L. BAGI.

ROLLER SURFACING OR POLISHING MACHINE.

APPLICATION FILED JAN. 18, 1921.

1,429,316. Patented Sept. 19, 1922.

2 SHEETS—SHEET 1.

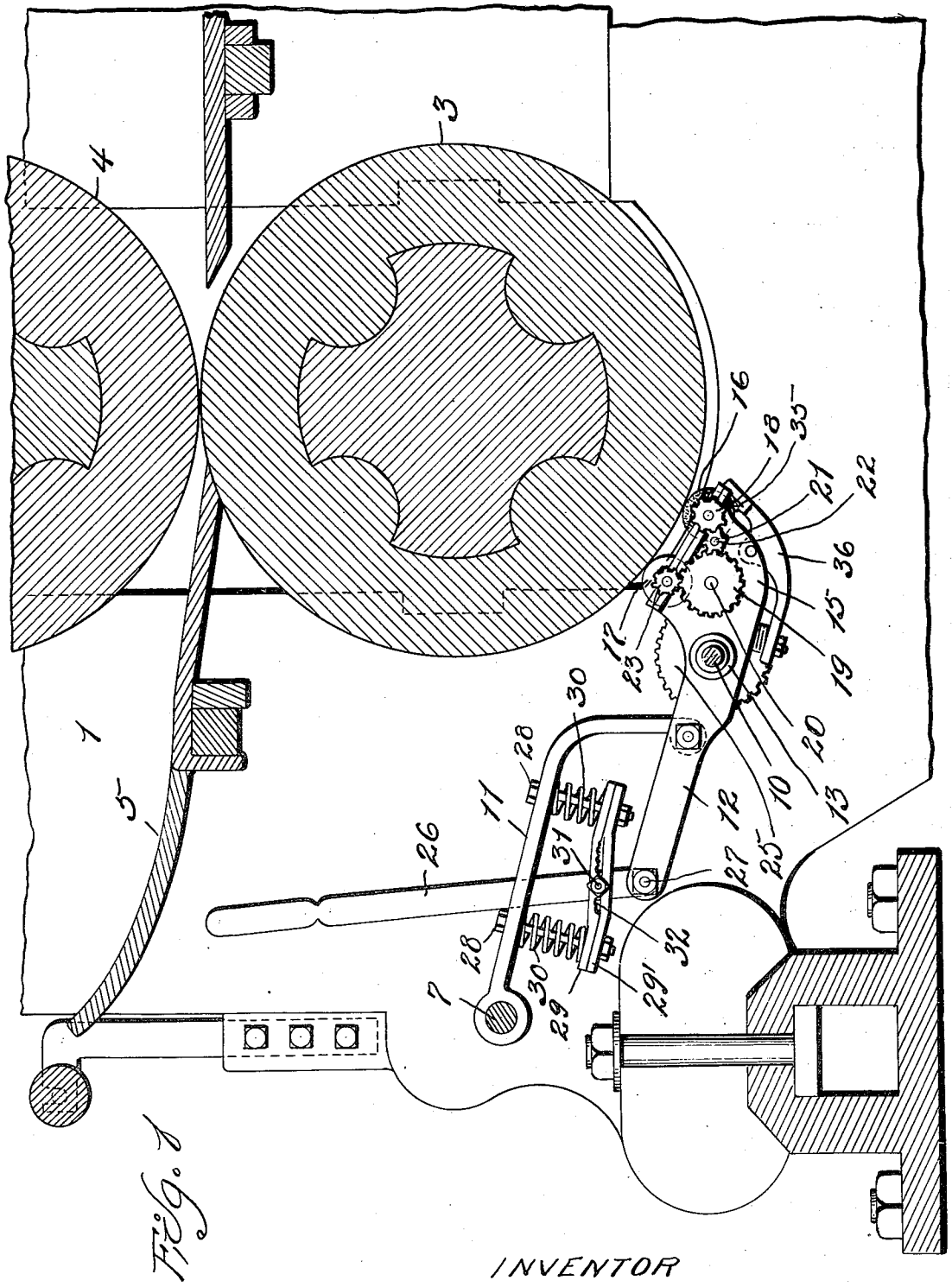


Fig. 1.

