July 24, 1923 1,463,036

G. J. BRYEN

ROLLING MILL RAGGING MECHANISM

Filed Dec. 23, 1920 2 Sheets-Sheet 1

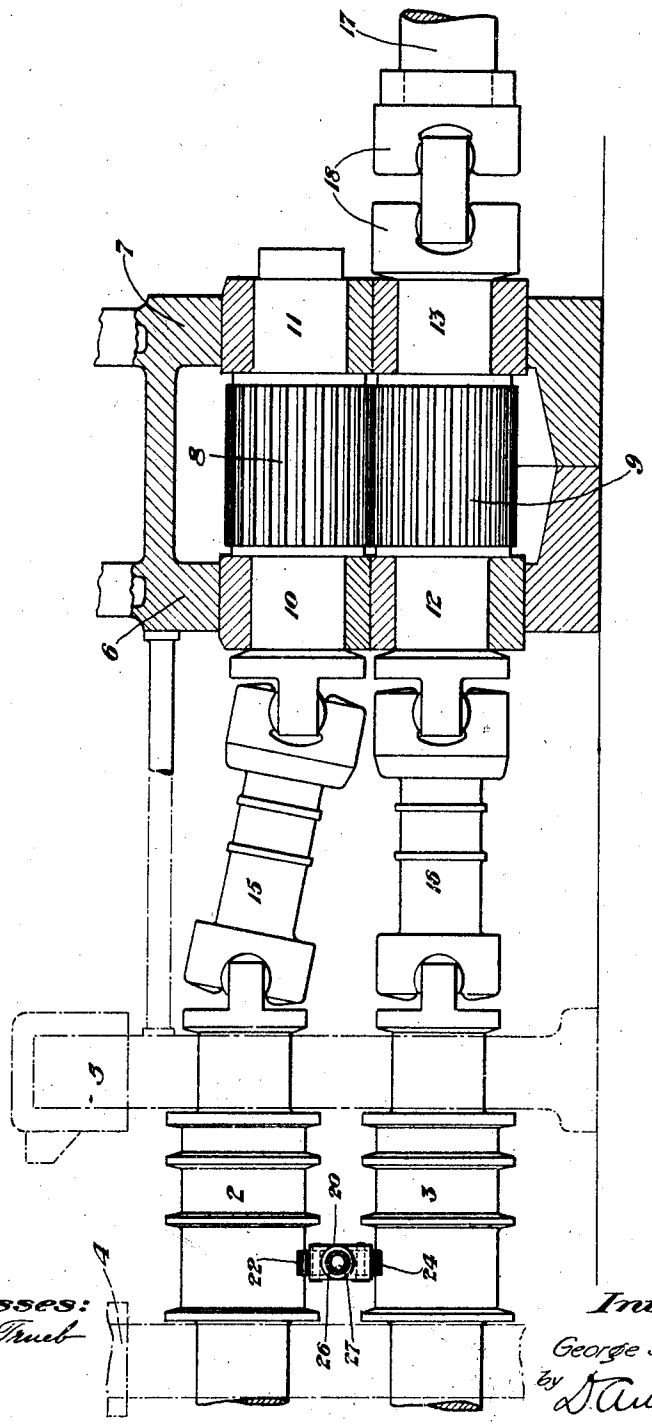


Fig. 1.

