May 29, 1934. E. G. MYERS 1,960,346

HAMMER MILL

Filed Nov. 11, 1931

FIG. 1.

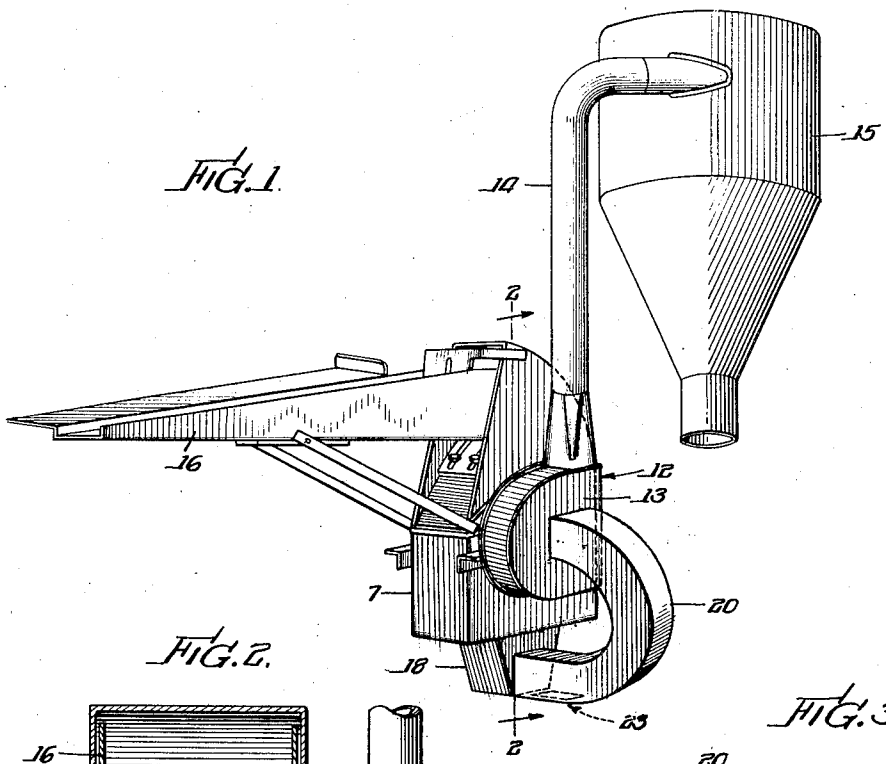


FIG. 2.

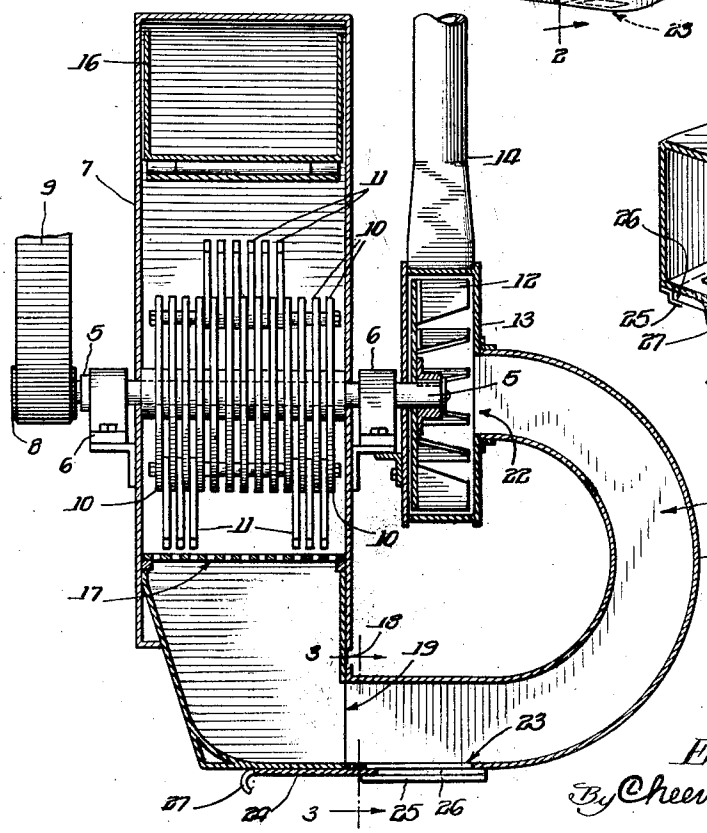
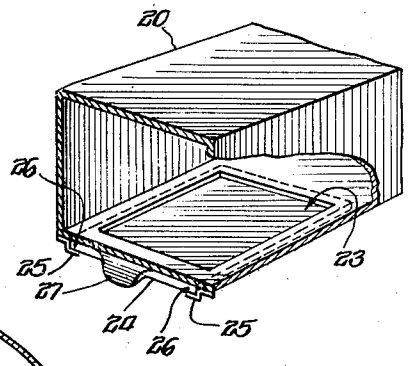


