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SHAKER PLATE FOR ORE AND COAL WASHERS.
APPLICATION FILED MAY 28, 1914.

1,142,434.

Patented June 8, 1915.

Fig. 1.

Fig. 2.

Fig. 3.

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SHAKER-PLATE FOR ORE AND COAL WASHERS.

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Application filed May 28, 1914. Serial No. 841,586.

To all whom it may concern:

Be it known that I, Moses James, citizen of the United States, residing at Lansford, in the county of Carbon and State of Pennsylvania, have invented certain new and useful Improvements in Shaker-Plates for Ore and Coal Washers, of which the following is a specification.

This invention relates to improvements in the shaker plates of ore and coal washers.

It is one aim of the invention to provide a shaker plate so formed that in operation it will act to effectually spread the material being washed over a maximum area thereby assuring a more thorough washing of the ore or coal.

Another aim of the invention is to provide a shaker plate of the class described, so constructed that in operation it will create "life" in the material being washed, that is to say, the material will be shifted in various directions, and at intervals, be thrown up from the plate to a greater or less extent, as distinguished from being merely shifted back and forth upon the surface of the plate, as would be the case if a plane shaker plate were employed. This agitation of the material of course serves to bring different portions of the mass into contact with the surface of the plate, successively, thereby insuring thorough washing of all portions.

The invention also contemplates so forming and arranging the rifles in the plate as to strengthen the plate and prevent its sagging, which is likely to occur in the use of a plane plate.

Another aim of the invention is to so construct and arrange the rifles that the material will be retarded in its movement over the surface of the plate, thereby further insuring thorough washing of the material.

Still further the invention has as its aim to provide a rifle plate of such formation that it may be employed in treating ore or coal whether in wet or dry condition.

The rifle plates are of course arranged in a series within the shaker frame, and inasmuch as all of the plates are of the same construction, a description of one will suffice for all.

The rifle plate embodying the invention is preferably stamped from sheet metal and is indicated in general by the numeral 1.

The front to rear median line of the plate is indicated by the dot and dash line \( \alpha - \alpha \) in Fig. 1, and the rifles formed in the plate are arranged, in a manner to be presently described, in a certain definite relation to this line, the rifles being located within a certain definite area, the boundary lines of which are spaced inwardly from the edges of the plate so that the edge portions of the plate are left plane, whereby to serve as attaching and connecting flanges. One of these edge portions, located at one longitudinal edge of the plate, is indicated by the numeral 2 and is formed with openings 3 suitably spaced throughout its length. The opposite edge portion is indicated by the numeral 4 and is preferably slightly wider than the edge portion 2 and formed with two series of openings 5. Each lateral edge portion of the plate is indicated at 6 and is formed with openings 7.

The rifles are formed by stamping the plate with alternating ridges and valleys at each side of its front to rear median line. The rifles are arranged in two series, one located at each side of the front to rear median line of the plate and the arrangement in the two series is the same. Certain of the rifles of each series are indicated by the numeral 8 and the other rifles of each series are indicated by the numeral 9. Corresponding ones of the first-mentioned rifles of the two series merge or unite at their inner ends along the median line, and the said rifles extend in opposite directions from this line diagonally from the plate and in the general direction of the adjacent corner of the plate, the rifles of each series being, however, parallel to each other and being furthermore preferably at right angles to the corresponding rifles of the other series. At their ends opposite their merging ends, the rifles merge into the surface of the plate, as clearly shown in Fig. 2 of the drawings. It will also be apparent by reference to Fig. 1 that the rifles of the two series diverge in the direction of the edge portion 4 of the plate. The rifles 9 of each series extend parallel to the rifles 8 of the same series but do

In the accompanying drawings: Figure 1 is a plan view of the shaker plate embodying the present invention. Fig. 2 is a sectional view through the plate taken on the line 2—2 of Fig. 1. Fig. 3 is a perspective view, illustrating the manner in which the plates are arranged within the shaker frame.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.
not merge at their adjacent ends, they being arranged diagonally within the corner of the plate next adjacent which the longer ones of the rifles are located and being gradually decreased in length as they, in the series, approach the said corner. Inasmuch as the rifles of the other series do not merge or join each other, they merge at both ends with the surface of the plate. The shaker plate is provided throughout its rifle area with a number of perforations through which the water may drain during the washing operation.

The manner of arranging the plates within a shaker frame is clearly illustrated in Fig. 3 of the drawings, the numeral 11 indicating the frame in general and the said frame being of the ordinary form and provided at the lower edges of its sides with L-angle iron bars 12 which have a vertical flange secured to the inner face of the said side and a horizontal flange projecting inwardly therefrom. The lateral edge portions of the plates are bolted or otherwise secured to the horizontal flanges of the angle iron bars, and bolts are passed through the openings 3 and 5 in the overlapped edge portions of the series of plates and through cross bars 13 secured at their ends, to the horizontal flanges of the angle iron bars and extending transversely beneath the said side portions 2 and 4. By reference to the said Fig. 3 it will be observed that the plate, located at the intake end of the frame, which end of the frame is indicated by the numeral 15, is so arranged that its rifles will converge or be inclined toward that end of the frame. The next plate in the series is arranged in reversed position, however, and this relative arrangement of each two of the plates is continued throughout the series.

It will now be apparent that when the material is introduced into the shaker frame, it will be separated and agitated, and due to the fact that the rifles of the second plate in the series of plates diverge toward the outlet end of the frame, the material will be spread and separated at each side of the front to rear median line of the frame. As the material passes onto the second plate in the series, the mass is concentrated or gathered toward the said longitudinal median line of the frame, and as it passes onto the third plate of the series, it will again be spread in the same manner as when passing over the first plate of the series. It will be understood, of course, that the rifles will serve to throw the material up from the surface of the plate and that the material is shifted not only back and forth but also from side to side, so that it is thoroughly agitated and more effectually washed than would be possible by the use of a plane perforated plate. It will also be understood that the valleys of rifles will tend to collect and retain the water, thereby preventing the same passing too quickly or freely through the opening.

It will be observed that the plates embodying the present invention have plane or flat marginal portions, and it will further be observed by reference to Fig. 3 that when a number of the plates are assembled in a series with their said marginal portions overlapped, distributing channels will be provided between the said plates.

Having thus described the invention, what is claimed as new is:

1. In a device of the class described, a frame, a plurality of shaker plates arranged within the frame, each plate being provided at each side of its median line with a series of rifles, the rifles of the two series upon each plate meeting at the median line of the plate and the rifles of one series extending at an angle with respect to the rifles of the other series, the plates being arranged within the frame with the rifles of the two series alternately diverging in the direction of the opposite ends of the frame.

2. A shaker plate of the class described having flat marginal portions and formed within the bounds of the said portions with a raised rifle dressing, certain of the marginal portions being constructed to overlap similar portions of the other ones of the plates when a number of the plates are assembled in a series, and being further constructed to permit of the said portions being secured together in their overlapped relation and adapted with a mating plate to form distributing channels between said plates.

3. A shaker plate of the class described having flat marginal portions and formed within the bounds of the said marginal portions with diagonally extending raised corrugations arranged in series at opposite sides of the longitudinal median line of the plate, the corrugations of the two series converging toward and meeting at the said line and each terminating at one end at the marginal portion at one side of the plate, the front and rear marginal portions of the plate being connected to overlap and be secured to similar portions of other similarly constructed plates when a number of the plates are arranged in a series and adapted with a mating plate to form distributing channels between said plates.

In testimony whereof I affix my signature in presence of two witnesses.

MOSSES JAMES. [T. H.]

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."