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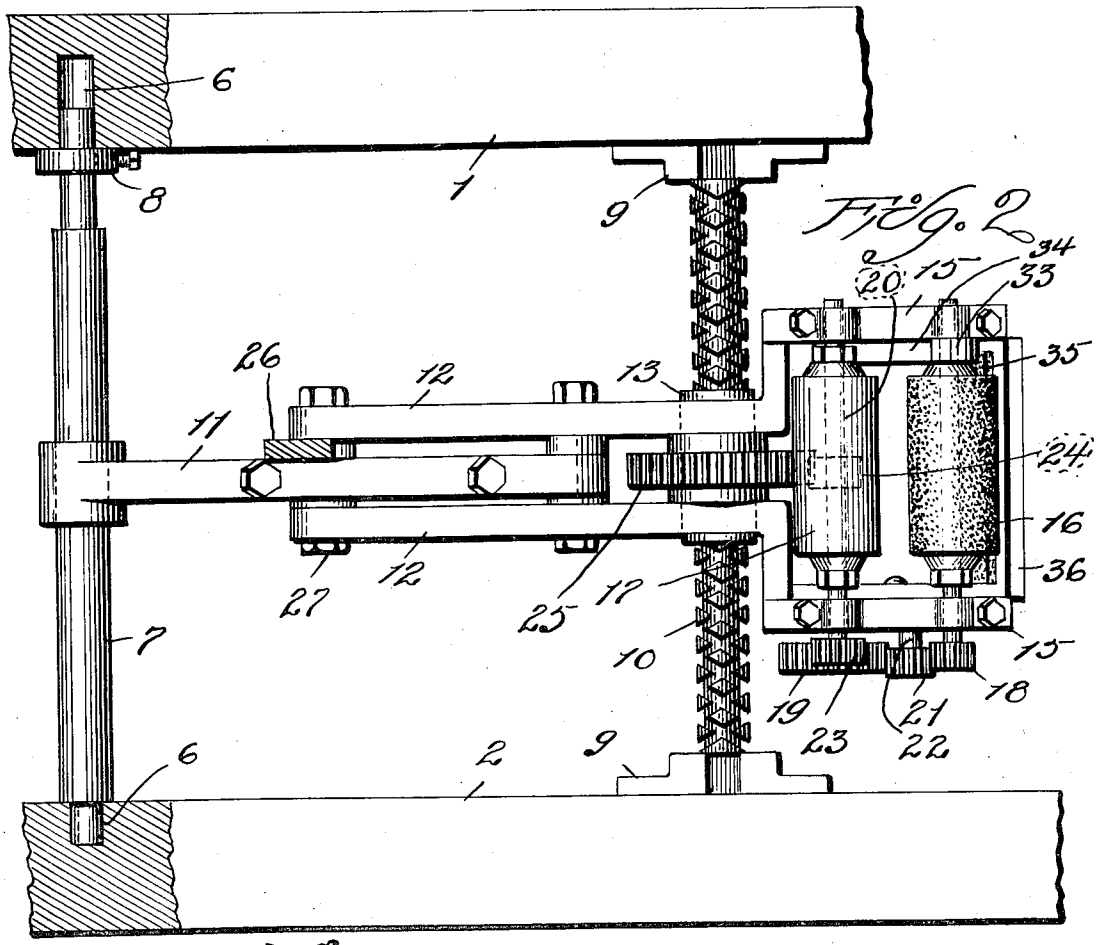


