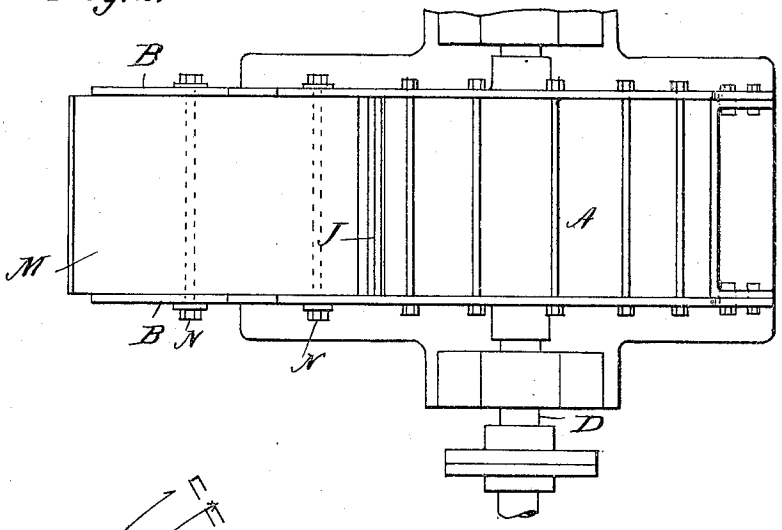
Dec. 26, 1922. 1,439,781

M. F. WILLIAMS.
CRUSHER.
FILED JULY 1, 1922.

Fig. 2.



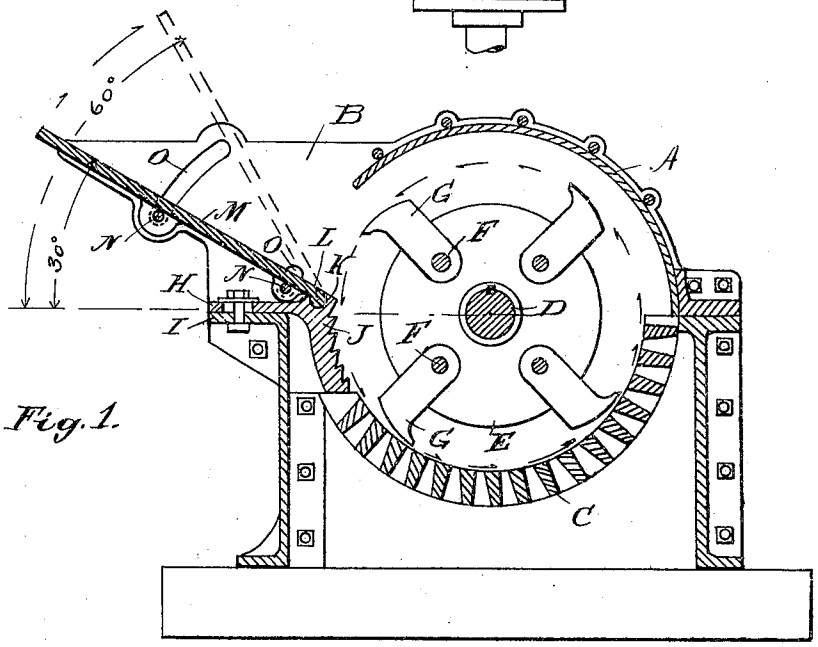


Fig. 1.

Inventor

Milton F. Williams,

By H. M. Paisted,

Attorney.

Patented Dec. 26, 1922. 1,439,781

UNITED STATES PATENT OFFICE.

MILTON F. WILLIAMS, OF ST. LOUIS, MISSOURI, ASSIGNOR TO WILLIAMS PATENT CRUSHER & PULVERIZER COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

CRUSHER.

Application filed July 1, 1922. Serial No. 572,135.

To all whom it may concern:

Be it known that I, MILTON F. WILLIAMS, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Crushers, of which the following is a specification.

This invention relates to certain new and useful improvements in crushers, the peculiarities of which will be hereinafter fully described and claimed.

The main object of my invention is to provide a crusher adapted to supply the feed to the rotor chamber at such a rate according to the material being reduced, that it will be drawn in gradually and evenly by the action of the hammers and slope of the hopper bottom as adjusted according to the angle of repose of various materials.

In the accompanying drawing on which like reference letters indicate corresponding parts, Fig. 1, represents a vertical sectional view across the shaft of a crusher embodying my invention; and Fig. 2, a plan view of such a crusher.

