(No Model.)

C. S. HAMLIN.

SHEET METAL PIPE.

No. 586,179. Patented July 13, 1897.

FIG. I.

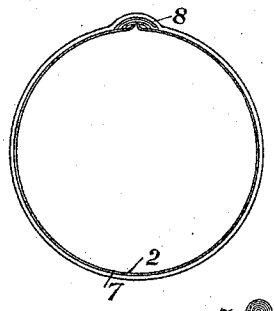


FIG. II.

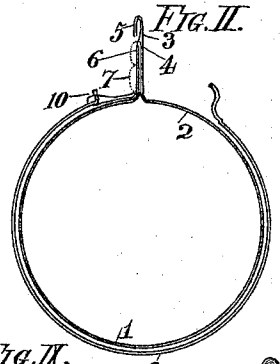


FIG. III.

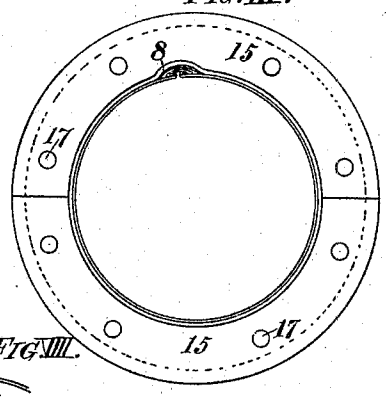


FIG. IX.

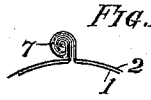


FIG. VIII.

FIG. V.

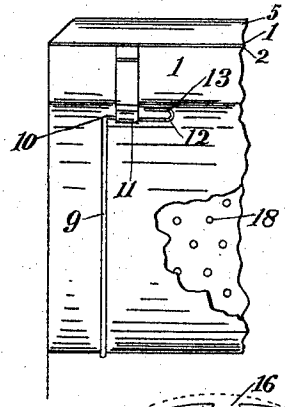


FIG. IV.

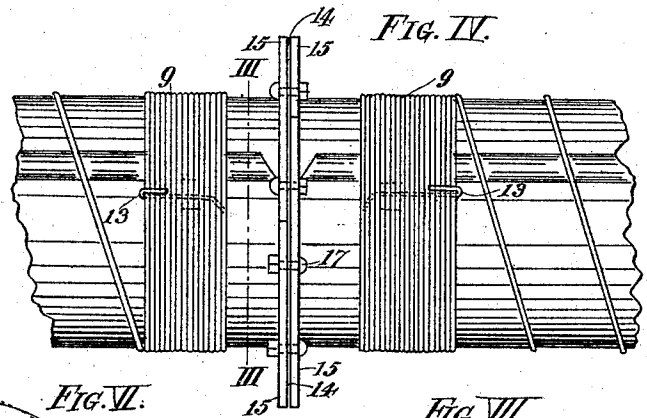


FIG. VI.

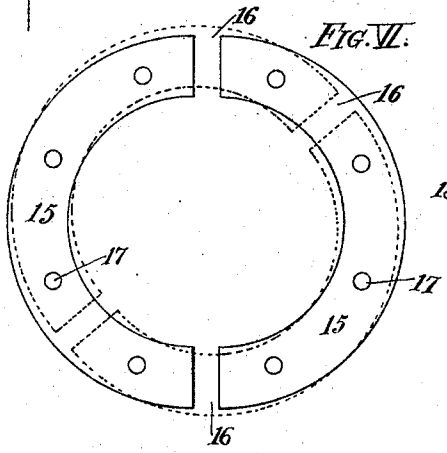
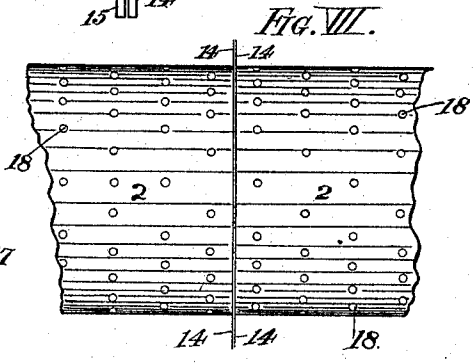


FIG. VII.



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UNITED STATES PATENT OFFICE.

CHARLES S. HAMLIN, OF LOS ANGELES, CALIFORNIA.

SHEET-METAL PIPE.

SPECIFICATION forming part of Letters Patent No. 586,179, dated July 13, 1897.

Application filed October 1, 1896. Serial No. 607,610. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. HAMLIN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Sheet-Metal Pipes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to certain new and useful improvements in the manufacture of sheet-metal pipes; and my invention consists in certain features of novelty hereinafter described and claimed.

Figure I represents an end elevation of pipe without the flange or coupling-ring. Fig. II is an end elevation showing the pipe in a partially-completed state. Fig. III represents a transverse section taken on line III III, Fig. IV. Fig. IV is a detail view showing two sections of the pipe secured to each other by means of the coupling-rings. Fig. V is a detail view showing manner of securing the end of binding-wire and also showing the perforated inner sheet of the pipe. Fig. VI is a side elevation of the coupling-rings, showing the manner in which their joints are broken. Fig. VII is a detail view showing the inner perforated plate of pipe. Fig. VIII is a detail view showing manner of securing the edges of the metal pipe together. Fig. IX shows a further step in the manner of securing the edges of the pipe together.

