(No Model.)

W. & G. W. JOHNSON.

AMALGAMATOR.

No. 398,406. Patented Feb. 26, 1889.

Fig. 1.

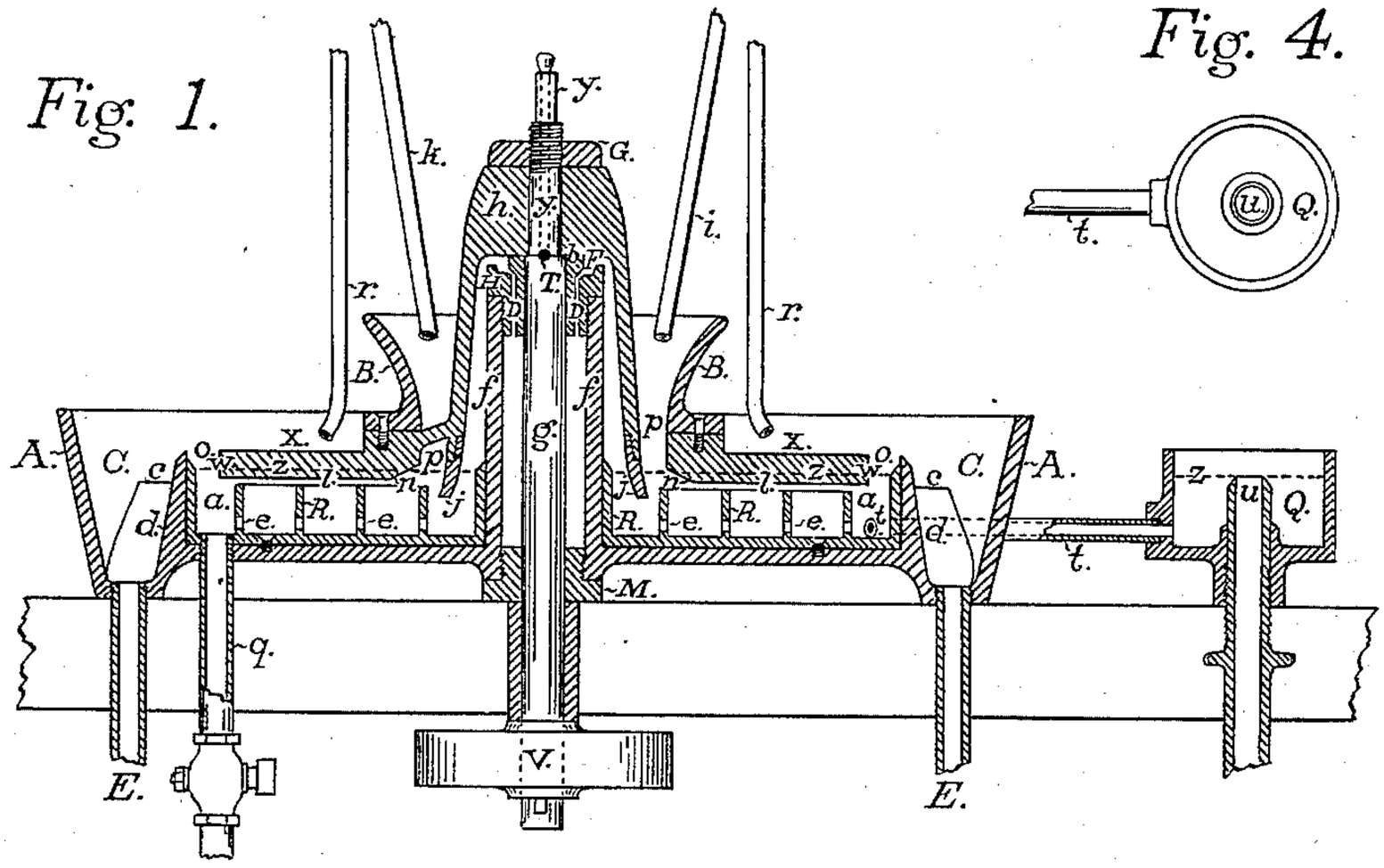


Fig. 4.

Fig. 3.