Witnesses:
Edwin Trueb

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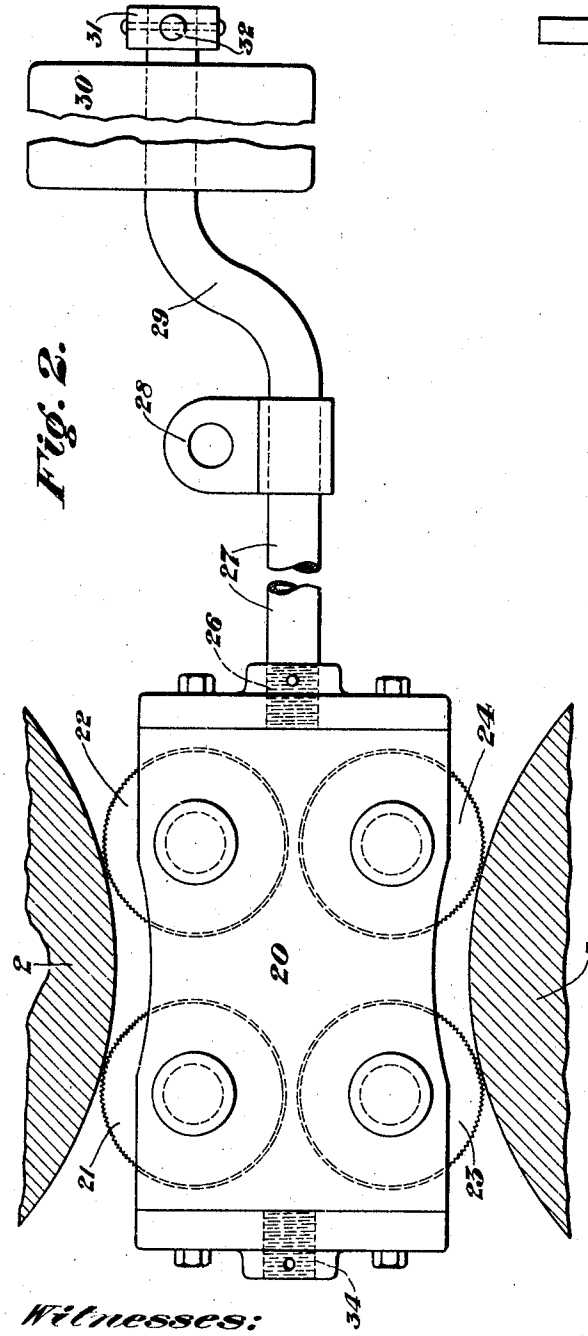


Fig. 2.

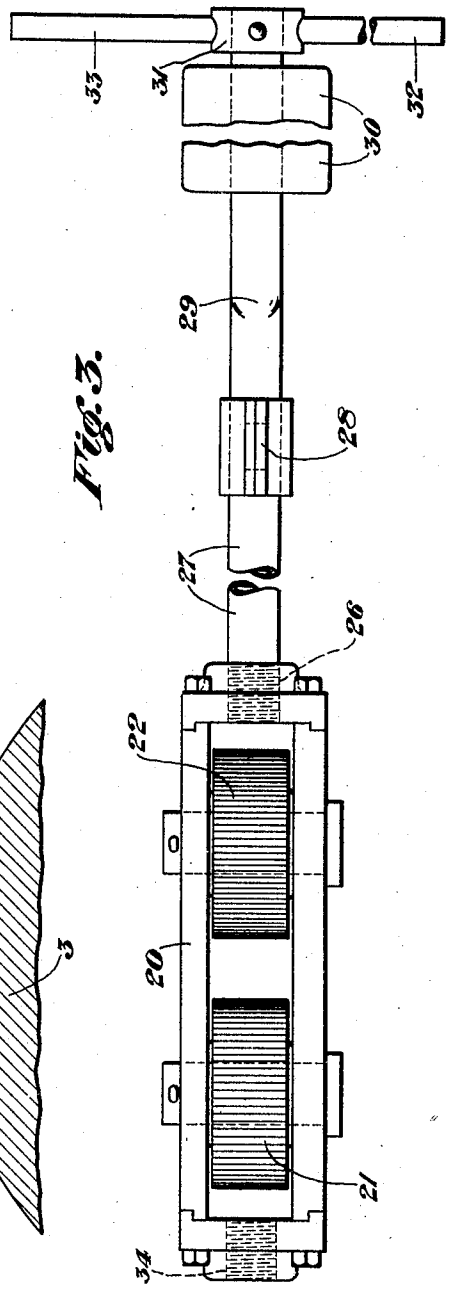


Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE J. BRYEN, OF DUQUESNE, PENNSYLVANIA.

ROLLING-MILL RAGGING MECHANISM.

Application filed December 23, 1920. Serial No. 432,674.

To all whom it may concern:

Be it known that I, GEORGE J. BRYEN, a citizen of the United States, and resident of Duquesne, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Rolling-Mill Ragging Mechanisms, of which the following is a specification.

This invention relates to apparatus for roughing the working faces of the reducing rolls of rolling mills.

