

[54] **ROLLER MILL OF THE EDGE RUNNER TYPE**

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[58] **Field of Search**..... 241/110, 111, 103,
241/117, 121

[56] **References Cited**

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[57]

ABSTRACT

An edge runner type roller mill in which three rolls are adapted to cooperate with a grinding table, and spring or hydraulic loading means are provided for the rolls. A ring is arranged above the rolls for applying force to the rolls in accordance with a three point system, and a yoke serves for holding down the ring, with a second ring being arranged above or below the first-mentioned ring for loading three further rolls alternating with the first-mentioned rolls and adapted with them to cooperate with the grinding table.

4 Claims, 5 Drawing Figures

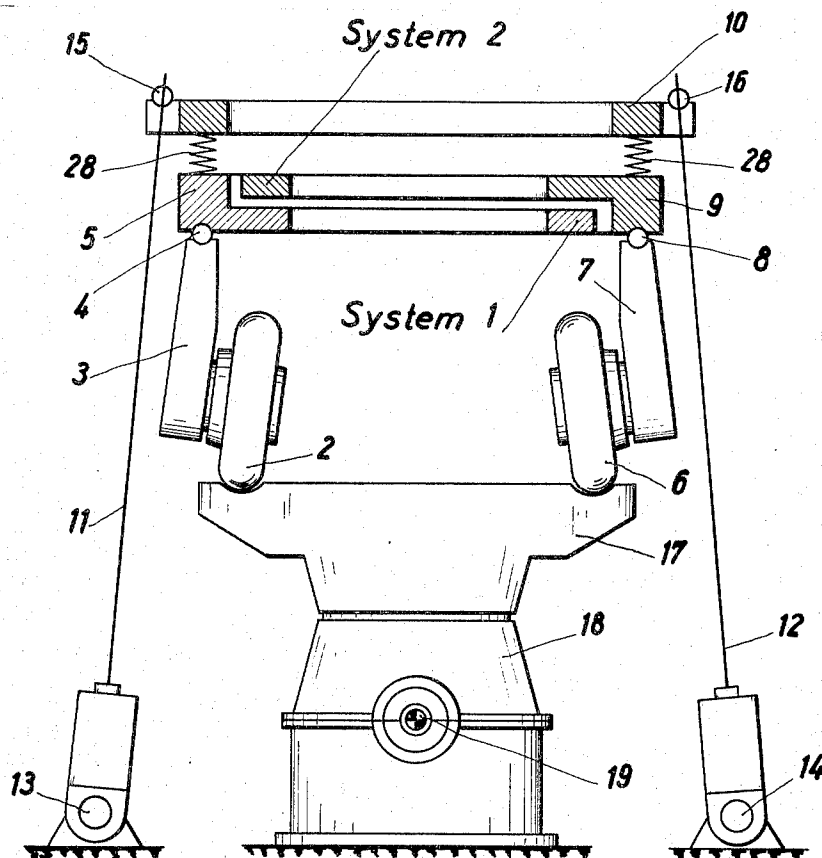


Fig. 1

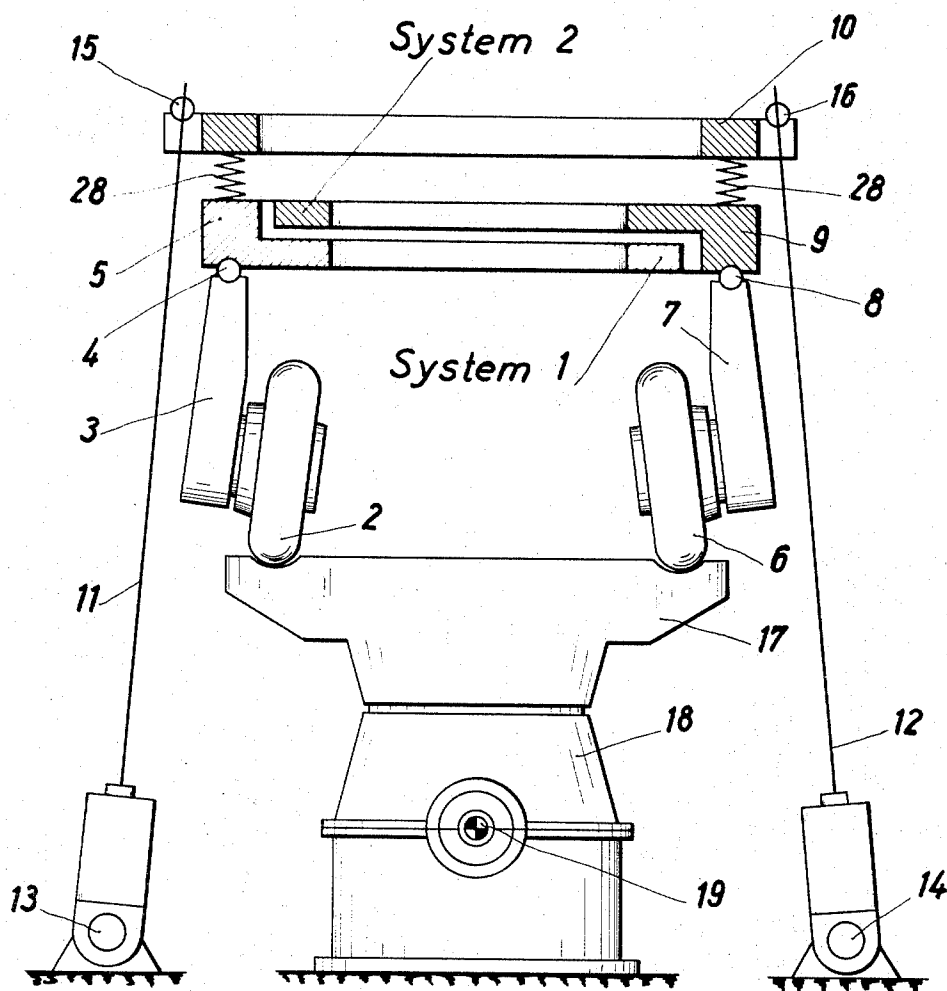
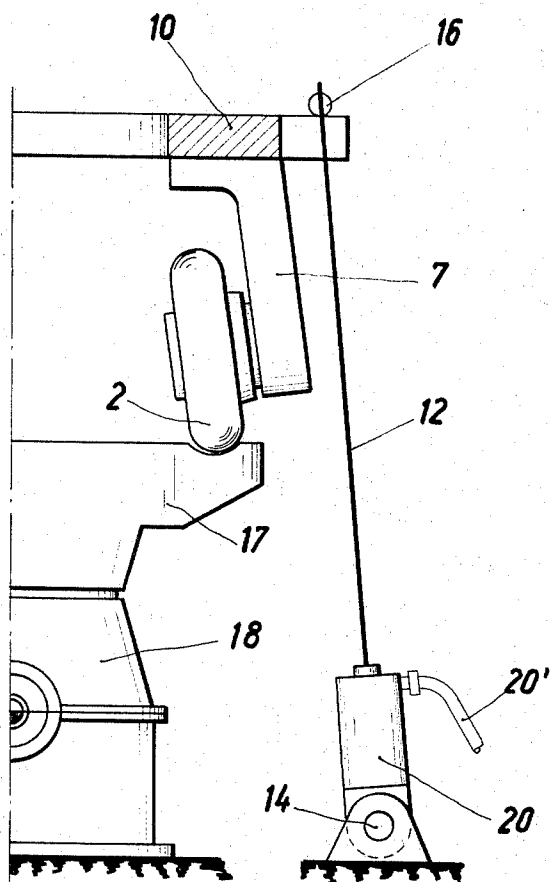