FIG. 2

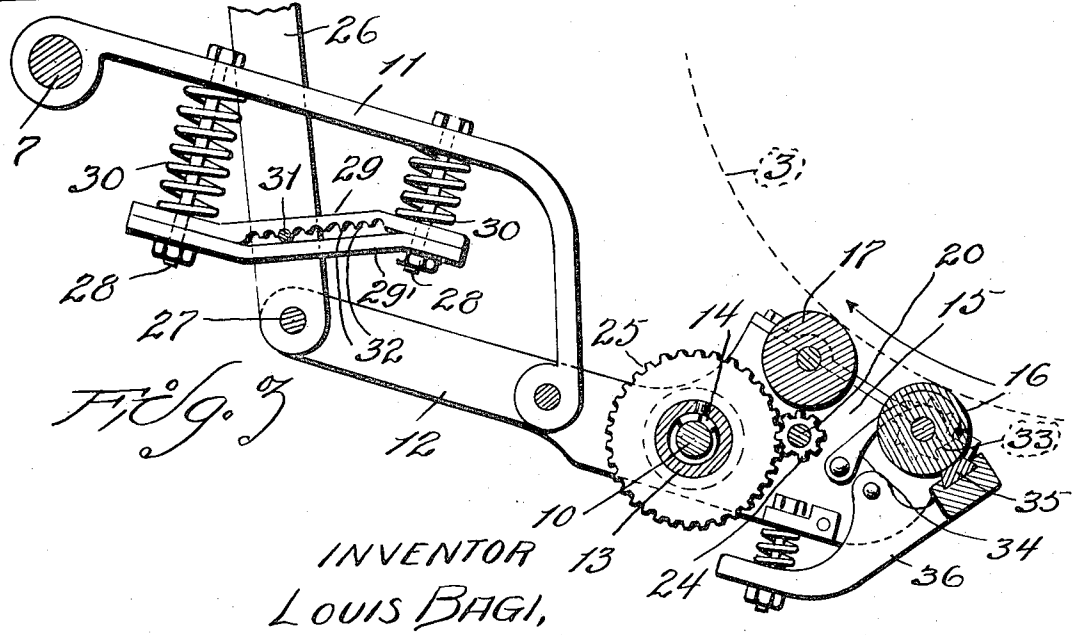


FIG. 3

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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 January 18, 1921. Serial No. 438,144.

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 is 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 may not only be readily and conveniently operatively attached or applied to the rolling machine or mill, but also detached from the machine or mill whenever repairs to or replacement of the rolls of the mill become necessary; to provide a machine of the type stated which is so constructed as 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, readily actuable into and out of polishing engagement with the rolls of the mill, automatic in its operations, 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 fragmental transverse sectional view of a sheet metal rolling mill equipped with a roll polishing machine or attachment embodying my invention;

Figure 2 is an enlarged plan view, partly in section, of the polishing attachment or machine; and

Figure 3 is a longitudinal sectional view 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.

Extending lengthwise between, and removably seated at its reduced ends in recesses 6 provided in the frame-members or standards 1 and 2, is a smooth cylindrical shaft 7. A set collar or other suitable means 8, as seen in Figure 2, is utilized to detachably lock the shaft 7 against removal.

Fixed upon the frame-members or standards 1 and 2 forwardly of the shaft 7, is a pair of inwardly presented oppositely disposed brackets 9—9, and non-rotatably seated at its ends in the brackets 9 and likewise extending between the standards 1 and 2, is a second shaft 10 provided upon its surface and substantially throughout its length with series of oppositely cut threads, as also best seen in Figure 2.

Arranged for travel or movement along the shaft 7, is a carrying-arm 11 bent adjacent its forward or free end to project downwardly, as seen in Figures 1 and 3, and to whose free end are pivotally connected intermediate their length a pair of spaced bars 12—12 constituting substantially the side or frame-members of the polishing attachment, which, as a whole, is operatively supported adjacent the rolls 3 and 4 upon the threaded shaft 10 by means of a hub

or barrel 13, which is journaled for rotation between the bars 12 at their forward end and disposed for movement on the shaft 10, the bars 12 being apertured in registration with the bore of hub 13 to accommodate the shaft 10. Suitably mounted within the bore of the hub or barrel 13, as seen in Figure 3, is an arcuated shoe 14 arranged to travel in the threads of the shaft 10 to cause the attachment as a whole to move or travel in both directions or reciprocatorily between the frame-members or standards 1 and 2.

