No. 790,706. PATENTED MAY 23, 1905.

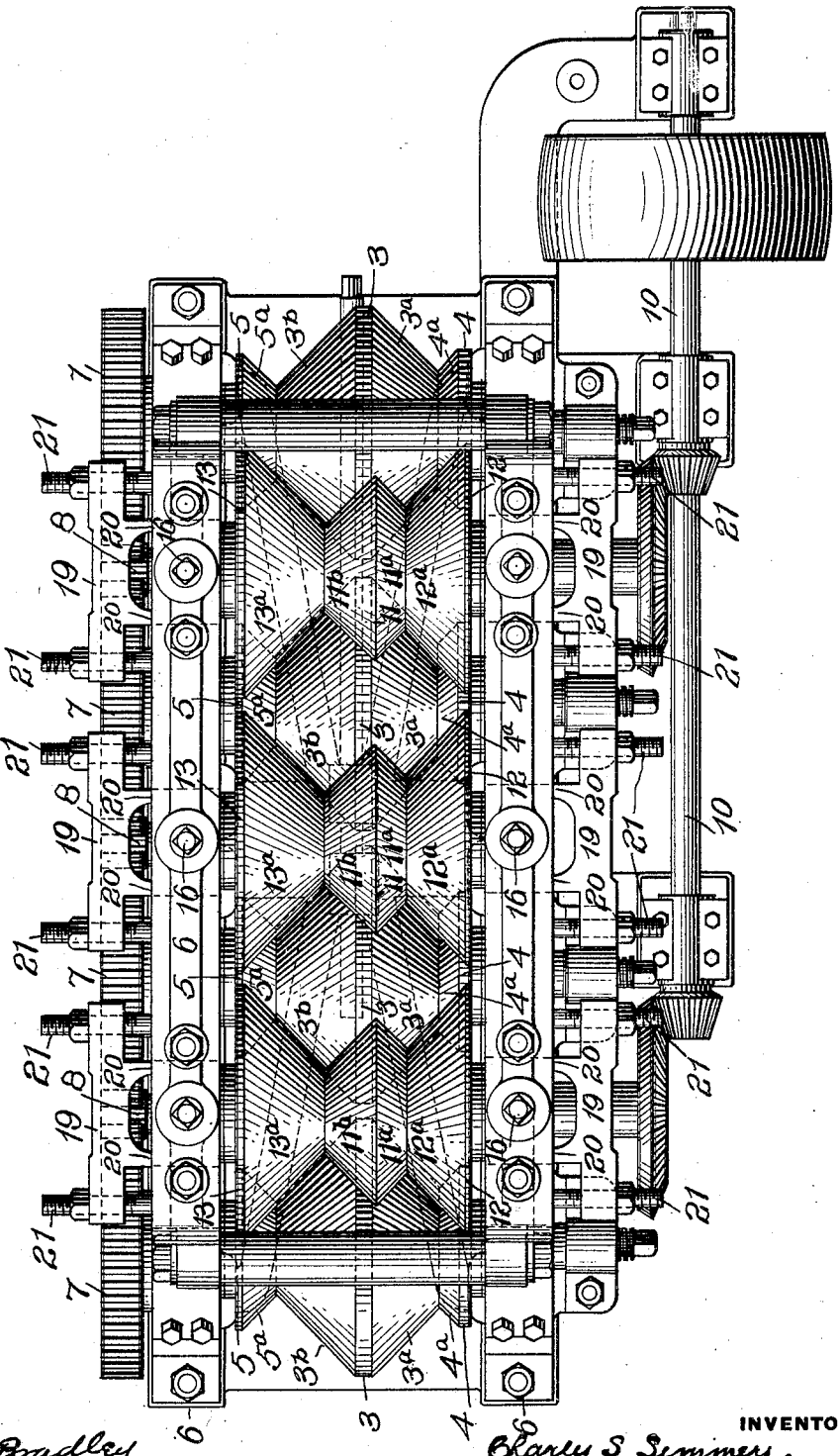
C. S. SIMMERS.

MECHANISM FOR STRAIGHTENING CHANNEL BARS, &c.

APPLICATION FILED AUG. 5, 1903.

3 SHEETS—SHEET 1.

FIG. 1.



