April 6, 1937. A. J. HAZLE, JR 2,076,025

RELEASABLE SCREEN ATTACHMENT FOR HAMMER MILLS

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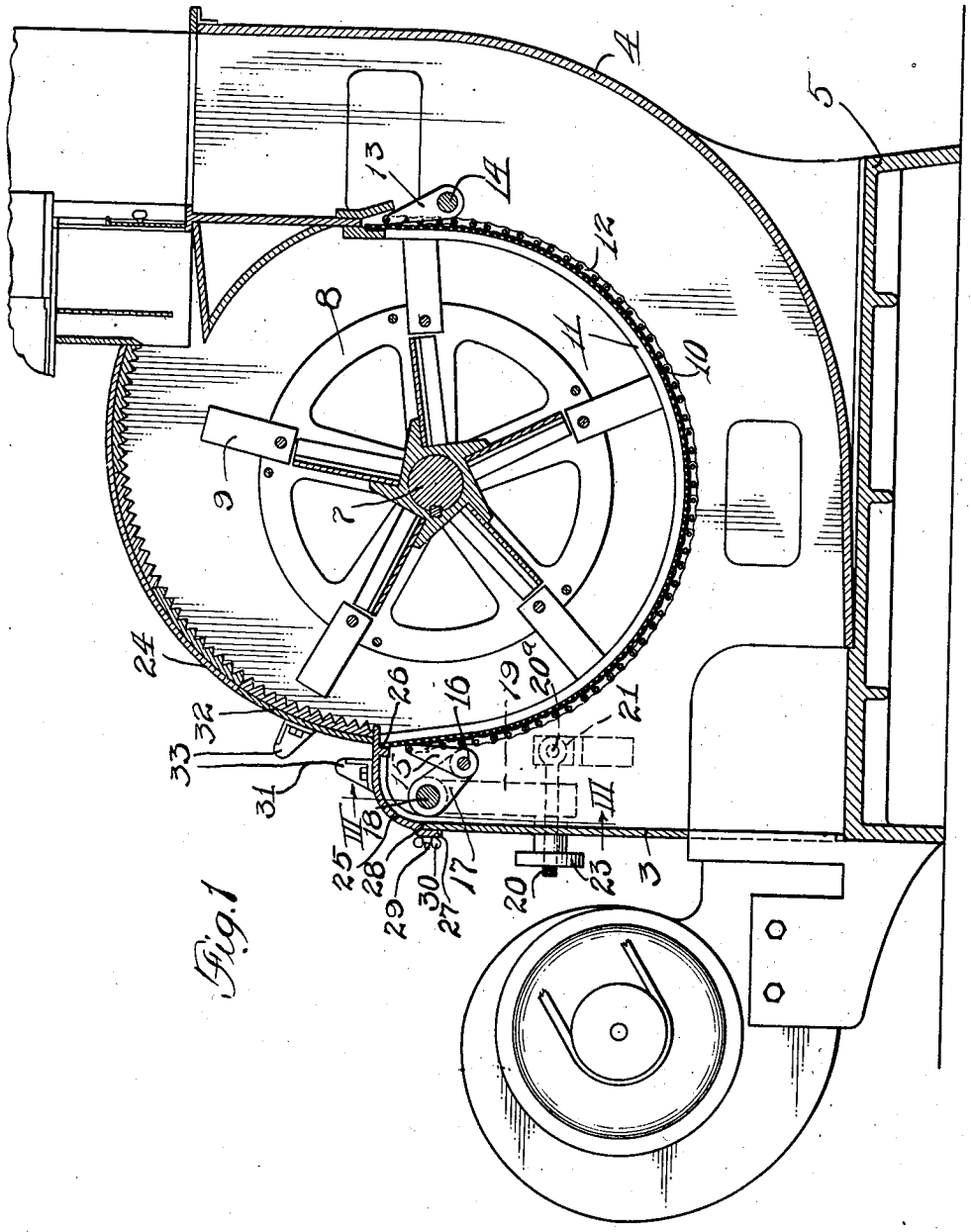


