

C. M. WALES & C. BASKERVILLE.
MANUFACTURE OF PIPES.
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1,280,909.

Patented Oct. 8, 1918.

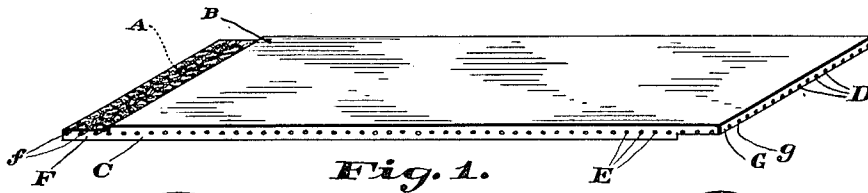


Fig. 1.

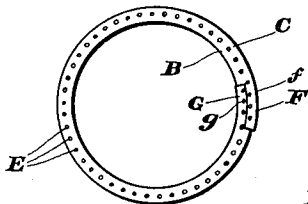


Fig. 2.

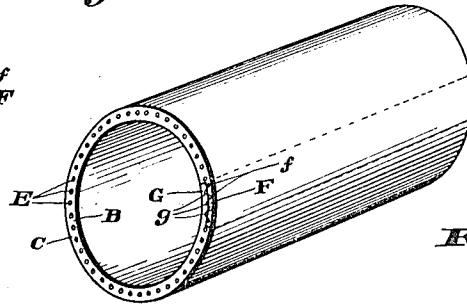


Fig. 3.



Fig. 4.

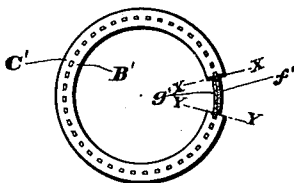


Fig. 5.

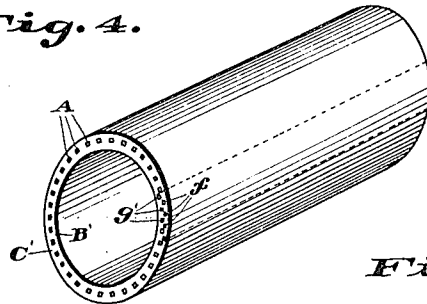


Fig. 6.

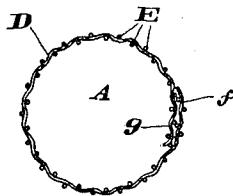


Fig. 7.

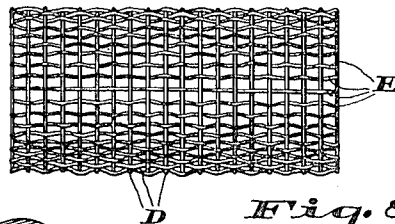


Fig. 8.

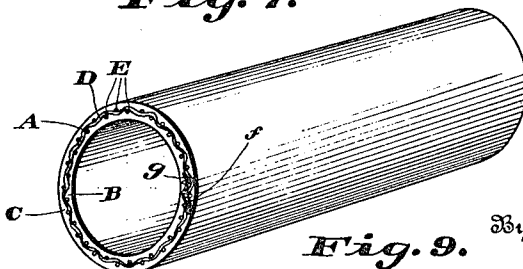


Fig. 9.

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UNITED STATES PATENT OFFICE.

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MANUFACTURE OF PIPES.

1,280,909.

Specification of Letters Patent.

Patented Oct. 8, 1918.

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To all whom it may concern:

Be it known that we, CHARLES M. WALES and CHARLES BASKERVILLE, citizens of the United States, and residents of the borough of Manhattan, city of New York, county and State of New York, have made certain new and useful Improvements in the Manufacture of Pipes, of which the following is a specification.

10 The object of the invention is to produce a pipe having a lead or a lead alloy coating which is secured to a ferrous reinforcing member that is preferably in the form of a gauze, netting or perforated sheet. Such a
15 pipe is useful where it is desired to have strength and at the same time a lead or lead alloy coating whereby the pipe will not be subject to attack by many acids.

As illustrating certain manners in which
20 the invention may be realized reference is made to the drawing forming a part of this specification and in which drawing,

Figure 1 shows in perspective one form
25 of blank which may be employed in making a pipe.

Fig. 2 shows the same blank when bent into circular form prior to the overlapping ends being united so as to complete the pipe.

Fig. 3 is a perspective view of the finished
30 pipe made from the blank shown in Fig. 1.

Fig. 4 is a perspective view of another form of blank which may be employed in the making of a lead pipe having a ferrous reinforcing member.

35 Fig. 5 is an end view of the blank after the same has been bent into substantially circular form.

Fig. 6 is a perspective view of the pipe
40 made by the employment of the blank shown in Fig. 4.

Figs. 7 and 8 are, respectively, end and side views of a reinforcing member which may be employed in the manufacture of a lead pipe.

45 Fig. 9 is a perspective view of a pipe which is made by dipping the blank shown in Figs. 7 and 8 in hot lead after said blank has been properly treated.

According to the present invention a ferrous reinforcing member, which is preferably in the form of a wire gauze, netting or perforated sheet, of either iron or steel, is properly cleaned as by pickling in any suitable acid in any well known manner. When
55 cleaned it is preferably dipped in a zinc

chlorid or antimony chlorid solution. The function of this solution is to serve as a flux to maintain the ferrous reinforcing member in a clean condition. The reinforcing member which is, as previously indicated, preferably in the form of gauze or the like, is then dipped into a molten antimony lead alloy. The alloy will hereinafter be referred to as the alloy of binding material. This binding alloy contains approximately from
65 10 to 13% of antimony and is preferably covered with a suitable flux when in a molten condition. When the reinforcing member is thus dipped it acquires a coating of the binding material and it is now ready for
70 the reception of the main covering or coating material which is to provide the exterior of the final article.

