June 12, 1923. 1,458,381

G. BAEHR

FINISHING ROLLS

Filed July 31, 1918

FIG. 1.

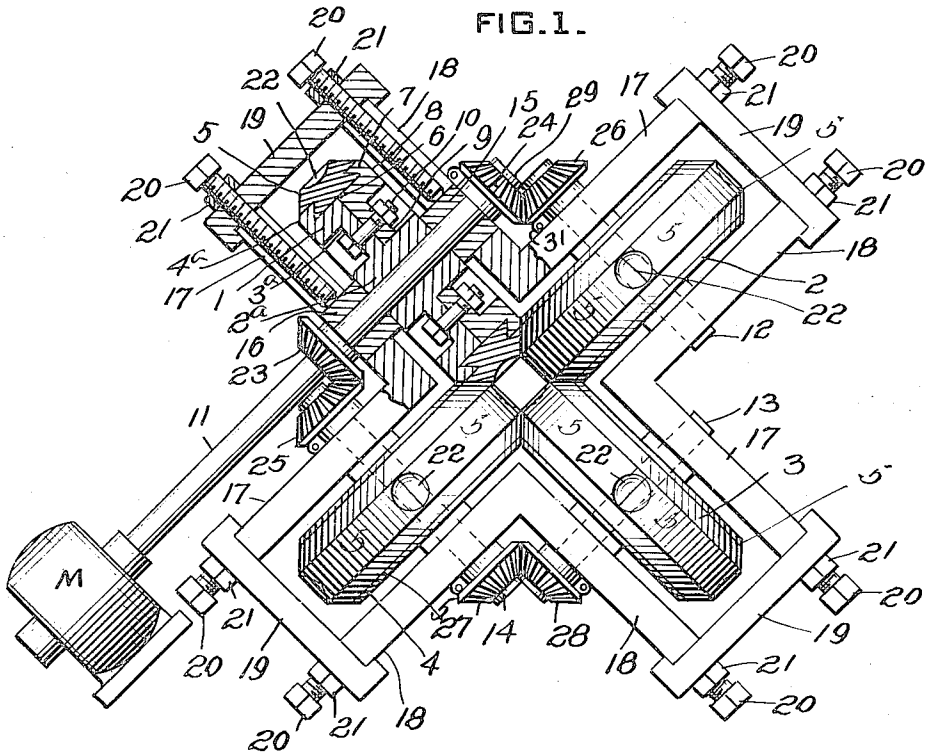


FIG. 2.

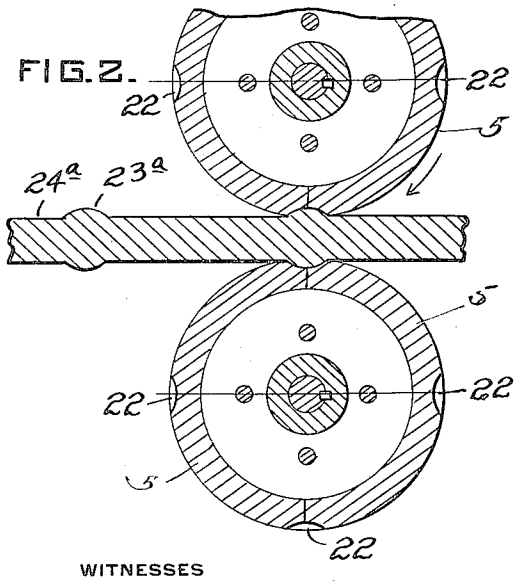


FIG. 3.

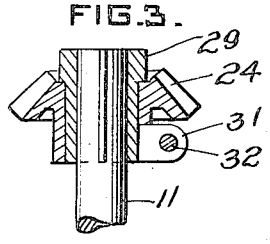
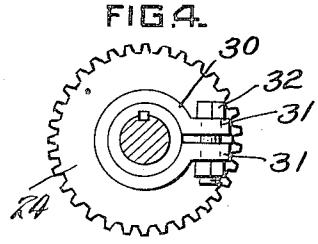


FIG. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE BAEHR, OF PITTSBURGH, PENNSYLVANIA.

FINISHING ROLLS.

Application filed July 31, 1918. Serial No. 247,660.

To all whom it may concern:

Be it known that I, GEORGE BAEHR, a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Finishing Rolls, of which the following is a specification.

This invention relates to rolls for forming shapes having varying cross section, and especially to mounting, driving and adjusting means for such rolls.

The object of the invention is to provide a plurality of such rolls, which are geared together so as to be in exact synchronism, and at the same time so arranged that they may be adjusted on their respective shafts to secure proper registry of the forming surfaces.

In the drawings, Fig. 1 represents an elevation and partial section of four forming rolls mounted and driven according to this invention; Fig. 2 is a vertical section through a pair of the rolls and a portion of a bar formed between the rolls; Fig. 3 is a partial central axial section showing the adjustable mounting of a driving gear on a roll shaft; and Fig. 4 is a partial section through the roll shaft showing the adjusting means of the driving gear mounted thereon.

