

July 30, 1940.

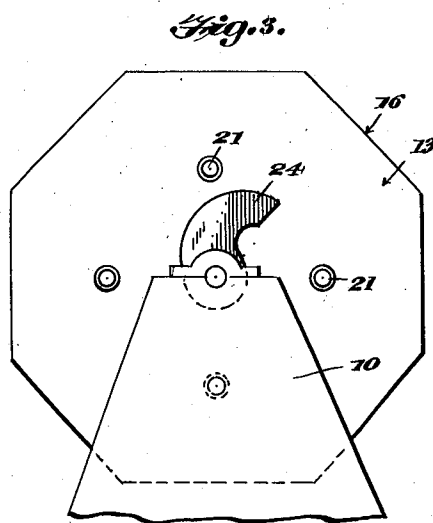
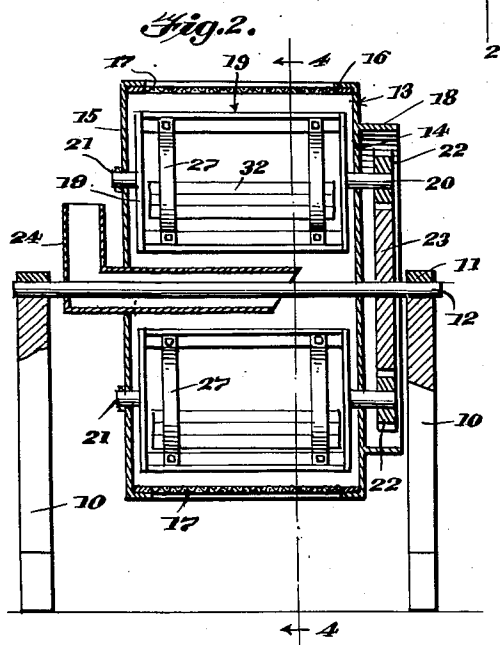
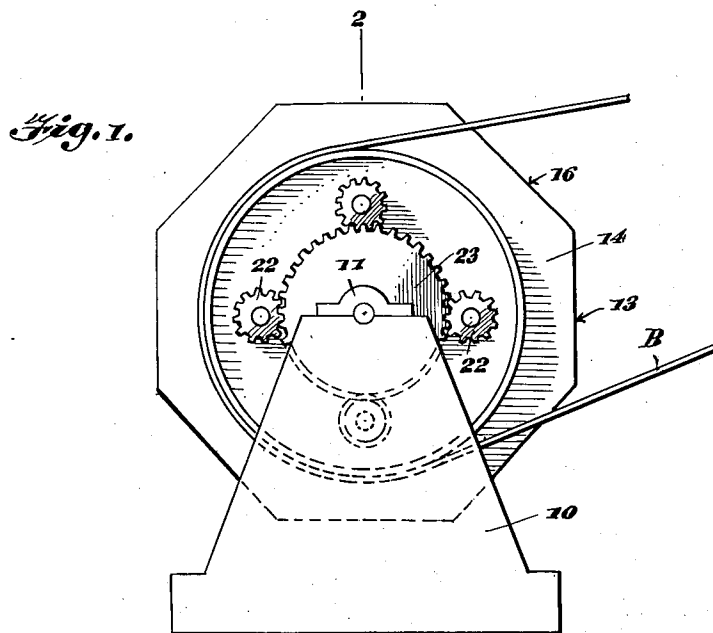
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2,209,344

ROCK PULVERIZER

Filed Oct. 4, 1938

2 Sheets-Sheet 1



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Fig. 4.

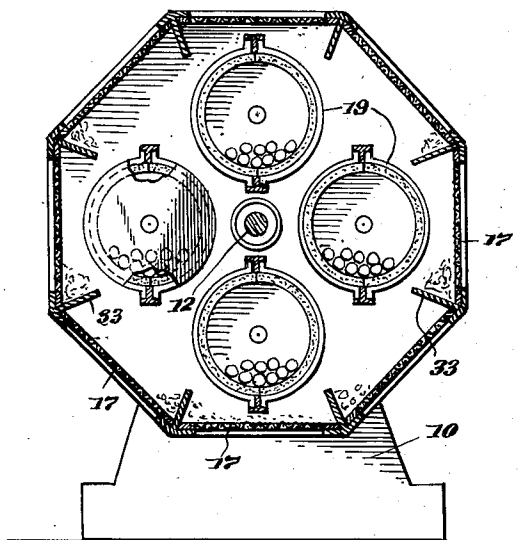


Fig. 5.

