

(No Model.)

2 Sheets—Sheet 1.

W. H. NOBLE.  
SHEET METAL TUBING.

No. 460,651.

Patented Oct. 6, 1891.

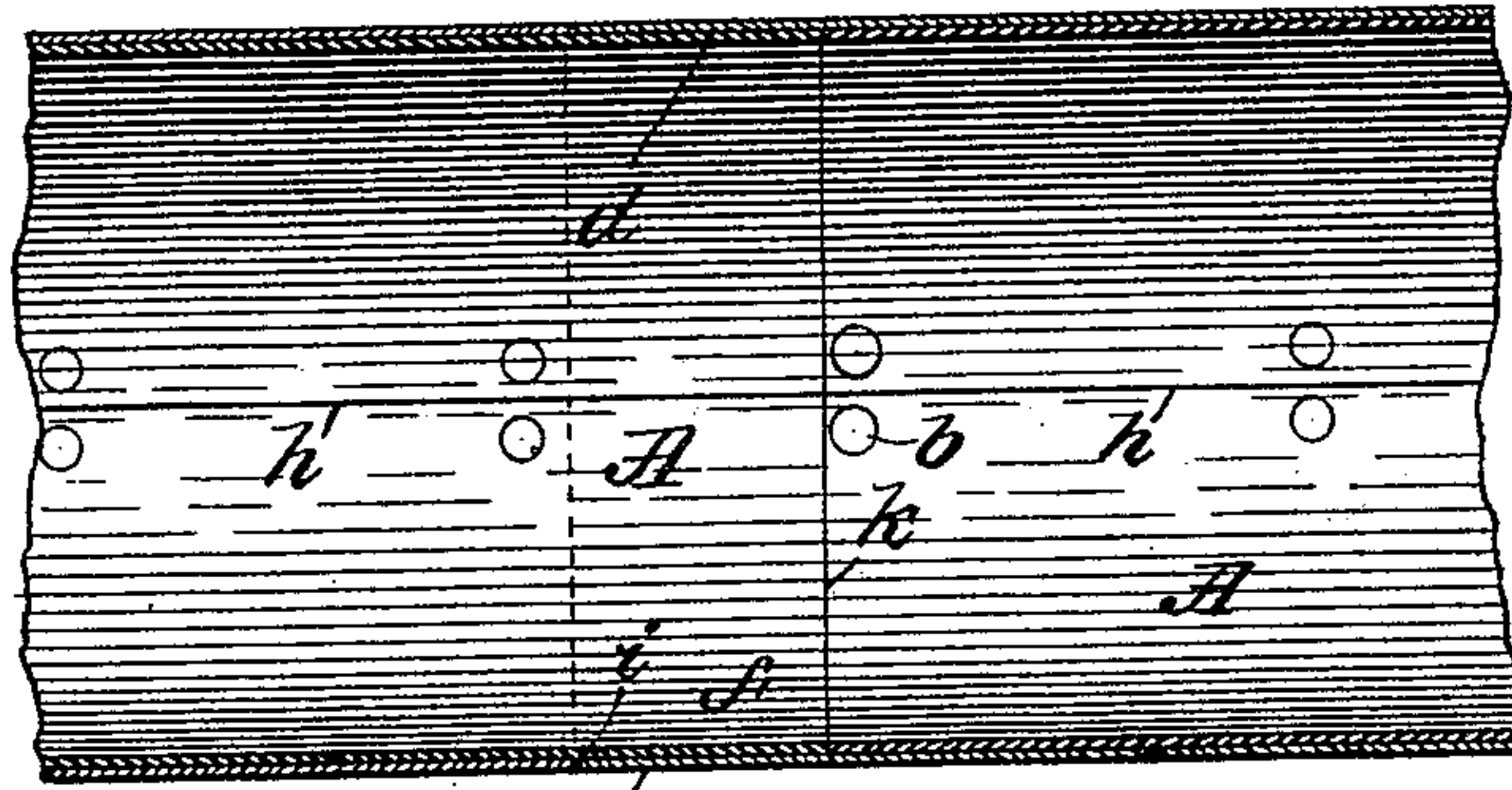
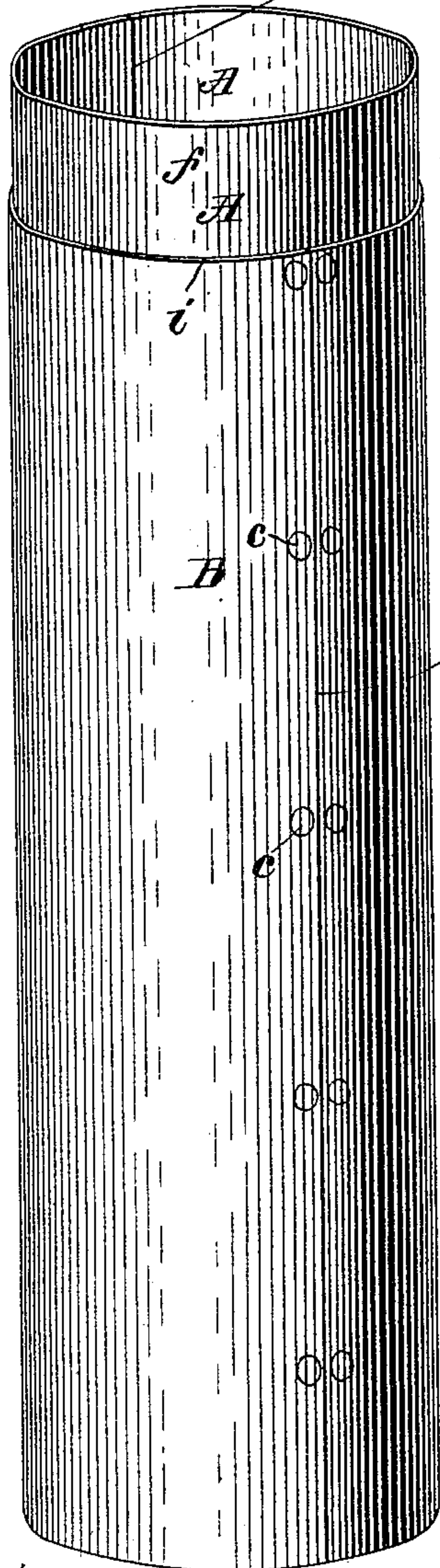
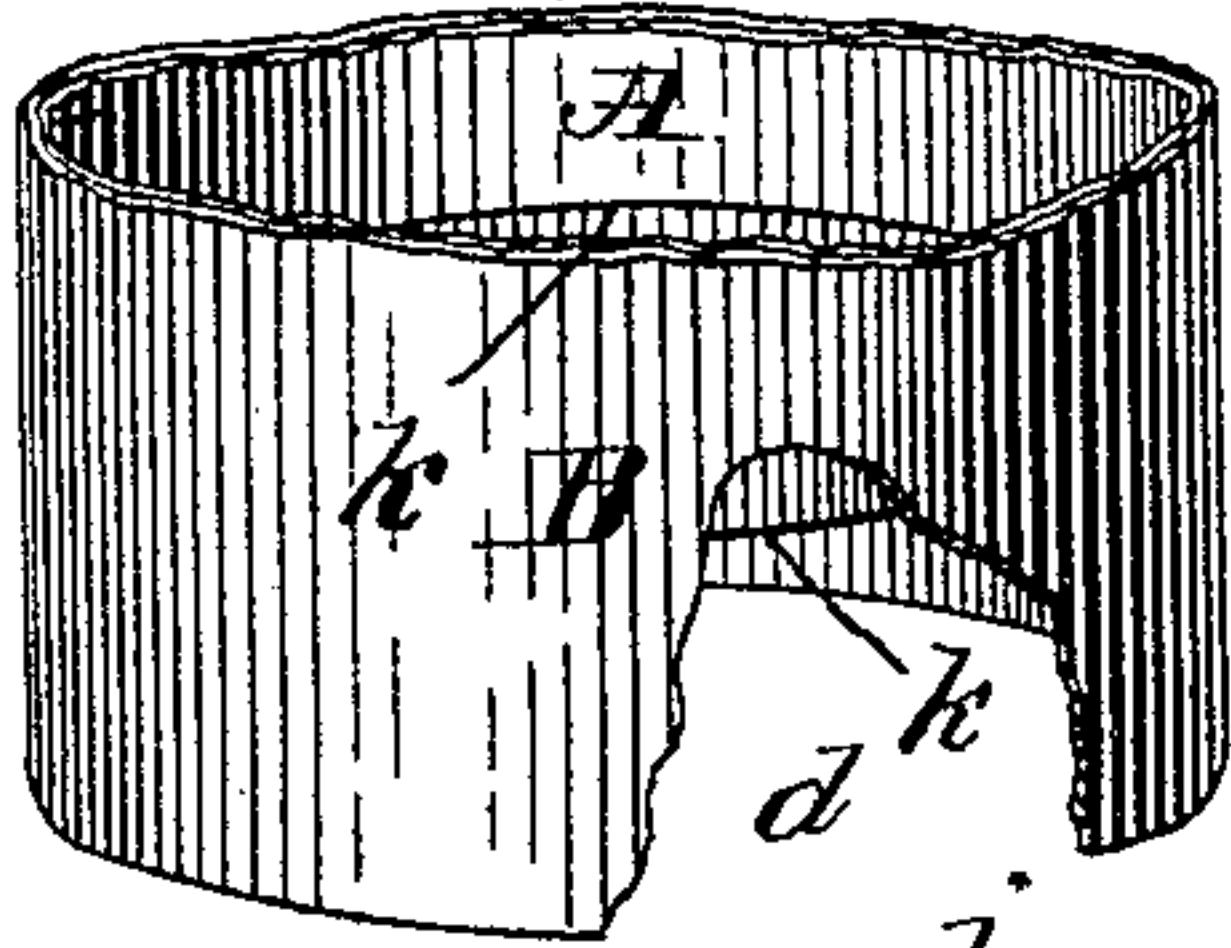


