

(No Model.)

2 Sheets—Sheet 1.

D. V. GOODSON.

ORE PULVERIZER.

No. 306,145.

Patented Oct. 7, 1884.

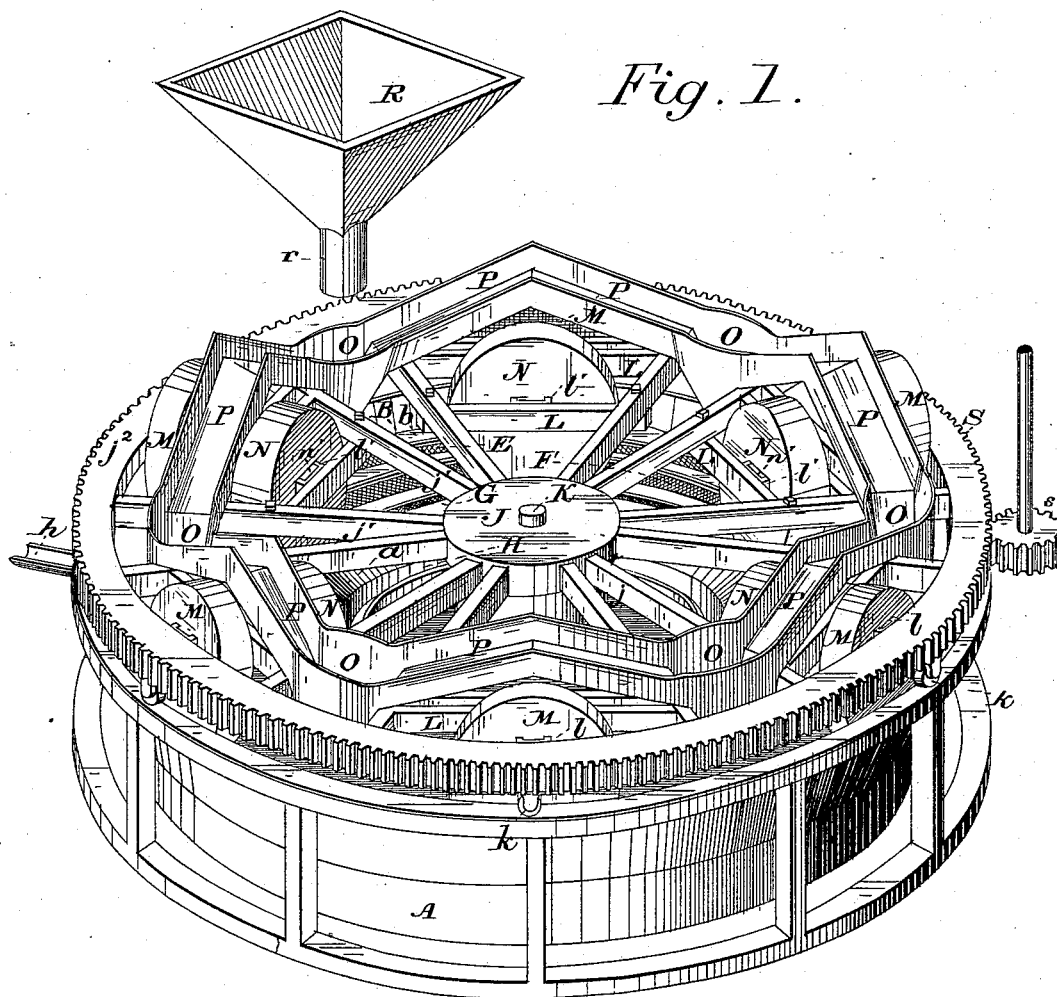
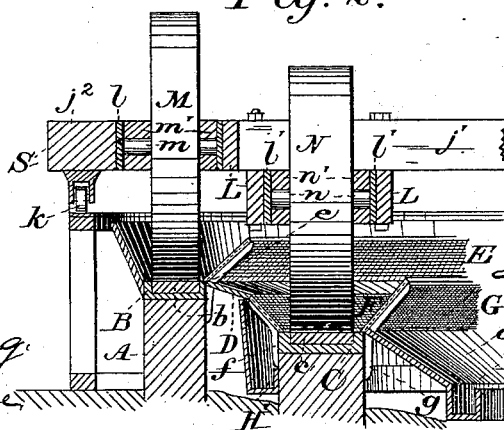


Fig. 2.



