

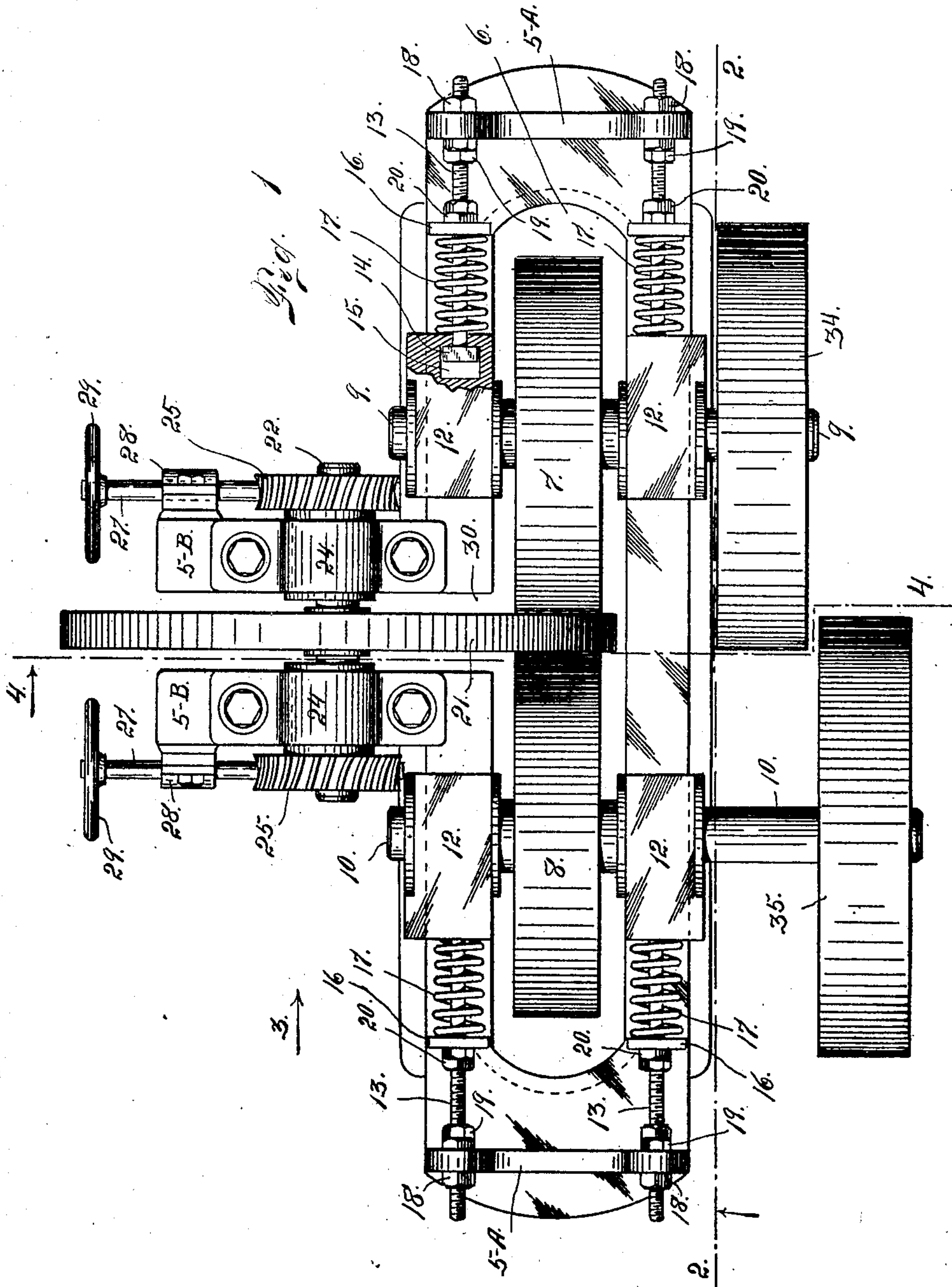
J. H. ELSPASS.
ROLLER MILL.

APPLICATION FILED APR. 2, 1908.

916,129.

Patented Mar. 23, 1909.

3 SHEETS—SHEET 1.



Witnesses
Otto E. Hoddick.
Dena Nelson.

