L. BAGI.

ROLLER SURFACING OR POLISHING MACHINE.

APPLICATION FILED JULY 28, 1921.

1,429,317.

Patented Sept. 19, 1922.

2 SHEETS—SHEET 1.

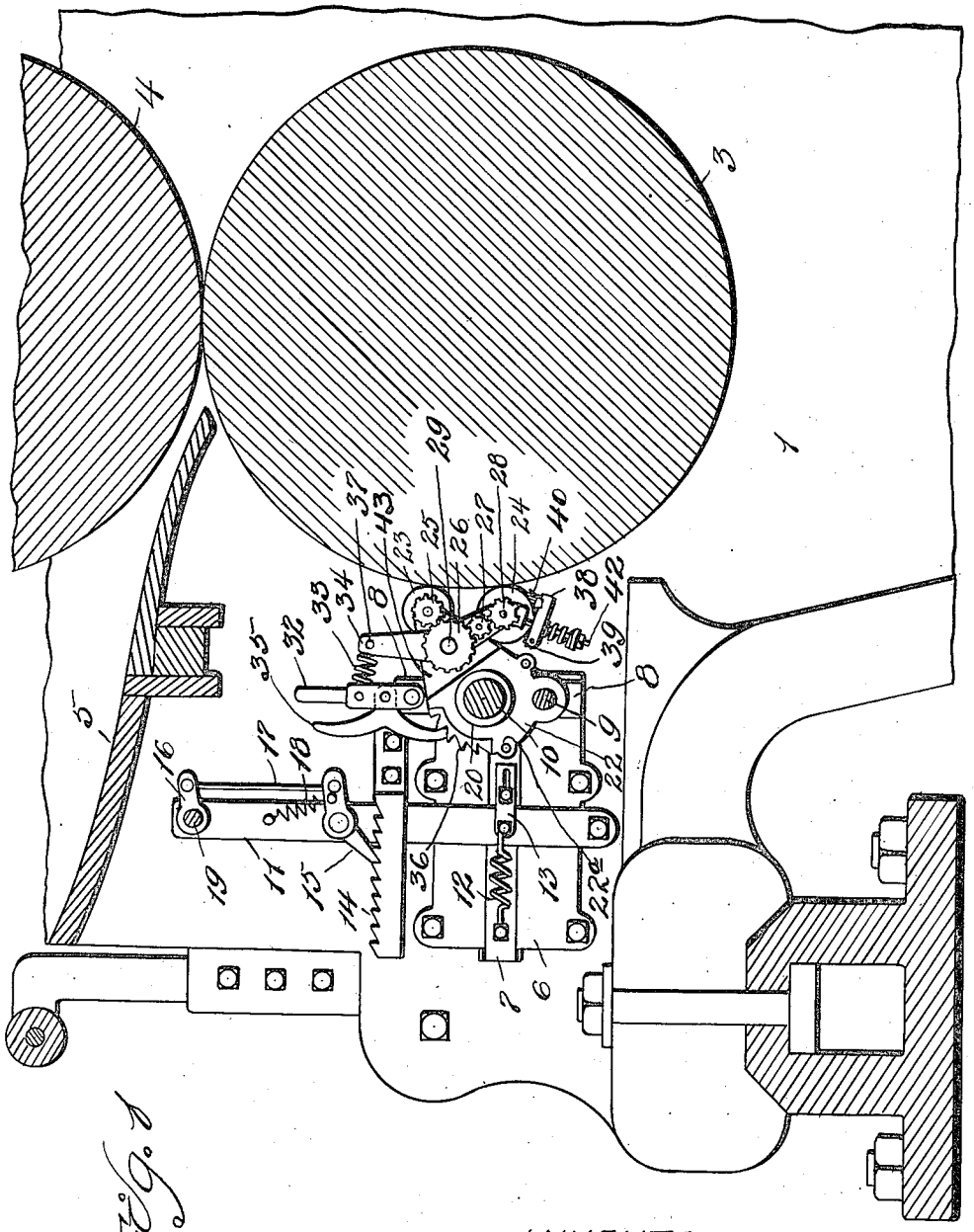


Fig. 1.

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2 SHEETS—SHEET 2.

FIG. 2.

