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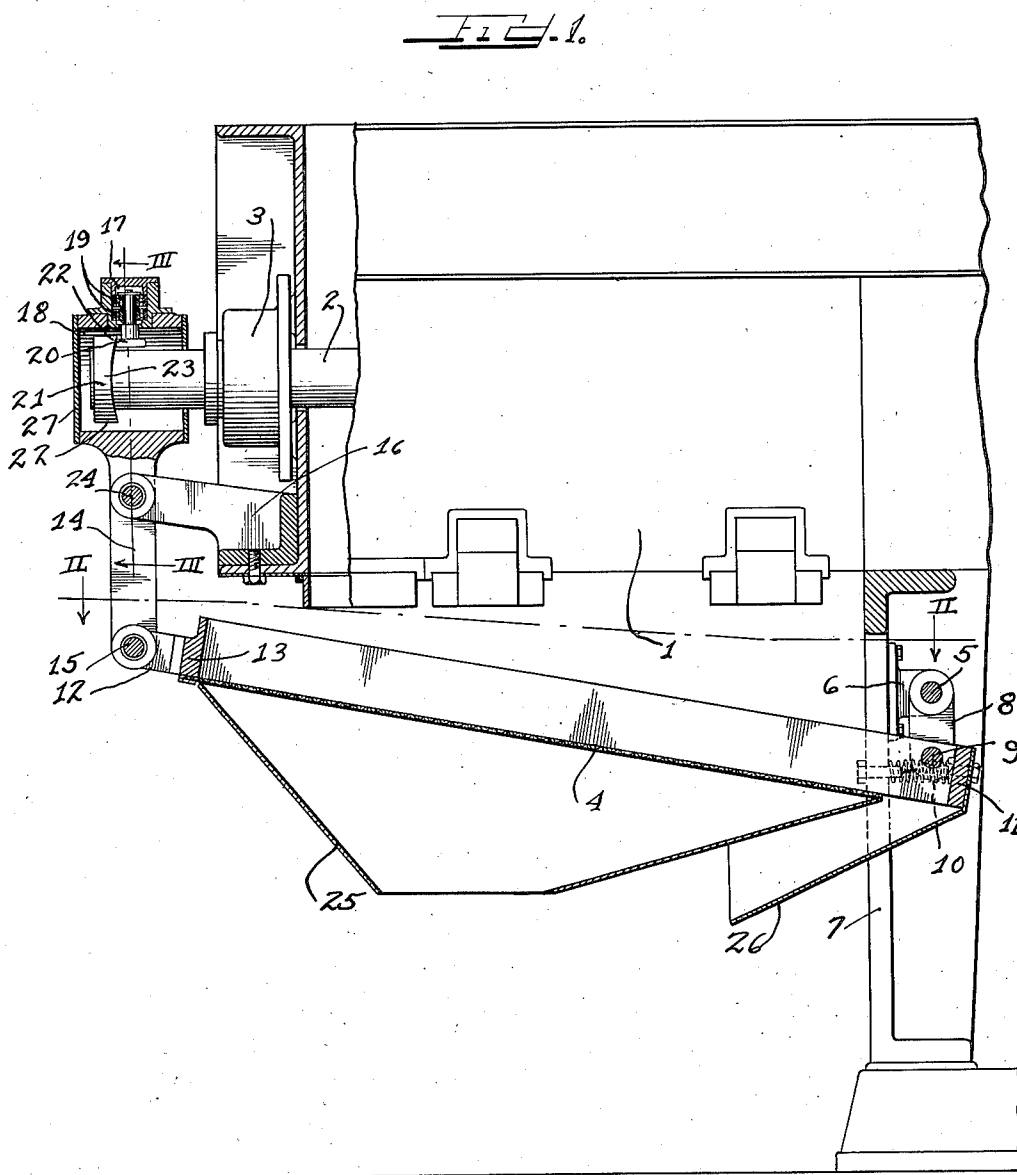
A. J. HAZLE, JR., ET AL

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SHAKING MECHANISM FOR SCREENS

