

No. 837,267.

PATENTED NOV. 27, 1906.

L. O. GOODWIN.
SHAFT STRAIGHTENER FOR LATHES.

APPLICATION FILED FEB. 15, 1906.

3 SHEETS—SHEET 1.

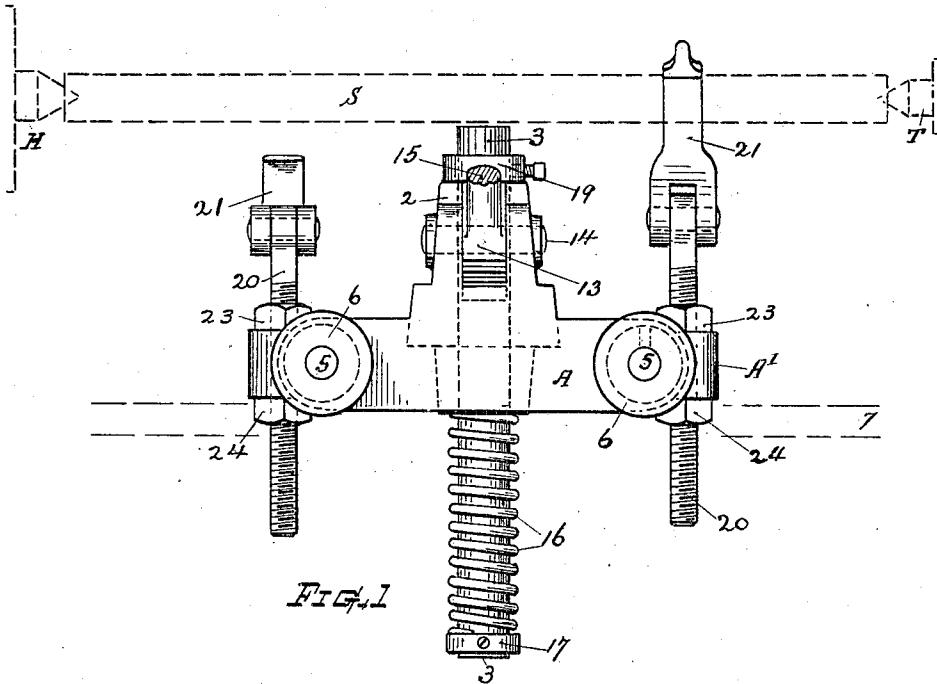


FIG. 1

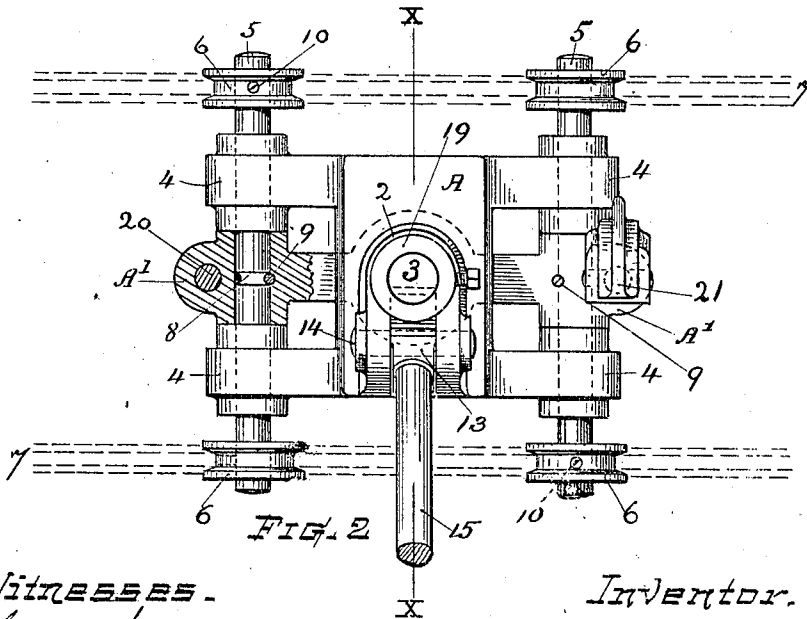


FIG. 2

Witnesses.

Charles S. Mason
W. W. Harrington.

Inventor.

Lyman O. Goodwin,
By Chas. H. Burleigh
Attorney.