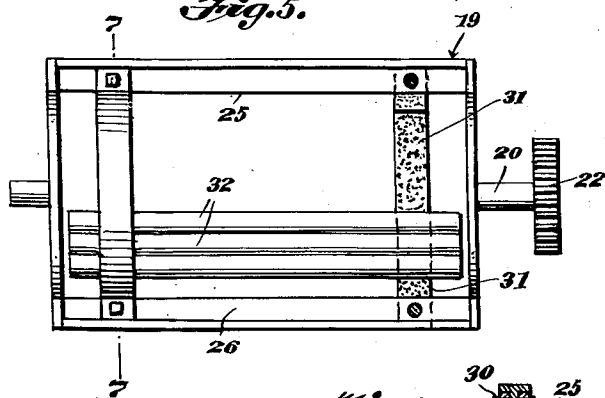


Fig. 6.

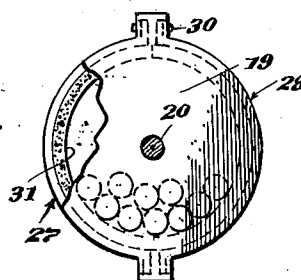
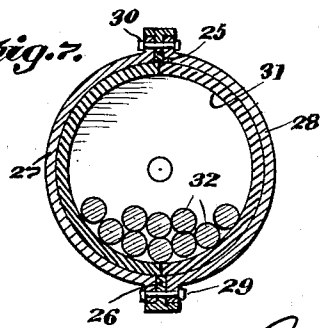


Fig. 7.



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ROCK PULVERIZER

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Application October 4, 1938, Serial No. 233,269

3 Claims. (Cl. 83-9)

This invention relates to rock pulverizers, and has for one of its objects, the production of a simple and efficient means for mounting and revolving the rod carriers within the casing of the mill.

A further object of this invention is the production of a simple and efficient means for causing the crushing rods to have a bouncing motion as the rod carriers are rotated.

Other objects and advantages will appear throughout the following specification and claims.

In the drawings:

Figure 1 is an end elevational view of the mill;

Figure 2 is a sectional view taken on line 2-2 of Figure 1;

Figure 3 is an end elevational view looking at the opposite end of the mill to that shown in Figure 1;

Figure 4 is a sectional view taken on line 4-4 of Figure 2;

Figure 5 is an enlarged side elevational view of one of the revolving rod carriers, certain parts being shown in section;

Figure 6 is an end elevational view of one of the revolving rod carriers, the supporting shaft being shown in section;

Figure 7 is a transverse sectional view taken on line 7-7 of Figure 5.

By referring to the drawings, it will be seen that 10 designates the supporting standards which are arranged in spaced relation, which standards 10 carry journals 11 at their upper ends within which journals 11 is mounted the supporting shaft 12. A casing 13 is carried by the shaft 12 and comprises end plates 14 and 15, which end plates carry the hexagonal sides 16 which hexagonal sides 16 support flat screen plates 17. The form of the casing 13, therefore, assumes a hexagonal shape which permits of the use of flat screens, in this way reducing the cost of construction as well as facilitating repair. A rim or wheel 18 is carried by the end plate 14, as shown in Figure 2, for the purpose of receiving a driving medium such as a belt B, or other suitable driving means common to the trade.

A plurality of revolving rod carriers 19 are mounted within the casing 13 as shown, and these revolving rod carriers 19 are supported upon journal shafts 20 and 21, which shafts 20 and 21 are journaled within the respective end walls 14 and 15, as shown. Each carrier 19 comprises a cylindrical frame, shown in detail in Figures 5, 6 and 7, the shaft 20 carrying a pinion or gear

22, the pinions or gears 22 of the revolving rod carriers meshing with a central gear 23 which is carried by the shaft 12. A suitable ore feeder 24 extends centrally through the casing 13 and extends around a shaft 12, as shown, for the purpose of delivering the ore into the interior of the casing 13.

