

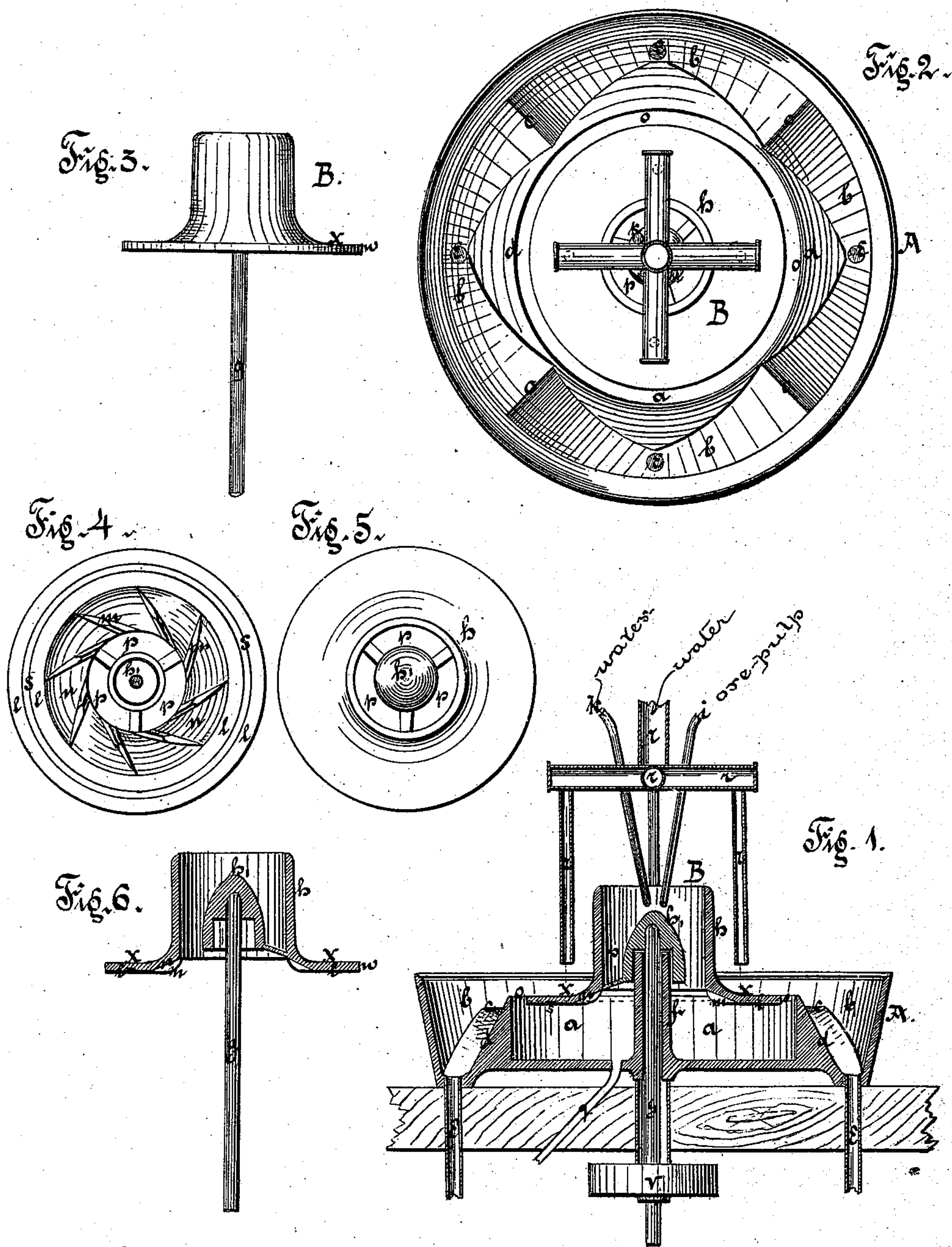
(No Model.)

W. & G. W. JOHNSON.

AMALGAMATOR.

No. 377,760.

Patented Feb. 14, 1888.



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UNITED STATES PATENT OFFICE.

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AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 377,760, dated February 14, 1888.

Application filed December 13, 1886. Serial No. 221,479. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM JOHNSON and GAREY WILLIAM JOHNSON, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Amalgamator, of which the following is a specification.

Our improvement relates to that class of amalgamators shown in the Victorian patent to Evans and Evans, dated April 18, 1864; and the invention consists in the peculiar construction, arrangement, and combination of parts, hereinafter more particularly described, and then definitely pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical section of the entire machine, showing also the feeding-pipes for ore pulp and water. Fig. 2 is a top view of the machine. Fig. 3 is a side view of the turret-disk. Fig. 4 is a bottom view of the turret-disk. Fig. 5 is a top view of the turret-disk. Fig. 6 is a vertical section of the turret-disk.

