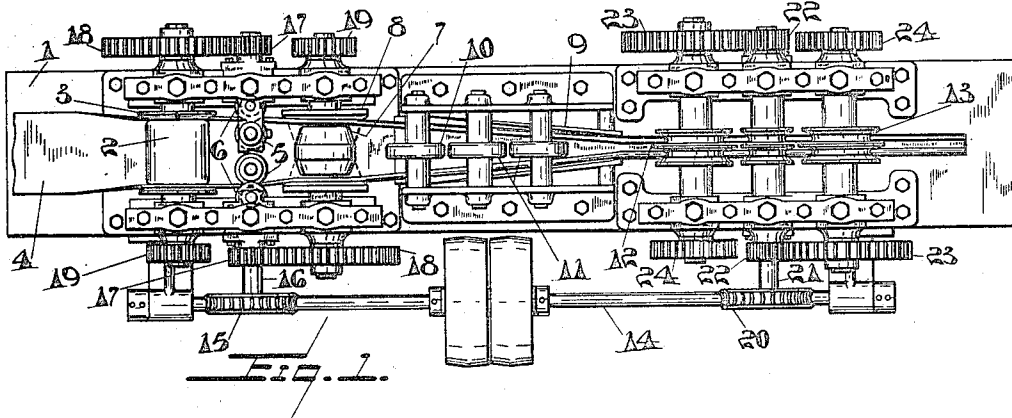
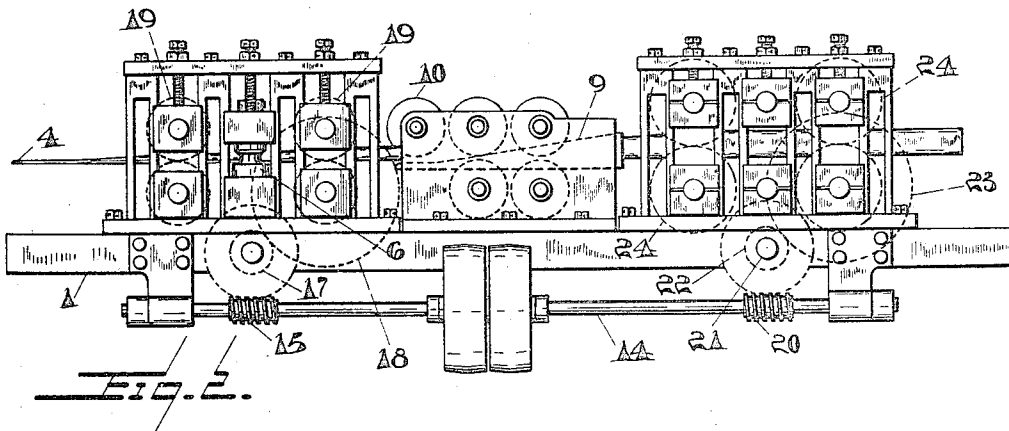
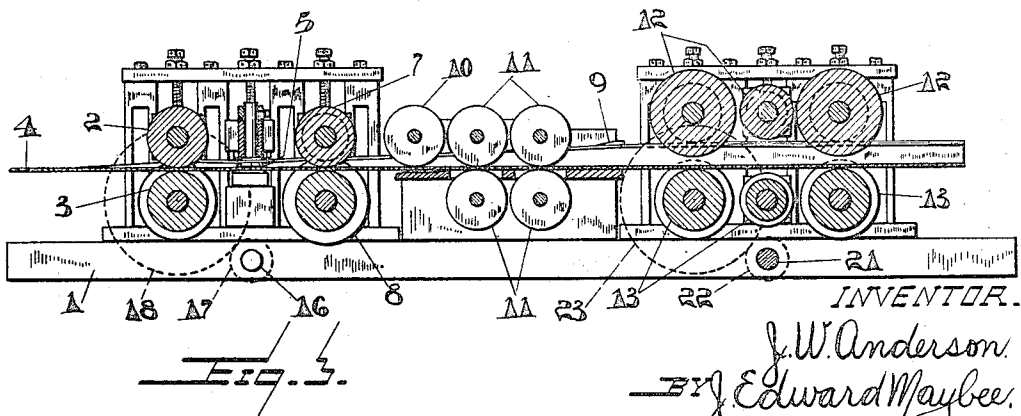


J. W. ANDERSON.
 APPARATUS FOR SHAPING METAL CHANNEL BARS.
 APPLICATION FILED JULY 12, 1917.

1,266,545.

