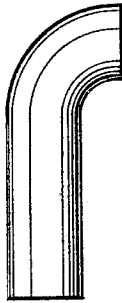


A. SYVERSON.  
SHEET-METAL ELBOW.

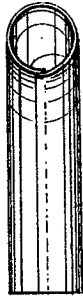
No. 180,736.

Patented Aug. 8, 1876.

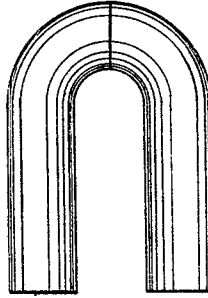
*Fig. 1*



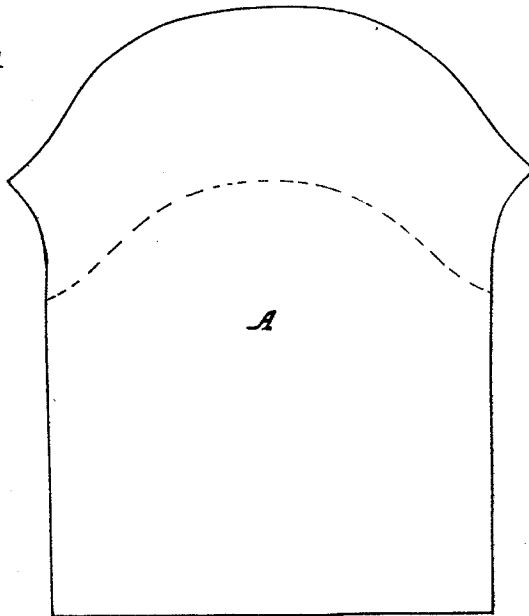
*Fig. 2*



*Fig. 3*



*Fig. 4*



WITNESSES.

*W. H. Torross*  
*F. A. Herring*

INVENTOR.

*Andrew Syverson*  
*By Lindley & Warner*  
*Attys*

# UNITED STATES PATENT OFFICE.

ANDREW SYVERSON, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF HIS  
RIGHT TO JOSEPH S. DENNIS, OF SAME PLACE.

## IMPROVEMENT IN SHEET-METAL ELBOWS.

Specification forming part of Letters Patent No. **180,736**, dated August 8, 1876; application filed  
December 9, 1874.

*To all whom it may concern:*

Be it known that I, ANDREW SYVERSON, of Chicago, in the county of Cook and State of Illinois, have invented a new, useful, and Improved Sheet-Metal-Elbowed Pipe, of which the following is a full, clear, and exact description, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing, forming a part hereof, and in which—

Figure 1 is a side elevation of my improved elbowed pipe; Fig. 2, an elevation of that side of the same in which the seam lies; Fig. 3, a side elevation of a double-elbowed pipe, and Fig. 4 a representation of the form of the blank.

Like letters of reference indicate like parts.

The object of my invention is to make a sheet-metal-elbowed pipe in one piece, and having only one seam, which will be smooth both on its outer and inner surface, and the bent part of which will lie in the arc of a circle, or in a curved line.

This I accomplish by making a sheet-metal blank in a proper form, and by then bending and drawing the blank in such a manner that a smooth circular elbow is formed on the end of the pipe or section of pipe. The edges of the blank thus brought together are soldered to each other when the metal will admit of soldering, and riveted when it will not.

In the drawing, A represents the form of the blank employed in constructing an elbowed pipe, formed in the manner shown in Figs. 1, 2, and 3. The upper end of the blank is curved, as shown, and, in the example represented, has pointed and curved projections at the junction of the upper and lateral edges. This blank is placed in a machine made for that purpose, and the vertical edges are crowded together, the upper part of the blank being at the same time "drawn," so as to give a curved form to the upper end of the pipe or section of pipe, thus forming a continuous and smooth elbow thereon, having only one seam, as shown in Figs. 1 and 2. When the blank is made in this form the upper end of the completed elbow will be at right angles, or nearly so, to the lower end of the pipe or section. This angle, however, may be varied by varying the form of the blank, and an angle of about forty-five degrees may be pro-

duced by forming the blank in the form shown below the dotted line in Fig. 4. When the pipe or section is thus bent, the edges which form the seam may be either soldered or riveted together, regard being had to the kind of metal of which the pipe is made. When the pipe is made of a metal which will admit of soldering, the edges need not be lapped.

I am aware that curved sheet-iron elbows alone, having smooth surfaces and only one seam, have heretofore been made; but two sections of pipe cannot be joined by means of such elbows without producing at least three joints between the parts so united, whereas there will be only one joint when two sections of my elbowed pipe are united, as shown in Fig. 3.

I am also aware that a smooth-surfaced, curved sheet-iron elbow has been made from a blank of peculiar construction, as shown and described in Letters Patent No. 154,760, granted to George Lupton, September 8, 1874.

I am also aware that soft-metal tubes or pipes made from blanks have been curved without being perceptibly crimped or corrugated; but an uncrimped or uncorrugated hard-metal pipe made from an ordinary blank, and curved at the end, so as to form an elbow continuous therewith, and having only one seam, substantially as herein shown and described, has not, so far as I am aware, ever before been made.

I am also aware that both soft and hard metal elbowed pipes have been produced by casting the metal into such a form.

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

1. The blank A, of uniform thickness, adapted to form the elbow by being constructed substantially as specified.

2. The sheet-metal elbow, made of a single blank of sheet iron of uniform thickness, having a single longitudinal seam, the elbow being formed without crimping or cutting, and presenting a smooth surface throughout when finished, substantially as shown and described.

ANDREW SYVERSON.

Witnesses:

F. A. HERRING,  
F. F. WARNER.