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2 Sheets—Sheet 2.

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Fig. 3.

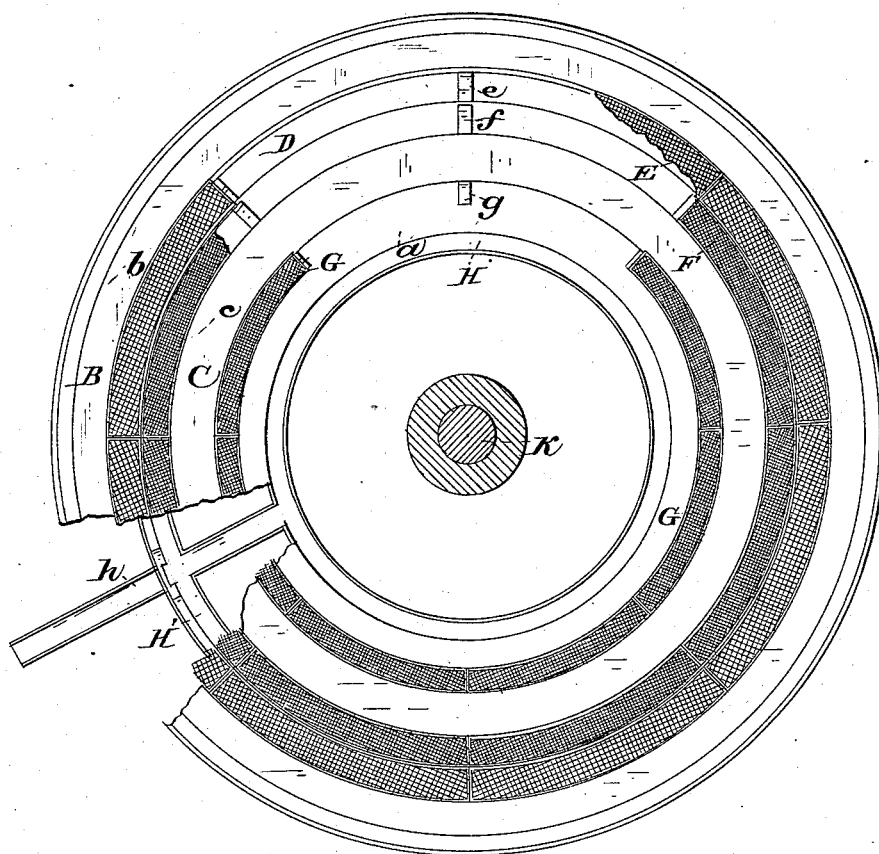
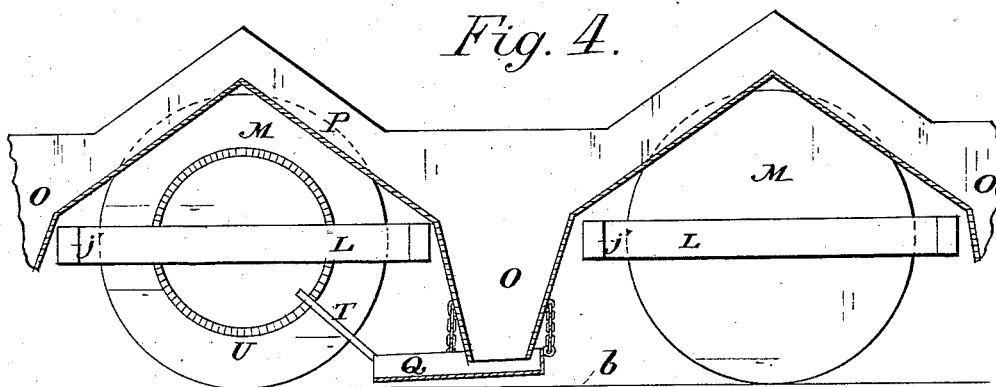


Fig. 4.



