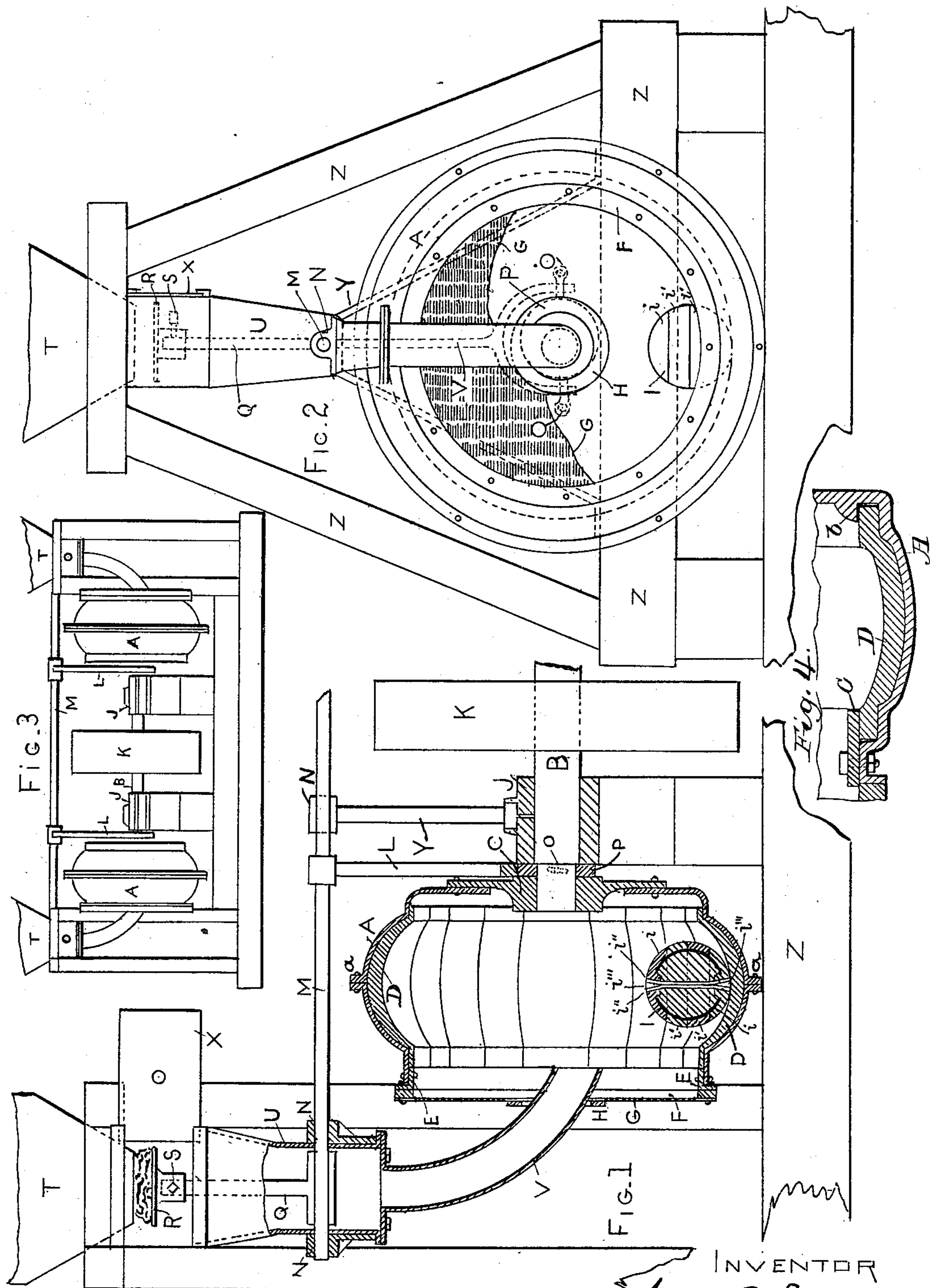


(No Model.)

J. B. LOW.  
ORE CRUSHING MACHINE.

No. 329,750.

Patented Nov. 3, 1885.



ATTEST { *Geo. S. Hooker*  
*Chas. H. Houseman*

INVENTOR  
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# UNITED STATES PATENT OFFICE.

JOEL B. LOW, OF SAN FRANCISCO, CALIFORNIA.

## ORE-CRUSHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 329,750, dated November 3, 1885.

Application filed July 25, 1885. Serial No. 172,677. (No model.)

*To all whom it may concern:*

Be it known that I, JOEL B. LOW, of San Francisco, California, have invented an Improved Ore-Crushing Machine, of which the

5 following is a specification.

The invention particularly relates to ore-crushing machines; but it is applicable for crushing and pulverizing other substances.