This main covering is a chemically pure lead or an alloy containing lead. This ad-
75 ditional lead or lead alloy which provides the coating or covering may be applied to the gauze which has been dipped into the binding alloy or to which the binding alloy has otherwise been applied as by pressing
80 the treated gauze or the like into a thin layer of molten lead or lead alloy some of which molten lead or alloy is allowed to solidify and remain on the treated gauze. This dipping operation into the molten lead or lead
85 alloy may be continued until the required structure has been built up or the additional lead may be secured to the reinforcing member of gauze or the like as by placing the gauze between sheets of lead or sheets of lead alloy and passing the same between heated
90 rollers; or the additional lead or lead alloy may be applied to the gauze or the like by feeding the gauze between two troughs containing molten lead or lead alloy and which
95 troughs are constructed so as to feed out layers of molten metal against the gauze whereby the molten metal thus fed will solidify and adhere to the gauze.

According to the present invention a
100 gauze or wire netting as shown in Fig. 1 is treated in any suitable manner as above described and a body of lead is applied to opposite sides thereof so as to form two sheets B and C, so to speak, of lead that are connected to each other and also to the ferrous metal in the reinforcing member A through the medium of the binder comprising an alloy of antimony and lead. The reinforcing member shown in Fig. 1 is made as by
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weaving the wires D and E, part of which wires extend circumferentially of the pipe when the pipe is completed and the rest of which wires preferably extend along the pipe.

In Fig. 4 the reinforcing member is designated by A' and the sheets of lead which are secured thereto on opposite sides thereof are designated by B' and C'. The reinforcing member A' shown in this figure is a gauze or netting in the form of a perforated metal sheet.

The blank shown in Fig. 1 has been left with ends F and G which overlap each other when the blank is bent as shown in Fig. 2. When the ends have assumed the position shown in Fig. 2 heat and pressure are applied whereby the lead in the laps and body portion of the pipe will unite and whereby there will be formed an intimate union of lead with the overlapping portions *f* and *g* of the reinforcing member thus resulting in a pipe such as shown in Fig. 3.

It will be manifest from what has preceded that a blank, such as is illustrated in Fig. 4, can be readily made so as to comprise a ferrous reinforcing member having lead or an alloy of lead, in substantially sheet form, secured to and located on opposite sides of said ferrous reinforcing member. This blank can be bent so as to assume the circular or tubular form shown in Fig. 5 with the portions *f'* and *g'* of the reinforcing member overlapping. These overlapping portions may have a small amount of lead or lead alloy upon them besides the binding alloy or may merely be left with only some binding material thereupon whereby when lead is cast or otherwise placed into the space between the lines *x-x* and *y-y* a product will result in which a lead outer coating and a lead lining coating respectively on the exterior and interior of the pipe will be continuous and whereby the lead thus cast or positioned in place will be firmly united to the overlapping ends of the reinforcing member and will also serve to firmly unite said overlapping ends.

In Figs. 7 to 9 inclusive there is illustrated another manner of making a reinforcing pipe and this comprises the bending of a reinforcing member into the circular or tubular form shown in Figs. 7 and 8 after which it is properly treated and supplied with the lead antimony binder. This rein-

forcing member which is now in the form of a tubular blank is dipped into a lead bath and this dipping is continued until a sufficient body has been provided for the pipe.

The pipes resulting from the methods herein described are comparatively strong and self-sustaining and as they are strongly reinforced they will not bend, bulge or sag when in place. They can also be subjected to severe treatment, as by being hammered, twisted, bent or otherwise worked without destroying or injuring the connection between the lead or lead alloy coating and the ferrous reinforcing metal and thus the ferrous metal will be adequately protected so that it can continue to perform its function and will not be subjected to deleterious attacks in places where pipes of the kind herein described are liable to be used.

What we claim is:

1. A pipe of the class described comprising in combination a ferrous reinforcing member to which there is secured a continuous sheet of lead by means of a binder comprising an alloy of antimony and lead.

2. A pipe of the class described comprising in combination a wire gauze or the like of ferrous metal to which there is secured a continuous sheet of lead by means of a binder comprising an alloy of antimony and lead.

3. A pipe having an exposed surface of chemically pure lead which is reinforced by means of a ferrous wire gauze or the like, there being a lead antimony binder between said chemically pure lead surface and the wire gauze.

4. A pipe having a lead or lead alloy coating and a ferrous reinforcing member which is bent into circular or tubular form so that the ends thereof overlap, said lead or lead alloy coating being secured to said reinforcing member by means of a suitable binder.

5. A pipe having a lead or lead alloy coating and a ferrous reinforcing gauze bent into circular form so that the ends thereof overlap, said lead or lead alloy coating being secured to said reinforcing gauze through the medium of a lead antimony binder.

This specification signed and witnessed this 4th day of February A. D., 1916.

CHARLES M. WALES.

CHARLES BASKERVILLE.

Signed in the presence of—

G. McGRANN,

EDWIN A. PACKARD.