

No. 666,419.

Patented Jan. 22, 1901.

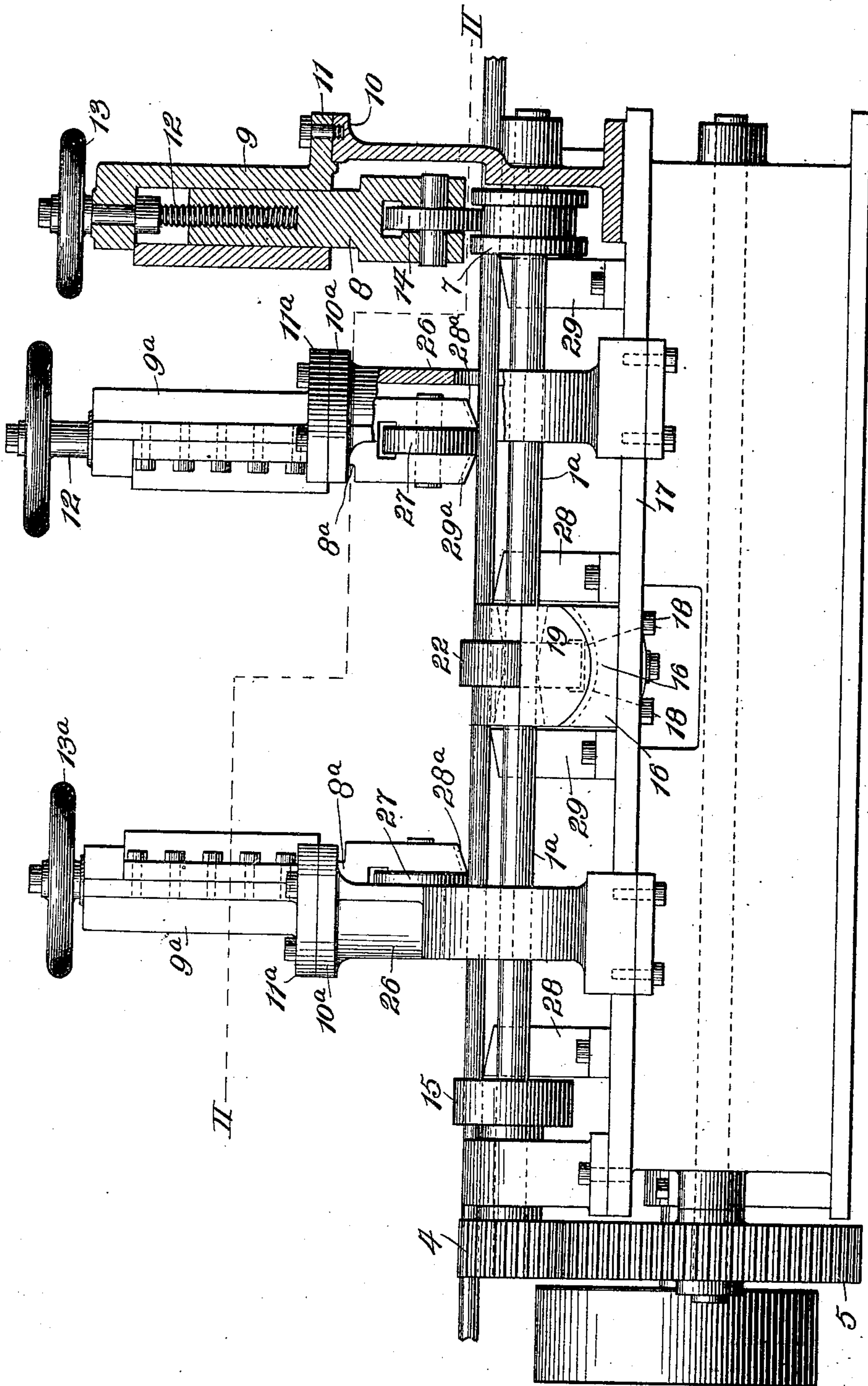
P. M. HAAS.
STRAIGHTENING MACHINE.

(Application filed July 16, 1900.)

