

C. CUMMINGS.

Grinding and Amalgamating-Pan.

No. 168,621.

Patented Oct. 11, 1875.

Fig. 1.

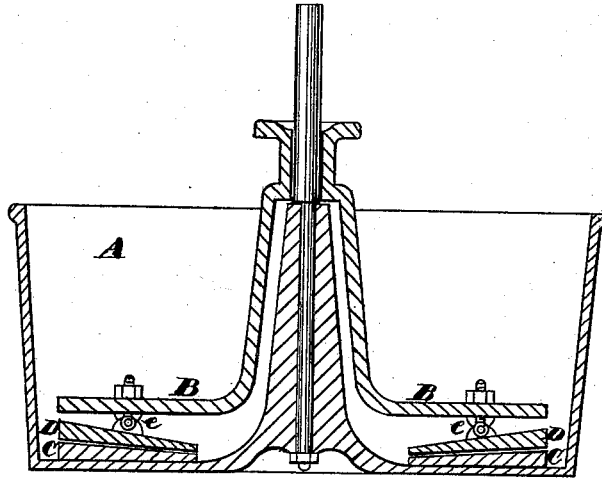
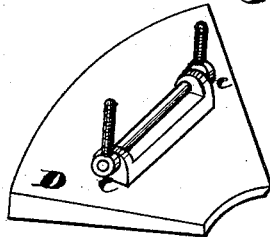


Fig. 2.



Witnesses

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## IMPROVEMENT IN GRINDING AND AMALGAMATING PANS.

Specification forming part of Letters Patent No. **168,621**, dated October 11, 1875; application filed May 25, 1875.

*To all whom it may concern:*

Be it known that I, CHARLES CUMMINGS, of Virginia City, Storey county, State of Nevada, have invented Improvements in Amalgamating-Pans; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

My invention consists in constructing the shoes and dies of grinding and amalgamating pans with a gradually-increasing thickness of metal toward their outer edges, where they are subjected to the greatest amount of wear.

In order to more fully illustrate and explain my invention, reference is had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an elevation in section of my pan. Fig. 2 is a view of one shoe.

Let A represent a grinding or amalgamating pan or vessel, and B the muller.

Owing to the rotary motion which is imparted to the muller, the outer edges of the shoes and dies, where the speed is greatest, always wear away much faster than that portion which is nearer the center, and which, consequently, moves at a less rate of speed.

On this account, therefore, it is impossible to maintain a uniform grinding-surface, as the faster motion of the outer extremities wears the metal of the shoe away so much faster than near the center that most of the grinding is done near the center, where the speed is slower, thus requiring more power to do the same work than if the grinding were done at the outer extremity.

To remedy this difficulty I construct the dies C and shoes D with a gradually-increasing thickness of metal toward their outer edges, so as to render them more durable, and obviate the necessity of changing them so often.

The dies C are rigidly secured to the bed of the pan, as shown; but, instead of fixing the shoes D rigidly to the under side of the muller, I attach them by means of a pivot or loose joint, as at *e*, so that they can adapt themselves to the irregularities of the wearing-surface, and thus maintain an even and uniform bearing at all times, no difference how much they may become worn.

Any suitable pivot or hinge-joint can be employed that will let the shoe vibrate or move freely, and the hinge or joint may extend entirely across the middle of the shoe, or it can be merely a point attachment at their centers. Although shoes and dies of uniform thickness can be used with this method of attachment, I gain a very great advantage in their durability by making them thicker toward and at their outer edges.

By this arrangement I greatly improve the efficiency and durability of the shoes and dies which are used in grinding and amalgamating pans, saving not only in the superior manner of triturating the pulp, but in the length of time that the shoes and dies will run without replacing, as it always is a considerable item of expense to stop the pans in order to remove worn-out shoes and dies and replace them with new ones.

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

In an amalgamating-pan, the mullers B, in combination with the dies C and shoes D, having a gradually-increasing thickness of metal toward their outer edges, substantially as shown and described, and for the purpose set forth.

CHAS. CUMMINGS.

Witnesses:

GEO. H. STRONG,  
JNO. L. BOONE.