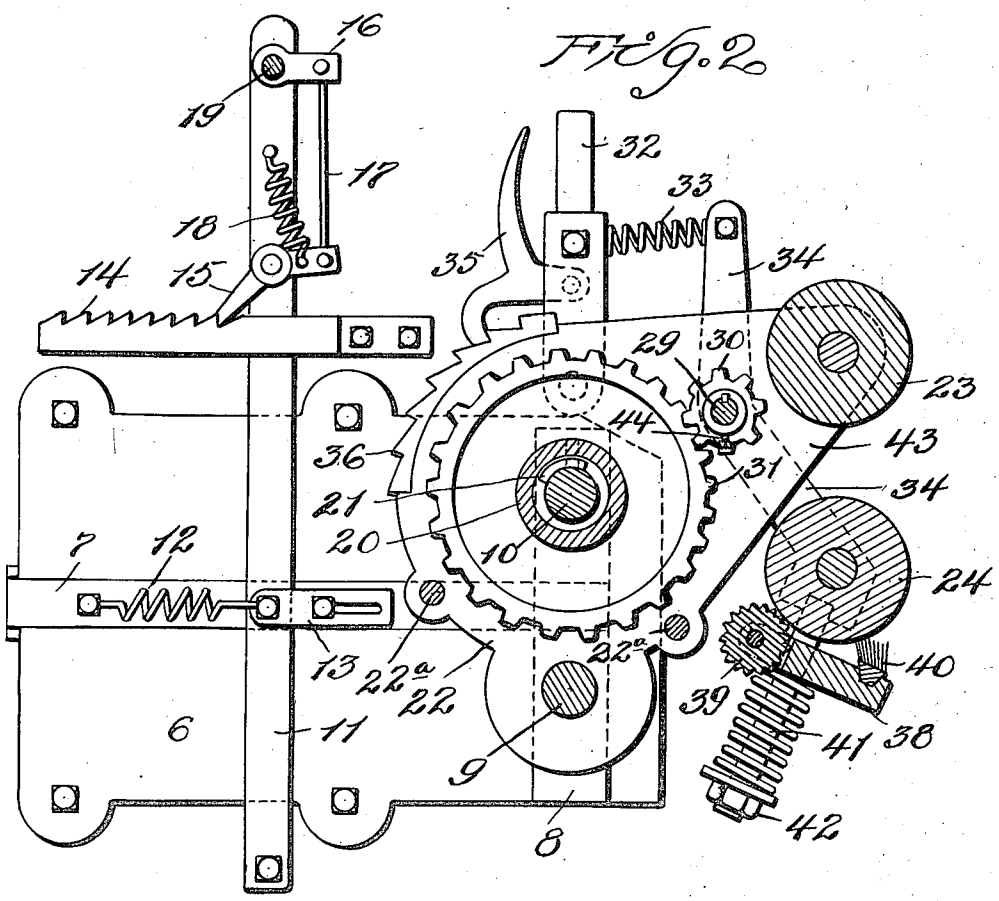
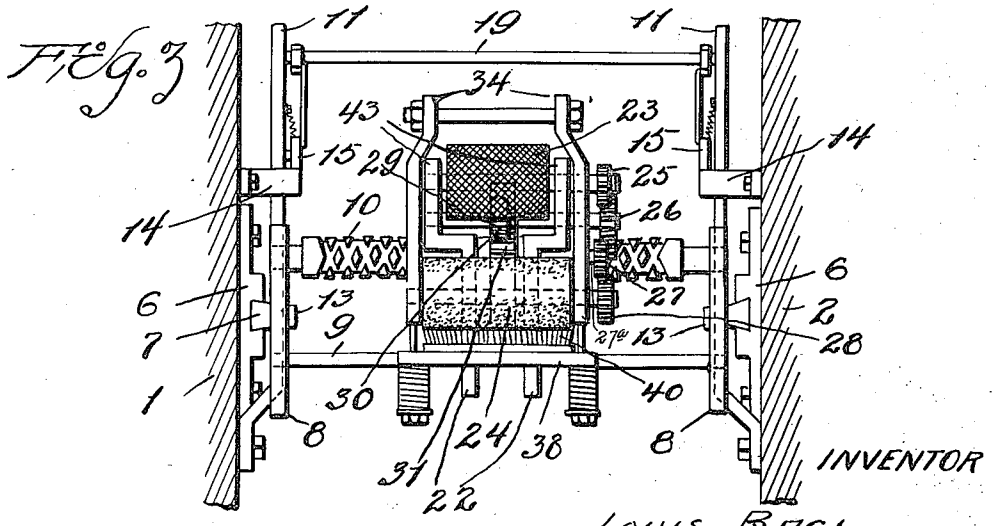


FIG. 3.