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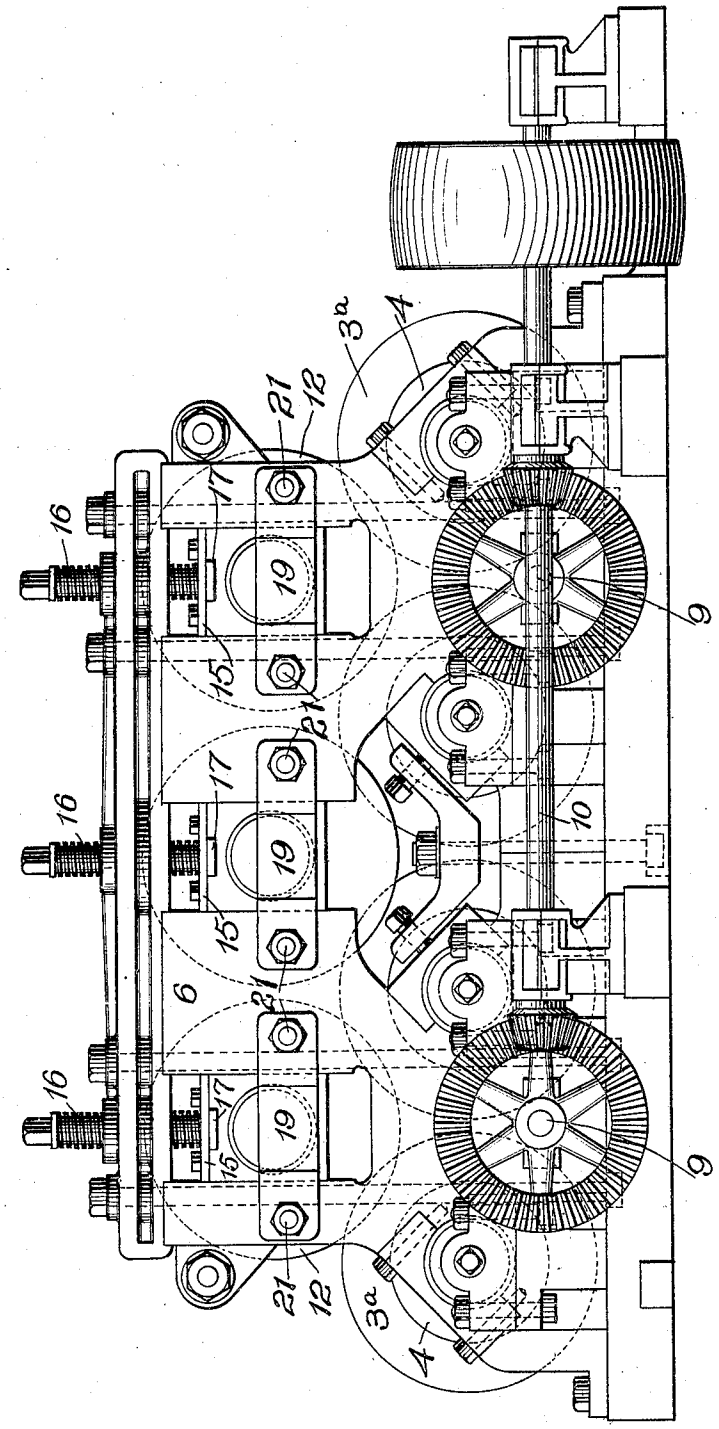


FIG.2.

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3 SHEETS—SHEET 3.

FIG. 3.

