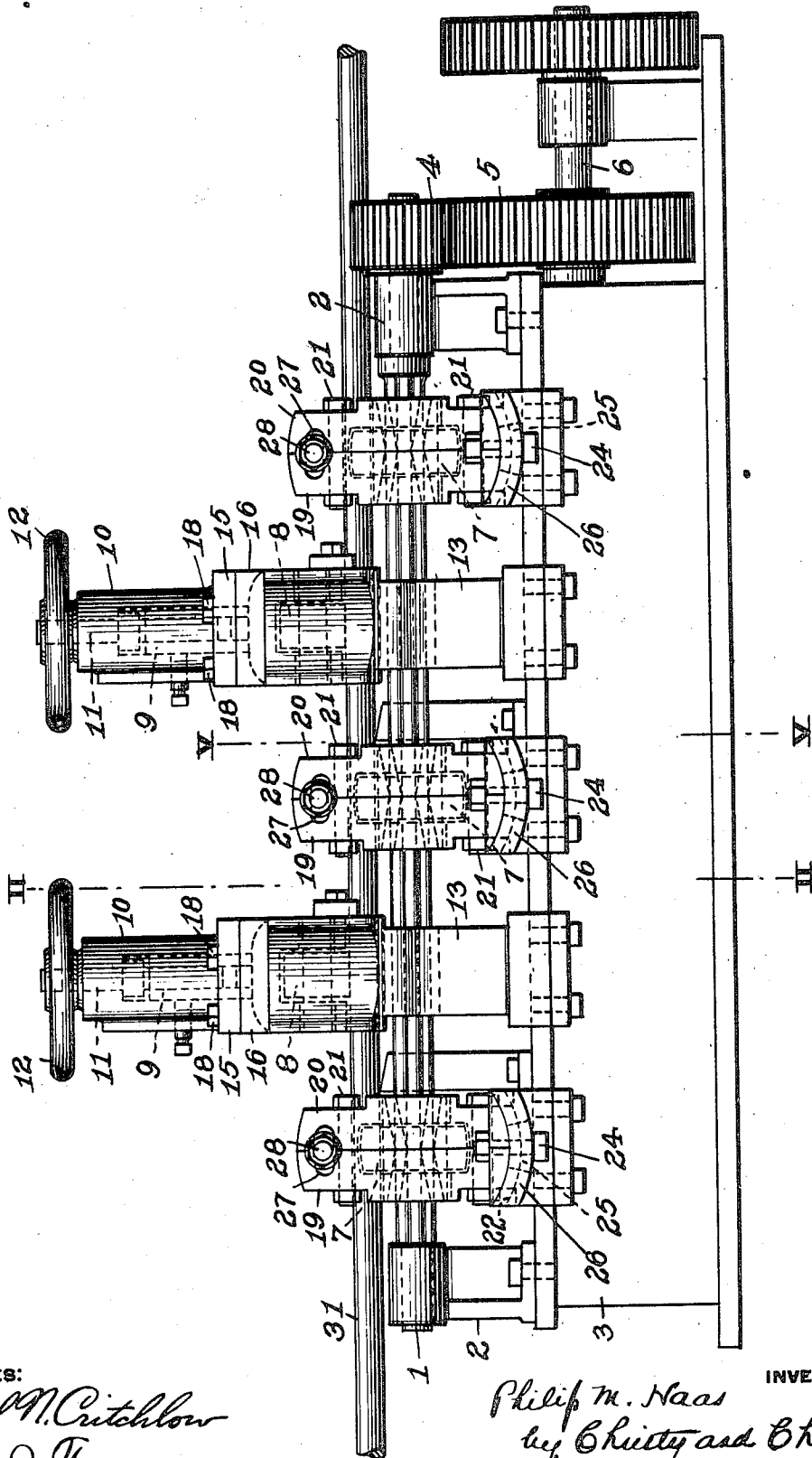


P. M. HAAS.
STRAIGHTENING MACHINE.
APPLICATION FILED MAR. 6, 1913.

Patented Aug. 12, 1913.
2 SHEETS—SHEET 1.

1,070,030.

FIG. 1.



