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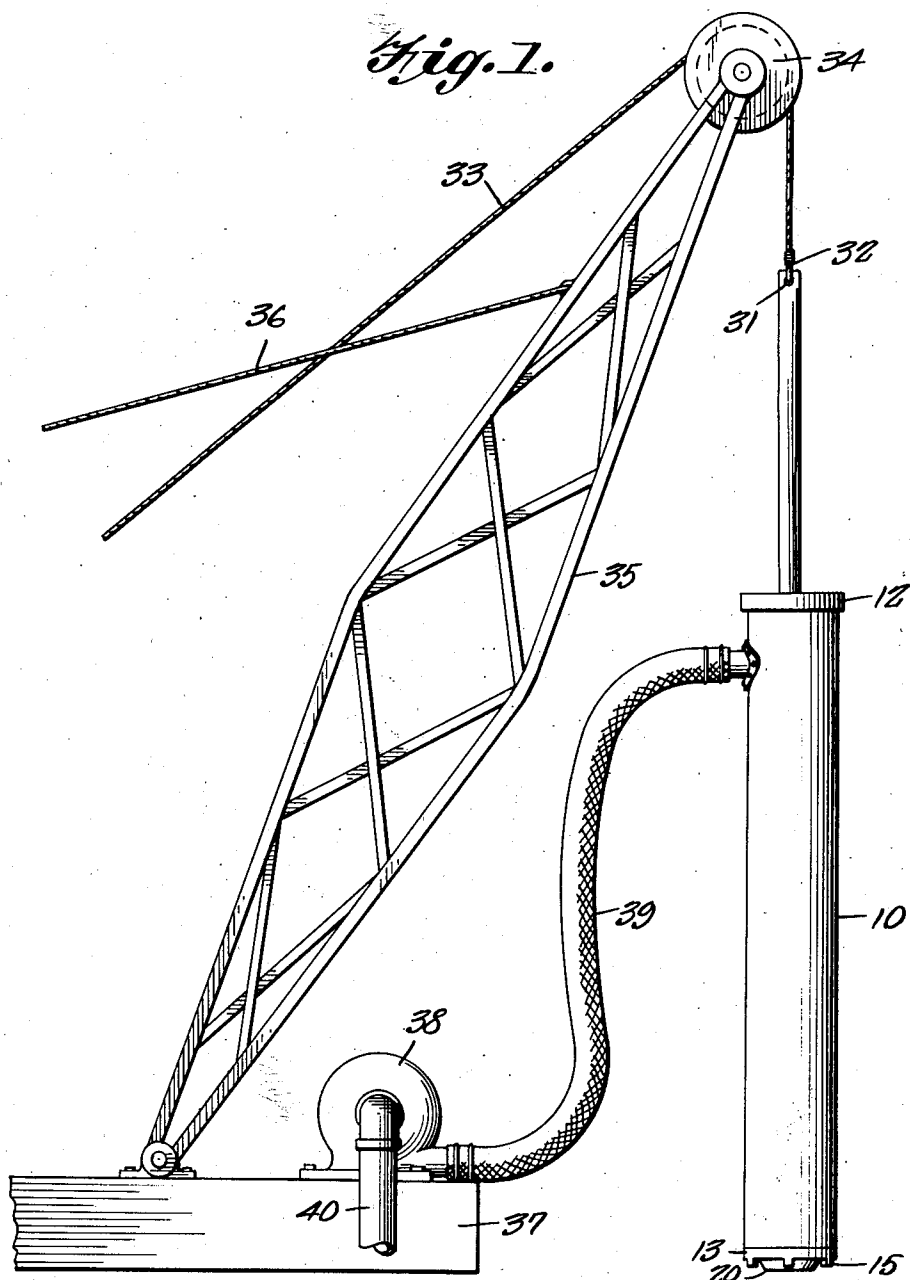
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2,145,753