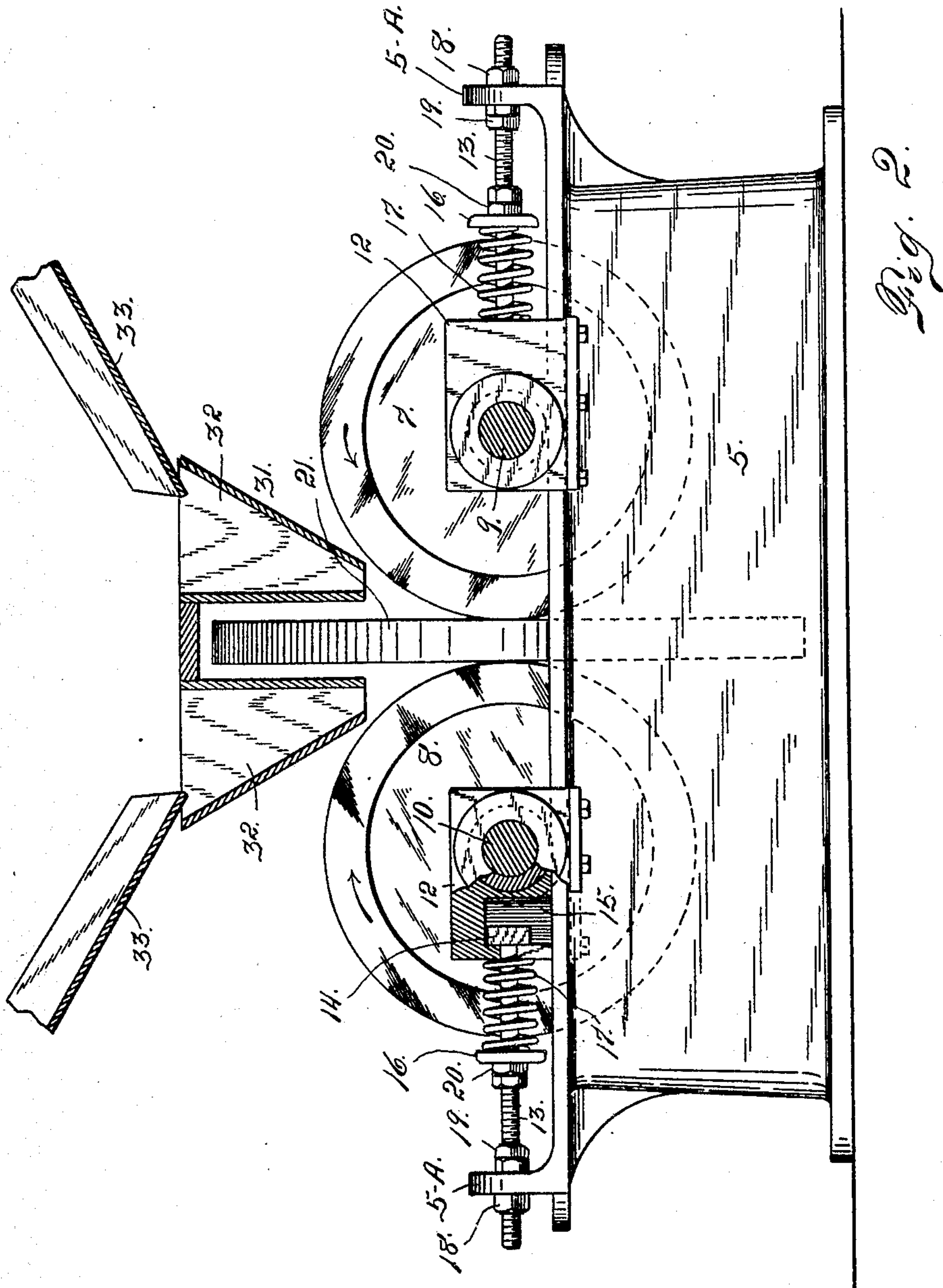
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 3 SHEETS—SHEET 3.