Fig. 3.

Fig. 2.

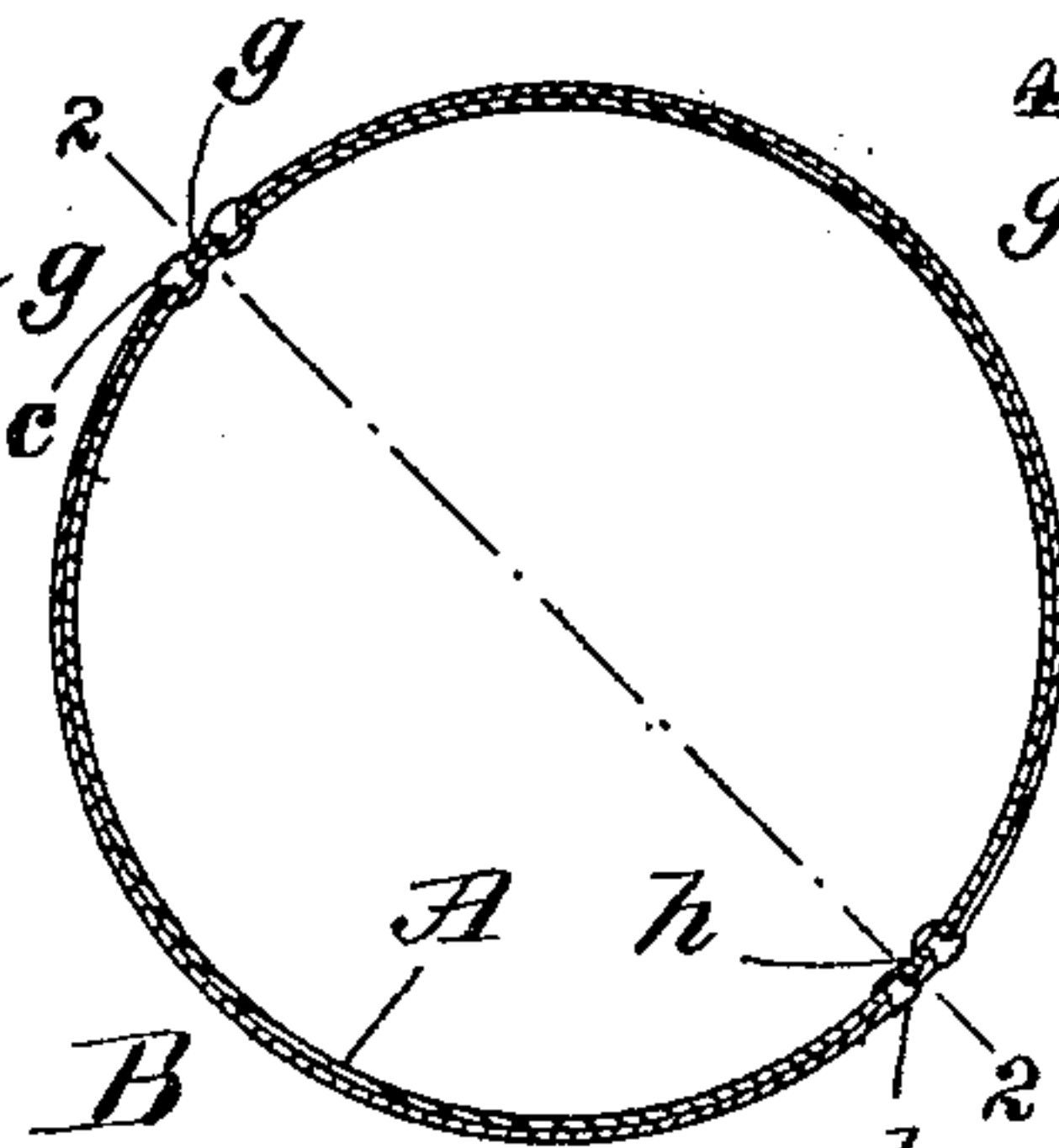
