the pan member 25 and function to thoroughly agitate and stir the material in the pan member as said member is oscillated, thereby releasing particles of precious metal from the material, whereby said particles descend to the bottom of the pan member. The worthless residue ultimately is discharged from the pan member by passing through the overflow sleeve 34 and discharge tube 33.

The bottom of pan member 25 is formed adjacent its center with a pair of openings 35, 35. Secured to the bottom of the pan member is a bifurcated hollow housing 36 having the hollow arms 37, 37. The top wall of each arm 37 is formed with an elongated opening 38 communicating with an opening 35 in the bottom wall of the pan member. The arms 37, 37 merge in a main hollow body portion 39 having an end closure

40 hinged thereto and biased at its hinges by springs 41, 41 to a closed position.

In the operation of the machine, sand or other granular material, in either a wet or dry condition, containing particles of precious metal is fed into the hopper 16, the motor 32 being energized so that pan member 25 oscillates angularly, as above described. The material gravitates through opening 17 and downwardly on conical member 20 into pan member 25, where it undergoes oscillation and a thorough agitation and stirring treatment by the action of the stationary depending prong members 22. The metal particles are thereby released and pass to the downwardly and inwardly sloping bottom of pan member 25, where they enter the hollow arms 37, 37 through the respective aligned openings 35 and 38.

The bottoms of the arms 37, 37 are sloped downwardly and outwardly to facilitate the movement of the separated metal particles toward the enlarged hollow main portion 39 of the housing 36. The outward movement of said metal particles is further aided by centrifugal forces developed during the angular oscillations of the housing 36 around the vertical axis of the machine.

When a sufficient amount of metal has been collected in housing 36, the motor 32 is de-energized and the metal is removed from said housing at end closure 40. Said end closure 40 is preferably cork or rubber lined in order to render same substantially waterproof, whereby particles of metal will not be carried off by water dripping through the closure.

While a specific embodiment of a placer mining machine has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the

invention except as defined by the scope of the appended claim.

What is claimed is:

In a placer mining machine comprising a support, a pan member mounted for semi-rotary oscillation about a vertical axis on the support, a means for oscillating the pan member on the latter, said pan member having a pair of openings in the bottom thereof symmetrically disposed with respect to the vertical axis of oscillation, the features which include a bifurcated hollow housing having a pair of hollow arms secured to the bottom of said pan member with the openings therein connecting with the interior of said arms, a radially directed main hollow body portion connecting with both hollow arms and having an open outer end for discharging materials received from the pan member into said hollow arms, a closure member for said open outer end of said main hollow body portion, downwardly sloping bottoms upon said hollow arms inclining downward toward said main hollow body portion, and a bottom upon the latter continuous with the sloping bottoms of said hollow arms.

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