

No. 752,755.

PATENTED FEB. 23, 1904.

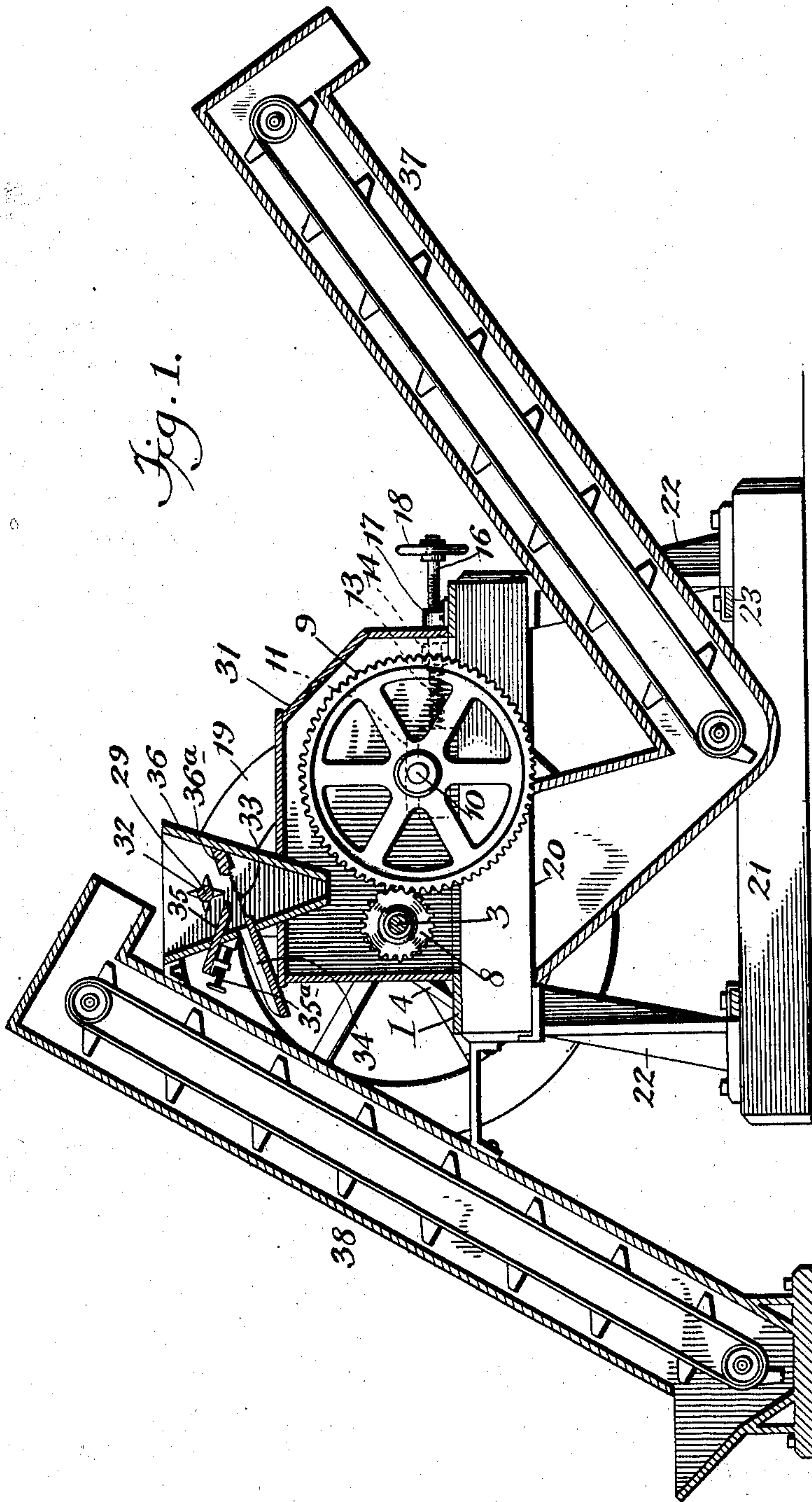
E. BROWN.

MILL FOR ROLLING OR GRINDING GRAIN, &c.

