

[54] **SUSPENSION DISPERSING APPARATUS**

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277/30

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259/10, 109, 110; 277/30

[56]

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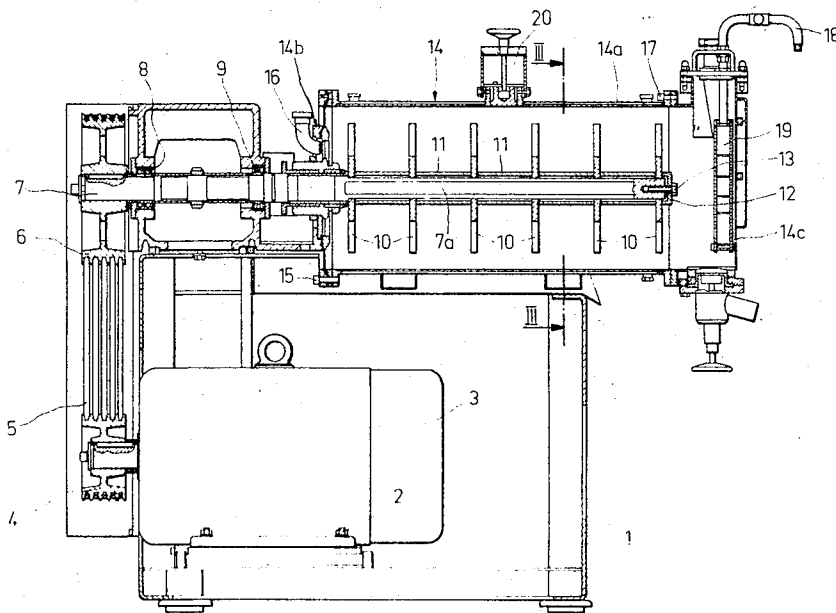
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ABSTRACT

Apparatus for finely dispersing the components of suspensions, having a suspension-receiving container with an end wall incorporating a stuffing box by means of which a shaft is journaled in the end wall for driving an agitator, and an elastic connection between the end wall and the remainder of the container.

