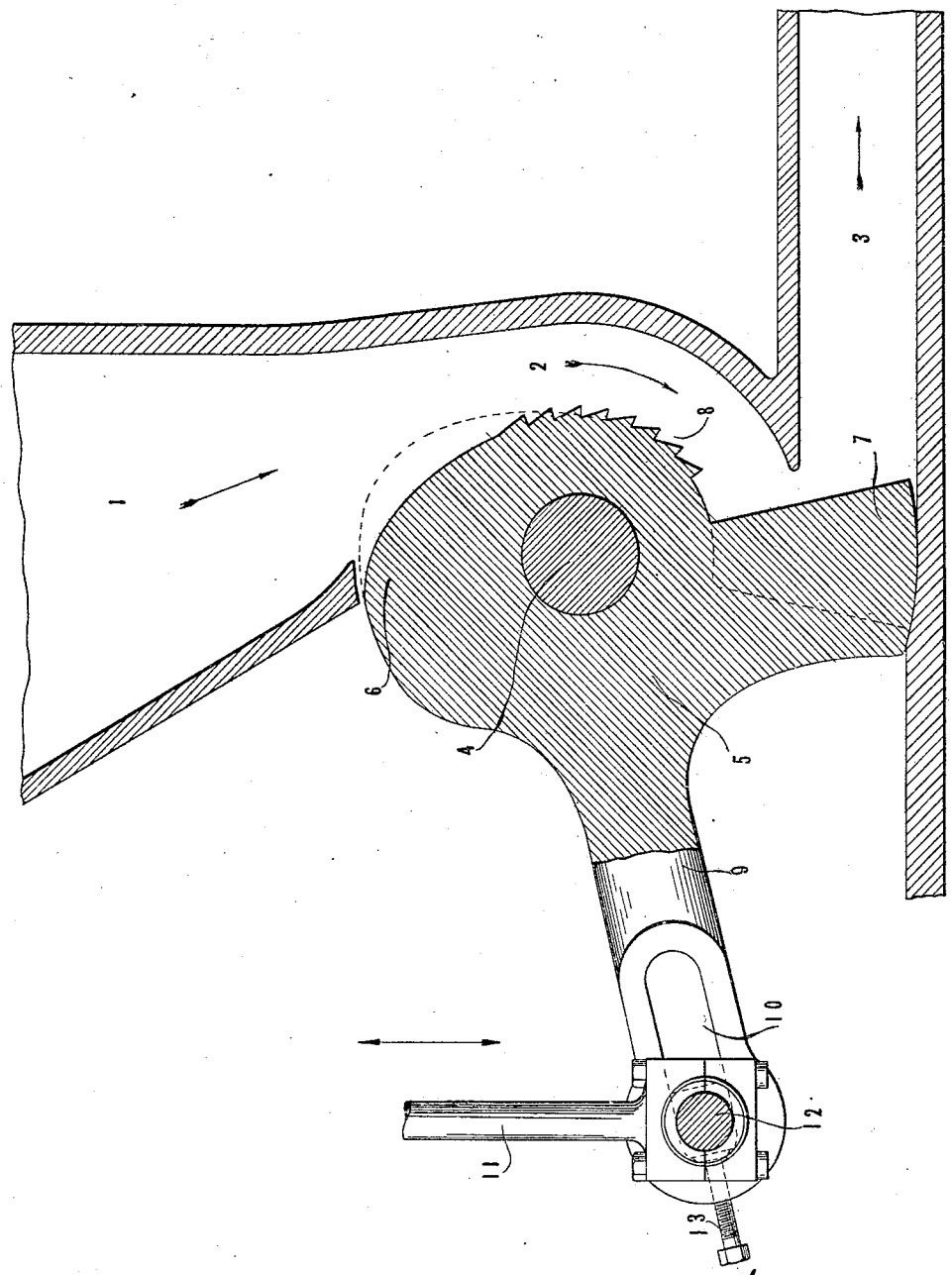
G. W. BULLEY.

STOKING APPARATUS.

APPLICATION FILED DEC. 3, 1906.

956,757. Patented May 3, 1910.



WITNESSES

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STOKING APPARATUS.

956,757. Specification of Letters Patent. Patented May 3, 1910.

Application filed December 3, 1906. Serial No. 345,989.

To all whom it may concern:

Be it known that I, GEORGE W. BULLEY, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Stoking Apparatus, 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.

This invention relates to apparatus for handling mineral products and the like, and, with regard to its more specific features, to the crushing and feeding of coal as in stoking apparatus.

Certain of the independent objects of this invention are to provide simple, compact and efficient means for crushing and for feeding mineral products.

Another object is to provide means of the above type which are alternative in action and tend to render uniform the power required for driving.

Other objects are to provide means of each of the first mentioned types the action of which is readily adjustable.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

The accompanying drawing is a diagrammatic sectional view of one of various possible embodiments of this invention.