APPLICATION FILED APR. 7, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
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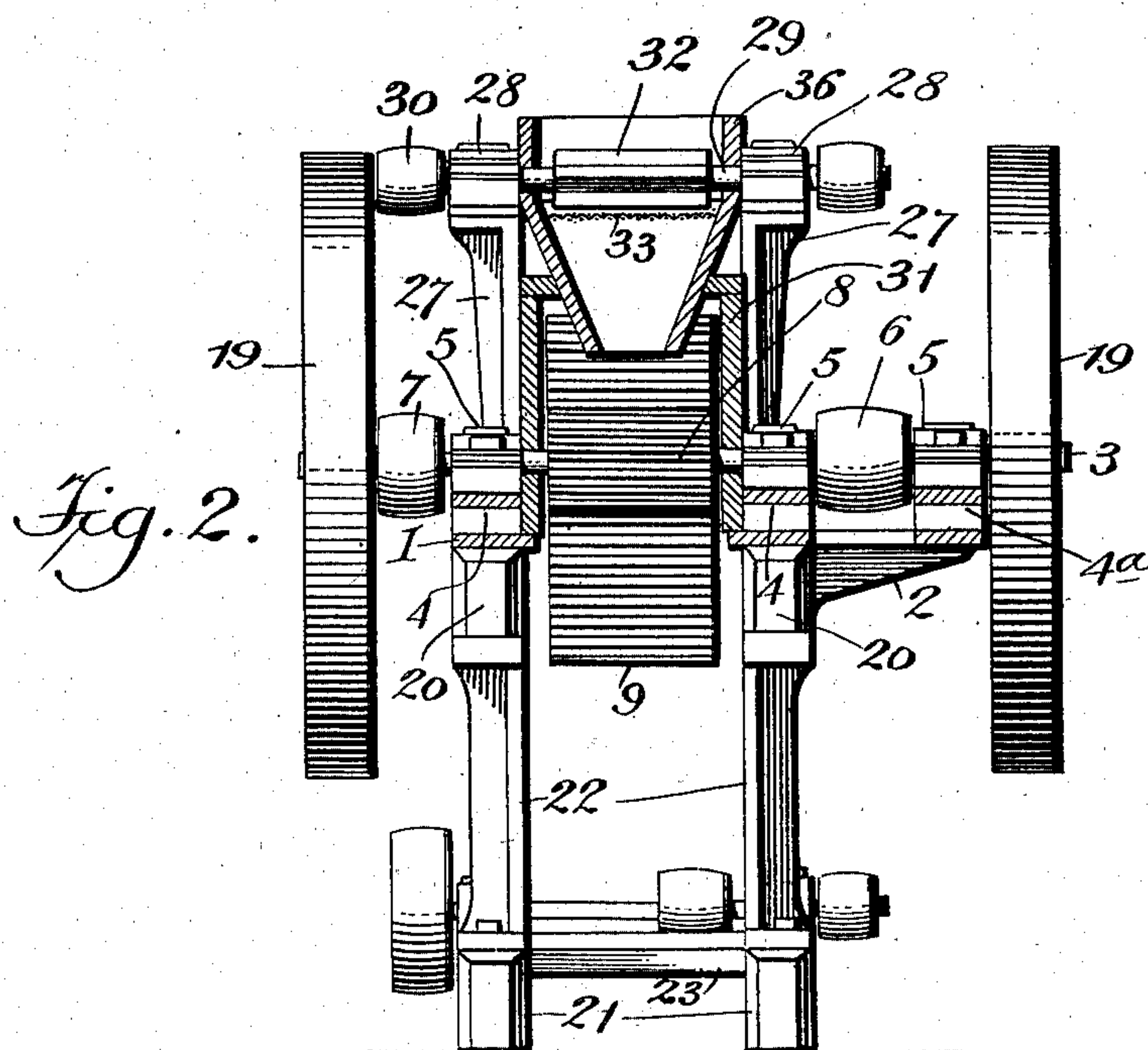
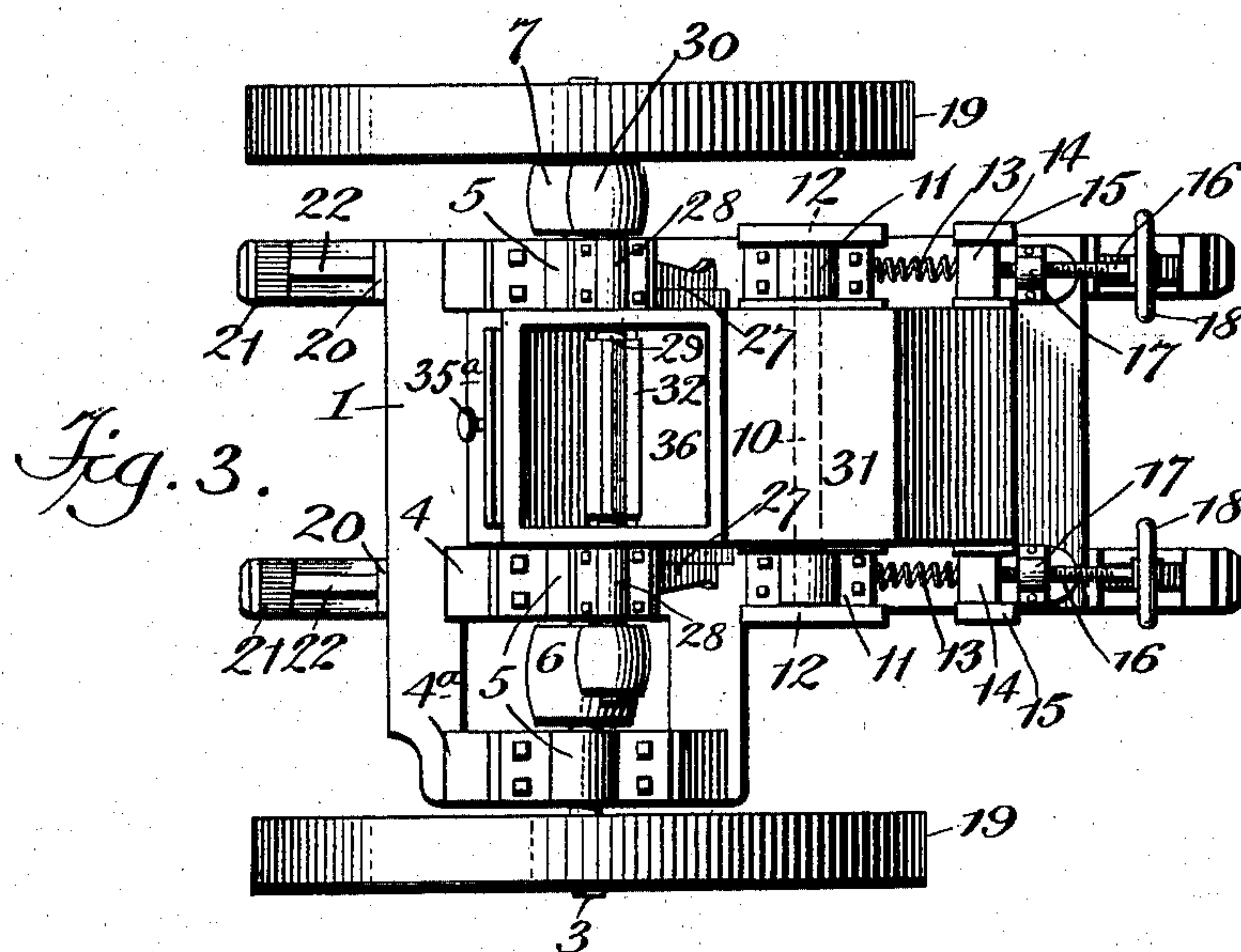
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UNITED STATES PATENT OFFICE.