(No Model.)

3 Sheets—Sheet 1.

FIG. 1.



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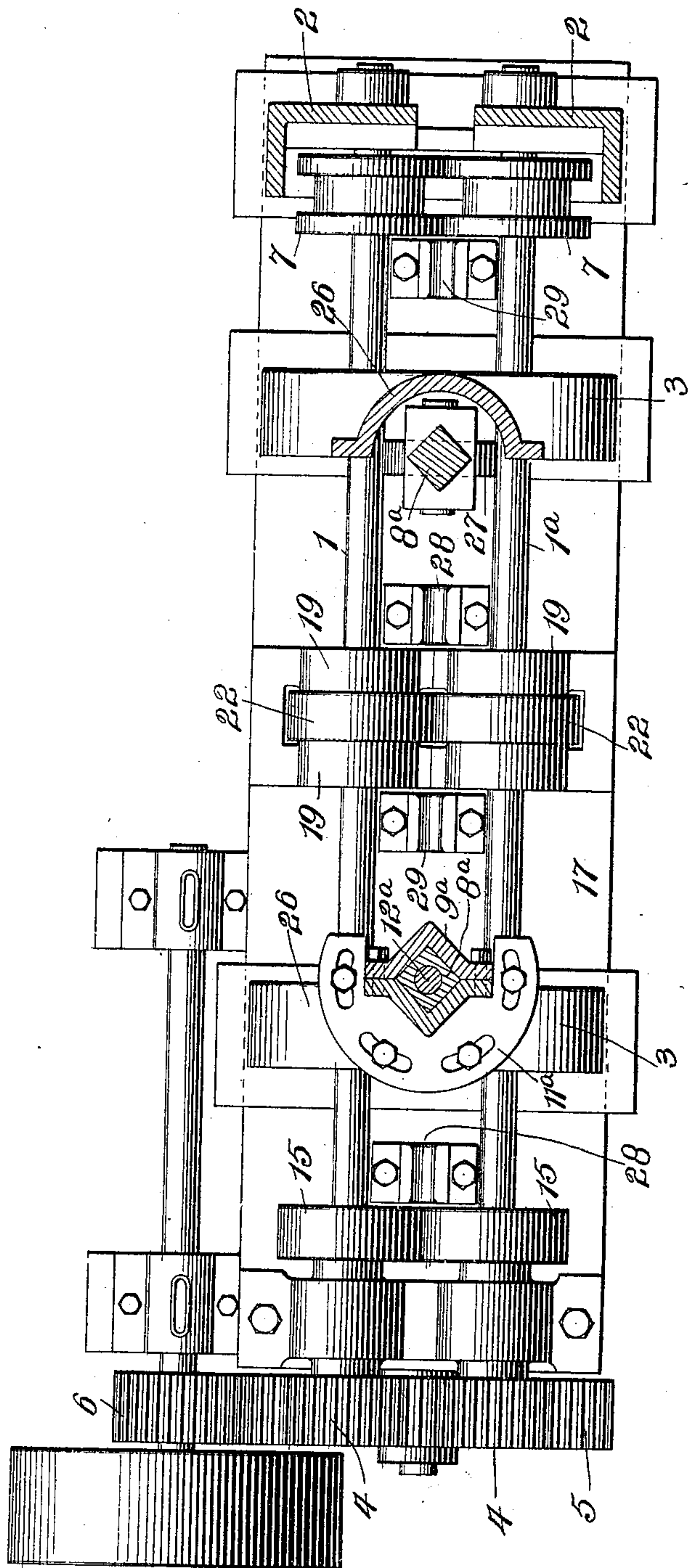
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FIG. 2.



