UNITED STATES PATENT OFFICE.

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SOFT-COAL CRUSHER.

984,406.


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To all whom it may concern:

Be it known that I, John H. Wiestner, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Soft-Coal Crushers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to soft coal crushers and has for its object to provide a simply constructed and inexpensive device especially adapted for use in the home.

The invention comprises a casing fitted with a screw having graduated grooves adapted to receive large pieces of soft coal at one end of the casing and deliver it in pulverized form at the other end.

The invention also consists of the particular features of construction and combinations of parts hereinafter described and specified in the claims.

In the accompanying drawing illustrating the preferred embodiment of my invention: Figure 1 is a side elevation of the crusher as it appears ready for use. Figure 2 is a central longitudinal section. Figure 3 is an end view of the casing with the screw removed, and Figure 4 is a detailed view of the screw.

The casing 1 is made of cast iron or other suitable material in the general form of a cylinder with projecting flanges 2 at the base for securing it to a bench or table and a hopper 3 at one end. The diameter of the hopper is preferably equal to that of the cylinder in order that pieces of coal of maximum size may be introduced into the crusher. The end of the casing at which the hopper is arranged is closed, as at 4, except for a comparatively small opening 5 in its center. The other end of the casing is open and somewhat enlarged, as at 6, for a space equal to about one-fourth of the entire length of said casing. The interior diameter as well as the exterior diameter is greater at this point, and longitudinal ribs 7 are formed at suitable intervals on the inside of this enlarged portion, the inner faces of said ribs being flush with the inside wall of the main portion of the casing.

The screw 8 fits snugly into the casing except at its delivery end which is arranged opposite the ribs 6 and which is slightly tapered, as at 8", to facilitate the delivery of the pulverized coal. The other end of said screw carries a central projecting lug 9 which extends through the opening 5 in the closed end 4 of the casing. A crank 10 is secured on the projecting portion of said lug and in addition to serving as a means for rotating the screw retains said screw in place in the casing. When the crank is removed, the screw may be readily and quickly taken out through the open end of the casing. It will be noted that because the screw fits the casing no end bearings are required in addition to the crank lug.

The grooves in the screw are graduated, 70 that is they are broad at the end arranged below the hopper but become gradually narrower as they approach the delivery end of the casing, as is best illustrated in Figure 2. It will be noted that the enlarged portion at the delivery end of the casing extends within a short distance of the hopper so that the narrower grooves are compensated for by the extra space in the casing between the ribs 6 so that the coal as it is crushed will not clog in the machine. The tapered end of the screw also facilitates the delivery of the crushed or pulverized coal as fast as it is fed through the casing and crushed by said screw. The width of the groove immediately below the hopper is preferably equal to the diameter of said hopper in order that pieces of coal as large as can be inserted into the hopper may be received and acted upon by the screw. The grooves in the screw are formed by one continuous spiral rib 8°, which extends the full length of the screw, and two shorter ribs 8° which extend from the middle of the screw to its discharge end. The broadened part 8° of the groove, which is arranged below the inlet opening in the casing, is formed between adjacent coils of the rib 8° by reason of the absence of the two short ribs 8°. The latter begin below this broad portion of the groove and extend from that point to the discharge end of the screw. In operation, the piece of coal will be taken into the broad portion of the groove and crushed at the first revolution of the screw by the short ribs. It will be noted that the ribs on the screw as well as the longitudinal ribs 7 on the interior of the discharge end of the casing are blunt, it being unnecessary to have them sharpened, as in a food cutter.

While this device is especially designed for crushing soft coal, it may also be employed for crushing other minerals without
departing from my invention. I also reserve the right to make such changes in detail as may fairly fall within the scope of the following claims.

1. In a crusher of the character described, the combination, with a casing having a straight cylindrical bore, a portion of the inner surface of said casing, extending inward from the discharge end thereof, being grooved leaving longitudinal ribs having their inner faces flush with the inner surface of the remainder of the casing, of a screw fitted in said casing, and means to turn said screw.

2. In a crusher of the character described, the combination, with a casing having a straight cylindrical bore, a portion of the inner surface of said casing, extending inward from the discharge end thereof, being grooved leaving longitudinal ribs having their inner faces flush with the inner surface of the remainder of the casing, of a screw fitted in said casing, the portion of said screw arranged within said ribs being tapered to its discharge end, and means to turn said screw.

3. In a crusher of the character described, the combination, with a casing having a straight cylindrical bore, a portion of the inner surface of said casing, extending inward from the discharge end thereof, being grooved leaving longitudinal ribs having their inner faces flush with the inner surface of the remainder of the casing, of a screw fitted in said casing, said screw having graduated grooves therein which become narrower as they approach the discharge end thereof, the portion of said screw arranged within said rib being tapered, and means to turn said screw.

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

JOHN H. WIESTNER.

Witnesses:

JOHN BRADLEY,

HERMAN YOERKE.