(No Model.)

G. E. SMITH & C. H. WILKIE.

ORE STAMP.

No. 417,965. Patented Dec. 24, 1889.

Fig. 1.

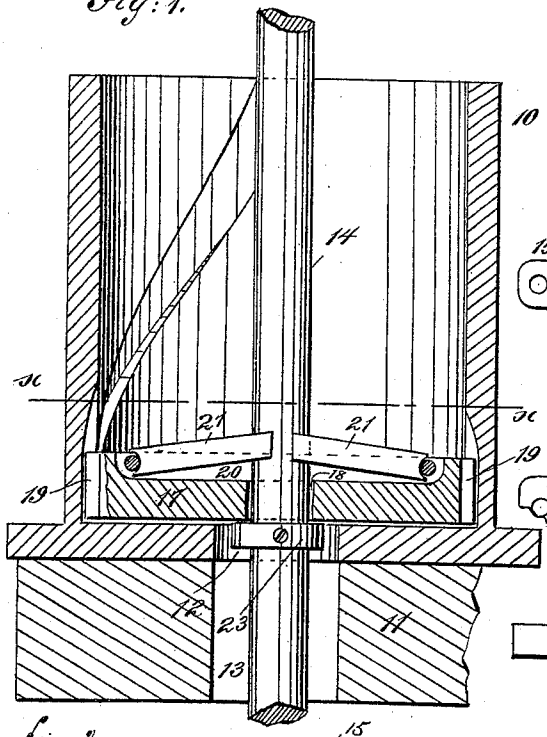


Fig. 3.

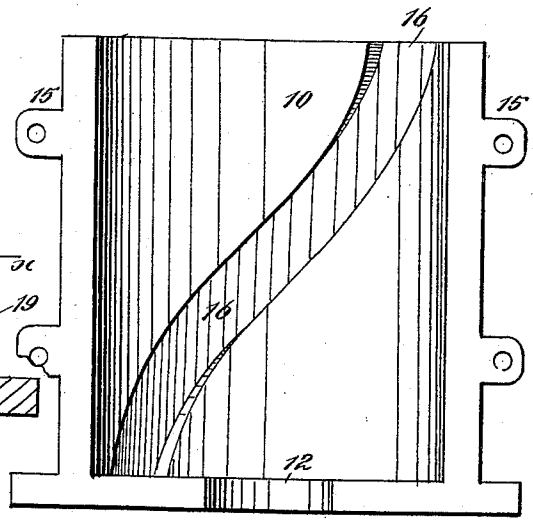


Fig. 2.

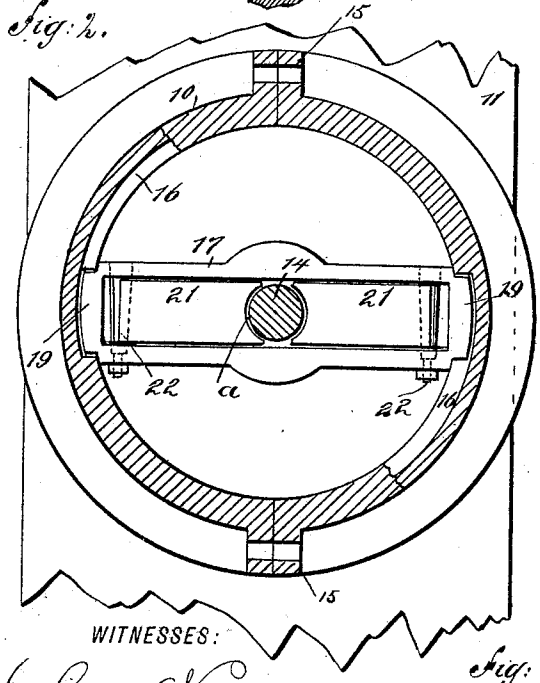


Fig. 4.

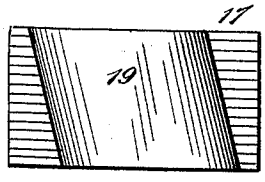


Fig. 6.

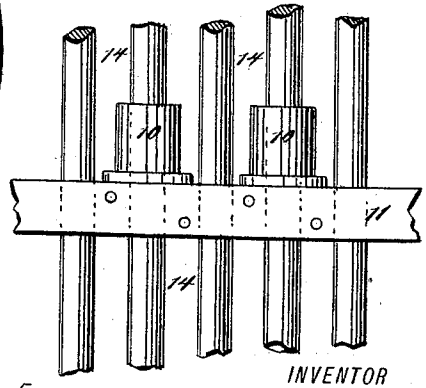
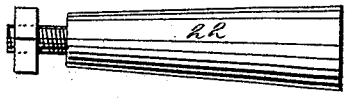


Fig. 5.



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UNITED STATES PATENT OFFICE.

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ORE-STAMP.

SPECIFICATION forming part of Letters Patent No. 417,965, dated December 24, 1889.

Application filed April 9, 1889. Serial No. 306,516. (No model.)

To all whom it may concern:

Be it known that we, GEORGE E. SMITH, of Cooney, in the county of Socorro and Territory of New Mexico, and CHARLES H. WILKIE, of Silver City, in the county of Grant and Territory of New Mexico, have invented a new and useful Ore-Stamp, of which the following is a full, clear, and exact description.

