March 10, 1964 A. SIEBERT 3,124,315

FEED HOPPER FOR FINE GRINDING ROLLER MILLS

Filed Sept. 25, 1961 2 Sheets-Sheet 1

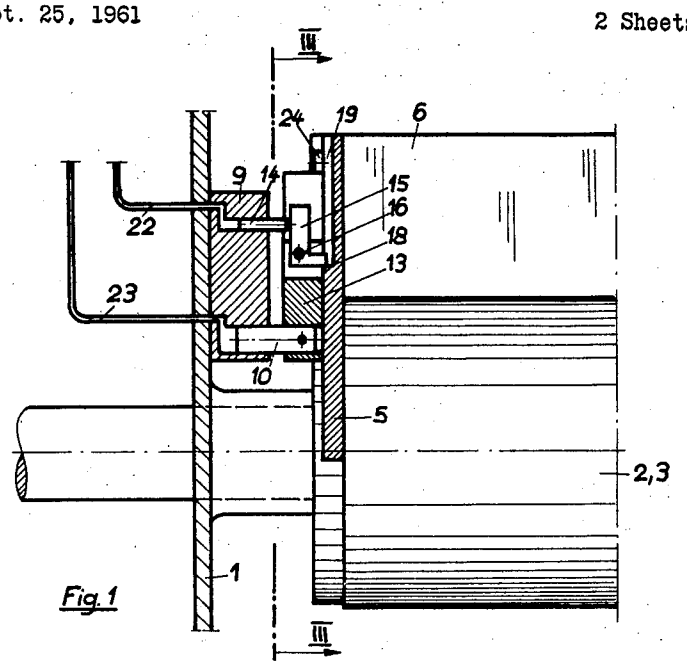


Fig. 1

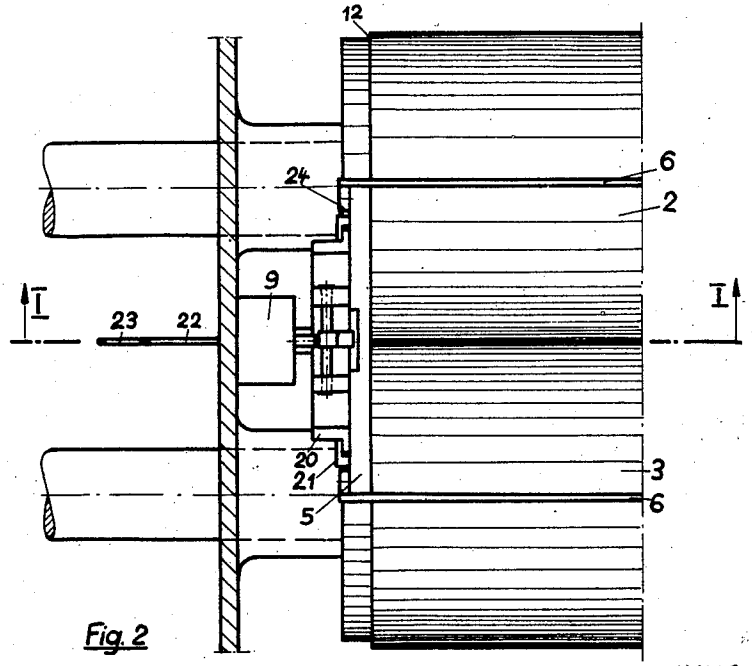


Fig. 2

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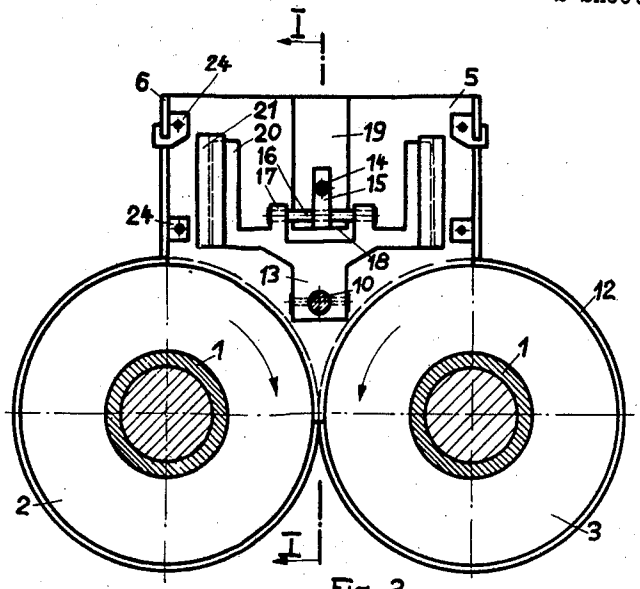


Fig. 3

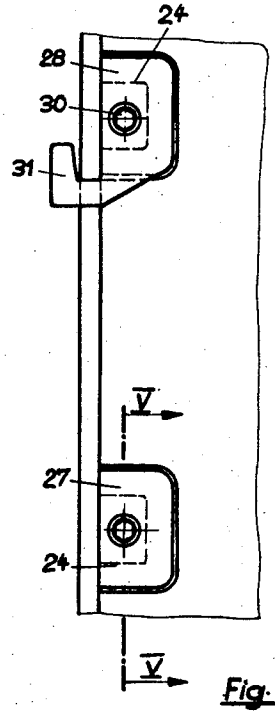


Fig. 4

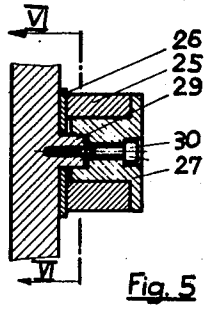


Fig. 5

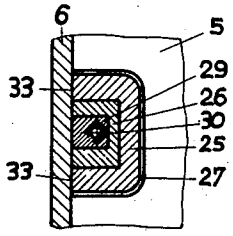


Fig. 6

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# FEED HOPPER FOR FINE GRINDING ROLLER MILLS

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5 Claims. (Cl. 241—224)

In fine grinding roller mills most feed hoppers consist of adjustable lateral sealing plates and one or two hopper walls disposed parallel to the axis of the grinding rollers.