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UNITED STATES PATENT OFFICE.

LOUIS BAGI, OF GRANITE CITY, ILLINOIS, ASSIGNOR OF ONE-HALF TO JOHN MAKAY, OF GRANITE CITY, ILLINOIS.

ROLLER SURFACING OR POLISHING MACHINE.

Application filed July 28, 1921. Serial No. 488,224.

To all whom it may concern:

Be it known that I, LOUIS BAGI, a citizen of Hungary, Europe, residing at Granite City, county of Madison, State of Illinois, have invented a certain new and useful Improvement in Roller Surfacing or Polishing Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates generally to surfacing or polishing machines and, more particularly, to a certain new and useful improvement in that type of polishing machines which are especially adapted for polishing the rolls of a rolling mill or the like.

In rolling mills, it is generally essential in order that the rolls may efficiently perform their function, that the surfaces of the rolls be clean, smooth, and polished, and it is the principal object of my present invention to provide a machine which will efficiently maintain the rolls in proper polished working condition without interfering with or causing delays in the proper productive operation of the rolls.

Further objects of my invention are to provide a machine of the type stated which is adapted to directly receive and be actuated by power frictionally imparted by the rolls of the mill; to provide a machine of the type stated which is self-cleaning, conveniently shiftable into and out of driven engagement with the rolls of the mill, automatic in its operations, readily adjustable to rolls of varying diameter, and of simple, compact, and practical construction for the effective performance of its intended functions; and to generally improve upon and simplify the construction of existing types of analogous machines.

With the above and other objects in view, my present invention resides in the novel features of form, construction, arrangement, and combination of parts hereinafter described and afterwards pointed out in the claims.

In the accompanying drawings,

Figure 1 is a longitudinal fragmentary sectional elevation of a rolling mill equipped with a roll-polishing machine or attachment constructed in accordance with and embodying my invention;

Figure 2 is an enlarged longitudinal sectional elevation of the polishing machine or attachment; and

Figure 3 is an end elevation of the polishing machine or attachment.

Referring now more in detail to the said drawings, which illustrate a practical embodiment of my invention and in which like reference characters refer to like parts throughout the several views, 1 and 2 indicate the frame-ends or standards of a rolling-mill, in and between which are mounted for rotation the rolls 3 and 4, one of which rolls, as is common, is suitably driven (by means not shown), and between which rolls the sheet metal or other material being worked is drawn, a suitable table 5 facilitating the movement or feeding of the sheets to and from the rolls.

The accuracy of the work and efficiency of the rolls 3 and 4 depend largely upon their surface condition, and to maintain the surface of the rolls in efficient working condition, I have provided my new polishing attachment, which will now be described.

6—6 designate plates which are secured to the inside faces of the standards 1 and 2. Formed in the plates 6, are longitudinally disposed undercut grooves providing supporting-ways for runners 7—7, fixed to which are cheeks 8, and which runners 7 with the cheeks 8—8 constitute what may be described as the main frame of the polishing machine or attachment.

Supported lengthwise by and between the cheeks 8, is a so-called main shaft 9, and non-rotatably seated at its ends in, and also disposed lengthwise between the cheeks 8, is a second shaft 10 provided upon its surface and substantially throughout its length with series of oppositely cut threads, as best seen in Figure 3.

Suitably pivoted at their lower end to the mill-standards 1 and 2, as seen in Figures 1 and 3, are frame-shifting levers 11—11. Having one end suitably attached to the runners 7 and their opposite end to clips or brackets 13, for purposes shortly appearing, are coiled springs 12, the clips

or brackets 13, in turn, being fastened pivotally to the levers 11 and having slot-and-pin connection with the runners 7, as best seen in Figure 2.

Fixed to the mill standards 1 and 2 adjacent the levers 11, are racks 14—14, adapted for co-action with which to releasably hold the levers 11, and hence also the attachment main-frame and its carried parts, in adjustably set positions, are pawls 15, and having engagement with the levers 11 and pawls 15 for yieldingly holding the pawls 15 in engagement with the racks 14, are coiled springs 18.

