

[54] **ROUND BAR STRAIGHTENER-POLISHER MACHINE**

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[51] Int. Cl. **B21b 19/10**

[58] Field of Search 72/98, 100, 110, 224, 250

[56] **References Cited**

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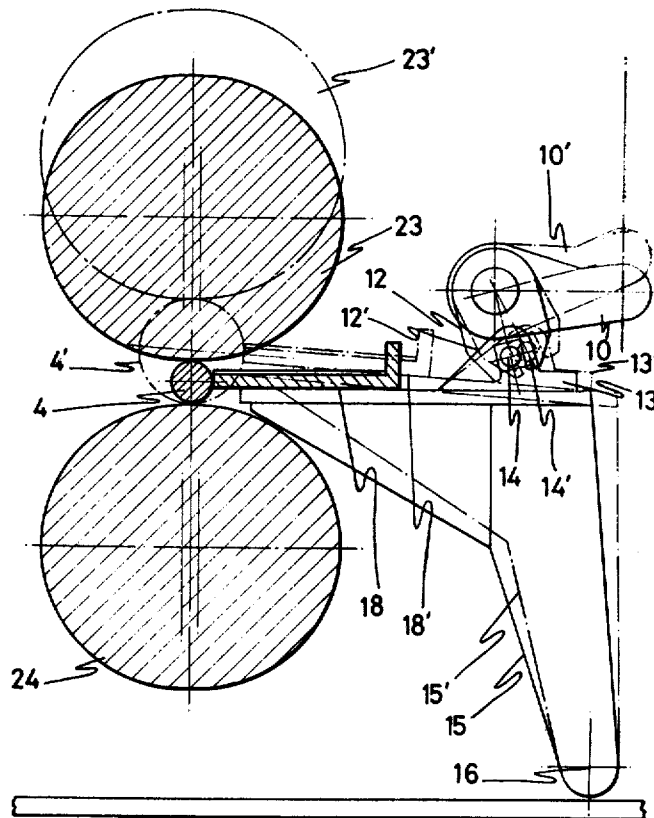
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[57] **ABSTRACT**

Round bar straightener-polisher machine of the type

which has a pair of rotary rollers the lower of which is fixed while the upper of which moves at will in a vertical direction so as to determine the distance between the rollers, which distance will be occupied by the bar to be treated. On each side of the bar are corresponding lateral guides, also movable at will according to the gage of the bar, in order to avoid horizontal movement thereof. The movement of the upper roller and that of the lateral guides is controlled by a single control, for which two symmetrically arranged tables which solidly support the corresponding lateral guides, turn with the center in its lower part, this turning being caused by movement of the frame of the upper roller, which transmits its movement to two yokes, one for each table and guide, each yoke being linked to a lever solidly connected to a horizontal shaft, which has respective heel-pieces or projections at its opposite ends, articulately coupled to corresponding lugs, fixed to each table. At the anterior end of one of the guides and at the posterior end of the other guide, successive small rollers, whose active areas are always in the same plane as the edges facing the lateral guides, are provided.

