

M. L. HUNKER.
METHOD OF FORMING SHEET METAL ELBOWS.
APPLICATION FILED JULY 3, 1912.

1,058,590.

Patented Apr. 8, 1913.

2 SHEETS—SHEET 1.

Fig. 1

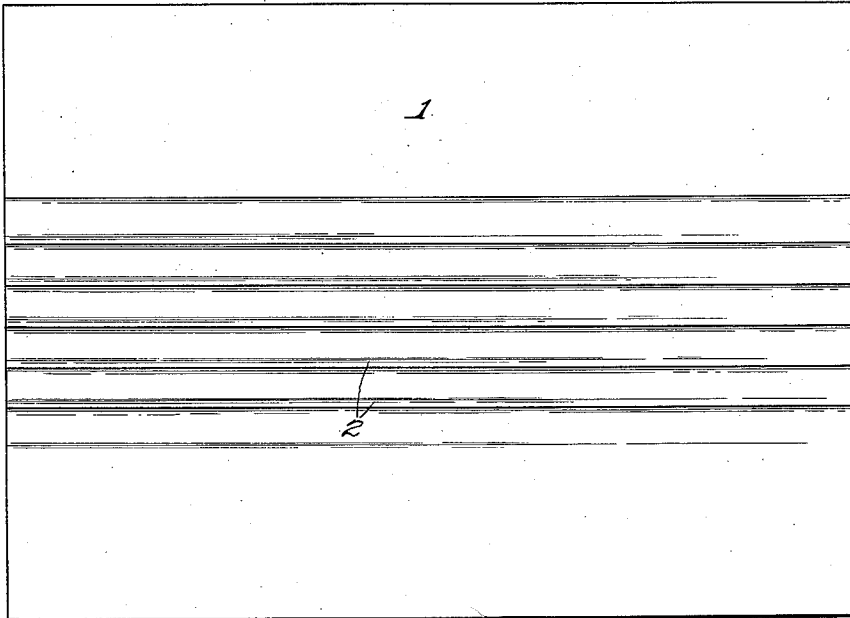


Fig. 2



Fig. 3

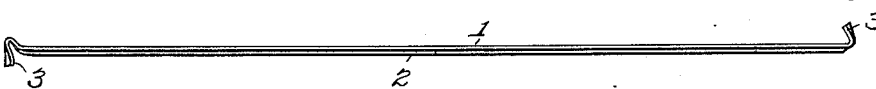
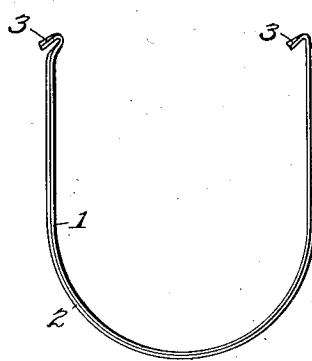


Fig. 4



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2 SHEETS—SHEET 2.

