This invention relates to coal washing and separating machines and has for an object the provision of a machine in which coal may be washed and cleaned, and the washed coal separated from the dust and other extraneous materials.

To this end, the invention includes a hopper which is adapted to receive the coal, with means to supply and distribute water throughout the hopper to wash or flush the lumps of coal over the edges of the hopper, together with means to discharge the dust through the bottom of the hopper.

The invention further includes a discharge cylinder of novel construction for controlling the discharge of dust and for providing a closure for the bottom of the hopper.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings:

25 Figure 1 is a side elevation of the invention.
Figure 2 is a section on the line 2—2 of Figure 1.
Figure 3 is an end view.
Figure 4 is a section on the line 4—4 of Figure 2.
Figure 5 is an end view partly in section showing one end of the rotary cylinder.
Figure 6 is a fragmentary longitudinal sectional view of the same with one end of the cylinder in elevation.
Figure 7 is an end view partly in section looking at one end of the cylindrical chamber.
Figure 8 is a fragmentary view of the same with parts in elevation and parts in section.

Referring to the drawings in detail wherein like characters of reference denote corresponding parts, the reference character 10 indicates a hopper which may be rigidly supported in any desired manner, or it may be rockably supported.

45 The hopper is adapted to receive coal from screens (not shown) and these screens may be stationary where the hopper is movable, and may be movable where the hopper is stationary.

The hopper as shown comprises a transversely curved main bottom 11 and end plates 12, while the upper edge of the hopper is inclined as shown at 13.

The hopper further includes a supplemental bottom 14 which is provided with perforations 15 and this supplemental bottom is spaced from the main bottom 11 as shown.

Both the bottom 11 and the bottom 14 are provided with longitudinally extending openings which provide a discharge opening 16 which extends longitudinally of the bottom of the hopper and whose opposed walls are defined by extensions 1′ which form a part of the curved walls 18 of a cylindrical chamber 19. This chamber 19 communicates with the hopper through the opening 16. The main and false bottoms 11 and 14 are secured to the extensions 17 of the walls 18 as shown at 20. Rods 21 extend longitudinally upon the outside of the chamber 19 and pass through the end plates 12 and connect plates 22 upon the outside of these end plates.

The chamber 19 is provided with a lining 23 and rotating within this chamber is a cylindrical discharge member 24. This member includes radially disposed wings 25 and certain of these wings have their outer ends connected by curved plates 26 whose edges are dovetailed into the wings as shown at 27. Heads 28 are connected to the opposite ends of the wings as shown at 29 and these heads, together with the wings form circumferentially spaced pockets 30 which are adapted to be moved into and out of register with the openings 16 in the bottom of the hopper. Plates 31 are removably secured along one edge of each of the pockets.

The cylindrical discharge member is fast upon a shaft 32 which passes through packing glands 33 at opposite ends of the hopper.

An outlet opening 34 is provided in the bottom of the chamber 19 so that the pockets 30 are also brought into communication with this outlet.

The main bottom 11 of the hopper has extending therefrom upon opposite sides of the opening 16, spaced nippies 35 and these nippies are connected to a flexible or other water supply pipe 36 through the medium of the union 37.

The extension 17 are provided with oppositely inclined ports 38.

Coal to be washed and separated is supplied to the hopper and water under pressure is supplied through the pipes 36. This water is distributed throughout the hopper by means of the perforated false bottom 14, so that the coal is washed and the lump coal is floated over the low edge of the hopper. The coal dust and other extraneous material passes outward through the opening 16 into the pockets 30 and is discharged through the outlet opening 34. Water discharging upward and inward through the inclined ports 38 agitates the coal at the meeting points of the jets of water so provided and prevents the lump coal from passing through the opening 16.

The invention is susceptible of various changes in its form, proportions and minor details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claims.

Having described the invention what is claimed is:

1. In a coal washer and separator, a hopper having inner and outer walls spaced from each other.
other, the inner wall being perforated, and aligned openings being formed in the walls at the bottom of the hopper, a cylindrical discharge chamber beneath said hopper having a lower outlet opening and a neck extending upwardly through the opening of the walls of the hopper to establish communication between the chamber and hopper, the side walls of said neck having inclined passages formed therein, communicating with the space between the walls of the hopper, means for feeding water into the space between the walls of the hopper for passage through the perforated inner wall and the passage of said neck to agitate coal in the hopper and prevent clogging of the neck, and a discharge member rotatably mounted in said chamber and formed with pockets successively moved from a filling position beneath said neck to a discharging position above the outlet opening as the member is rotated.

2. In a coal washer and separator, a hopper having inner and outer walls spaced from each other, the inner wall being perforated, and aligned openings being formed in the walls at the bottom of the hopper, a cylindrical discharge chamber beneath said hopper having a lower outlet opening and a neck extending upwardly through the opening of the walls of the hopper to establish communication between the chamber and hopper, the side walls of said neck having inclined passages formed therein, communicating with the space between the walls of the hopper, means for feeding water into the space between the walls of the hopper for passage through the perforated inner wall and the passage of said neck to agitate coal in the hopper and prevent clogging of the neck, and a discharge member rotatably mounted in said chamber and consisting of a cylindrical body extending axially through the chamber and having heads at its ends and radially extending vanes defining pockets, certain of said pockets being opposed and open at their outer ends, and other pockets having their outer ends closed by transversely curved plates.

3. In a coal washer and separator, a hopper having inner and outer walls spaced from each other, the inner walls being perforated, and aligned openings being formed in the walls at the bottom of the hopper, a cylindrical discharge chamber beneath said hopper having a lower outlet opening and a neck extending upwardly through the opening of the walls of the hopper to establish communication between the chamber and hopper, the side walls of said neck having inclined passages formed therein, communicating with the space between the walls of the hopper, means for feeding water into the space between the walls of the hopper for passage through the perforated inner wall and the passage of said neck to agitate coal in the hopper and prevent clogging of the neck, and a discharge member rotatably mounted in said chamber and having heads at its ends and radially extending vanes defining pockets, certain of said pockets being open at their outer ends and intervening pockets closed, and wear plates removably secured against side faces of certain of said vanes within the open pockets.

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