

No. 637,466.

Patented Nov. 21, 1899.

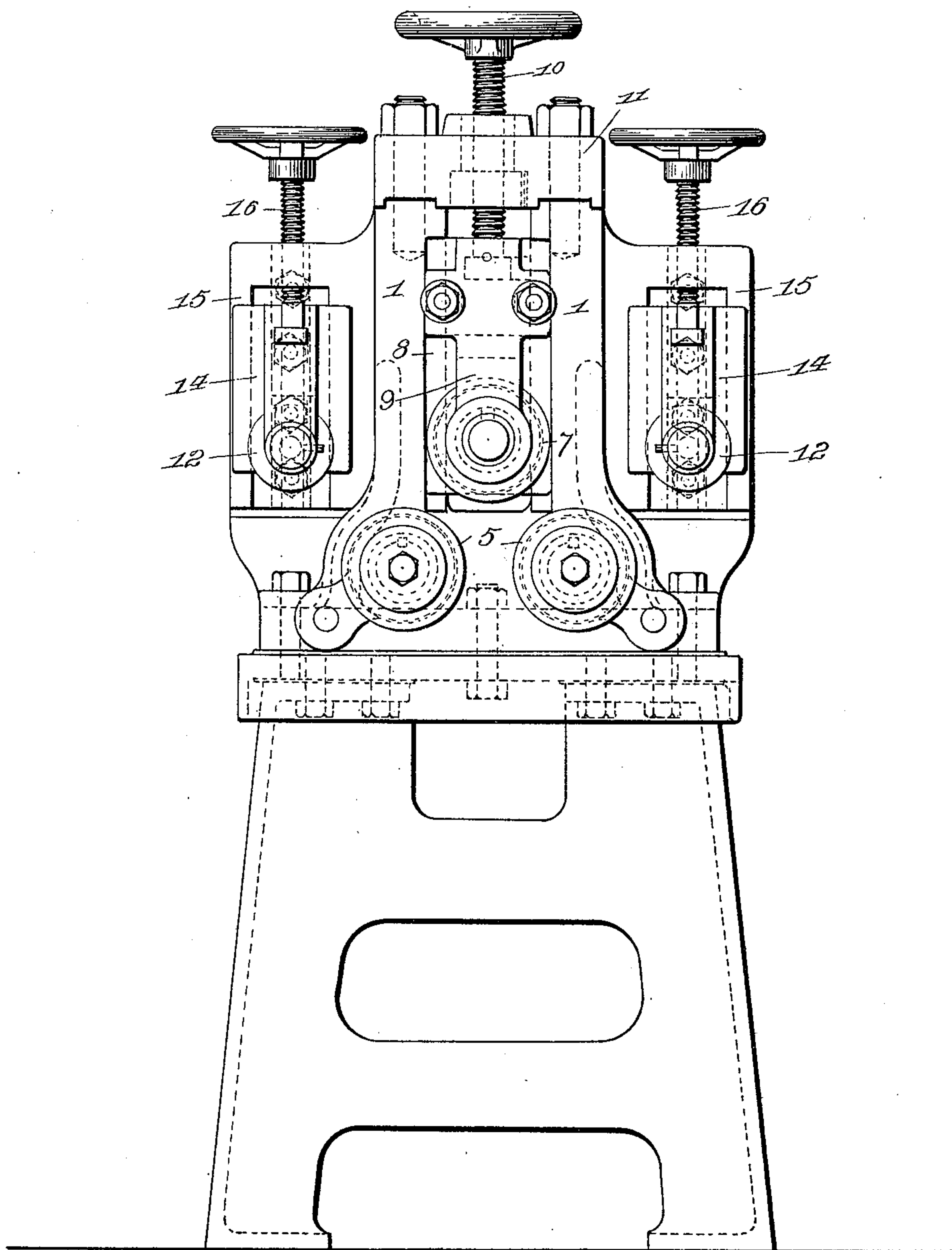
L. W. JERNBERG.
STRAIGHTENING MACHINE.

(Application filed Apr. 29, 1899.)

(No Model.)

5 Sheets—Sheet 1.

FIG. 1.



