(No Model.) 3 Sheets—Sheet 1.

P. M. HAAS.

MACHINE FOR STRAIGHTENING RODS.

No. 518,403. Patented Apr. 17, 1894.

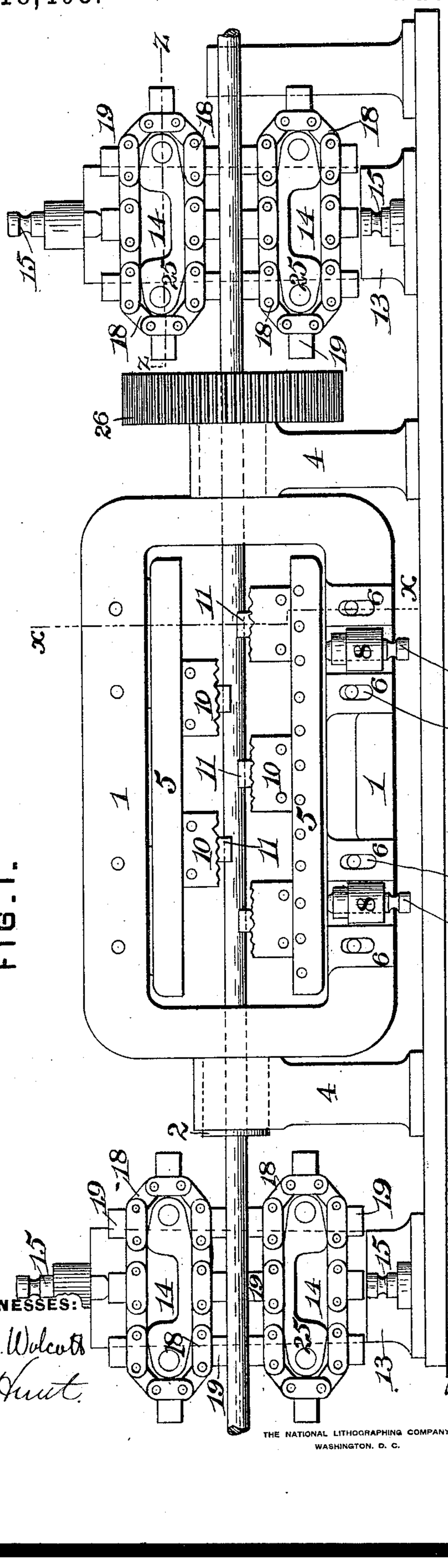

FIG. 1.

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FIG. 2.

