W. HOOPER.

TOSSING TUBS FOR SEPARATING ORES.

No. 185,921. Patented Jan. 2, 1877.

Fig. 1.

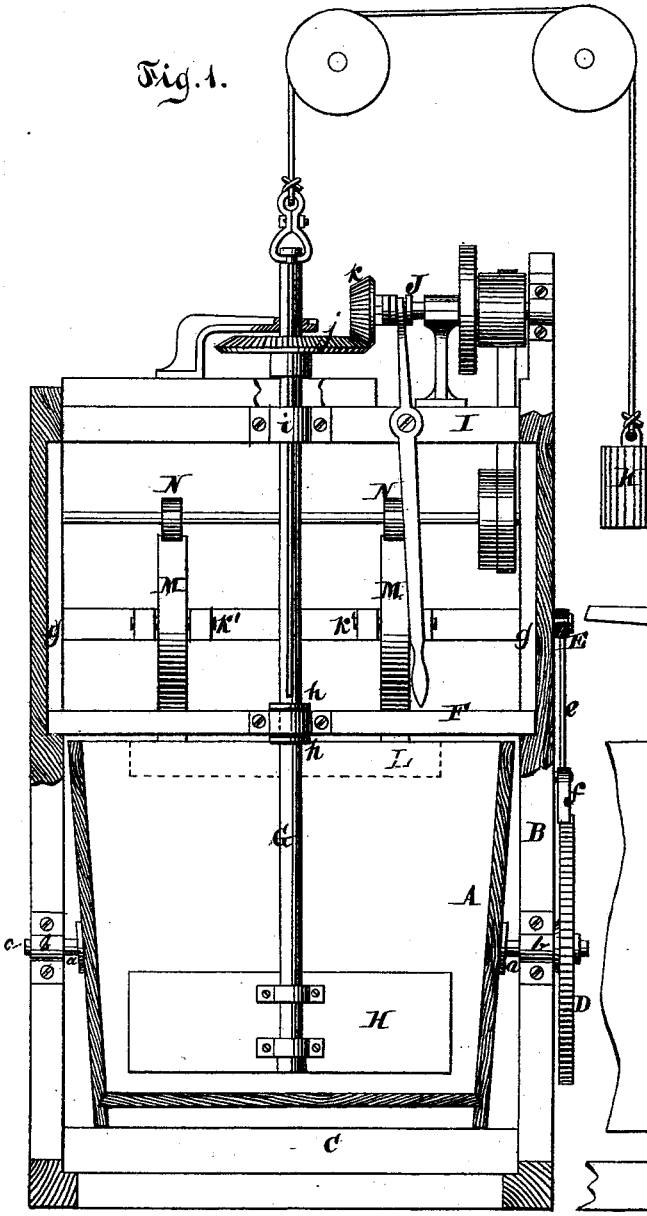
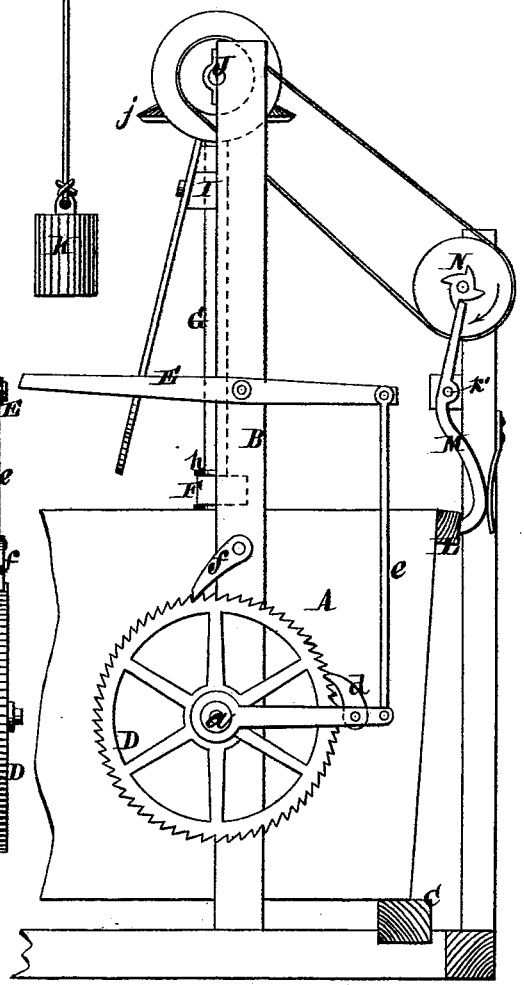


Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM HOOPER, OF TICONDEROGA, NEW YORK, ASSIGNOR TO NEW YORK ORE SEPARATOR COMPANY.