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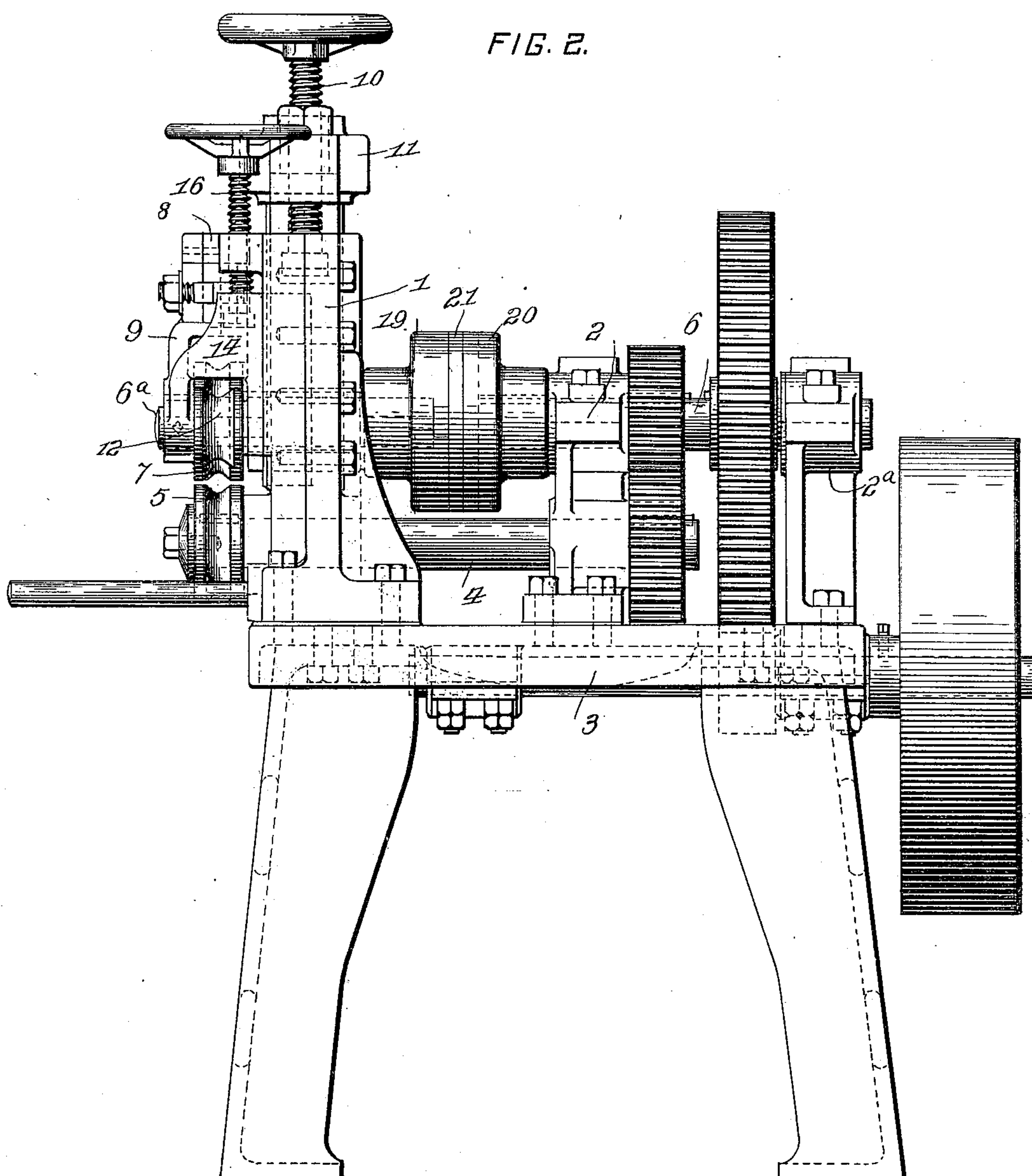
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