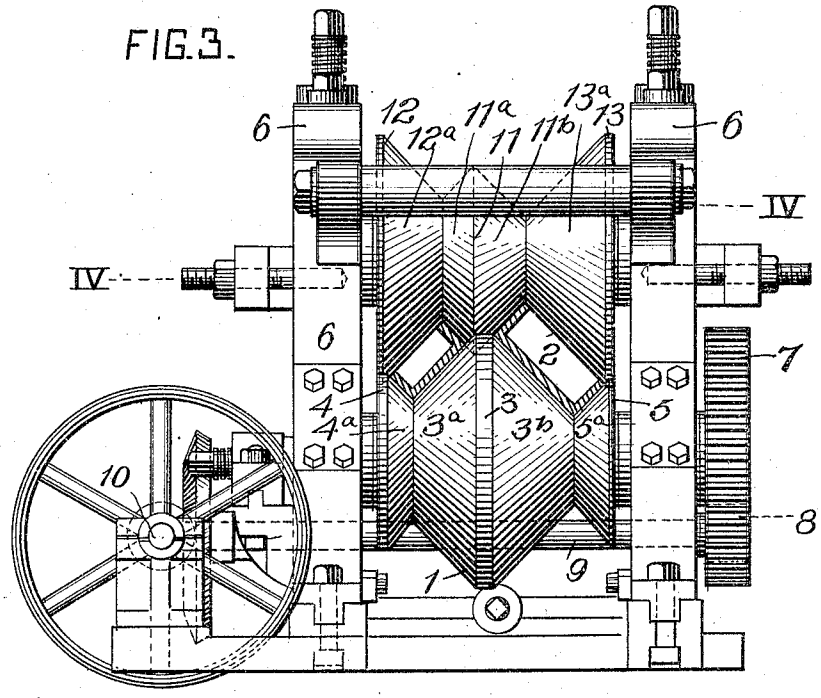
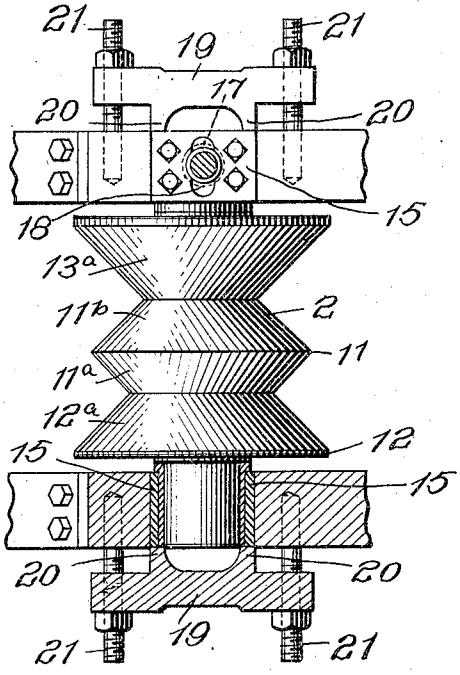


FIG. 4.



WITNESSES:

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No. 790,706. Patented May 23, 1905.

UNITED STATES PATENT OFFICE.

CHARLES S. SIMMERS, OF PITTSBURG, PENNSYLVANIA.

MECHANISM FOR STRAIGHTENING CHANNEL-BARS, &c.

SPECIFICATION forming part of Letters Patent No. 790,706, dated May 23, 1905.

Application filed August 5, 1903. Serial No. 168,350.

To all whom it may concern:

Be it known that I, CHARLES S. SIMMERS, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Mechanism for Straightening Channel-Bars, &c., of which improvements the following is a specification.

The invention described herein relates to certain improvements in rolls for straightening shapes such as channel-bars, rails, &c., and has for its object a construction or shape of bars whereby pressure will be exerted simultaneously in all directions on the channel-bar; and it is a further object of the invention to provide for changing the dimensions of the passes, so that different sizes of bars may be operated on the same mill.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of a mill embodying my improvements. Fig. 2 is a side elevation of the same. Fig. 3 is an end elevation, and Fig. 4 is a sectional elevation on a plane indicated by the line IV IV, Fig. 3.

In the practice of my invention I employ a series of two or more lower rolls 1 and one or more upper rolls 2, arranged to operate intermediate of the lower rolls, as clearly shown in Figs. 1 and 2. The lower rolls are constructed with collars 3 4 5, the collars 4 and 5 being arranged on opposite sides of the median collar 3. The outer faces 3^a and 3^b of the collars 3 are formed at an acute angle to the axes of rolls and are designed to form bearings for the web portions of the channels. The inner faces 4^a and 5^a of the outer collars are also formed at such an angle to axes of the rolls that said faces will be at or approximately at right angles to the faces 3^a and 3^b. These faces are designed to form bearings for one of the sides or flanges of the channel-bar. These rolls are mounted in suitable bearings in the housings 6 and have gear-wheels 7 secured to the necks at one end of the rolls. These gear-wheels intermesh with pinions 8 on transverse shafts 9, driven through suitable gearing by the power-shaft 10.