WITNESSES:

Paul M. Critchlow
Francis J. Tomasson

INVENTOR

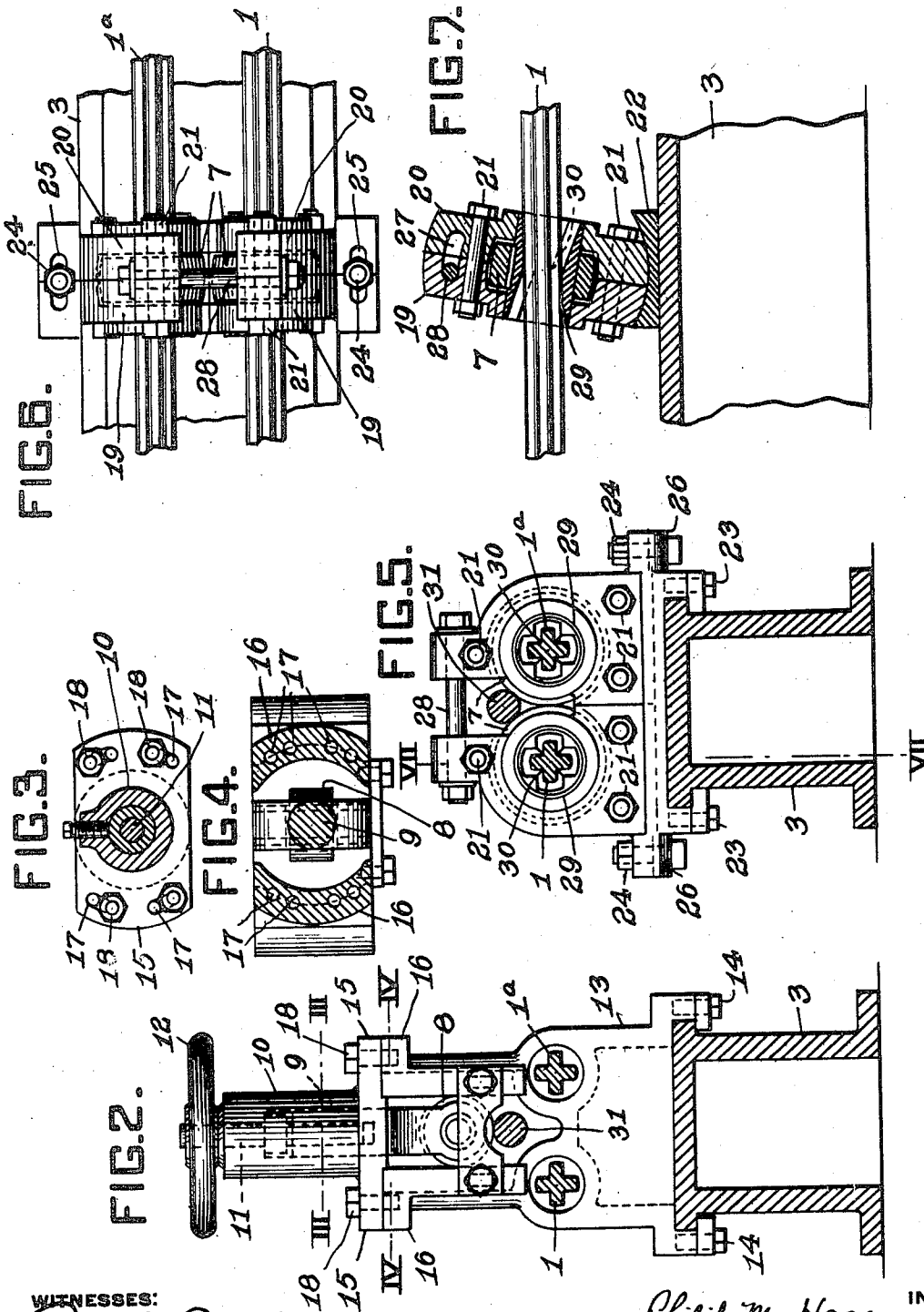
Philip M. Haas
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UNITED STATES PATENT OFFICE.

PHILIP M. HAAS, OF YOUNGSTOWN, OHIO.

STRAIGHTENING-MACHINE.

1,070,030.

Specification of Letters Patent.