FIG. 3.



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HAMMER MILL

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Application November 11, 1931, Serial No. 574,300

2 Claims. (Cl. 83—11)

This invention relates to hammer mills and particularly to hammer mill construction operatively connected to a blower arrangement and a hopper into which said blower exhausts. More specifically, the invention relates to improved means connected to a hammer mill for making the hammer mill adapted for other than its original use.

The primary object of the invention is to provide a hammer mill which has new and improved means operatively connected thereto whereby the hammer mill may be employed to grind and pulverize not only fodder for making meal and other finely ground feed, but also to make the hammer mill convertible as a corn cracker.

Another object of the invention is to provide a hammer mill having a transverse shaft to which the hammers are connected and a blower or fan operatively connected to the transverse shaft, said hammer mill having an opening provided in its bottom and a member fixed to a part of the hammer mill and providing a passage from the opening in the bottom of the hammer mill to the fan-eye of the fan or blower.

A further object is to provide a hammer mill which has a blower arranged on one side thereof and an opening provided in the bottom of the hammer mill, there being a circular-shaped member or elbow forming a passage leading from the opening in the bottom of the hammer mill to an opening provided in the side of the blower or fan, said member or elbow having an opening therein closed by a slidable member or door, thereby permitting the hammer mill to operate as usual when the door or slide is closed and further permitting the hammer mill to act as a corn cracker when the door or slide is open.

Numerous other objects and advantages will be apparent throughout the progress of the following specification.

The accompanying drawing illustrates a selected embodiment of the invention and the views therein are as follows:

Fig. 1 is a detail perspective view of the improved hammer mill.

Fig. 2 is a detail sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a detail sectional view on the line 3—3 of Fig. 2 showing the door or slide in closed position.

The hammer mill comprises a transverse shaft 5 which is supported in bearings or journals 6 operatively fixed to the hammer mill casing 7. A pulley 8 is fixed to one end of the shaft and has a belt or other member 9 wrapped thereabout and driven by a prime mover (not shown). A plurality of spaced circular members 10 are arranged inside of the casing 7 and carry a plurality of circumferentially arranged pivotally mounted hammers 11.

A fan or blower 12 is operatively connected to the opposite end of the shaft 5 and is driven by said shaft. The fan or blower is encased in a casing 13, and a pipe 14 is operatively connected to the casing 13, and leads to a hopper 15 of the cyclone type. A feed chute or trough 16 is operatively connected to the front end of the blower as shown in Fig. 1. This chute or trough is preferably of the type disclosed and claimed in the copending application, Serial No. 635,981, filed October 3, 1932, by Ralph L. Sherman.

The hammer mill is provided with an opening 17 provided in its bottom to which a hopper or receptacle 18 having a side opening 19 is operatively connected. The hopper may be permanently fixed in position or it may be removably connected to the body of the hammer mill, as desired. An elbow 20 comprising a circular-shaped member, preferably rectangular in cross section, is connected to the receptacle 18 to provide a continuous passage 21 leading to an opening 22 formed in the front face of the blower 12.

The elbow 20 is provided with an opening 23 formed in the bottom thereof which is closed by a sliding door or panel 24. This door or panel may be swingingly connected, if desired, but it is preferably made slidable, as shown, there being spaced oppositely disposed members 25 mounted on the bottom of the elbow in such a manner as to provide longitudinal grooves 26 into which the door or panel 24 is slidable. The door or panel 24 may be provided with a grip or handle portion 27 to facilitate in operating the same.

