(No Model.)

C. E. SEYMOUR.

ORE CONCENTRATOR.

No. 456,968. Patented Aug. 4, 1891.

Fig. 1.

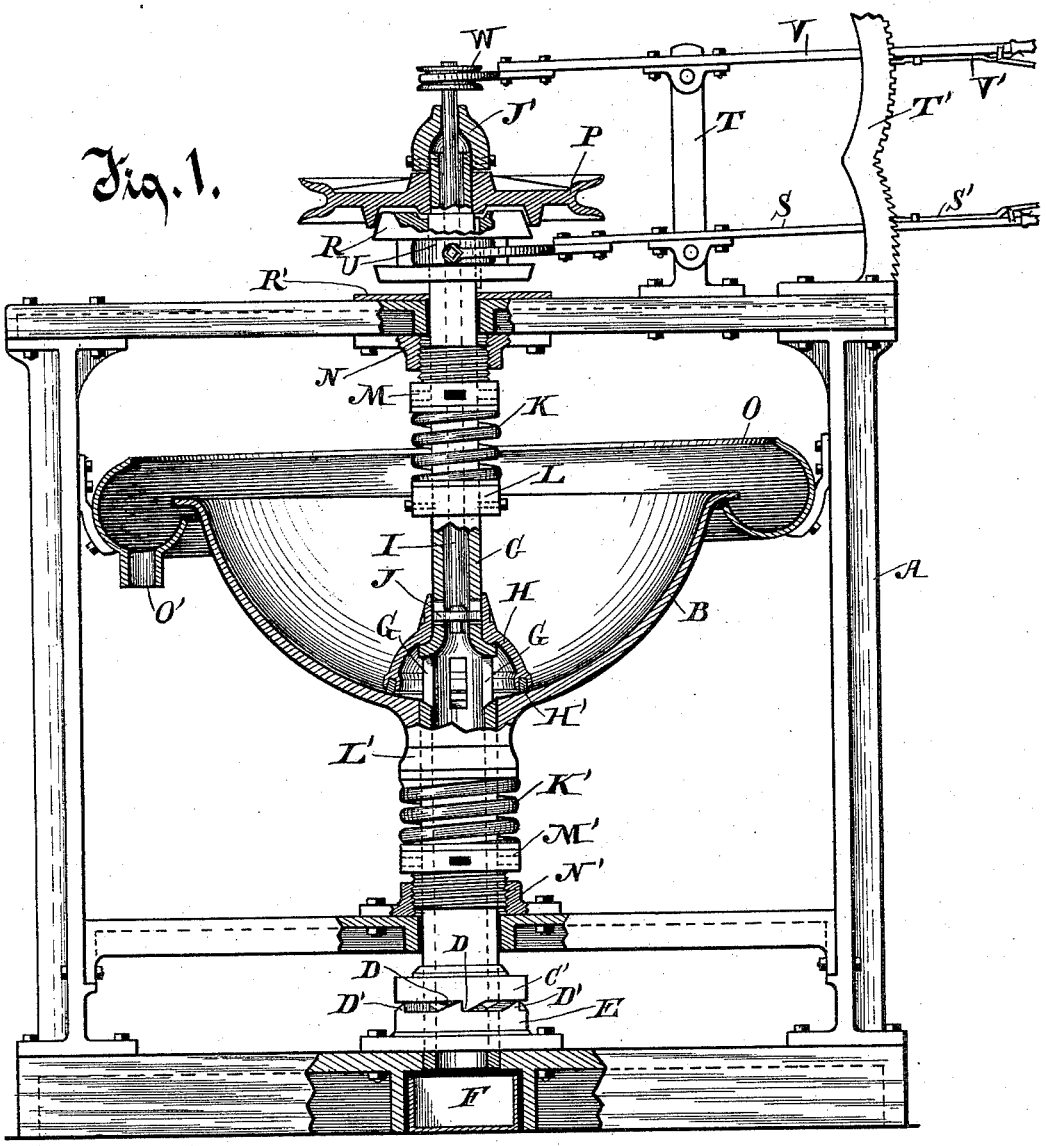
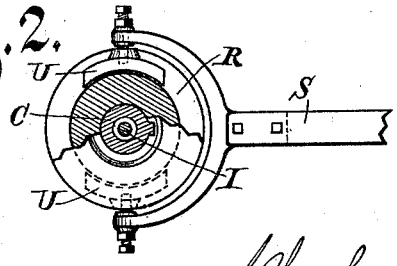


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES E. SEYMOUR, OF HURLEY, WISCONSIN.

ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 456,968, dated August 4, 1891.