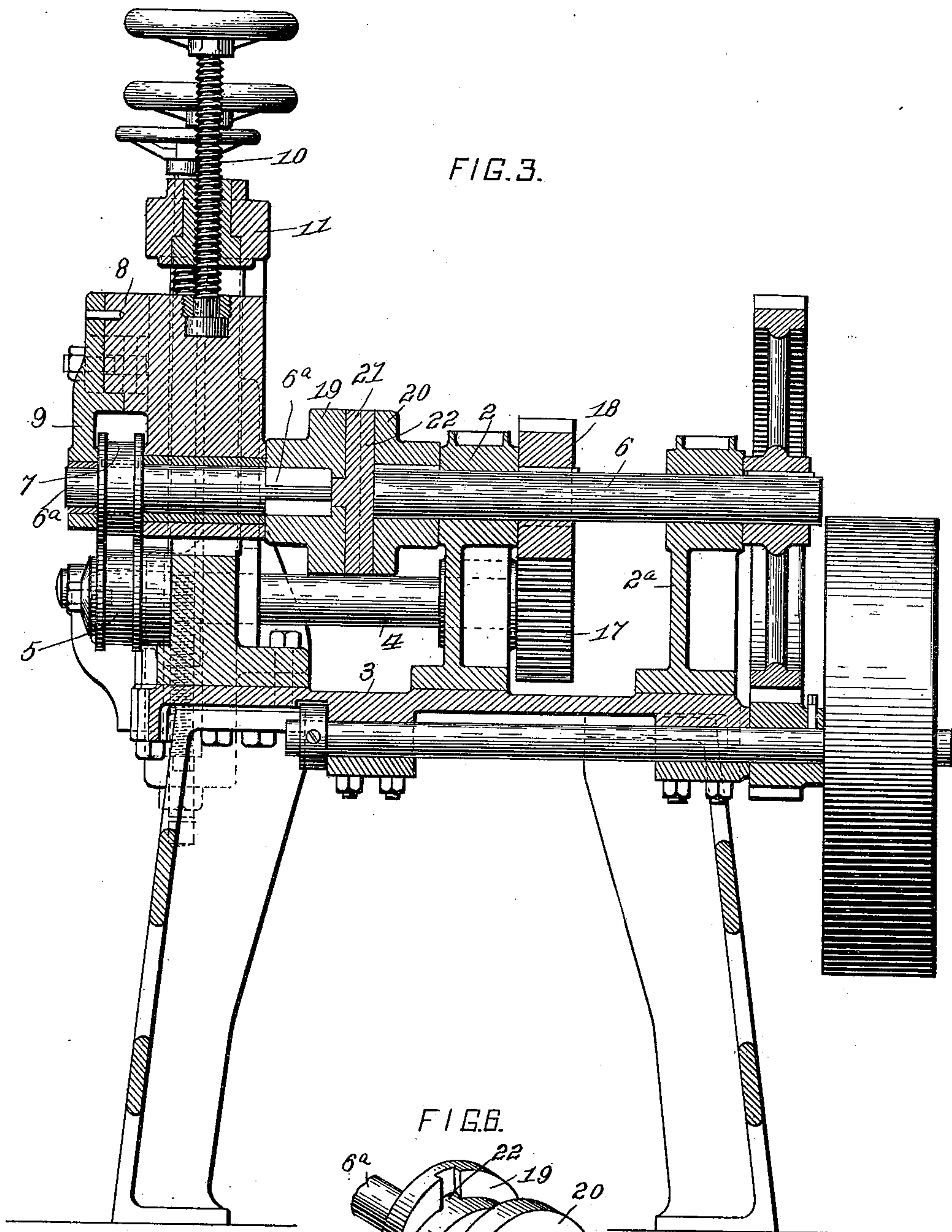
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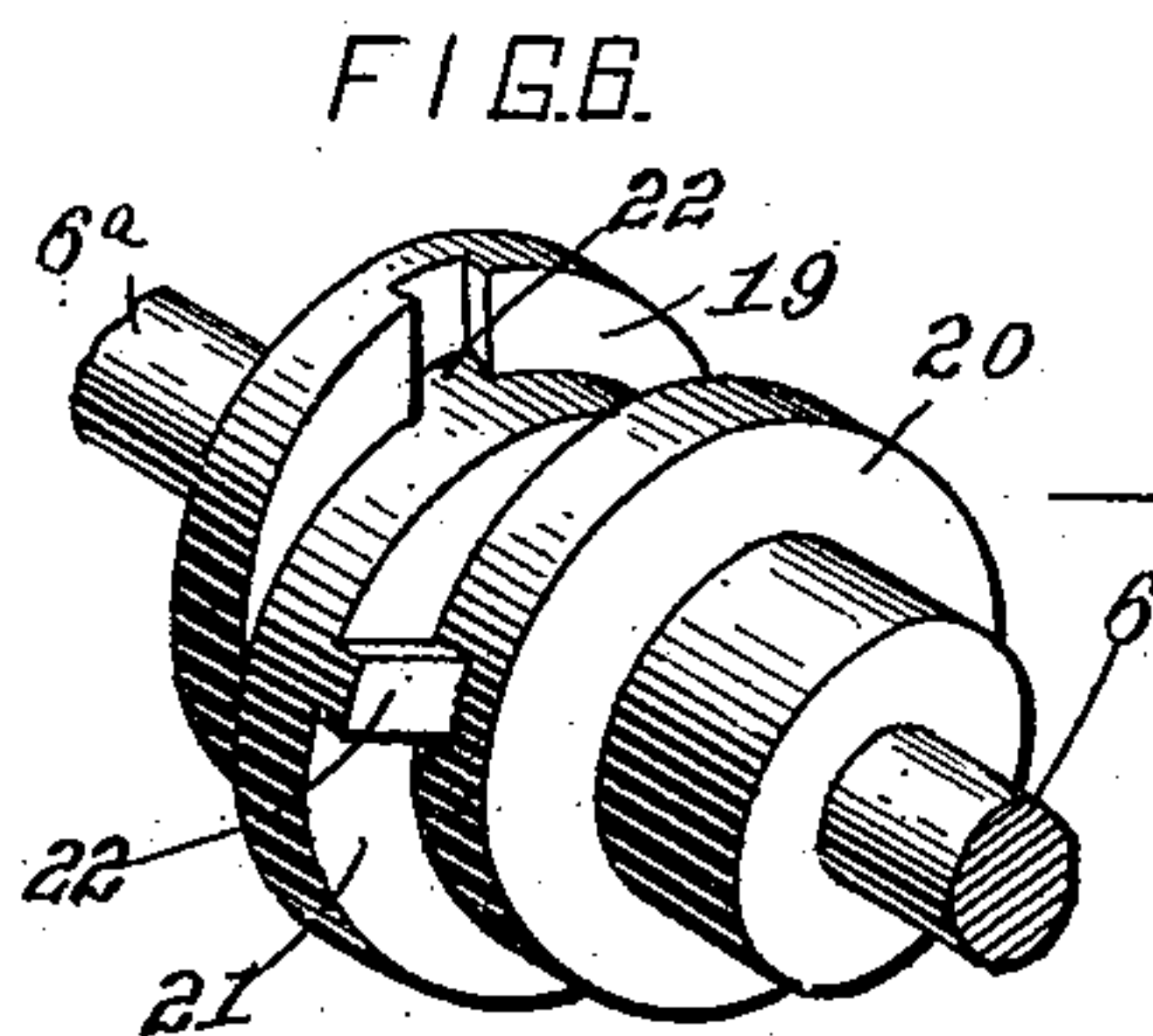