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UNITED STATES PATENT OFFICE.

D. VIRGIL GOODSON, OF BODIE, CALIFORNIA.

ORE-PULVERIZER.

SPECIFICATION forming part of Letters Patent No. 306,145, dated October 7, 1884.

Application filed April 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, D. VIRGIL GOODSON, of Bodie, county of Mono, and State of California, have invented Improvements in Ore-Pulverizers; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a new and useful ore pulverizer or crusher of that class in which heavy wheels or rollers are caused to travel on an annular track or bed, to which the ore or pulp is fed.

My invention consists in details of construction and combinations of parts, all of which I shall hereinafter fully claim and explain by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of my ore-pulverizer. Fig. 2 is a radial vertical section through the cogged band, base-frame, ore beds and screens, and an elevation of the rollers. Fig. 3 is a plan of ore bed and screens. Fig. 4 is a longitudinal section through the inclined chutes, hoppers, and tray, showing the rollers in elevation.

The object of my invention is to provide a simple and effective ore-crusher having great capacity for work and easily handled.

A is the base-frame. Near the outer rim is an annular groove forming ore-bed B, in which is the wearing-die *b*.

Concentric with bed B is the annular bed C, having die *c*. The bed C is on a lower plane than the bed B, and is separated from it by the intervening inclined surface D, Fig. 2.

Upon the inner rim of bed B are secured at intervals arms *e*, which support the series of screen-sections E. These screens have preferably a large mesh.

Secured to the outer rim of bed C are inclined arms *f*, which support the series of screen-sections F. These continue the inclination of surface D, and under them is an annular trough, H'. Arms *g* on the inner rim of said bed C support the series of screen-sections G, both screens F and G having a finer mesh than screens E. The surface *a* of the base A slopes downwardly from bed C toward an annular trough, H, concentric with said bed, and having an outlet, *h*, passing through the base to the outside, whereby the pulp or crushed

ore may be discharged for subsequent treatment. The outer trough, H', also communicates with outlet *h*.

J is a circular frame, consisting of a hub, radiating arms *j'*, and a rim, *j*². The hub is pivoted by a vertical shaft, K, passing through it into the center of base A, and its rim is provided with underlying anti-friction rollers *k*, which travel on the rim of the base outside of the bed B.

Between each pair of arms *j'* are secured bars L. To the inner edge of the rim *j*² are secured vertical guides *l*, and to the adjacent sides of the outermost of bars L are secured similar guides.

M are heavy rollers or wheels resting on the bed B. Their hubs *m* are journaled in boxes *m'*, fitted and adapted to slide up and down in guides *l*.

N are heavy rollers or wheels resting on the bed C. Their hubs *n* are journaled in boxes *n'*, fitted and adapted to move vertically in guides *l'*, secured to the adjacent edges of adjacent bars L. The rollers N are thicker than rollers M.

O are hoppers resting between and upon each pair of arms *j'*, and having their discharge ends extending downwardly. Each hopper has an oppositely-extending and upwardly-inclined chute, P, joined together, as shown. Hung under each hopper is a tray, Q, adapted to discharge into the outer bed, B.

R is the main supply-hopper having spout *r*, adapted to discharge into each hopper and chute as it is brought under it. Motion is imparted to frame J by means of the cogged band S on its rim, and the pinion *s* on the main driving-shaft; but I may use a belt, if found desirable. A shaking motion is given to the suspended trays for the purpose of producing an evenly-distributed discharge by means of a rod or arm, T, on said trays. The other end of each arm is engaged by an annular toothed or roughened surface, U, on the inner face of each roller M.