At their forward end, the bars 12 are formed with a yoke-extension, as at 15; and journaled for rotation in the yoke 15 is a roller 16, 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 roll 3 of the mill. This roller 16 is preferably driven in a direction opposed to the direction of rotation of the roll 3, and to such end, a smooth second roller 17 is also journaled for rotation in the yoke 15 and which, in the operation of the attachment, is adapted for frictional driven engagement with the roll 3, the roller 17 having driving connection with the roller 16 through a train of gearing comprising a relatively small gear 18 fixed upon the shaft of roller 16, a large gear 19 fixed upon an end of a shaft 20 journaled for rotation in the yoke 15, a second relatively small gear 21 mounted for rotation on a stub-shaft 22 supported by yoke 15, the gear 21 meshing with gears 18 and 19, and a third relatively small gear 23 fixed upon the shaft of roller 17 and meshing with gear 19. I might add here that a relatively small gear 24 fixed upon the shaft 20 meshes for driving-engagement with a larger gear 25 on the hub or barrel 13. Thus it will be seen that, on rotation of the roller 17 through frictional engagement with the roll 3, the roller 16 will be rotatably driven at a somewhat higher speed and in an opposite direction over the roll 3 and, at the same time, the attachment as a whole will be caused to travel reciprocatorily along the threaded shaft 10 and consequently back and forth along the roll 3.

26 indicates an operating lever whose upper end or handle is conveniently located for gripping under the table 5 and whose other or lower end is connected pivotally, as at 27, to the rear connected ends of the frame-bars 12. Suspended from the carrying-arm 11 by means of spaced unequal length bolts 28 is a pair of plates 29—29′, which, as seen in Figures 1 and 3, incline upwardly and forwardly intermediate the bolts 28 and which are yieldingly held or spring-pressed from the carrying-arm 11 preferably by means of extensile springs 30—30 coiled on the bolts 28 and interposed between the plates 29—29′ and the carrying-arm 11. Fixed to the lever 26 and disposed between the plates 29—29′, is a fulcrum-pin or bolt 31. The spring-pressed plates 29—29′ form or provide what may be well described as a yielding-sector for the lever and the polishing attachment as a whole; and it follows from such construction that, when the lever 26 is actuated or swung rearwardly, the yoke-frame 15 will be elevated and rollers 17 and 16 carried yieldingly into frictional engagement with the roll 3.

In use or operation, it will be evident that, upon movement of the lever 26, the polishing roller 16 will be moved into or out of engagement with the roll 3, and that, when thrown to the position shown in Figures 1 and 3 of the drawings, the roller 17, in its engagement with the roll 3 and through the gearing described, drives the polishing roller 16 to act on the roll 3 and also drives the barrel 13 to carry the shoe 14 around the oppositely threaded shaft 10 to cause the rotating roller 16 at the same time to travel reciprocatorily lengthwise of and along the roll 3, the engagement between the polishing-roller 16 and the roll 3, due to the co-operating action between the lever-fulcrum 31 and the yielding sector-plates 29—29′, being such as not to grind, but to merely maintain the surface of the mill-rolls in polished clean condition for the efficient performance of their functions. As seen in Figures 1 and 3, the upper sector-plate 29 is preferably notched on its under face, as at 32, whereby the lever-pin or fulcrum 31 is readily held or maintained in selected set positions to vary the pressure of the rollers 17 and 16 upon the mill-rolls.

To lock the polishing-roller 16 against rotation in the same direction with the roll 3, I preferably provide the roller 16 with a ratchet 33, with which is adapted for engagement a unidirectional pawl 34 pivoted upon the yoke 15, as best seen in Figure 3; and to maintain the roller 16 in efficient roll-polishing condition, free from grease or other foreign particles, a flat cleaning stone 35 of preferably high grade carborundum is held yieldingly in engagement with the surface of the roller 16 by a second spring-pressed yoke 36 pivoted upon the main yoke 15, as seen especially in Figures 1 and 3.