5 Claims, 4 Drawing Figures



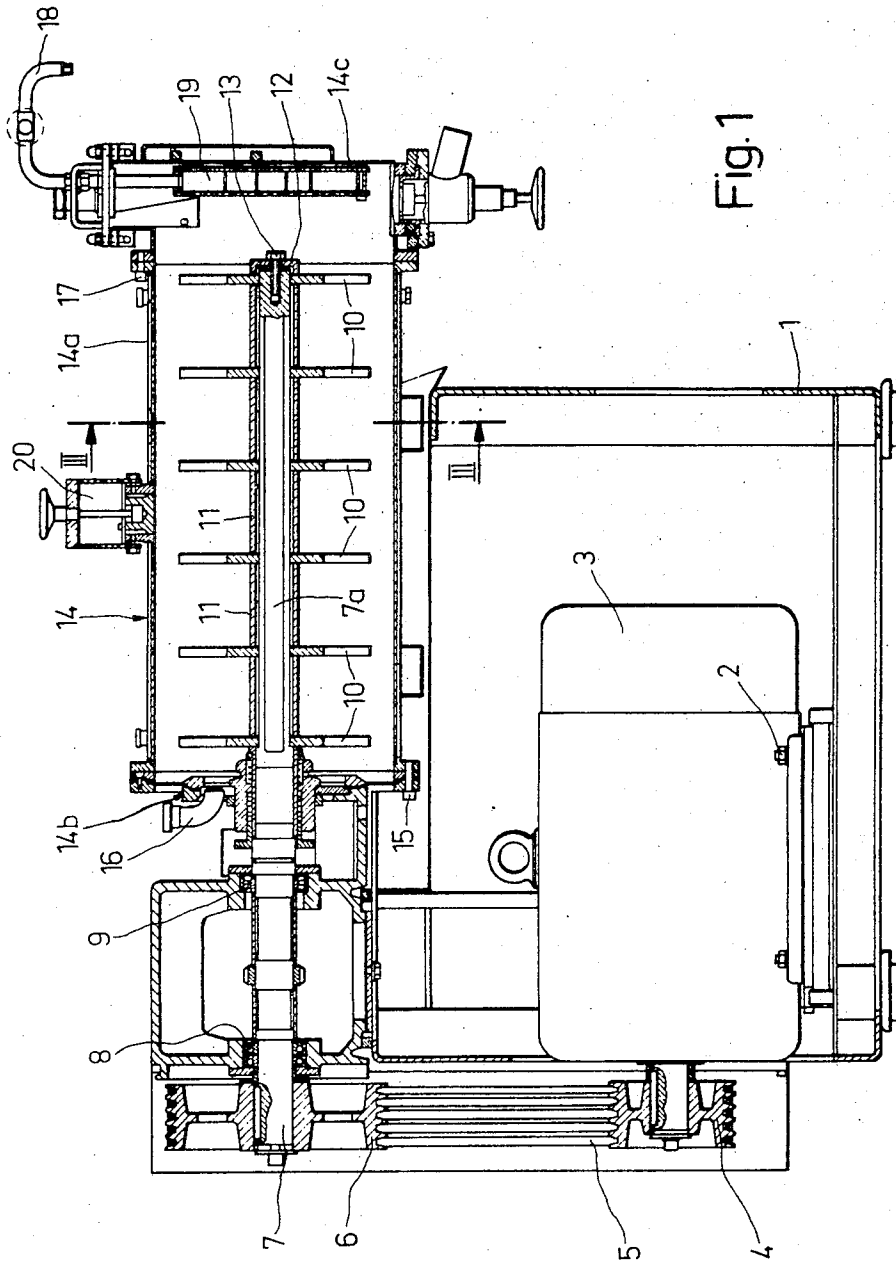


Fig. 1

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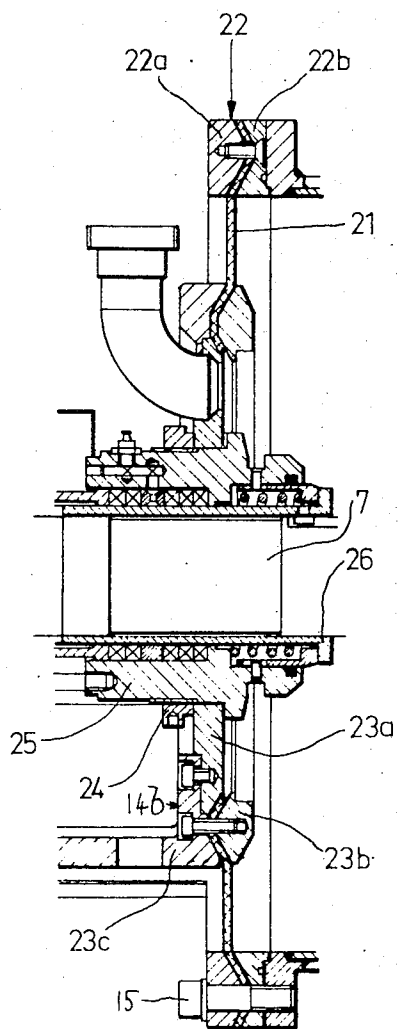