6 Claims, 8 Drawing Figures



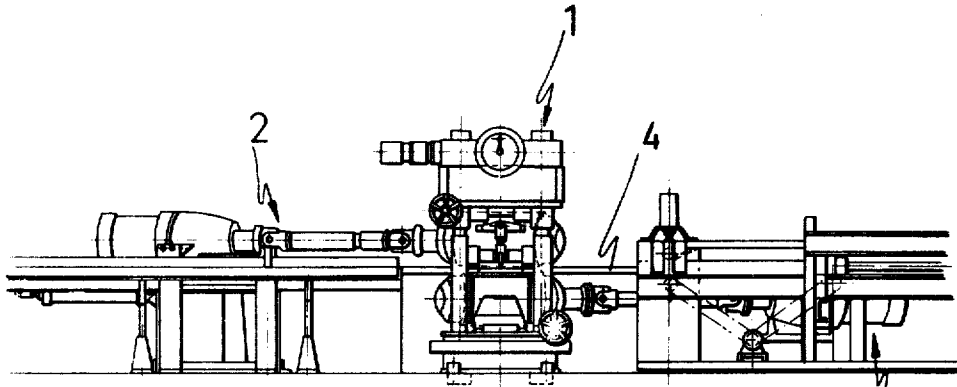


FIG-1

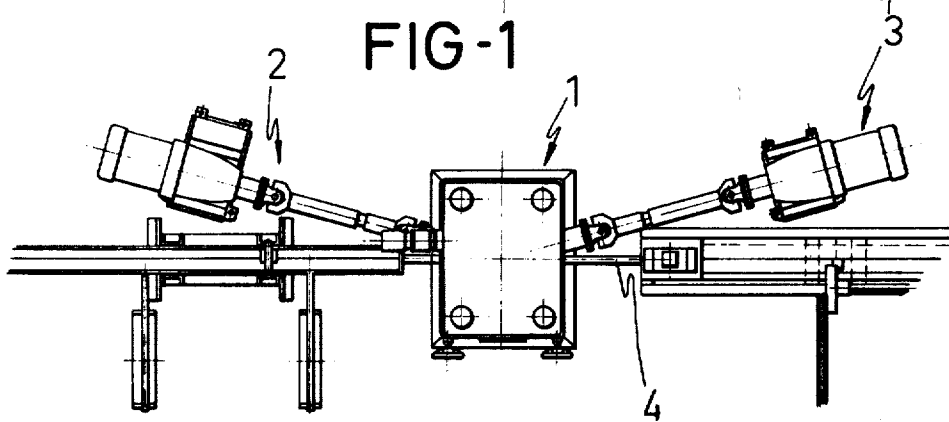
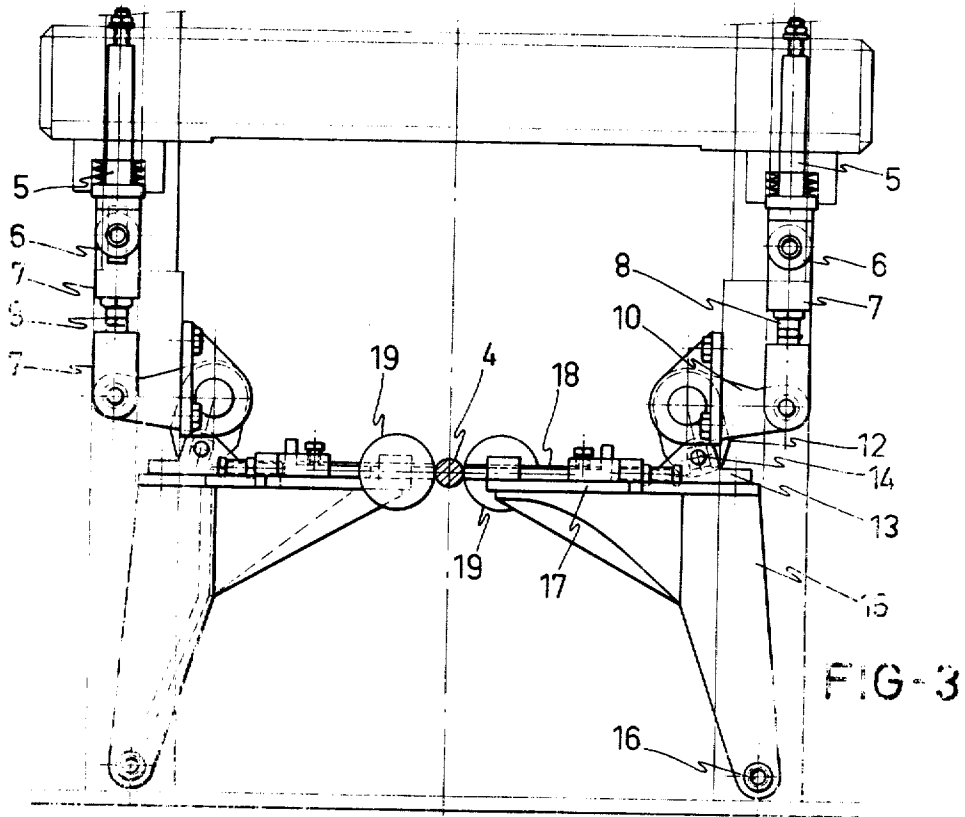