IMPROVEMENT IN TOSSING-TUBS FOR SEPARATING ORES.

Specification forming part of Letters Patent No. **185,921**, dated January 2, 1877; application filed April 27, 1876.

To all whom it may concern:

Be it known that I, WILLIAM HOOPER, of Ticonderoga, in the county of Essex and State of New York, have invented a new and useful Improvement in Tossing-Tubs for Separating Ores, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a vertical central section. Fig. 2 is a side view.

Similar letters indicate corresponding parts.

This invention consists in a tub which is hung in journals, and in which works an agitator, which is secured to a shaft that can be raised or lowered, so that by raising the shaft together with the agitator the tub is free to be swung round on its journal for the purpose of discharging its contents. A lever-pawl, acting on a ratchet-wheel which is mounted on one of the journals, serves to facilitate the operation of turning the tub. With the tub is combined a hammer, which is operated by a tappet-wheel, and which strikes the side of the tub for the purpose of producing a shaking motion, whereby the separation of the materials in the tub according to their specific gravity is materially facilitated.

In the drawing, the letter A designates a tub, which swings on journals *a*, having their bearings in suitable boxes *b*, attached to the frame-work. Said journals are secured in such a position that the tub is evenly balanced as near as possible, and that the same, when left to itself, will have no tendency to swing in either direction; but in order to steady the tub a block, C, of wood may be placed under it, as shown in Fig. 2. One of the journals extends beyond its journal-box, and on its outer end is mounted a ratchet-wheel, D, which is acted on by a lever-pawl, *d*, that connects by a rod, *e*, with a lever, E, so that the required power can be applied for turning the tub on its journals when the same is charged. A stop-pawl, *f*, prevents the tub from swinging backward while the same is being emptied. Above the tub A is situated a cross-bar, F, which slides in grooves *g* in the frame-work, and which forms the bearing for a vertical shaft, G, which extends down into the tub, and carries on its lower end an agitator, H, said shaft being provided with collars *h*, one above and the other below the cross-bar F, so that it is prevented from sliding in the bearing of the cross-bar. A journal-box, *i*, secured to a fixed cross-bar, I, of the frame A, serves to steady the shaft G, and a revolving motion is imparted to said shaft by bevel-wheels *j k*, the bevel-wheel *k* being mounted on the driving-shaft J, while the bevel-wheel *j* is feathered on the vertical shaft G, so that this shaft is free to slide therein. The agitator H and its shaft G are counterbalanced by a weight, K, (see Fig. 1,) so that comparatively little power is required to raise those parts clear of the tub; and since, by raising the shaft G, the cross-bar F is caused to slide up in the guide-grooves *g*, the tub can be readily turned on its journals after said parts have been raised. On the side of the tub A, near its top edge, is situated a hammer, L, which is secured to one or more levers, M, swinging on pivots *k'*. These levers are exposed to the action of tappet-wheels N, so that rapid blows are produced against the outside of the tub.

The water and ore are let into the tub while the agitator H is kept in motion, and by the action of the agitator the light parts of the ore are kept in suspense, while the heavy parts gradually settle down. The hammer L is also set in motion, and thereby a shaking motion is imparted to the contents of the tub, whereby the separation of the heavy particles of ore from the light particles is materially promoted. As the heavy particles of ore accumulate on the bottom of the tub the agitator is gradually raised, and the operation is continued until the tub is filled up to the desired point. Then the motion of the agitator is stopped, and the agitator-shaft, with its appendages, is raised clear of the tub, and the latter is turned on its gudgeons, for the purpose of discharging its contents.

By this arrangement the operation of the tossing-tub is rendered comparatively easy, and the process of separating certain kinds of ores can be accomplished with dispatch.

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

1. The combination, with a tub, A, which is hung on journals, of an agitator, H, mounted on a shaft, which, together with its support, can be raised clear of the tub, for the purpose of permitting the tub to be turned on its journals, substantially as shown and described.

2. The combination of the tub A, hung on journals, the agitator H, vertical shaft G, cross-bar F, guide-grooves *g*, in which the cross-bar slides, and a mechanism for raising the cross-bar and agitator, for permitting the turning of the tub on its journal, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

WILLIAM HOOPER. [L. S.]

Witnesses:

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ALBERT HOOPER.