

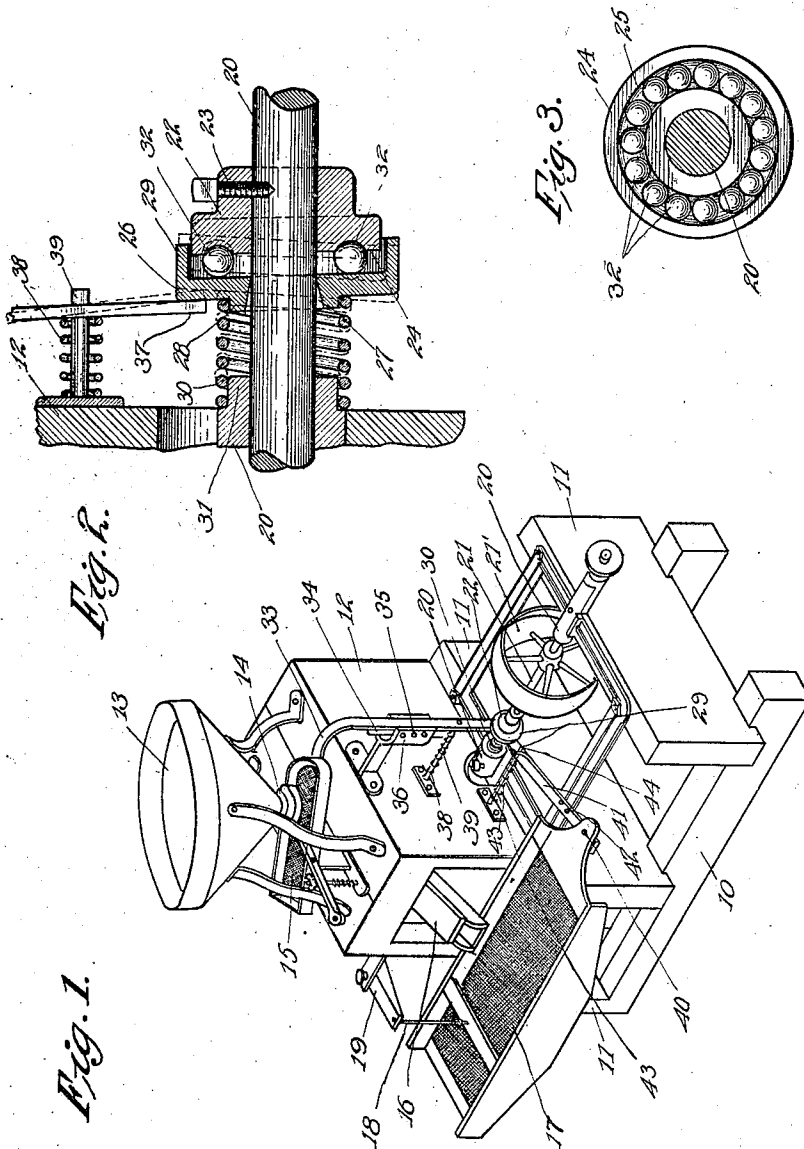
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J. D. MOORE

MECHANICAL MOVEMENT

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MECHANICAL MOVEMENT.

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To all whom it may concern:

Be it known that I, JAMES D. MOORE, a citizen of the United States, residing at North Wilkesboro, in the county of Wilkes and State of North Carolina, have invented certain new and useful Improvements in Mechanical Movements, of which the following is a full, clear, and exact specification.

This invention relates to mechanical movements, and more particularly to a mechanical movement for changing a rotary movement to an oscillating movement.

The invention has for its object to provide a mechanical movement for a drive which will utilize a minimum amount of power for its operation, will automatically take up any wear between the cooperating parts and will operate quietly and efficiently.

The invention described in this specification has been devised particularly for operating cleaning screens or bolters of flour mills, and has been illustrated in connection with a flour mill, but it should be distinctly understood that the invention is not limited to this particular use, but is of general application.

The invention comprises in the present embodiment a rotary driving member and a member resiliently held in a position adjacent the rotary member for communicating the rotary motion of the driving member to the elements to be driven thereby. The rotary member is provided with a front surface which is inclined at an angle with respect to a plane perpendicular to the shaft upon which the rotary member is mounted. This inclined surface is provided with a circular groove adapted to receive a set of balls. In view of the fact that the front surface of the driving member is inclined, as above described, the rotation of this member will cause the balls carried by the groove formed therein to move longitudinally with respect to the driving shaft, thereby oscillating the second member, which is disposed adjacent the rotary member and in a position to be engaged by the balls.

I have illustrated one embodiment of the invention in the accompanying drawings, and in these drawings—

Fig. 1 shows in perspective a flour mill having my improved mechanical movement embodied therein;

Fig. 2 is an enlarged view showing in section the cooperating parts of the improved movement; and

Fig. 3 is a front elevational view, partly in section, showing the front face of the rotating member which is secured to the drive shaft.

The flour mill, in connection with which my invention is illustrated, comprises a base 10 having a plurality of upright frame members 11 and secured thereto the members 11 supporting a casing 12 in which is mounted the usual grinding mechanism. A hopper 13 is carried by the casing 12, and is provided with a discharge chute 14 which empties into an oscillatory screen 15. A discharge chute 16 conveys the ground meal from the grinding mechanism to a bolter 17 which is supported at its front end by a flexible link 18 carried by a bracket 19 which in turn is secured to the casing 12. The uprights 11 are provided with bearings 20 in which is supported a main drive shaft 21 for the grinding mechanism, this shaft also being utilized to oscillate the screen 15 and the bolter 17. A drive pulley 21' is secured to the drive shaft and is driven by a belt in connection from any suitable source of power.