The operation is as follows: The frame J is given a rotary motion in a horizontal plane, and the rollers are caused to travel around on the annular beds. Ore is supplied to each hopper and chute as it passes under the dis-

charge-spout of the main supply-hopper, and each receives enough to last it one round. The ore passes down onto the trays, and by them is shaken off into the outer bed, B, in which it is crushed by the rollers M. The partially-crushed ore or pulp, as it has now become, thence passes inwardly through the screens E and over the inclined surface D and screens F, into the inner bed, C, in which it is pulverized very fine by the rollers M. In passing over screens F that portion of the ore which has been crushed sufficiently fine drops through said screens into trough H', and is thus disposed of, while the coarser ore passes into C. Thence after being crushed it passes equally through the screens F G into trough H' on one side, and over surface *a* on the other into the trough H, and is discharged from both troughs through spout *h* into suitable pans or receivers. The coarser screens E are to permit the partially-crushed sand to pass freely. The rollers being vertically yielding pass easily over the larger rocks without being impeded. They bear none of the weight of frame J, this office being performed by the anti-friction rollers *k*. The inner set of rollers are thicker than the outer set, in order, by reason of a greater surface, to pulverize the ore more thoroughly.

30 I do not confine myself to two concentric beds and series of rollers, as I may add others, if necessary, and I may make the machine as simple and light-running as possible by decreasing the number of rollers.

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

1. In an ore-pulverizing machine, the combination of the concentric annular ore-beds on different planes, an annular trough concentric with said beds and formed on a lower plane, said trough having a discharge, an inclined surface between said beds and trough, whereby a flow of pulp or crushed ore may be effected by gravitation from one bed to another and to the trough, suitable intervening inclined screens separating the beds from each other and from the trough, and suitable wheels or rollers of varying thickness mounted independently and traveling on said beds, substantially as described.

2. In an ore-pulverizing machine, the combination of the concentric annular beds B C on different planes, the inclined surface D between them, the annular concentric troughs H' H, inside of beds B C, respectively, and

lower than said beds and having a common discharge, *h*, the sloping surface *a*, the series of screen-sections E, on the inner side of bed B, the series of screen-sections F G, on the outer and inner sides, respectively, of bed C, and suitable crushing rollers or wheels adapted to travel on said beds, substantially as herein described.

3. In an ore-pulverizing machine, the base-frame A, annular beds B C, and the centrally-pivoted horizontal rotating frame J, having arms *j'*, rim *j''*, the cross-bars L, between the arms, and the vertical guides *l' l''* on the rim and cross-bars, in combination with the crushing-rollers or wheels M N, having hubs *m n*, boxes *m' n'*, sliding in the guides *l' l''*, and the carrying anti-friction wheels or rollers K, under the rim of the frame J, and traveling on the bed-frame, substantially as herein described.

4. In an ore-pulverizing machine, an annular ore-bed, the centrally-pivoted horizontal rotating frame J, and crushing rollers or wheels traveling on said ore-bed, in combination with the directing-hoppers O, on said frame and between said wheels, and the underlying shaking trays Q, suspended from the hoppers and adapted to receive their contents and discharge them upon the bed, substantially as herein described.

5. In an ore-pulverizing machine, an annular ore-bed, the centrally-pivoted horizontal rotating frame J, and crushing rollers or wheels traveling on said bed, in combination with the hoppers O on the frame, the underlying trays Q, suspended from the hoppers and adapted to receive their contents and discharge them upon the bed, and the means for imparting a shaking motion to said trays, consisting of the rods or arms T on the trays and the annular toothed or roughened surface U on the face of the rollers, substantially as herein described.

6. An ore-pulverizing machine comprising the base-frame A, the concentric annular screen-divided beds B C, discharge-troughs H H', the centrally-pivoted horizontal rotating frame J, the rollers M N, adapted to travel on the beds B C, the annular series of hoppers O and chutes P, and the underlying suspended shaking trays Q, all arranged and operating substantially as herein described.

In witness whereof I have hereunto set my hand.

D. VIRGIL GOODSON.

Witnesses:

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WILLIAM D. HASLAM.