

No. 666,796.

Patented Jan. 29, 1901.

C. BRASH.

ORE WASHING AND CONCENTRATING MACHINE.

(Application filed Mar. 17, 1900.)

(No Model.)

2 Sheets—Sheet 1.

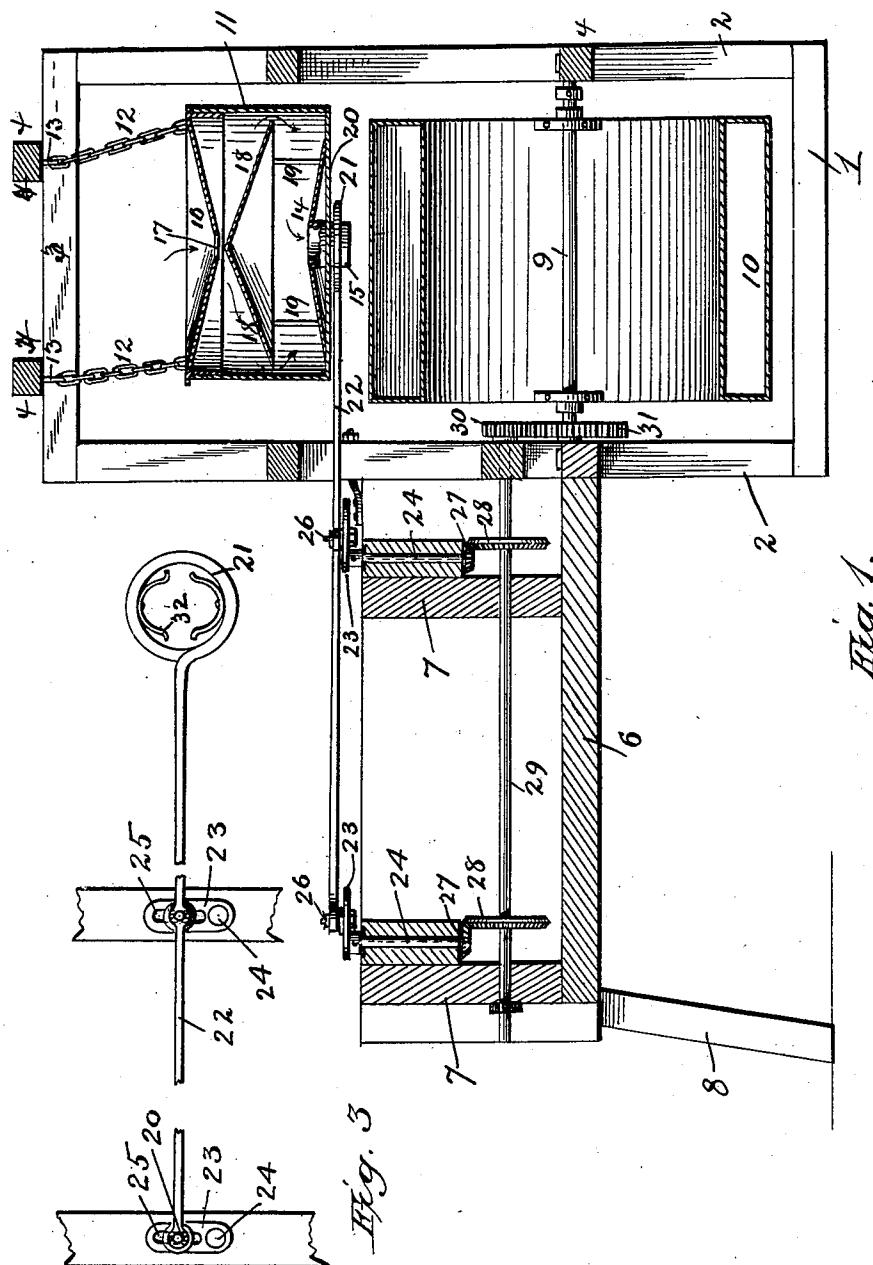


Fig. 1.

Fig. 3

WITNESSES:

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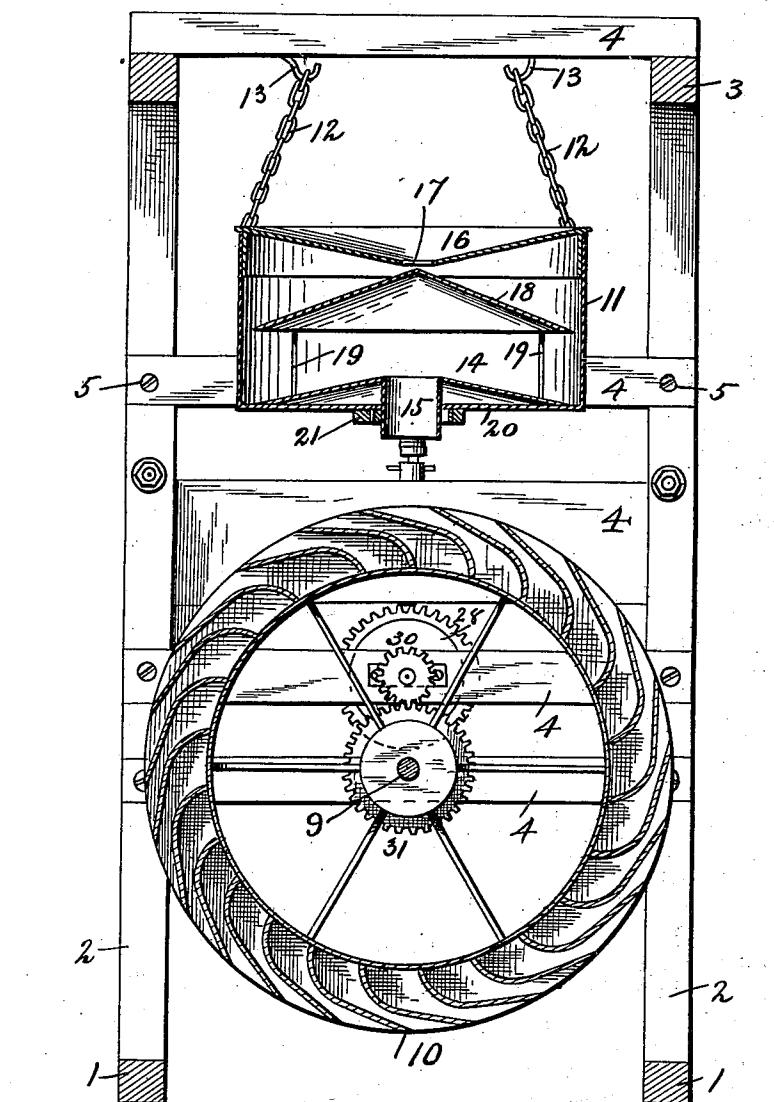


Fig. 2.

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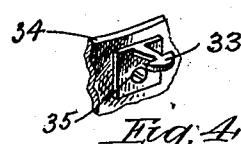
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UNITED STATES PATENT OFFICE.

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ORE WASHING AND CONCENTRATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 666,796, dated January 29, 1901.

Application filed March 17, 1900. Serial No. 9,090. (No model.)

To all whom it may concern:

Be it known that I, CHARLES BRASH, a citizen of the United States, residing at Victoria, British Columbia, Canada, have invented certain new and useful Improvements in Ore Washing and Concentrating Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to gold-concentrating machines; and it consists of certain novel features of construction and combination of parts, as will be hereinafter fully described and claimed.

One object of my invention is to provide a machine of the character specified by means of which subject-matter may be treated which has a low ore-producing quality or which contains the gold or other mineral in a more or less finely pulverized state.

The prime object of my invention may therefore be said to be to enable the operator to extract from sand or like subject-matter what is termed "flour gold," though the machine will at the same time prove reliably efficient in separating larger particles of gold from earth, sand, crushed stone, or the like, as will be hereinafter made fully apparent.

In the accompanying drawings, Figure 1 is a vertical central section of my ore separating and concentrating machine. Fig. 2 is a transverse section of Fig. 3 on a line central to the driving-wheel and on a slightly enlarged scale. Fig. 3 is a detail view of the actuating-shaft designed to operate the separating pan or receptacle. Fig. 4 is a detail of one of the supporting-hooks employed to suspend the ore-separating chamber in its operative position.

While I shall describe the preferred construction to be adopted in producing the several parts of my invention and their necessary coöperating accessories, it will be understood that I desire to comprehend the substantial equivalent thereof and all such changes and modifications in the construction as fall fairly within the scope of my invention.

In order to more conveniently refer to the several features of my invention and the elements deemed necessary to illustrate the same, numerals will be employed, of which 1 indicates the base portion of the framework, upon which may be erected in any preferred

way the superstructure comprising the standards 2, the top sections 3, and the series of bracing-beams 4, it being understood that any desired number of said beams may be employed, all of them being suitably connected to the uprights by bolts 5 or the equivalent thereof. To the framework thus or otherwise provided I secure the extension or auxiliary frame, comprising the beams 6, provided with the standards 7 and the supporting-leg 8, the purpose of which will be hereinafter specifically set forth. Within the framework comprising the standards 2 and cross-beams 4 I dispose upon the shaft 9, which is mounted in suitable bearings, the driving-wheel 10, having the usual series of pockets or blades, by means of which power is afforded to operate the ore-agitating compartment or receptacle 11, which is sustained in its operative position in any preferred way, as by the supporting-chains 12, which are connected to the top beam 4, as by the hooks 13 or their equivalent. The ore-agitating receptacle 11 is provided with the conical bottom 14, having a central aperture, from which depends the sleeve or throat 15, said receptacle being so disposed that it will rest over the driving-wheel 10 and deliver its contents thereto, as will be hereinafter specifically set forth. The ore-agitating receptacle 11 is also provided with a cover 16, which by reference to the drawings will be seen to be depressed in the center and provided with a central aperture 17, while intermediate the lid and bottom just described I dispose the conical diaphragm 18, which is supported in its operative position and held slightly above the bottom by the legs 19, it being understood that said diaphragm and the lid 16 are designed to be readily removable in order that the contents of the receptacle may be rendered easily accessible.