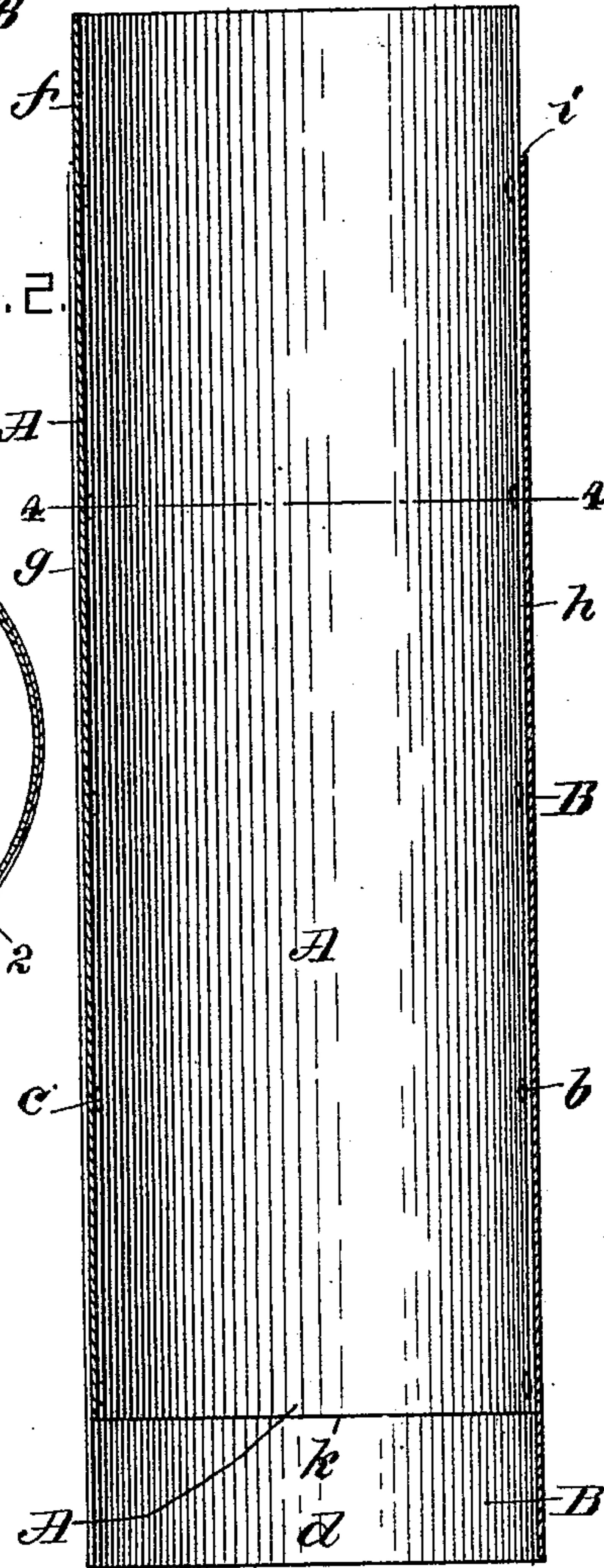


