F. R. BROWN.
Ore-Separator.

No. 206,417. Patented July 30, 1878.

Fig. 1.

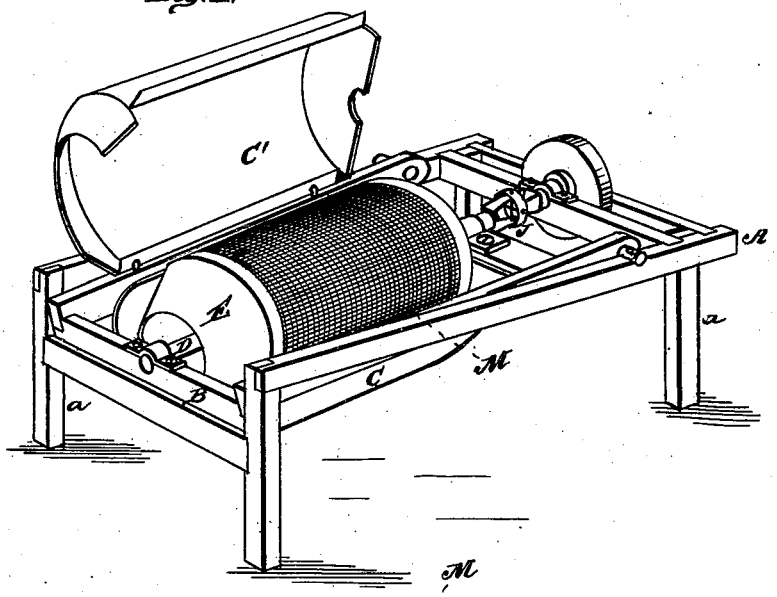


Fig. 2.

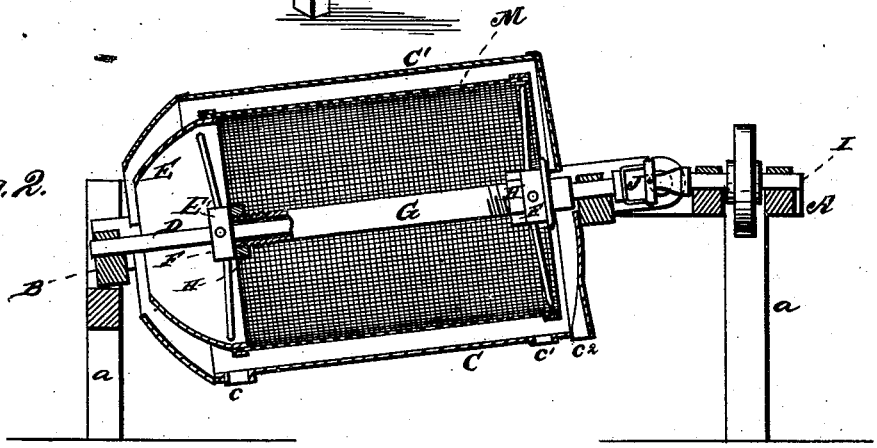
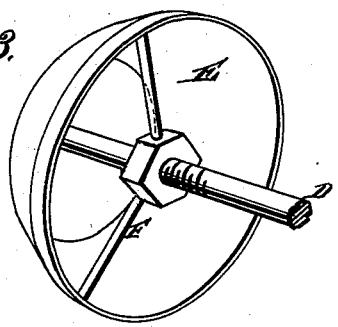


Fig. 3.



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FRANCIS R. BROWN, OF DENVER, COLORADO.

IMPROVEMENT IN ORE-SEPARATORS.

Specification forming part of Letters Patent No. **206,417**, dated July 30, 1878; application filed May 22, 1878.

To all whom it may concern:

Be it known that I, FRANCIS RANDOLPH BROWN, of the city of Denver, in the State of Colorado, have invented certain new and useful Improvements in Sizers for Ores; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to rotary screens for sizing ores and other substances when crushed; and it consists in the construction, combination, and arrangement hereinafter particularly set forth.