FIG-2



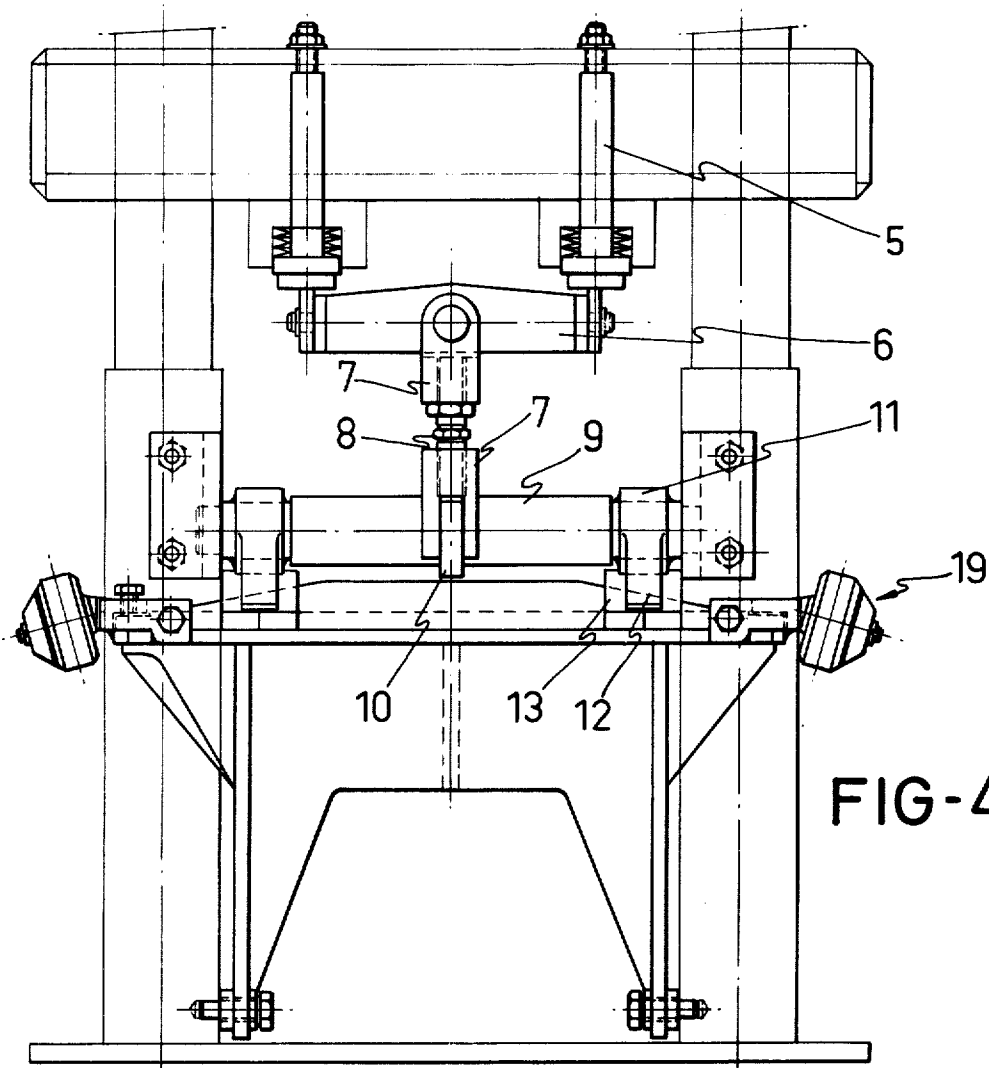


FIG-4

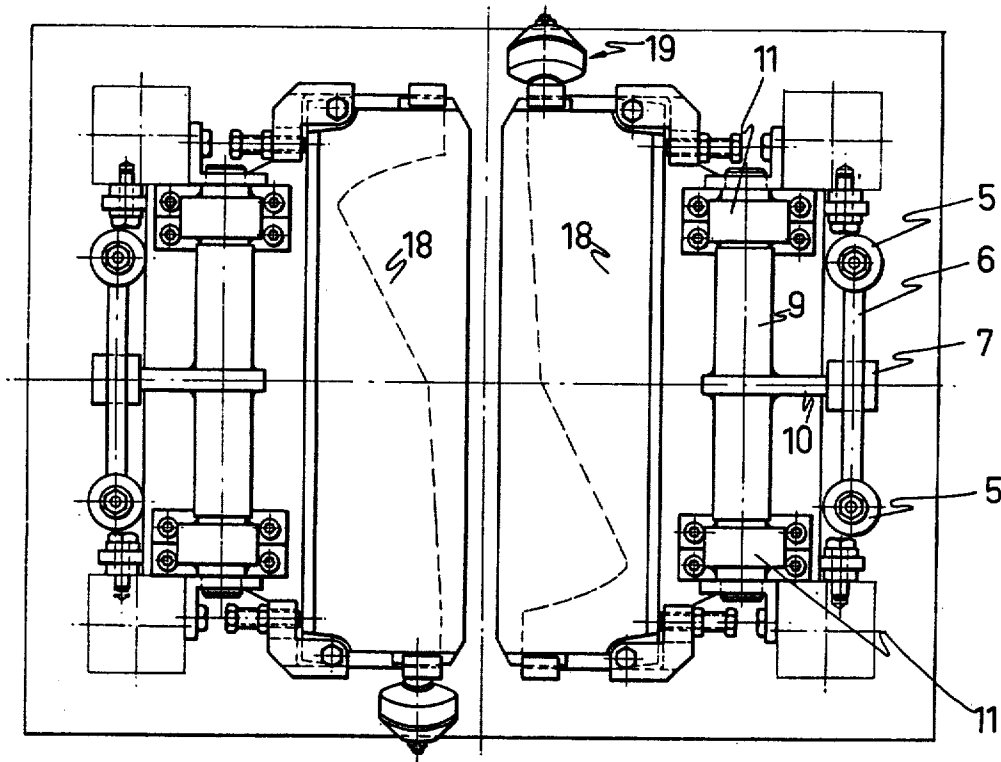


FIG-5

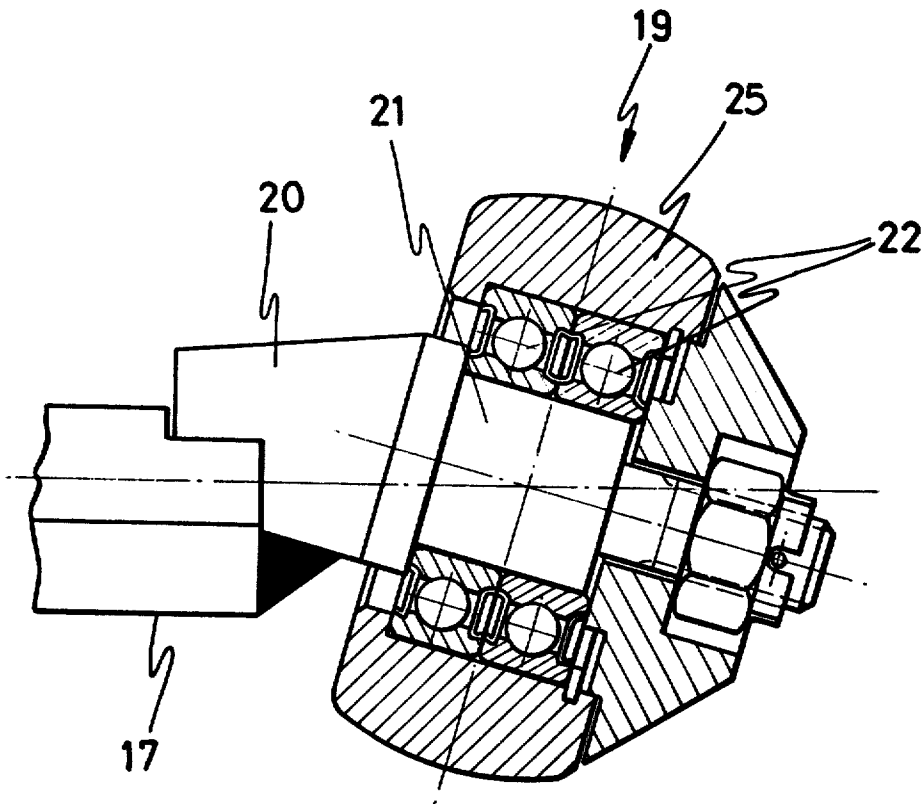


FIG-6

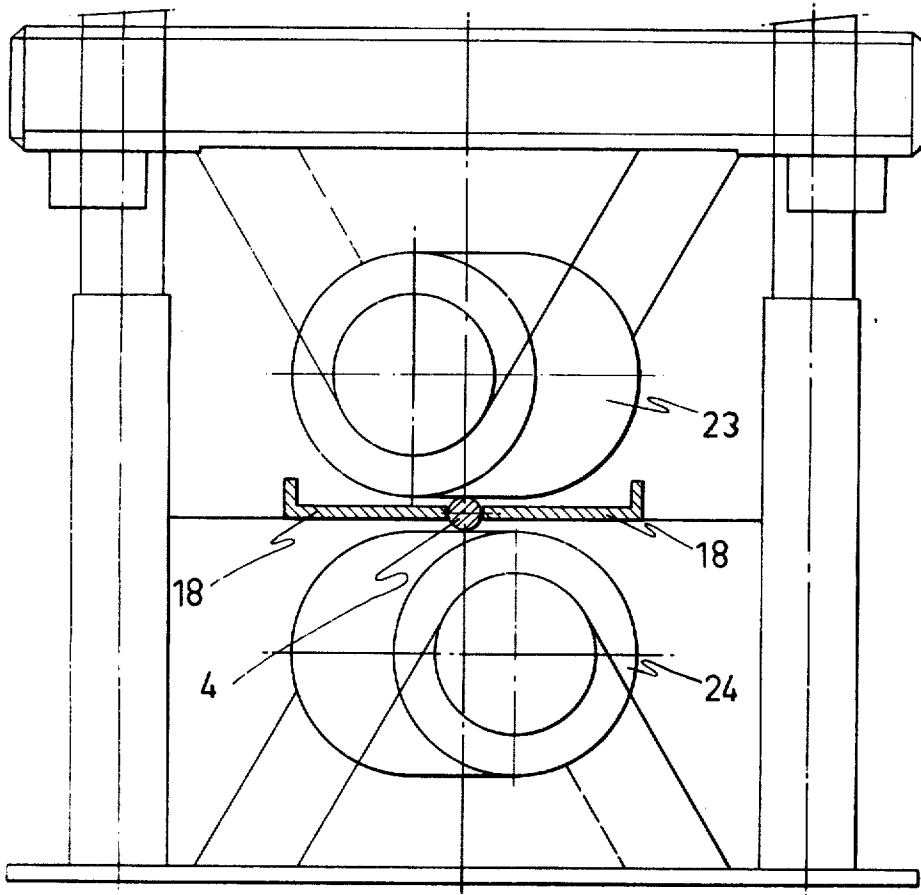


FIG. 7

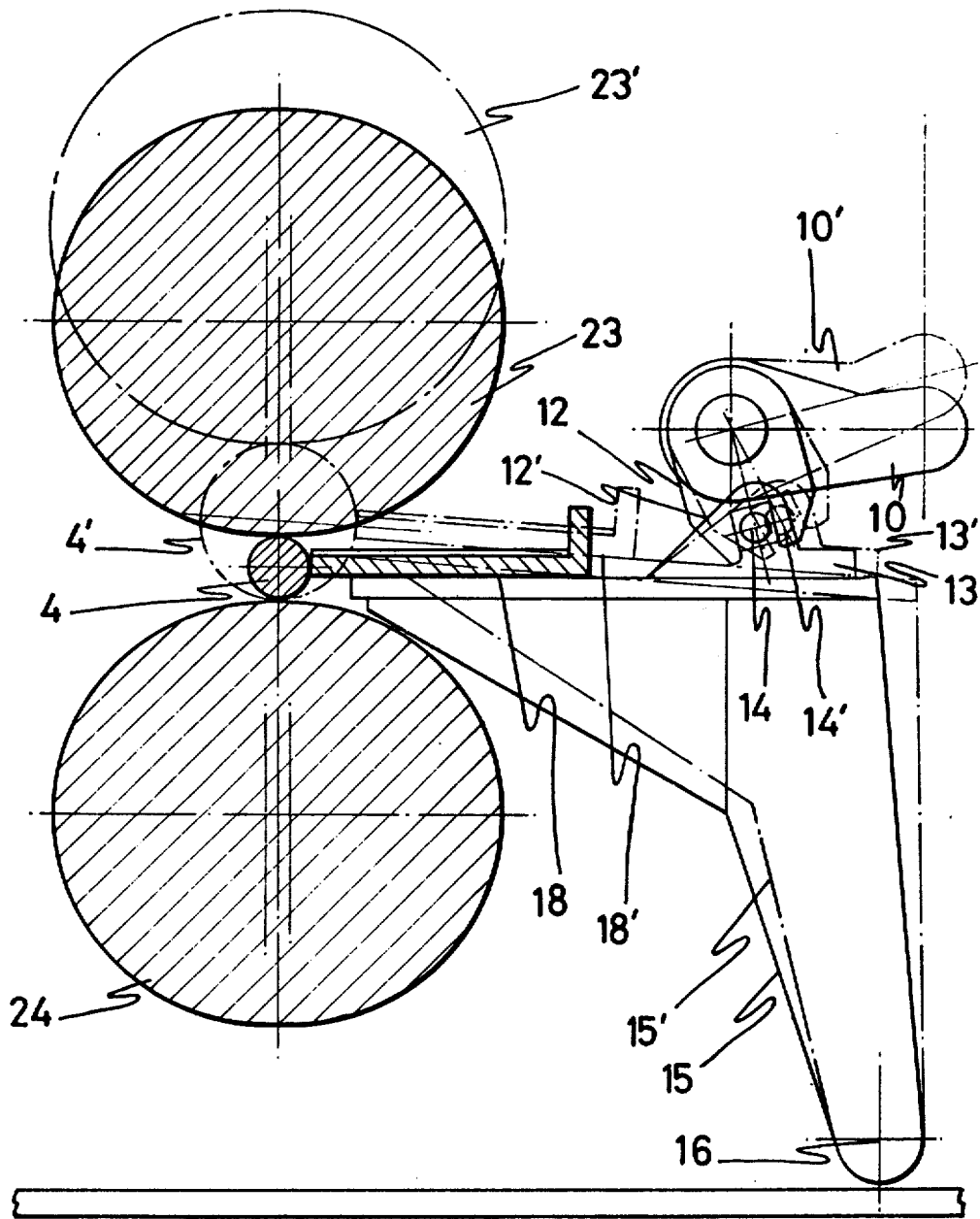


FIG-8

ROUND BAR STRAIGHTENER-POLISHER MACHINE

The present invention relates to a straightener-polisher of round bars.

There presently exist machines of this type, which attain the straightening and polishing of bars by sliding said bars between two rollers whose generators are cut to form a determined angle. The rollers turn and force the bar itself to slide while they subject the bar, at the same time, to a considerable pressure. In this type of machine, the lower roller is fixed while the upper one is mounted on a frame vertically displaceable along columns.

The machine in question has two guides, one on each side of the bar, to stabilize the position of same in the straightening process.

These two guides are nothing more than two parallel rulers, diametrically placed with regards the bar, and at approximate distance with regards the diameter of same.