Fig. 4.

Fig. 1.



WITNESSES.

*G. H. Marsh.*  
*Harry H. Allen.*

INVENTOR.

*William H. Noble*  
*by J. E. Schenck* *Att'y*

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Fig. 5.

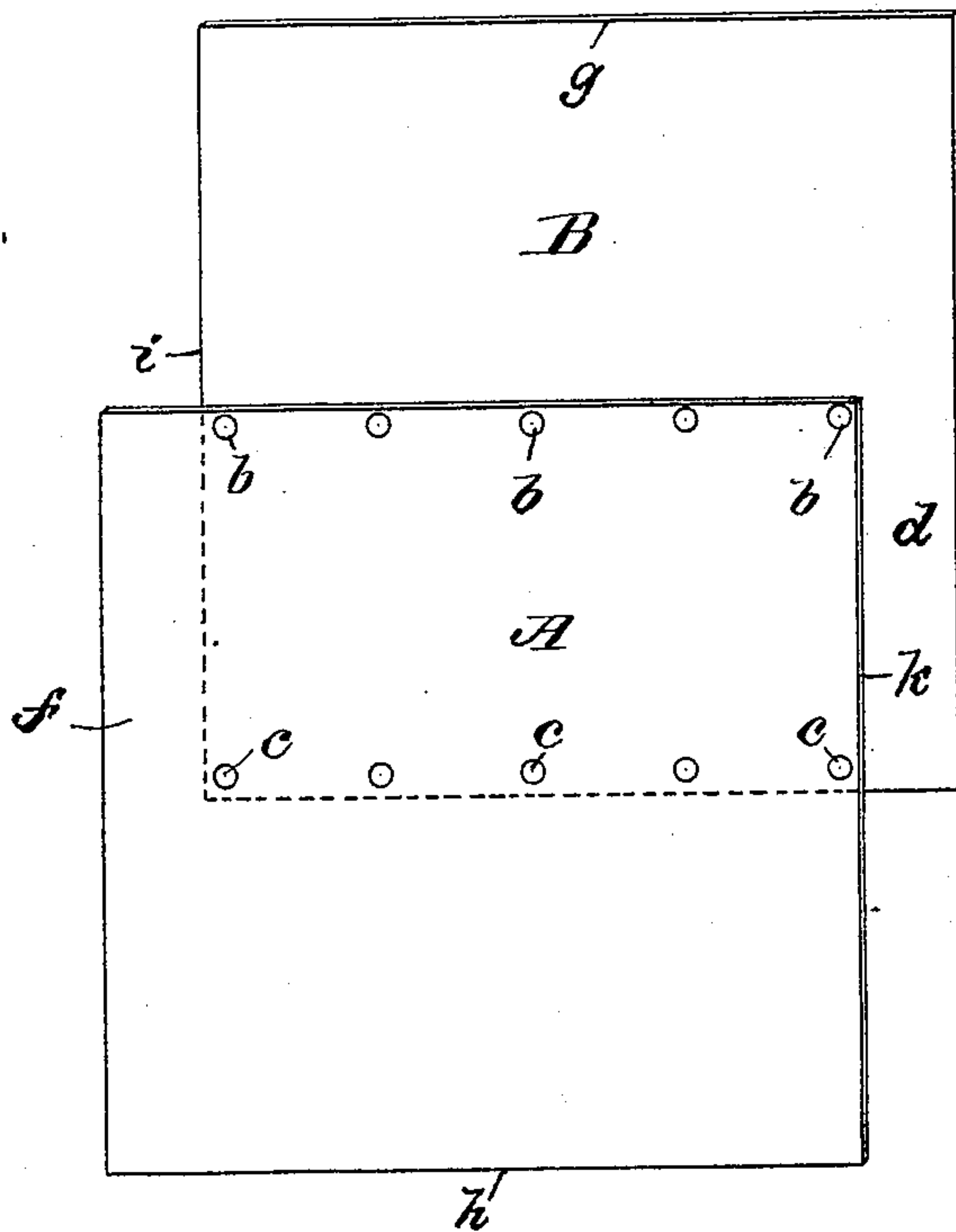
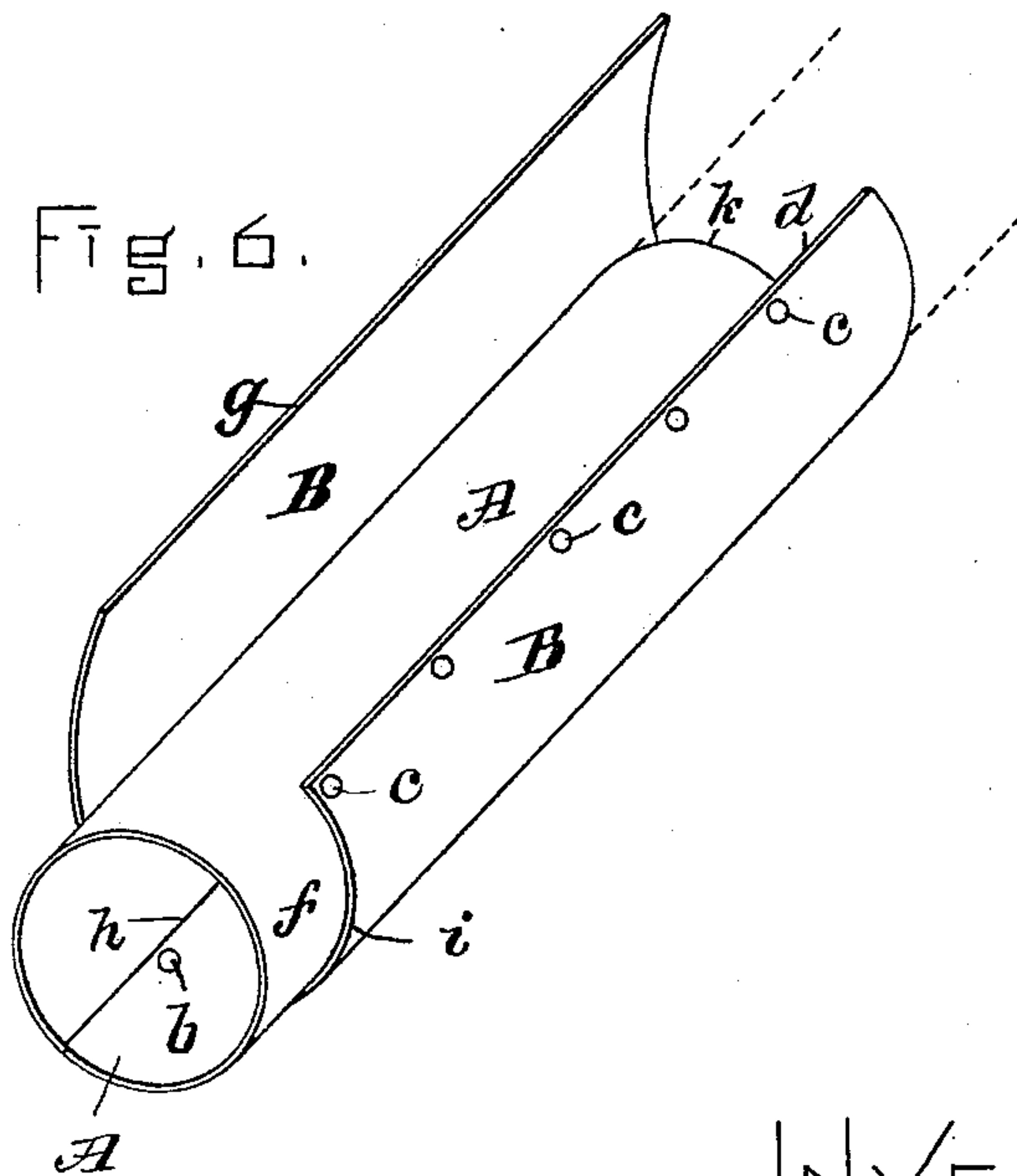