Patented May 21, 1918.

2 SHEETS—SHEET 1.

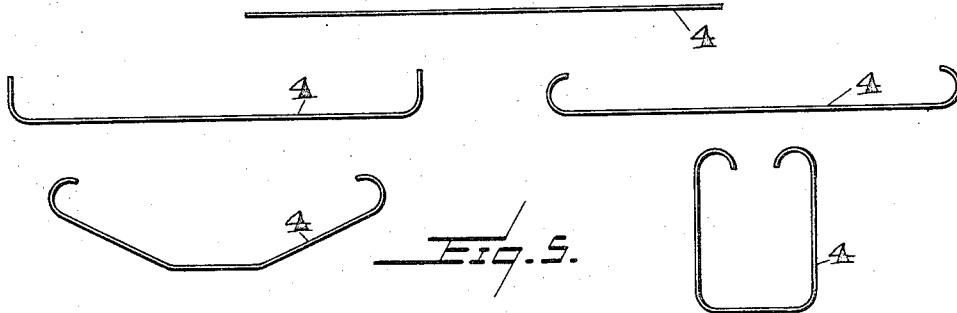
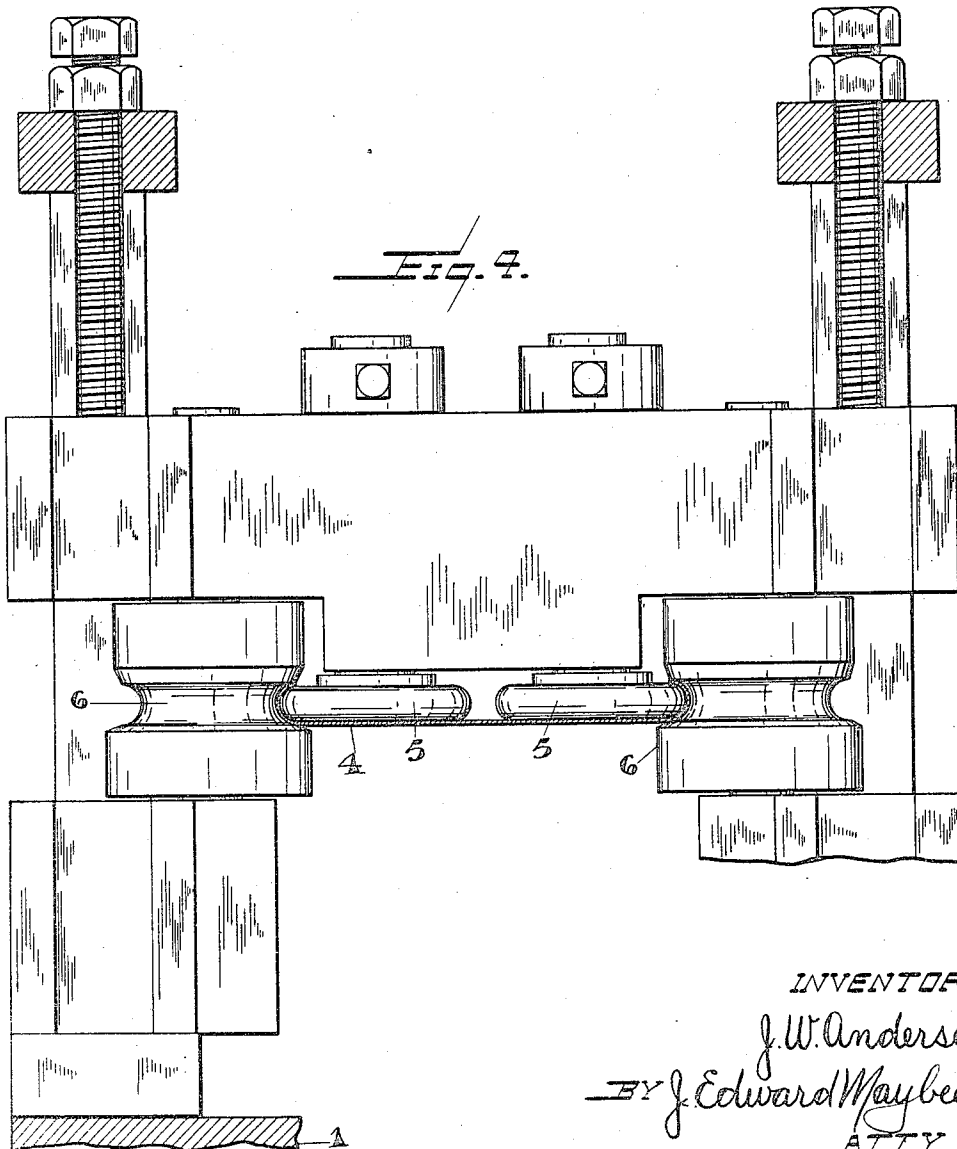