In order to impart to the ore-agitating receptacle 11 the requisite rotary motion which will result in separating the finer particles of gold from sand or the like, I reinforce the sleeve 15 by providing a bottom 20, which by reference to the drawings will be seen to encircle said sleeve near its central portion. The extreme lower end of the sleeve 15 extends below the bottom 20 and is loosely encircled by the controlling-ring 21, which is formed upon the end of the shaft 22, which latter extends into operative engagement with the eccentrics 23, which are properly secured

to the vertical shafts 24, as will be seen by reference to Fig. 1.

The eccentrics 23 by reference to Fig. 3 will be seen to be provided with a slotted aperture 25, the office of said slot being to enable the shaft 22 to be properly adjusted upon the eccentrics by means of suitable bolts 26. The vertical shafts 24 are suitably mounted in position and are provided at their lower ends with the beveled gear 27, which is designed to mesh with a similar gear 28, carried by the driving-shaft 29, said shaft being mounted in suitable bearings provided in the uprights 7 and 2. The inner end of the shaft 29 is provided with the gear 30, designed to mesh with the gear 31, which is keyed to the shaft or axle 9, as it is by means of said gear that the shaft 29 is rotated.

The controlling-ring 21 is provided upon its internal edge with the springs 32, there being preferably one spring upon each side. By reference to Fig. 3 it will be observed that said springs describe an arc of a circle, while their office is to receive the end of the sleeve 15, and so coöperate therewith that they will cushion the blows and strain incident to use, inasmuch as some force will be required to agitate the chamber 11.

In Fig. 4 I have illustrated the preferred means by which the chamber 11 may be readily suspended in its operative position, as one of the links of the chain 12 may be quickly slipped over the end of the lug 33, which is carried by the blade 34, the latter being held in place preferably upon the outside of the upper edge of the receptacle 11, as by means of the rivet 35.

It will be understood that the several parts of my improved ore separating and concentrating machine may be formed of any preferred material and of any desired size which may be deemed productive of the best results, it being understood that the machine may be made in various sizes and designed to be run by the force of the water and the sand escaping through the sleeve 15 upon the wheel 10, or my machine may be manually operated by attaching a suitable crank to the outer end of the shaft 29.

My improved ore-concentrating machine will be found especially desirable and valuable for use in locations where the supply of water is very limited, in which case it is obvious that the water after having once passed through the agitator 11 and upon the wheel 10 may be directed into any suitable reservoir or receptacle, where its use may be repeated.

By reference to the drawings it will be readily apparent that the crushed ore, sand, or the like may be directed into the receptacle 11 by delivering the same upon the depressed lid 16, from whence it will flow into the receptacle and upon the conical diaphragm 18 and will pass off said diaphragm onto the conical bottom 14, when the finer particles of gold or other metal which it is desired to conserve will be directed by grav-

ity and the centrifugal motion imparted to the receptacle 11 into the recess formed by the walls of the receptacle and the outer edge of the conical bottom, while the lighter particles, as sand or the like, will pass with the water through the sleeve 15 and upon the wheel 10.

By forming the receptacle 11 of proper size 75 it is obvious that a stream of water and sand of sufficient size may be directed through said receptacle to operate the wheel 10, which in turn will rotate the shaft 29 and incidentally operate the shaft 22 and cause a thorough 80 agitation of the contents of the receptacle 11 and insure that the precious metals directed into the same, with the water, sand, &c., will be arrested and retained in the bottom of said receptacle, as set forth.

It is desirable to so move the shaft 22 that it will remain substantially parallel with the median line of the framework supporting it in its operative position, and for such reason I have provided a pair of eccentrics 23. By 90 this construction the ring 21 will in its movement describe a complete circle, thus causing the sleeve 21 to move in a continuous circular path, and thereby impart to the receptacle 11 that essential and desirable centrifugal movement necessary to separate the gold from the lighter particles with which it is incorporated. By reference to Fig. 1 it will be seen that I have indicated the path or travel of the ore and water by means of arrows, and since the exit-aperture may be so disposed by the formation of the conical bottom that it will be much higher than the outer edge of said bottom it follows that a recess of any desired depth may be provided for the reception of the gold-dust as it becomes separated from the sand.

Believing that the advantages and operation of my improved ore-concentrating machine have been made fully apparent in the foregoing specification, considered in connection with the accompanying drawings, I will dispense with further reference to the details thereof.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In an ore washing and concentrating machine, a suspended receptacle for receiving the water and the ore, and provided with an outlet which extends below the bottom of the receptacle, combined with suitable eccentrics, a rod operated thereby, a ring upon the end of the rod and which encircles the outlet extending below the bottom of the receptacle, suitable curved springs placed inside of the ring, and means for operating the eccentric, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES BRASH.

Witnesses:

BENJAMIN A. HUNTER,
G. H. SEELIG.