Referring now to Fig. 2, I will describe the construction of the mechanical movement by means of which the screen 15 and bolter 17 are oscillated. A collar 22 is fixedly secured to the shaft 20 by means of a set screw 23, this collar being provided with an end surface 24 which is disposed in a plane inclined at an angle with respect to a plane passing through the shaft 20 at right angles with respect to said shaft. From the showing in Fig. 2 it will be seen that the portion of the surface 24 disposed above the shaft 20 is positioned in advance of the portion of the surface 24 disposed below the shaft 20. The surface 24 has formed thereon a circular groove 25 which is formed concentric with the axis of the shaft 20. A collar 26 is also carried by the shaft 20 in a position adjacent the collar 22, this collar being provided with a tapered central opening 27 to permit the collar to be oscillated on the shaft 20. The collar 26 is also provided with oppositely extending flanges 28 and 29, the flange 29 being formed on the outer pe-

riphery of the collar and overlapping a portion of the peripheral surface of the collar 22. The spring 30 is interposed between the collar 26 and the casing 12, this spring being positioned at one end of the flange 23 and at its opposite end on a shoulder 31 formed on the inner bearing 20. A plurality of balls 32 are positioned in the groove 25 formed in the collar 22 and are held in this groove by means of the collar 26 which is forced toward the collar 22 by the spring 30.

The oscillating motion of the collar 26 is communicated to the screen 15 and the bolter 17 in the following manner.

15 The screen is supported on the front end of a resilient strap 33 which extends downwardly from the screen and is secured to a member 34 which in turn is pivoted at 35 to a bracket 36 secured to the casing 12. The strap 33 is extended below its connection to the pivot member 34 to a position adjacent the outer surface of the collar 26, as shown at 37, and is held in engagement with said surface by means of a spring 38 which is carried by a rod 39 which in turn is mounted on the casing 12. The lower end 37 of the strap 33 is provided with a suitable aperture through which the rod 39 extends, the spring 38 being positioned between the strap and the casing. In this manner the lower end 37 of the strap is constantly held in engagement with the outer surface of the collar 26. The bolter 17 has pivoted thereto at 40 a lever 41 which is pivoted at 42 to the frame of the mill, the inner end of the lever being held in engagement with the outer surface of the collar 26 by means of a spring 43 carried by a rod 44 which is secured to the casing 12 and passes through a suitable aperture formed in the lever 41, the spring being positioned between the lever and the casing. In this manner the inner end of the lever is constantly held in contact with the outer surface of the collar 26.

45 Having described the construction of my improved mechanical movement I will now briefly outline the operation of the movement.

50 As the shaft 20 is rotated by means of suitable power, the collar 22 will also be rotated, and in view of the inclination of its front surface, will change this rotary movement to an oscillating movement of the collar 26. This movement of the collar 22 is communicated to the collar 26 by means of a plurality of balls 32 which are held in the groove 25 formed in the collar 22 by means of a spring 30. The oscillating movement of the collar 26 is communicated to the screen 15 and bolter 17, respectively, through the strap or lever 33 and lever 41.

From the above description of the construction and operation of my improved invention, it will be seen that I have provided

a simple and effective combination of coacting parts, and a construction which may be operated with a minimum expenditure of power, and by means of which any wear between the coacting parts will be automatically compensated for.

While I have in the above specification described one embodiment which my invention may assume, it should be distinctly understood that the invention is not limited to the specific construction illustrated, and that modifications and changes in the construction and arrangement of the cooperating parts may be made without departing from the spirit and scope of the invention, as expressed in the following claims.

I claim:

1. In a mechanical movement, a rotatable driving member, an oscillatory collar, said rotatable driving member having an inclined surface on one end thereof facing said collar, and resilient means for maintaining said oscillatory member in a position adjacent said rotatable member whereby the movement of said rotatable member will be communicated to said oscillatory collar.

2. In a mechanical movement, a driving member, a driven member, one of said members being provided with an end surface inclined with respect to a plane perpendicular to the axis of rotation of said member, a plurality of balls disposed between said members and resilient means for maintaining said other member in contact with said balls.

3. In a mechanical movement, a driving member, a driven member, one of said members being provided with an end surface inclined with respect to a plane perpendicular to the axis of rotation of said member, said surface having a groove formed therein, a plurality of balls positioned in said groove and resilient means for maintaining said other member in contact with said balls.

4. In combination, a driving member having an end surface inclined with respect to a plane perpendicular to the axis of rotation of said driving member, an oscillatory driven member disposed adjacent said driving member and having a peripheral flange overlapping said driving member, and resilient means for forcing said oscillatory member toward said driving member.

5. In a mechanical movement, a shaft, a driving member secured thereto and having formed on one end thereof a surface inclined with respect to a plane perpendicular to the axis of rotation of said shaft, an oscillatory member having a central opening therein for the reception of said shaft, and having a peripheral flange overlapping said driving member, and resilient means for forcing said oscillatory member in a direction toward said driving member.

6. In a mechanical movement, a shaft, a
driving member, secured thereto and having
formed on one of its ends an inclined surface
having a circular groove formed therein, an
5 oscillatory member having a tapering open-
ing receiving said shaft and adapted to os-
cillate with respect thereto, resilient means
for forcing said oscillatory member toward
the driving member and a plurality of balls
10 disposed in the groove formed in said driv-

ing member and positioned between said
groove and said oscillatory member.

7. In combination, an oscillatory collar,
means for oscillating said collar, a plurality
of operative elements, levers connected there- 15
to, and resilient means for forcing said
levers into contact with said collar.

In testimony whereof I affix my signature.

JAMES DUDLEY MOORE.