Fig. 2

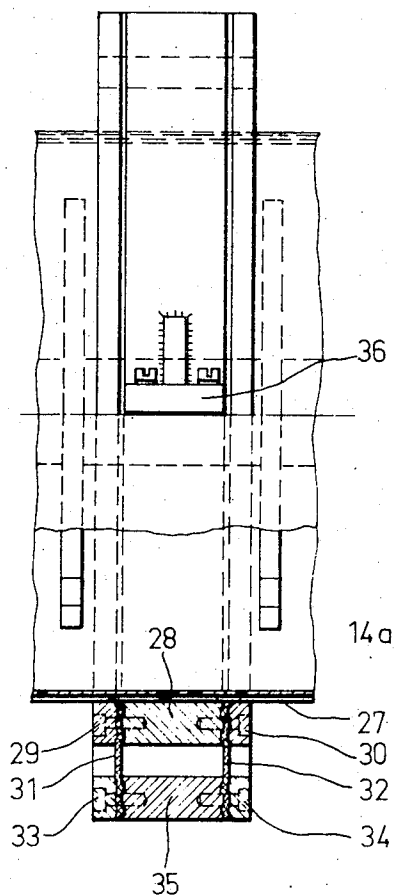


Fig. 4

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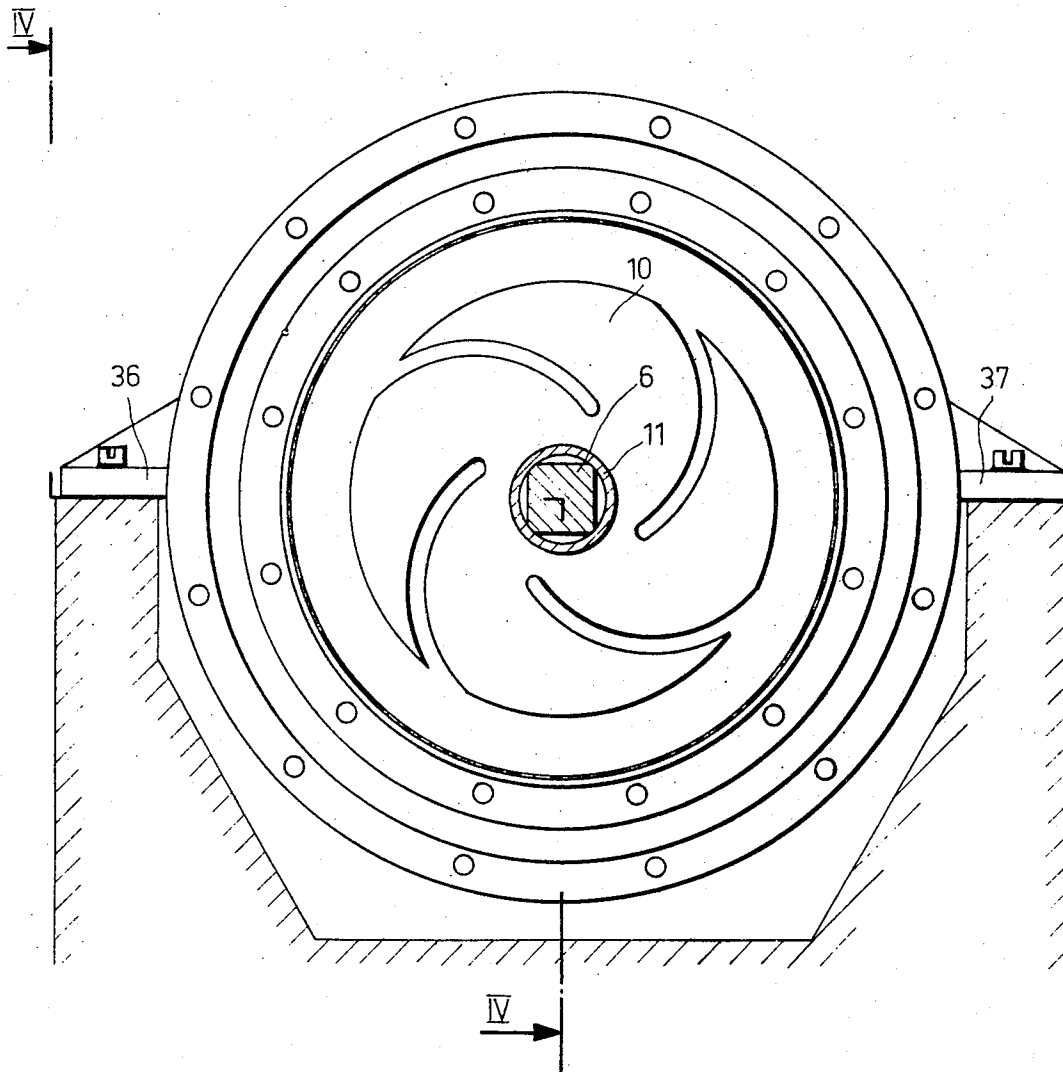


Fig. 3

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SUSPENSION DISPERSING APPARATUS

BACKGROUND OF THE INVENTION

The present invention relates to an apparatus for finely dispersing the components of a suspension. In machines of this type great accuracy is required to ensure that the cylindrical suspension container, one of the end walls of which carries a stuffing box for a shaft carrying an agitator, is always located coaxially with the shaft, so that no bending forces are exerted on the shaft or the stuffing box, not only during production but also during fitting after routine cleaning and servicing operations.

SUMMARY OF THE INVENTION

According to the present invention, there is provided apparatus for finely dispersing the components of a suspension, comprising a container for receiving a suspension, comprising the components of which are to be dispersed; at least one agitator disposed in the container to act on the suspension; means for driving the agitator, sealingly mounted in an end wall of the container; and an elastic connection between the end wall of the container and the remainder thereof.

The apparatus may be used to perform a pulsating or milling action in a mechanically agitated mixture of the suspension with grinding elements.