In well known machines, vertical movement of the upper roller is independent of the movement of the lateral guides, whereby, when one desires to treat a bar having dimensions different to the one previously treated, it is necessary to move two different controls, one for the upper roller and another for the lateral guides.

One of the objects of the present invention is to achieve automatic movement of a single control simultaneous with the movement of the upper roller and the lateral guide.

Another object of the invention is to position two rollers at the ends near the corners of the lateral guides in order to avoid wear of such corners of the guides in question.

The guides are automatically positioned, according to the diameter of the bar, since, by means of oscillating arches, connecting rods and bell-cranks, same are controlled by displacement of the base plate of the upper roller. The guide-rules are perfectly accessible and are fixed by screws which can be replaced when they are worn out and they are protected from excessive overtaxing.

For the purpose of better understanding the expounded idea, a set of drawings, forming part of the specification, is hereto attached and wherein the following is represented:

FIG. 1 is an elevational view of an installation which centrally comprises the straightener-polisher assembly of round bars.

FIG. 2 is a plan view of the machine illustrated in FIG. 1.

FIG. 3 is a side view of the center part of the straightener-polisher.

FIG. 4 is a side view of the assembly by which the positioning of the lateral guides is controlled.

FIG. 5 is a plan view of the straightener-polisher machine.

FIG. 6 is a diametrical section of one of the two rollers situated at the ends of the lateral guides.

FIG. 7 is a schematic view wherein two rollers, upper and lower, the bar being treated, as well as the two lateral guides, are shown.

FIG. 8 is a schematic view showing two positions for two different bars undergoing treatment.

In FIGS. 1 and 2, in which an entry and exit table for the bar to be treated, is represented, the round bar straightener-polisher assembly is referenced 1, while the groups which move the upper and lower rollers, are referenced 2 and 3, respectively.

The bar undergoing treatment is referenced 4.

The central part of the assembly, in which the straightening-polishing treatment of the bar 4 is carried out, is shown in FIGS. 3 to 5. Two bridges or yokes 10 which are each comprised of two vertical bars 5 and a horizontal bar 6, linked to each other by means of corresponding fixing elements, are also shown in the above mentioned figures. In the central zone of the horizontal bar 6, coupling of the vertical element 7, whose height can be regulated by means of nuts 8 or similar, at the time of installing the machine, is provided.

The lower part of the member 7 is linked to a lever 10 whose end, in turn, is solidly connected to a horizontal shank 9. The ends of this horizontal shank, one of which is situated on each side as seen in FIGS. 3 and 5, have solidly connected bodies 11 which will be denoted "heel-pieces or projections" with regards its lowermost part referenced 12.

Such heel-pieces are linked to lugs 13 by means of shafts 14.

These lugs are solidly connected to the table 15 which turns about the shaft 16, situated in the upper part of each of the tables.

The horizontal upper part of the table 15 was referenced 17 and it is here, in this part, where the corresponding guide 18 is situated, which guide is fixed by screws or similar to the table so that when said guides 18 are worn out by use, same could be substituted.

The structure of one of the two small rollers 19, whose precise position can be seen in FIGS. 4 and 5, is shown in FIG. 6. This pair of friction rollers is solidly connected to the upper part 17 of each table 15, at its area referenced 20, which is continued slantingly towards the exterior according to the shaft 21 in which the bearing 22, surrounded by the roller 23 itself, are mounted and which corresponds to the active zone of the assembly.

FIG. 7 is a schematic view of the position of the corresponding bar, rollers and guides.

We thus observe that the roller 24 is connected to the bar 4 and the upper roller is likewise connected to the upper part of the bar. On either side of the bar 4, bodies which form the lateral guides 18, are provided.

FIG. 8 schematically represents the positioning of the members which move when it is necessary to treat two bars of different caliber.

In the straight line position it can be seen that roller 23 drives and actuates the bar 4, in conjunction with roller 24, in such a way that it laterally disposes of the bodies which form the guides 18 mounted on the table 5, as is already known. In the straight line position the lug 13 is driven by means of its shaft 14 at the heel-piece 12 which is duly driven by the lever or connecting rod 10.

