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R. H. BOWMAN

1,780,112

MILL

Filed July 10, 1929

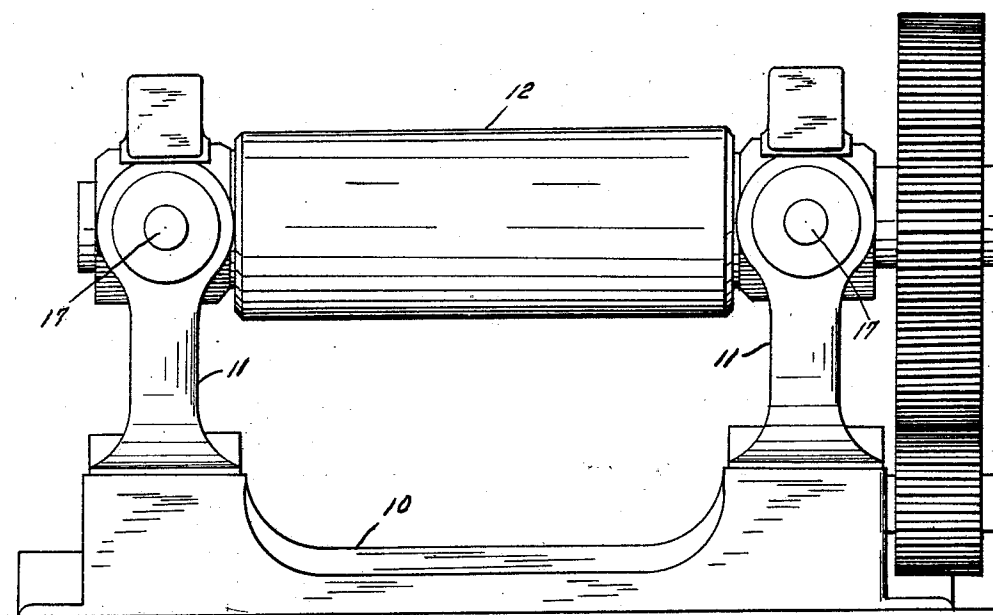


Fig. 1.

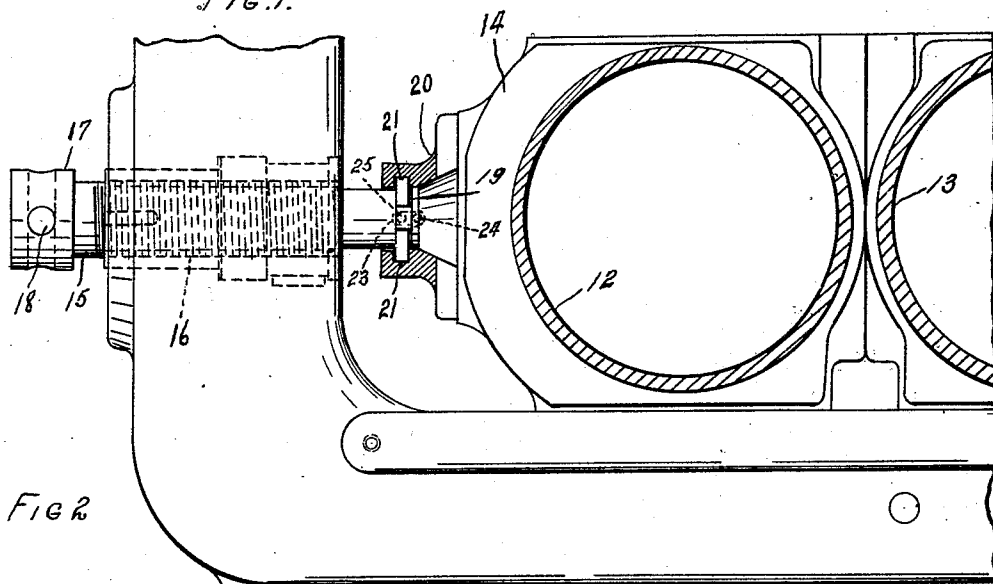


Fig. 2.

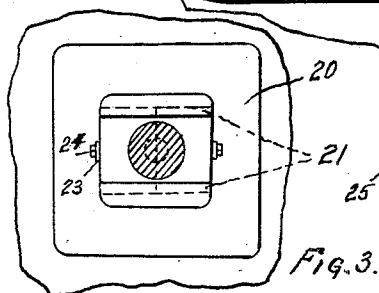


Fig. 3.

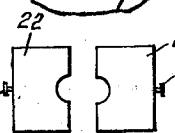


Fig. 4.

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MILL

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In rubber mixing and like mills cooperating mill rolls are employed between which the material is worked under pressure, the rolls being adjustable toward and from each other a predetermined distance depending upon the character of the material being worked, and in the case of rubber, the thickness of the milled sheet to be produced. Such mills have usually been provided with a safety device in the form of a frangible disk or plate between the movable arbor of an adjustable roll and the adjusting means, said disk or plate being adapted to break under a heavy strain such as might be caused by some hard object finding its way into the mill so that said object cannot break or injure the expensive mill rolls, bearings or some other part of the mill.