Our machine consists, mainly, of a metallic bowl, A, and a metallic turret-disk, B, to which a pulley, *v*, or sheave is fastened to give a rotating motion to turret-disk B. The metallic bowl A is round and cast in one piece, and consists of one inner chamber, *a*, to receive the mercury, and one outer space, *b*, arranged so that the discharged ore pulp from chamber *a* slides over the sides *d* and down the four angular elevated edges *e*, to the discharge-pipes *e*, from which the worthless pulp can be conveyed to a suitable place. In the center of the inner chamber, *a*, is a post, *f*, on which the turret-disk B rests, and through which the shaft *g* of turret-disk B revolves. The turret-disk B rests and revolves on post *f* in the inner chamber, *a*, of bowl A, so that the level face *l* of the bottom side of turret-disk B revolves in contact with the mercury set in the chamber *a*. To give the turret-disk the necessary revolving motion, a conical shaft-holder, *h*, is used, which is fast to or formed with the main or turret part *h* of the disk, in which holder is secured the shaft *g*, to which a pulley, *v*, or a sheave may be fastened. Between this pulley and the bottom of the bowl is a sleeve which keeps the horizontal part of the disk always in contact with or partially submerged in the mercury, whereby the latter forms a perfect

water-seal, so that nothing can pass through without coming in contact with the mercury.

The ore pulp is conveyed by means of pipe *i* into the inner part of the turret-disk B, falling onto the conical shaft-holder *h*, and thence into the mercury in chamber *a*, as well as the water to spread the pulp, which is let into the turret by pipe K. The shaft-holder *h* is fastened to the inner part of the turret-disk B, so as to leave ample room *p* for the pulp out of pipe *i* and water out of pipe *k* to pass.

The bottom part of turret-disk B has an even surface, *l*, and a beveled surface, *n*, whereon one or more of its ribs or conveyers, *m*, are cast, for the purpose of forcing the ore pulp conveyed into the turret-disk B by pipe *i* into a centrifugal motion and into the mercury. By the revolving of turret-disk B the surface *l* will spread and keep the ore pulp in the mercury long enough to extract all the precious metals the pulp contained, allowing the worthless pulp to reach the outer edge, *w*, of the disk part of turret-disk B, so that it will flow into the open space *o* of chamber *a*. To force this worthless pulp into the outer space, *b*, of bowl A, four small streams of water running through pipes *r* and playing on the upper surface, *x*, of turret-disk B will, through the rotation of said turret-disk B, wash the pulp gradually and continuously into the outer space, *b*, from whence it is conveyed to any suitable place by pipes *e*.

To increase the amalgamating capacity of the level surface *l* of the turret-disk B, a metallic ring, *s*, heavily silver-plated, may be inserted in said level surface *l*. The sides *d* of the inner chamber, *a*, may also be covered with silver plate, thus securing any precious metal or mercury which might wash over the sides *d*. The inner chamber, *a*, is provided with an outlet-pipe, *g*, for the discharging of the amalgam, thus allowing the refilling of the chamber *a* of the bowl A with new mercury. This will occur but once within twelve to twenty-four hours, according to the richness of the ore pulp, and will only detain operations a short time.

We deem the peculiar construction of the turret-disk, with its beveled surface provided with ribs and plain horizontal surface, to be important, for the beveled surface allows of

the ready passage outward of the pulp, while the ribs *m* will tend to force the material outward under the horizontal surface *l*, whereby it is spread and thoroughly subjected to the action of the mercury until the worthless stuff is washed off by the action of the water above the disk. Were the disk made flat, with grooves cut in the same, as has been proposed in the aforesaid patent of Evans and Evans, the operation would not be nearly so rapid.

The peculiar arrangement of the bowl, disk, and water-pipes *r* we also consider important, because, as the waste rises into the space *o* between the edge of the disk and the wall of the chamber *a*, the water falling on the top of the disk, and being rapidly thrown off by the same, strikes the waste with considerable force and rapidly washes the same out of the space *o* into the inclined receptacles around the same, from whence it as rapidly passes away.

We are aware that it has been proposed to drop water on the upper side of a revolving disk to mix with sand dropped into the bowl or tank of an amalgamator; but the arrangement of the parts is essentially different from ours, so that the water is not driven outward against the waste material to wash it over the edge of the bowl, as in our case, nor has it the outer wall to catch the material washed off by the water from the pipes.

The machine may be enlarged or reduced, as required.

Having thus fully described our amalgamator, we claim as our invention and desire to secure by Letters Patent—

1. The combination, in an amalgamator, of a chamber or bowl, *a*, and a disk working therein and mounted on a spindle, means for revolving said spindle, said bowl having its edges of substantially the height of the upper edge of the disk and constructed to retain the material at the height of the edges of said bowl, and having the walls *d*, forming the chamber *b*, around the bowl *a*, with one or more pipes arranged to discharge water on the upper surface of said disk, and a wall surrounding the chamber *a* and forming a channel outside of and around said chamber *a*, to receive the waste washed off by the water from the pipes, substantially as and for the purpose specified.

2. In an amalgamator, and in combination with a suitable disk, as B, mounted on a spindle, means for revolving the same, the bowl A, having an inner chamber, *a*, surrounded by two walls, the outer being the highest, and between which are the inclined surfaces *c*, to carry off the waste, substantially as described.

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