Dec. 6, 1960 L. A. RHODES 2,963,229

GARBAGE GRINDER FEEDER

Filed June 10, 1955

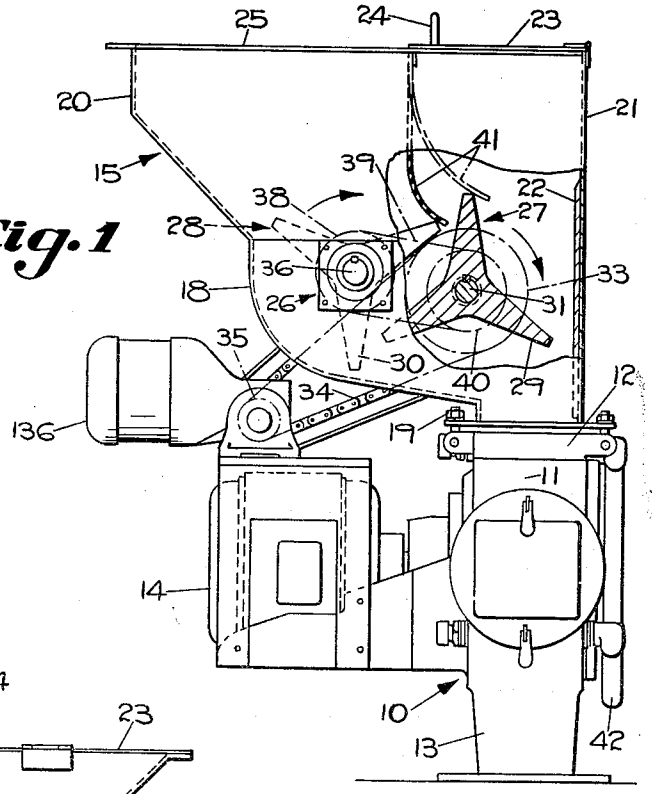


Fig. 1

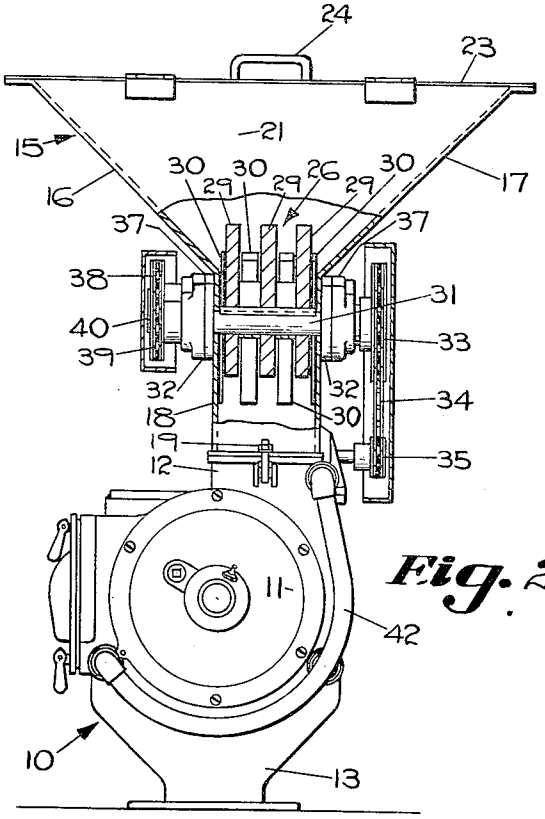


Fig. 2

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United States Patent Office 2,963,229
Patented Dec. 6, 1960

2,963,229

GARBAGE GRINDER FEEDER

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Filed June 10, 1955, Ser. No. 514,435

1 Claim. (Cl. 241—46)

This invention relates to material grinders, and more particularly to a grinder adapted to receive garbage and the like. In general, the invention comprises a grinder of the type stated and includes a feed hopper for the grinder having breaker and feed means for breaking up the material delivered to the hopper before it is fed to the grinder.

