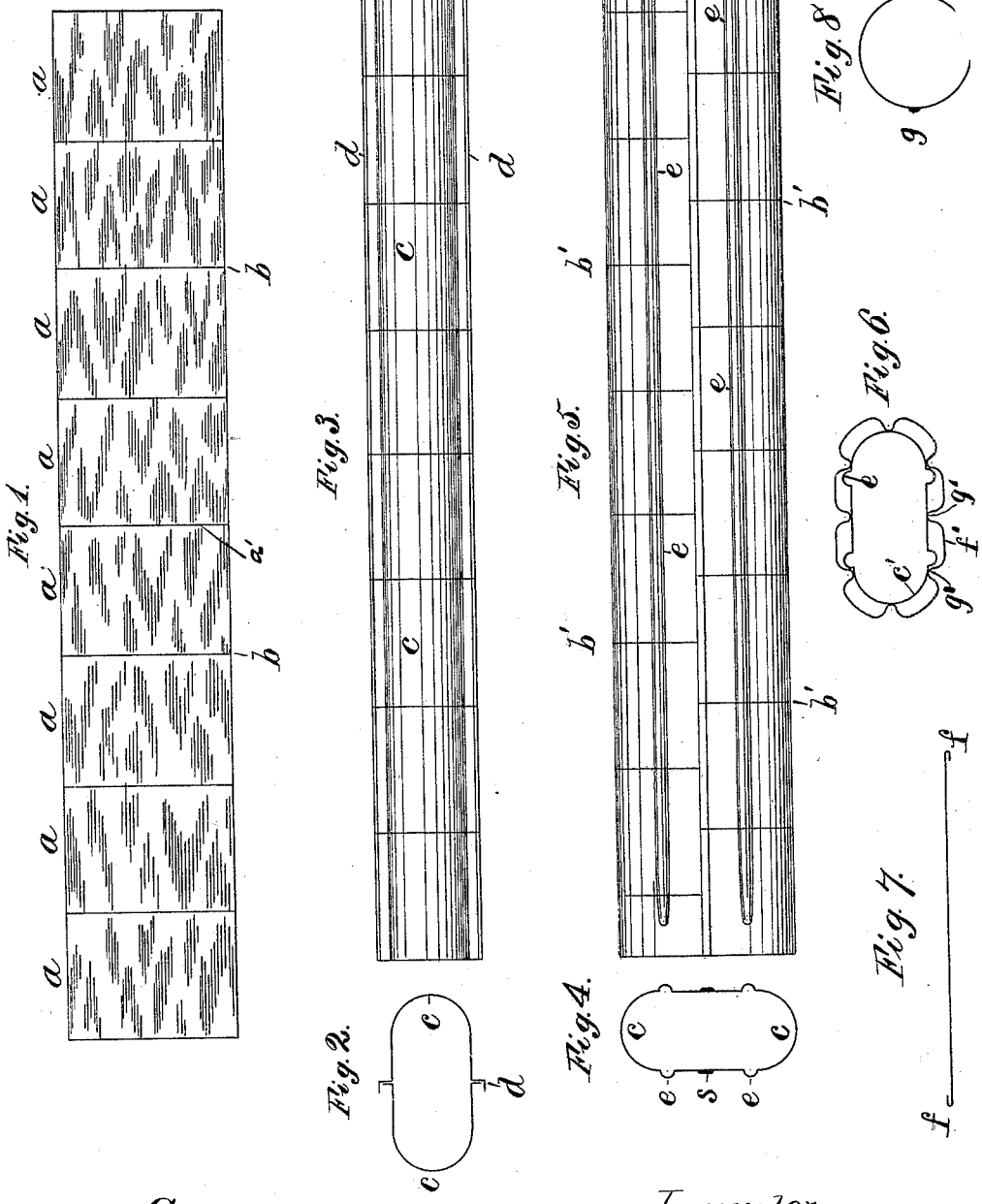
(No Model.)

J. WHITE.

SHEET METAL PIPE.

No. 421,366. Patented Feb. 11, 1890.