The upper rolls are formed with a median collar 11 and end collars 12 and 13. The sides or faces 11^a and 11^b are formed at such an angle to the axes of rolls that they will be parallel or substantially parallel to the faces 4^a and 5^a of the lower rolls, while the inner faces 12^a and 13^a of the outer or end collars are made parallel or substantially parallel with the faces 3^a and 3^b of the lower rolls. It will be observed that the upper rolls are each provided with two faces arranged to operate in opposition to similar faces on the lower rolls, forming, in effect, a box-pass, as will be seen by reference to Fig. 3. The upper rolls are mounted in boxes 15, adjustably arranged in windows in the housings. The vertical adjustment of the upper rolls is effected by means of screws 16, having a swivel connection with the boxes 15, such connection consisting of heads 17 on the screws engaging undercut grooves 18 on the boxes, so as to permit of the movement of the boxes transverse of the housings to effect the longitudinal adjustment of the rolls. This adjustment of the boxes and rolls is effected by any suitable means—such, for example, as that consisting of plates 19, provided with lugs 20, bearing against the boxes 15 and adapted to be adjusted by nuts or studs 21, secured to the housings, as shown.

It will be seen by reference to Fig. 3 that by adjustment of the upper roll the walls on said rolls can be moved toward and from the corresponding walls on the lower rolls, thereby rendering it possible to operate on channel-bars of different dimensions. It is preferred to so proportion the walls on the rolls as regards their dimensions that channel-bars between certain sizes will be straightened in one pass and between certain other sizes in the other. By the adjustment of the upper rolls channels up to a certain size can be rolled in the left-hand pass in Fig. 3 and from such size to a larger size in the right-hand pass. While it is preferred for reasons stated to use two passes operative on different sizes, one supplementing the range of operation of the

other, both passes may be made of equal dimensions, and, further, as will be readily understood by those skilled in the art, the rolls can be constructed with only one pass. It will be understood by those skilled in the art that by a suitable adjustment of the rolls the mill may be employed for straightening other shapes, as rails, &c.

The rolls of the mill are so adjusted that the first three will impart a uniform curve or camber to the shape in two directions, thereby eliminating all short curves or kinks. The next two rolls serve as grippers, while the two last rolls operate to bend back the curves or cambers, and thereby straighten the shape.

I claim herein as my invention—

1. A mill for straightening shapes, such as channel-bars, rails, &c., having in combination a series of two or more lower rolls, one or more upper rolls, alternating with the lower rolls, each of the lower rolls having collars forming two sides of a straightening-pass, said pass portions operative on the articles simultaneously and at an angle to each other, and the upper roll or rolls having the complementary portions of such pass formed thereon, the upper and lower rolls being so spaced as to operate at substantially different points on the article being straightened, and being so arranged as to bend the shape transversely into two or more directions, substantially as set forth.

2. A mill for straightening shapes, such as channel-bars, rails, &c., having in combination a series of two or more lower rolls, one or more upper rolls alternating with the lower rolls, the lower rolls having collars forming two sides of a straightening-pass, and the upper roll or rolls having the complementary portion of such pass formed thereon, the rolls being so spaced as to operate at substantially different points on the article being straightened and means for varying the dimensions of such pass, the rolls being arranged to bend the shape transversely in two or more directions, substantially as set forth.

3. A mill for straightening shapes such as channel-bars, rails, &c., having in combination a series of two or more lower rolls, one or more upper rolls alternating with the lower rolls, the lower rolls having collars forming two sides of a straightening-pass, and the upper roll or rolls having the complementary portion of such pass formed thereon and means for adjusting the upper rolls longitudinally and toward and from the lower rolls, the rolls being so spaced as to operate at substantially different points on the article being straightened, substantially as set forth.

4. A pair of rolls for straightening shapes, such as channel-bars, rails, &c., each provided with bearing-faces arranged at equal or approximately equal angles to the axes of the rolls and oppositely inclined, in combination with means for adjusting one of said rolls longitudinally of the other for varying the relation of the bearing-faces of the upper and lower rolls, substantially as set forth.

In testimony whereof I have hereunto set my hand.

CHARLES S. SIMMERS.

Witnesses:

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F. E. GAITHER.