In the operation of rolling mills, particularly two-high reversing mills of the type used in rolling blooms, billets and slabs and similar semi-finished products, the working faces of the rolls are roughened or ragged so that the rolls will "bite" the metal being rolled and in that way drag the metal being reduced through the rolls.

One way of "ragging" or roughening these surfaces is to chip, by hand, a series of grooves around the periphery of the rolls, the grooves extending parallel with the axis of the roll. This is a slow and laborious operation, and, as the roughened surfaces are rapidly worn smooth, must be repeated at frequent intervals.

It will be obvious that the rolls cannot be ragged or roughened while metal is being rolled so that the delays in rolling, due to the time lost in "ragging" the rolls, is a source of great expense in the operation of such mills.

In another way of roughening or ragging the rolls it is necessary to disconnect one roll of a two-high mill from the driving pinion for that roll, in order to simultaneously rag both rolls, and the time lost in uncoupling and again coupling the roll and its driving pinions, is the cause of long delays and large expense in the operation of the mill.

One object of the invention is the provision of novel means whereby the rolls are roughened or ragged mechanically instead of by chipping by hand.

Another object of the invention is to provide a roll ragging mechanism having novel means whereby the opposite, oppositely rotated working faces of a pair of rolls may be simultaneously roughened or ragged.

Another object of my invention is to provide a roll ragging apparatus adapted to roughen or rag the opposite faces of a pair of reducing rolls in a rolling mill, without disconnecting the rolls from the pinions or gears by which the rolls are positively driven in the operation of the rolling mill, and also in the roll ragging operations.

A further object of this invention is to provide a roll ragging mechanism having novel means whereby the mecanism is manipulated in the roll ragging operations. A still further object of my invention is the provision of a roll ragging mechanism having the novel constructions, arrangement and combination of parts shown by the drawings, described in detail hereinafter, and particularly pointed out in the appended claims.

With these and other objects in view, one form of apparatus embodying my invention will be described in the following specification and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of a two-high reversing mill and driving mechanism therefor, showing a roll ragging mechanism applied thereto.

Figure 2 is a side elevation of roll ragging mechanism constructed in accordance with my invention, in operative position between a pair of rolls.

Figure 3 is a top plan of the apparatus of Figure 2.

Referring now to the drawings, the numerals 2 and 3 designate the upper and lower rolls respectively of a two-high reversing mill, which are journaled in suitable bearings mounted in the usual manner in the windows of the roll housings 4 and 5. The usual pinion housings 6 and 7 positioned at one side of the housing 5 have the spur pinions or gears 8 and 9 supported therein. The necks or journals 10 and 11, 12 and 13, respectively, of the pinions 8 and 9 are mounted in bearings in the windows of the housings 6 and 7, these housings being enclosed to provide a casing to exclude dust and dirt and hold a supply of lubricant for the pinions 8 and 9, after a well known and approved manner.

The necks 10 and 12 of the gears 8 and 9 are flexibly connected respectively to the neck of the upper roll 2 and the lower roll 3 of the mill by spindles 15 and 16 of an approved design.

The neck 13 of the lower gear 9 is flexibly connected to a drive shaft 17 by coupling 18, from which power is received for driving the rolls 2 and 3.

My improved ragging apparatus when operatively mounted between the rolls 2 and 3

is arranged to simultaneously rag both rolls while they are being positively driven in opposite directions.

The numeral 20 designates the substantially rectangular frame of my ragging device which has an upper pair of ragging rolls or disks 21 and 22, and a lower pair of ragging rolls or disks 23 and 24 loosely journaled on suitable pins or axles mounted in said frame. Each of the rolls or disks 21, 22 and 23, 24 has a serrated or toothed circumferential face, and is free to rotate independent of the other. These rolls or disks will be made of high grade tool steel and when not made of self-hardening steel will be hardened and tempered.