For evenly shifting the attachment main-frame, the levers 11 are connected together by a rotary cross-rod 19; and fixed at an end to the rod 19 are levers 16 pivotally connected at their other end to one end of links 17 having pivoted connection, in turn, at their other end to the pawls 15, whereby, on rotary movement of the cross-bar 19, both pawls 15 will be operatively actuated in unison.

Arranged for travel or movement along the shaft 9, is a second frame composed of a pair of parallel plates 22 connected together in fixed spaced relation by a plurality of cross-bars 22a. Journaled for rotation between the plates 22 and embracing the threaded shaft 10, is a sleeve or barrel 20, and suitably mounted within the bore of the sleeve or barrel 20, as best seen in Figure 2, is an arcuated shoe 21 arranged to travel on the rotation of barrel 20 in the threads of the shaft 10 to cause the second frame as a whole and its carried parts to move or travel in both directions or reciprocatorily between the cheeks 8 and transversely of the mill-rolls 3 and 4.

At their forward or upper end, the plates 22 are formed with a yoke extension, as at 43, and journaled for rotation in the yoke 43 is a preferably corrugated or roughened roller 23 which, in the operation of the attachment, is adapted for frictional driven engagement with the mill-roll 3.

Disposed lengthwise in the yoke 43 rearwardly of roller 23, is a shaft 29, pivoted for swinging movement upon which are substantially bell-crank levers 34. Journaled for rotation between the lower ends of the bell-cranks 34, is a second roller 24, which is constructed of some suitable polishing material, such as, for instance, low grade carborundum, and which is adapted, in the operation of the attachment, for polishing engagement with the lower mill-roll 3.

The polishing roller 24 is preferably driven in a direction opposed to the direction of rotation of the mill-roll 3 and to such end has driven connected with the friction roll 23 through a train of gearing comprising a relatively small gear 28 fixed upon the shaft of roller 24, a large gear 26 fixed upon an end of shaft 29, a second relatively small gear 27 mounted for rotation on a stub-shaft 27a supported by bell-cranks 34, the gear 27 meshing with gears 28 and 26, and a third relatively small gear 25 fixed upon the shaft of roller 23 and meshing with gear 26. I might add here that a relatively small gear 30 feathered for adjustment upon the shaft 29 is adapted for meshing driving-engagement with a larger gear 31 on the sleeve or barrel 20. Thus, it will be seen, on rotation of the roller 23 through frictional engagement with the mill-roll 3 and the gear 30 being in meshing engagement with gear 31, the roller 24 will be rotatably driven at a somewhat higher speed and in an opposite direction over the roll 3 and, at the same time, the second frame as a whole will be caused to travel reciprocatorily along the shafts 9 and 10 and consequently transversely or back and forth along the mill-roll 3.

Mounted for swinging or rocking movement on the frame plates 22, is a lever 32 yieldingly connected by means of a coil-spring 33 with the connected bell-cranks 34 which carry the polishing roller 24, a pawl 35 carried by the lever 32 being adapted for engagement with a toothed sector 36 arranged on the frame-plates 22 to releasably hold the lever 32 in adjustably swung position.

Normally the attachment main-frame and its carried parts are in retracted position, with the rollers 23 and 24 out of operative engagement with the mill-roll 3. It will be evident, however, that upon a forward movement of the levers 11 into, for instance, their adjustably shifted position illustrated particularly in Figures 1 and 2, the attachment main-frame will be bodily shifted and the rollers 23 and 24 carried into driven and polishing engagement, respectively, with the mill-roll 3, the pawls 15 in their engagement with the racks 14 functioning to lock the levers 11 in any such adjusted or shifted position to which they may be selectively thrown to meet the requirements of the particular mill. Due, however, to the springs 12 and the slot-and-pin connection between the clips 13 and the runners 7, it will be seen that the attachment-main-frame as a whole, and its carried roller 23, may yield or give, even with the levers 11 locked as described, should the roller 23, for instance, meet an obstruction. In its engagement with the roll 3 and through the gearing described, the roller 23 drives the polishing roller 24 to act on the roll 3 and also, the gear 30 being in meshing engagement with the gear 31, drives the barrel or sleeve 20 to carry the shoe 21 around the oppositely threaded shaft 10 to cause the rotating polishing roller 24 at the same time to travel reciprocatorily lengthwise of and along the roll 3. The yielding engagement between the polishing-roller 24

and the roll 3, due both to the springs 12 and the spring 33, is such as not to grind the mill-roll, but to merely maintain the surface of the mill-rolls in polished, clean condition for the efficient performance of their functions, the engagement between the roll 24 and the mill-roll 3 when the attachment main-frame has been shifted forwardly, as well as the selective adjustment of the position of the roll 24 to engage worn rolls or mill-rolls of varying diameter, being conveniently controlled and regulated by a swinging and locking of lever 32 and a consequent increase or decrease in the pull of spring 33.