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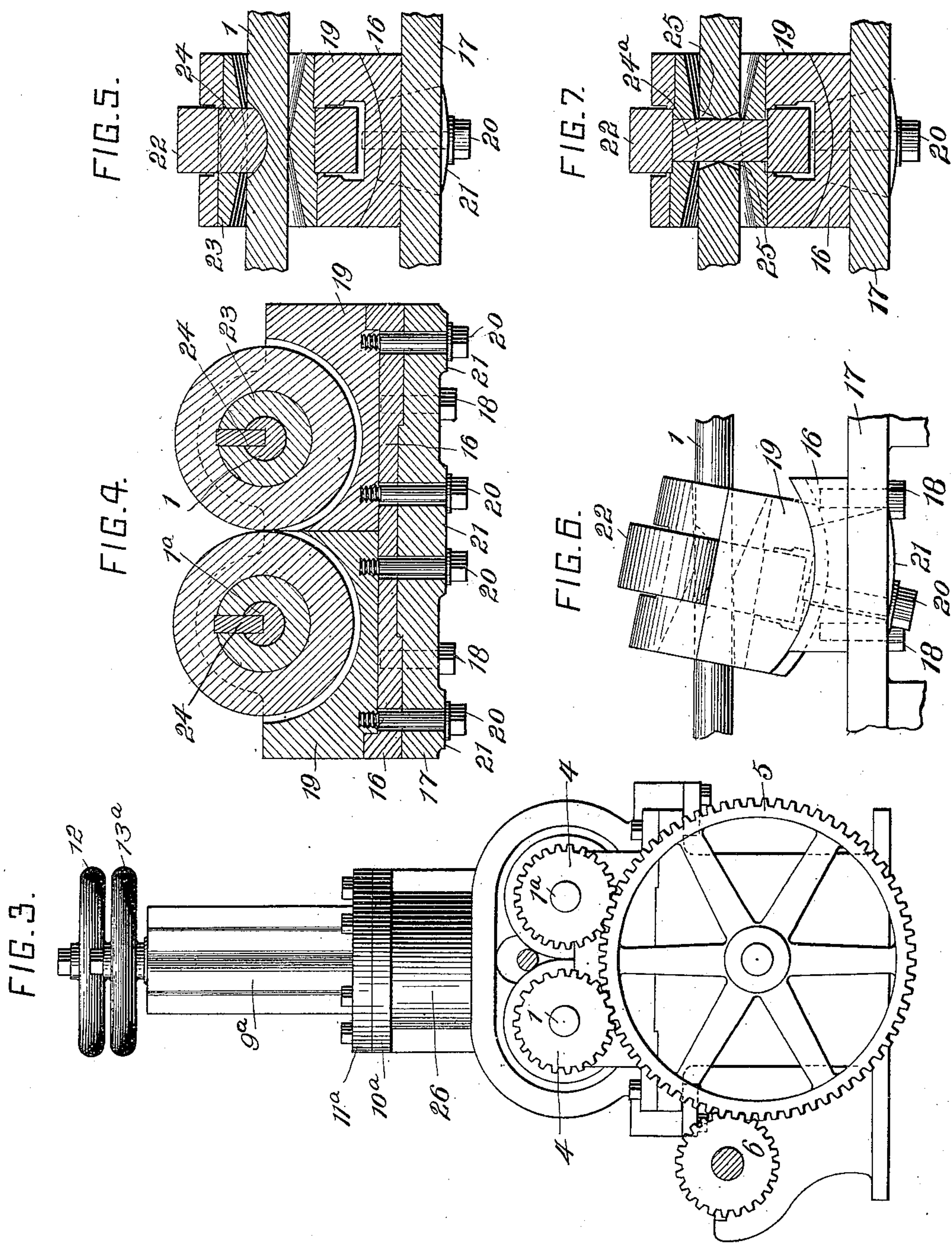
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

PHILIP M. HAAS, OF YOUNGSTOWN, OHIO.

STRAIGHTENING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 666,419, dated January 22, 1901.

Application filed July 16, 1900. Serial No. 23,773. (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 Straightening-Machines, of which improvement the following is a specification.

