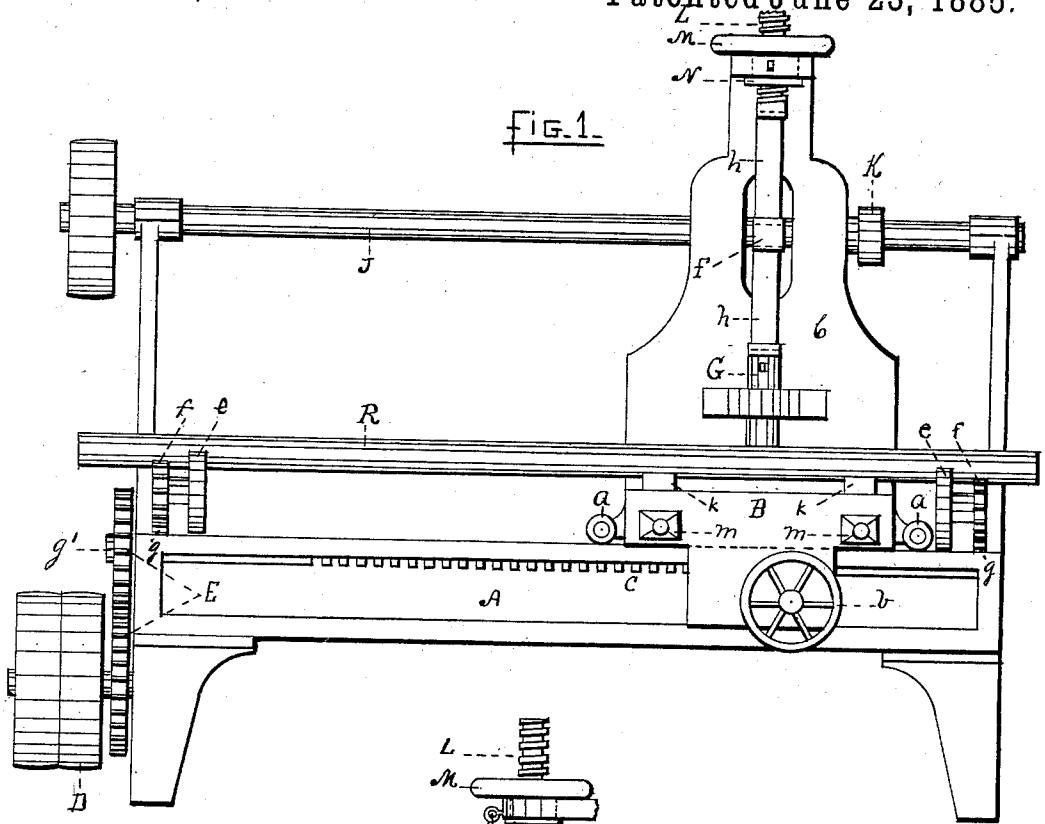
(No Model.)

A. WOOD.

SHAFT STRAIGHTENING MACHINE.

No. 320,610. Patented June 23, 1885.

Fig. 1.



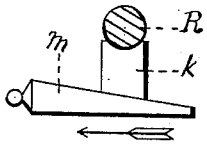


Fig. 3.

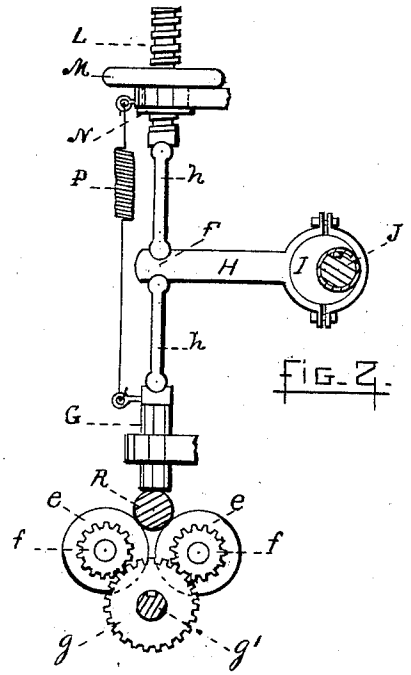


Fig. 2.

Witnesses.

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H. M. Fowler

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UNITED STATES PATENT OFFICE.

AURIN WOOD, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CHARLES N. HAIR, OF SAME PLACE.

SHAFT-STRAIGHTENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 320,610, dated June 23, 1885.

Application filed September 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, AURIN WOOD, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Shaft-Straightening Machines, of which the following is a specification.

My invention relates to an improved method of straightening metal bars preliminary to the manufacture of shafting, and has for its objects to obviate the necessity of centering the bar before straightening, to apply power in the process of straightening, and to render the power so applied entirely within the control of the operator.

The accompanying drawings illustrate a machine embodying my invention, in which Figure 1 is a plane elevation of the machine. Fig. 2 shows the principal operating portions in end view and detached from the framework, and Fig. 3 one of the supporting-blocks *k* and actuating-wedge *m*.

Similar letters refer to similar parts in the several views.