Fig. 2



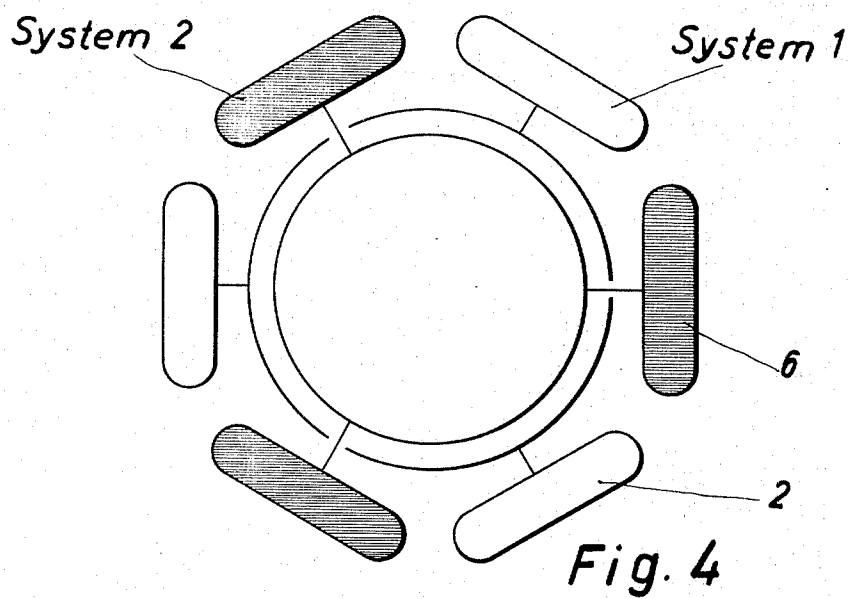
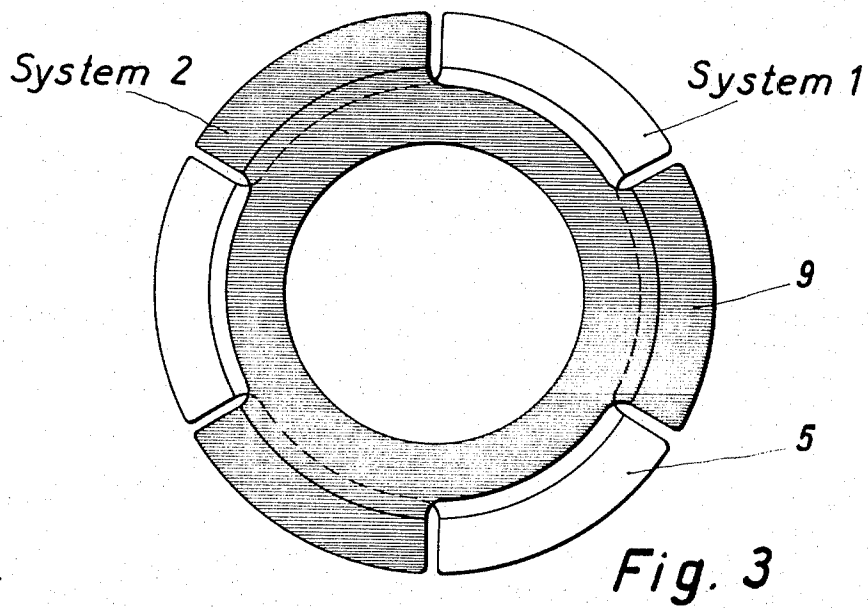
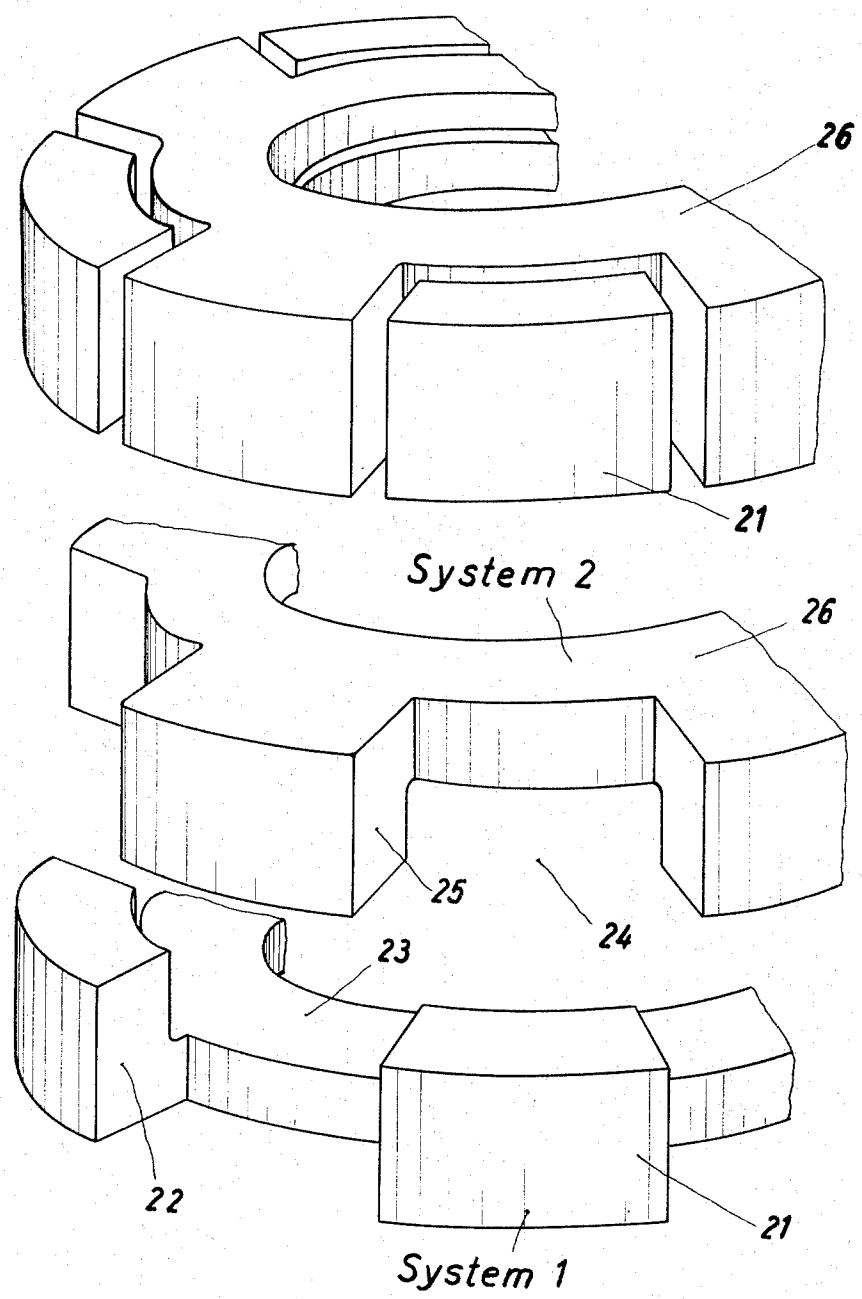