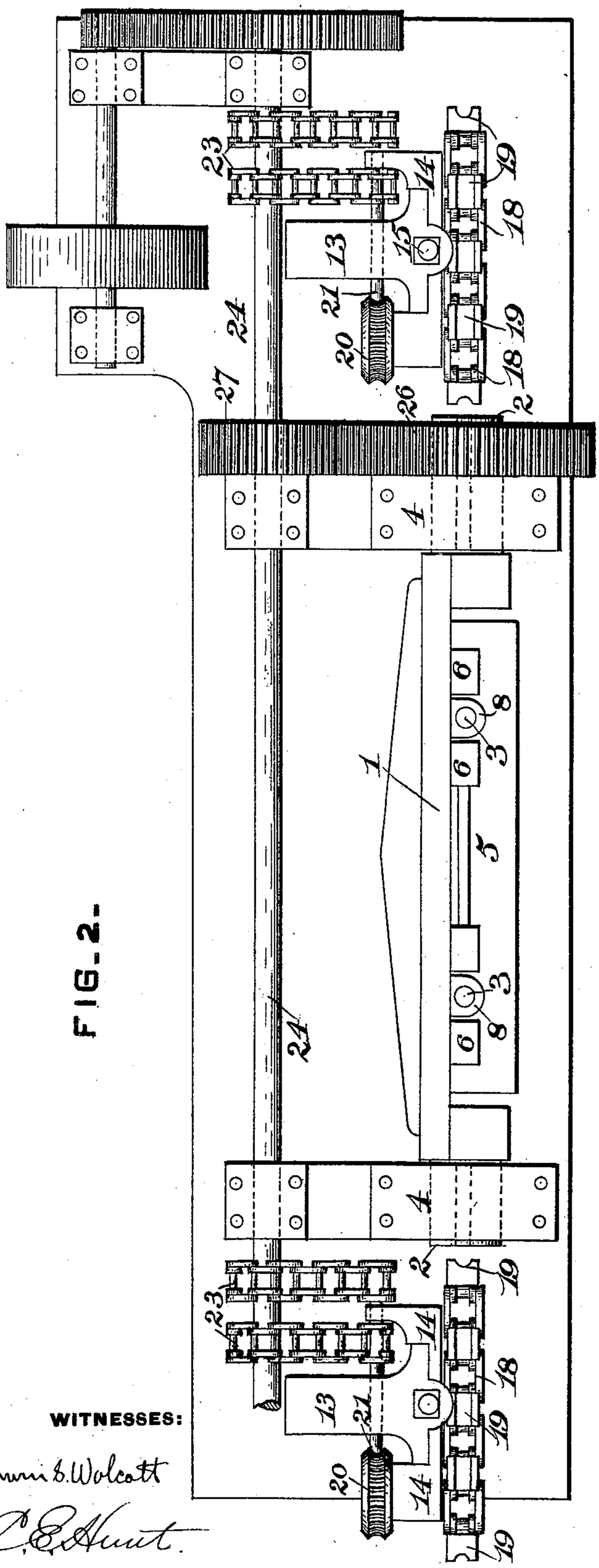

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FIG. 5.

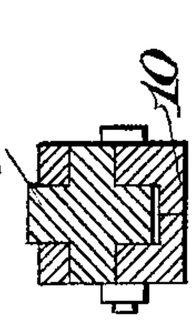


FIG. 6.

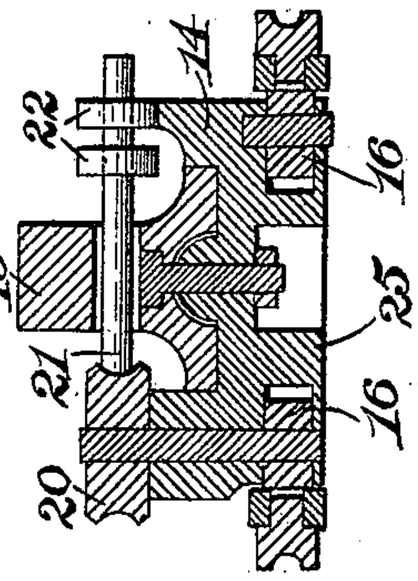


FIG. 4.