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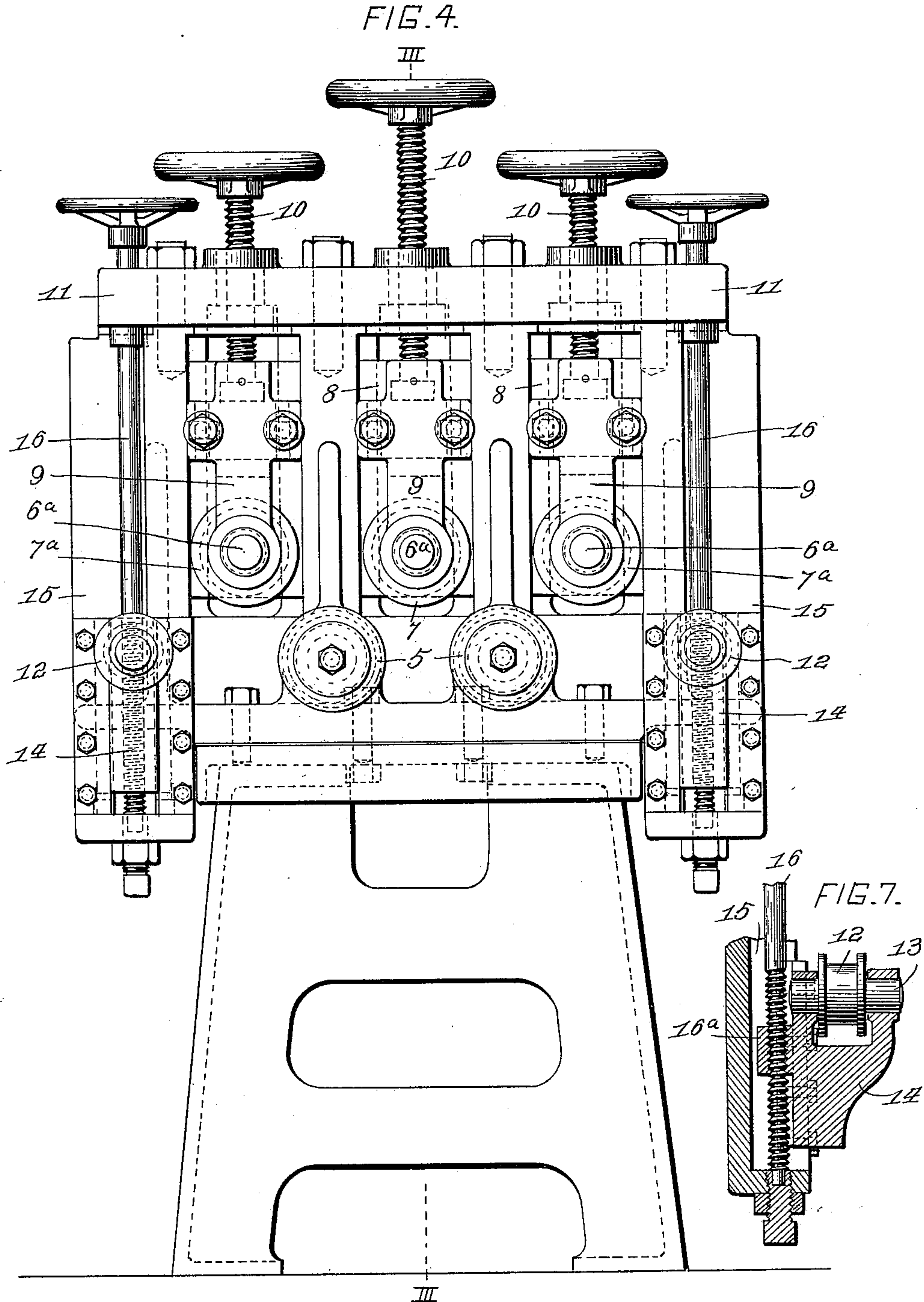