Fig. 5



ROLLER MILL OF THE EDGE RUNNER TYPE

BACKGROUND OF THE INVENTION

The invention relates to an edge runner type roller mill, and more particularly to such a mill with a three roll system, in the case of which the rolls are adapted to cooperate with a rotary grinding table under spring or hydraulic loading pressure and a ring, arranged above the grinding rolls holds the rolls in a three point system.

PRIOR ART

A disadvantage with known edge runner type roller mills is that the system is tied to the use of three rolls so that the rolls make proper engagement with an even distribution of pressing forces. Accordingly, as a result, the dimensions of such a roller mill are limited for economic reasons because the rolls cannot, for economic reasons, exceed a certain size. Furthermore, it is difficult to control bearing pressures in the case of very large rolls.

OBJECT AND SUMMARY OF THE INVENTION

One object of the present invention is that of developing a construction, using the three roll system, which allows an increase in the size of the mill while observing economic limits, so that the capacity can be increased without unduly increasing the amount of space required.

The invention consists in an edge runner type roller mill comprising three rolls adapted to cooperate with a grinding table, loading means for the rolls, a first ring arranged above the rolls for applying force to the rolls in accordance with a three point system, a yoke for holding down the ring, a second ring arranged in operative relationship to the first-mentioned ring for loading three further rolls alternating with the first-mentioned rolls and adapted with them to cooperate with the grinding table. In the case of a preferred embodiment of the invention, there is the feature that the inner parts of the two rings are arranged immediately one above the other, while one ring has recesses on its outer side, whose depth is approximately twice the thickness of the two rings together on the inner side, the other ring having projections extending into the recesses in a complementary manner to fill the recesses.