Patented Aug. 12, 1913.

Application filed March 6, 1913. Serial No. 752,453.

To all whom it may concern:

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

In Letters Patent No. 666,419, granted to me January 22, 1901, I have shown and described a machine for straightening rods or tubes, wherein the blank to be straightened is fed between rolls some of which have their axes angularly disposed with relation to each other, to the end that the blank is given a rotary as well as a progressive movement. There is shown, in the disclosure of this patent, a single pair of adjustable rolls mounted in fixed housings at a point midway of the extent of the machine, such rolls being driven by shafts, and so mounted thereon that their axes may be adjusted obliquely with relation to the axes of the shafts. On each side of these rolls there is an undriven single pressure roll the axis of which is adjustable with relation to the axis of a blank being operated upon by the machine; and at each end of the machine there is a pair of fixed rolls mounted upon the rotatable shafts, there being a pressure roll opposite one pair of said fixed rolls.

My present invention has to do with machines of this character, and the object thereof is to improve their general construction and operation.

In the accompanying drawings which form part of my specification, I have illustrated my improvements in their preferred form.

Figure 1 of the drawings shows an elevation of the complete machine having in its engagement a rod to be straightened; Fig. 2 is transverse sectional view taken on the line II—II, Fig. 1, showing an upper roll and its housing; Figs. 3 and 4 are sectional views taken on the lines III—III and IV—IV, respectively, of Fig. 2; Fig. 5 is a transverse sectional view taken on the line V—V, Fig. 1, showing a lower pair of rolls and their housings; Fig. 6 is a plan view of rolls and

housing shown in Fig. 5; and Fig. 7 is a sectional view taken on the line VII—VII, Fig. 5, the roll, however, being shown with its axis at an angle to that of the driving shaft, instead of parallel therewith, as shown in Figs. 1, 5 and 7.

In the several drawings like numerals are used to designate like parts.

The general construction of the machine shown herein is similar to that illustrated in my above mentioned patent, and consists of shafts 1 and 1^a, rotatably mounted in suitable bearings 2, which are secured to each end of the machine frame or bed plate 3. The end of each shaft 1, 1^a is provided with a pinion 4, which meshes with a gear wheel 5, driven by a power shaft 6. Upon the bed plate 3 of the machine, rolls, adapted to bear upon opposite sides of a blank to be straightened, are suitably mounted within housings, each of which housings is independently adjustable upon such bed plate. The rolls 7 operating upon the lower side of the blank are arranged in pairs within their housings, and, alternating with such pairs of rolls, single upper rolls 8 bear vertically upon the blank.

The upper rolls 8 and their adjustable housings are illustrated in Figs. 1, 2, 3 and 4 of the drawings. Each roll 8 is rotatably mounted upon a sliding bar 9, which may be vertically adjusted within the guide-frame 10 by means of a screw 11 and hand wheel 12. The housing of each roll 8 comprises two main parts, a base portion 13 clamped to the frame 3 by bolts 14, and the above mentioned guide frame 10. To the end that the axis of the roll 8 may be adjusted angularly with relation to the axis of a blank, and thereby be made a feed roll, the guide frame 10 is provided with oppositely disposed outstanding feet 15 adapted to rest upon the top lugs 16 of the housing base 13, said feet 15 having slots 17 through which clamping bolts 18 extend and engage the lugs 16.

While the above described housing for the pressure rolls does not differ in the manner of its operation from that shown in my early patent, it will be observed that greater ri-

gidity of its roll 8 is effected by reason of the fact that the guide frame is secured to the base portion of the housing by securing members disposed on opposite sides of the roll-carrying bar rather than on one side thereof.

The lower rolls 7 are particularly illustrated in Figs. 1, 5, 6, and 7. Each of such rolls is mounted within a two-part carrier block 19, 20 clamped together as by bolts 21. The bearing surface of the blocks is cylindrical and rests upon a correspondingly concave surface of a bearing plate 22, the radius of curvature of said contacting surfaces being struck from the center of the roll 7. The bearing plate 22, as will readily be seen, is clamped to the bed plate 3 by bolts 23, and each pair of carrier blocks 19, 20, is in turn clamped to the bearing plate 22 by means of a bolt 24 extending through a slot 25 in said bearing plate, which plate is also provided on its lower side with a convex curved surface 26. The tops of the carrier blocks 19, 20 are provided with curved slots 27, through which a bolt 28 extends and clamps together the carrier blocks of a single pair of rolls 7, the arrangement being such the axes of the rolls 7 may be placed at an angle to the axis of the blank to be straightened, as well as at an angle with relation to each other.