Our improvement relates to an attachment to the stamps of quartz-mill batteries, and has for its object to provide a simple and durable device, capable of communicating a positive rotary motion to the stamp-stem during the entire drop, whereby the capacity of the battery is greatly increased.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter more fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a central vertical section through the device. Fig. 2 is a longitudinal section on line *x x* of Fig. 1. Fig. 3 is a side elevation of one section of the cylindrical portion of the attachment. Fig. 4 is an end view of the cross-head. Fig. 5 is a side elevation of the pivotal bolt for the dies or grips adapted for attachment to the cross-head, and Fig. 6 illustrates the application of the attachment to a battery.

In carrying out the invention the cylinder 10 is secured upon the guide-rail 11, which cylinder is provided in the bottom with an aperture 12, aligning a corresponding aperture 13 in the guide-rail, as best illustrated in Fig. 1. Through the apertures 12 and 13 the stamp-stem 14 is carried upward to slide in the said apertures and through the said cylinder. The cylinder 10 is preferably constructed in two sections provided with apertured ears 15, whereby said sections may be expeditiously and securely united through the medium of suitable bolts. The cylinder is preferably thus made in sections to facilitate its application to the stamp-stems already set up in the battery. In opposite sides of the cylinder, or in each section of the cylinder, a spiral groove 16 is produced, extending from top to bottom and crossing, for instance, about two-thirds the diameter of the cylinder in its length, as best illustrated in Fig. 3.

Within the cylinder 10 a cross-head 17 is held to slide vertically in the spiral grooves 16, which cross-head is provided with a central aperture or opening 18, through which the stamp-stem passes, and a diagonal end lug or projection 19, of sufficient width and suitable contour to freely slide in the respective grooves 16. In the upper face of the cross-head 17 a recess 20 is produced, and in each end of said recess a die or grip-arm 21 is pivoted, the opposed ends of which arms are concaved, as illustrated at *a* in Fig. 2, whereby the said ends are adapted to the cylindrical contour of the stamp-stem, one die or grip-arm being purposed to engage said stem upon opposite sides, as best illustrated in Figs. 1 and 2.

The dies or grip-arms 21 are pivoted within the cross-head 17 through the medium of a tapering bolt 22, illustrated in Fig. 5, and shown in position in Fig. 2, the object of the tapering bolt being to provide a means whereby the dies or grip-arms may be adjusted to properly engage with stamp-stems of various diameters. Below the cross-head 17 the stamp-stem is provided with a collar 23, secured thereto, preferably by means of a suitable set-screw, which collar by being adjusted up or down upon the stamp-stem will limit the revolution of the stem in its drop motion.

The cylinders 10, constructed as herein set forth, and provided with the cross-head, as described, are made to surround the respective stamp-stems, as shown in Fig. 6, and are held in position by attachment to the binder 11, said attachment being ordinarily effected through the medium of lag-screws or their equivalent.

It will be readily observed that in operation, when the stamp-stems are carried upward, the dies or grip-arms will not bind upon the said stem, whereby the stem as it is carried upward is not necessarily revolved. As the stem travels upward the attached collar 23 carries the cross-head also upward in the direction of the top of the cylinder. Upon the drop motion of the stamp-stem the dies or

grip-arms positively clutch the stem, and by reason of the extremities of the said cross-head traveling in the spiral grooves 16 a decided positive rotary motion is communicated to the stem during its entire drop.

Our invention, as above stated, gives a positive revolving or rotary motion during the entire drop, the weight of the stamp, less the slight friction of the cross-head in the cylinder, being the source of power.

It is a well-known fact that a rotary motion with the falling stamp facilitates the crushing of ore.

In addition to the collar 23 being used to regulate the rotation of the stamp-stem, it may also be employed to compensate, by means of adjustment, for the wear of the shoes and the dies. In applying the attachment to batteries already erected, since there is room for only three cylinders upon the upper binder, we place two on the top of the mortar.

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

1. The combination, with a stamp-stem of an ore-crusher, of a cylinder surrounding the said stem provided with spiral grooves upon the inner face, a cross-head traveling through the said grooves, means on the stem for raising said cross-head, and dies or grip-arms pivoted in the said cross-head, capable of contact with the stamp-stem, all combined for operation substantially as set forth.

2. In an ore-stamp, the combination, with a stamp-stem and a cylinder surrounding the same provided with opposed spiral grooves extending from top to bottom, of a cross-head sliding upon the stamp-stem within the cylinder, provided with end lugs capable of traveling within the said grooves, and a die or grip-arm pivoted in each end of the cross-head at the top, said grip-arms having concaved opposed ends capable of gripping the stamp-stem upon its drop motion, the said stem being provided with means for raising the cross-head, substantially as and for the purpose specified.

3. In a quartz-crusher, the combination, with a stamp-stem and a cylinder surrounding the said stem provided with spiral grooves extending from top to bottom, of a cross-head apertured to receive the stamp-stem and provided with end lugs capable of sliding in the grooves of the cylinder, a collar adjustably secured upon the stem beneath the cross-head, and a die or grip-arm pivoted in the upper surface of the cross-head near each end, by means of an adjustable conical bolt, said grip-arms provided with a concaved outer end capable of contact with the said stamp-stem, all combined for operation substantially as shown and described.

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