

T. G. LEAVELL.  
PLACER GOLD SEPARATOR.  
APPLICATION FILED NOV. 27, 1907.

919,894.

Patented Apr. 27, 1909.  
2 SHEETS—SHEET 1.

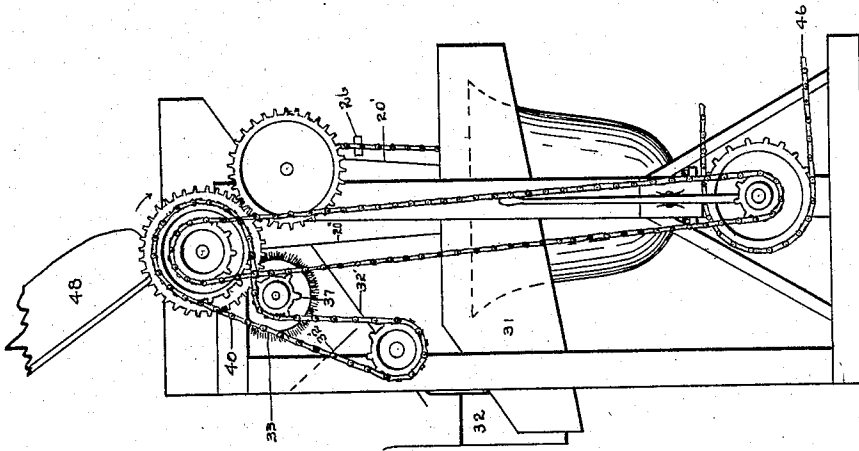


Fig. 2

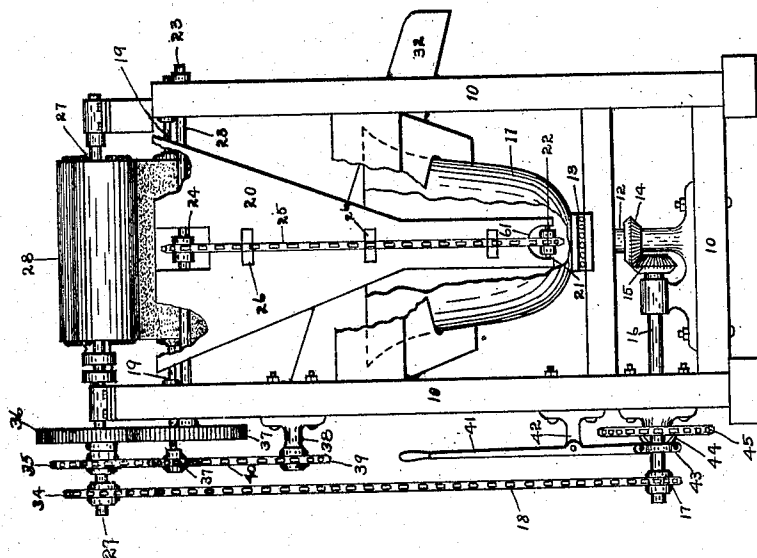


Fig. 1

WITNESSES:

W. R. Sampson  
W. S. Weer.

Thomas G. Leavell INVENTOR

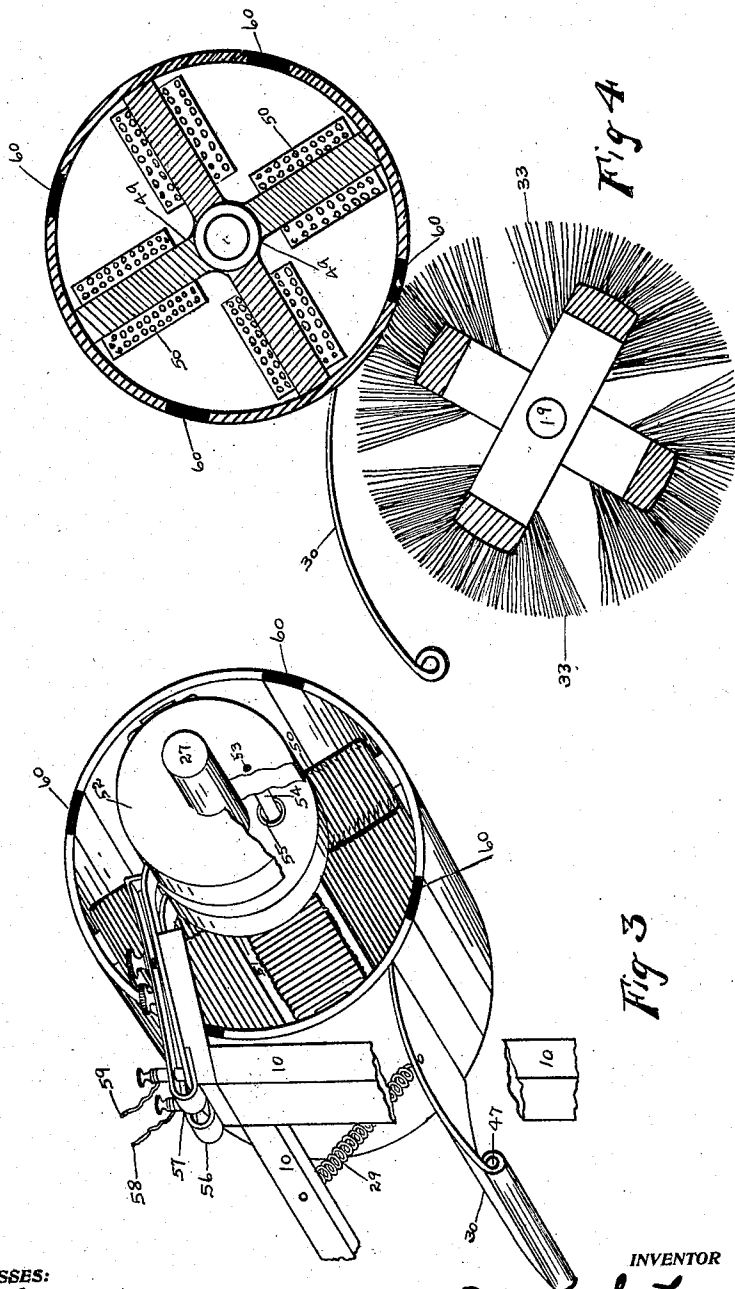
BY

L. L. Westfall his ATTORNEY

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Thomas G. Leavell  
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# UNITED STATES PATENT OFFICE.

THOMAS G. LEAVELL, OF SPOKANE, WASHINGTON, ASSIGNOR OF ONE-FIFTH TO WILLIAM J. PARKS, ONE-FIFTH TO HENRY L. HERKELRATH, ONE-FIFTH TO EDMUND E. BRANDT, AND ONE-FIFTH TO MERTON J. HILLS, ALL OF SPOKANE, WASHINGTON.

## PLACER-GOLD SEPARATOR.

No. 919,894.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed November 27, 1907. Serial No. 404,191.

*To all whom it may concern:*

Be it known that I, THOMAS G. LEAVELL, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Placer-Gold Separators, of which the following is a specification.

This invention relates to placer gold separators, of the kind known as the dry process, as distinguished from those depending on gravity and a flow of water in various ways and by various means. While I use mercury to take up the gold, I have made use of new principles and new devices to make more thorough the process, along with greater economy in the use of mercury, as well as to save a greater percentage of the gold. While this is termed a dry process, still a small amount of water may be used to overflow the surface of the mercury, to assist in carrying away the waste dirt and for other purposes. These objects are attained by the mechanism facilitating a more thorough mixture of the sand and earth with the mercury, thus bringing a greater portion of the gold in the sand and dirt in actual contact with the mercury, also by the mechanism used to separate the black sand from the other portions of sand and dirt before coming in contact with the mercury. What is known as black sand in placer mining, contains magnetic iron in greater or less proportions, and I remove this black sand by means of a magnetized cylinder with which the sand comes in contact within my mechanism and to which the black sand adheres, the same being removed therefrom by means of a rotary brush and a scraper and transported to one side and away from the other sand and dirt being treated. This separation of the black sand facilitates its preservation for other treatment, whereby the gold may be extracted from the same.

I am aware of the fact of black sand being removed from placer dirt by means of magnetized plates, but the advantages of a rotating cylinder for the purpose will be apparent to one skilled in the process of treating placer dirt.

In the drawings, Figure 1, is a front elevation of the device, Fig. 2, is a side elevation of the same, Fig. 3, is a perspective

view of the magnetized cylinder and Fig. 4, is a sectional view of the magnetized cylinder and of the rotary brush and the scraper.

The apparatus is mounted upon a frame 10. A bowl 11, to serve as a receptacle for mercury is anchored within the frame 10 and secured to the end of the shaft 12, with which it is adapted to rotate, the bowl 11 resting upon the ball bearings 13.