As in my earlier patent, the rolls 7 are mounted upon and driven by the shafts 1, 1^a. To the end, however, that the shafts may not be weakened by the manner of securing the rolls thereto, and that greater driving force may be had, I form shoulders on the shafts 1, 1^a integral therewith and preferably extending from one of its end bearings to the other. As shown herein such shoulders may be formed by providing angular grooves in the shaft, which in section then appears as cross-shaped (see Figs. 2 and 5). Each roll 7 is rigidly secured to a sleeve 29 adapted to be slipped upon the shafts 1, 1^a, and having inwardly-extending projections 30 of such configuration as to engage the grooves formed in said shafts. The projections 30, as will be seen, taper from a high point at the center of the sleeves to the end thereof, the construction being such that the rolls may within certain limits be driven with their axes angularly disposed with relation to the axes of the driving shafts, the limit of such angular position being shown in Fig. 7.

In the operation of my improved rod or tube straightening machine, the axes of the pressure rolls 8 and the driven lower rolls 7 are first adjusted to the desired angularity with relation to the axis of the blank to be straightened, which in the drawings is represented as a rod 31, it being understood that any or all rolls may have their axes

angularly disposed to such rod, and that when so adjusted they become feed rolls as well as straightening rolls; also the pressure rolls 8 are adjusted vertically to the required height depending upon the diameter of the rod to be straightened. Still a third adjustment of the rolls is effected by adjusting the housings thereof upon the bed 3 of the machine, and for such adjustment it will be observed that all the housings may be moved to any desired relative positions upon the bed plate by unloosening their respective clamping bolts. The lower rolls 7 are driven by the shafts 1 and 1^a, and by their action and the cooperation of the pressure rolls 8 the rod will be drawn between the rolls, and the kinks and bends in it removed.

I do not wish to limit myself to the details of construction shown herein for obviously many changes may be made by those skilled in the art without departing from the spirit of my invention.

I claim herein as my invention:

1. In a machine for straightening cylindrical bodies, the combination of a frame, driving shafts rotatably mounted thereon, and a plurality of pairs of rolls obliquely adjustable with relation to the axes of said shafts, said pairs of rolls being adjustable upon said frame longitudinally of said shafts.

2. In a machine for straightening cylindrical bodies, the combination of a frame, driving shafts rotatably mounted thereon, a pair of rolls obliquely adjustable with relation to the axes of said shafts, a housing for each of said pair of rolls having a curved bearing surface, and a bearing plate sustaining the housings of said pair of rolls and longitudinally adjustable upon said frame.

3. In a machine for straightening cylindrical bodies, the combination of a frame, driving shafts rotatably mounted thereon, a pair of rolls obliquely adjustable with relation to the axes of said shafts, an independently adjustable housing for each of said pair of rolls, means for locking each of said housings to said frame, and means for clamping said housings together in their adjusted relative positions.

4. In a machine for straightening cylindrical bodies, the combination of a frame, driving shafts rotatably mounted thereon and provided with integrally formed shoulders, a plurality of rolls mounted in pairs for longitudinal adjustment on said shafts, each of said rolls being obliquely adjustable with relation to the axis of said shafts, said rolls having central openings of angular form adapted to be slipped upon and engaged by said shafts.

5. In a machine for straightening cylin-

drical bodies, the combination of a frame, driving shafts rotatably mounted thereon and provided with continuous longitudinal angular grooves, roll-carrying-sleeves surrounding said shaft and longitudinally adjustable thereon, said sleeves having tapered inwardly-extending projections formed integrally therewith and adapted to be en-

gaged by said grooved shaft, and rolls mounted on said sleeves.

In testimony whereof I have hereunto set my hand.

PHILIP M. HAAS.

Witnesses:

WALTER I. LYON,
JOHN D. HODGE.