One of the objects of this invention is to provide an improved material grinder of the character described which is more efficient in operation in that it is adapted to receive and dispose of material of a size ordinarily too bulky to be received in the grinders presently available. An advantage and feature of the construction embodied in the present invention is that bulky materials are broken up or compressed and reduced to a smaller size for faster and more efficient handling in the grinder prior to being fed into the material receiving opening of the grinder.

Another object of the invention is to provide an improved materials reducing grinder having mechanism for feeding materials to the grinder which includes a hopper having a wide feed opening therein which is larger than the grinder feed opening. There is also provided, in the hopper, breaker and feed means which operate to break up, crush and grind materials delivered to the hopper, and which then feeds such materials directly to the feed receiving opening of the grinder.

It is also an object of the invention to provide for a materials grinder an improved type of breaker and feed means which includes a pair of rotors having arms constructed and spaced so that they interleaf during rotation to provide both a breaking action and a feeding action on the materials received.

Other objects, advantages and features of this invention will appear hereinafter, the novel features and combinations being set forth in the appended claims.

In the accompanying drawings, wherein for purposes of illustration and explanation a preferred embodiment only of the invention is shown:

Fig. 1 is a side elevational view, partly in section, of a grinder incorporating the features of the invention and constructed in accordance therewith; and

Fig. 2 is a view similar to Fig. 1, showing the grinder from the right side thereof.

Referring further to the drawings, a grinder **10** is disclosed which may comprise in general apparatus of the type described and shown in United States Patent No. 2,591,076, issued April 1, 1952. This type of grinder includes a cylindrical portion, indicated generally at **11**, which forms a reducing or grinding chamber. The feed chute or opening **12** for chamber **11** is formed as an integral part of this portion of the grinder. A discharge chute or opening **13** is located below the reducing chamber. The main frame of grinder **10** supports an electric motor **14**, as shown, which provides for driving the grinding elements mounted in chamber **11**. Since the construction and operation of this portion of the grinder is well known, a further description thereof is omitted.

The mechanism for feeding materials to the grinder through the feed opening **12** includes a hopper **15**. As shown in the drawings, the hopper **15** has converging side walls, indicated at **16** and **17** in Fig. 2, which taper at their lower ends to form a housing **18** aligned with and adapted to be received within the feed chute opening **12**. The lower end of housing **18** is provided with a flange which is bolted, as indicated at **19**, to a collar mounted on the upper end of the feed chute opening **12**. The front and back walls of hopper **15** are shown at **20** and **21** in Fig. 1. The lower part of front wall **20** also forms an integral part of housing **18**. Back wall **21** is provided with a liner or breaker plate **22** (Fig. 1) which reinforces and strengthens that portion of the hopper **12** for a purpose more fully described hereinafter.

A cover **23** is hinged to the top of wall **21** and extends over a portion of the upper end of the hopper **15**, as seen most clearly in Fig. 1, and forms a closure member therefor. A handle **24** is provided for raising the cover **23** when it is desired to have access to the interior of that portion of the hopper over which the cover **23** extends. As shown in Fig. 1, the cover **23** extends only part way over the top of the hopper **15**, leaving a wide feed opening **25** unobstructed. The feed opening **25** is much wider and larger than the feed chute opening **12**, as illustrated, and is adapted to receive large and bulky materials or objects which are too large to go through the feed chute opening **12** before being crushed or reduced in size as hereinafter described. Thus, in one preferred size of grinder the feed chute opening **12** is horizontally across the opening approximately 6 inches by 6 inches. The feed opening **25** in the hopper **15**, in the same model, is approximately 1½ feet by 2½ feet horizontally across the opening.

