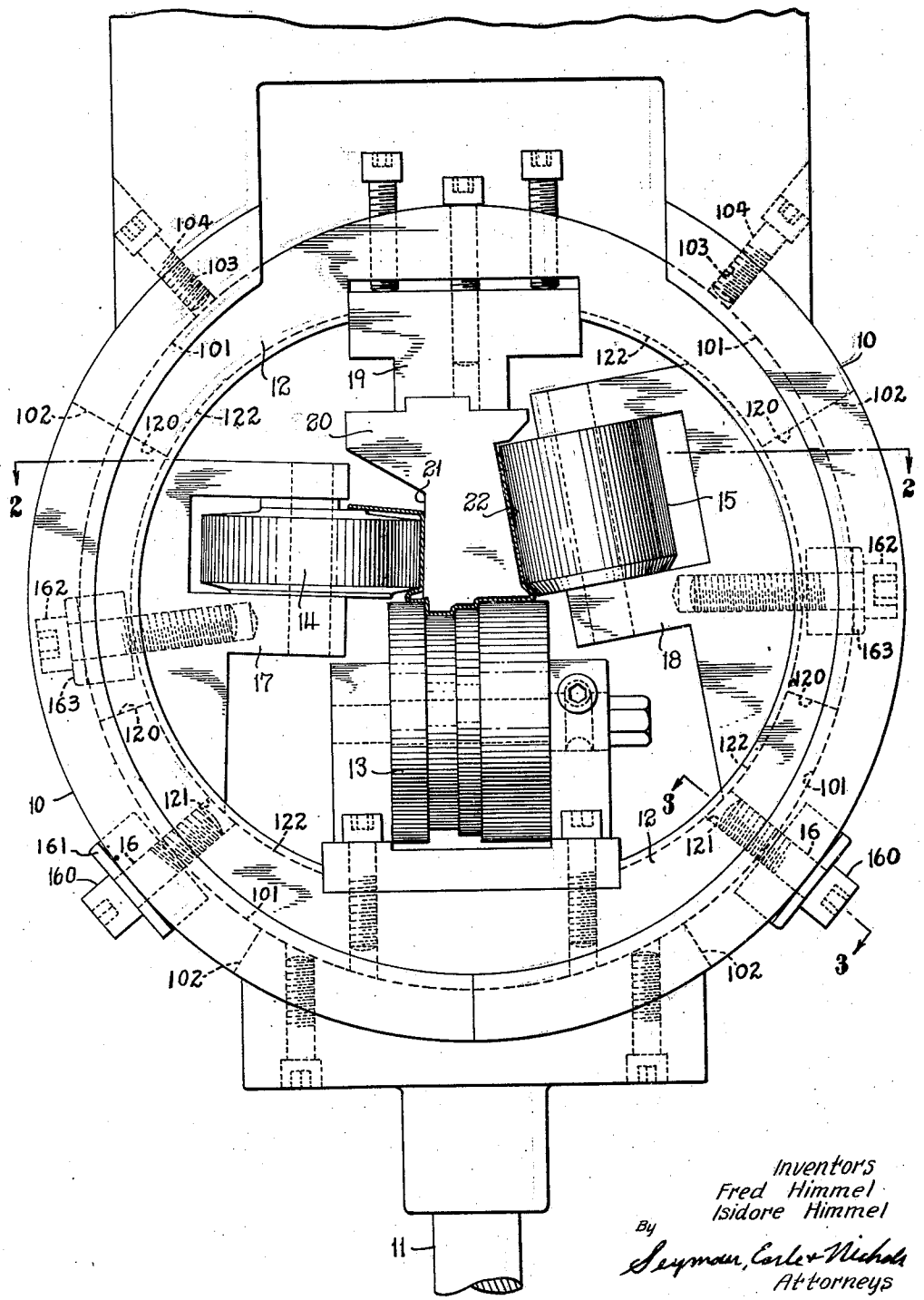
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SUPPLEMENTARY FORMING MEANS FOR STRIP-METAL FORMING MACHINES

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Fig. 1.



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Fig. 5.