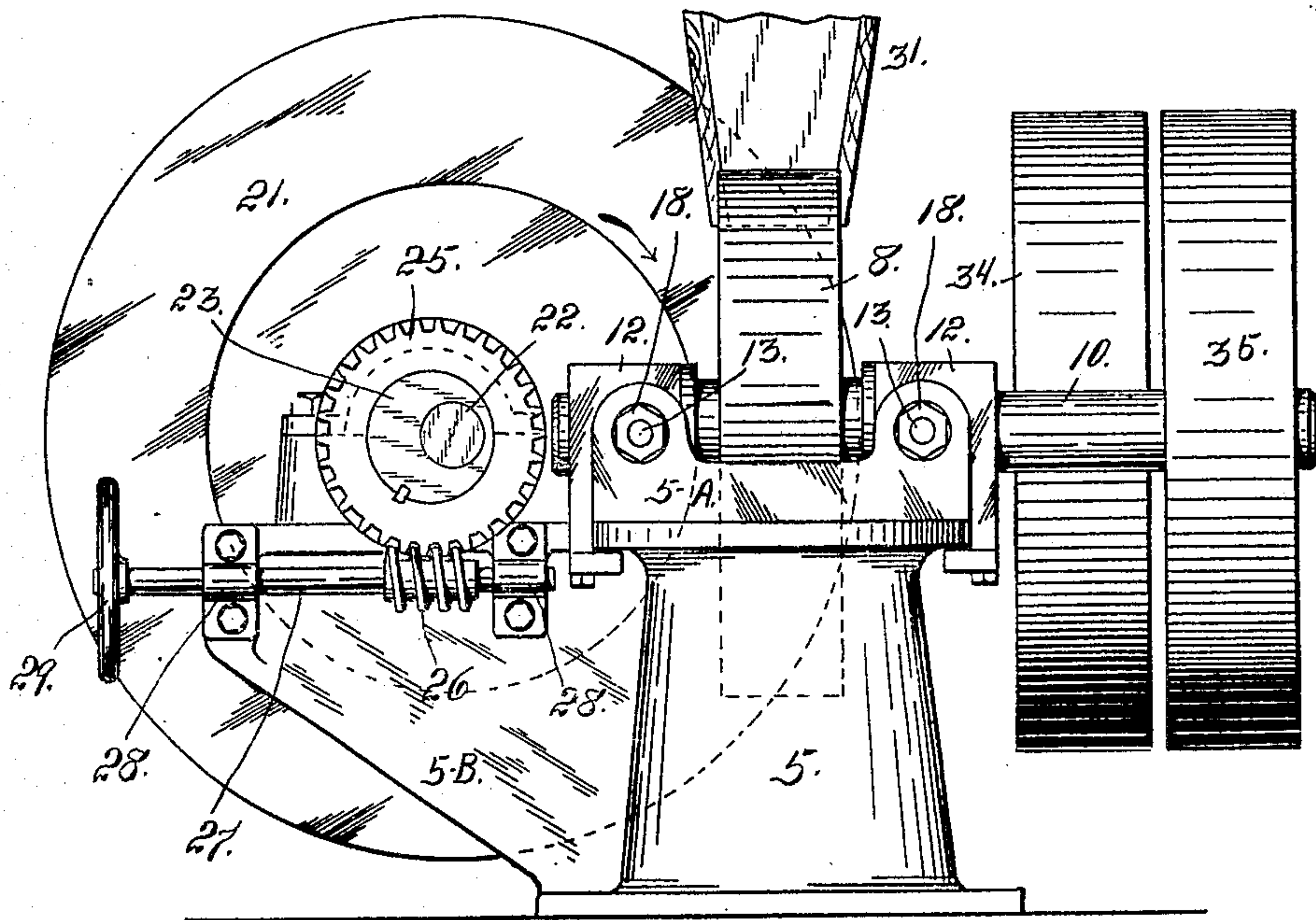


Fig. 3.

