W. HASENDAHL.

PULVERIZER.

APPLICATION FILED JAN. 24, 1916.

1,355,335. Patented Oct. 12, 1920.

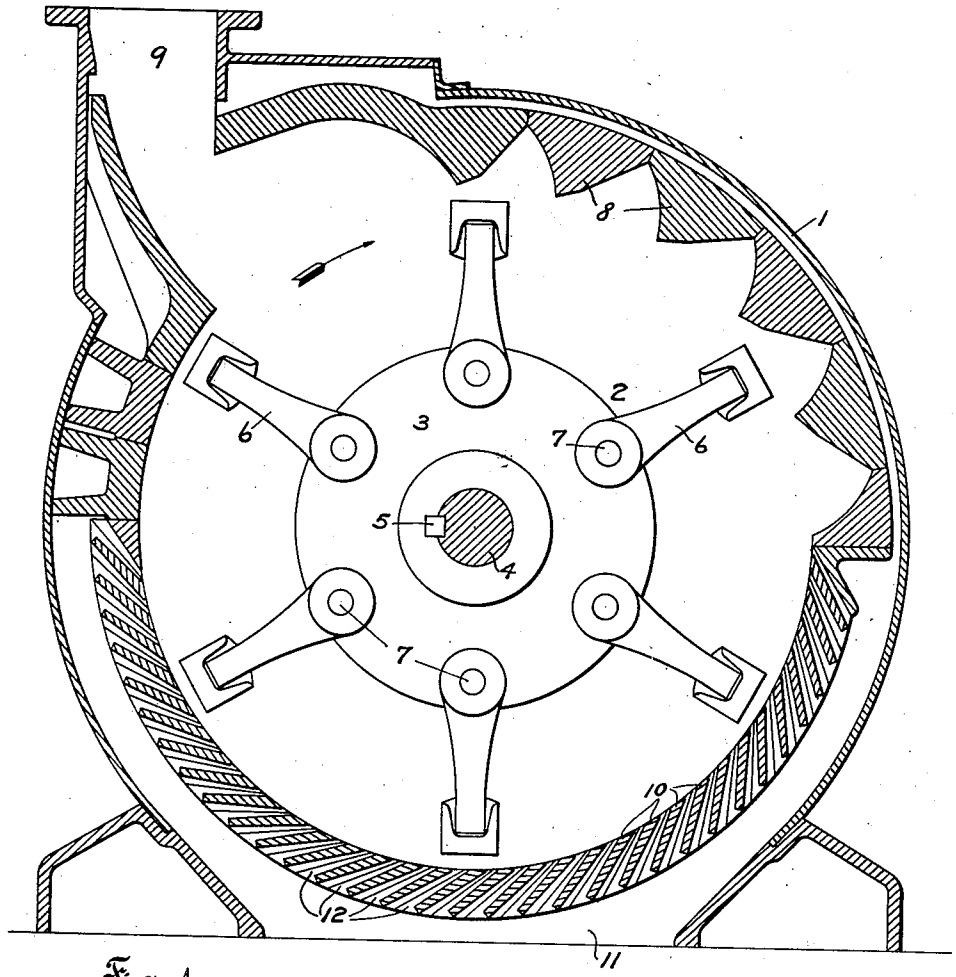


Fig. 1

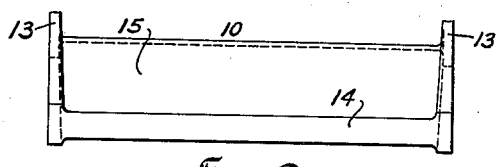


Fig. 2

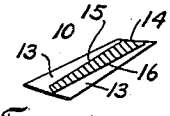


Fig. 4

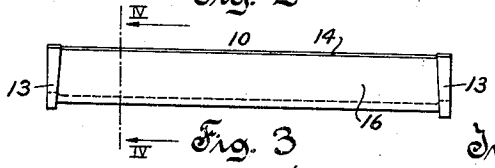


Fig. 3

Inventor

W. Hasendahl

by G. J. Dellwin

Attorney

UNITED STATES PATENT OFFICE.

WALTER HASENDAHL, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO ALLIS-CHALMERS MANUFACTURING COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF DELAWARE.

PULVERIZER.

1,355,335. Specification of Letters Patent. Patented Oct. 12, 1920.

Application filed January 24, 1916. Serial No. 74,506.

To all whom it may concern:

Be it known that I, WALTER HASENDAHL, a subject of the Emperor of Germany, but having declared his intention of becoming a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented a certain new and useful Improvement in Pulverizers, of which the following is a specification.