Fig. 5

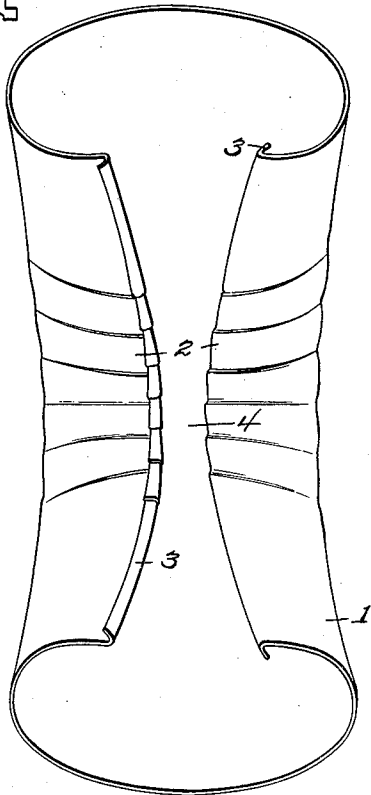


Fig. 6

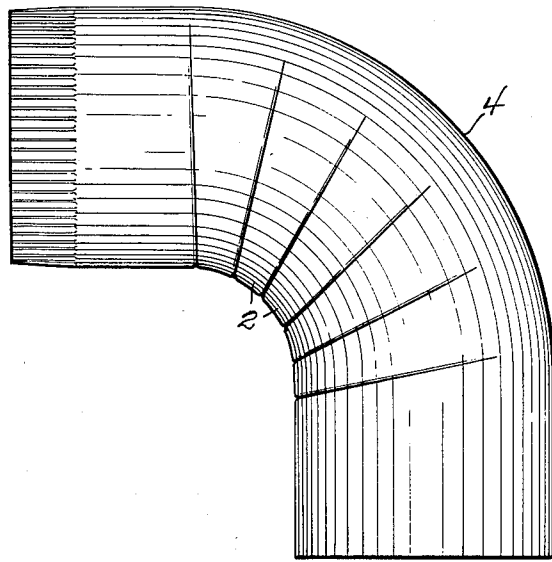


Fig. 8

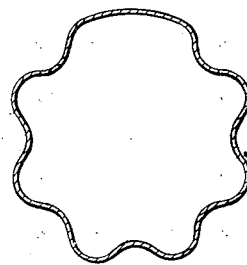
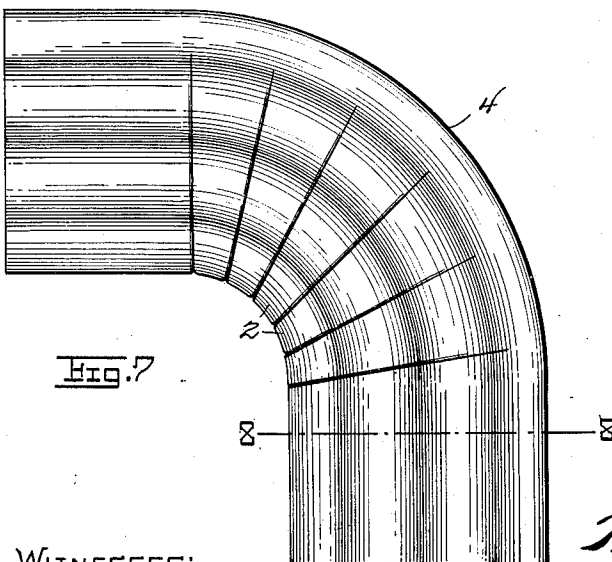


Fig. 7



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UNITED STATES PATENT OFFICE.

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METHOD OF FORMING SHEET-METAL ELBOWS.

1,058,590.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed July 3, 1912. Serial No. 707,450.

To all whom it may concern:

Be it known that I, MARTIN L. HUNKER, a citizen of the United States of America, and resident of Martins Ferry, county of Belmont, and State of Ohio, have invented certain new and useful Improvements in Methods of Forming Sheet-Metal Elbows, of which the following is a specification.

This invention relates to a method of producing sheet-metal elbows of the plaited type, and it has for an object to provide a process or method whereby such elbows may be readily manufactured at a low cost.

A further object is to provide a simple method which admits of the employment of forming tools of relatively greater strength and which are more conveniently operated or handled than are those commonly employed in elbow manufacture. And a still further object is to provide a method wherein the drawing out of portions of the plaits or folds provided in the sheet-metal blank is accomplished prior to forming the plaited blank into a tube.

With these and other objects in view, the invention consists in the process or method which will hereinafter be fully described, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan view of a sheet metal blank folded or plaited in a transverse, or crosswise, direction, illustrating the same as it appears at the completion of the first step in the manufacture of an elbow; Fig. 2 is an edge view of the same; Fig. 3 is an end view of the same showing the lateral edges turned to form hooks; Fig. 4 is a similar view showing the plaited blank bent longitudinally into substantially U-shape; Fig. 5 is an inner face view of the same after portions of the plaits or folds have been drawn out to produce the proper degree of curvature and before joining of the edges; Fig. 6 is a side elevation of the completed elbow; Fig. 7 is a similar view of an elbow which is corrugated longitudinally; and Fig. 8 is a cross section on the line 8—8, Fig. 7.