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UNITED STATES PATENT OFFICE.

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SHEET-METAL PIPE.

SPECIFICATION forming part of Letters Patent No. 421,366, dated February 11, 1890.

Application filed June 12, 1889. Serial No. 313,986. (No model.)

To all whom it may concern:

Be it known that I, JAMES WHITE, a citizen of the United States, residing at Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Sheet-Metal Pipe, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of this invention is partly to utilize larger blanks in the manufacture of pipes, so as to produce longer lengths at a single operation of the bending-tools, and partly to provide a construction adapted to furnish an air-space around furnace-pipes when carried through buildings adjacent to wood-work.

The invention consists, primarily, in a blank formed of a suitable number of tin sheets secured together by their edges, thus forming transverse joints across the blanks. The longitudinal edges of such blank would thus be intersected by the joints between the several sheets, and the whole blank would be treated in the subsequent process of making the pipe the same as a single sheet has heretofore been treated. Heretofore it has been common in forming lengths of furnace-pipe to make short lengths, which are first wholly shaped and completed and then united together by slip-joints, whereas by my construction a sufficient number of sheets to make a long pipe are first united together, and may then be formed into a pipe with very little more expense than the short pieces heretofore made.

The invention will be understood by reference to the annexed drawings, in which—

Figure 1 shows a blank for one side of a pipe-length. Fig. 2 represents in end view two such blanks shaped in readiness for seaming. Fig. 3 is a side view of one of such shaped blanks. Fig. 4 is an end view of the pipe, formed by seaming such pipes together, with ribs pressed in the sections to stiffen the same. Fig. 5 is a view of the flat side of such length of pipe, with the ribs terminated short of one end to facilitate the fitting of the pipe-lengths by slip-joints. Fig. 6 shows one pipe of such construction inserted within another ribbed internally, the pipes being thus separated to form a longitudinal air-space. Fig. 7 is the end of a blank for making the single-seamed pipe, the end of which is shown with the seam at *g* in Fig. 8. The pipes shown in the other figures are formed in two longitudinally-divided sections, each section requiring a blank formed of several sheets.

In Fig. 1 the blank is shown formed of eight sheets *a* of tin-plate, united at their longer edges *a'* by seamed joints *b*, the joints being transverse to the longitudinal edges of the blank, and the blank being of the same length as the intended pipe, and of width suitable to form the entire pipe, as shown in Fig. 8, or to form one of the longitudinally-divided sections *c*. (Shown in Figs. 2 to 5.) To form the blank into an entire pipe the opposite edges of the blank would be hooked, as shown at *f* in Fig. 7, and then seamed together by any suitable tools.

Two blank-sections adapted to form one pipe are shown in Figs. 2 and 3, and shaped each by bending such a blank to form one-half of the pipe, the edges of the sections being longitudinally flanged at *d*, in readiness for seaming. Such bending and flanging of the blanks are readily performed in the cornice-brakes and cornice-presses now generally used for bending sheet metal, and they are as readily bent when six or eight feet in length as a single small sheet of the same width. The two longitudinal sections to form a length of pipe being thus prepared, they are readily united by a longitudinal seam *s*, with suitable tools, with very little more labor than a part of such length. By forming each blank of a number of small sheets light tin-plate may be used, and to stiffen the resulting pipe I press it, preferably after it is otherwise finished, in suitable dies, to form ribs *e*, which may be projected upon either the inside or outside of the pipe, as preferred. The ribs, as shown in Fig. 5, are preferably stopped short of one end of the pipe to facilitate the fitting of the ends together by a slip-joint, as usual. Where it is desired to form

a double pipe with intervening air-space to protect the wood-work around such furnace-pipe, the ribs furnish a convenient means of holding the outer casing the required distance from the furnace-pipe. In such case I preferably form the casing f', as shown in Fig. 6, with inwardly-projecting ribs g', adapted to fit against the inner pipe c', and thus secure the required stiffness in the outer pipe with the use of such thin sheet as I am enabled to utilize by forming my blank to envelop but one-half the circumference.