This invention relates to improvements in the construction of pulverizers and is especially applicable to the discharge grates or walls of such pulverizers.

An object of the invention is to provide a pulverizer which is simple in construction and efficient in operation. One of the more specific objects is to provide one or more discharge openings for a rotary impact pulverizer which will permit free delivery of the crushed material from the pulverizing chamber and which will reduce to a minimum the wear on the elements. These and other beneficial results are attained by providing one or more discharge openings extending forwardly with reference to the direction of rotation of the pulverizing elements and away from the path of rotation of the elements.

A clear conception of an embodiment of the invention may be had by referring to the accompanying drawing in which like reference characters designate the same or similar parts in the various views.

Figure 1 is a transverse vertical section through a rotary impact pulverizer having the invention applied thereto.

Fig. 2 is a top view of one of the bars forming the discharge grate or wall of the pulverizer.

Fig. 3 is a side elevation of one of the bars forming the discharge grate or wall of the pulverizer.

Fig. 4 is a transverse vertical section through one of the bars forming the discharge grate or wall, the section being taken along the line IV—IV of Fig. 3 looking in the direction of the arrows.

The rotary impact pulverizer disclosed in Fig. 1 comprises essentially a main casing 1 and a rotary pulverizing element 2 secured to the shaft 4 which is mounted in bearings in the casing 1 in the usual manner. The pulverizing element 2 comprises a suspension element 3 fixed to the shaft 4 by means of a key 5, and a circular series of hammers 6 suspended from pivots 7 carried by the suspension member 3. The element 2 is rotatable in a clockwise direction as viewed in Fig. 1. The upper portion of the casing 1 is provided with a feed inlet 9 and liners 8 having involute impact surfaces thereon. The lower portion of the casing 1 is provided with a discharge grate or wall having openings 12 therethrough through which the fine material is delivered from the pulverizing chamber to the discharge opening 11 at the lower extremity of the casing 1.

The discharge wall is made up of a series of individual bars 10 which are spaced apart to form the openings 12 by means of end flanges 13. The flanged ends of the bars 10 are mounted in curved recesses in the side walls of the casing 1 in the usual manner, thus making the bars 10 removable for renewal when worn.

Each of the bars 10 has a surface 14 extending along the path of the hammers 6. Each bar 10 is moreover provided with a surface 15 extending forwardly with reference to the direction of rotation of the element 2, and away from the path of the hammers 6. The surfaces 15 form obtuse angles with the surfaces 14 of the corresponding bars. Each of the bars 10 is provided with a surface 16 on the side thereof opposite to the surface 15, also extending forwardly with reference to the direction of rotation of the element 2, and away from the path of the hammers 6. The surfaces 16 form acute angles with the surfaces 14 of the corresponding bars. The surfaces 15, 16, form the side walls of the discharge openings 12, which openings therefor also extend forwardly with reference to the direction of rotation of the element 2, and away from the path of the hammers 6.

During the normal operation of the device, the material to be pulverized is admitted to the crushing chamber through the feed inlet 9 and is pulverized by the hammers 6 and liners 8, after which it passes to the portion of the pulverizing chamber adjacent the discharge grate or wall. The finely pulverized material is delivered directly through the openings 12 and is either withdrawn by mechanical means or drops by gravity through the discharge opening

11. Due to the substantially tangent arrangement of the openings 12 relative to the path of the hammers 6, it will be noted that the material discharged by the hammers is not compelled to make a substantial change in direction in order to pass from the pulverizing chamber to the discharge side of the grate or wall, as in the devices of the prior art. This feature permits direct and free delivery of the material and eliminates excessive wear upon the side surfaces of the grate bars 10. While the grate bars 10 have been disclosed as arranged substantially tangent to the path of the hammers 6, such arrangement is not essential and may be varied to suit different conditions of operation of the machine.

It should be understood that it is not desired to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

It is claimed and desired to secure by Letters Patent,—

1. In combination, a pulverizing element movable in a circular path, and a grid having a series of segmental circular surfaces adjacent said path, said grid having other surfaces intersecting said circular surfaces and providing discharge openings the medial planes of which are tangent to a common circle within said path and the said medial planes of which openings extend forwardly with reference to the direction of movement of said element away from said circle.

2. In combination, a pulverizing element movable in a path about an axis, and a grid adjacent said path, said grid comprising bars each having a segmental circular surface generated about said axis as a center and each bar having side surfaces the corresponding ones of which are tangent to a common circle within said path, said side surfaces extending forwardly with reference to the direction of movement of said element away from said circles.

In testimony whereof the signature of the inventor is affixed hereto.

WALTER HASENDAHL.