Filed March 22, 1934

2 Sheets-Sheet 1



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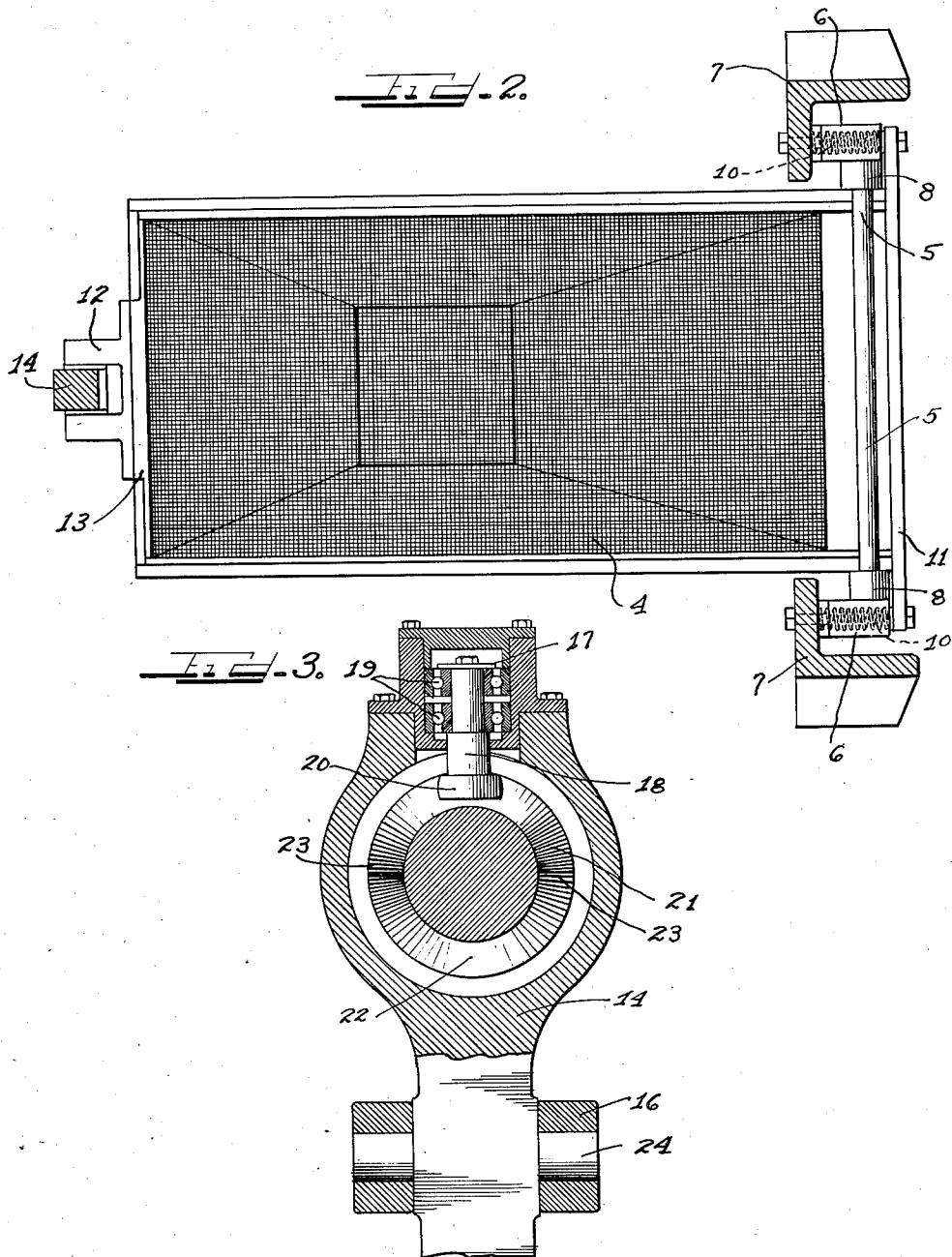
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UNITED STATES PATENT OFFICE

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SHAKING MECHANISM FOR SCREENS

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6 Claims. (Cl. 74-53)

This invention relates to shaking mechanism for screens and concerns itself primarily with means for reciprocating a screen in a longitudinal direction at a more rapid rate than has been done in the past.

The invention comprises the novel structure and combination of parts hereinafter described and more particularly pointed out and defined 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 fragmentary elevational view of a coffee mill equipped with a screen and shaking mechanism therefor involving this invention with parts shown in section at the center line of the machine.

Figure 2 is a sectional view taken upon the line II-II of Fig. 1 looking in the direction of the arrows.

Figure 3 is an enlarged sectional view taken upon the line III-III of Fig. 1 looking in the direction of the arrows.

In order to illustrate the application of the invention, there is shown in the drawings the parts of a machine that cooperate therewith. While the machine may be of any character that requires a screen or scalping shoe to completely perform its function, a coffee granulator designed to remove the strings and coarse matter from the finished product has been illustrated. The parts of the machine illustrated comprises a casing 1 which forms a mixing and comminuting chamber through which a shaft 2 passes that carries comminuting or whipping elements as disclosed in my pending application Serial No. 570,863 filed October 24, 1931. This shaft may be journaled in a suitable bearing 3 attached to the end of the casing.

The finished product discharged from the comminuting and mixing chamber falls upon a scalping screen 4 which is supported for limited reciprocating movement. To this end, a rod 5 is supported by bearings 6 attached to the angular frame members 7 that support the casing 1. Links 8 are journaled upon the rod 5 for supporting the rear end of the screen. The lower ends of the links 8 are loosely connected to a rod 9 that extends thru the side walls of the screen. Coil springs 10 are interposed and supported between the rear end 11 of the screen which projects beyond the sides and the frame members 7.