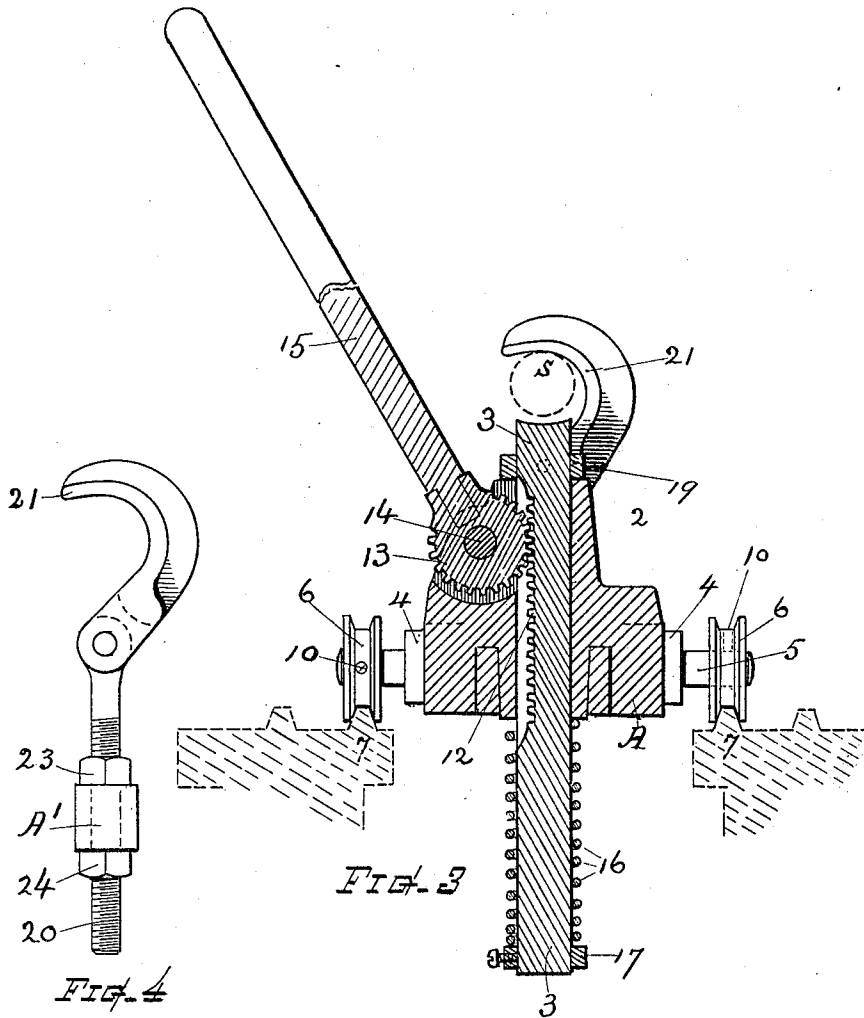
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2 SHEETS—SHEET 2.



Witnesses—
Charles W. Bacon
W. A. Harrington.

Inventor—
Lyman O. Goodwin
By Chas. H. Burlingame
Attorney.

UNITED STATES PATENT OFFICE.

LYMAN O. GOODWIN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF TWO-THIRDS TO GEORGE M. BASSETT AND ONE-THIRD TO ARTHUR J. BASSETT, OF WORCESTER, MASSACHUSETTS, A FIRM.

SHAFT-STRAIGHTENER FOR LATHES.

No. 837,267.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed February 15, 1906. Serial No. 301,284.

To all whom it may concern:

Be it known that I, LYMAN O. GOODWIN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Shaft-Straightener for Lathes, of which the following is a specification, reference being made therein to the accompanying drawings.

The object of my present invention is to provide a simple, efficient, and convenient mechanism for straightening shafts when mounted on the turning-centers of an engine-lathe and to afford a method of performing such work in a more satisfactory manner than the usual slow method of using the tool-carriage and a common pry-bar against the shaft.

To this end my invention consists in the mechanism illustrated in the drawings and hereinafter specifically described in detail, the particular subject-matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 represents a front view of my improved straightener mechanism. Fig. 2 is a plan view of the same, a portion thereof being shown in section. Fig. 3 is a central vertical section at line X X on Fig. 2, and Fig. 4 is a side view of one of the overhold-hooks and its adjusting means.

Referring to the drawings, A indicates a body-casting or strong portable frame having a central upright bearing 2, within which is arranged a vertically-movable lifter-bar 3, while at its ends the frame is provided with suitable bearings 4, within which are arranged horizontal shafts 5, the ends of which project beyond the frame and are provided with small wheels or rollers 6, grooved upon their periphery to fit upon the ways 7 (indicated by dotted lines) of any ordinary lathe and to facilitate the movement of the straightener mechanism thereon.

The shafts 5 are rotatable in the bearings 4 and are each provided with circumferential groove 8, (see Fig. 2,) in which there is arranged a pin or key 9, fixed in the frame, whereby the shaft is confined from endwise movement within its bearings, while it is free to rotate.

The wheels or rollers are preferably adjustable on the shaft and each confined by

set-screw 10, so that the width of the gage can be adjusted to the width of any lathe upon which the mechanism is to be used.

The plunger or lifter-bar 3 extends vertically through the central bearing and is movable endwise therein. It has upon its front side a rack of gear-teeth 12, which mesh with a pinion 13, mounted on a pivot-stud 14, fitted in suitable ears at the front part of the bearing-hub 2. Said pinion forms the head of a hand-lever 15, that projects out over the front of the lathe and by means of which the lifter-bar 3 can be moved up and down as desired.

The lifter-bar extends below the bottom of the frame, and an expanding coiled spring 16 is arranged around its lower part, between the frame and a collar 17, attached to the end of the lifter-bar. Said spring exerts its tension for drawing down the lifter-bar and elevating the hand-lever. The upper part of the lifter-bar is provided with an adjustable collar 19 or means for limiting the downward movement. The upper end of the lifter is preferably somewhat concaved to approximate the cylindrical form of the shaft.