Heretofore in general, the use of such frangible disks or plates has rendered adjustment of the mill rolls and replacement of broken disks somewhat difficult. A screw has usually been provided for adjustment but it could only be used to adjust the rolls in one way, that is toward each other, and other means had to be employed to adjust the rolls the other way. Means have been more recently utilized which overcome these difficulties to some extent but such means are not entirely satisfactory.

The present invention has for its object the provision of an improved mill roll adjusting device in which the safety plate is incorporated in such a way that the roll or rolls of a mill may be adjusted both toward and from each other without affecting the functioning of the safety means if the mill should become overloaded for any reason, and in which the safety plate is so mounted as to be quickly replaceable.

The foregoing and other objects of the invention are attained in the mill illustrated in the accompanying drawings and described below. It is to be understood that the invention is not limited to the specific form thereof shown and described.

Of the accompanying drawings,

Figure 1 is a front elevation of a mill in which the invention may be embodied;

Figure 2 is an enlarged view partly in

section along line 2—2 of Figure 1 showing the invention embodied in the mill;

Figure 3 is a section on line 3—3 of Figure 2; and

Figure 4 is a detail elevation of the two-part frangible plate.

Referring to the drawings, the usual mill includes a bed plate 10 provided with standards 11, 11 in which are journaled rolls 12 and 13, the former in adjustable arbors 14 so as to be slidable toward and from the latter on standards 11.

An adjusting screw 15 is threaded through a nut 16 in each of standards 11, the outer end of each screw having a turning head 17 which may be apertured as at 18 to receive a bar (not shown) for turning the same. The inner end of each screw 15 is formed with a groove 19 and extends into a cap 20 secured to each arbor 14. Cap 20 is formed with transverse slots 21, 21, whereby it is adapted to receive a frangible plate 22 made in two parts, (Figure 4) and adapted to be slid into the slots 21 from opposite sides, the inner ends of the plates being shaped to fit in the groove 19, whereby when the plates are in place they embrace the screw 15 in groove 19. To prevent displacement of the plates 22 suitable means such as hooks 23 pivoted as at 24 on the caps 20 may be hooked over studs 25, 25 on the outer ends of plates 22.

It will be seen that because of engagement of plates 22 in groove 19 adjusting the rolls 12 and 13 either together or apart is obtained through the safety plates 22 in which the screws 15 rotate. Should a plate 22 be broken to prevent injury to the mill by reason of an overload, it may be quickly replaced by swinging back hooks 23, removing from slots 21 and sliding out of the caps 20 and new plates replaced therefor.

It will be apparent from the foregoing that a simple, effective safety device has been provided for mills which permit ready adjustment of the mill rolls and the frangible plate which is easily replaced in case of breakage.

Modifications of the invention may be resorted to without departing from the spirit

thereof or the scope of the appended claims.

What is claimed is:

1. In a mill, an adjustable mill roll and means for adjusting said roll including a screw, a safety cap connected to the roll, said screw extending into said cap and having a peripheral groove adjacent its end in the cap, said cap having slots therein, and a two-part frangible plate slidable from opposite sides of the cap in the slots into embracing relation to the screw end and engaged in said groove, whereby said roll is adjustable in either direction by said screw through said frangible plate, and means for releasably retaining said plate in said cap, said means comprising pivotal hooks mounted on the cap and engageable over studs on the outer edges of the frangible plate.

2. In a mill, an adjustable mill roll and means for adjusting said roll including a screw, a safety cap connected to the roll, said screw extending into said cap and having a peripheral groove adjacent its end in the cap, said cap having slots therein, and a two-part frangible plate slidable from opposite sides of the cap in the slots into embracing relation to the screw end and engaged in said groove, whereby said roll is adjustable in either direction by said screw through said frangible plate, and means for releasably retaining said plate in said cap.

3. In a mill, an adjustable mill roll, means for adjusting said roll, a safety cap connected to the roll, a two-part frangible plate slidable from opposite sides of the cap into inter-engaged relationship with said adjusting means, whereby said roll is adjustable in either direction through said frangible plate, and means for releasably retaining said plate in said cap, said means comprising pivotal hooks mounted on the cap and engageable over studs on the outer edges of the frangible plate.

4. In a mill, an adjustable mill roll and means for adjusting said roll including a screw, a safety cap connected to the roll, said screw extending into said cap and having a peripheral groove adjacent its end in the cap, said cap having slots therein, and a two-part frangible plate slidable from opposite sides of the cap in the slots into inter-engaged relationship with said adjusting means and engaged in said groove, whereby said roll is adjustable in either direction by said screw through said frangible plate, and means for releasably retaining said plate in said cap.

5. In a mill, an adjustable mill roll and means for adjusting said roll including a screw, a safety cap connected to the roll, said screw extending into said cap and having a peripheral groove adjacent its end in the cap, said cap having slots therein, and a two-part frangible plate slidable from opposite sides of the cap in the slots into inter-

engaged relationship with said adjusting means and engaged in said groove, whereby said roll is adjustable in either direction by said screw through said frangible plate.

6. In a mill, an adjustable mill roll, means for adjusting said roll, a safety cap connected to the roll, and a frangible plate in said cap in inter-engaged relationship with said adjusting means, whereby said roll is adjustable in either direction through said frangible plate.

In witness whereof I have hereunto affixed my signature this 5th day of July, 1929.

ROBERT H. BOWMAN.

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