EUGENE BROWN, OF COLFAX, WASHINGTON, ASSIGNOR OF TWO-THIRDS TO FRANK H. BROWN AND FRED H. BROWN, OF WHITMAN COUNTY, WASHINGTON.

MILL FOR ROLLING OR GRINDING GRAIN, &c.

SPECIFICATION forming part of Letters Patent No. 752,755, dated February 23, 1904.

Application filed April 7, 1903. Serial No. 151,489. (No model.)

To all whom it may concern:

Be it known that I, EUGENE BROWN, a citizen of the United States, residing at Colfax, in the county of Whitman and State of Washington, have invented a new and useful Mill for Rolling or Grinding Grain, &c., of which the following is a specification.

This invention relates to mills for rolling and grinding grain or other substances.

10 The object of the invention is to produce a simple, durable, and effective mill which may be run at small expenditure of power and which may be used to grind materials to any desired degree of fineness.

15 The invention consists in the construction and combination of parts of a mill hereinafter fully described, shown in the accompanying drawings, and having the novelty thereof specifically pointed out in the appended claims.

20 In the drawings, Figure 1 is a view in longitudinal section through the mill with conveyers for introducing the material to be ground and for removing the product of the mill. Fig. 2 is a view in vertical transverse section through the mill in the plane of the center of the driving-shaft. Fig. 3 is a plan view of the bed-plate of the mill with the super-structure in position.

25 In the various views corresponding parts are designated by the same characters of reference throughout.

Referring to the drawings in detail, 1 designates the bed-plate of the mill, which is preferably of the form shown in Fig. 3, a projection being provided on one end of the bed-plate near one side to furnish additional support for the main driving-shaft and the band-wheel upon its end.

2 is an arm-brace for supporting the lateral projection at the side of the bed-plate.

3 designates the main driving-shaft, which is arranged transversely of the bed-plate and at one end projects over the lateral extension of the bed-plate, being supported in journals 4, resting on bearing-supports 5 and 4^a.

Mounted on the main driving-shaft 3 near the ends are pulleys 6 and 7, the former be-

ing the pulley to which power is transmitted for driving the mill and the latter the pulley from which power is transmitted to the other portions of the mill, as will be hereinafter explained. To insure smoothness of operation in the mill, a heavy balance-wheel 19 is rigidly mounted at each end of the main driving-shaft 3. Also mounted on the main driving-shaft 3 and rigidly secured thereto is a grinding-roll 8, which lies over a central opening in the bed-plate. (Best shown in Fig. 3.) The grinding-roll 8 is of small size and has a corrugated surface, the corrugations being in the form of dull cogs all the curves of which are made circular arcs in order to prevent the lodgment of grain in the space between the cogs and to insure smooth engagement with similarly-formed cogs on the large grinding-roll 9, which is in mesh with the small grinding-roll just described. The large roll 9 is mounted upon a shaft 10, journaled in bearing-blocks 11, which are slidably mounted in guideways 12, provided therefor on the upper surface of the bed-plate, as best seen in Fig. 3. In order to hold the large roll 9 in proper engagement with the small roll 8, I provide heavy springs 13 between the bearing-blocks 11, slidably mounted on the bed-plate, as already described, and abutment-blocks 14, also slidably mounted on the bed-plate in guides 15, the position of the abutment-blocks being adjustable by means of heavy set-screws 16. The set-screws 16 are mounted in internally-threaded stationary blocks 17, mounted upon the bed-plate 1, near one end thereof, as best seen in Fig. 1. For turning the set-screws 16 a hand-wheel 18 is rigidly mounted upon the end of each.

The bed-plate of the mill is supported upon a frame composed of heavy timbers 20, secured together in any suitable manner, and this frame is raised above the base-frame composed of timbers 21 by means of legs 22, as shown in Fig. 1. To insure perfect steadiness of the mill structure, the base members 21 are braced by cross-sills 23.

Mounted upon the bed-plate 1 and extend-

ing over the grinding-rolls I provide a housing 31 of the form shown in Fig. 1, having on the upper surface thereof a hopper 36 of the usual tapered form and containing a force-feed device comprising an agitator 32, mounted on a shaft 29, which is journaled in bearing-blocks 28 at the top of standards 27, as seen in Figs. 1 and 2. The agitator consists, preferably, of a plurality of radially-disposed wings spaced equidistant around the shaft 29 and of such size that they extend nearly to the bottom of the hopper. Motion is imparted to the agitator by means of a belt, which runs over the pulley 7 on the main driving-shaft 3 and a pulley 30, provided on the end of shaft 29, to which the agitator is secured. In order to control the rate of feed of the grain or other material in the mill, the bottom of the hopper is formed out of a stationary member 36^a at one side thereof and a slide 35 placed opposite the stationary member and provided with a set-screw 35^a for adjusting its position, so as to make the opening between the edges of stationary member 36^a and slide 35 as wide or as narrow as desired.