The invention described herein relates to certain improvements in machines for straightening bars, pipes, &c., and has for its object a construction and arrangement of parts whereby the rod or pipe is progressively fed through the machine and at the same time given a rotary movement, the longitudinal movement causing it to move transversely of rolling abutments, whereby opposite bends or flexures are given to the rod in order to remove any bends or kinks therein.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a view, partly in elevation and partly in section, of my improved machine. Fig. 2 is a sectional plan view, the plane of section being indicated by the line II II, Fig. 1. Fig. 3 is an end elevation of the machine. Fig. 4 is a transverse section of the main bending-rolls. Fig. 5 is a longitudinal section of the same. Fig. 6 is a side elevation of the main bending-rolls; and Fig. 7 is a view similar to Fig. 5, illustrating a modification of the construction of the bending-roll.

In the practice of my invention shafts 1 and 1^a are mounted in suitable bearings 2 at the ends of the machine. At one end these shafts are provided with pinions 4, which intermesh with the driving-wheel 5, which in turn is rotated by pinion 6 on the power-shaft. At the entrance end of the machine grooved rolls 7 are secured upon the shafts, and above these rolls is arranged a sliding bar 8, mounted in a suitable guide-frame 9, which is formed in two sections. The lower section is provided with a curved head 10, on which is adjustably secured a curved foot 11, formed on the guide-frame 9, as shown in Figs. 1 and 2. The guide-frame is held upon the head 10 by means of bolts passing through curved slots in the foot 11 and screwing into the head 10. This construction permits of

the axial rotation or adjustment of the guide-frames for the purpose to be hereinafter stated. The sliding bar 8 is moved up and down in the guide-frame by means of a screw 12, operated by the hand-wheel 13, and has a roll 14 mounted in its lower end. The axial adjustment of the head 9 permits of the axis of the roll 14 being shifted to an angle with the axes of the rolls 7, so that the roll 14 will act as a feed for a bar gripped between the rolls 7 and 14. The angularity of the axis of the roll 14 to the axes of the rolls 7 will regulate the rate of longitudinal movement of the bar through the machine. In order to increase the capacity of the machine as regards the sizes of rods or pipes to be straightened therein, the rolls 7 are grooved, as shown, so as to permit of the gripping of small sizes of rods between the rolls 7 and 14, the latter entering said groove when the small sizes of rods or pipes are being straightened. The grooves of the rolls 7 are made sufficiently wide with reference to the width of the face of the roll 14 to permit of the desired angular arrangement of the latter with reference to the axes of the rolls 7 for purposes of feed.

The shafts 1 and 1^a are provided adjacent to the rear end of the machine with plain supporting-rolls 15. The main polishing and straightening rolls are arranged at a point preferably midway between the rolls 7 and 15. A bearing-block 16 is secured to the bed 17 of the machine by means of bolts 18, as clearly shown in Figs. 1, 4, and 6. The upper surface of this bearing-block is made concave and forms a seat for the tipping block 19, which is held in position on the bearing-block 16 by means of bolts 20, passing through slots in the bearing-block and bed of the machine and screwing into the carrier or tipping block 19. A curved seat 21 is formed on the under side of the bed-plate 17, having a radius of curvature equal to the radius of curvature of the seat in the block 16. This seat forms a bearing for the heads of the bolts 20, as shown in Figs. 4 and 6. Rolls 22 are mounted upon sleeves 23, passing through the carrier-blocks. These rolls and sleeves are connected to the driving-shafts in such manner as to permit of the sleeves and rolls being shifted, so that their axes will be at an angle

to the axes of the rod or pipe passing through the machine. A convenient means for accomplishing this purpose consists in enlarging the openings at the ends of the sleeves, as shown in Figs. 5 and 7, so that the latter will normally bear on the shaft only in a plane midway of the length of the sleeve. The rolls and sleeves are connected to the shaft by means of a key 24, which has a curved seat in a groove in the shafts 1 and 1^a, as shown in Fig. 5. In lieu of the form of key shown in Fig. 5, a slot 25 may be formed through the shafts, the ends of the slot being enlarged lengthwise of the shaft and a key 24^a passed through this slot and engaging the sleeves and rolls. This construction permits of the adjustment of the axes of the rolls to any desired angle to the rod passing through the machine. It will be seen that these rolls 22 can be adjusted at different angles, so that they will have a rubbing and polishing action upon the surface of the bar passing through the machine.