INVENTOR.
 J. W. Anderson.
 BY Edward Maybee.
 ATT'Y.

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UNITED STATES PATENT OFFICE.

JOHN WILLIAM ANDERSON, OF HAMILTON, ONTARIO, CANADA.

APPARATUS FOR SHAPING METAL CHANNEL-BARS.

1,266,545.

Specification of Letters Patent.

Patented May 21, 1918.

Application filed July 12, 1917. Serial No. 180,157.

To all whom it may concern:

Be it known that I, JOHN W. ANDERSON, of the city of Hamilton, in the county of Wentworth, Province of Ontario, Canada, have invented certain new and useful Improvements in Apparatus for Shaping Metal Channel-Bars, of which the following is a specification.

This invention relates to apparatus for bending up metal strips to form channel bars and more particularly channel bars with incurved edges such as hereinafter described, and my object is to devise means for shaping the metal by a continuous process without pressing or stamping.

I attain my object by means of the constructions hereinafter described and illustrated in the accompanying drawings in which—

Figure 1 is a plan view of my improved apparatus;

Fig. 2 a side elevation of the same;

Fig. 3 a longitudinal section of the same;

Fig. 4 a front elevation of the pair of rolls for inwardly curving the edges of the metal strip; and

Fig. 5 a series of cross sections showing the various stages in forming the metal channel from the flat strip.

In the drawings like numerals of reference indicate corresponding parts in the different figures.

1 is the frame of the machine suitably shaped to support the different parts. At one end of this frame are journaled a pair of rolls 2—3. The lower roll is spool-shaped and the upper roll cylindrical, that is, the metal strip 4 fed between them has its edges turned up at right angles as indicated in Fig. 5.

From these rolls 2—3, the metal strip passes to the two pairs of rolls 5 and 6 journaled at right angles to the rolls 2—3. The outer rolls 6 are grooved, the bottoms of the grooves being substantially semi-circular. The inner rolls 5 are shaped to suitably cooperate with the outer rolls to give the semi-circular inward curve to the edges of the metal strip shown in Fig. 5.

From the rolls 5 and 6, the metal strip passes to the rolls 7 and 8. These rolls are shaped to produce bends longitudinally of the metal strip along lines located one at each side of the center of the strip, the portion of the strip between the said lines forming the bottom of the finished channel.

From these rolls 7 and 8 the metal strip passes to a longitudinally arranged die, of which 9 are the sides. These sides are twisted, that is, at the end adjacent the rolls 7 and 8 the lines of their cross sections are substantially parallel to the outer parts of the metal strip at each side of the bends hereinbefore referred to, but in the course of their length these sides turn so that the lines of their cross sections are substantially vertical as shown. The result is that as the metal strip is carried through the die, the longitudinal bends are increased substantially to right angles so that the sides of the channel bars formed from the strips stand at substantially right angles to the bottom.

To suitably hold the strip in engagement with the die and to keep the bottom straight, I provide an anti-friction roller 10 at the end of the die closest to the rolls 7 and 8, which holds the metal strip down on the parts of the die which are very nearly horizontal at this position and contact with one another. I also provide a plurality of pairs of anti-friction rollers 11, which engage the metal strip from above and below. These rollers do not need to be driven.