By reference to Figure 2, it will be noted that the gear 30 is held from axial movement on the shaft 29 by any suitable means, as, for instance, a set-screw 44 and, screw 44 being loosened, may be adjustably moved along the shaft 29 and out of meshing or driving engagement with the gear 31, should it be desired to temporarily concentrate the cleaning action of the roller 24 upon any one circumferential portion of the mill-roll 3.

To maintain the polishing-roller 24 in efficient roll-polishing condition, free from grease or other particles, a roll scraping-member 39 and a roll-brush 40 are held in engagement with the surface of the roller 24 by a bar 38 slidably supported upon rods 42 depending from the rocking-members or bell-cranks 34 and yieldingly held to functionate position by springs 41.

I am aware that changes in the form, construction, arrangement, and combination of the several parts of my new roll-polishing-attachment may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is,

1. A roll-polishing-machine comprising a frame slidably shiftable relatively to the roll to be operated upon, a roller carried for rotation by the frame and adapted for frictional engagement with said roll, and means for slidably shifting the frame to carry the roller into driven frictional engagement with said roll.

2. A roll-polishing-machine comprising a frame slidably shiftable relatively to the roll to be operated upon, a roller carried for rotation by the frame and adapted for frictional engagement with said roll, and means for slidably shifting the frame to carry said roller into yielding driven frictional engagement with said roll.

3. A roll-polishing machine comprising a frame shiftably movable relatively to the roll to be operated upon, a friction-roller carried by the frame, and means for shifting the frame to carry its roller into yielding frictional engagement with said roll, said means including a pivoted lever, a clip having engagement with the lever and slot-and-pin connection with the frame, and an expansion spring having connection with the clip and the frame.

4. A roll-polishing machine comprising a frame shiftably movable relatively to the roll to be operated upon, a friction-roller carried by the frame, means for shifting the frame to carry its roller into yielding frictional engagement with said roll, said means including a pivoted lever, a clip having engagement with the lever and slot-and-pin connection with the frame, and an expansion spring having connection with the clip and the frame, and means for releasably locking the lever in shifted positions.

5. A roll-polishing machine comprising a frame shiftably movable relatively to the roll to be operated upon, a friction-roller carried by the frame, means for shifting the frame to carry its roller into yielding frictional engagement with said roll, said means including a pivoted lever, a clip having engagement with the lever and slot-and-pin connection with the frame, and an expansion spring having connection with the clip and the frame, and means for releasably locking the lever in shifted positions, said last named means including a fixed rack and a pawl carried by the lever for co-action with the rack.

6. A roll-polishing-machine including a support, a frame mounted for swingable movement upon the support, a polishing-roller carried for rotation by the frame, and means including a spring for swingably pulling the frame for holding the roller in yielding engagement with the roll being operated upon.

7. A roll-polishing-machine including a support, a frame mounted for swingable movement upon the support, a polishing-roller carried for rotation by the frame, means including a spring for swingably pulling the frame for holding the roller in yielding engagement with the roll being operated upon, and means for selectively varying the tension of the spring for regulating the pressure of the polishing-roller upon said roll.

8. A roll-polishing-machine comprising a frame, a polishing roller carried for swinging movement by the frame, and means including a lever pivoted for adjustable movement upon the frame and a spring having engagement with the lever and roller for holding the roller in adjustably selected yielding engagement with the roll being operated upon.

9. A roll-polishing-machine comprising a frame, a polishing roller carried for swinging movement by the frame, and means for holding the roller in adjustably selected

yielding engagement with the roll being operated upon, said means including a lever pivoted for adjustable movement upon the frame, a spring having engagement with the lever and roller, a toothed sector fixed on the frame, and a co-acting pawl carried by the lever.

10. A roll-polishing-machine comprising a frame, a polishing-roller carried swingably for adjustment by the frame, and means for adjustably swinging the roller to accommodate mill-rolls of varying diameter.

In testimony whereof, I have signed my name to this specification.

LOUIS BAGI.