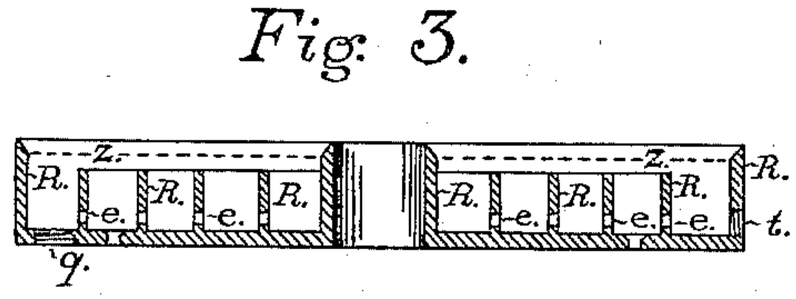
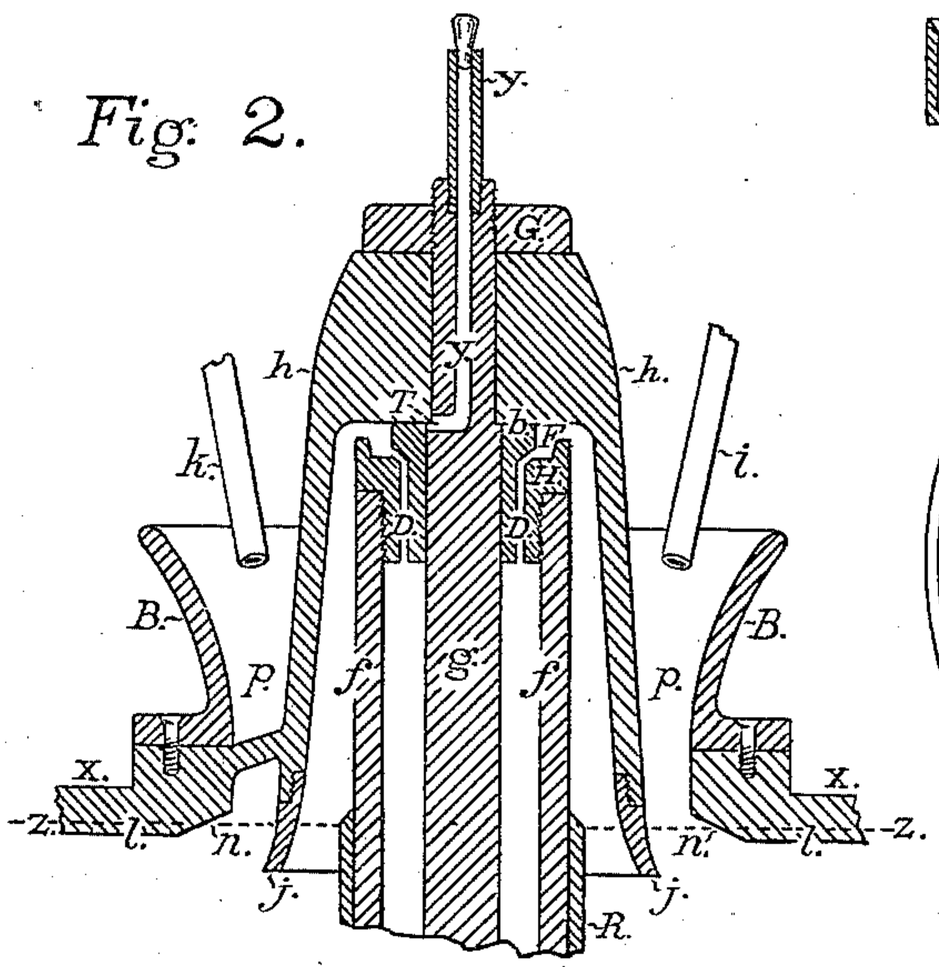
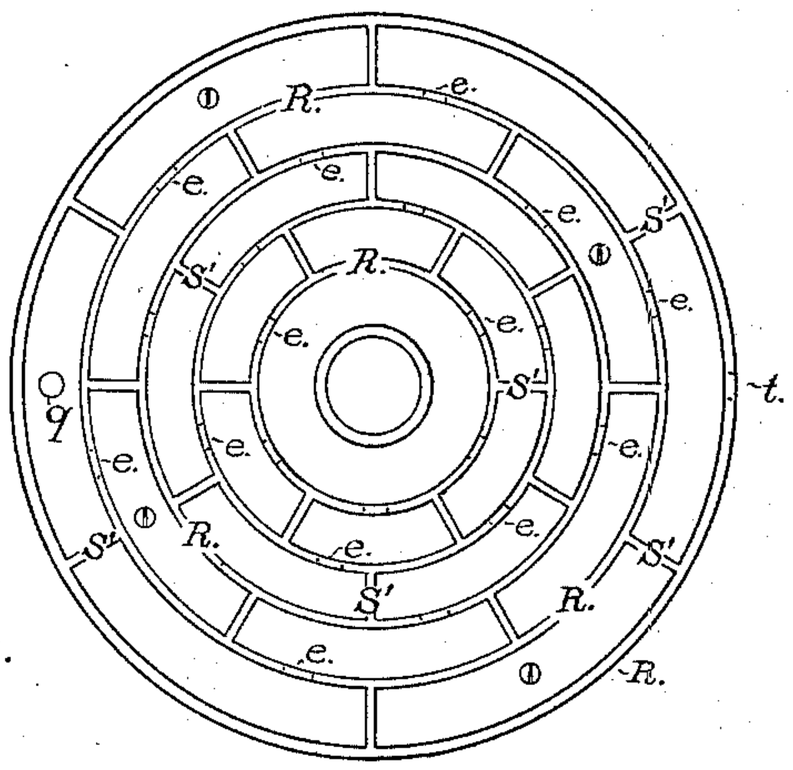