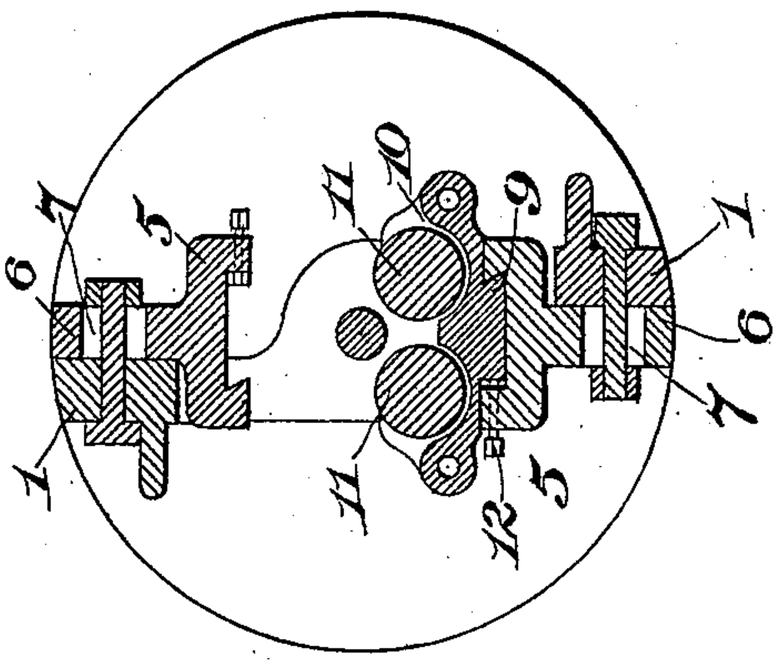
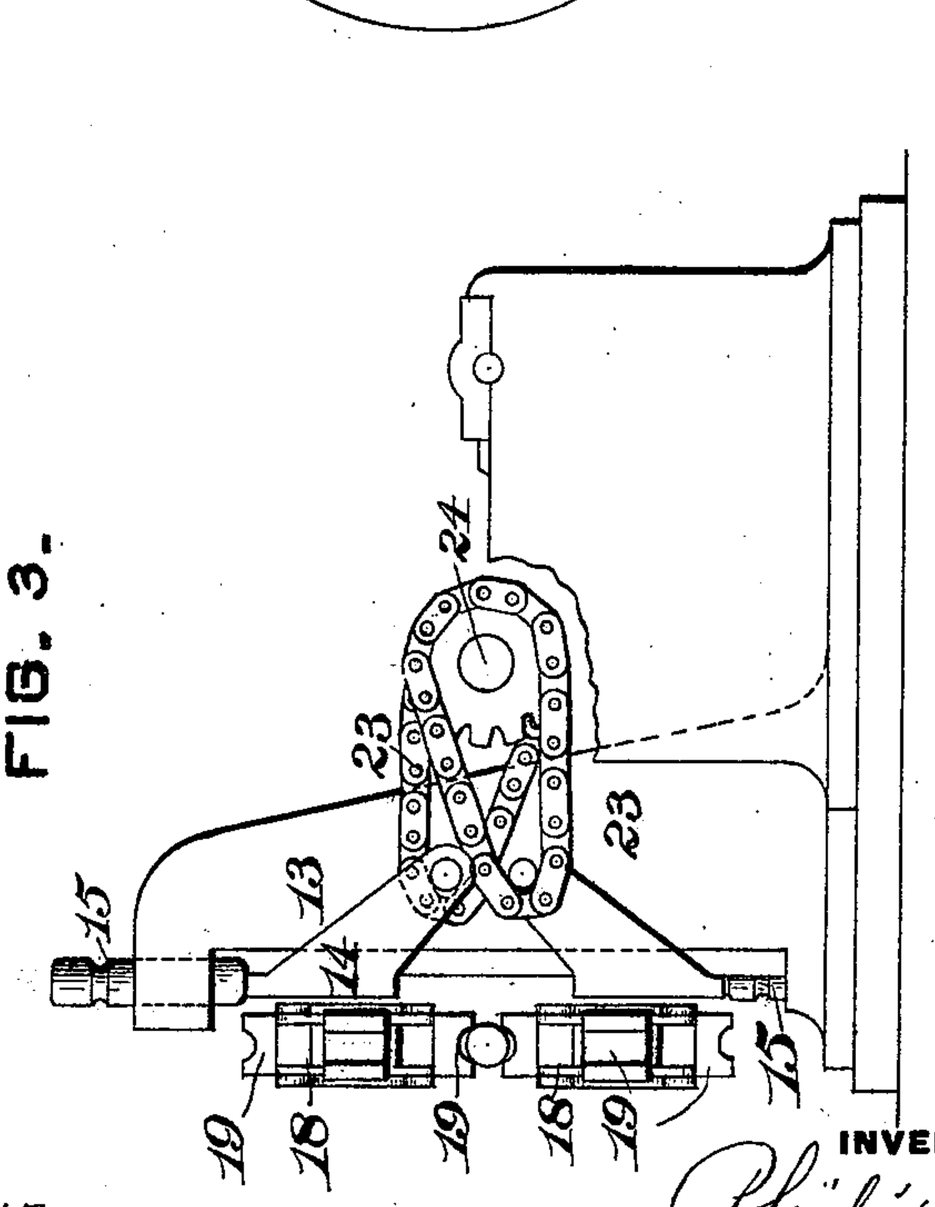


FIG. 3.