Each carrier 19, as stated above, comprises a cylindrical frame, the frame having inwardly extending upper and lower ribs 25 and 26, to the opposite faces of which are secured respective ends of the semicircular bands 27 and 28 to provide when assembled, circular trackways, the bands 27 and 28 being secured to the ribs 25 and 26 by means of suitable bolts 29 and 30. A resilient rod-supporting ring 31 is secured to the inner face of each band 27 and 28 to provide a circular resilient rod-supporting medium which is clearly shown in Figures 5, 6 and 7. Elongated circular rods 32 are adapted to rest upon the resilient ring 31 in a manner as shown in Figures 5 to 7, inclusive, and it should be understood that these rubber or resilient rings constituting rubber tires will facilitate fast turning of the revolving rod carriers, give the same longer wear, and provide a bouncing motion for the rods 32 as they tumble from one position to another through the rotation of the revolving rod carriers. This bouncing motion will increase the pounding action of the rods upon the ore or rock within the casing 13 and greatly reduce the wear and strain upon the frames 19.

As shown in Figure 4, a plurality of ore-lifting fins 33 are carried within the casing 13 and extend inwardly for a short distance toward the center of the casing to provide ore lifters or ore-lifting shelves to lift the ore upwardly within the casing 13, as the same is revolved in the conventional manner.

From the foregoing description, it will be seen that a very simple and efficient mill has been provided, the sides of which are so constructed as to provide a substantial hexagonal casing within which the ore or rock may be agitated as the casing is rotated. Furthermore, it will be noted that I have provided rod carriers which revolve within the mill as the mill is turned and as the gears 22 travel about the stationary gear 23. The gears 22 and 23, because of their ratio, will speed up the rod carriers so as to drive the same faster than the speed at which the exterior casing 13 of the mill may rotate. Furthermore, it will be noted that the rubber tires or rings 31 will provide a resilient abutment or buffer against which the rods may strike when crushing the

rock, in this way giving the rods a bouncing motion and increasing the pounding motion of the rods upon the rock or ore. Furthermore, it should be noted that the shape of the casing 13 will permit of the use of flat screens in place of the common type of curved screens which have previously been used, in this way reducing the cost of maintaining and construction thereof.

The shaft 12, as well as the gear 23, may be mounted for support in a stationary manner within the journals 11, the casing 13 being revolvable about the shaft 12 by causing the gears 22 to rotate for the purpose of rotating the revolving rod carriers at a greater speed than the speed of the casing 13, as above stated.

Having described the invention, what I claim is:

1. A device of the class described comprising a support, a casing constituting a drum mounted for rotary movement upon the support, screens carried by the side walls of the casing, rotating carriers mounted within the casing and adapted to rotate on their own axes and also adapted to rotate about the axis of the drum, means for rotating the carriers, a driving wheel for the casing, a series of rods loosely supported within the carriers and adapted to have a tumbling action therein, and resilient buffers carried by the carriers adapted to be directly contacted by said rods.

2. A device of the class described comprising

a support, a flat sided casing constituting a drum, flat screens carried by the side walls of the casing, rotating carriers mounted within the casing, means for rotating the carriers, a driving wheel for the casing, a series of elongated rods supported longitudinally within each carrier and loosely mounted within each carrier, the rods being adapted to roll up the sides of each carrier as the carrier is rotated and drop back within the carrier, ore lifting fins carried by the casing at the junction of the side walls thereof and extending inwardly toward the center of the casing, said carriers being rotatable on their own axes within the casing, and said carriers being adapted to revolve about the axis of the drum.

3. A device of the class described comprising a support, a casing constituting a drum mounted for rotatable movement upon the support, screens carried by the drum, rotating carriers mounted for individual rotation upon their own axes within the drum and adapted to revolve about the axis of the drum, elongated rods mounted within each carrier, resilient bands fixed within each carrier and adapted to directly contact with the rods, the rods being adapted to roll up the sides of the carriers upon the rotation of the carriers and drop back into direct contact with the resilient bands to constitute a direct resilient bumper means for the rods.

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