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1,869,105

JOINT FOR TUBULAR CONCRETE MEMBERS AND THE LIKE

Original Filed June 30, 1928

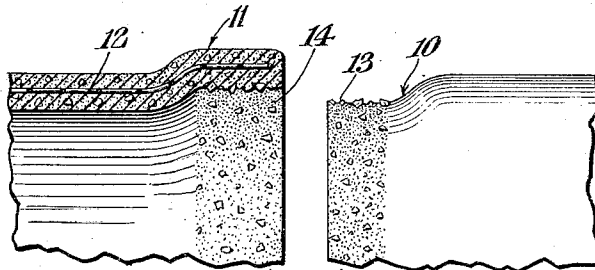


Fig. 1.

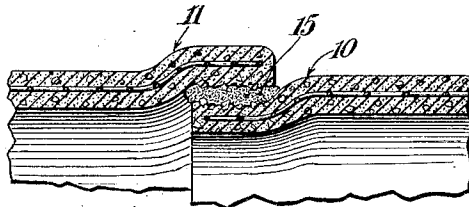


Fig. 2.

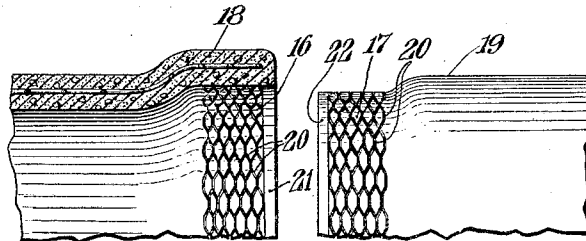


Fig. 3.

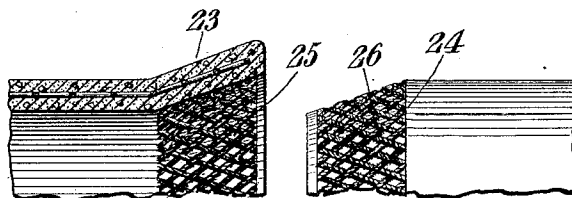


Fig. 4.

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UNITED STATES PATENT OFFICE

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JOINT FOR TUBULAR CONCRETE MEMBERS AND THE LIKE

Application filed June 30, 1928, Serial No. 289,438. Renewed April 11, 1932.

This invention relates to an improved joint construction for tubular members of concrete or the like, such as concrete piping, and to methods of forming such joints.

5 The objects of this invention include the provision of efficient, durable and relatively inexpensive joining means and methods of the class above indicated.

10 Further and more specific objects, features and advantages will clearly appear from the detailed description given below, taken in connection with the accompanying drawings which form a part of this specification and illustrate by way of example certain embodiments of the invention.

15 The invention consists in the novel features and arrangements embodied by way of example in the constructions herein described as illustrating preferred forms of the invention, together with such novel methods as are also hereinafter described.

20 In the drawing, Fig. 1 is a view partly in section and partly broken away of the cooperating joining portions of concrete piping prepared according to one phase of my invention;

Fig. 2 illustrates the manner of cementing together the parts shown in Fig. 1; and

25 Figs. 3 and 4 are views similar to Fig. 1, but showing alternative embodiments of my invention.

30 In Fig. 1 male and female joining portions of concrete piping are indicated at 10 and 11. Except for the joining portions hereinafter described, this piping may be constructed substantially according to well known methods. That is, the same may be molded of concrete or other suitable cementitious material and if desired, suitable reinforcing means as at 12 may be incorporated. The exterior surface 13 at the end of the portion 10 and also the interior surface 14 at the end of the portion 11 may be treated during or soon after the molding process in a manner such as to expose to a considerable degree the coarser aggregate particles of the concrete or other mixture. Certain methods for thus treating these surfaces are fully described in my Patents, No. 1,637,321, entitled "Method of and composition for treating concrete", issued

July 26, 1927, and No. 1,668,723, entitled "Process of and means for cementitious molding", issued May 8, 1928. According to such processes the concrete surface is treated with a suitable medication to delay or prevent the setting of the cement at the surface layers so that after the main body of the concrete is hardened, such surface layers of cement may be brushed or washed away, leaving the stone or other aggregate particles exposed to the desired degree. In the drawings Figs. 1 and 2 indicate the manner in which the coarser aggregate particles may be made to prominently protrude from these surfaces.

35 The portions 10 and 11 may be telescoped in the usual manner as indicated in Fig. 2 and the intervening space between the areas 13 and 14 may be filled with a suitable cement, which upon hardening, serves to interlock the aggregate particles projecting from the surfaces of the two members. The multitude of irregular shaped protruding aggregate particles thus not only provide desirable bonding areas cooperating with the cement 15, but also provide a large number of members equivalent to "clinchings" means, securing the two sections of pipe against longitudinal separation. Thus, an interlocking joint is provided without necessarily resorting to the expedient of extending the reinforcing means into the joint. Hence if minor cracks or fissures should appear at the joint, for example, as a result of displacements of the pipe as time goes on, there will be no reinforcing means to become exposed and corroded at the joint. Furthermore, the body of sealing cement 15, being annular in form and interlocked as above described, cannot possibly under proper conditions, work loose from the joint either as a whole or in part. The joints between the sections of pipe may accordingly be made with substantially the same or a greater degree of permanency and strength, as the other portions of the pipe.

40 If clean, relatively sharp aggregate stone is used at the surfaces 13 and 14, a true and water-tight union between the two surfaces may be formed when mortar of the proper grade is poured in.

45 In the embodiment of the invention illus-

trated in Fig. 3, the inside surface 16 and the outside surface 17 at the ends of the female and male portions 18 and 19 respectively may be made with a series of shallow grooves as at 20, so as to interlock with the sealing cement. The grooves 20 in the particular form shown may be made by lining the concrete molds with annular pieces of expanded metal either treated or untreated with set delaying medication, such as disclosed in the above mentioned patents. As the piping is removed from the molds, the expanded metal may also be removed, leaving a pattern of grooves in the concrete surface corresponding to the pattern of the expanded metal. The grooves may be made with a somewhat larger cross-sectional area if the expanded metal is medicated with the set delaying material and also the use of such material facilitates ready removal of the expanded metal without danger of cracking the peripheral edges at the ends of the pipe. To give the outermost peripheral edges greater strength, the grooves may be there omitted as indicated at 21 and 22.

According to the embodiment of the invention shown in Fig. 4, female and male pipe portions 23 and 24 are formed with cooperating areas 25 and 26 respectively formed in a manner similar to the above described members, but using a relatively wide mesh burlap or inexpensive cloth in lieu of the use of expanded metal. That is, the burlap or cloth preferably after treatment with medicated material, such as disclosed in my above mentioned patents, is applied to the surfaces of the molds so as to provide a predetermined grooved pattern as shown in the drawings. After the molds have been removed, the burlap or cloth may be readily stripped off, especially if it has been medicated. Then to join the pipe sections, the areas 25 and 26 may be brought into engagement and sealed together with cement, which will interlock with the grooves and form a permanent tight joint.

While the invention has been described in detail with respect to particular preferred examples thereof which give satisfactory results, it will be understood by those skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention and it is intended therefore in the appended claim to cover all such changes and modifications.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

The method of sealing telescoped tubular members, which comprises, molding concrete tubular members, treating the surfaces to be sealed with a set delaying agent, removing the resulting unset cement of the concrete when the members are set, and sealing and

interlocking said surfaces by introducing cement between the same.

In testimony whereof I have signed my name to this specification.

NATHAN C. JOHNSON.

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