Breaker and feed means, indicated generally at **26** in Figs. 1 and 2 of the drawings, are mounted within the housing **18** of hopper **15**, and provide for breaking or crushing and grinding to reduce the size of bulky materials delivered to the hopper **15** so that such materials can be delivered to and pass through the feed chute opening **12** more easily and without clogging or binding in the grinding chamber **11**. The breaker and feed means **26** includes a pair of rotors **27** and **28** (Fig. 1), each rotor having spaced three-pointed or star-shaped spiders **29** and **30**, the arms of which interleaf during rotation.

As shown in the drawings, there are three of the spiders **29** on rotor **27**. It is to be understood, however, that more, or less, than three may be used, depending upon the size of the grinder. In the form shown in Figs. 1 and 2, the spiders **29** are spaced along a shaft **31**, being keyed thereto. In operation it has been found that if the spiders **29** are about 12 inches across, one inch thick and spaced about one inch apart on shaft **31**, satisfactory performance is obtained. Rotor **27** is driven by shaft **31** which is rotatably mounted, being journaled at each end thereof in bearings **32** carried on the side walls of housing **18**. Means for rotating the shaft **31** includes a sprocket **33** carried on the end of shaft **31** having a chain **34** connected to a sprocket **35** driven by an electric motor **136**.

Rotor **28** has four of the spiders **30** (see Fig. 2). As illustrated in Figs. 1 and 2 of the drawings, the spiders **30** are spaced along a shaft **36**, being keyed thereto. The two inner spiders **30** (Fig. 2) are about 12 inches across and 1 inch thick so that they interleaf between the spiders **29** when rotating. The two end spiders **30** are also about 12 inches across, but these two spiders are only approximately 3/16 of an inch in thickness and extend between the ends of the spiders **29** and the side walls of housing **18**. These end spiders **30**, when rotating, provide for keeping the side walls of the housing **18** clean and free of

materials which would have a tendency to stick or lodge thereon. Rotor **28** is driven by shaft **36** which is rotatably mounted, being journaled at each end thereof in bearings **37** (Fig. 2) carried on the side walls of housing **18**. Means for rotating the shaft **36** includes a sprocket **38** carried on the end of shaft **36** having a chain **39** connected to a sprocket **40** carried on the end of shaft **31**, opposite from the sprocket **33**. Rotor **28** is thus driven from rotor **27**, the rotors being connected to rotate together, and in the same direction, as indicated by the arrows in Fig. 1, and at a speed of approximately 60 r.p.m.

A strip of sheet rubber **41** is attached to the outer edge of cover **23** and hangs down so as to extend between the rotors **27** and **28**, as shown in Fig. 1. This strip or flap is flexible and forms a screen which prevents materials or parts thereof when crushed between the rotors from flying back out through the opening **25** in the hopper **15**. It also prevents water sprayed into the grinder compartment **12** from pipe **42** from splashing out.

It will be apparent that in operation large or bulky articles, such as, for example, milk cartons, cabbages, and the like, may be delivered through the hopper opening **25**. These materials receive a crushing or breaking and grinding action between the rotors **27** and **28** and then are delivered against the breaker plate **22** where further crushing, grinding and breaking is effected before the materials are fed into the feed chute opening **12** of the grinder **10**.

Obviously those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of the invention as defined by the claims hereto appended, and applicant therefore wishes not to be restricted to the precise construction herein disclosed.

Having thus described and shown an embodiment of the invention, what it is desired to secure by Letters Patent of the United States is:

A garbage grinder having a feed opening, mechanism for feeding material to said grinder through said feed opening including a hopper having a wide feed opening larger than said grinder feed opening, and breaker and feed means within said hopper constructed to break up material delivered to said hopper and feed it to said grinder, said breaker and feed means including a pair of rotors each having spaced three-pointed spiders, said spiders being alternately disposed on the respective rotors and comprising identical blunt radially extending arms adapted to interleaf with each other during rotation of the rotors, a flexible baffle projecting between said rotors, and means for rotating said rotors to feed material to said grinder feed opening.

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