Fig. 6.



WITNESSES.

*R. Henry Marsh.*  
*Barry H. Hicken.*

INVENTOR

*William H. Noble*  
by *R. O. Schenck*  
*Atty.*



# UNITED STATES PATENT OFFICE.

WILLIAM H. NOBLE, OF CHELSEA, MASSACHUSETTS, ASSIGNOR OF ONE-HALF  
TO HENRY C. KALISH, OF SAME PLACE.

## SHEET-METAL TUBING.

SPECIFICATION forming part of Letters Patent No. 460,651, dated October 6, 1891.

Application filed April 16, 1891. Serial No. 389,210. (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 Tubing, 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 my improved sheet-metal tubing. Fig. 2 is a longitudinal vertical section through a piece of the same on the line 2 2 of Fig. 4. Fig. 3 is a longitudinal section representing the ends of two pieces joined together. Fig. 4 is a transverse section on the line 4 4 of Fig. 2. Fig. 5 is a view representing the two plates or pieces of sheet metal which form a section of my improved tubing, said pieces being secured together with the edge of one extending beyond that of the other and ready to be rolled around a mandrel or "former." Fig. 6 is a perspective view representing the manner in which the two plates of sheet metal are rolled to form the tube.

My invention has for its object to produce a sheet-metal tube or pipe which shall possess great strength and durability, and in which the seams, as well as the joints between the sections or lengths, will be flush both on the inside and outside, thus giving the tube a perfectly smooth inner and outer surface throughout its entire length.

To this end my invention consists in a double tube or pipe composed of two thicknesses or pieces of sheet metal put together with flush break-joint seams in such manner as to form a socket of single thickness at one end of the tube and a portion of single thickness at the other end adapted to fit the socket of the adjacent section or piece of pipe with which it is to be connected, as hereinafter more particularly set forth, and pointed out in the claims.

The tube is made in sections of any desired length, each section being composed of two plates or thicknesses A B of sheet metal, preferably sheet-iron dipped in a bath of tin. These plates A B are first placed one upon

the other, as seen in Fig. 5, with the edge of one overlapping or extending beyond the edge of the other in the direction of the length of the tube, and after being so placed these plates are secured together at the edges in any suitable manner, preferably by two lines of rivets *b c*, which thus serve to hold the plates together while being rolled around a mandrel or former. (Not shown.) By thus arranging the two plates so that one will extend beyond the other, as shown, they will when rolled up form a tube provided with a socket *d* of single thickness of metal at one end and a projecting portion *f* of single thickness at the other end, which will fit into the socket *d* of the adjacent section of pipe to which it is to be attached, as seen in Figs. 1, 2, and 3.