Fig. 2.





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UNITED STATES PATENT OFFICE.

WILLIAM JOHNSON AND GAREY WILLIAM JOHNSON, OF PORTLAND, OREGON.

AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 398,406, dated February 26, 1889.

Application filed January 23, 1888. Serial No. 261,671. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM JOHNSON and GAREY WILLIAM JOHNSON, residing at Portland, in Multnomah county, State of Oregon, both citizens of the United States, have invented certain new and useful Improvements in Amalgamators, of which the following is a specification.

The invention is designed more particularly as an improvement upon the device shown in our patent, No. 377,760, dated February 14, 1888. The novelty resides in the peculiar combinations and the construction, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the drawings, and then more particularly defined by the appended claims.

In the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, Figure 1 is a vertical section of the entire machine, showing also the feeding-pipes for the ore-pulp and water. Fig. 2 is a vertical section of the turret-disk, the post upon which the turret revolves, the lubricator, and the shaft which revolves the turret-disk when the machine is in motion. Fig. 3 is a vertical section and top view of the rings and cross-bars, and Fig. 4 is a top view of the quicksilver-gage.

Similar letters refer to like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates a metallic bowl; B, a metallic disk mounted on the shaft *g*, to which a pulley or sheave, V, is fastened to give a rotary motion to the disk B. The bowl A is round, and is cast in one piece, and consists of the inner chamber, *a*, to receive the mercury, and an outer space, C, arranged so that the discharged ore-pulp from chamber *a* slides down over the sides *d* or four angular elevated edges, *c*, 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*, in the top of which is fastened a brass bushing, H, on which the turret-disk B rests, and through which the shaft *g* of the said turret-disk revolves.

The turret-disk B is formed of two pieces—the main body or shaft-holder *h* and the shaft *g*, secured together by means of the nut G. Said disk revolves and rests on the bushing H in the top of the post *f* in the inner chamber, *a*, of the bowl A, so that the level space *l* of the bottom side of the turret-disk will be submerged in the mercury in the chamber *a*.

The ore-pulps are conveyed by means of the pipes *i* into the inner part of the turret of turret-disk B, falling into the space *p* of the turret-disk B, and thence into the mercury in the chamber *a*, as well as the water to spread the pulp, which is let into the turret by the pipe *k*.

The shaft-holder *h* is fastened into the inner part of the turret-disk B, so as to leave ample room, *p*, for the pulp out of the pipe *i* and water out of pipe *k* to pass.