Referring to the drawings, 1 represents an outer and 2 an inner sheet of metal, which are rolled into circular form, their edges united to each other and the pipe bound so as to resist pressure from within. The outer sheet 1 is somewhat longer than the inner sheet 2, with the result that when the edges have been brought together, as shown in Fig. II, a portion of the outer plate will extend beyond the ends of the inner plate, as shown at 3, the ends of the inner plate stopping at 4. This enables me to form a fold 5 in the edges of the outer plate without in any way binding the edges of the inner plate. (See Fig. II.) After the fold 5 has been formed in the edges of the outer plate I then form a fold, as shown in dotted lines at 6, which includes both the edges of the outer plate and the edges of the inner plate, being the second fold of the outer plate and the first fold of the inner plate. I then form an additional fold, (shown in dotted lines at 7,) which includes both the inner and outer plates, into the position as shown in Fig. IX. I then by means of suitable machinery or instrument flatten down the fold 7 onto the body of the pipe, forming a bead 8, that will effectually prevent the passage of liquid under a considerable degree of pressure, but in order to further strengthen the pipe, where it is desired to produce a pipe that will resist a heavy pressure of fluid from the inside, I bind the pipe with a suitable binding-wire 9, the end of the binding-wire being secured in the following manner:

10 represents a strip of the metal having its upper ends and sides cut free from the outer plate 1 and turned down, forming a loop 11. In this loop I secure the end of the binding-wire 9 by passing a right-angled portion 12 through the loop, after which I form several coils of wire around the pipe, (see Fig. IV,) the coil passing over the loop 11 and over the right-angled section 12 of the end of the wire. When a sufficient number of coils have been formed, I then bend the free end of the wire over the coils by forming a loop 13, (see Fig. V,) which prevents any possibility of the separate coils of wire spreading on the pipe, the wire then extending along the length of the pipe, as shown in Fig. IV, and secured at the opposite end of the section or at any intermediate point, if so desired.

In order to couple the sections of the pipe together, I form flanges 14 on the ends of the pipe and secure said flanges together by means of coupling-rings 15. The coupling-rings are divided, as shown at 16, which enables them to be placed on the pipe after the flanges have been formed.

I provide a series of holes 17 in the coupling-rings, by which means they may be clamped together.

The coupling-rings on the adjacent sections of pipe are placed in position so as to break joints, as shown in Fig. VI, the rings being held firmly together by means of bolts inserted in the holes 17.

After the pipe has been formed and the wire in place I secure the wire and seal up

the openings at the edges and cement the edges to the body by immersing the pipe in a galvanizing-bath, and to make the cementing process more complete I provide a series of perforations 18, preferably in the inner sheet 2 of the pipe, which permits the melted galvanizing material to run in between the two sheets, as they are expanded by the heat of the bath and then form a perfect bond between the inner and outer sheets of the pipe, the galvanizing material filling up the perforations 18 and making a smooth interior to the pipe, leaving it in the same condition as it would have been if the perforations had not been made, so far as its surface is concerned.

By making a pipe as thus described I am enabled to use a class of material that is less expensive than where two or more coils of single sheet are used, a pipe that for certain purposes has sufficient resistance merely by forming the folds in the edges, the resistance being increased for other uses by wrapping the pipe with wire, as described, and a pipe of still greater resistance formed by immersing it in a galvanizing-bath, in which the two sheets of metal, the folds in the edges, and the wire with which the pipe is wrapped are all joined and cemented firmly together, in which latter condition it will withstand most any pressure that could be desired in such a form of pipe.

I have shown a pipe constructed of two thicknesses of sheet metal, but do not desire to confine myself to any number of sheets. Neither do I desire to confine myself to perforations being made in the inner sheet, as shown, as the outer sheet may be perforated, if found desirable. The perforations may also be altered in shape, if found desirable, as I do not desire to confine myself to round perforations, as shown.

I have described the bath as formed of galvanizing material, but this may be changed, if desired, without departing from the spirit of my invention, as asphaltum or other material may be used, if found desirable.

I claim as my invention—

1. As a new article of manufacture a sheet-metal pipe formed of an inner sheet of one width and an outer sheet of a greater width with a fold first formed in the edges of the outer sheet and then formed of the edges of the two sheets combined, substantially as set forth.

2. As a new article of manufacture a sheet-metal pipe having one or more rolled sheets of varying width, the edges of the outer rolled sheet being first secured together by folding and then folded collectively with the edges of the inner rolled sheet into one or more folds, substantially as set forth.

3. In a sheet-metal pipe the combination of one or more sheets of different widths, being rolled into pipe form, the outer rolled sheet being first folded at its edges upon itself and then folded together with the inner rolled sheet into one or more folds and then formed into a bead and pressed down against the body of the pipe and suitably secured in said position.

4. In a sheet-metal pipe the combination of one or more sheets of metal rolled to form a pipe and having their edges secured; of a loop formed out of the body of the pipe to which one end of the binding-wire is secured, said binding-wire being coiled about the pipe to give the same additional strength, substantially as set forth.

5. In a sheet-metal pipe the combination of a loop formed from the body of the pipe of a wire wound about the pipe having a right-angle extension inserted in said loop and then coiled over the loop and over the ends of the wire, and having the ends of the wire bent back upon the coils to hold them in position, substantially as set forth.

6. In a sheet-metal pipe the combination of two or more sheets rolled into pipe shape and having perforations in one or more of said sheets for the purpose of admitting galvanizing material, when the pipe has been immersed in a galvanizing-bath, substantially as set forth.

7. As a new article of manufacture the pipe formed of inner and outer sheets of metal, with the edges secured together, and having perforations formed in one of said sheets and a filling of galvanizing in the interstices between the sheets and in said perforations, substantially as set forth.

CHARLES S. HAMLIN.

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J. E. KOEBERLE.