In the accompanying drawings, Figure 1 represents a perspective view of my improved sizing-machine with the cover raised. Fig. 2 represents a vertical longitudinal section of the same. Fig. 3 represents a detail view of the receiving-head detached, showing the inside thereof.

In said drawings, A designates the supporting-frame of the machine, resting on standards *a*, sustaining hinged or journaled subframe B, the lower end of which rests in its lowest position on a cross-bar of said main frame. These parts may be varied by the substitution of other supporting devices which will allow the adjustment of the inclination of the sizer, as hereinafter described.

C designates a metallic tank or casing, provided with a hinged cover, C′, and attached to said hinged frame B. Said tank or casing is approximately cylindrical, and is provided in its bottom with discharge openings or chutes $c\,c^1\,c^2$, *c* being near the receiving end of the sizer, and c^1 c^2 near the opposite end thereof.

A shaft, D, traverses said tank or casing, and is journaled in the cross-pieces of frame B. Said shaft carries a receiving-head, E, and a spider, F, which form the ends of the sizer, the body thereof consisting of a cylindrical wire screen, M, which stretches from the one of them to the other. Said receiving-head has a central opening and an inwardly-curved flare, as shown, which is so shaped as to deliver the crushed ore on the inner face of said screen in a line parallel therewith. This avoids unnecessary strain on the wire and wear thereof, and insures more reliable action.

As the weight and centrifugal force of the ore will have a tendency to stretch and bend said screen out of shape, and thereby impair its working, I provide means for straightening it and drawing it taut. These consist of a sleeve, G, which is slipped on shaft D, and screw-threaded at each end, and a pair of adjusting-nuts, H, which bear, respectively, against the hub of said spider and the hub of the similar spider E′, which supports receiving-head E and forms part thereof. Said hubs are feathered on shaft D, so as to be capable of longitudinal adjustment thereon, though turning therewith. By means of these nuts the said parts E and F may from time to time be adjusted away from each other, so as to take up the sagging of said screen and keep it always in proper condition for work.

Instead of employing sleeve G, screw-threads may be cut on shaft D itself to receive said nuts; also, collars or sleeves may be substituted for the latter.

I designates the operating-shaft of the machine, which may receive rotation from any convenient source in any convenient manner, and is connected to said screen-shaft D by means of universal joint J. This attachment is shown as made at the discharging end of the sizer, but it may be made at the other end instead. In either case it permits the adjustment in a vertical plane of the inclination of said sizer or screen without interfering with the running of the machine.

A certain space necessarily intervenes between the receiving-head E and the end of the casing C, and into this space certain particles of ore, &c., are liable, by accident, to fall. These find their exit through opening *c*. Of the particles which enter the screen, the finer fall through the same as it rotates and pass out through opening or chute c^1, and the larger gradually move along over the wire to the end of the screen, where they pass out through opening or chute c^2. Thus the various sizes of ore are separated or sorted and made ready for treatment by the machines, which further sort and separate them according to specific gravity and density.

These sizers may be arranged in series, so

that the finer screens will act on material which has already passed through the coarser ones, thereby multiplying the number of sizes of ore sorted to any desired extent.

These sizing-machines are applicable to quartz, coal, or any other suitable substance, as well as to ores, and many of the parts above described are susceptible of various modifications without affecting the spirit or scope of the invention.

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

1. The combination of a universal joint with a rotary screen or sizer and a hinged vertically-adjustable frame, which serves as a bearing for the sizer-shaft, substantially as set forth.

2. The combination of fixed frame A and a screen or sizer with hinged vertically-adjustable sub-frame B, tank C, and hinged tank-cover C′, said tank and cover being attached to said sub-frame, and said tank being provided with outlets c c^1 c^2, which discharge separately the different sizes of crushed ore, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

FRANCIS RANDOLPH BROWN.

Witnesses:
EMANUEL W. HERSHE,
JAMES W. SPRAGUE.