Such a construction offers the possibility of using two roll systems with six rolls in all while using the same basic constructional units. Thus, while using the same type of rolls and roll bearing units, which are expensive, a substantially larger type of mill can be constructed.

The accompanying drawings show two embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows diagrammatically in side view an edge runner type roller mill in accordance with the invention in the case of which the guide rings or loading rings are subjected to spring pressure.

FIG. 2 shows a second embodiment in a similar view in the case of which the guide or loading rings are acted upon by hydraulic pressure.

FIG. 3 shows in plan view diagrammatically the arrangement of the guide or loading rings.

FIG. 4 shows a plan view indicated in the arrangement of the two roll systems.

FIG. 5 shows the arrangement and construction of

the two-loading rings and their matching configuration.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 firstly shows the main conventional parts of an edge runner type roller mill, comprising grinding rolls 2, 6 which are acted upon by levers 3 and 7. The grinding rolls 2 and 6 run on a rotating grinding table 17, which is driven via a drive 18 and a drive shaft 19.

It is to be noted in this respect that the roll 2 belongs to a system 1 with a loading ring 5, which is connected with the lever 3 via balls 4. On the other hand, the roll 6 belongs to a system 2 with a loading ring 9, with which the lever 7 is connected in an articulated manner, for example by means of balls 8. The pressing force acting on the loading rings 5 and 9 is exerted by a pressing ring 10, which is connected via springs 28 with the rings 5 and 9. The pressing ring 10 is held by parts 11 and 12, which, via joints or balls 15, and 16 act on the pressing ring 10 and which underneath have articulated bearing means 13 and 14.

The embodiment shown in FIG. 2 which only serves to show the differently constructed parts has an oil pressure cylinder 20 on the end of a pulling rod 12. The oil pressure cylinder 20 is supplied with oil and the pressure by a supply line 20'. The articulated arrangement 14 underneath the oil pressure cylinder is in principle the same as that previously described.

FIG. 3 shows a plan view of the arrangement of the rings 5 and 9. In this case, the loading ring 5 belongs to system 1 and the loading ring 9 to system 2.

FIG. 4 shows diagrammatically a plan view of the arrangement of the grinding rolls 2 which belong to system 1 and correspondingly the arrangement of the grinding rolls 6 which belong to system 2.

FIG. 5 shows, in the upper arrangement, the two rings 5 and 9, whose inner parts 23 and 26 are arranged immediately above one another. From the views underneath this it can be seen that the loading ring 5 of the system 1 has projections 21 extending into recesses 24 of the loading ring 9 which belongs to the system 2. The construction is, furthermore, so designed that the projections 21 have their side faces 22 lying directly against side faces 25 of the recesses 24.

It can be readily seen that the arrangement described with the loading rings 5 and 9 can, in principle, be duplicated by using three loading rings instead of two loading rings so that three systems with in all nine rolls would result. At the present state of milling technology, however, an overall number of six rolls appears to be sufficient.

I claim:

1. An edge runner type roller mill comprising a grinding table, three rolls adapted to cooperate with said grinding table, a loading means for the rolls, a first ring arranged above the rolls for applying force to the rolls in accordance with a three point system, a yoke for holding down the first ring, and a second ring arranged in operative relation to the first ring for loading three further rolls alternating with the first mentioned rolls and adapted with them to cooperate with the grinding table.

2. The edge runner type roller mill in accordance with claim 1, in which the inner parts of the first and second rings are arranged immediately one above the other, one ring having recesses on its outer side, whose depth is approximately twice the thickness of the first and second rings together on the inner side, and the

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other ring having projections extending into the recesses in a complementary manner to fill the recesses.

3. The edge runner type roller mill in accordance with claim 1, in which said loading means is of spring type.

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4. The edge runner type roller mill in accordance with claim 1, in which said loading means is of hydraulic type.

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