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STRAIGHTENING MACHINE

Filed April 26, 1929

2 Sheets-Sheet 1

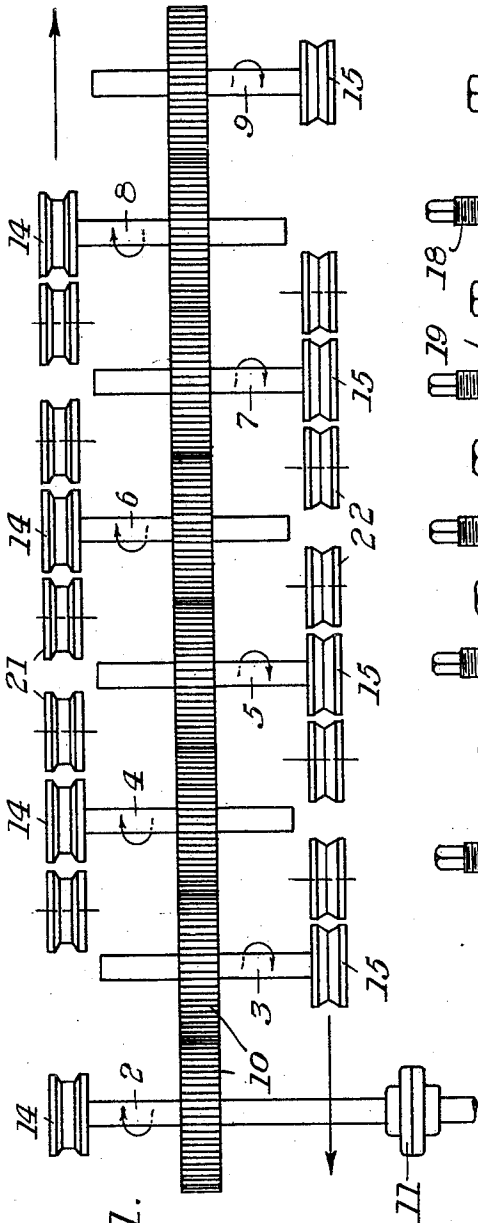


Fig. 1.

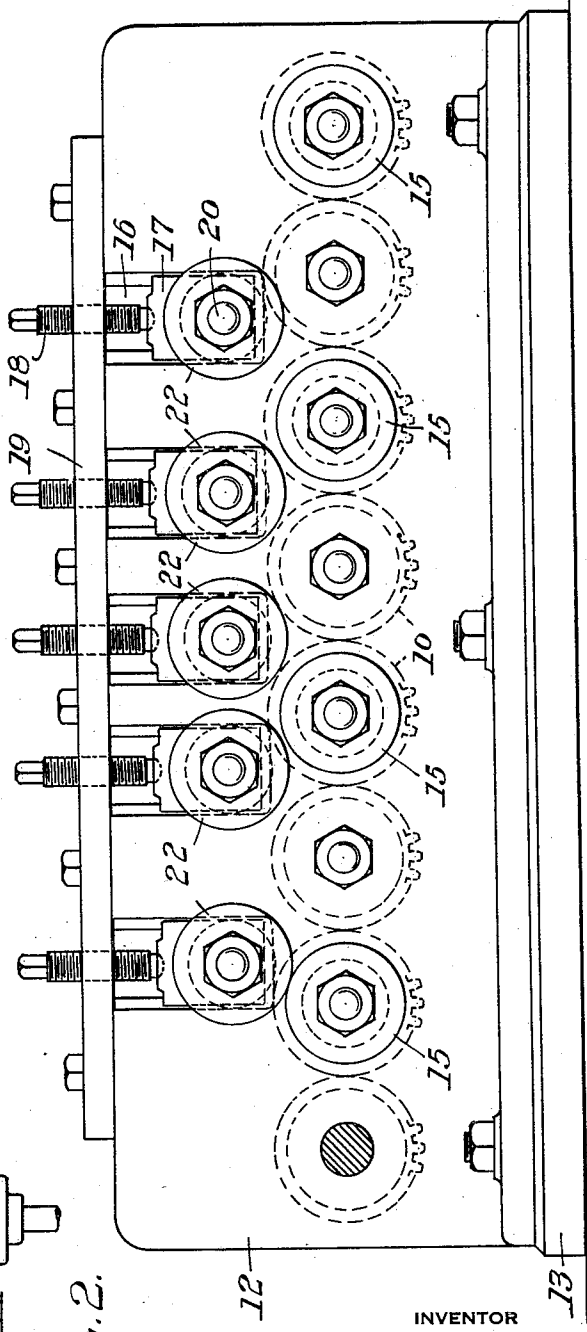


Fig. 2.