Hitherto the hopper walls were screwed on to the sealing plates or clamped by means of tommy screws. However this type of fastening entails the disadvantage that under certain curcumstances the sealing plates, when locally locked, no longer fit tight on the entire face of the rollers. In case of hydraulic clamping means being used, automatic adjusting means for the sealing plates should be included. However, if the sealing plates are locked to the hopper walls they cannot move, thereby entailing leakages.

It is an object of this invention to provide means to avoid the above mentioned disadvantages. These disadvantages are overcome by providing a new feed hopper for fine grinding mills, comprising magnetic holding means for fastening the hopper walls to the sealing jaws.

One embodiment of this invention is shown by way of example in the accompanying drawings, wherein:

FIG. 1 is a sectional elevation of a roller mill along the line I—I of FIGURE 2.

FIG. 2 is a corresponding plane view.

FIG. 3 is a sectional side elevation along the line III—III of FIGURE 1.

FIG. 4 shows a detail of FIGURE 3 in an enlarged scale.

FIG. 5 is a sectional side elevation along the line V—V of FIGURE 4, and

FIG. 6 is sectional view along the line VI—VI of FIGURE 5.

As shown in FIGURES 1–3, the grinding rollers **2**, **3**, journalled in housing **1** are topped by a feed hopper consisting of two sealing plates **5** and two hopper walls **6**. A hydraulic block comprising a piston **10** is disposed against housing **1**. Piston **10** presses sealing plate **5** against shoulders **12** of the grinding rollers **2** and **3** and also bears holder **13**. A second piston **14** pressing against a lever **15** pivotably mounted on a pivot pin **16** is disposed in block **9**. Pivot pin **16** is mounted in two projecting lugs **17** forming part of holder **13**. The force exerted by piston **14** will be transmitted by lever **15** to the edge **18** of a recess **19** in sealing plates **5** pressing this latter downward to rollers **2** and **3**. Holder **13**, provided with two lateral glide shoes **20** is guided by projecting guide tracks **21** on the sealing plate **5**. The pistons are actuated by some fluid, preferably oil, supplied through pipes **22** and **23**. Hopper wall **6** is held in place by magnetic holding fixtures **24** disposed on the outside of sealing plate **5**.

As shown in FIGURES 4–6 the magnetic holders **24** consist of a permanent magnet **25** clamped by means of a clamping cap **27**, **28** and a screw **30** against sealing plate **5** but spaced from this latter by a washer **26**. Both,



washer **26** and clamping caps **27**, **28** consist of some non-magnetic material, such as aluminum or the like. Clamping cap **27** is placed on projecting tetragonal member **29** disposed on sealing plate **5** and fastened by means of a screw **30**. The tetragonal members **29** are designed and disposed in such a manner that the active faces **33** of the magnets **25** are flush with the edge of the sealing plate **5** and the hopper wall **6**. Cap **28**, basically similar to cap **27** is moreover provided with a locking tab **31** to prevent inadmissible displacement of hopper wall **6**. The clamping caps **28** will normally be used on the upper magnets but can also replace the lower caps **27** as well.

The product to be ground will be fed into the feed hopper. In the above described arrangement the action of pistons **14** and **16** will automatically compensate any wear occurring on the sealing faces of plates **5** on account of their friction on the grinding rolls **2** and **3**. The magnets readily admit vertical displacement of the hopper walls **6** since the magnetic forces acting in any direction parallel to the active surfaces **33** of the magnets **25** are negligible compared with those acting perpendicular to surfaces **33**. It may also be added that washers **26** prevent the magnetic flux from being shunted through sealing plate **5** (FIG. 5) but is compelled to pass through hopper wall **6**.

What I claim is:

1. In a material grinding mill including a pair of parallel axially rotatable rollers, each having a circumferential peripheral grinding surface, the peripheral grinding surfaces being juxtaposed so that material fed between said juxtaposed surfaces can be ground by opposing rotations of the rollers, a hopper, for feeding the material between the juxtaposed surfaces, comprising: two longitudinal walls, one wall being juxtaposed against one roller and longitudinally extending parallelly along the axis of rotation of the one roller, the other wall being juxtaposed against the other roller and longitudinally extending parallelly along the axis of rotation of the other roller; two side plates, said side plates being spaced apart and forming with said two walls said hopper, each side plate being disposed in juxtaposed relation with the rollers; and, magnet means for holding said plates and said walls together.

2. A hopper, according to claim 1, wherein said magnet means are mounted on said side plates in such a manner that the faces of said magnet means are flush with the edges of the plates.

3. A feeding hopper, according to claim 1, wherein clamping caps are employed to secure said magnet means on said plates.

4. A feeding hopper according to claim 3, wherein said clamping caps include a locking tab projecting beyond the plate and securing thereby the position of said walls.

5. A feeding hopper, according to claim 1, wherein said magnet means magnetically holds said walls to said plates and allows vertical movement of said walls.

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