Referring now to the accompanying drawing, there is shown a hopper 1 leading through an intermediate channel 2 to a feeding conduit 3, which in turn may lead to the furnace or other desired receptacle of the material acted upon by this apparatus. Pivotally mounted within the walls of the channel 2, as by means of a heavy pivot 4, is a casting 5 comprising at its upper portion an abutment 6 and at its lower portion a somewhat similar part 7 facing in part the channel 2 and at its lower end the conduit 3. Intermediate abutments 6 and 7 upon the member 5 there are provided a plurality of teeth 8, preferably of the ratchet form shown. The arm or shank 9 of the casting 5 is connected, as by the slot 10, with a pitman 11, the bearing of the pin 12 of this pitman being adjustable within the slot, as by the screw 13, in a well known manner.

It may here be noted that by the term "hopper" as used throughout this specification and the following claims is meant any receptacle adapted for the temporary storage of material, and by the term "ratchet teeth" is meant teeth having one of their lateral faces of more abrupt or more nearly radial conformation than the opposite face.

The operation of the above described embodiment of my invention is substantially as follows: Assuming coal or other material to be fed within the hopper 1 and the casting 5 to be oscillated or rocked through the pitman 11 from any desired source of power, as a crank, the abutment 6 is intermittently swung into the mass of coal, and any lumps or large pieces obtaining therein are crushed to the desired proportions for efficient use. The crushed material dropping within the channel 2 is positively fed by the oscillating teeth 8 toward the open end of conduit 3, into which it is forced by the lower end of abutment 7. The engagement of the abutment 6 and the feeding teeth 8 with the material to be crushed alternating with the engagement of the abutment 7 therewith, tends, in a measure, to balance the load upon the driving mechanism.

It will thus be seen that there is provided apparatus of simple, cheap and non-complicated construction in which the objects of this invention are attained and the above enumerated advantages are, among others, present. The arc through which the casting 5 swings is readily adjustable, as by the slot 10, assuming a constant travel of the pitman 11, so as to provide for any rate of feed, and the rate of crushing of material is varied in proportion so as to supply the prepared coal to the feeding mechanism at precisely the desired rate.

The several parts are individually so simple as to be readily replaced in the remote contingency of the same breaking, and are so few in number and so certain in action as to render the apparatus reliable to a high degree and well suited for the hardest practical use.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all

matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In an apparatus of the class described, in combination, a hopper, a conduit, a pivotally mounted member in said hopper, and means for oscillating said member to crush the material and feed the same to the conduit when moving in one direction and force the crushed material delivered to the conduit therethrough when moved in the opposite direction.

2. In apparatus of the class described, in combination, a receptacle, a conduit, a pivotally mounted member provided with ratchet teeth projecting into said receptacle and adapted to engage the contents thereof, means adapted to move said member alternately in opposite directions whereby said teeth upon the forward stroke of said member will propel the contents of said receptacle in a predetermined direction and deliver the same adjacent the mouth of said conduit, a portion of said member being adapted upon its return stroke to feed the material thus delivered into said conduit, and means adapted to vary the extent of movement of said member.

3. In apparatus of the class described, in combination, a hopper, a discharge conduit, means adapted to feed material from said hopper to said discharge conduit including a pivotally-mounted member provided with a pair of abutments, one of which is adapted upon the forward movement of said member to swing into the material and crush the same and the other of which is adapted upon the rearward movement of said member to swing toward said discharge conduit and force the crushed material thereinto, and means adapted to oscillate said pivotally-mounted member, the axis of said pivotally-mounted member being disposed between said abutments whereby said abutments are alternately operative.

4. In apparatus of the class described, in combination, a receptacle, a discharge conduit disposed beneath said receptacle, a pivotally-mounted member provided with a pair of abutments, one of which forms a wall of said receptacle and is adapted to be thrown thereinto upon the forward movement of said member to crush the contents thereof and the other of which is adapted to swing toward the mouth of said discharge conduit upon the return movement of said member, said receptacle being so disposed as to discharge into the path of travel of said second-mentioned abutment, and means adapted to oscillate said pivotally-mounted member.

5. In apparatus of the class described, in combination, a conduit, a hopper, means leading from said hopper to said conduit, a member pivotally mounted adjacent said means and provided with a pair of abutments, one of which is adapted to swing into and crush the material passing from said hopper to said conduit and the other of which is adapted to swing toward and away from the mouth of said conduit and force the crushed material thereinto, said pivotally-mounted member being provided with ratchet teeth disposed between said abutments and adapted to engage and tend to feed the material from one of said abutments into the path of travel of the other thereof, and means adapted to oscillate said pivotally-mounted member, the axis of said pivotally-mounted member being disposed between said abutments, whereby said abutments are alternately operative.

6. In apparatus of the class described, in combination, a conduit, a hopper, means leading from said hopper to said conduit, a member pivotally mounted adjacent said means and provided with a pair of abutments, one of which is adapted to swing into and crush the material passing from said hopper to said conduit and the other of which is adapted to swing toward and away from the mouth of said conduit and force the crushed material thereinto, said pivotally-mounted member being provided with ratchet teeth disposed between said abutments and adapted to engage and tend to feed the material from one of said abutments into the path of travel of the other thereof, means adapted to oscillate said pivotally-mounted member, the axis of said pivotally-mounted member being disposed between said abutments whereby said abutments are alternately operative, and means adapted to vary the arc through which said pivotally-mounted member oscillates.

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

GEORGE W. BULLEY.

Witnesses:
R. S. BLAIR,
ARTHUR G. PREVIN.