The plate B, which forms the outside of the tube, is of slightly greater width than that of the plate A, which forms the inside of the tube, to enable the edges of the former to meet when the two are rolled together, as seen in Fig. 6. In rolling the two plates A B together upon a mandrel or former to form the pipe, the edges of the inner plate A are first brought together, butting squarely against each other, as seen in Fig. 6, after which the edges of the outer plate are butted squarely together and the free edge *g* riveted to the inner plate on a line parallel with the line of rivets *c*, as seen in Fig. 1. The edge *h* of the inner plate is then riveted to the outer plate in any suitable manner by hand or by means of suitable mechanism, the two seams being on opposite sides of the tube and being perfectly flush or smooth as well as very strong and reliable. By thus riveting the two squarely-buttressed edges of the outer plate to the inner plate and the edges of the inner plate to the outer plate at different points not in line with each other, as shown, the seams will break joints, thus rendering the tube perfectly tight and avoiding any liability of its breaking away along the line of seams or longitudinal joints, as is liable to occur with the ordinary "lock-seam," in which the metal is frequently cracked or injured in folding over the edges to form the seam. The section or length of pipe thus made is then galvanized or dipped into a bath



of tin in the ordinary manner, the heat of the bath into which it is dipped serving to fuse the tin on the contacting-surfaces of the plates A B, which causes them to be firmly united or soldered together and the seams at the same time more completely closed at the edges of the plates.

The above-described tubing may be corrugated, if desired, either during the operation of forming the tube or after it has been completed.

Double-thick sheet-metal tubing made as above described possesses great strength and durability, while at the same time the interior and exterior present perfectly smooth surfaces, the seams being perfectly flush. Furthermore, when two lengths or sections of tubing are fitted together, the end of the portion *f* of one will fit against the shoulder *k* at the inner end of the socket *d* of the other, while the outer end of the said socket will fit against the shoulder *i* on the outside of the adjoining length of tube, as seen in Fig. 3, thus forming a smooth, strong, and reliable joint perfectly flush on the outside and inside.

My improved tubing is especially well adapted for water and hot-air conductors, speaking-tubes, and stove-pipes; but will be found equally useful for many other purposes on account of its great strength and durability.

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

1. A double tube or pipe composed of two thicknesses or plates of sheet metal secured together with the edge of one plate overlapping or extending beyond the edge of the other in the direction of the length of the tube to form a socket of single thickness at one end of the tube and a portion of single thickness at its opposite end adapted to fit within the corresponding socket of the adjacent piece of tubing to which it is to be attached, said plates being riveted or fastened together along the lines of the longitudinal

seams, said seams being arranged to break joints, substantially as set forth.

2. A double tube or pipe composed of two pieces or thicknesses of sheet metal placed one upon the other, with the edge of one overlapping and extending beyond the edge of the other in the direction of the length of the tube to form a socket of single thickness at one end of the tube and a portion of single thickness at its opposite end adapted to fit within the corresponding socket of the adjacent piece of tubing, leaving the inner and outer surfaces smooth and flush at the joints, the two edges of each plate being riveted or secured to the other plate in such manner that the longitudinal seam of one plate will break joints with the other plate and leave the exterior and interior surfaces of the tubing smooth or flush throughout its entire length, substantially as set forth.

3. A double tube or pipe composed of two thicknesses or plates of tinned sheet metal secured together with the edges of one plate overlapping and extending beyond the edges of the other in the direction of the length of the tube to form a socket of single thickness at one end of the tube and a portion of single thickness at its opposite end adapted to fit within the socket of the adjacent piece of tubing to which it is to be attached, said plates being united or fastened together along the line of the longitudinal seams, said seams being arranged to break joints, and said tube being galvanized, whereby the coating of tin upon the contacting surfaces of the plates will be fused, and the said plates thereby firmly united or stirred together, substantially as set forth.

Witness my hand this 11th day of April, A. D. 1891.

WILLIAM H. NOBLE.

In presence of—

P. E. TESCHEMACHER,  
HARRY W. AIKEN.