BRIEF DESCRIPTION OF THE DRAWINGS

Two embodiments of the invention will now be more particularly described with reference to the accompanying drawings, in which:

FIG. 1 shows a side elevation of a first embodiment;

FIG. 2 shows a detail view of the embodiment of FIG. 1, to an enlarged scale;

FIG. 3 shows a section, on a line equivalent to the line III—III of FIG. 1, of a modified embodiment; and

FIG. 4 shows, partly in side elevation and partly in section on the line IV—IV of FIG. 3, the embodiment of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIGS. 1 and 2, an electric motor 3 is secured by screws 2 to a frame 1. A belt pulley 4 of the motor 3 is connected by V-belts 5 to a second belt pulley 6 which is carried at one end of a shaft 7. The shaft 7 is freely rotatable in bearings 8 and 9. At a square section 7a of the shaft 7, remote from the belt pulley 6, the shaft carries several, (in the present case six), agitating devices 10, which are spaced from each other by spacer tubes 11 and which, although they may be constructed anyhow, must, however, be dynamically balanced. The shaft and agitating devices are held together by means of an end cap 12 and an end bolt 13.

A cylindrical container 14, releasably secured on the frame by means not shown in FIG. 1, encircles the agitating devices. It has a double walled cover 14a and two end walls or cover plates 14b and 14c. In the cover plate 14b is located an inlet socket 16, which forms, together with a feed pump (not shown), a suspension inlet. The cover plate 14c is swivellably mounted on the cylinder cover 14a, and secured with screws 17. An outlet connection 18 is also positioned in the cover plate 14c, the outlet connection 18 being connected at its inner end to a filter screen 19.

The mode of operation of this crusher is as follows. The cylindrical container is filled with grinding bodies through a filling opening 20, after which the suspension to be dispersed is caused to flow or be pumped in through the inlet connection. The agitating apparatus, rotating at a large number of revolutions per minute, generates the necessary pulsating effect of the grinding bodies in the mixture of the grinding bodies and the suspension. The solids in the suspension thus become very finely dispersed, and the suspension leaves the cylinder again through the outlet connection 18.

From FIG. 2 it can be seen that the cover plate 14b is not rigidly connected to the cylinder cover 14a, but is connected thereto by means of an annular disc-shaped element or membrane 21, constructed of elastic material. The membrane 21 is clamped externally in a ring 22 formed of two parts 22a and 22b, the ring 22 being secured to the cylinder cover 14a by screws 15. At its inner edge, the annular disc-shaped element 21 is clamped by means of a ring 23b to a support put together from a support flange 23c and a flange 23a. A stuffing box 25 is secured in the flange 23a by means of a nut 24. A tube 26 carried by the shaft 7 can rotate with the shaft in the stuffing box 25.

With this construction, and also since the annular part 21 elastically retains the cover plate 14b, the exertion of bending forces or other tensions on the support and the stuffing box during fixing of the cylinder housing on the frame is prevented, so that the assembly of the container is facilitated. This applies equally during production and during fitting together again after routine cleaning and servicing operations.

FIGS. 3 and 4 show a further embodiment of the cylindrical container, and in particular its mounting. On an outer cover 27 of the cylinder 14a, individual retaining rings 28 are welded, on each of which two annular discs 29 and 30 are screwed.

Between each retaining ring 28 and the annular discs 29 and 30, the inner edge of a ring, 31 or 32 respectively, constructed of elastic material, is clamped rigidly. At the outer edge of both these rings of elastic material, a carrier ring 35 is clamped by means of two annular discs 33 and 34. Two stays 36 and 37 are welded to the carrier ring 35, and the stays rise from parts of the raised frame 1, and are bolted securely thereto. By means of this elastic mounting, any vibrations of the cylindrical container are absorbed, and thus are not conveyed to the frame, and furthermore a simplified mounting and automatic centring are ensured in the event that the centring is not adequate.

It is not essential that the rotatable shaft be horizontal; it could, for example, alternatively be vertical.

I claim:

1. A mechanical agitator apparatus for finely dispersing the components of a suspension, comprising, in combination, a horizontally extending shaft; bearing means only at one end portion of said shaft for rotatably mounting the latter with the remainder of the shaft freely projecting beyond said bearing means; a suspension receiving container having a peripheral wall surrounding at least part of the remainder of said shaft and an endwall facing said bearing means; at least one agitator in said container and mounted on said shaft for rotation therewith; support means supporting said container substantially coaxially with said shaft; means sealingly mounting said shaft in said endwall; and

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means elastically connecting said endwall and said peripheral wall to prevent exertion of bending forces on said shaft.

2. Apparatus as specified in claim 1, wherein said mounting means comprises a stuffing box.

3. Apparatus as specified in claim 1, wherein said connecting means comprises an elastic membrane secured between said body portion and said end wall.

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4. Apparatus as specified in claim 3, wherein said membrane comprises an annular disc of elastic material.

5. Apparatus as specified in claim 1, further comprising means elastically mounting said container on said support means.

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