A represents a bed having on its upper surface longitudinal ways upon which the carriage B moves, running upon the friction-rolls *a a*, and being actuated by the operator by means of the hand-wheel *b*, rack *c*, and suitable gearing common in lathes, but not shown in the drawings.

Above the track are two pairs of friction-rolls, *e e*, to whose hubs are attached the pinions *f f*, which are driven by gears *g g* upon a shaft, *g'*, running the entire length of the bed A, and receiving motion through the gearing E and pulley D.

The carriage B carries the stand C, which supports the toggle-joint F, formed of the bars *h h*, follower G, and actuating-bar H, operated by the eccentric I, upon the shaft J.

To the hub of the eccentric I is attached the friction-clutch K, by which the rotary motion of the shaft J may be imparted at the will of the operator to the eccentric I. The shaft J has a groove its whole length, and the friction-clutch K has a spline, which causes it to rotate with the shaft and at the same time be capable of sliding on the shaft as the carriage B is moved on the bed A.

The reaction from the downward thrust of the toggle-joint F upon the follower G is received by the threaded bolt L, which can be raised or lowered by the operator by means of the hand-wheel M and connected nut N, which is held in the frame of the machine.

The follower G is drawn upward and held by the spiral spring P, so that the action of the eccentric overcomes the tension of the spring in throwing the follower down.

In the base of the carriage B are two supporting-blocks, *k k*, equidistant from the follower G, and resting upon sliding wedges *m m*, the supports *k k* being placed in line, so as to support the bar R as it lies upon the friction-rolls *e e*.

The operation of straightening a bar is as follows: The bar R is placed upon the friction-rolls *e e*, thereby receiving a rotary motion through the pinions *f f* and connected driving mechanism. The bar R will rotate about an axial line concentric with the periphery of that portion of the bar resting upon the friction-rolls *e e*, and any deflection of any part of the bar from this axial line may be easily detected by holding a piece of chalk in the path of the revolving bar in the usual and well-known method. The carriage B is then moved along the bed until the follower G is brought over the bent portion of the bar, the wedges *m m* are pressed inward, raising the two supporting-blocks *k k* against the bar R, the eccentric I set in motion by means of the friction-clutch K, and the follower G pressed down against the bar, care being taken to have the convex side of the bar uppermost. If the follower does not quite reach the bar, or does not "spring" it far enough to render it straight, the threaded bolt L is moved down a sufficient distance by the nut N and hand-wheel M, and by raising or lowering the bolt L the force of the pressure against the bar R may be varied, as may be desired. Upon releasing the friction-clutch K the motion of the eccentric ceases, the spring P holds the follower up and removed from the bar R, the wedges *m m* are withdrawn in the direction of the arrow in Fig. 3, the supporting-blocks *k k* fall away, the bar R again begins to rotate upon the constantly-revolving friction-wheels *e e*, and the operation is repeated until the whole bar is made straight.

For convenience I arrange the friction-rolls *e e* and their connected pinions *f f* so they may be moved along the bed A and brought nearer together for short bars, the shaft *g'* being grooved, and the gears *g g* having splines for that purpose.

In order to better illustrate the toggle-joint in Fig. 1, I have omitted the spiral spring P from that figure.

I am aware that straightening-machines have been constructed having a vertical head carrying the straightening devices and moving on a bed which supports the shaft-sustaining rests. Such a construction I do not claim, the shaft-sustaining rests in my improved machine being held in and supported by the base of the movable head, in order to prevent the strain exerted by the straightening devices from having a tendency to raise the head from the bed.

I am also aware that a fixed head having in its base fixed blocks or rests for sustaining the shaft has been made. Such I do not claim. In such machines the shaft is moved along so as to subject successive portions to the operation of the straightening devices, instead of holding the shaft by a suitable rotating device, which is necessary in straightening bars which are to be turned.

I am also aware that machines have been in use in which an adjustable threaded fulcrum has been employed to receive the thrust of a toggle-joint. Such a fulcrum was shown in the patent to Berry, May 9, 1882, No. 257,645, consisting of a rotating screw in a fixed nut acting upon a sliding plate sliding in and held by suitable ways. Such I do not claim.

In my improved machine, in place of the rotating threaded fulcrum I use a threaded fulcrum having only a longitudinal motion and acting directly upon the link of the toggle-joint, thereby obviating the use of the intermediate sliding plate, as shown in the patent to Berry above cited.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the bed of a shaft-straightening machine, of the shaft-supporting rotating rolls *e e*, sliding carriage C, sliding on the bed, and vertically-adjustable rests *k k*, said rests being carried by and supported in the base of the sliding carriage C, together with means for applying pressure to the shaft carried by the sliding head, all combined and operating as described, and for the purpose set forth.

2. The combination, with the toggle-joint F and actuating eccentric I, of the spring P, as and for the purpose set forth.

3. The straightening-machine consisting of the rotating friction-rolls *e e*, traversing carriage B, blocks *k k*, wedges *m m*, toggle-joint F, and threaded fulcrum L, capable of vertical adjustment, as and for the purpose set forth.

AURIN WOOD.

Witnesses:
R. B. FOWLER,
H. M. FOWLER.