Should one desire to treat a bar having a bigger gage, for example as the one referenced 4', when the roller 23' moves upwards, the entire assembly previously described, moves so as to situate itself in the position shown with dotted lines. In this position the guide 18' is found more or less on the horizontal diametrical line of bar 4', and the table 5' is somewhat inclined as in the case of the corresponding guide 18', the rest of the

members occupying the position indicated by the discontinued lines.

Only one of the two parts which form the straightening machine was represented in this figure.

From the foregoing explanation of the drawings it can be deduced that when the frame of the upper roller 23 is lowered by a single control, descent of the bridge or yoke 5-6 is effected and together with this, actuation of the lever 10, linked to the vertical member 5 in such a way that the lever or connecting rod 10 provokes turning of the shank 9 and consequently the turning of members 11 and 12, in the case same presses against the lugs 13 due to the fact that the heel-piece 12 and the member 13 are linked by means of the common shaft 14.

In this way, the table 15, in question, turns to a corresponding angle to duly position itself in accordance with the bar 4 to be treated.

The spherical rollers of FIG. 6 were oppositely mounted near the lateral guides 18, so as to limit as much as possible, the wear of such guides precisely in said zones which are mostly affected.

Presently known machines of this type do not have rollers as herein illustrated, and therefore the corners of well known guides wear out with great ease, since such guides should in no way be constructed on the bases of hard material as it would without any doubt, scratch the treated bars.

On the other hand, and due to the great pressure to which the bar is subjected, when the upper and lower rollers turn to its limited support zone in the rollers, and due to other reasons, the bar tends to move horizontally, its friction power being more noticeable at the corners of the guides which wear out for this reason, before any of the other areas.

I claim:

1. In a round bar straightener-polisher machine of the type including a lower rotary roller; the vertical position of said lower roller being fixed; an upper rotary roller positioned above said lower roller; a bar to be treated being longitudinally moved in a horizontal direction between said lower and upper rollers; frame means supporting said upper roller for selectively vertically moving said upper roller toward or away from said lower roller to accommodate between said upper and lower rollers bars of differing diameter; a pair of lateral guide means positioned to contact opposite sides of a bar positioned between said upper and lower rollers for guiding such bar during movement thereof; and means

for selectively moving said pair of lateral guide means toward or away from each other to accommodate therebetween bars of differing diameter; the improvement wherein:

5 said means for moving said lateral guide means comprises a pair of guide supports, one each having mounted thereon one of said lateral guide means, said guide supports each being pivotally mounted about shaft means for allowing pivotal movement of said lateral guide means about axes extending parallel to said horizontal direction;

and further comprising:

control means operatively connected between said frame means supporting said upper roller and said guide supports for transferring vertical movement of said upper roller into pivotal movement of said lateral guide means about said axes.

2. The improvement claimed in claim 1, wherein said control means comprises a pair of guide movement structures, each of which is connected to said frame means and one each of which is connected to one of said guide supports.

3. The improvement claimed in claim 2, wherein each of said guide movement structures comprises a yoke attached to said frame means, a lever pivotally connected at one end thereof to said yoke, a horizontal shank having fixed thereto a second end of said lever, said shank having at opposite ends thereof integral downwardly extending projections, and lugs fixed to the respective guide support and pivotally connected to said projections.

4. The improvement claimed in claim 1, wherein each of said guide supports comprises a table having an upper surface, the respective said lateral guide means being fixed to said upper surface.

5. The improvement claimed in claim 1, further comprising a pair of friction rollers, one each attached to one of said guide supports with a friction surface in alignment with the surface of the respective lateral guide means to be in contact with a bar.

6. The improvement claimed in claim 5, wherein a first of said friction rollers is attached to a first of said guide supports at the anterior end of said machine, taken in said horizontal direction; and a second of said friction rollers is attached to a second of said guide supports at the posterior end of said machine, taken in said horizontal direction.

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