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SUCTION CONVEYING MEANS FOR A HAMMER MILL

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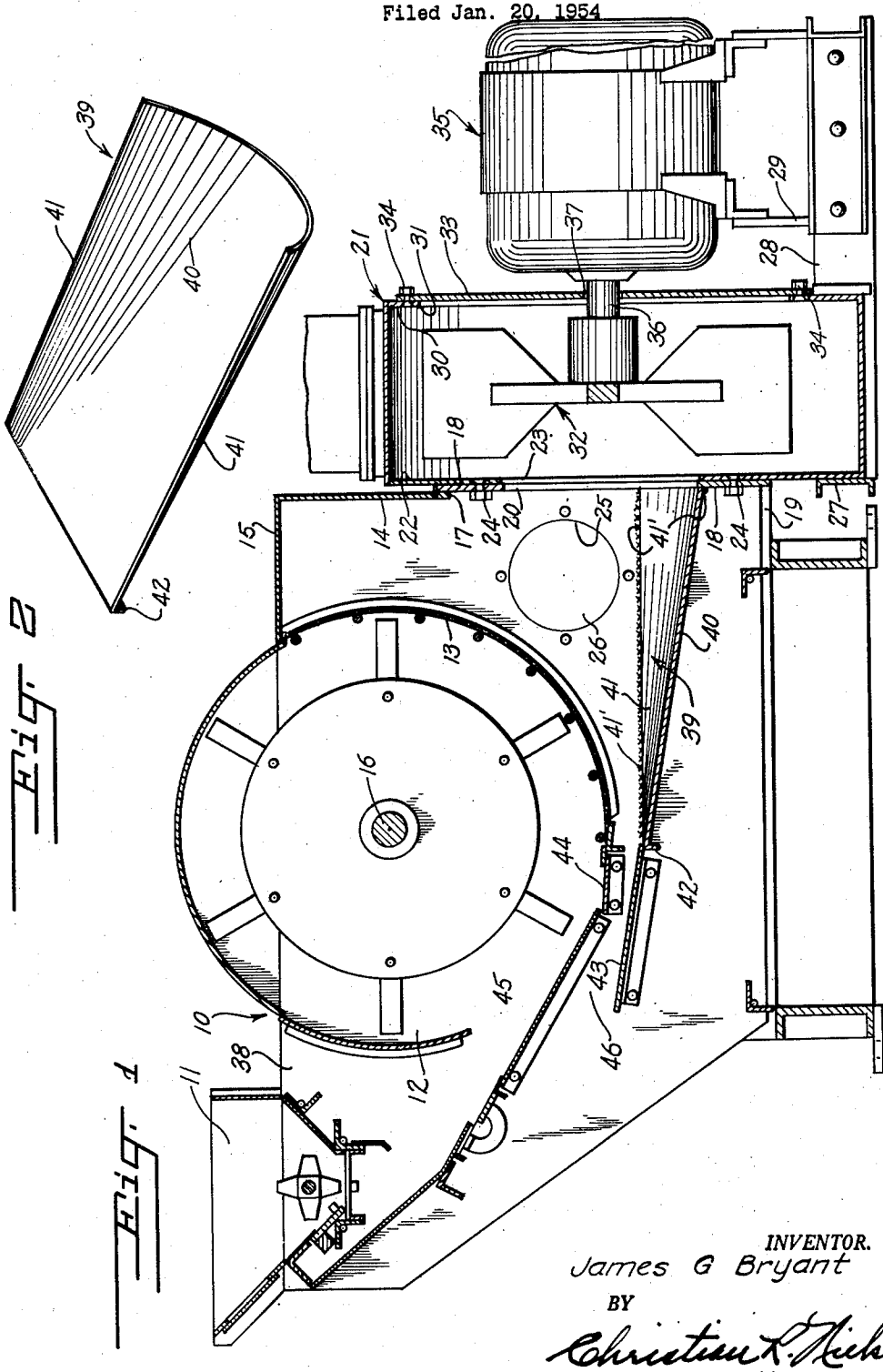


Fig. 2

Fig. 1

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SUCTION CONVEYING MEANS FOR A HAMMER MILL

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1 Claim. (Cl. 241—57)

This invention relates to a hammer mill and more particularly to such a mill wherein the mill is constructed with a suction fan at the discharge end thereof to more effectively draw air and ground material through the screen of the mill.

The cardinal object of the invention is the provision of a suction fan at the discharge end of the hammer mill for creating a suction beneath the screen of the mill for assisting passage of ground material into the fan housing.