I am aware that changes in the form, construction, arrangement, and combination of the several parts of the polishing machine or 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

polishing-roller, in combination with means including a driving-roller adapted for driven frictional engagement with the roll being acted upon for simultaneously rotating the polishing-roller and causing the polishing roller to travel lengthwise reciprocatorily along the roll being acted upon, and means for simultaneously shifting the driving-roller and the polishing-roller into, respectively, yielding driven engagement and yielding polishing engagement with the roll being acted upon.

2. A roll polishing machine comprising, in combination with a stationary shaft provided with oppositely disposed series of threads, a pair of pivotally supported spaced frame-members, a polishing-roller journaled for rotation between the frame-members, a driving-roller also journaled for rotation between the frame-members and adapted for frictional engagement with the roll being acted upon, a barrel also mounted for rotation between the frame-members and encircling the shaft, a shoe carried by the barrel having engagement with the threads of the shaft, gearing on the frame-members between the driving-roller and both the polishing-roller and the barrel, and means for shifting the frame-members for carrying the driving-roller and the polishing-roller into and out of, respectively, yielding driven engagement and yielding polishing engagement with the roll being acted upon.

3. A polishing machine comprising, in combination with a shaft, a pair of pivotally supported spaced frame-members, a polishing-roller journaled for rotation between the frame-members, a driving-roller also journaled for rotation between the frame-members, a barrel also mounted for rotation between the frame-members and encircling the shaft, a shoe carried by the barrel having engagement with the threads of the shaft, gearing on the frame-members between the driving-roller and both the polishing-roller and the barrel, and means for shifting the frame-members for carrying the driving-roller into and out of yielding driven engagement and the polishing-roller into and out of yielding polishing engagement with the roll being acted upon, said means including a lever having engagement with the frame-members, a fulcrum on the lever, and a spring-pressed sector for the lever-fulcrum.

4. A polishing machine comprising, in combination with a pair of stationary shafts, one of the shafts having a smooth surface and the other shaft being provided with oppositely disposed series of threads, a carrying-arm mounted at an end for movement on the smooth shaft, a pair of spaced frame-members pivotally connected to the carrying-arm, a polishing-roller journaled for rotation between the frame-members, a driving roller also journaled for rotation between the frame-members, a barrel also mounted for rotation between the frame-members and encircling the threaded shaft, an arcuated shoe carried by the barrel having engagement with the threads of the threaded shaft, gearing on the frame-members between the driving-roller and both the polishing-roller and the barrel, and means for shifting the frame-members to carry the driving-roller into yielding driven-engagement and the polishing-roller into yielding polishing-engagement with the roll being acted upon, said means including a lever having pivoted connection with the frame-members, a pair of separate plates suspended and spring-pressed from the carrying-arm, and a fulcrum on the lever disposed between the plates.

5. A roll-polishing-machine comprising, in combination, a shiftable frame, a polishing roller carried for rotation by the frame, means including a driving roller for simultaneously rotating the polishing roller and causing the polishing roller to travel lengthwise reciprocatorily along the roll being acted upon, the driving-roller being also carried for rotation by the frame and adapted for frictional engagement with the roll being acted upon, and means for shifting the frame to carry the driving-roller and the polishing-roller into, respectively, driven engagement and polishing engagement with the roll being acted upon.

6. A roll-polishing-machine comprising, in combination, a swingably shiftable frame, means including a driving roller for simultaneously rotating the polishing-roller and causing the polishing-roller to travel lengthwise reciprocatorily along the roll being acted upon, the driving-roller being also carried for rotation by the frame and adapted for frictional engagement with the roll being acted upon, and means for swingably shifting the frame to carry the driving-roller and the polishing-roller into, respectively, driven engagement and polishing engagement with the roll being acted upon.

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

LOUIS BAGI.