When it is desired to have the hammer mill operate for its usual purpose, which is for grinding or pulverizing materials for making meal and other cattle food, the panel or door 24 is arranged in closed position as shown in Fig. 3. Thus, during operation, the hammers 11 rotate at a terrific speed and grind up and pulverize the material which will then fall into the receptacle 18. The fan or blower 13 creates a suction in the elbow 20 and draws up the pulverized material, depositing it in the hopper 15. When it is desired to use the hammer mill as a corn cracker, the rotation of the shaft 5 is reduced or lowered causing the centrifugal action of the hammers 11 to be likewise reduced. Corn fed into the hammer mill is broken up into particles of various sizes, many of the particles be-

ing relatively large, that is to say, a kernel of corn will be broken up into, for example, two to four parts plus some additional finer material caused by the hammering operation. This finer material is drawn up through the elbow 20 and deposited in the hopper 15 in the usual manner even though the door or panel 24 is in open position as shown in Fig. 2. However, the heavier particles, which comprise the cracked corn, will fall through the opening 23 in the bottom of the elbow. Thus, by connecting the open bottom of the hammer mill to the fan-eye of the fan or blower and by providing an opening in the bottom of the elbow, the hammer mill may be utilized not only for the purpose for which it was originally intended, but also for the purpose of cracking corn.

The invention provides simple, efficient means for converting an ordinary hammer mill into a corn cracking machine. The particular elbow construction permits the suction therein to draw up the finer or minute particles of the corn and still prevent the larger cracked and whole kernels of corn from being drawn up and deposited in the hopper. The elbow is made circular and has no sharp joints, thereby providing a smooth unobstructed passage into which the material is sucked up by the blower. The hammer mill, when employed for its usual purpose, has the door or panel 24 closed but when it is desired to convert the hammer mill into a corn cracker, the door is left open.

The invention provides relatively simple means for making a single machine perform the operation of two separate and distinct machines. In practice, the hammer mill with its cooperating chute and hopper is fixed to an automobile frame so that it can be readily transported from one place to another, the grinding and cracking operations being performed while the hammer mill is fixed to the chassis of the automobile. By the provision of the simple means herein disclosed, an extra corn cracking machine and means for transporting the corn cracking machine is dispensed with.

Changes may be made in the form, construction, and arrangement of the parts without departing from the spirit of the invention or sacrificing any of its advantages, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claims.

The invention is hereby claimed as follows:

1. The combination with a pulverizing hammer mill having a driven transverse shaft, the speed of which is variable, a blower fixed to one end of said shaft and rotated during operation of the shaft, a casing for said blower and having a suction opening and a discharge opening therein, a discharge opening from the mill, and a pipe line leading from the mill discharge to the fan casing suction opening, of means for selectively converting the pulverizing mill to a grain cracking mill comprising the said pipe line having a bottom opening arranged in the bottom thereof between the said suction opening and the said mill discharge, the said bottom opening being substantially as wide as the width of the pipe whereby the mill will, upon variation of the speed of the shaft, crack the grain instead of pulverizing it, the cracked grain discharging out of the last named opening instead of being carried to the fan suction and discharged through the fan discharge.

2. The combination with a pulverizing hammer mill having a driven tranverse shaft, the speed of which is variable, a blower fixed to one end of said shaft and rotated during operation of the shaft, a casing for said blower and having a suction opening and a discharge opening therein, a discharge opening from the mill, a pipe line leading from the mill discharge to the fan casing suction opening, of means for selectively converting the pulverizing mill to a grain cracking mill comprising the said pipe line having a bottom opening arranged in the bottom thereof between the said suction opening and the said mill discharge, the said bottom opening being substantially as wide as the width of the pipe whereby the mill will, upon variation of the speed of the shaft, crack the grain instead of pulverizing it, the cracked grain discharging out of the last named opening instead of being carried to the fan suction and discharged through the fan discharge, and a door slidably positioned on the bottom of the pipe and adapted to close the opening therein to permit the mill to be reconverted to a pulverizing mill, the pulverized material being discharged through the fan discharge opening when said door is closed.

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