The rear end of the frame 20 is provided with a screw threaded socket 26 in which is threaded a long handle or arm 27 by which the apparatus is operatively suspended from an overhead support and is manipulated in positioning and removing the device. The handle or arm 27 is provided intermediate its ends with an apertured lug 28 adapted to be connected to an overhead traveling crane or other supporting device, so as to form a flexible support for the apparatus. The handle 27 is bent at a point beyond the lug 28 as at 29 and is provided with a counterweight 30 to counterbalance the weight of the ragging disks or rolls and frame 20. The rear end of the handle or arm 27 is provided with a head 31 having cross bars or handles 32 and 33 therein.

The front end of the frame 20 is also provided with a screw threaded socket 34 so that the handle 27 may be fastened thereto when found desirable or necessary.

The operation of the apparatus will be readily understood by those skilled in the art. In using the apparatus the roll 2 will be adjusted by the usual screw adjusting mechanism so that there will be sufficient space between the rolls for my device to pass between the rolls 2 and 3. The ragging mechanism will then be positioned between the rolls and the roll 2 of the mill will be moved downwardly by the roll adjusting mechanism until the one of the pairs of disks (21, 22) is in engagement with the roll 2 and the other pair (23, 24) is in engagement with the roll 3. With the apparatus thus positioned the rolls are slowly rotated and the teeth of the now rotating disks will cut into the contacting surfaces of the rotating rolls and quickly form a series of grooves therein.

It will be readily seen that my improved apparatus is a marked improvement in the art, and therefore, I do not wish to be limited to the exact construction shown and described since various changes in minor details of construction may be made without departing from the spirit of my invention, as defined in the appended claims.

I claim:—

1. A rolling mill ragging mechanism comprising a frame, upper and lower ragging disks journaled on pins mounted in said frame, said disks having serrated peripheral faces, an arm having one end secured to said frame for moving said mechanism into place between a pair of rolls, and a counterweight adjacent the free end of said arm.

2. A rolling mill ragging mechanism comprising a frame, and a plurality of disks rotatably mounted in said frame, said disks having serrated peripheries adapted to engage with and roughen the working face of at least one roll of said rolling mill while positioned between two rolls thereof.

3. A rolling mill ragging mechanism comprising a frame, a plurality of independently rotatable disks mounted in said frame, at least part of said disks having a serrated periphery, and said serrated periphery being adapted to engage with and roughen the working face of one roll of said rolling mill while positioned between two rolls thereof.

4. A rolling mill ragging mechanism comprising a frame, a plurality of independently rotatable disks mounted in said frame, at least part of said disks having a serrated periphery, and said serrated periphery being adapted to engage with and roughen the working face of one roll of said rolling mill while positioned between two rolls thereof, a handle on said frame for positioning the ragging mechanism between said rolls and means on said handle for suspending said ragging mechanism in operative position between the said rolls.

5. A rolling mill ragging mechanism comprising a frame, a plurality of disks rotatably mounted in said frame, at least part of said disks having serrated peripheries adapted to engage with and roughen the working face of at least one roll of the rolling mill while positioned between two rolls of said mill, a handle connected by one end to said frame, a counterweight adjustably secured thereon at the other end of said handle and means between the ends of said handle whereby said ragging mechanism is mounted on a support therefor.

6. A rolling mill ragging mechanism comprising a frame, a plurality of disks rotatably mounted in said frame, at least part of said disks having serrated peripheries adapted to engage with and roughen the working face of at least one roll of the rolling mill while positioned between two rolls of said mill, a handle connected by one end to said frame, a counterweight adjustably secured thereon at the other end of said handle and means between the ends of said handle whereby said ragging mechanism is pivotally connected to a support therefor.

7. In the ragging or rolling mill rolls, the

steps consisting of inserting a ragging mechanism between two opposed, axially parallel rolls, relatively adjusting said rolls to thereby bring the ragging disks of said ragging mechanism into operative engagement with opposed surfaces of said rolls and then positively rotating said rolls to thereby rag the surfaces thereof in engagement with said ragging mechanism.

8. In the ragging of rolling mill rolls, the steps consisting of inserting a ragging mechanism between two opposed axially parallel rolls, relatively adjusting said rolls to thereby bring the ragging disks of said ragging mechanism into operative engagement with the opposed surfaces of said rolls and then positively and simultaneously rotating said rolls to thereby rag the surfaces thereof in engagement with said ragging mechanism.

In testimony whereof I have hereunto signed my name.

GEORGE J. BRYEN.