PORTABLE GRINDING MILLS

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Application February 13, 1952, Serial No. 271,390

5 Claims. (Cl. 241—101)

This invention relates to improvements in portable grinding mills.

The main objects of the present invention are:

First, to provide a portable mill or grinder with a discharge pipe which may be adjusted to any desired angular position relative to the grinder for the delivery of the ground material in the most advantageous manner.

Second, to provide a structure of this character in which the discharge pipe, while being adjustable, is effectively and fixedly supported in its selected adjusted position.

Third, to provide a structure having these advantages which is simple and very economical in its operation.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is pointed out in the claims.

A structure embodying the features of the invention and the manner of carrying out the method is clearly illustrated in the accompanying drawings, in which:

Fig. 1 is a front perspective view of a grinder embodying the features of my invention, with the discharge pipe adjusted to one of its operative positions.

Fig. 2 is a vertical section on a line corresponding to line 2—2 of Fig. 3.

Fig. 3 is an enlarged fragmentary side elevation view from the right of Fig. 2.

Fig. 4 is a fragmentary view in vertical section on a line corresponding to line 4—4 of Fig. 2.

I have illustrated my invention as embodied in a grinding mill of the type shown in the Erickson Patent No. 2,357,544, issued January 19, 1951, but it should be understood that my invention is adapted for embodiment in other mills of this type.

The embodiment illustrated comprises a casing 1 for the lower section of the discharge pipe 14, an elongated upright discharge spout 16, an elongated delivery spout 26, and an elongated U-shaped discharge spout 31 secured to the casing 14.

The discharge pipe comprises a tubular lower section 14 and a curved upper section 15. The lower section has a coupling member 16 at its upper end, while the upper section has a coupling member 17 at its lower end. These coupling members are of angle section, their vertical flanges 18 being disposed within the pipe sections with their horizontal flanges 19 projecting outwardly to receive the bolts 20. An annular plate-like bearing member 21 is disposed between the coupling members and clamped thereto. This bearing member coacts with the bearing 12 on the discharge spout to rotatably support the discharge pipe.

The discharge spout delivers to a collector 22 which is provided with a delivery chute 23 hinged thereto at 24. This chute is further supported by braces 25 which extend from the collector and are attached to the lower section 14 of the discharge pipe adjacent at its lower end at 26. The section 14 has a vertical slot extending from its lower end. Ears 28 are secured to the section 14 at its lower end on opposite sides of the slot as shown in Fig. 3. The threaded bolt 29 is fixedly secured to one of the ears and disposed through the other to receive the clamping nut 30 which has a spacing sleeve portion 31 so that the nut, which is in the form of a hand wheel, is positioned for grasping at the side of the pipe.

The rotor 2 constitutes a blower for the ground material which is discharged through the spout 10 into the discharge pipe and delivered thereby into the collector and discharged from the collector mainly by gravity. The discharge pipe is thus supported so that it may be swivelly adjusted to any desired position, and this permits the collector to be moved completely around the mill as may be desired for the most efficient discharge. This also permits the mill to be located in the most convenient position for its operation.

The delivery may be to wagons or trucks, feed bunkers or buildings. Also the delivery pipe may be supported according to wind conditions. The discharge pipe is easily adjusted as it is very effectively supported in its adjusted position.

I have illustrated and described my invention in a highly practical embodiment thereof. I have not attempted to illustrate or describe other adaptations or embodiments which, I contemplate, as I believe this disclosure will enable those skilled in the art to embody or adapt my invention as may be desired.

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

1. In a mill the combination of a grinder including a casing, and a rotor, said casing and rotor coacting to provide a blower for discharging the ground material, an elongated upright discharge spout 16, said spout having an external annular bearing member adjacent its upper end, a discharge pipe comprising a tubular lower section 14 embracing said discharge spout, and a curved upper section extending from the upper end of the lower section, annular coupling members of angular section disposed with their vertical flanges in- and secured to the said lower and upper sections and with their horizontal flanges projecting outwardly therefrom, an annular bearing member clamped between said coupling members and securedly coacting with said bearing member on said discharge spout for rotatably and adjustably supporting the discharge pipe thereon, the lower end of the lower section of said discharge pipe having a vertical slot therein, a clamp carried by said lower end for clamping the lower end thereof in its adjusted position, a collector mounted on and to which the curved end of said discharge pipe delivers, and braces connecting the lower end of the collector to the discharge pipe adjacent its lower end.