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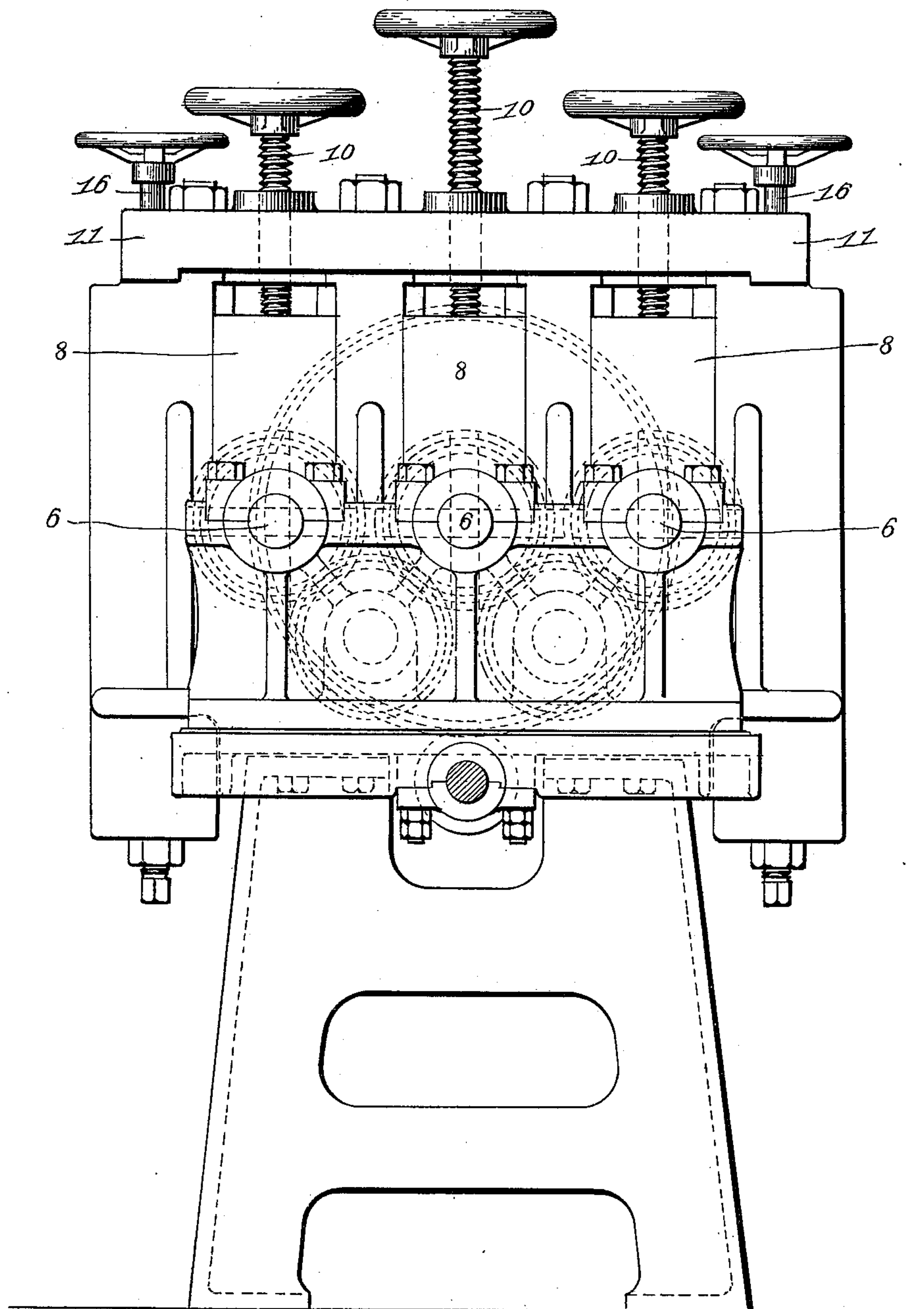
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FIG. 5.



