(No Model.)

W. H. NOBLE.

SHEET METAL PIPE ELBOW.

No. 471,620. Patented Mar. 29, 1892.

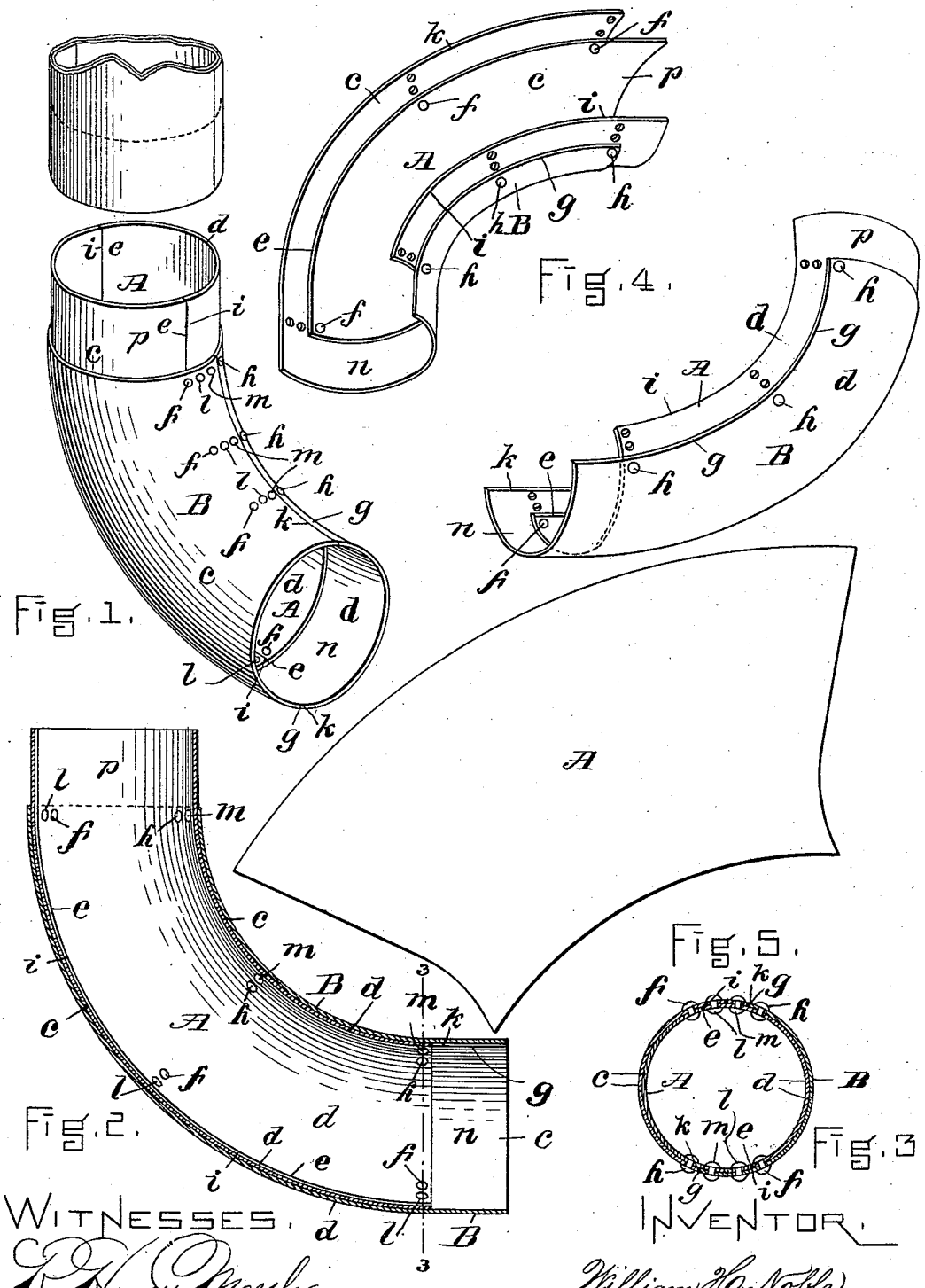

Fig. 1.

Fig. 4.

Fig. 2.

Fig. 5.

Fig. 3.

WITNESSES.

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SHEET-METAL PIPE-ELBOW.

SPECIFICATION forming part of Letters Patent No. 471,620, dated March 29, 1892.

Application filed October 27, 1891. Serial No. 410,014. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. NOBLE, a citizen of the United States, residing at Chelsea, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Sheet-Metal Pipe-Elbows, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a sheet-metal pipe-elbow constructed in accordance with my invention. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a transverse section on the line 3 3 of Fig. 2. Fig. 4 is a perspective view illustrating the manner in which the sections or parts of the elbow are put together. Fig. 5 is a plan of a blank from which is formed one of the four parts of which the elbow is composed.