It is also an important object of the invention to provide a hammer mill wherein the suction fan is positioned at one end of the mill and which is rotatable at right angles to the rotation of the hammer mill grinding unit to thereby create a direct suction of air through the mill.

More specifically, it is an object of the invention to provide a hammer mill wherein an air inlet is so positioned with respect to the grinding compartment and a suction fan located at one end of the mill to create a direct pull upon the air entering the grinding compartment for effecting passage of ground material into the suction fan compartment, as well as to provide an inclined trough beneath the grinding compartment, the latter defining an air inlet for the passage of air beneath the screen of the grinding compartment.

Additional objects, advantages and features of invention will be apparent from the following description, considered in conjunction with the accompanying drawing, wherein,

Figure 1 is a longitudinal sectional view through a hammer mill embodying the invention,

Figure 2 is a perspective view of the trough employed beneath the grinding chamber of the mill.

Referring to Figure 1 of the drawing, a hammer mill **10** is shown of conventional construction insofar as the crusher **11**, grinding chamber **12** and screen **13** is concerned, these devices functioning as heretofore and is well understood in the art.

The front wall **14** of the mill housing **15** terminates a distance below the horizontal axis of the hammer mill shaft **16**, forming an opening **17** and around this opening a plate **18** is suitably welded as well as to the base beam **19** of the mill frame. The plate **18** has a circular opening **20** in direct line with the lower portion of the screen **13**.

A fan housing **21** includes a rear wall **22** having a circular opening **23** in registry with the opening **20** of the plate **18**, the rear wall **22** being suitably secured to the plate **18** by means of bolts and nuts **24**, access to which may be had through openings **25** formed at suitable points in the side walls of the mill, these openings being closed by suitable closure plates **26**. The openings **20** and **23** form the discharge into the fan compartment.

The lower portion of the fan housing **21** is mounted upon a base **27** consisting of channel irons which extend transversely and longitudinally of the housing, the longitudinal channel irons **28** also forming the support for a motor pedestal **29**.

The front wall **30** of the fan housing has an opening **31** formed therein of a diameter greater than the diameter of the fan **32** to be employed therein to permit

installation within the housing, the opening being closed by a plate **33** which may be suitably bolted as at **34** to the wall **30**.

An electric motor **35** is mounted upon the pedestal **29** in any suitable manner, and in order that the motor shaft **36** may pass into the fan housing **21**, the plate **33** is formed with a medial opening **37**.

From the construction thus far described it will be noted that by positioning the fan housing at the front end of the mill housing, the fan **32** will be rotated at right angles to the rotation of the hammer mill unit in the grinding chamber **12** effecting a direct draft of air through the air inlet **38** into the material being ground and through the screen **13** from whence the material passes into the fan housing **21**.

A trough **39** is employed for conveying ground material to the fan housing **21**, the trough being of semi-cylindrical form at the juncture with the opening **20**. The trough includes a bottom wall **40** converging upwardly with respect to the upper edges **41** of the trough and terminates in a downwardly extended lip **42** to provide rigidity. Preferably the trough **39** is welded to the plate **18** and along the upper edges **41** to the side walls of the mill as indicated at **41'**.

Aligned with the trough **39** there is a trough extension plate **43**, which is detachably mounted beneath the bottom plate **44** and intake plate **45** of the mill forming an air intake **46**.

Thus, it will be seen that a trough is provided under the grinding chamber and the screen, arranged at a slight inclination in the direction of the bottom plate and intake plate to form the air intake, producing a flow of air under the screen, through the trough and into the fan housing. The air intake **46** as here defined makes it unnecessary for the trough to be at a steep inclination, thereby reducing the over-all height of the mill, and this pitch of the trough makes it unnecessary to employ high air velocity which would be required in a trough horizontally disposed, thereby resulting in a saving in fan horsepower.

While I have shown and described a preferred form of the mill, this is by way of illustration only, and I consider as my own all such modifications in construction as fairly fall within the scope of the appended claim.

I claim:

A suction conveying means for a hammer mill comprising a housing having a material crusher at one end thereof and a suction housing and fan at the other end thereof, a grinding chamber between said material crusher and said suction housing, said grinding chamber being spaced from the material crusher forming an air inlet passage opening upon said grinding chamber, said grinding chamber having a bottom plate, an inclined trough beneath said grinding chamber, the lower end of the trough being in communication with the intake opening of the suction housing, the upper end of said trough terminating beneath the bottom plate of the grinding chamber and a detachable extension for said trough being positioned beneath and extending beyond the bottom plate thereby defining an air inlet passage outwardly of the hammer mill housing.

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