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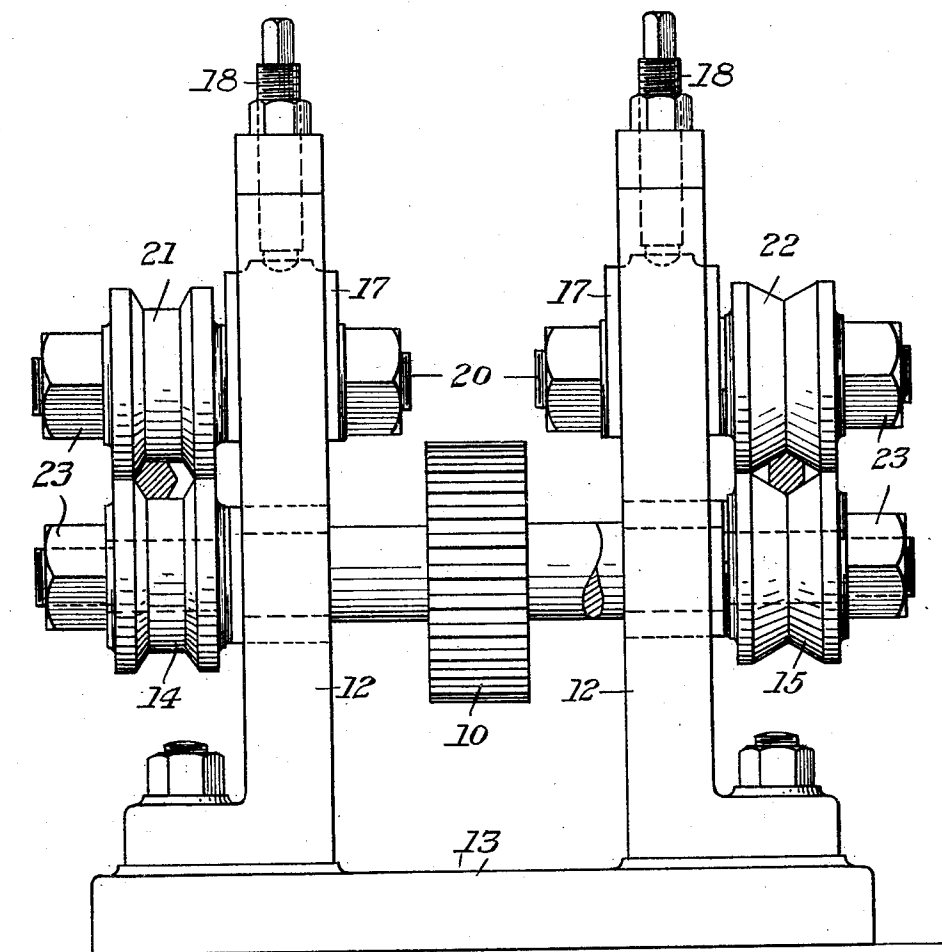
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Fig. 3.



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STRAIGHTENING MACHINE

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This invention relates to straightening machines and more particularly to straightening machines for shapes such as square bars, hexagons, or the like.

A rolled bar such as one of hexagonal shape must be passed through two sets of straightening rolls, each presenting a properly shaped pass, in order to adequately straighten it. In one pass it is straightened "across corners" and in the other pass it is straightened "across flats." Similar situations arise in the straightening of bars of other cross-sectional shape. Straightening machines of various types have been heretofore employed but most of them have been open to the objections that they take up a large amount of room, require an undue amount of handling of the material, and frequently require two separately driven independent machines. Even in those cases where the two straightening passes are the same, these difficulties are encountered.

I provide a straightening machine wherein straightening rolls on one side of the machine are effective for moving the bar to be straightened in one direction and straightening the same, while another set of rolls on the other side of the machine is effective for moving the bars in the other direction and further straightening them. With this arrangement the machine may be of very simple construction and the amount of labor required is reduced to a minimum.

A workman standing at the receiving end of the first set of straightening rolls can grasp the delivered bar and feed its trailing end to the second set of straightening rolls so that it travels back to the position from which it originally came. The machine may therefore be employed with existing mill layouts without requiring any re-routing of the bars through the mill.

The machine preferably comprises a frame having substantially parallel shafts which are geared together. Alternate shafts project on opposite sides of the machine and since they are connected by gearing, those shafts which project to one side of the machine rotate in one direction, while those projecting to the other side rotate in the opposite direction.

Straightening rolls are placed on the pro-

jecting ends of the shafts and cooperating independently adjustable straightening rolls are secured to the frame.

In the accompanying drawings illustrating the present preferred embodiment of the invention,

Figure 1 is a top plan diagram illustrating the machine,

Figure 2 is a side elevation, and

Figure 3 is an end view.

Referring first to Figure 1, the machine consists of a series of substantially parallel shafts numbered 2 to 9, inclusive. The even numbered shafts project in one direction beyond the ends of the odd numbered shafts, and the odd numbered shafts project in the other direction beyond the ends of the even numbered shafts. The several shafts are all connected together by spur gears 10, all of equal diameter, whereby the several shafts are rotated at the same speed, the even numbered shafts rotating in one direction as indicated by arrows, and the odd numbered shafts rotating in the other direction.

