Oct. 16, 1928. 1,688,099

A. WAGENBACH

DEVICE FOR BENDING IRON RODS

Filed April 30, 1926

Fig.1.

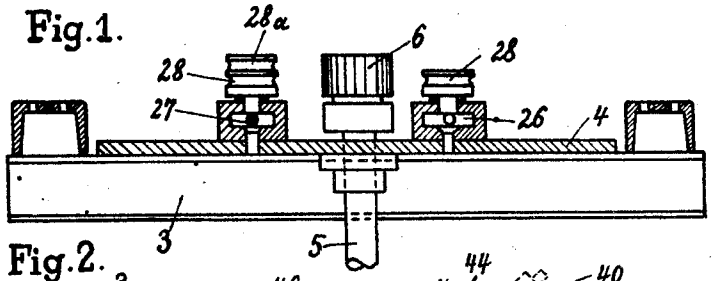


Fig.2.

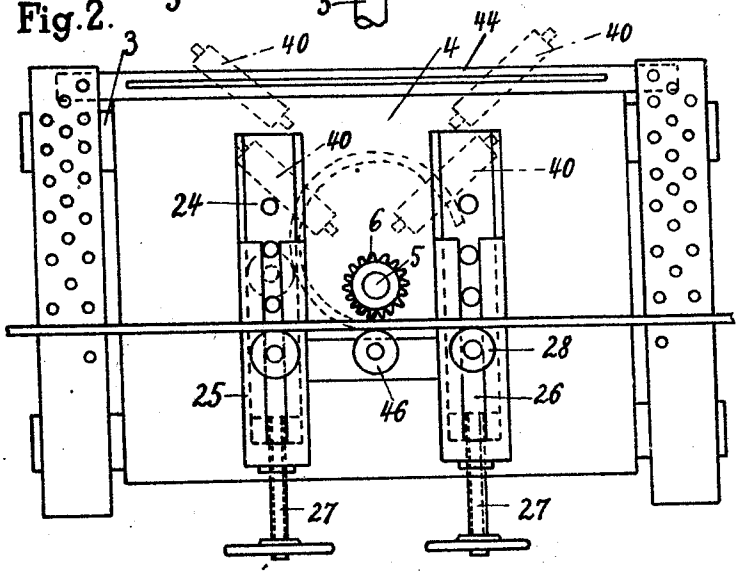
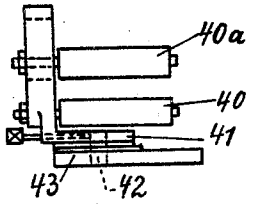


Fig.3.



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UNITED STATES PATENT OFFICE.

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DEVICE FOR BENDING IRON RODS.

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The invention relates to a device for bending iron rods of such a form that circular bendings of diameters up to the largest can be made by substituting a roll with cramping teeth instead of the usual bending lever and by arranging on the ground plate supplementary rolls in such a way the device works in the fashion of a three roll bending machine. Thereby the addition of simple and no cumbersome auxiliary parts not only enables the machine to bend iron to angular shapes, as for example concrete iron rods, but also to bend iron rods for every possible purpose.

The invention further concerns special appliances enabling the bending rolls to be arranged at different heights, so that screwlike bendings can be obtained. Thereby the machine can be used for making screw springs, or screwlike rods for concrete pipes, or for bending conical screw spirals, the possibilities of use thus being practically unlimited.

The drawing shows the essential parts of the new machine,

Fig. 1 being a perpendicular section of the head part of the machine,

Fig. 2 a top view, and

Fig. 3 a side view of one of the roll arrangements.

A main frame, usually placed on running wheels, and fitted with a motor and gear, which is not shown for matter of simplicity, carries at a handy height an upper frame 3 with a bearing plate 4 and with a bending shaft 5, passing through the middle of said plate 4 and adapted to be driven by motor force. Instead of the bending lever used for angular bendings, on the bending shaft 5 a toothed cramping roll 6 is placed, which holds and moves by its teeth or points the iron rod to be bent.