2. In a mill the combination of a grinder including a casing, and a rotor, said casing and rotor coacting to provide a blower for discharging the ground material, an elongated upright discharge spout for said casing, said spout having an external annular bearing member adjacent its upper end, a discharge pipe comprising a tubular lower section embracing said discharge spout, and a curved upper section extending from the lower end of the lower section, annular coupling members of angular section disposed with their vertical flanges in- and secured to the said lower and upper sections and with their horizontal flanges projecting outwardly therefrom, an annular bearing member clamped between said coupling members and securedly coacting with said bearing member on said discharge spout for rotatably and adjustably supporting the discharge pipe thereon, the lower end of the lower section of said discharge pipe having a vertical slot therein, a clamp carried by said lower end for clamping the lower end thereof in its adjusted position, a collector mounted on and to which the curved end of said discharge pipe delivers, and braces connecting the lower end of the collector to the discharge pipe adjacent its lower end.

3. In a mill the combination of a grinder including a casing, and a rotor, said casing and rotor coacting to provide a blower for discharging the ground material, an elongated upright discharge spout for said casing, said spout having an external annular bearing member adjacent its upper end, a discharge pipe comprising a tubular lower section embracing said discharge spout, and a curved upper section extending from the lower end of the lower section, annular coupling members of angular section disposed with their vertical flanges in- and secured to the said lower and upper sections and with their horizontal flanges projecting outwardly therefrom, an annular bearing member clamped between said coupling members and securedly coacting with said bearing member on said discharge spout for rotatably and adjustably supporting the discharge pipe thereon, the lower end of the lower section of said discharge pipe having a vertical slot therein, a clamp carried by said lower end for clamping the lower end thereof in its adjusted position, a collector mounted on and to which the curved end of said discharge pipe delivers, and braces connecting the lower end of the collector to the discharge pipe adjacent its lower end.
adjacent its upper end, a discharge pipe comprising a tubular lower section embracing a substantial length of said discharge spout, and a curved upper section extending from the upper end of the lower section, a bearing member mounted on the connection between the upper and lower sections of said discharge pipe and supportedly coacting with said bearing member on said discharge spout for rotatably adjusting the discharge pipe thereon, means on the lower end of the lower section of said discharge pipe for securing said discharge pipe in its adjusted position upon said spout, a collector to which the curved end of said discharge pipe delivers, and a brace between the collector and the discharge pipe, said lower section of said discharge pipe and the coacting discharge spout constituting the sole support for the discharge pipe.

4. In a mill the combination of a grinder including a casing, and a rotor, said casing and rotor coacting to provide a blower for discharging the ground material, an elongated upright discharge spout for said casing, said spout having an external annular bearing member adjacent its upper end, a discharge pipe comprising a tubular lower section embracing a substantial length of said discharge spout, and a curved upper section extending from the upper end of the lower section, a bearing member mounted on the connection between the upper and lower sections of said discharge pipe and supportedly coacting with said bearing member on said discharge spout for rotatably adjusting the discharge pipe thereon, and means on the lower end of the lower section of said discharge pipe for securing said discharge pipe in its adjusted position upon said spout, said lower section of the said discharge pipe and the coacting discharge spout constituting the sole support for the discharge pipe.

5. In a mill the combination of a grinder including, a casing provided with an upright elongated discharge spout provided with an external bearing spaced slightly below its upper end to provide a shoulder around the inside of the bearing, a discharge pipe comprising an elongated upright lower section embracing a substantial length of said discharge spout and a curved upper section extending from the upper end of the lower section, said discharge pipe having a bearing mounted at a section joint thereof and rotatably supported by said bearing on said spout, the lower end of said upright section being slotted, and means for clamping said lower section in its adjusted positions upon said spout, said lower section of the said discharge pipe and the coacting discharge spout constituting the sole support for the discharge pipe.

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