Heads 26 are adjustably mounted upon the bed 17 on each side of the rolls 22, and on the upper ends of these heads are formed curved enlargements 10^a, which form seats for the feet 11^a of the guide-frames 9^a. These guide-frames 9^a are made adjustable on the seats or heads 10^a by forming slots in the feet, through which pass securing-bolts threaded into the seats 10^a. Slides 8^a are movably mounted in the guide-frames 9^a, their adjustment being effected by screws 12, operated by handles 13. On the lower ends of these slides 8^a are mounted straightening-rolls 27, arranged to bear upon the rod passing through the machine. By axially adjusting the frames 9^a these rolls 27 may be so shifted that their axes will be at any desired angle to the axis of the rod being straightened.

In order to guide the front end of the rod or pipe up onto the rolls 22 and 15 and under the rolls 27, blocks 28, having curved and inclined seats in their upper faces, are arranged in front of the rolls 22 and 15, as shown in Fig. 2, and the lower ends of the forks of the slides 8^a, forming the bearings for rolls 27, are shaped, as shown at 28^a and 29^a in Fig. 1, to guide the end of the rod or pipe under the rolls 27. The outer edges of these blocks are sufficiently low to permit of the front end of the rod passing up onto the blocks and, as the rod progresses, being forced up sufficiently high to pass onto the rolls 22 and 15.

As will be readily understood by those skilled in the art, the rod or pipe may be passed back and forth several times through the machine, if necessary, to produce the desired straightening and polishing thereof by reversing the direction of rotation of the rolls 7, 22, and 15. In order that the rod when passed in a reversed direction may be raised up onto the rolls 22 and 7, auxiliary guides 29 are arranged in suitable relation to the rolls 22 and 7, as shown in Fig. 1.

As will be readily understood by those

skilled in the art, the rolls 7 and 14 will effect the onward movement and rotation of the bar or pipe, as the latter will be firmly gripped between said rolls, and this grip will be sufficient to effect the onward movement of the rod, even if the several rolls 27 and 22 are adjusted so that their axes will be at different angles to the axes of the pipe or rod, so that these rolls will have a polishing action, as well as flexing action, on the rod.

I claim herein as my invention—

1. In a machine for straightening bars, rods, &c., the combination of driving-shafts, rolls angularly adjustable on the shafts and adjustable top pressure-rolls, substantially as set forth.

2. In a machine for straightening rods, bars, &c., the combination of driving-shafts, sleeves angularly adjustable on the shafts and rolls mounted on said sleeves, substantially as set forth.

3. In a machine for straightening bars, rods, &c., the combination of driving-shafts, rolls mounted on the driving-shafts with their axes parallel with the axis of the shaft and rolls loosely mounted on the shaft, and means for so connecting the rolls to the shafts as to permit of their being angularly adjusted to the shaft, substantially as set forth.

4. In a machine for straightening bars, rods, &c., the combination of driving-shafts, rolls mounted on the driving-shafts with their axes parallel with the axes on the shafts, rolls loosely mounted on the shafts, means for so connecting the rolls to the shafts as to permit of their being angularly adjusted on the shafts and adjustable top pressure-rolls, substantially as set forth.

5. In a machine for straightening bars, rods, &c., the combination of driving-shafts and rolls mounted on the shaft and means for so connecting the rolls to the shafts as to permit the rolls being angularly adjusted on the shafts, substantially as set forth.

6. In a machine for straightening bars, rods, &c., the combination of driving-shafts, sleeves angularly adjustable on the shafts and rolls mounted on said sleeves, substantially as set forth.

7. In a machine for straightening bars, rods, &c., the combination of a bearing-block having a curved seat, a carrier-block adjustably mounted on the bearing-block, a sleeve mounted in the carrier-block, a roll carried by the sleeve, a shaft passing loosely through the sleeve and means connecting the sleeve to the shaft constructed to permit of the sleeve and roll being adjusted to an angle with the axis of the shaft, substantially as set forth.

In testimony whereof I have hereunto set my hand.

PHILIP M. HAAS.

Witnesses:

MAYE E. BAIRD,
FRANK B. MEDBURY.