J. P. ECKENROTH.

ROLLING MILL FOR BENDING ANGLE OR CHANNEL IRON INTO DIFFERENT ANGLES.

APPLICATION FILED SEPT. 25, 1918.

1,397,271. Patented Nov. 15, 1921.

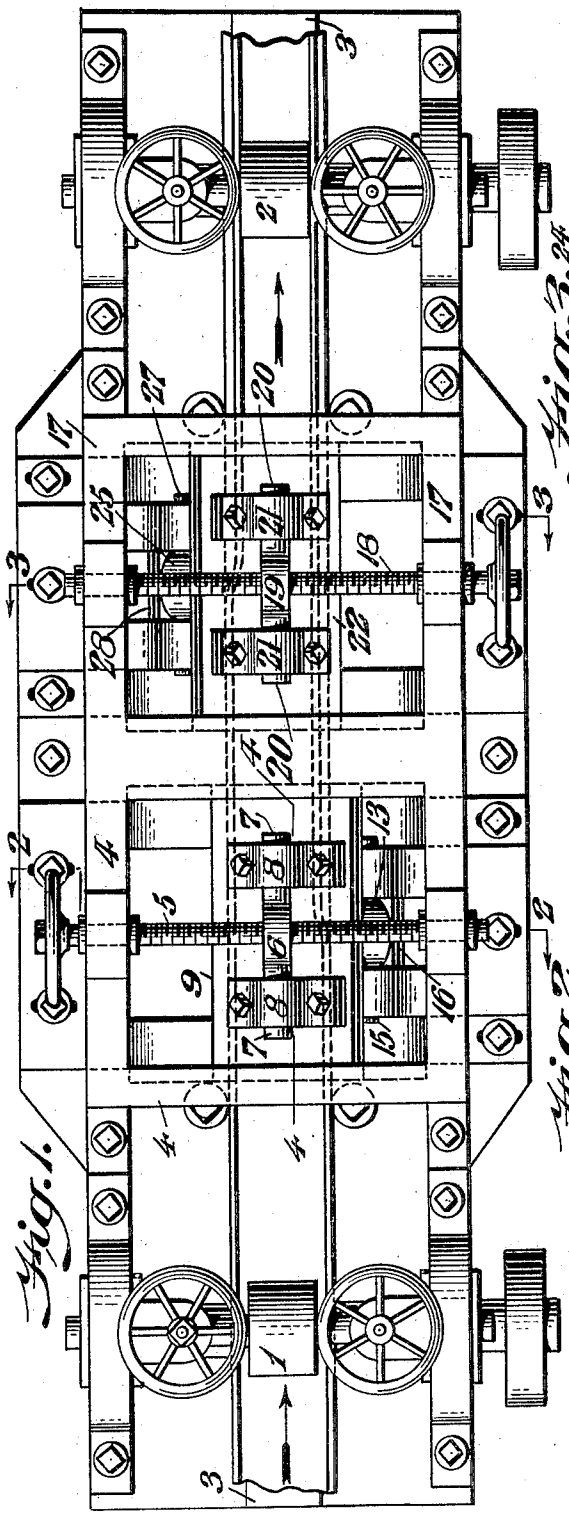


Fig. 1.

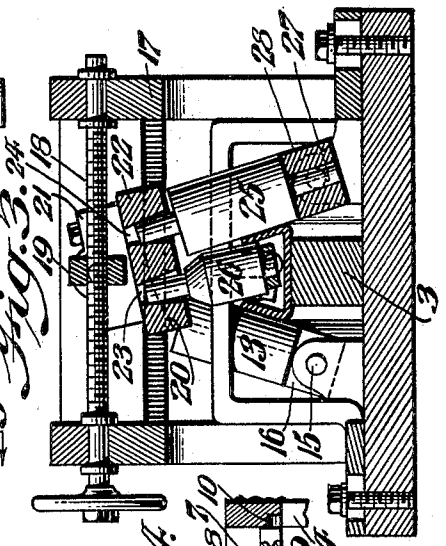


Fig. 3.

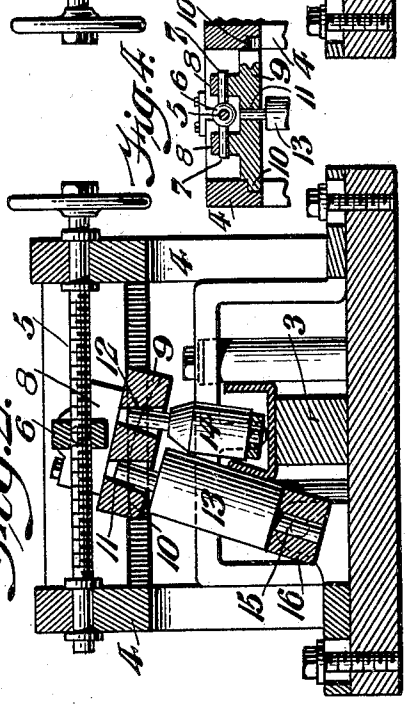


Fig. 2.

Fig. 4.

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ROLLING-MILL FOR BENDING ANGLE OR CHANNEL IRON INTO DIFFERENT ANGLES.

1,397,271. Specification of Letters Patent. Patented Nov. 15, 1921.

Application filed September 25, 1918. Serial No. 255,559.