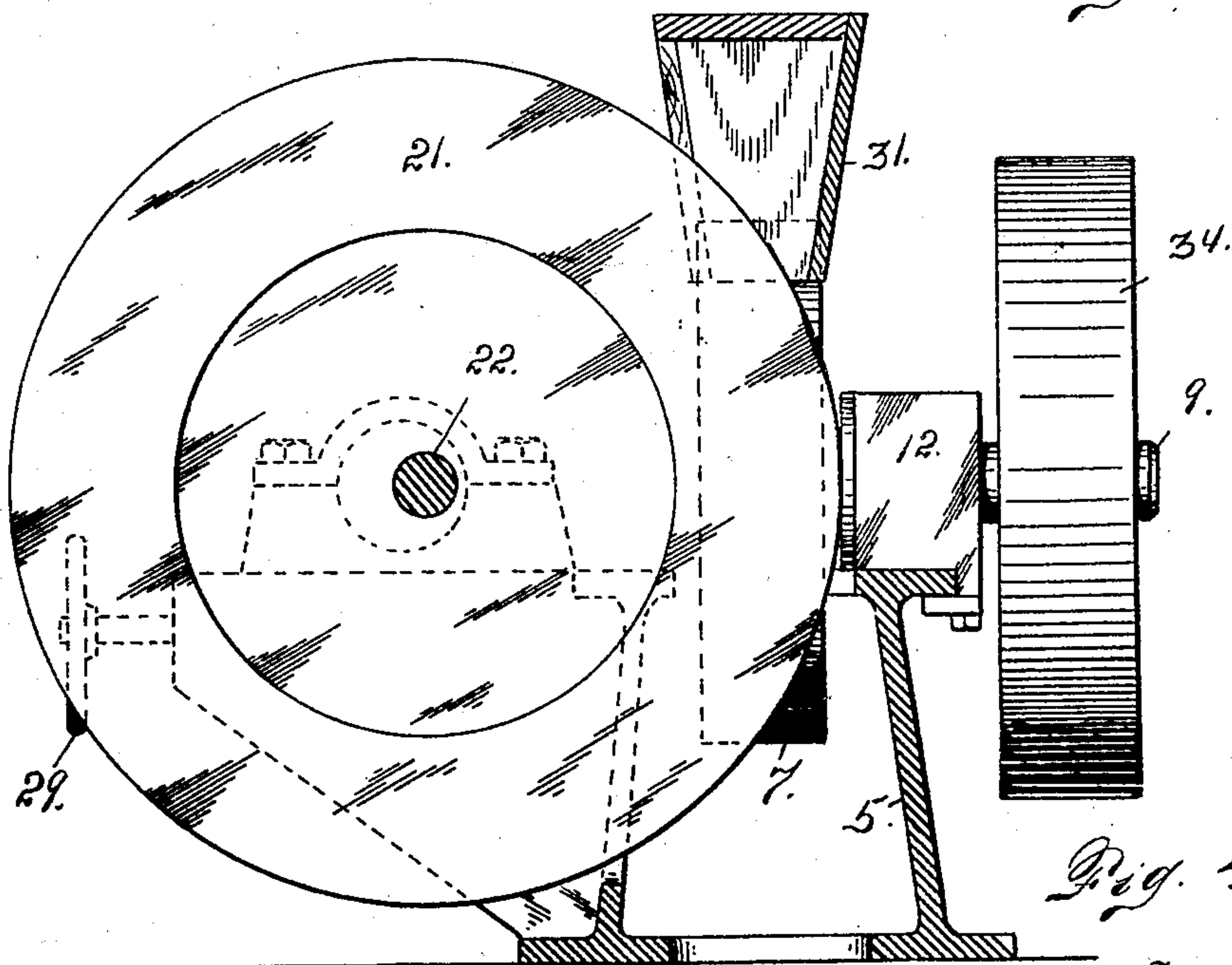


Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN H. ELSPASS, OF DENVER, COLORADO, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE TRIPLEX ROLL COMPANY, OF DENVER, COLORADO, A CORPORATION OF COLORADO.

ROLLER-MILL.

No. 916,129.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed April 2, 1906. Serial No. 309,360.

To all whom it may concern:

Be it known that I, JOHN H. ELSPASS, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Roller-Mills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in roller mills or mills in which rolls are employed for pulverizing purposes.

The distinguishing feature of my improved mill consists in a third or intermediate roll mounted to coöperate with two rolls of ordinary construction, the latter being mounted with a sufficient intervening space for the entrance of the third roll whose axis extends at right angles to the axes of the main rolls. The main rolls are directly driven while the intermediate roll is operated from the other rolls. The intermediate roll is eccentrically mounted and means are provided for adjusting it to change its pulverizing zone on opposite sides, the said zone corresponding with the path of the main rolls or their circular area of engagement on the intermediate roll during the operation of the mill.

Having briefly outlined my improved construction I will proceed to describe the same in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a top plan view of my improved roller mill, with the feed hopper removed in order to clearly illustrate the rest of the mechanism. Fig. 2 is a section taken on the line 2—2 Fig. 1 viewed in the direction of the arrow. Fig. 3 is an elevation of Fig. 1 viewed in the direction of arrow 3 Fig. 1. Fig. 4 is a section taken on the line 4—4 Fig. 1 looking toward the right or in the direction of arrow 4.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a suitable stationary bed which may be of any suitable construction. This bed as shown in the drawing is an integral casting with a central opening 6 into which the lower portions of

the rolls extend. The two main rolls 7 and 8 are substantially the same size. These rolls are mounted on shafts 9 and 10 journaled in boxes 12 suitably mounted upon the stationary bed. These boxes are adjustable upon the bed by the manipulation of bolts 13 whose heads or inner extremities 14 are inserted in sockets 15 formed in the boxes 12. Surrounding each bolt 13 between its box and a stop 16 thereon, is located a coil spring 17 whereby the box as well as the shaft in which it is journaled is yieldingly retained. The bolts are passed through stationary members 5^A formed integral with the opposite extremities of the bed. The bolts are connected with these end projections by means of nuts 18 and 19 threaded on the bolts and occupying positions on opposite sides of the projections. The position of the stops 16 determines the tension of the springs 17. These stops are adjustable on the bolts by regulating the position of nuts 20.