Fig. 1

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Fig. 2

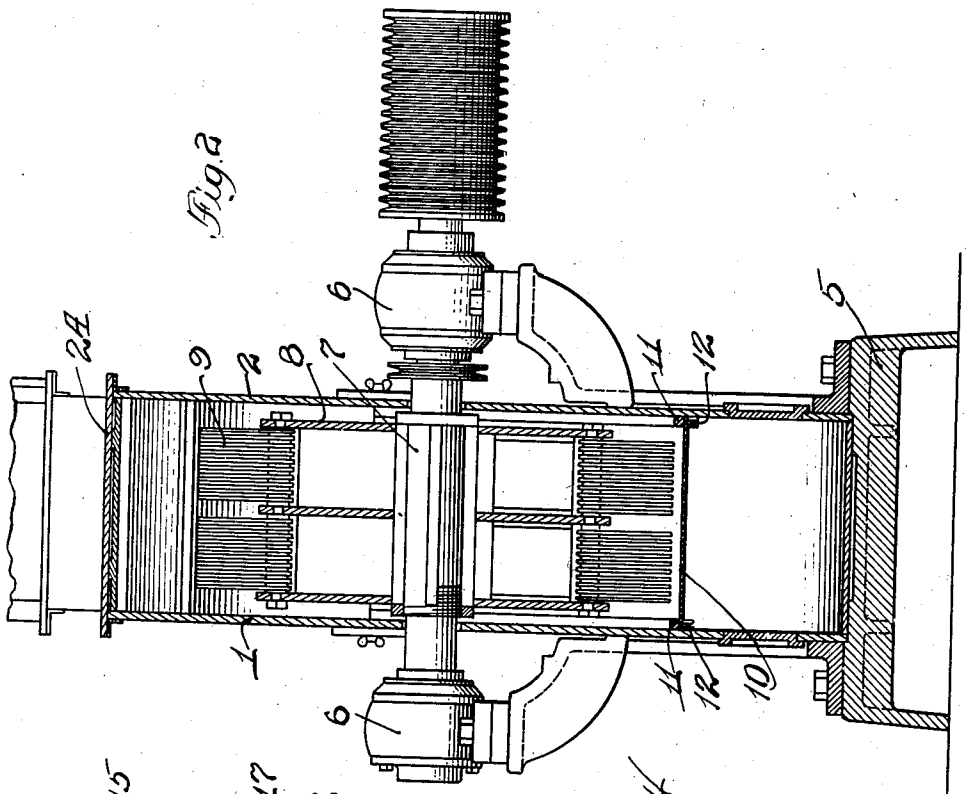


Fig. 3

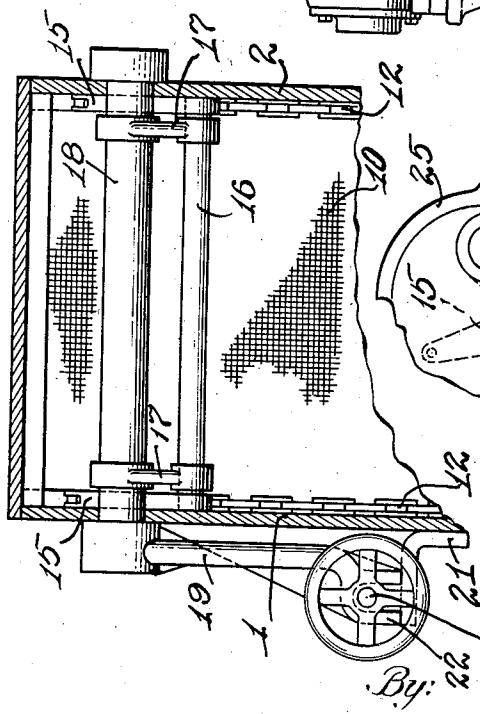
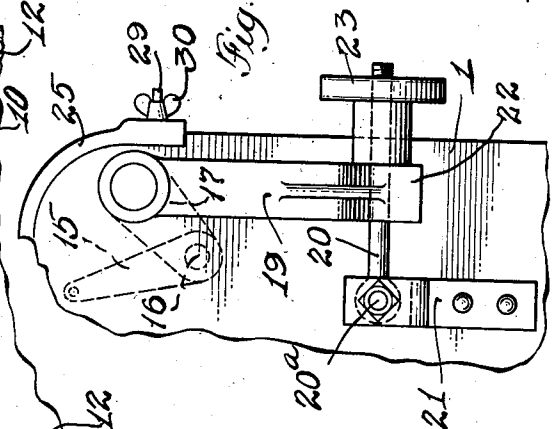


Fig. 4



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UNITED STATES PATENT OFFICE

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RELEASABLE SCREEN ATTACHMENT FOR HAMMER MILLS

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Application January 14, 1935, Serial No. 1,616

2 Claims. (Cl. 83—11)

This invention relates to hammer mills and concerns itself with novel means for supporting a screen whereby the same may be quickly released and removed and a new one or one of different mesh may be quickly and readily inserted.

The invention comprises the novel structure and combination of parts hereinafter described and more particularly pointed out in the appended claims.

In the accompanying drawings which illustrate a preferred form of this invention and in which similar reference numerals refer to similar features in the different views:

Figure 1 is a sectional view through a hammer mill involving this invention.

Figure 2 is a sectional view taken at right angles to the plane of Figure 1.

Figure 3 is an enlarged sectional view taken substantially upon the line III—III of Figure 1 with parts in elevation.

Figure 4 is an enlarged fragmentary elevational view of the left hand end of Figure 3.

In the drawings there is shown a hammer mill comprising a casing having side walls 1 and 2, a front wall 3 and a rear curved wall 4 which rests upon a supporting base 5 which supports the bearings 6 for the rotor shaft 7 upon which a rotor 8 is secured that carries swinging beaters 9 that cooperate with a grind surface for grinding or crushing material as is well known in the art. A portion of this grinding surface is in the form of a screen 10 and the invention herein is directed to the means for releasably supporting the screen.