In practice I prefer to join the edges a' of the sheets of which I form my blanks in a continuous operation in suitable seaming-tools, and thus produce a strip of great and indefinite length, from which I afterward cut off blanks suited to form the desired longitudinal pipe-sections. It will be obvious that when two or more of such blanks are shaped and seamed together to form a pipe the transverse joints b' in the pipe would not extend all the way around, but, as shown in Fig. 5, the joints in one blank would be wholly independent of those in the other. Such a pipe plainly shows in its construction that it was not made in short parts, completed separately, and united at their ends, as in such case the end joints would extend all the way around the pipe. Such a construction with transverse seam-breaking joints can only arise with a pipe formed of a transversely-seamed blank in longitudinally-divided sections, by which features my invention is clearly distinguished from any pipe formed in transversely-divided lengths or sections, as has commonly been made before.

The advantage of my invention consists partly in the diminution of the labor which is saved by operating upon much larger blanks than usual, and partly in the facility it affords to use smaller sheets of tin, which are lighter in weight and cheaper for their area than those heretofore used in forming a pipe with transversely-divided sections, in which latter case much larger sheets are commonly used.

By forming longitudinal ribs e in the finished pipe I impart to such thin tin the desired stiffness, and as the class of pipes for which my invention is primarily intended is wholly protected and not exposed to wear or abuse the thinness of the tin-plate is not detrimental.

It is obvious that the advantages of my invention may be secured by forming the pipe in three or more longitudinally-divided sections, and that such modification of the invention permits its application to larger pipes, or permits the use of narrower blanks if found desirable.

By making my blanks of suitable width to embrace only a portion of the circumference of the pipe I am enabled to use smaller sheets of tin, which are relatively cheaper, because thinner, than the large sheets which are commonly used in the endeavor to make each part of the pipe as long as possible with such single sheets.

My invention, although illustrated in connection with furnace-pipes, may be applied to the manufacture of other pipes of any desired form.

It will be noticed in the finished length of pipe that the transverse joints in the blank form seams running around the pipe, whereas the joints running around the pipe made by former constructions are not seamed joints, but are merely slip-joints either soldered or unsoldered, as may be desired.

By the processes heretofore used it has not been convenient to form a seamed joint around the pipe; but in my invention, in which the blank is first formed by seaming together a number of small sheets, the seaming machinery long in use may be utilized with the result of producing the pipe in longer lengths, having the distinguishing mark of seamed joints running transversely around the pipe in the finished article. Longitudinal sections for such pipe may be made and sold as an article of manufacture, and may obviously be packed by fitting one within the other in a very much smaller compass than the pipes themselves, and my invention thus forms an article of extensive manufacture among those who possess tools of the required character, while the bent sections may be sold and seamed together (upon a long mandrel) by those who desire to use them.

The sections, fully shaped and flanged for seaming, thus constitute an article of manufacture adapted for sale in the manner set forth.

Having thus set forth my invention, what I claim herein is—

1. A sheet-metal pipe having one or more longitudinal sections united by one or more longitudinal seams, and each section consisting in a series of tin sheets united at their edges by seams, as and for the purpose set forth.

2. The sections adapted for the formation of sheet-metal pipes, consisting each in a number of thin sheets secured at their edges into a long blank, and bent to form half of the pipe, and flanged at its longitudinal edges to seam to the adjacent section, substantially as herein set forth.

3. A sheet-metal pipe having two or more longitudinal sections united by seams with ribs pressed in the sections from one end nearly to the other end, as set forth, and the respective sections being formed of a series of sheets of tin united at their edges, as and for the purpose set forth.

4. A sheet-metal pipe having two or more longitudinal sections united by seams with ribs pressed outwardly upon the pipe, in combination with a casing having ribs pressed inwardly, as and for the purpose set forth.

5. A sheet-metal pipe having two or more longitudinal sections united by seams with ribs pressed outwardly upon the pipe, in combination with a casing fitted outside such ribs to form an air-space, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES WHITE.

Witnesses:
R. J. SLANDORFF,
J. B. DAVENPORT.