To the shaft 12 is secured a bevel gear 14, meshing with a bevel gear 15 secured to end of the shaft 16. The shaft 16 is provided with a sprocket wheel 17 facilitating a chain 18 connection with the other moving mechanism. Within the frame 10 and secured to a shaft 19 is anchored a funnel 20, extending downward into the bowl 11 to a point near the bottom thereof. At the bottom portion of the funnel 20 is secured a shaft 21, to which is anchored a sprocket wheel 22, and to the shaft 23 near the top of the funnel 20 is secured a sprocket wheel 24. A chain 25 bearing cups 26 at intervals, connects with the sprocket wheels 22 and 24 located near the top and bottom, respectively, of the funnel 20. Mounted upon a shaft 27 at the top of the frame 10 is the magnetized cylinder 28 and subjacent thereto and mounted upon the shaft 19 is a rotary brush 33. Also subjacent to the magnetized cylinder 28 and secured to the frame 10 by means of a coiled spring 29 and by means of a pivot through the opening 47, is a scraper 30, mounted in such a manner as to come in contact with the peripheral surface of the cylinder 28.

Mounted near the top of the bowl 11 and engaging the outer surface thereof, is an inclined trough 31 extending outward and downward from the bowl 11 and which is subjacent and in a position at right angles with an inclined trough 32, which extends outward and downward from the cylinder 28 and at a position crosswise of the frame 10.

The shaft 27 bears at one end thereof two sprocket wheels 34 and 35 and one cog-wheel 36. The cog-wheel 36 meshes with a cog-wheel 37 on end of shaft 23. A sprocket wheel 37 is mounted upon the end of the shaft 19. An idler shaft 38 is secured to the frame 10, upon which shaft is mounted a sprocket wheel 39. This sprocket wheel 39 is provided in order that the chain gear 40 may

be made effective in rotating the rotary brush 33 in an opposite direction from the rotation of the magnetized cylinder 28.

A hand lever 41, fulcrumed at the pivot 42 is provided as a means of throwing the machinery in and out of gear. The lever 41 is secured to the collar 43, which is feathered to the shaft 16, in order that the friction clutch 44 may be brought into engagement and disengagement with the sprocket wheel 45 to which is applied the chain gear 46 leading from the engine or motor furnishing the power and to which the power is applied.

At the top of the frame 10 and engaging the top surface of the magnetized cylinder 28 is provided a hopper 48 adapted for a receptacle for the placer dirt as first applied to the mechanism.

In Fig. 2 I have shown the sides of the funnel 20' and 20'', leading to the cylinder 28 and by means of which the placer dirt cleared of the black sand is guided into the funnel 20. Also in Fig. 2 I have shown the extension 32' of the trough 32, to a point underneath the rotary brush 33, in order that the black sand removed from the magnetized cylinder 28 by the brush 33 and by the scraper 30 may be guided into the trough 32.

In Fig. 3 I have shown means for the magnetization of the cylinder 28. To the shaft 27 are secured four supports 49, leading to the cylinder 28. To these supports 49 is secured a wire coil 50. On the shaft 27 adjacent to one end of the cylinder 28 are secured two commutators 51 and 52. A wire 53 secured to the commutator 52 passes through an insulator 54 to and through an opening 55 in the commutator 51 and connects with the wire coil 50. Two brushes 56 and 57 are secured to the frame 10 and engage the surfaces of the commutators 51 and 52, respectively, to which brushes 56 and 57 are connected the electric current by means of the wires 58 and 59, respectively. A fibrous insulator 60 is provided longitudinally

of the cylinder 28, intervening each support 49.

In the practical working of the apparatus, the machinery is set in motion and the placer dirt to be treated is thrown into the hopper 48. The black sand or that containing magnetic iron adheres to the surface of the magnetized cylinder 28 in its rotations and is removed therefrom by the rotary brush 33 and the scraper 30, drops into the trough 31' and is carried from there by gravity to the trough 32 and thence to one side of the apparatus. The remaining placer dirt drops from the cylinder 28 into the funnel 20 and is carried by means of the chain 25 and the cups 26 at intervals thereon, downward through the opening 61 in the bottom of the funnel 20 into the bowl 11 containing the mercury, where with the assistance of the revolving movement of the bowl 11, the same becomes thoroughly mixed with the mercury. The gold contained in the placer dirt adheres to the mercury and the dirt is forced to the surface thereof and from there sloughed off and carried away by means of gravity, and a stream of water if thought advisable, through the inclined trough 31.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters-Patent is:

In an apparatus for separating gold from placer dirt, the combination of a frame, a hopper mounted on the frame, a funnel extending downward from the hopper, an endless chain carrying cups mounted within the funnel, a rotating bowl inclosing the lower end of said funnel, an inclined trough leading from the bowl, and means for actuating said chain and bowl, substantially as set forth.

In testimony whereof I have affixed my signature, in presence of two witnesses.

THOMAS G. LEAVELL.

Witnesses:

W. J. PARKS,

W. R. SAMPSON.