Upon the side walls 1 and 2 of the casing are secured arcuate bars 11 that are substantially semi-circular in extent. The screen 10 fits against the bars 11 and is clamped thereagainst by means of a pair of flexible members in the form of chains 12. It will be noted that these chains are in opposed relation to the arcuate bars 11 and that the rear ends thereof are attached to arms 13 (only one of which is shown). The arms 13 are secured upon a shaft 14 journalled in the side walls of the case adjacent the rear upper end of the screen.

The forward ends of the chains 12 are attached to the ends of links 15 which are pivoted upon a rod 16 carried by crank arms 17 rigidly attached to a shaft 18 journalled in the side walls of the casing. The arms 17 and links 15 form toggles. The shaft 18 extends through the side wall 1 of the casing, and upon the extended end of said shaft there is secured a tongue or arm 19 which extends downwardly along the side wall of the casing as shown in Figures 3 and 4.

A rod 20 which is pivoted to a bracket 21 as indicated at 20a extends through a bifurcation 22 in the lower end of the arm 19 and is provided with a threaded nut 23 at its end that engages the arm 19 when the chains are in their applied positions. When the nut 23 is threaded against the arm 19 to swing the same in an anti-clockwise direction as viewed in Figure 1, the shaft 18 will be rocked to move the arms 17 toward the arcuate bars 11. At the same time, the links 15 will be elevated and forced in the direction of the screen. When the nut 23 is threaded in a direction away from the arm 19, the pressure exerted against the chains will of course be released. When the nut 23 is sufficiently unthreaded, the rod 20 may swing downwardly through the bifurcation in the arm 19 and wholly release the same, so that the arm 19 may be manually swung to release the chains as much as desired.

The casing is provided with a curved top wall 24 that extends adjacent the forward ends of the bars 11. The front wall is forwardly offset from the top wall 24. A curved cover plate 25 bridges the space between the front wall 3 and the top wall 24. The inner edge of the cover plate 25 extends inwardly between the lower edge of the top wall 24 and the upper front ends of the bars 11. A flange 26 upon the interior side of the cover plate 25 fits against the upper end of the screen. The cover plate 25 has a lower outwardly offset portion 27 forming a shoulder 28 that rests upon the top of the front wall. The offset portion 27 engages the outer surface of the front wall which is provided with threaded pegs 29 that extend through such offset portion. Wing nuts 30 threaded upon the pegs 29 hold the cover plate 25 in place. The cover plate 25 is provided with a handle 31 whereby the same may be removed or replaced. If desirable the section 32 of the top wall 24 adjacent the cover plate including the corrugated surface thereon may also be made removable and supplied with a finger piece 33. The removable cover 25 is provided for the purpose of removing a screen and inserting another as will later more fully appear.

It is desired to point out that the rocking of the shaft 18 in an anti-clockwise direction to clamp the chains 12 against the screen swings the arms 13 and links 15 toward the screen to firmly bind the chains against such screen. It

should also be noted that the operating and releasing means for the chains will always be effective for tightly clamping the chains against the screen no matter if such chains should wear or stretch a certain amount. This is due to the fact that the crank arms 17 can be swung upwardly further if stretching in the chains occurs. Of course, in the present construction as shown, the arms 17 can only be swung upwardly in an operative direction until they strike the screen. There is however sufficient clearance in the illustrated construction for practical purposes.

In the use of such a machine, it is frequently desirable to change the screen, according to the required fineness of the grind. Screens of different mesh are usually held in stock for such a purpose. When it is desired to change the screen, it is only necessary to remove the cover plate 25 and unthread the nut 23 sufficiently to allow the shaft 18 to rock in a clock-wise direction. In this manner, it is possible to drop the chains 12 sufficiently to release the screen so that it can be easily withdrawn through the opening provided by the removed cover. Then a new or different screen may be easily inserted since there will be such a space between the arcuate bars 11 and the released chains that no trouble will be encountered in inserting a new or different screen.

From the foregoing, it will be apparent that a novel and effective mechanism has been invented for clamping and releasing screens in hammer mills or the like that takes up wear or stretching of the clamping members, and that greatly facilitates the removal or replacement of the screen.

I am aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

I claim as my invention:

1. In a machine of the class described, a casing, a pair of arcuate bars attached to said casing in parallel relation, a screen fitting against said bars, a pair of chains, means for movably anchoring said chains adjacent the rear ends of said bars, a shaft adjacent the forward ends of said bars, connections between said shaft and chains, an arm upon said shaft having a bifurcation, a rod pivotally connected to said casing and extending through said bifurcation and a nut threaded on said rod and engaging said arm for rocking said shaft.

2. In a machine of the class described, a casing having side walls, an arcuate bar secured to the interior of each side wall, a screen fitting against said bars, flexible members for clamping said screen against said bars, a pair of swingable arms pivoted to said casing and extending upwardly at an angle toward said screen and attached respectively to the rear ends of said flexible members, a rockable shaft, arms upon said shaft, a rod carried by said arms, upwardly extending links connecting said rod with the front ends of said flexible members and means for operating said shaft..

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