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UNITED STATES PATENT OFFICE.

LAURENCE W. JERNBERG, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE AMERICAN STEEL AND WIRE COMPANY, OF NEW JERSEY.

STRAIGHTENING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 637,466, dated November 21, 1899.

Application filed April 29, 1899. Serial No. 714,996. (No model.)

To all whom it may concern:

Be it known that I, LAURENCE W. JERNBERG, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented or discovered certain new and useful Improvements in Straightening-Machines, of which improvements the following is a specification.

The invention described herein relates to certain improvements in mechanism for straightening bars, the mechanism being especially adapted for the edgewise straightening of flat bars and the diagonal straightening of rectangular bars.

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

In the accompanying drawings, forming a part of this specification, Figure 1 is a front elevation of my improved straightening-machine. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional elevation, the plane of section being indicated by the line III III, Fig. 4. Fig. 4 is a front elevation of a modified form of construction. Fig. 5 is a rear elevation of the same, and Figs. 6 and 7 are detail views of the universal connection between the shaft-sections.

In the practice of my invention uprights or standards 1, 2, and 2^a are secured or formed on the bed-plate 3. In the front and middle standards are formed stationary bearings for the shafts 4 of the lower rolls 5, and stationary bearings are formed in the upper portions of the middle and rear standards for the driving-sections 6 of the shafts of the upper rolls 7. The driven section 6^a of the shaft of this roll is mounted in a bearing-block 8, which is mounted in a vertical slot or window formed in the front standard 1. In order to prevent undue strains, the section 6^a is made to project beyond the roll 7, which is keyed on said section and into a bearing formed in the yoke 9, which is bolted to the bearing-block 8, as shown in Figs. 1, 2, 3, and 4. The vertical adjustment of the bearing-block and the roll 7 is effected by means of a screw 10, having a swivel connection with the block and extending up through an internally-

threaded opening in the cap-plate 11, as shown in Fig. 3.