In rolling small bars for concrete reinforcement, or other uses, spikes, and other special shapes of varying cross-section, the enlarged portions of the product are made by co-operating oppositely placed cavities in the surfaces of the finishing rolls. In Fig. 1 I have shown a stand in which are mounted four rolls 1, 2, 3, and 4, having their edges beveled, the four being mounted so as to contact in a vertical and a horizontal plane. Each roll comprises an inner sleeve or hub 2^a, having an extended circular web 3^a, which is enlarged at its outer edge, and thus provides an undercut collar 4^a, adapted to retain segmental shaping members 5. The latter members have a dove-tailed undercut portion 6, which is adapted to be retained by the collar 4^a, and a co-operating undercut collar 7, on an annular member 8, having a web 9 adapted to be clamped to the web 3 of the main roll body, by bolts 10. The shaping members 5 are placed end to end in position about the periphery of the roll and when the two webs 3 and 9 are clamped together as shown, the shaping members are held rigidly in position, as will be obvious. They may be removed for repair, or for insertion of members having a different forming surface, as will be obvious. The rolls are all similar. The sleeves 2 of the four rolls are keyed on shafts 11, 12, 13, and 14, respectively. Each of these shafts is mounted on each side of the sleeves 2, in bearings 15 and 16, which are slidable in slotted extensions 17 and 18 of the roll supporting frame. The ends of the members 17 and 18 are connected by removable cap plates 19, so that the rolls may be taken out of the frame when desired. Clamping screws 20, having locking nuts 21 extend through the cap plates 19 with their ends in contact with the bearings 15 and 16, in order to adjust and limit their outward travel in the extensions 17 and 18.

The four rolls illustrated are adapted to form a square bar, each side of which is formed by the shaping surface of one of the four rolls above described. At intervals on the finishing surfaces concave depressions 22 are provided, and these depressions on the several rolls are adapted to register as the rolls turn, so as to form a round portion, or knob 23^a, on the square bar 24^a, at regular intervals.

In order to form bars or shapes having regularly spaced cross sectional variations, in a plurality of rolls, it is essential that the roll surfaces be adjusted to and kept in proper registering relation. In order to secure this result it is necessary that each of the rolls be positively driven so that one cannot lag behind the other, and also that means be provided for accurately adjusting the rolls to proper initial registering position. In the example illustrated in the drawings, the rolls are all driven by means of motor M, connected directly to shaft 11, on which are fixed gears 23 and 24, on opposite sides of the roll on each shaft, which gears mesh respectively with gears 25 and 26, fixed on other shafts 14 and 12, respectively. A gear 27 on the other end of shaft 14 meshes with a miter gear 28 fixed on the shaft 13. Consequently the motor is positively connected to and drives each of the four rolls comprising the particular mill illustrated.

In order that the different rolls may be individually circumferentially adjusted to secure exact registry of the forming depressions 22, I mount each of the driving gears 23, 24, 25, 26, 27, and 28 as shown in Figs. 3 and 4. Sleeves 29 are keyed on

the driving shaft, and the gear is mounted on this sleeve. The mounting comprises compressible yokes 30 having extending lugs 31 connected by compression bolts 32, so that the gears may be rigidly clamped on the sleeve by tightening bolts 32, and released so as to be rotatable on the sleeve by loosening that member. All the driving gears are similarly mounted, and therefore any one of the rolls may be released and rotated without disturbing the position of the other rolls and without turning its driving gears, by simply loosening the clamps 32.

It will be understood that this invention is applicable to different forms of rolls, and to different combinations thereof. For example three rolls may be used to form a finished bar, or even two, and similar adjusting means applied. The rolls may be shaped to form spikes, chisels, crowbars, punches, etc., connected by thin webs, according to the finishing segments used.

I claim:

1. In a mill for forming bars or shapes of varying cross section, the combination of a plurality of circular rolls, individual driving shafts therefor, positive driving connections from a source of power to each of the said driving shafts, and means to completely release all but one of the said driving shafts individually from the source of power, whereby to permit unlimited circumferential adjustment of each roll with respect to the other rolls.

2. The combination with a plurality of rolls adapted to form a bar of varying cross section, of driving shafts for said rolls, all but one of said driving shafts being connected to a source of power by means of gears fixed on the driving shafts, and means to completely release the said gears individually from their respective shafts, whereby to permit unlimited circumferential adjustment of any roll with respect to the other rolls.

3. A mill adapted to roll shapes of varying cross section, comprising a driven shaft, a roll situated on the shaft, two other shafts driven by geared connection to the first shaft, rolls positioned thereon, and a fourth shaft driven by a geared connection to one of the two secondary shafts, a roll positioned on the fourth shaft, the four rolls being adapted to make contact with and form a bar passing therebetween, each of the three geared connections being releasable, whereby the rolls may be individually and circumferentially adjusted with respect to each other.

4. A mill for rolling bars of varying cross section comprising a driven shaft carrying a roll, a plurality of secondary shafts driven from the first shaft by connecting gears, each of said shafts carrying a roll adapted to cooperate with the other rolls, and means to completely release the shaft of each roll from its driving gear, whereby to adjust the roll to any desired circumferential relation to the other rolls without moving the other rolls and without moving the driving gear of the roll being adjusted.

In testimony whereof, I have hereunto set my hand.

GEORGE BAEHR.