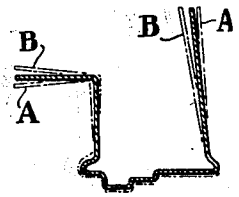
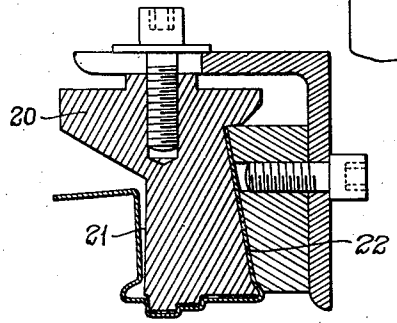


Fig. 2.

Fig. 3.

Fig. 4.



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Patented Jan. 11, 1949 2,458,906

UNITED STATES PATENT OFFICE

2,458,906

SUPPLEMENTARY FORMING MEANS FOR STRIP-METAL FORMING MACHINES

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Application May 25, 1946, Serial No. 672,284

7 Claims. (Cl. 153—32)

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This invention relates to supplementary forming means for strip-metal forming machines and particularly to machines for forming strips for store-front construction. Owing to variations in the composition of metals and particularly stainless steel, strips coming from a forming machine do not retain the desired shape in cross section and have a tendency to curve or bow.

The object of this invention is to provide means for supplementally forming the strips to overcome variations in the alignment of the preformed strip, and the invention consists in the formation and arrangement of parts as hereinafter described and particularly recited in the claims.

With the above and other objects in view, as will appear to those skilled in the art from the present disclosure, this invention includes all features in the said disclosure which are novel over the prior art.

In the accompanying drawings, in which certain modes of carrying out the present invention are shown for illustrative purposes:

Fig. 1 is a front view of supplementary forming mechanism for strip-forming machines, constructed in accordance with the present invention;

Fig. 2 is a sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view on the line 3—3 of Fig. 1;

Fig. 4 is a sectional view on the line 4—4 of Fig. 2; and

Fig. 5 is a diagrammatic sectional view illustrating the action of the supplementary rolls on a preformed strip.

In carrying out our invention, we mount a ring-like frame 10 substantially vertically upon a fixed post 11 which is mounted adjacent a metal-forming machine (not shown), and mounted on the inner wall of the frame 10 for rotation circumferentially in the vertical plane thereof is a roller-carrier ring 12 in which are mounted supplementary forming-means comprising a header 19 and forming rolls 13, 14 and 15 corresponding to the preforming rolls of the metal-forming machine and in line therewith. The roller-carrier ring 12 when turned circumferentially to the desired position in the ring frame 10, is adapted to be secured by bolts 16. To this end, the ring-frame member 10 has an annular retaining-groove 101 on its inside wall intermediate the vertical front and back faces thereof as shown in Figs. 1, 2 and 3; and a pair of substantially-diametrically-opposite arcuate

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slots 102 in the vertical plane of its rim, each slot being symmetrical with respect to a diameter substantially at right angles to the vertical diameter of the ring, as clearly shown in Fig. 1. In addition to the slots 102, the ring-frame 10 is provided with a pair of screw-threaded radial apertures 103 on the upper edge thereof and on opposite sides respectively of its vertical axis for accommodating locking-screws 104 for the purpose hereinafter described.

A carrier-ring 12 is rotatably mounted in the vertical plane of the ring-frame 10, the periphery of the carrier-ring engaging the annular retaining-groove 101 of the ring-frame. The carrier-ring 12 is provided with a pair of substantially-diametrically-opposite slots 120 in the vertical plane of its rim adapted to coincide with the corresponding slots 102 of the ring-frame 10, as indicated clearly in Figs. 1 and 2. The carrier-ring 12 is also provided with a pair of screw-threaded radial apertures 121 adjacent its lower edge and on opposite sides respectively of its vertical axis for accommodating a pair of adjusting-screws 16 having enlarged heads 160. Each adjusting-screw is adapted to be mounted in a flanged bushing 161, one of which is mounted in each respective slot 102 of the ring-frame 10, the flange of each bushing 161 being adapted to span the sides of its respective slot 102 to support the bushing for circumferential movement therein. Thus, by tightening up the adjusting-screw 16, the enlarged heads 160 thereof will bind the flanges of the bushings against the periphery of the ring-frame 10 and thereby hold the carrier-ring 12 firmly in a predetermined adjusted position circumferentially therein. Additional locking-means is provided by the screws 104 which are threadedly engaged in the radial apertures 103 of the ring-frame 10 and adapted to be turned down against the periphery of the carrier-ring to lock the latter therein. To change the adjustment of the carrier-ring, it is only necessary to loosen the adjusting-screw 16 and the locking-screws 104, whereupon the carrier-ring may be rotated freely in the ring-frame 10, the flanged bushings 161 and their respective adjusting-screws 16 traveling circumferentially in the arcuate slots 102 thereof.