This invention relates to a sheet-metal pipe-elbow which is particularly adapted for use in connection with the sheet-metal tube for which Letters Patent of the United States No. 460,651 were granted to me October 6, 1891; and it consists in a double pipe-elbow composed of four separate parts or pieces of sheet metal, forming when put together two tubes arranged one within the other, said tubes being secured together by rivets or other suitable fastening and each tube being composed of two curved longitudinal sections or halves put together in such manner that the seams of the inner tube will break joints with the seams of the outer tube, as hereinafter more particularly set forth; and my invention also consists in certain details of construction, as hereinafter set forth, and specifically claimed.

My pipe-elbow (represented in the said drawings) is composed of four separate parts or pieces of sheet metal, forming two tubes A B, having the desired curvature, and placed one within the other, as shown. Each tube is divided longitudinally into two sections or halves *c d*, each of which is separately formed from a blank of the shape shown in Fig. 5, in a suitable die to give it the proper curvature both longitudinally and transverely, the edges of the two halves *c d* when put together abutting squarely against each other, as seen in Fig. 3, forming perfectly-flush joints or seams, the said blanks being preferably tinned or galvanized previous to being shaped by the dies. The two halves *c d* of each tube A or B are so shaped by the dies that the two longitudinal seams of each tube will lie on opposite sides of a vertical plane passing longitudinally through the elbow, as seen in Figs. 1 and 3, by which construction the seams of the inner tube are caused to break joints with the seams of the outer tube, as shown.

In putting the elbow together each half of the inside part or tube A is secured along its edge *e* to the corresponding half of the outside part B by means of a line of rivets *f* or other suitable fastening, as seen in Figs. 3 and 4, and the edge *g* of the said half of the outside part or tube B is secured to the half of the inside part A by a line of rivets *h* or other suitable fastening, two sections or halves of the elbow being thus formed, as shown in Fig. 4, which are then properly fitted together, after which the remaining edges *i k* of the said inside and outside parts are secured, the former to the outside part and the latter to the inside part, by means of rivets *l m* or other suitable fastening, by which construction the four sections or parts of the elbow are firmly and securely held together with the edges at the seams abutting squarely together and with the seams of the inner tube breaking joints with those of the outer tube, as seen in Figs. 1 and 3, while the interior and exterior present smooth surfaces, the seams being perfectly flush.

The inner and outer tubes A B are so placed with respect to each other that the outer tube B will project at one end beyond the inner tube A, while at the opposite end of the elbow the inner tube projects beyond the outer tube, the elbow being thus provided with a socket *n*, of single thickness of metal, at one end to receive the corresponding end of the pipe to which it is to be attached, and a projecting portion *p*, of single thickness, at the opposite end adapted to fit within the correspondingly-shaped socket of the piece of pipe to which said end of the elbow is to be secured, the joints thus made at the opposite ends of the elbow being smooth and perfectly flush both on the inside and outside. The elbow thus made is then subjected to a bath of molten zinc, tin, or other suitable metal having a sufficiently high temperature to fuse the coating

of zinc or tin upon the material of which the elbow is made, thus causing the contacting surfaces of the inner and outer tubes or parts A B to be firmly united or soldered together and the seams at the same time more completely closed at the edges of the halves or sections *c d*.

If desired, the elbow can be corrugated, which can be accomplished by corrugating the sections or parts *c d* before they are put together.

By making each of the tubes A B in two parts or halves, as described, they can be easily formed in dies, and an exceedingly strong and durable elbow thus produced with light material.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A double-thick pipe-elbow composed of four separate parts or pieces of sheet metal, forming two tubes, one within the other, each tube being divided longitudinally into two parts or halves put together in such manner that the longitudinal seams of the inner tube will break joints with the seams of the outer tube and said two tubes being riveted or fastened together, substantially as set forth.

2. A double-thick pipe-elbow composed of four separate parts or pieces of sheet metal, forming two tubes, one within the other, each tube being divided longitudinally into two parts or halves put together in such manner that the longitudinal seams of the inner tube will break joints with the seams of the outer tube, said two tubes being riveted or fastened together and the end of one tube extending beyond the end of the other tube in the direction of the length of the elbow to form a socket of single thickness at one end of the said elbow to receive the end of the pipe to which it is to be attached, and a portion of single thickness at the opposite end adapted to fit within the corresponding socket of the adjacent piece of pipe to which it is to be attached, substantially as set forth.

3. The herein-described method of making double pipe-elbows, consisting in forming two curved tubes, one within the other, from four separate parts or pieces of tinned or galvanized sheet metal, so that each tube will be divided longitudinally into two parts or halves fitting together in such manner that the longitudinal seams of the inner tube will break joints with the seams of the outer tube, uniting or fastening said tubes together along the edges of the longitudinal seams and subsequently dipping said elbow into a bath of molten tin or other suitable metal, whereby the coating of tin or zinc upon the contacting surfaces of the two tubes will be fused, and the said two tubes thereby firmly united or soldered together, substantially as set forth.

Witness my hand this 22d day of October, A. D. 1891.

WILLIAM H. NOBLE.

In presence of—
P. E. TESCHEMACHER,
HARRY W. AIKEN.