

No. 850,988.

PATENTED APR. 23, 1907.

M. F. WILLIAMS.
COAL CRUSHER.
APPLICATION FILED NOV. 24, 1905.

Fig. 1.

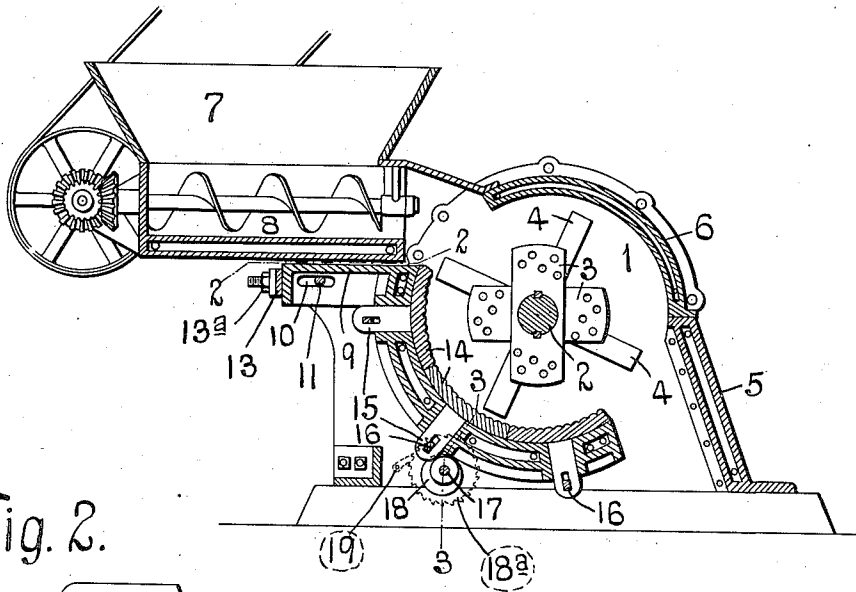


Fig. 2.

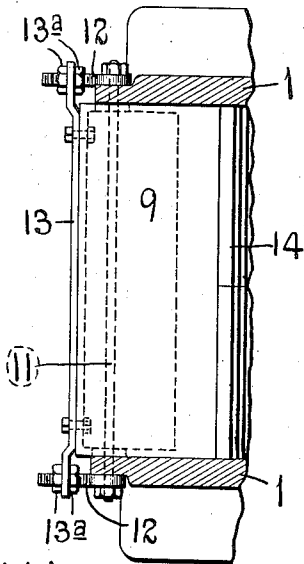
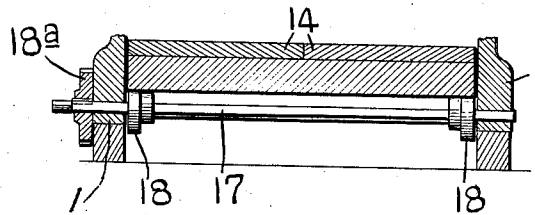


Fig. 3.



Witnesses

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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.

COAL-CRUSHER.

No. 850,988.

Specification of Letters Patent.

Patented April 23, 1907.

Application filed November 24, 1905. Serial No. 288,947.

To all whom it may concern:

Be it known that I, MILTON F. WILLIAMS, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Coal-Crushers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical sectional view through my improved coal-crusher. Fig. 2 is a horizontal sectional view through line 2 2 of Fig. 1, and Fig. 3 is a sectional view through line 3 3 of Fig. 1.

This invention relates to a new and useful improvement in coal-crushers, the object being to provide a crusher with a positive feed, whereby the coal to be reduced may be uniformly fed into the machine, and rotary beaters or hammers acting upon the material as it passes along an imperforate grinding-surface, the reduced material being finally discharged through an opening at the rear of said grinding-surface.

The particular feature of my present invention is the means for adjusting the grinding-surface inwardly and outwardly by one set of adjusting devices which constitute the pivotal point or axis about which the grinding-surface moves when the other set of adjusting devices are operated to move the inner end of the grinding-surface vertically. These two sets of adjusting devices enable the grinding-surface to be so adjusted as to take up wear on the ends of the revolving beaters or hammers and by so doing render the machine most efficient.

My present invention therefore consists in the construction, arrangement, and combination of the above-described parts, as will be hereinafter pointed out in the claims.