The forming rolls 14 and 15 are respectively mounted in brackets 17 and 18 which may be adjusted circumferentially within the carrier ring 12 to give the rolls the desired inclination. To this end, the inner wall of the carrier-ring 12 is provided with an annular non-circular retaining-groove 122 (see Fig. 2) in which is en-

gaged the outer peripheral surface of each bracket. Each bracket 17 and 18 is adapted to be secured in a predetermined adjusted position circumferentially in its respective retaining-groove of the carrier-ring by means of an adjusting-screw 162 and flanged bushing 163, each flanged bushing being adapted to be supported in one of the respective arcuate slots 120 of the carrier-ring 12 and to be held in any predetermined adjusted position therein by tightening up its respective adjusting-screw 162 to bind the flange of the bushing against the periphery of the carrier-ring, both the flanged bushing and its adjusting-screw being accommodated for circumferential displacement with respect to the fixed ring-frame 10 by moving freely in the arcuate slots 102 thereof which, as pointed out above, coincide with the arcuate slots 120 of the carrier-ring. Thus, each bracket 17 and 18 may be adjusted circumferentially in the carrier-ring 12 independently of each other and of the adjustment of the carrier-ring 12 within the fixed ring-frame 10.

Supported within the carrier-ring between the supplementary forming-means, as shown in Figs. 2 and 4 and arranged to rotate therewith, is a shaping-block 20 which has inclined side walls 21 and 22, the lower roll 13 and the header 19 being adjustable with relation to the re-shaping-block 20.

Referring to Fig. 5 of the drawings, the strip as it comes from the preforming-rolls has inclined walls, as indicated, for instance, by broken lines A. These walls, in passing between the supplementary forming rolls 13, 14 and 15, will assume the position indicated by broken lines B or vice versa, but in either case, the resiliency of the metal will restore the walls to the desired position of rest as shown by full lines.

This supplementary strip-forming device with readily adjustable forming rolls will assure the desired configuration of a strip and straighten the strip if it tends to bow or curve as it comes from the first forming-rolls. Should the strip bow, curve or twist on leaving the preforming rolls, the carrier-ring 12, together with the supplementary forming rolls 13, 14 and 15, may be rotatably adjusted within the fixed ring frame 10 to compensate for any such curving or twisting and thereby produce a longitudinally-straight strip.

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

We claim:

1. In a device for straightening a preformed metal strip, a ring-frame, a carrier-ring adjustably mounted for rotation in the ring-frame, a shaping-block mounted in the said carrier-ring for rotation therewith; and supplementary forming-means comprising an under-roll, two side-rolls, and a header, said rolls and header being adjustably mounted on said carrier-ring for movement relative to said shaping-block to supplementally form a strip passed between said supplementary forming-means.

2. In a device for straightening a preformed metal strip: a fixed ring-frame; a carrier-ring; means arranged to support said carrier-ring for adjustment circumferentially within said fixed ring-frame; adjustable means cooperatively associated with said ring-frame and said carrier-ring to secure said carrier-ring in a predetermined adjusted position circumferentially within said fixed ring-frame; forming rolls; means arranged to support said forming-rolls within said carrier-ring for adjustment circumferentially therein; and adjustable-means cooperatively associated with said forming-rolls supporting-means and said carrier-ring to secure said forming-rolls supporting-means in predetermined adjusted positions circumferentially within said carrier-ring.

3. In a device for straightening a preformed metal strip: a fixed ring-frame; a carrier-ring having circumferential slots in the periphery thereof; means arranged to support said carrier-ring for adjustment circumferentially within said fixed ring-frame; adjustable-means cooperatively associated with said ring-frame and said carrier-ring to secure said carrier-ring in a predetermined adjusted position circumferentially within said fixed ring-frame; forming rolls; brackets constructed and arranged to support said forming-rolls within said carrier-ring for adjustment circumferentially therein; and adjustable-bolts secured to said brackets and arranged to extend outwardly radially through the circumferential slots of said carrier-ring to secure said brackets in predetermined adjusted positions circumferentially within said carrier-ring.