10 It consists in the combination of certain parts hereinafter set forth and claimed.

The invention further consists in a novel feeding device arranged so as to be used in connection with the ore-crusher herein described, but which has features which render

15 it also applicable to other ore-crushers.

In the accompanying drawings, forming part of this specification, Figure 1 is a longitudinal section of my machine. Fig. 2 is an view partly broken away, and Fig. 3 an elevation of the same. Fig. 4 is a sectional view showing how the wearing-plates are fastened in place.

In all the figures the same letters of reference indicate the same parts.

25 A is a circular iron casing made in two parts and joined at the flanged joint *a*. This casing is supported on the shaft B by being bolted to the flanged hub C, which is firmly keyed on the shaft. The casing is lined within

30 its concaved rim with hard-iron wearing-plates D—say about eighteen in number, according to the size of the machine. These wearing-plates are held in place by inserting one end under a lug, *b*, Fig. 4, and bolting the

35 plate *c* to the casing in such a way as to overlap the opposite end of the plate and hold it firmly in place. To the front or mouth of the casing is bolted an angle-iron ring, E, which is bolted also to the wooden ring F. There is

40 an iron screen, G, fastened to this wooden ring by ordinary wood-screws. It may be applied in sections, and will cover the entire front of the casing, except a central space left for the feed-spout. The inner edge of the screen-disk

45 will be stiffened by the metal ring H.

I is a heavy metal ball of hard iron. It rests within the hollow of the lining of the casing and upon the material fed to the machine. The shaft B is supported upon two bearings, J, the inner bearing only being shown in Fig. 1 for lack of room on the sheet, the shaft being broken off.

The machine will be revolved by pulley and belt or gearing, as found most convenient. I show a pulley, K, secured on the driving-shaft. 55

L is a forked lever secured to and pendent from the rocking shaft M, which rests in bearings at N N. At the fork of this lever are adjusting-screws O O, and between these an eccentric, P, is fastened to the shaft B, so that 60 as the eccentric revolves the lever is vibrated a greater or less distance, according to the set of the adjusting-screws, with the effect of rocking the shaft M. On the end of the rocking shaft is a perpendicular lever, Q, which supports a square plate, R, on its upper end, 65 which plate has a socket underneath to fit on the lever, a set-screw, S, being used to secure it. It may be raised or lowered a trifle, so as to be nearer to or farther from the hopper T, 70 from which the material falls upon it with the effect of regulating the amount it receives and consequently feeds to the pulverizer. The hopper T is an ordinary funnel-shaped receptacle of either sheet-iron or wood. 75

U is a box-shaped housing inclosing the vibrating lever Q with its plate R. It is bolted onto the upper end of the spout V, which leads into the pulverizing-chamber. It carries the two end bearings, N N, of the rocking shaft, 80 and it has a sliding door, X, to permit access to the plate R. The ball I is shown with an outer covering of metal, separate from the interior part, which may be of a softer quality. This is for the purpose of avoiding the loss of 85 the unworn metal when the ball by constant use is rendered too light for service.

The manner in which the outer shell is secured is as follows: There are two saucer-shaped pieces, *i i*, having bosses, as shown, in 90 the centers of their concave sides. Then there are two solid rings, *i' i'*, fitting the convex surface of the ball in the middle, between the saucer-shaped ends. Two flat iron rods, *i'' i''*, are passed through the ball, and wedges *i''' i'''* are 95 driven between to spread out their ends to fill the tapering holes in the saucer-shaped end pieces, and thus the several parts are firmly held in place. In putting the covering on the ball the rings are put on first. Then the two 100 saucer pieces, and finally the rods, are run through and the wedges inserted.

Y is a standard to support the outer bearing of the rocking shaft.

Z is the timber frame-work of the machine.

The operation is simple and as follows: Ore is dumped into the hopper T and the machine put in motion. As the plate R moves from side to side the ore resting upon it is thrown off to drop through the spout V into the pulverizing-chamber, and the ball I rolling over it crushes it to such a degree of fineness that it will pass through the screen.

What I claim as my invention, and desire to secure by Letters Patent, is as follows:

1. The combination of the casing A, supported on and revolved directly by the shaft B, lining-plates D, shaft B, crushing-ball I, and vertical annular screen G, substantially as and for the purpose described.

2. The adjustable feeding device consisting of the hopper T, box-housing U, lever Q, plate R, resting directly on top of lever Q, shaft M, forked lever L, adjusting-screws O O, eccentric P, secured on the shaft B, and shaft B, arranged and operating substantially as herein described, and for the purpose set forth.

3. The crushing-ball herein described, consisting, essentially, of the interior perforated ball, outer shell-sections, *i i'*, rods *i''*, and wedges *i'''*, substantially as and for the purpose herein set forth.

JOEL B. LOW.

Witnesses:

GEO. PARDY,  
JNO. D. HOOKER.