In the drawings, 1 indicates the side frame of the machine, in which is mounted a shaft 2, carrying hammer-supports 3. These hammer-supports are each preferably provided with a series of openings at varying distances from the shaft, whereby the pivotal point of the hammers or beaters 4 may be changed, so as to take up wear thereof. The particular construction of the hammer-

supports, however, forms no part of my present invention, as they form the subject of my pending application, Serial No. 260,499, filed May 15, 1905. The rear wall 5 and the top or cover 6 of the casing are preferably cored out, so as to provide steam-chambers to prevent the adherence of wet coal.

7 indicates a hopper in the lower portion of which is a trough containing a feed-chute 8 for feeding coal uniformly into the machine. This trough is also preferably steam-jacketed.

9 indicates a casting of semicircular form having a forwardly-extending shelf-like projection provided with side flanges in which horizontally-disposed slots 10 are formed, said slots receiving a pivot-bolt 11, passing through the side frames of the machine and on whose outer ends are mounted screw-eyes 12.

13 is a bar secured to the forward end of the casting 9, which bar is provided with openings in its ends receiving the screw-eyes 12. Nuts 13^a are arranged on the screw-eyes on each side of the ends of this bar, rendering it possible to adjust the bar and its connected casting 9 forwardly or rearwardly, as required.

The rear end of casting 9 is curved downwardly and rearwardly and cored to form steam-chambers, the upper curved face of said casting providing a seat for the renewable grinding-plates 14, having securing-lugs 15 passing through the casting 9 and held in place by keys 16.

17 indicates a cross-shaft having cams 18 arranged on each end thereof for supporting the inner end of casting 9. The outer end of this shaft is squared or made non-circular to receive a socket-wrench, whereby the shaft may be turned, and in addition the shaft carries a ratchet-wheel 18^a, which coöperates with a pawl 19.

When the machine is first put in use, the revolving beaters are preferably mounted in the openings in their supports which are nearest the shaft 2, and as the ends of the beaters wear the nuts 13^a may be adjusted, so as to move the casting 9 inwardly to take up the wear of the beaters, so far as the forward grinding-plate is concerned. The shaft 17 may also be rotated to position the cams so as to move the rear end of the casting 9 upwardly, said casting in this adjustment

swinging on the bolt 11 as a pivot, and in this manner the rear grinding-plate may be adjusted toward the hammers. Upon continued wearing of the hammers the pivotal points of support of said hammers are adjusted in different openings farther away from the shaft 2, and in this manner the striking ends of the hammers are moved outwardly, so as to increase the diameter of the circular path in which said striking ends travel. Upon such adjustments the casting 9 is reset—that is, moved forwardly and downwardly—so as to compensate for the enlarged diameters of the hammers. As the hammers wear in their newly-adjusted positions the adjusting devices of casting 9 are again resorted to to take up and compensate for the wear of the hammers, so as to insure efficient fine grinding of the material throughout the life of a set of hammers.

I am aware that minor changes in the construction, arrangement, and combination of the several parts may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

30 1. A crusher comprising side frames, revolving beaters, a grinding-surface arranged between the side frames and provided at its upper end with a shelf-like projection having depending flanges provided with elongated

slots, a bolt carried by the side frames and extending through said slots, threaded bolts fastened to the side frames, a bar connected to the shelf-like projection on the grinding-surface and provided with holes through which said bolts extend, and adjusting-nuts on said bolts; substantially as described. 40

2. A crusher comprising side frames, revolving beaters, a grinding-surface arranged therebetween, a through-bolt connecting the side frames and passing through elongated slots in a shelf-like projection on the forward upper edge of said grinding-surface, means mounted on the side frames and cooperating with said grinding-surface for adjusting the same horizontally relatively to said through-bolt comprising threaded members connected to said through-bolt, a device connected to said projection and provided with openings through which said threaded members extend and adjusting-nuts on said members, cams mounted in the side frames cooperating with the lower rear edge of the grinding-surface for adjusting the rear end of said grinding-surface vertically, and means for locking said cams in adjusted positions; substantially as described. 55 60

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 21st day of November, 1905.

MILTON F. WILLIAMS.

Witnesses:

MILTON J. WILLIAMS,
GEORGE BAKEWELL.