After passing from the die, the strip passes through the finishing rolls 12 and 13. Three pairs of rolls are preferably employed, the rolls of each pair being of approximately the same shape, the lower rolls being spool-shaped to fit the outside of the channel bar into which the strip has been formed, while the upper rolls pass through between the incurved edges to engage the bottom. These rolls straighten the finished channel and remove all irregularities.

The rolls 2 and 3, 7 and 8 and the end rolls 12 and 13 are driven by means of the following mechanism, but it is not usually necessary to drive the intermediate rolls 12 and 13. Longitudinally of the apparatus is journaled the drive shaft 14 provided with the usual fast and loose pulleys. By means of worm gearing 15, the drive shaft actuates the transverse shaft 16, which is provided with the pinions 17. These pinions mesh with the gear wheels 18 on the lower rolls 3 and 8. The lower rolls drive the upper rolls 2 and 7 by means of the gearing 19. The rolls 5 and 6 do not require to be driven.

The end rolls 12 and 13 are driven by the following mechanism. Worm gearing 20 is employed to drive the transverse shaft 21

from the drive shaft 14. On this transverse shaft are secured the pinions 22 which mesh with gear wheels 23 on the lower rolls 13. The upper rolls are driven from the lower rolls by means of the gearing 24. The various rolls are adjustably supported in a manner well known in the art, which adjustment need not therefore be particularly described.

10 From the above description it will be seen that I have devised a machine which will satisfactorily attain the objects of my invention as set out in the preamble to this specification.

15 What I claim as my invention is:—

1. In metal shaping apparatus, the combination of a pair of driven rolls adapted to turn up the edges of a metal strip at right angles; two pairs of rolls journaled at right angles to the first mentioned rolls and adapted to inwardly curve the said upturned edges; a following pair of driven rolls journaled parallel to the first pair and adapted to slightly bend up the sides of the strip along two lines one at each side of the center; a die following the last mentioned rolls having sides whose faces are shaped to engage the sides of the strip and to gradually increase the bends at the lines aforesaid to right angles as the strip passes through the die; and anti-friction rolls engaging the center part or bottom of the strip as it passes through the dies to hold it down in the die and prevent deformation.

2. In metal shaping apparatus, the combination of a pair of driven rolls adapted to turn up the edges of a metal strip at right angles; two pairs of rolls journaled at right angles to the first mentioned rolls and adapted to inwardly curve the said upturned edges; a following pair of driven rolls journaled parallel to the first pair and adapted to slightly bend up the sides of the strip along two lines one at each side of the center; a die following the last mentioned rolls hav-

ing sides whose faces are shaped to engage the sides of the strip and to gradually increase the bends at the lines aforesaid to right angles as the strip passes through the die; anti-friction rolls engaging the center part or bottom of the strip as it passes through the dies to hold it down in the die and prevent deformation; and one or more pairs of finishing rolls, each pair comprising a channel shaped roll fitting the outside of the finished metal strip and a roll adapted to pass between the inturned edges of the strip and engage its bottom.

3. In metal shaping apparatus, the combination of a pair of driven rolls adapted to turn up the edges of a metal strip at right angles; two pairs of rolls journaled at right angles to the first mentioned rolls and adapted to inwardly curve the said upturned edges; a following pair of driven rolls journaled parallel to the first pair and adapted to slightly bend up the sides of the strip along two lines one at each side of the center; a die following the last mentioned rolls having sides whose faces are shaped to engage the sides of the strip and to gradually increase the bends at the lines aforesaid to right angles as the strip passes through the die; anti-friction rolls engaging the center part or bottom of the strip as it passes through the dies to hold it down in the die and prevent deformation; two pairs of driven finishing rolls and an intermediate pair of idler finishing rolls, each pair comprising a channel shaped roll fitting the outside of the finished metal strip and a roll adapted to pass between the inturned edges of the strip and engage its bottom.

Signed at Hamilton, Ontario, Canada, this 9th day of June, 1917.

JOHN WILLIAM ANDERSON.

Witnesses:

BELLA J. METCALF,
H. C. PEPPER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."