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UNITED STATES PATENT OFFICE.

PHILIP M. HAAS, OF YOUNGSTOWN, OHIO.

MACHINE FOR STRAIGHTENING RODS.

SPECIFICATION forming part of Letters Patent No. 518,403, dated April 17, 1894.

Application filed August 4, 1893. Serial No. 482,410. (No model.)

To all whom it may concern:

Be it known that I, PHILIP M. HAAS, a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented or discovered certain new and useful Improvements in Machines for Straightening Rods, &c., of which improvements the following is a specification.

The invention described herein relates to certain improvements in machines for straightening iron and steel bars for shafting, &c., and has for its objects certain improvements in feed mechanism, whereby a continuous combined push and pull is applied to the bar as it is fed through the machine, such mechanism being so constructed and operated as to prevent a sudden forward movement of the bar as it is being drawn through the flier, whereby it frequently happens a kink or bend is imparted to the bar.

The invention also has for its object certain improvements in the straightening devices, whereby their frictional resistance on the rod is lessened.

In general terms, the invention consists in the construction and combination substantially as hereinafter described and claimed.

In the accompanying drawings forming a part of this specification, Figure 1 is a view in side elevation of my improved straightening machine. Fig. 2 is a top plan view of the same; Fig. 3, an end elevation of the machine; Fig. 4, a transverse section on the line *x*, *x*, Fig. 1; Fig. 5, a sectional detail view of one of the straightening rollers, the plane of section being indicated by the line *y*, *y*, Fig. 4, and Fig. 6 is a horizontal section, the plane of section being indicated by the line *z*, *z*, Fig. 1.

In the practice of my invention the frame 1 of the flier is provided with hollow journals 2 at its ends, which are mounted in suitable bearings formed on the upper ends of the standards 4, secured to the bed of the machine. On the side bars of the flier are adjustably mounted the carrier frames 5, which are provided with lugs 6, having slots 7 for the reception of the bolts whereby the carrier frames are clamped to the flier. The carrier frames are adjusted toward the axis of the flier by means of screws 3, passing through threaded lugs 8, formed on the flier, and bearing at their ends against the carrier frame, as clearly shown in Fig. 1. The carrier frames are provided along their inner edges with dovetailed grooves for the reception of correspondingly shaped projections 9, on the bearing blocks 10, in which are mounted the straightening rollers 11, two of said rollers being mounted in each block. For convenience in manufacture, and for mounting the rollers in the blocks, the latter are preferably made in two parts, as shown in Fig. 5, and are held together by suitable bolts. The bearing blocks are held in any adjusted position along the carrier frames, by means of set screws 12.

By reference to Fig. 4, it will be seen that the sides of the frames of the flier are in different vertical planes, passing on opposite sides of the axis of the flier, and that the rollers in each bearing block have their axes in vertical planes on opposite sides of the axis of the flier, so that said rollers will bear upon the bar or rod whose axis, when being fed through the machine, corresponds with the axis of the flier, on opposite sides of the axis of the rod, as clearly illustrated in Fig. 4. It will, also, be observed that the straightening rollers have their axes parallel with the axis of the flier, so that said rollers will be rotated in their bearings as the flier is rotated around the bar, and will not be rotated by the onward movement of the bar through the machine, as is the usual practice. On opposite sides of the flier are arranged posts or standards 13, and on these standards are arranged slides 14, which are held against the vertical face of the standard by means of bolts which will permit of the vertical adjustment of the slides toward and from each other. The adjustment of the slides is effected by means of screws 15, as shown in Fig. 1. In the slides are mounted sprocket wheels 16, around which pass endless chains 18, said chains being provided with V-shaped gripping blocks 19, as shown in Figs. 1, 2 and 3. On the shaft upon the sprocket wheel is mounted a worm wheel 20, intermeshing with a worm on one end of a shaft 21, said shaft being mounted in suitable bearings in the slide, and provided, at its opposite ends, with a sprocket wheel 22, around which passes a chain 23, driven by a sprocket wheel on the shaft 24. The