Referring to said drawings, in which like designating characters distinguish like parts throughout the several views—1 indicates a rectangular sheet-metal blank which is first doubled or folded transversely upon itself, as shown in Figs. 1 and 2, to form a plu-

rality of parallel folds or plaits 2, the number of such plaits depending upon the angle desired for the elbow and upon the depth or width of the individual plaits formed in the blank. The opposite lateral edges of the blank are then turned over or bent in reverse directions, as shown in Fig. 3, to form continuous longitudinally-extending hooks 3, after which the blank is bent longitudinally into substantially U-shape, or gutter-shape, as shown in Fig. 4. Then, employing a machine designed for the purpose, the gutter-shaped blank is suitably gripped and is stretched longitudinally along a substantially median line to completely draw out those portions of the plaits along said line to produce a plain smooth surface, as shown at 4 in Figs. 5, 6 and 7, while allowing the ends of the plaits to remain undisturbed. This last-mentioned step, in the process accomplishes the curving of the article into bow-shape without stretching or weakening the material, and leaves the article in substantially the form illustrated in Fig. 5. The lateral edges are then drawn together and the hooks 3 placed in interlocking engagement throughout their lengths and pressed flat to form the usual seam.

I am aware that elbows have heretofore been produced by forming in a blank folds or plaits portions of which are later drawn out to produce the proper curvature, but in all such the blank is formed into a tube before the folds or plaits are drawn out, and the machinery required for accomplishing this stretching is, as a consequence, necessarily more or less complicated in its construction and lacks the strength requisite to withstand long-continued use. It will be noted that in my process the step of forming the tube follows that of stretching or drawing out the plaits. Therefore, as will be apparent, mechanism employed for effecting the stretching may be relatively much simpler and stronger in its construction, and, consequently, less liable to become out of order. Furthermore, by my method it is possible to produce corrugated elbows practically as readily as plain elbows, the corrugations being formed before the blank is bent out of its plaited flat shape.

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

1. The method of manufacturing sheet-

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metal elbows, which consists, first, in forming plaits in a sheet-metal blank, then drawing out the plaits along a substantially median line while the ends of the plaits remain
5 undisturbed, and finally uniting the lateral edges.

2. The method of manufacturing sheet-metal elbows, which consists, first, in forming plaits in a sheet-metal blank, bending
10 the plaited blank into substantially U-shape, then drawing out the plaits along a substantially median line to produce the desired curvature, and finally uniting the lateral edges.

15 3. The method of manufacturing sheet-metal elbows, which consists, first, in forming transverse plaits in a sheet-metal blank, bending the plaited blank longitudinally into substantially U-shape, then drawing
20 out the plaits along a substantially median line to produce the desired curvature, and finally joining and seaming the lateral edges.

4. The method of forming plaited sheet-metal elbows, which consists, first, in forming
25 plaits crosswise of a sheet-metal blank, corrugating the plaited blank longitudinally, bending the same into substantially U-shape, then drawing out the plaits along a substantially median line to produce the

desired curvature, and finally uniting the
30 lateral edges.

5. The method of forming plaited sheet-metal elbows, which consists, first, in forming plaits crosswise of a sheet-metal blank, corrugating the plaited blank longitudi-
35 nally, bending the same into substantially U-shape, then completely drawing out said plaits along a median line while the ends of the plaits remain undisturbed, and finally uniting the lateral edges.
40

6. The method of forming plaited sheet-metal elbows, which consists, first, in forming plaits crosswise of a sheet-metal blank, bending the lateral edges of the plaited
45 blank to form reversely directed hooks, bending the plaited blank into substantially U-shape, then drawing out said plaits along a substantially median line while the ends of the plaits remain undisturbed, and finally
50 drawing said hooks into interlocking engagement.

In testimony whereof, I affix my signature in presence of two subscribing witnesses.

MARTIN L. HUNKER.

Witnesses:

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