The bottom part of the turret-disk B has an even surface, *l*, and a beveled surface or edge, *n*. By the revolving of the turret-disk B the surface *l* will spread and keep the ore-pulp into the mercury long enough to extract all the precious metals that the pulp contains and allowing the worthless pulp to reach the outer surface or edge, *w*, of the disk part of the turret-disk B, so that it will flow into the open space *o* of the chamber *a*. To force this worthless pulp into the outer space, C, of the bowl A, four or more small streams of water running through pipes *r* and playing on the upper surface, X, of the turret-disk B will, through the rotation of the turret-disk B, wash the pulp gradually and continuously into the outer space, from where it is conveyed to any suitable place by the pipes E.

The inner chamber, *a*, of the bowl A, when filled with mercury, and the lower surface, *l*, of the turret-disk partly submerged in the mercury, in making its revolutions, causes the mercury in the inner chamber, *a*, to revolve, and sometimes to sway from side to side, and should the particles of pulp vary in size it causes the mercury to spill over the edges of the inner chamber, *a*, into the outer space, C, and thence through the waste-pipes E and be lost. To prevent this and to make our machine more perfect in its operation, we place in the inner chamber, *a*, of the bowl A a number of metallic rings, R, varying in diameter at equal distances apart from each other from the post *f* to the outer sides of the inner chamber, *a*.

The metallic cross-bars S′ are placed between each of the metallic rings R, so that no

two cross-bars in adjoining circles are on a line with each other, as shown in Fig. 3 of the drawings. The metallic rings R and cross-bars S′ are firmly attached to the bottom of the inner chamber, *a*, and through the rings are holes *e*, so that the mercury can pass from section to section. The inner or center ring is somewhat higher than the others and embraces and helps to steady the post *f*, as shown in Fig. 1. The outer ring is also extended upward and snugly fits against the wall of the chamber *a*, as seen in the same figure.

The metallic rings R are of sufficient height to leave a space of about one-eighth of an inch between the top edge of the same and the lower surface, *l*, of the turret-disk B.

The lubricator consists of a tube, *y*, inserted inside of the shaft *g* and extending down to where the cone *h* of the turret-disk B rests and revolves upon the seat *b* of the bushing H, through which the oil can run into the seat *b*. On the outer edge of the bushing H there is an elevated flange (the top of which is lower than the seat *b*) forming a gutter, F, to catch the surplus oil from the seat *b*. There is a plurality of ducts, D, to carry the said oil off through a hollow space between the shaft *g* and the sides of the post *f*.

By placing the rings R and cross-bars S′ as above described, thereby holding the mercury in sections, the mercury keeps its equilibrium, and all swaying, rotating, or slopping over of the mercury is prevented.

The mercury-gage Q is a round metallic bowl attached to the bowl A and communicating with the inner chamber, *a*, by means of the pipe *t*, so that the mercury can pass freely from the inner chamber, *a*, to the mercury-gage Q.

Penetrating up through the center of the bowl Q is an adjustable pipe, *u*, so that its top can be adjusted to a level with a surface of the mercury *z* in the inner chamber, *a*, so that the surplus, accumulating as the mercury takes up the precious metals or precious metals and mercury (when the amalgamator is operating on tailings containing mercury) and increases in bulk, will be carried off by the pipe *u* to some safe repository.

To the lower end of the shaft-holder *h* is detachably secured, preferably by screwing it on, a flaring copper ferrule, *j*, extending down into the mercury, which prevents the pulp from lodging around the post *f*, and also aids in forcing the pulp over the beveled surface *n* of the disk of the turret-disk B. This ferrule projects below the bottom face of the disk into one of the sections or chambers formed between two of the rings R, as shown in Fig. 1.

What we claim as new is—

1. The combination, with the stationary rings R and the revolving turret-disk, of the outwardly-flaring ferrule *j* on the lower end of the shaft-holder *h* of said disk and extended below the bottom of the level face *l* of said disk into the space between two of said rings, substantially as shown and described.

2. The combination, with the bowl A and rotary turret-disk, of the rings R, secured within the inner chamber, *a*, of said bowl, and provided near their lower edge with apertures *e*, and the cross-bars S′, dividing the space between said rings into separate compartments and arranged with the two adjacent bars out of line, substantially as shown and described.

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