slides are provided with plates 25, arranged between the two horizontal parts of the chains 18, the inner edges of said plates having their edges inclined near their ends, so that as the gripping blocks are carried around by the chain, they will be wedged against the bar to be fed, and will leave the bar with a gradual movement. On one of the journals of the flier is mounted a gear wheel 26, intermeshing with a gear wheel 27, on the shaft 24, as shown in Fig. 2.

In the operation of my machine, a bar is fed by one of the feed mechanisms at one end of the machine, into the flier, and the carrier frames 5 are adjusted toward each other until the rollers 11 have a proper bearing upon the bar. The slides 14 are then so adjusted that the gripping blocks 19 will, as they pass around and against the plates 25, take a firm grip upon the bar. The shaft 24 is now rotated by any suitable means, thereby rotating the flier, and, also, imparting through the mechanism heretofore described, a progressive movement in the same direction to the drive chains 18, thereby both pushing and pulling the bar through the machine. It will be observed that after the bar has passed out of the pushing mechanism, the pulling mechanism still has a firm grip upon the bar, and will prevent any sudden forward movement of the bar as is liable to happen when the rear end of the bar is resting upon one of the bearing rollers, the pressure of the roller on the opposite side of the bar, and ahead of the one on which the end of the bar rests will cause a flexure of the bar, so that the roller bearing against the incline thus produced will shoot the bar forward.

As hereinbefore stated, the rollers are so mounted in the flier that their axes of rotation are parallel with the axis of rotation of the flier. This is an important feature of my improvement, as I am thereby enabled to operate the machine without such careful and close adjustment as is necessary in such machines as have the axes of their rollers at an angle to the axis of rotation of the flier. When the rollers have their axes at an angle to the axis of rotation of the flier, they will feed the bar or rod operated on forward through the machine, the speed of such feed being dependent upon the angularity of their adjustment with reference to the axis of the flier. Hence, it is necessary in operating such machines to carefully adjust the mechanism for feeding the bar or rod into the straightening machine with reference to the angular arrangement of the axes of the rollers, as, if the feed mechanism operates too slowly, the rollers will tend to force the metal of the bar or rod forward, but, if the feed mechanism is too fast, the rear corners of the feed rollers will cut into the bar or rod, thus, in both cases, injuring the appearance of the product. The rollers having their axes parallel with the axis of rotation of the flier, the rollers do not operate to feed the rod at all, and, hence, will not, in any way, score or injure the rod.

I claim herein as my invention—

1. In a rod straightening machine, the combination of a rotating flier, presser rollers arranged on the flier with their axes parallel with the axis of rotation of the flier, and feed mechanism for forcing a bar or rod through the machine, substantially as set forth.

2. In a rod straightening machine, the combination of a rotating flier, carrier frames adjustably mounted on the flier, rollers mounted on the blocks with their axes parallel with the axis of rotation of the flier, and mechanism for feeding a bar or rod through the flier, substantially as set forth.

3. In a rod straightening machine, the combination of straightening mechanism, two endless chains provided with gripping blocks and mechanism for driving the chains, substantially as set forth.

4. In a feed mechanism for straightening machines, the combination of adjustable slides arranged on a suitable standard, endless chains provided with gripping blocks and so mounted on the slides that the gripping blocks on one chain will during a portion of its travel be in line or approximately in line with and in such proximity to the gripping blocks on the other chain as to tightly grip the rod, and mechanism for driving the chains, substantially as set forth.

In testimony whereof I have hereunto set my hand.

PHILIP M. HAAS.

Witnesses:
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C. F. WALKER.