A bifurcated bearing 12 is secured to the front

wall 13 of the screen. A vertical lever 14 is pivotally connected at its lower end to the bearing 12 by means of a pivot pin 15. It will be noted that the lower portion of said lever is designed to fit in the bifurcation of said bearing. The lever 14 is pivoted intermediate its ends to an arm 16 extending from the front wall of the casing 1. The upper end of the lever 14 is in the form of a hollow cylinder that surrounds the outer end of the shaft 2.

The upper end of the lever 14 is provided with a cylindrical bore 17 in the wall of which a pin or stem 18 is journaled by means of ball bearings 19. The lower end of the stem 18 is in the form of a roller 20, against which a cam 21 secured upon the end of the shaft 2 is adapted to bear. It will be observed that the face of the cam 21 has a plurality of advancing portions 22 and a plurality of receding portions 23. In the present instance, two advancing portions 22 are shown that are adapted for engaging the roller 20 for rocking the lever 14 on its fulcrum 24 which connects the said lever to the arm 16. Such rocking movement of the lever 14 will move the screen 4 forward against the tension of the springs 10. As soon as an advancing portion of the cam passes the roller 22, the springs 10 will retract the screen as a receding portion of the cam moves into the plane of the roller. The springs 10 will always maintain the roller 20 against the cam 21.

Below the perforated portion of the screen, there is a converging chute 25 for guiding the finished product passing thru the screen and at the rear end of the screen beyond the perforated portion there is a chute 26 for conveying the strings and coarse material that fail to pass thru the perforations of the screen.

It will be apparent that the screen is vibrated in a longitudinal direction and this vibratory movement is quite rapid due to the contour of the face of the cam. In addition, the longitudinal movement of the screen facilitates the movement of the strings and coarse matter down the screen.

The ends of cylindrical chamber in the lever 14 are closed by plates 27 and 28 to form an enclosed chamber for containing some lubricant so that the roller and coacting cam may always be lubricated. This will also tend to reduce undue noise in the operation of the machine.

During the operation of the machine, the shaft 2 which is rapidly rotating will impart a plurality of forward movements to the screen during each revolution thereof and the springs 10 will impart a similar number of rearward movements to

the screen. By increasing the number of advancing portions on the cam, the vibratory movement of the screen can be increased as desired. The forward end of the screen will also have an arcuate movement with the fulcrum 24 as a center that will cause the screen to rise and fall to increase its efficiency.

We are 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 we therefore, do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

We claim as our invention:

1. In an apparatus of the class described, a shaft having a cam adjacent one end, a lever having a housing at one end surrounding the end of said shaft, a roller journaled in said housing and engaging said cam, a reciprocating member pivotally attached at its forward end to the other end of said lever, and supported thereby, suspension means for supporting the other end of said member, yielding means for urging said member in one direction against the action of said cam, and a fulcrum member connected to an intermediate point of said lever whereby the forward portion of said member moves in an arcuate path.

2. In an apparatus of the class described, a shaft having a cam adjacent one end, a lever having a housing at one end surrounding said shaft, means within said housing for engaging said cam, a reciprocating member pivotally connected at its forward end to the other end of said lever, means for suspending the other end of said member for reciprocating movements and a fulcrum pivotally attached to an intermediate point of said lever for causing the forward end of said member to travel in an arcuate path.

3. In an apparatus of the class described, a shaft having a cam adjacent one end, a lever having a lubricant containing housing at its upper end surrounding said cam, a roller journaled within said housing and engaging said cam, a reciprocating member pivotally attached at its forward end to the lower end of said lever

and sustained in suspended relation thereby, suspension means for supporting the other end of said member, yielding means for urging said member in one direction against the action of said cam, and a fulcrum member pivoted to an intermediate point of said lever for causing the forward end of said member to move in an arcuate path.

4. In an apparatus of the class described, a horizontal shaft having a cam adjacent one end, a lever having a lubricant containing housing surrounding said cam, means within said housing for engaging said cam, a reciprocable member pivotally connected at its forward end to said lever and sustained thereby, means for movably supporting the other end of said member, and a fulcrum device pivotally attached to an intermediate point of said lever whereby the forward end of said member is adapted to move in an arcuate path.

5. In an apparatus of the class described, a horizontal shaft having a cam adjacent one end, a lever having means at its upper end surrounding said cam and engaging the same, a reciprocable member extending in an inclined plane beneath said shaft and pivotally connected at its forward end to the lower end of said lever and supported thereby, means for movably sustaining the rear end of said member, yielding means for normally urging said member in one direction against the action of said cam, and a fulcrum arm pivoted to an intermediate point of said lever and causing the forward end of said member to move in an arcuate path.

6. In an apparatus of the class described, a horizontal shaft having a cam adjacent one end, a lever having means surrounding and engaging said cam, a reciprocating member pivotally suspended at its forward end from said lever and yieldingly urged in one direction, means for movably suspending the rear end of said member, and an intermediate fulcrum for said lever whereby the forward end of said member is adapted to move in an arcuate path.

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