Power is supplied to the machine by the shaft 2 through a coupling as indicated at 11.

The several shafts are mounted in a frame consisting of spaced housings 12 on a base 13. The projecting ends of the shafts extend beyond the housings, as best shown in Figure 3. These projecting ends carry straightening rolls, those on the even numbered shafts being indicated at 14 and those on the odd numbered shafts being indicated at 15.

The housings are provided with windows 16 in which are mounted slide blocks 17 backed by screws 18. The screws 18 are threaded in caps 19 bolted to the tops of the housings. Each slide block 17 carries a stud 20 on which there is mounted a freely rotatable straightening roll, those cooperating with the rolls 14 being of the same shape and being numbered 21, and those cooperating with the rolls 15 being of the same shape as said rolls and being numbered 22.

The relative position of the several driven and idle straightening rolls on each side of the machine is clearly shown in Figs. 1 and 2.

The rolls 14 and 21 cooperate to form a straightening pass effective for straightening a hexagonal bar across flats. The rolls 15 and 22 cooperate to form a straightening pass effective for straightening a hexagonal bar across corners.

In operation, a bar is fed through the rolls 14 and 21 in the direction indicated by the arrow in Fig. 1. When the trailing end of the bar issues from the right-hand end of the machine, as viewed in Fig. 1 and Fig. 2, a workman grasps the bar and feeds it to the straightening rolls 15 and 22, whereby it is fed back through the machine in the direction indicated by the arrow in the lower left-hand corner of Fig. 1.

The straightening rolls 14 and 21, 15 and 22 may be removed from their shafts and rolls of other shapes substituted therefor. The shafts all have reduced ends which are threaded and provided with nuts 23 to permit of such removal.

With my machine a large amount of material may be straightened at minimum cost. The machine may be manufactured at a relatively low cost and the labor requirements are very low. The straightening rolls may be very quickly changed, as the shaft portions on which they are mounted all lie outside of the machine housings. The amount of straightening is, of course, governed by the flexing which is given to the material as it passes through the machine, this being controlled by the screws 18.

I have illustrated and described the present preferred embodiment of my invention. It will be understood, however, that it is not limited to the form shown, but may be otherwise embodied within the scope of the following claims.

I claim:—

1. A straightening machine comprising a frame, straightening rolls adjacent one side of the frame adapted for rotation in one direction, and straightening rolls adjacent the other side of the frame adapted for rotation in the other direction.

2. A straightening machine comprising a frame, straightening rolls adjacent one side of the frame adapted for rotation in one direction, and straightening rolls adjacent the other side of the frame adapted for rotation in the other direction, the rolls adjacent one side of the frame forming a pass of one cross-sectional shape and the rolls adjacent the other side forming a pass of another cross-sectional shape.

3. A straightening machine comprising a frame, straightening rolls lying outside the frame and on either side thereof and carried by the frame, and means for driving the straightening rolls.

4. A straightening machine comprising a frame, straightening means lying outside the frame and on one side thereof, effective for

moving a bar to be straightened in one direction and for straightening the same, and straightening means lying on the opposite side of the frame and effective for moving a bar in the opposite direction and straightening the same.

5. A straightening machine comprising a frame, shafts carried by the frame and projecting through the frame to opposite sides thereof, straightening rolls on the projecting portions of the shafts, and means for driving the shafts.

6. A straightening machine comprising a frame, a plurality of substantially parallel shafts carried by the frame, gearing connecting the shafts, alternate shafts projecting through the frame to the outside thereof in opposite directions, and straightening rolls on the projecting portions of the shafts.

7. A straightening machine comprising a plurality of substantially parallel shafts, gearing connecting the same, alternate shafts projecting in opposite directions, straightening rolls on the projecting portions of the shafts, and independently adjustable cooperating straightening rolls.

8. A straightening machine comprising a frame, straightening rolls lying outside the frame and on either side thereof, and a common means for driving the straightening rolls on opposite sides of the frame in opposite directions.

9. A straightening machine comprising a frame, straightening rolls outside the frame and on one side thereof forming a pass for rolling a bar across flats, straightening rolls outside the frame on the other side thereof forming a pass for rolling a bar across corners, and means for driving the rolls.

10. A straightening machine comprising a frame, shafts projecting through the frame to opposite sides thereof, straightening rolls on the projecting portions of the shafts, and means for driving the straightening rolls on opposite sides of the frame in opposite directions.

11. A straightening machine comprising a frame, straightening rolls lying outside the frame and on either side thereof, and means for driving oppositely disposed rolls in opposite directions.

In testimony whereof I have hereunto set my hand.

PETTER B. ABRAMSEN.