Application filed November 7, 1890. Serial No. 370,679. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SEYMOUR, of Hurley, in the county of Ashland and State of Wisconsin, have invented a new and useful Improvement in Ore-Concentrators, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention relates to improvements in an ore-concentrator for which Letters Patent of the United States No. 436,808 were issued to me on September 23, 1890.

The novel features of the improvements will be hereinafter specifically claimed.

In the drawings, Figure 1 is an elevation of the complete device with which my improvements are used, parts being broken away and other parts shown in vertical section for convenience of illustration. Fig. 2 is a detail giving a top plan view of the device, parts being broken away for better illustration.

A is the frame on which the operative mechanism is supported. The concentrator-bowl B is supported rigidly on the vertical centrally-piercing shaft C. The shaft C has its bearings in cross-pieces of the frame, and is movable revolubly and vertically therein. At its lower end the shaft C terminates in a head or disk C′, having two crown-cams D, diametrically opposite each other, projecting downwardly therefrom. The disk C′, through its cams D, rests on the block E, fixed on the frame, which block has an even number of upwardly-projecting inclines or cams D′ D′, arranged in pairs in a circle so as to register with the cams D. The cams on the block E may be in even number, but preferably four, six, or eight. Six are shown in the drawings. These cams are adapted to raise the bowl and allow it to drop several times, depending on the number of the cams in each revolution of the bowl horizontally.

The shaft C is hollow throughout its entire length, and a corresponding aperture opens through the block E and base of the frame to a tank F. The shaft is provided with ports G, located at and just above the inner surface of the bowl. A cup-shaped valve H, fitted water-tight but movably about the shaft C and provided with a rubber packing H′ in its lower edge, fits normally against the bottom of the bowl and prevents the escape of the contents thereof through the ports G. The valve H is provided with a stem I, secured to the valve conveniently and movably in the shaft C by means of a pin or cross-bar J, passing through slots therefor in the shaft. The stem I has a journal-bearing in a cup-shaped collar J′, fitted on and secured to the top of the shaft C. Springs K K′ are coiled about the shaft C respectively above and below the bowl B and bear at one end respectively against the collars L and L′, rigid on the shaft, and against sleeve-nuts M and M′, turning by a screw-thread respectively into the blocks or plates N N′, fixed on the frame. These springs are adapted to control limitedly the vertical movements of the shaft and its supported bowl. An annular trough O about the edge of the bowl is adapted to receive the overflow of its contents and discharge the same through the pipe O′.

A pulley P, loose on the shaft C, is adapted to transmit motion thereto from the power-supplying mechanism. A friction-block R, splined on the shaft C, so as to have revoluble movement therewith and vertical movement thereon, is adapted to be shifted into frictional contact with and thereby clutch the pulley P, so as to transmit the motion thereof to the shaft C and to be shifted away from the pulley P and into frictional contact with a plate R′, fixed on the frame, and thereby check and ultimately stop the rotation of the shaft. An elastic lever S, pivoted medially on a post T, fixed on the frame, is provided with bifurcate inner ends, which ride in a groove therefor in the block R. These bifurcate ends of the lever S are pivoted at diametrically-opposite sides to the bearing-plates U U, fitted about and bearing against the central circular part or neck of the circular block R. The lever S is adapted for shifting the block R vertically into contact with the pulley P or with the plate K′, and is arranged to be locked in position by the spring-latch S′ thereon, arranged to engage with a rack therefor on the post T′, fixed on the frame. An elastic lever-handle V, pivoted medially on the post T, is provided with bifurcate inner ends riding in a groove in a collar W, fixed on the end of the valve-stem I. This lever-handle V is adapted for raising and closing the valve H, and is locked

in position by a spring-latch V′ thereon, arranged to engage with a rack on the post T′. The elasticity of the levers S and V is such as to permit of the slight vertical movement of the bowl B, caused by the cams D running over the cams D′, without disturbing the relation of the block R to the pulley P or relation of the valve H to the bowl B, but are yet stiff enough to serve for lever-handles for shifting the block R and raising the valve H, respectively, as hereinbefore described.

What I claim as new, and desire to secure by Letters Patent, is—

In an ore-concentrator, the combination, with a frame, a bowl having a centrally-piercing hollow shaft with ports in the shaft, and means for rotating the bowl and jumping it up and down, of a movable valve about the shaft to close the ports thereto, a valve-stem extending through the shaft and having a grooved collar thereon, an independent elastic lever pivoted medially on the frame, one arm of which lever rides in the collar on the valve-stem, the other arm being provided with a latch arranged to engage a rack adjustably, the rack fixed on the frame for adjusting and holding the elastic valve-stem lever, and independent means for starting and stopping the motion of the bowl, substantially as described.

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

CHARLES E. SEYMOUR.

Witnesses:

GEO. C. FOSTER,

C. H. MUNGER.