The frame is preferably provided with a central member A', the ends of which extend beyond the bearings 4, and supported therein are vertical rods or bolts 20, having at their upper ends pivotally-attached hooks 21, adapted for taking an overhold upon the top of the work. The rods 20 are screw-threaded on their exterior and have threaded thereon nuts 23 and 24, respectively, above and below the bearing-frame, whereby said rods and hooks can be adjusted up or down to the required position.

The relative position of a shaft S, supported on the head and tail centers H and T of a lathe, is approximately indicated by dotted lines on Fig. 1 and in section, Fig. 3.

The operation is as follows: When a shaft centered in the lathe is to be straightened, the straightener mechanism is placed upon the ways of the lathe, with the lifter 3 beneath the shaft. The shaft is turned to a position where the bulge of its curvature is downward, and the straightener mechanism is moved along the ways until the lifter is brought into the proper position beneath the part to be straightened. The operator then depresses

the handle-lever 15, which raises the end of the lifter 3 against the shaft with sufficient force to effect the straightening operation. The straightener mechanism can be readily moved along the ways 7 to the different positions where straightening of the shaft is required and the necessary pressure quickly and satisfactorily applied by means of the lever, as will be understood by those conversant with the art.

In case of short crooks the hooks 21 are hooked over the shaft, one or both of them, before the lifter is raised, thus taking an overhold on the shaft at either side of the lifter and holding it in opposition to the direction of the lifter force.

By my invention the straightening of shafts can be very quickly and easily accomplished. The mechanism can be placed upon and removed from the lathe without trouble, thus greatly facilitating the work of preparing the shafts ready for the turning operations. When the hooks are not in use, they can be swung back out of the way.

The mechanism may in some instances be made without the hooks 21 and their adjusting-rods, the purpose of such hooks being to support the shaft when a short bend is to be straightened; but for ordinary long curvatures of a shaft the straightening can be effected by the lifter while the shaft is merely held between the centers of the lathe.

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

1. A shaft-straightening mechanism for engine-lathes, consisting of a body-frame provided with supporting members for fitting upon the ways of the lathe, and having a central endwise-slidable lifting-bar provided with a rack, and a lever provided with a pinion-head pivoted within said frame and engaging with the rack and the lifter-bar.

2. A mechanism for straightening shafts when supported on the centers of lathes, said mechanism comprising a portable frame provided with roller-supporting devices adapted to seat upon the ways of the lathe, a central guide bearing on said frame and a vertically-movable lifter therein adapted to impinge beneath the shaft, a hand-lever pivotally fulcrumed on said frame and provided with means for elevating said lifter.

3. In a shaft-straightening mechanism for the purpose specified, the combination of a body-frame having a central upright bearing, transverse supporting-shafts mounted in bearings at the respective ends of said frame and provided with rolls adapted for support upon the ways of a lathe, a central vertically-movable lifter-bar provided with a rack, a pinion pivoted in the frame and meshing with said rack, a hand-lever for moving said pin-

ion, a depressing-spring for said lifter-bar and means for limiting the downward movement of the lifter-bar, substantially as set forth.

4. In a shaft-straightening mechanism for the purpose specified, the combination, of the portable body-frame having means for its guidance and support upon the guideways of an engine-lathe, a central lifter-bar mounted in said frame, and means for operating said lifter-bar to exert upward pressure, the pivotally-connected hooks adapted for affording an overhold upon the shaft at the right and left in alinement with said lifter-bar, and means for regulating said hooks in vertical relation to the lifter-supporting frame.

5. In a shaft-straightening mechanism for the purpose specified, the combination of a body-frame, transverse supporting-shafts at the respective ends of said frame, provided with peripherally-grooved rolls for support upon the ways of a lathe, a vertically-movable lifter provided with a rack, a gear-pinion mounted in said frame and meshing with said rack, a projecting hand-lever for moving said pinion, adjustable rods at the end of said frame having overhold-hooks pivoted to their upper ends, and adjusting-nuts threaded on said rods above and below the frame, said hooks being in alinement with the central plane of the lifter.

6. In a shaft-straightening mechanism of the character described, the combination with the bearing-frame, the lifter-bar and lifter-operating pinion and lever, of the transverse supporting-shafts each provided with a circumferential groove, retaining pins or keys engaging said grooves for maintaining the relative position of the shaft within the frame, the grooved supporting-rolls endwise adjustable upon said shafts, and means for retaining the roll at adjusted position, for the purpose set forth.

7. In a shaft-straightener mechanism of the character described, the combination with the main body-frame having transverse shaft-bearings and an upright bearing carrying a vertically-movable lifter-bar and lifter-operating means, the central frame member provided with transverse shaft-bearings and vertical bearings carrying the adjustable hook-supporting rods, at its respective ends, and the removable shafts arranged through said transverse bearings, said central frame member being separably connected with the main body-frame.

Witness my hand this 12th day of February, 1906.

LYMAN O. GOODWIN.

Witnesses:

CHAS. H. BURLEIGH,
CHARLES S. BACON.