4. In a device for straightening a preformed metal strip: a fixed ring-frame; a carrier-ring having an internal annular retaining-groove and circumferential slots in the periphery of said carrier-ring; means arranged to support said carrier-ring for adjustment circumferentially within said fixed ring-frame; adjustable-means cooperatively associated with said ring-frame and said carrier-ring to secure said carrier-ring in a predetermined adjusted position circumferentially within said fixed ring-frame; forming-rolls; brackets to support said forming-rolls, said brackets having arcuate edges arranged to engage in the annular retaining-groove of said carrier-ring for adjustment circumferentially therein; and adjustable-means comprising bolts secured to said brackets and arranged to extend radially outwardly through the circumferential slots of said carrier-ring, and flanged bushings supported by said bolts in said arcuate slots, said flanged bushings being arranged to bind against the periphery of said carrier-ring when said bolts are tightened to hold said brackets in a predetermined adjusted position within said carrier-ring.

5. In a device for straightening a preformed metal strip: a fixed ring-frame having circumferential slots in the periphery thereof; a carrier-ring; means arranged to support said carrier-ring for adjustment circumferentially within said fixed ring-frame; adjustable-means comprising bolts secured to said carrier-ring and arranged to extend outwardly radially through the circumferential slots of said fixed ring-frame to secure said carrier-ring in predetermined adjusted positions circumferentially within said ring-frame; forming-rolls; means constructed and arranged to support said forming-rolls within said carrier-ring for adjustment circumferentially therein; and adjustable-means cooperatively associated with said forming-rolls supporting-means and said carrier-ring to secure said forming-rolls supporting-means in predetermined adjusted positions circumferentially within said carrier-ring.

6. In a device for straightening a preformed metal strip: a fixed ring-frame having an internal annular retaining-groove and circumferential slots in the periphery of said ring-frame; a carrier-ring having circumferential slots in the periphery thereof constructed and arranged to coincide with the circumferential slots of said ring-frame said carrier-ring being arranged to be supported in the retaining-groove of said ring-frame for adjustment circumferentially therein; adjustable-means comprising bolts secured to said carrier-ring and arranged to extend outwardly radially through the circumferential slots of said fixed ring-frame, and flanged bushings supported by said bolts in said circumferential slots of said ring-frame said flanged bushings being arranged to bind against the periphery of said ring-frame when said bolts are tightened to hold said carrier-frame in a predetermined adjusted position therein; forming-rolls; brackets constructed and arranged to support said forming-rolls within said carrier-ring for adjustment circumferentially therein; and adjustable-bolts secured to said brackets and extending outwardly radially through the circumferential slots of said carrier-ring and said ring-frame to secure said brackets in a predetermined adjusted position circumferentially within said carrier-ring.

7. In a device for straightening a preformed metal strip: a fixed ring-frame having an internal annular retaining-groove and circumferential slots in the periphery of said ring-frame; a carrier-ring having circumferential slots in the periphery thereof constructed and arranged to coincide with the circumferential slots of said ring-frame said carrier-ring being arranged to be supported in the retaining-groove of said ring-

frame for adjustment circumferentially therein; adjustable-means comprising bolts secured to said carrier-ring and arranged to extend outwardly radially through the circumferential slots of said fixed ring-frame, and flanged bushings supported by said bolts in said circumferential slots of said ring-frame said flanged bushings being arranged to bind against the periphery of said ring-frame when said bolts are tightened to hold said carrier-frame in a predetermined adjusted position therein; forming-rolls; brackets constructed and arranged to support said forming-rolls within said carrier-ring for adjustment circumferentially therein; and adjustable-means comprising bolts secured to said brackets and extending outwardly radially through the circumferential slots of said carrier-ring and said ring-frame, and flanged bushings supported by said bolts in the circumferential slots of said carrier-ring and said ring-frame said flanged bushings being arranged to bind against the periphery of said carrier-ring when said bolts are tightened to hold said brackets in a predetermined adjusted position within said carrier-ring.

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