To all whom it may concern:

Be it known that I, JOHN P. ECKENROTH, a citizen of the United States, residing at Chester, in the county of Delaware, State of Pennsylvania, have invented a new and useful Rolling-Mill for Bending Angle or Channel Iron into Different Angles, of which the following is a specification.

My invention relates to a rolling mill which is adapted to convert a channel iron of right angular form into one of different angles.

In the Letters Patent No. 1,267,194, granted to me on the 21st day of May, 1918, there is shown a rolling mill which is intended to convert a channel iron of right angular form into one of different angles, but the same requires two distinct operations to change the opposite limbs of the channel iron, this being accomplished by converting one limb into the desired angle, and then reversing the channel iron and repassing it through the mill whereby the other limb is converted into the desired angle.

The present invention consists in the employment of means whereby both limbs of a channel iron may be converted from their right angular form into angles of other degrees, this being accomplished by one pass of the said iron through the mill, thus saving time and labor, and further reducing the expense of operation by the employment of one heat.

The invention is satisfactorily illustrated in the accompanying drawing, but the important instrumentalities thereof may be varied, and so it is to be understood that the invention is not limited to the specific details shown and described, as long as they are within the spirit or scope of the claims.

Figure 1 represents a top or plan view of a rolling mill embodying my invention.

Fig. 2 represents a transverse vertical section on line 2—2 Fig. 1.

Fig. 3 represents a transverse vertical section on line 3—3 Fig. 1. Fig. 4 represents a longitudinal section of a portion thereof on line 4—4 Fig. 1.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—

1 and 2 designate guide rolls mounted on the opposite ends of the frame of the mill, and 3 designates a longitudinally-extending bed plate on said frame adapted to support a channel iron in its pass through the mill.

In the upper part of the vertical housing 4 on the frame of the mill is swiveled the screw or screw shaft 5 on which is fitted the traveler nut 6 which is formed with gudgeons 7 extending laterally therefrom and having bearings in the ears 8 of a rocker or rocker block 9, the latter being provided with segments 10 which have bearings on the adjacent portions of the housing 4.

In said rocker block 9 are mounted the upper journals or axes 11 and 12 respectively of rolls 13 and 14 which are placed inclined or oblique side by side in vertical direction.

The lower end of the roll 13 has a gudgeon 15 which has a bearing in the rocker or pillow blocks 16 which are mounted on the adjacent portions of the housing 4. The members thus far described are similar to those shown in the patent referred to, it being evident that in the pass of the channel iron through the mill, one limb of said iron is passed between the rolls 13 and 14 and so bent from a right angle to an acute angle or inclination, as shown in Fig. 2. If the angularity of the other limb or flange is to be changed the iron requires to be reversed after which it is again passed through the said rolls 13 and 14 as explained in said patent.

On the frame of the mill is the vertical housing 17 which is forward of the housing 4. In the upper part of said housing 17 is swiveled the screw or screw shaft 18 on which is fitted the traveler nut 19 which is formed with gudgeons 20 extending laterally therefrom and having bearings in the ears 21 of a rocker or rocker block 22, the latter being provided with segments which have bearings on the adjacent portions of the housing 17.

In said rocker block 22 are mounted the upper journals or axes 23 and 24 of rolls 26 and 25 respectively which are placed inclined or obliquely side by side in vertical direction and are diagonal to the rolls 13 and 14. The lower end of said roll has thereon the gudgeons 27 which have bearings in the rocker or pillow block 28 which is mounted on the adjacent portion of the housing 17, the lower end of the rolls 14 and 26 being similarly mounted, as seen in Figs. 2 and 3,

it being seen that the inclination of the rolls 25 and 26 is in a direction the reverse of the rolls 13 and 14, it being noticed that either pair of rolls is adapted to be adjusted in inclination independent of the other, this being accomplished by the operation of the respective screws or screw shafts 5 and 18.

Now after the channel iron is passed through the mill between the rolls 13 and 14 and has one of its limbs bent from a right angle to an acute angle, leaving the other limb right angular, both as shown in Fig. 2 as has been stated, the said iron continues its passage and reaches the rolls 25 and 26 when the remaining right angular limb enters between said rolls 25 and 26 and is bent thereby into an acute angle as shown in Fig. 3, so the said iron passes through the mill subjected to the opposite limb-bending actions of the two pairs of rolls, this being accomplished in one pass, the advantages of which has been hereinbefore stated.

It is evident also that as each pair of rolls has its individual adjustment as to inclination the opposite limbs of the channel iron may be bent in angles variable or different from each other according to requirements.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:—

1. In a rolling mill of the character stated, a pair of bending rolls of different lengths, a second pair of bending rolls of different lengths, a rocker bearing for the gudgeons at one end of each of said pairs of rolls, and an independent rocker bearing for the other end of each of the longer rolls, said rolls being arranged to act upon and bend both limbs of a channel iron during a single pass thereof through said rolls.

2. In a rolling mill of the character stated, a pair of bending rolls of different lengths, a second pair of bending rolls of different lengths, a rocker bearing for the gudgeons at one end of each of said pairs of rolls, and an independent rocker bearing for the other end of each of the longer rolls, said rolls being arranged to act upon and bend both limbs of a channel iron during a single pass thereof through said rolls, and means for adjusting the inclination of each of said pairs of rolls.

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Witnesses:
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