The two rolls 7 and 8 are so arranged that their peripheries or convex pulverizing surfaces where they approach nearest each other, are sufficiently separated to receive the third or intermediate roll 21. This intermediate roll is fast on a shaft 22 journaled in eccentrics 23 carried by worm wheels 25 whose toothed peripheries are engaged by worms 26 mounted on shafts 27 journaled in bearings 28 mounted on the stationary bed. The eccentrics 23 are formed integral with or made fast in the worm wheels, extend beyond the same and engage bearings 24 mounted on lateral projections 5^B of the bed. The outer extremity of each worm shaft is provided with a hand wheel 29 for manipulating purposes.

The stationary bed 5 is open on one side as shown at 30, this space being for the entrance of the intermediate roll 21. In order to form means for mounting the third or intermediate roll, the body of the bed is provided with the integral projections 5^B which form the support for the third roll, its connections and manipulating devices.

It is evident that by the operation of the worm shafts and their engaging wheels, the position of the intermediate roll with reference to the rolls 7 and 8, may be changed at pleasure since the shaft 22 is eccentrically mounted. This changes or varies the wearing zone on opposite sides of the intermediate roll, in order to prevent the grooving of the

roll by constant wear in a single zone. This variation also prevents the grooving of the rolls 7 and 8 and has a tendency to cause their peripheries to wear evenly.

5 When the machine is in operation the material to be treated is delivered to the mill from a hopper 31 composed of two members 32 which project downwardly on opposite sides of the roll 21. Each member
10 of the hopper is open at the bottom whereby the material to be treated is delivered between the roll 21 and the rolls 7 and 8 on opposite sides thereof. Therefore during the operation of the machine each roll 7 and 8
15 coöperates with the intermediate roll, to perform the pulverizing function. Mounted above the feed hopper, chutes 33 are shown one for each member 32 of the hopper.

When the machine is in operation the
20 rolls 7 and 8 are propelled from any suitable source of power, transmitted in any manner desired. As shown in the drawing the shaft 9 is provided with an operating pulley 34, while the shaft 10 is provided with a similar
25 pulley 35. Each pulley may be connected with a belt (not shown) leading from a line shaft.

Assuming that the rolls 7 and 8 are rotated and material is fed to the mill from the
30 hopper, the intermediate roll will be rotated by the action of the rolls on opposite sides, said operation being facilitated by the ore passing between the peripheries of the main rolls and the opposite sides of the inter-
35 mediate roll. It is believed that a construction of this character will not only perform the pulverizing function more efficiently, but will also have a greatly increased capacity over mills having but two rolls
40 coöperating in the usual or ordinary manner.

It may be stated that no attempt has been made in the drawing to show all the

details of an operating mill. For instance the necessary cheek plates are not disclosed as they are not considered vital features of
45 my improved construction. These details are omitted to facilitate clearness in illustrating the main features of construction.

Having thus described my invention, what I claim is:

1. A roller mill composed of three coöperating rolls, two of the rolls having parallel axes, the axis of the third roll extending at right angles to the axes of the main rolls, the main rolls being adjustably mounted and
55 having their peripheries separated, and the third roll entering the separating space between the main rolls, the third roll being adjustable to vary or change its pulverizing zone on opposite sides, means for positively driv-
60 ing the main rolls, the third roll receiving its action entirely from the action of the main rolls.

2. A pulverizing mill comprising three coöperating rolls, two of which have parallel axes and peripheries separated at their
65 nearest points of contact, a third roll occupying a plane at right angles to the plane of the main rolls, and entering the space between the latter, the main rolls being spring-
70 actuated whereby their peripheries are kept in constant contact with the faces of the third roll, the third roll being eccentrically mounted, and means for adjusting the last
75 named roll to change the wearing zone on opposite sides, and means for positively driving the main rolls, while the third roll receives its action from the main rolls only.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. ELSPASS.

Witnesses:

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A. J. O'BRIEN.