The letter A designates a casing having hopper sides B and provided with a cage C concentric with a shaft D carrying discs E and rods F on which latter are pivoted eccentric to the shaft, suitable hammers G the points of which travel in the hammer circle indicated by dashed lines. A breaker plate is preferably used in connection with the cage C and consists of a horizontal web H slidingly mounted upon a horizontal plate I of the casing and located substantially in the horizontal central plane through the axis of the shaft D. From the inner edge of said web H and preferably integral therewith, is a breaker face portion J having serrations and thus located with its top end substantially in said horizontal plane and slidable with the web portion. The said web, and plate portion of the casing, are firmly secured together by bolt and slot connection or otherwise, to allow of horizontal adjustment of the web and breaker face toward and away from the hammer circle. In the upper end of the breaker plate and web is provided a semi-circular socket K in which is pivotally mounted the rounded end L of a slanting adjustable hopper bottom M the lever end of which is thus adjustably located in proximity to the path of the hammers and may be moved by its supporting bearing horizontally towards and away from the hammers. The hopper bottom inclines upward and outward from the socket bearing at inclinations that may be varied according to the angle of repose of various materials from substantially 30 degrees to 60 degrees with the central horizontal plane. Means for securing the bottom at any inclination are provided, such as rods N passing through slots O in the hopper sides, which slots are formed in arcs struck from the socket bearing at the lower end, and are wide enough to permit horizontal adjustment of the lower end of the hopper bottom when moved horizontally by the adjustment of the breaker plate web or other movable piece. These rods pass through the hopper sides and clamp the hopper bottom in any adjusted position and inclination.

It has been found that when wood cores are fed to a crusher such as above described, having the hopper bottom adjusted to such an inclination that the cores will slide into the path of the hammers at a regular speed, that they will be reduced upon the breaker plate and cage efficiently. The angle made between the hopper bottom and the breaker face is always an obtuse angle and the material is not drawn into the rotor chamber with consequent danger of clogging the machine, as is the case in other forms in which the hopper and breaker plate are substantially tangent to the cage, and located below the horizontal central plane, and by such inclination and location, tend to rush the feed into the rotor chamber faster than the hammers can reduce it. In my construction above described, the inclination of the hopper bottom is varied to suit the material whether it be wood cores, beef cake, or other material to be reduced, and the material is retarded by a suitable slanting position of the hopper bottom, so as not to be drawn by the hammers into the rotor chamber faster than it can be reduced over the breaker plate. Material that slides slowly on account of the frictional resistance has the hopper bottom adjusted to a greater angle with the horizontal plane than material that is greasy or otherwise liable to slide quickly down the hopper bottom into the path of the hammers.

At whatever the inclination of the hopper bottom, any adjustment horizontally of the web and breaker plate will carry also the

lower end of the hopper bottom located in the socket bearing, and maintain a proper relation of the upper end of the breaker plate to the hopper bottom. After such adjustment of the breaker plate, the hopper bottom may be clamped in any desired position or inclination according to the kind of material being delivered to the hopper.

I claim:

1. A crusher comprising a rotor having hammers, a breaker plate, a crusher casing having an inlet hopper forming part thereof and provided with an adjustable bottom, the lower edge of which is located directly adjacent to said breaker plate and adapted to be variably inclined to the horizontal to provide for the angle of repose of various materials and make a variable obtuse angle with said breaker plate, and means for securing the inclination of said hopper bottom in adjusted position, substantially as described.

2. A crusher comprising a rotor having hammers, an adjustable breaker plate the top edge of which is located at substantially the central horizontal plane of the rotor and is provided with a socket bearing at the top, a casing having an inlet hopper provided with an adjustable bottom the lower edge of which is pivotally mounted in said socket bearing and is carried forward and backward according to the adjustment of said breaker plate, and means to vary the inclination of said bottom at any adjustment of the breaker plate.

3. A crusher comprising a casing having hopper sides and separate inclined bottom for said hopper adjustably mounted between said sides, a horizontally movable piece mounted in the casing and pivotally connected to the lower edge of the hopper bottom, and clamping means to secure the casing sides and hopper bottom together in any horizontal adjustment of said piece and any inclination of the hopper bottom.

4. In a crusher the combination with rotary hammers, a casing having a hopper and provided with a horizontal plate below said hopper, of an adjustable breaker plate comprising a horizontal web slidingly mounted on said horizontal plate, and having a breaker face portion depending from the inner edge of said horizontal web, and movable to and from the hammer circle together with said web, and means to secure the web and horizontal plate firmly together in any adjusted position, substantially as described.

In testimony whereof I have affixed my signature.

MILTON F. WILLIAMS.