HYDRAULIC PLACER MACHINE

Filed Aug. 31, 1937

2 Sheets-Sheet 1



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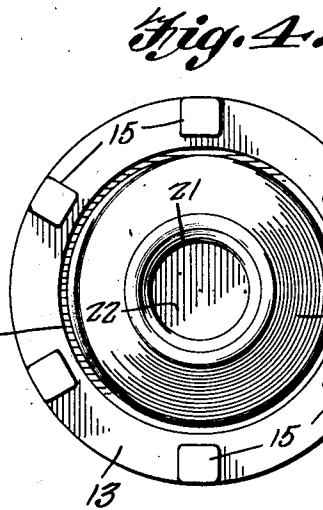
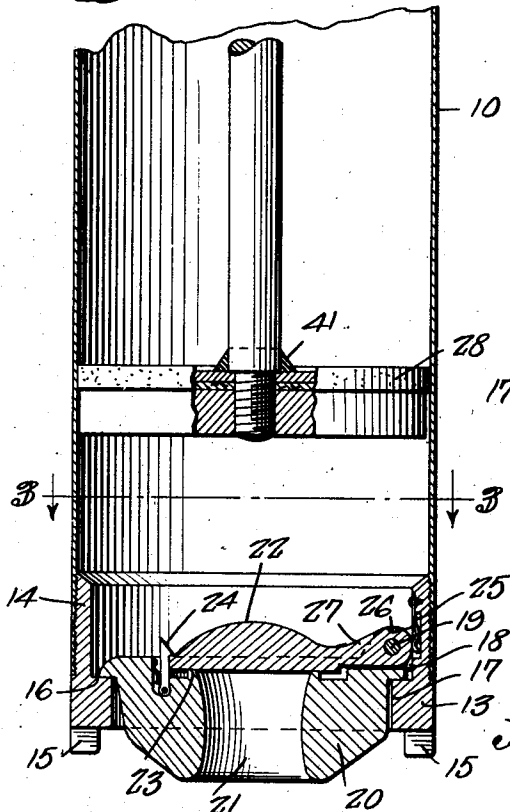
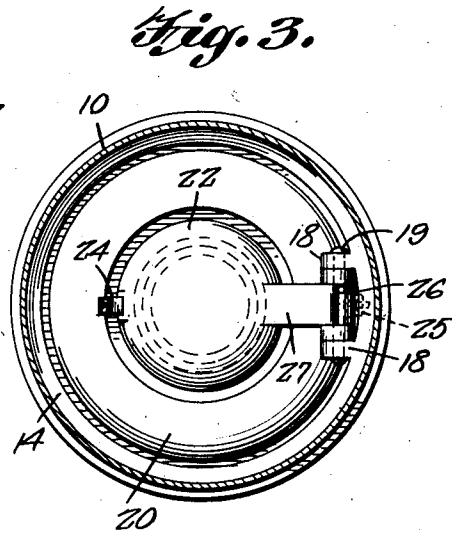
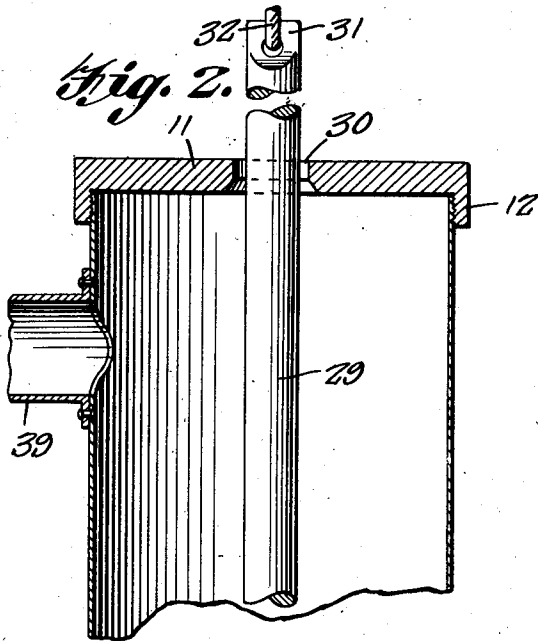
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UNITED STATES PATENT OFFICE

2,145,753

HYDRAULIC PLACER MACHINE

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Application August 31, 1937, Serial No. 161,849

7 Claims. (Cl. 209—1)

The invention relates to a placer machine or apparatus and more particularly to a hydraulic placer machine.

The principal purpose of the invention is to provide a means of sinking a barrel or cylinder at a controlled pressure of water to bed rock in a new and novel manner, combining a suction arrangement for recovering of classified materials and values on or concentrated near such bed rock in placer deposits, the machine being provided with a trapping arrangement to hold classified material inside of barrel or cylinder. The machine may then be lifted out of said placer ground and set into a clean-up tank or sluice box, opening lower valve body and machine flushed out. This machine being of a novel construction and operation, thus classifying precious mineral materials in place.

Another purpose of the invention is the provision of a machine of this character, wherein the same when in operation will enable through the direct action of water and gravity the recovering of gold, platinum and other precious metals notwithstanding the fact that the alluvial deposits containing recoverable precious metal have not sufficient grade or face to permit their classification by direct action of sluicing, the machine operating through water under pressure for digging in a placer area or a rock bed and as a bailer for the raising or lifting of concentrates thus eliminating much of the expense and labor as compared to the use of dredges of all types, drag line operations, power shovel and truck operations generally employed to elevate such materials so that they may be classified according to their specific gravities and recovered by means of sluicing. Incidentally this machine concentrates heavier particles within such materials and at the same time enabling the classifying of such materials in place.