In the bearing plate 4 holes 24 are provided which are used for fastening counter bearings serving as abutments for the iron to be bent, and which in this case are used for carrying slide beds 25, in which slides 26 with rolls 28 are arranged, and adjusting spindles 27 are placed for moving said slides. As visible in Fig. 2, the rolls 28, by being displaced, allow the bending of a straight iron rod (shown by full lines), with every radius of curvature from the largest down to the smallest (shown by dotted lines) in such a way, that the rod while being passed lengthwise by the toothed cramping roll 6 continually is bent with the prescribed radius. By adjusting the spindles 27 during the bending process plane spirals or any curvatures with variable radii can be produced. For bending iron rods an auxiliary roll 46 is usefully employed, which presses the iron rod against the toothed roll 6 and may be adjusted, or chosen with an adapted diameter, for surely operating on different sizes of rods.

One of the rolls 28 is provided with a second rim 28^a, situated higher than the first rim, and giving thereby to the iron rod a simultaneous upward direction, which produces a screwlike curve, or, by adjusting simultaneously the appertaining spindle 27, a conical spiral is produced. Instead of the several rims of the roll 28, 28^a an adjustability of the roll in the height can be provided, so that the roll can be moved axially up and down by means of a screw spindle or a wedge, and every desired pitch of the spiral or screw can be obtained.

For preventing of bending and twisting of the rod by its own weight during the bending process, several auxiliary devices (Fig. 3) are provided, consisting of a supporting roll 40 with a counter roll 40^a, adjustable in the height for different sizes of the rods. These rolls are placed on a turnable part 41 in such a way, that they extend over its center pin 42. The turnable part 41 is placed on a bearing plate 43, which can be inserted into the slide beds 25. These auxiliary devices are diagrammatically shown in Fig. 2 by dotted lines, as rolls 40, supporting the bent part of the rod. The rolls 40, in consequence of their great length extending over the center pin 42 can be easily adjusted in such a way, that differently bent iron rods run over the roll in a correct direction, so as to meet the least resistance of movement.

For bearing a rod with large bendings a beam 44 with a slot is provided along the bearing plate 4 in such a way, that the rolls 40, by aid of clamping screws passed through said slot, can be placed on any spots. Thereby the rod to be bent can be surely supported at practically every diameter.

I claim:

1. A device for bending iron rods, comprising in combination a substantially horizontal bearing plate, a substantially vertical bending shaft extending through said bearing plate, a cramping roll fastened to said shaft above said plate, and adjustable rolls adapted to be fastened to said plate, one of

said adjustable rolls being provided with means for holding the iron rod at different heights, as for instance with more than one guiding groove in its circumference.

2. A device for bending iron rods, comprising in combination a substantially horizontal bearing plate, provided with perforations, a substantially vertical bending shaft extending through said bearing plate, a cramping roll fastened to said shaft above said plate, a slide bed provided with means adapted to be inserted into said perforations, a slide in said bed, a spindle on said bed for displacing said slide and a roll on said slide.

3. A device for bending iron rods, comprising in combination a substantially horizontal bearing plate, a substantially vertical bending shaft extending through said bearing plate, a cramping roll fastened to said shaft above said plate, vertical bending rolls adapted to be fastened to said plate, turnable parts adapted to be fastened to said plate, horizontal supporting rolls mounted on said turnable parts and counter rolls mounted on said turnable parts parallel to said supporting rolls and adjustable in height.

4. A device for bending iron rods, comprising in combination a substantially horizontal bearing plate, a substantially vertical bending shaft extending through said bearing plate, a cramping roll fastened to said shaft above said plate, vertical bending rolls adapted to be fastened to said plate, turnable parts adapted to be fastened to said plate, horizontal supporting rolls mounted on said turnable parts and a slotted supporting beam on the edge of said plate for fastening said turnable parts.

In witness whereof I affix my signature.

ANTON WAGENBACH.