In the construction shown in Figs. 1, 2, and 3 only one upper driven roll 7 is employed, said roll being arranged to operate on the article to be bent at a point intermediate of the lower positively-driven rolls 5. In some cases a larger number of flexures are necessary in order to effect a straightening of the article. In such cases additional upper rollers 7^a are arranged on opposite sides of the roll 7 and in such relation to the rolls 5 that the latter will bear on the article at points intermediate of the rolls 7^a and the roll 7, as shown in Fig. 4. These rolls 7^a are mounted in the same manner as the roll 7 and similarly connected to adjusting and driving mechanism.

Guide-rollers 12 are loosely mounted on pins 13, removably secured in the forks of the slides 14, which are movably mounted in guides 15. These guides are secured to the front of the standard 1 at opposite ends of the series of positively-driven rolls, as shown in Figs. 1 and 4. The vertical adjustment of the rollers is effected by means of threaded rods 16, rotatably secured in the cap-plate 11 and engaging internally-threaded lugs 16^a, formed on the rear sides of the blocks. As shown in Figs. 1 and 4, these guide-rollers are arranged to act in opposition to the rolls at the ends of the series of positively-driven rolls. For example, in the construction shown in Fig. 1 the rollers 12 will operate on top of the article, while in the construction shown in Fig. 4 the rollers will operate on the under side of the article.

As shown in Figs. 2 and 3, the rolls 5 and 7 and the guide-rollers are peripherally grooved to maintain the article in such position that its plane of flexure will be at right angles to the axes of the bending-rolls.

The shafts 4 have pinions 17 keyed thereon, said pinions intermeshing with a pinion 18 on the driving-shaft section 6. The section 6^a, carrying the upper roll 7, which is adjustable, as hereinbefore stated, is connected to the driving-section 6 by a coupling mechanism constructed to permit of the section 6^a being shifted out of line with section 6, while

maintaining a positive driving connection therewith. A suitable construction consists of two disks 19 and 20, secured on the adjacent ends of the shaft-sections 6 and 6^a, and
 5 an interposed disk 21, provided on opposite sides with ribs 22, arranged at an angle to each other and adapted to project into grooves formed in the adjacent faces of the disks 19 and 20. This construction will permit of the
 10 shaft-sections being moved out of line a distance equal to or a little greater than half the diameter of the disks.

Where a series of three or more upper rolls are employed, the shafts are also formed in
 15 adjustable sections and the driving-sections have pinions keyed thereon, said pinions intermeshing with the pinions 17 on the shafts 4, thereby insuring the rotation of the upper outside rolls in the proper direction.

20 It is characteristic of my improvement that the adjustable rolls 7 are shifted in planes at right angles to a plane passing through the axes of the rolls 5, so that the distances from the adjustable rolls to the adjacent rolls 5
 25 will be equal. It is also characteristic of my improvement that the several rolls overhang or are mounted on the ends of the shafts projecting beyond the housings, so that rolls can be taken off and others placed in position
 30 without disturbing other parts of the machine.

I claim herein as my invention—

1. In a machine for straightening bars, &c., the combination of positively-driven overhanging rolls, one or more adjustable posi-
 35 tively-driven overhanging rolls arranged to

operate on the article intermediate of the other rolls, and means for shifting the adjustable rolls in a plane at right angles to the plane passing through the other or non-adjustable rolls, substantially as set forth. 40

2. In a machine for straightening bars, &c., the combination of non-adjustable positively-driven overhanging rolls, one or more adjustable positively-driven overhanging rolls, means for shifting the adjustable rolls in a
 45 plane at right angles to the plane passing through the other or non-adjustable rolls, a mechanism for driving both sets of rolls, and an adjustable connection between the driving mechanism and the adjustable rolls, sub- 50
 stantially as set forth.

3. In a machine for straightening metal bars, &c., the combination of non-adjustable positively-driven overhanging rolls, one or more adjustable positively-driven overhang- 55
 ing rolls, arranged to operate on the article intermediate of the other rolls, means for shifting the adjustable rolls in a plane at right angles to the plane passing through the other or non-adjustable rolls and adjustable guide- 60
 rolls arranged at each end of the series of positively-driven rolls substantially as set forth.

In testimony whereof I have hereunto set my hand.

LAURENCE W. JERNBERG.

Witnesses:

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