A further purpose of the invention is the provision of a machine of this character, wherein direct treatment of spoil from auriferous beds or banks beneath water can be had for the separation and concentration of such spoil for the recovery of precious metals and the classification of the same.

A still further purpose of the invention is the provision of a machine of this character, which is simple in its construction, thoroughly reliable and efficacious in operation, readily and easily handled, minimizing labor and expense in the working thereof, strong, durable, and inexpensive to manufacture and install.

With these and other purposes in view, the

invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings, which disclose the preferred embodiment of the invention and pointed out in the claims hereunto appended.

In the accompanying drawings:

Figure 1 is an elevation of a machine constructed in accordance with the invention.

Figure 2 is an enlarged vertical longitudinal sectional view thereof.

Figure 3 is a sectional view on the line 3—3 of Figure 2 looking in the direction of the arrows.

Figure 4 is a bottom end view.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, the machine constituting the present invention comprises a tubular barrel or cylinder 10 of a desired sectional length and of desired diameter in conformity to the requirement thereof having a head or top cap 11 provided with an internally threaded annular rim 12 in screw threaded engagement exteriorly with the upper end of the said barrel or cylinder for the closing thereof while fitted in the bottom or lower end of the latter is a base ring 13 having the reduced inner end 14 telescopically fitting within the said barrel or cylinder and made secure in any suitable manner. This base ring 13 at its outer end has studded peripherally thereof feet protuberances 15, these being uniformly spaced from each other and are for a purpose presently described.

The ring is formed with an internal annular shoulder 16 intermediate of the outer and inner ends thereof concentric to its center opening 17 while above the shoulder 16 at one side of the opening 17 are pintle ears 18 carrying a pintle 19 for the hinged mounting of a trapping valve body 20 provided with a rest lip 20' engageable with the shoulder 16 interiorly of the ring 13 when said body is in lowered position. This body is of outwardly tapered formation and is created with a central Venturi opening 21 extending therethrough. The feet protuberances 15 prevent the sealing of the opening 21 when the body 20 makes contact with a rock surface in the use of the machine.

The pintle 19 has hinged thereto a latching valve 22 which is adapted for engagement with a seat 23 formed on the body 20 concentrically about the opening 21, this body being provided with a spring pressed latch 24 for engaging the valve 22 when upon the seat 23 to hold it closed.

on the lowering thereof upon the body 20 while the ring 13 carries a leaf spring latch 25 frictionally engageable in a keeper notch 26 provided in the hinge side 27 of said valve 22 so that the said valve when in an open position or raised will be frictionally latched in this position and is released for the closing thereof in a manner presently described.

Working within the cylinder or barrel is a piston 28, its stem 29 being carried through a center guide opening 30 provided in the head or cap 11 and the outer eye end 31 of this stem is attached at 32 to a raising and lowering cable 33 trained over a guide pulley 34 carried by a boom or crane 35 of any conventional type, being adjusted by an adjusting cable 36 and is vertically swingable upon a support 37.

Upon the support 37 is a water feed device or pump 38 having a lead 39 connected with and opening into the barrel or cylinder 10 at a point removed from the head or cap 11 and into one side only of this barrel or cylinder, the pump or device 38 being operated in any suitable manner and the water supply thereto is had through a conduit or pipe, a portion being denoted at 40.

In the operation of the machine through the suspension of the stem 29 of the piston 28 within the barrel or cylinder 10 from the cable 33 and this suspension raises the piston within the barrel or cylinder 10 so that it will be clear and above the communication of the lead 39 with said barrel or cylinder whence water under pressure is forced by the device or pump 38 into the barrel or cylinder 10, the valve body 20 being in lowered position with the lip 26' resting on the shoulder 16 of the base ring 13 and the latch valve 22 in a raised latched position uncovering the opening 21 in said body 20, the water within the barrel or cylinder 10 under pressure flowing through the opening 21 and in this manner the said body 20 becomes a powerful digging nozzle and with the pressure of the water flow properly applied will permit materials penetrated to classify and concentrate according to their specific gravities. After reaching any point or depth in a placer area through the digging operation hydraulically, the digging may be stopped by shutting off the water pressure and the lowering of the pressure effects the dropping of the piston 28 within the barrel or cylinder 10 and when such piston engages the latch valve 22 in its raised position, the latter will be unlatched and lowered onto the seat 23 thereby assuming a closed position and being latched by the latch 24. Whereupon the valve body 20 becomes a complete valve or trap of approximately the diameter of the barrel or cylinder 10 and on raising the piston 28 by the cable 33 within the barrel or cylinder 10 causes a filling of the latter from surrounding material and water in that such valve body 20 becomes opened and when such barrel or cylinder is filled therewith this valve body 20 on the closing traps such filling whereupon the filling can be manually dispensed therefrom into a sluice box or tank.