Immediately below the opening between the slide 35 and the stationary member 36^a is a screen 33, which is set at a slight angle to the horizontal, as shown in Fig. 1, and has adjoining it at its lower side and forming a continuation of its upper surface a chute 34, which extends through an opening provided in the side wall of the hopper 36. The meshes of the screen 33 are of sufficient size to permit the passage of grain, but are small enough to take out burs, pieces of iron, and objectionable materials of similar size.

The feeding mechanism described in the preceding paragraph is of course to be used on the mill only when employed in grinding grain. When the mill is used as a rock-crusher, the agitator, screen, and chute for the escape of objectionable substances must be omitted, as they would only interfere with the action of the mill.

When the mill is used as a grain-mill or as a rock-mill, it is desirable to provide conveyers for supplying the material to the mill for grinding and removing the finished products. The conveyers shown at 37 and 38 are of convenient form for this purpose; but any other suitable form of conveyer may be substituted, and as the nature of the conveyers employed has nothing to do with this invention it is deemed unnecessary to give any detailed description of conveyers for use with the mill.

It will be readily understood from the foregoing description and the accompanying drawings that by means of the set-screws 16 and the associated parts the pressure exerted by the springs 13 upon the bearing-blocks 11, in which is journaled the shaft supporting the large grinding-roll 9, may be adjusted so as to exert any desired degree of pressure upon

the bearing-blocks 11, and consequently the pressure of the roll 9 against roll 8 may be correspondingly varied. By varying the pressure of the two rolls in the manner just explained the mill may be made to serve as a grinding-mill or a rolling-mill only, and the degree of fineness of the product may be determined by the size of the corrugations employed on the grinding-rolls, it being very easy to remove the rolls from the mill and substitute others of larger or smaller corrugations, as desired.

By having the grinding-rolls held in contact by heavy springs instead of by any positive adjusting means, injury to the mill from the passage of nail-heads and other similar pieces of metal between the rolls is prevented, the springs always yielding sufficiently to allow such objects to pass between them.

When the mill is in operation, the material to be ground is introduced into the hopper 36 from the conveyer 38 or in any other desired manner and is fed downward between the slide 35 and stationary member 36^a by the rotation of the agitator 32, passing through the screen 33, which separates the foreign materials mixed with the grain, and thence downward to pass between the downwardly-extending walls of the hopper, finally falling between the grinding-rolls 8 and 9, which revolve in the direction indicated by the arrows and grind or roll the grain to the form desired. After passing between the grinding-rolls the grain emerges in the form of chop or some similar product and falls into the flared end of conveyer 37, which is placed in suitable position beneath the grinding-rolls.

Having thus described the construction and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a mill, of a pair of grinding-rolls having their axes in substantially the same horizontal plane, a hopper having its opening above the points of contact of said grinding-rolls, an obliquely-disposed screen in said hopper, a chute extending laterally from said hopper at the margin of said screen, one of the sides of said hopper being provided with an opening immediately above said chute, a slide disposed obliquely across said hopper above said screen, means for positively adjusting the position of said slide, and a force-feed device above said slide.

2. In a mill, the combination with a pair of grinding-rolls having their axes in substantially the same horizontal plane, of a feed-hopper having its discharge-opening immediately above the points of contact of said rolls, a screen disposed obliquely across said hopper between the top and bottom thereof, a chute extending laterally from one side of said hopper at the margin of said screen, said side of the hopper being provided with an

opening immediately above said chute, a slide
disposed obliquely across said hopper above
said screen, a screw associated with said slide
for adjusting the position thereof, and a rotary
5 force-feed member mounted in said hopper im-
mediately above said slide.

In testimony that I claim the foregoing as

my own I have hereto affixed my signature in
the presence of two witnesses.

EUGENE BROWN.

Witnesses:

E. M. WARNER,
R. H. VERMILYE.