In the working of the machine as before set forth, it effects a hydraulic digging contrivance and through suction a bailing contrivance so that through water under pressure and suction precious metals are concentrated thereby and separated for the recovery of the same from bed rock or in a placer concentrated area in a single operation of the machine.

About the stem 29 at the connection thereof with the piston 28 and contacting with the latter is a washer 41 which is adapted to engage in the

opening 30 in the head or cap 11 on the full raising of the piston 28 in the barrel or cylinder 10 for the closing of said opening 30 and such opening on the upward movement of the piston allows the escape of water from the barrel or cylinder therethrough.

What is claimed is:

1. In a machine of the character described, a shiftable tubular barrel capped at its upper end, a base ring fitted in the lower end and having spaced feet, an annular flange internally of said ring, a valve body swingingly fitted within the ring and seated upon the flange and having a Venturi center opening, a valve inwardly of the first-mentioned valve body and adapted for closing said opening therein, means latching the second-named valve in closed position, means for latching the second-named valve in open position, a piston working within said barrel and having a suspended stem working through the closed top end of said barrel and active upon the second-named valve when in latched open position for the closing thereof on the lowering of the piston in said barrel, and means for inducing fluid under pressure into the said barrel.

2. In a machine of the character described, a shiftable tubular barrel capped at its upper end, a base ring fitted in the lower end and having spaced feet, an annular flange internally of said ring, a valve body swingingly fitted within the ring and seated upon the flange and having a Venturi center opening, a valve inwardly of the first-mentioned valve body and adapted for closing said opening therein, means latching the second-named valve in closed position, means for latching the second-named valve in open position, a piston working within said barrel and having a suspended stem working through the closed top end of said barrel and active upon the second-named valve when in latched open position for the closing thereof on the lowering of the piston in said barrel, means for inducing fluid under pressure into the said barrel, and means for adjustably suspending the piston by its stem.

3. In a machine of the character described, a shiftable tubular barrel capped at its upper end, a base ring fitted in the lower end and having spaced feet, an annular flange internally of said ring, a valve body swingingly fitted within the ring and seated upon the flange and having a Venturi center opening, a valve inwardly of the first-mentioned valve body and adapted for closing said opening therein, means latching the second-named valve in closed position, means for latching the second-named valve in open position, a piston working within said barrel and having a suspended stem working through the closed top end of said barrel and active upon the second-named valve when in latched open position for the closing thereof on the lowering of the piston in said barrel, means for inducing fluid under pressure into the said barrel, means for adjustably suspending the piston by its stem, and a swinging crane carrying said last-named means.

4. In a machine of the character described, a shiftable tubular barrel capped at its upper end, a base ring fitted in the lower end and having spaced feet, an annular flange internally of said ring, a valve body swingingly fitted within the ring and seated upon the flange and having a Venturi center opening, a valve inwardly of the first-mentioned valve body and adapted for closing said opening therein, means latch-

ing the second-named valve in closed position, means for latching the second-named valve in open position, a piston working within said barrel and having a suspended stem working through the closed top end of said barrel and active upon the second-named valve when in latched open position for the closing thereof on the lowering of the piston in said barrel, means for inducing fluid under pressure into the said barrel, means for adjustably suspending the piston by its stem, a swinging crane carrying said last-named means, and a pump for regulating the fluid pressure.

5. In a machine of the character described, a shiftable tubular barrel, a piston working within the barrel and having a stem for suspending the said piston and barrel when fitted with said piston, a perforated valve arranged within the barrel at its lowermost end and swingably supported, a valve coacting with the first-named valve for closing its perforation when in one position, and means for latching the last-named valve in an open position with respect to the first-named valve and releasing the last-named valve when acted upon by the piston.

6. In a machine of the character described, a shiftable tubular barrel, a piston working within the barrel and having a stem for suspending

the said piston and barrel when fitted with said piston, a perforated valve arranged within the barrel at its lowermost end and swingably supported, a valve coacting with the first-named valve for closing its perforation when in one position, means for latching the last-named valve in an open position with respect to the first-named valve and releasing the last-named valve when acted upon by the piston, and means for latching the last-named valve in position for closing the perforation in the first-named valve.

7. In a machine of the character described, a shiftable tubular barrel, a piston working within the barrel and having a stem for suspending the said piston and barrel when fitted with said piston, a perforated valve arranged within the barrel at its lowermost end and swingably supported, a valve coacting with the first-named valve for closing its perforation when in one position, means for latching the last-named valve in an open position with respect to the first-named valve and releasing the last-named valve when acted upon by the piston, means for latching the last-named valve in position for closing the perforation in the first-named valve, and a seat associated with the barrel for the first-named valve.

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