J. G. ZWICKER.

REINFORCING COIL FOR CONCRETE PIPES.

APPLICATION FILED FEB. 1, 1917.

1,267,835. Patented May 28, 1918.

Fig. 1.

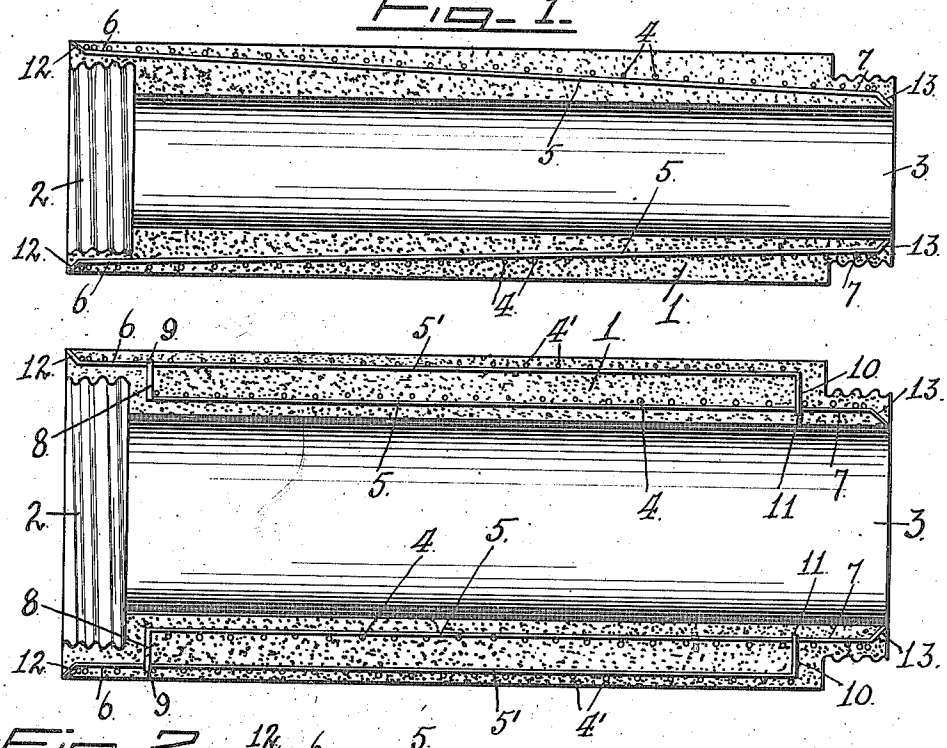


Fig. 2.

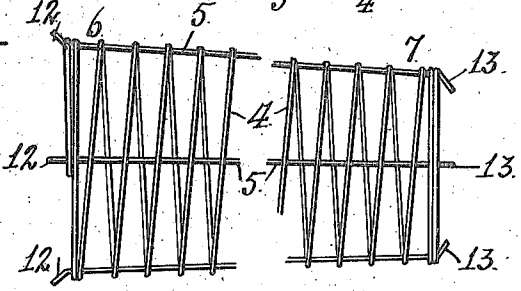


Fig. 3.

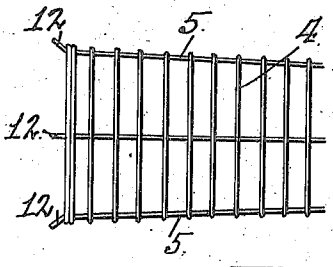


Fig. 4.

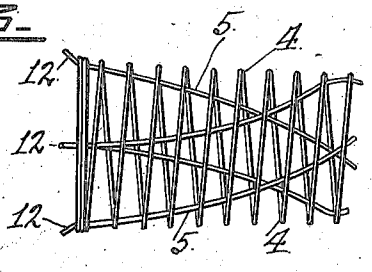


Fig. 5.

WITNESS

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REINFORCING-COIL FOR CONCRETE PIPES.

1,267,835. Specification of Letters Patent. Patented May 28, 1918.

Application filed February 1, 1917. Serial No. 145,887.

To all whom it may concern:

Be it known that I, JULIUS G. ZWICKER, a citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented certain new and useful Improvements in Reinforcing-Coils for Concrete Pipes, of which the following is a specification.

My invention relates to reinforcements for concrete articles, and more particularly to a metal wire-coil for the reinforcing of tubular concrete articles, such, for example, as pipe sections.

The object of the invention is to provide a reinforcing coil which can be easily and cheaply made, and which will combine lightness with the necessary strength and rigidity.

A further object is to provide such a coil of a form to be used in reinforcing pipe sections having threaded or over-lapping joints, and which will be self-centering when placed within the mold.

These objects will be more fully set forth in the following description, with reference to the accompanying drawings, wherein—

Figure 1 is a longitudinal section of a concrete pipe with threaded ends, showing my reinforcing coil, in one of its forms, in place.

Fig. 2 is a similar view showing another form of my reinforcing coil.

Fig. 3 is a side view broken of my reinforcing coil, of the form of Fig. 1.

Figs. 4 and 5 are views of modified types of coils.

Referring more particularly to the drawings, the reference numeral 1 designates the concrete article within which my reinforcing coil is placed, and which is here shown as a section or joint of pipe having overlapping end flanges 2 and 3, which may be formed with threads, as shown, adapted to be screwed into corresponding flanges of adjacent pipe sections, or secured to said adjacent sections by any other means, not illustrated.

The reinforcement shown in Figs. 1 and 3 comprises a coil of wire 4, preferably iron, which is wound helically over a series of longitudinally disposed members 5, which may be formed of the same wire as the helix 4. The helix wire and the longitudinal wires are secured together at their meeting points, preferably by an electric welding process, as, for example, spot-welding, so that the entire coil forms a rigid, but light structure.

For the purpose of providing reinforcement for the end flanges 2 and 3 of the pipe, I make one end of the coil of greater diameter than the other end, to enable said ends to lie within the pipe flanges 2 and 3. This is done by tapering the coil continuously, as shown in Figs. 1 and 3, so that the large end 6 may extend into the outer flange 2, and the small end 7 may extend into the inner flange 3.

Another form of coil, and particularly for the reinforcement of pipes of large diameter, is illustrated in Fig. 2. In this form the coil is formed of two cylindrical concentric portions, one partially within the other. The inner longitudinal members 5, over which is wound the inner cylindrical helix 4, are turned outwardly at their inner ends, as shown at 8, and are suitably fastened, at 9, as by welding, to the outer longitudinal members 5′, over which latter members is wound the outer cylindrical helix 4′. Similarly, the inner ends 10 of said outer longitudinal members 5′ are turned inwardly, and fastened to the inner longitudinal members 5 at 11. As in the case of the previously described tapered coil of Figs. 1 and 3, this coil has an end portion 6 of a diameter suitable for reinforcing the outer flange 2 of the pipe, and an opposite smaller end portion 7 of a proper diameter to reinforce the inner pipe flange 3, while the central portion of the coil, by its double construction, provides additional strength for the central portion of the pipe.

Referring now to both forms of coils, it will be seen that at the larger end 6, the ends of the longitudinal wires are turned outwardly, as shown at 12, so that their ends are approximately flush with the outer diameter of the pipe, at the end of the flange 2 thereof. Similarly, at the smaller end 7 of the coils, the longitudinal wires are turned inwardly, as at 13, to be approximately flush with the inner surface of the pipe at the end of the flange 3.

Thus when the coil is placed within a mold, not shown in the drawings, preparatory to the introduction of the concrete, said coil is properly centered and positioned lineally within the mold by the ends 12 and 13 of the longitudinal members, which bear

against the outer and inner mold surfaces respectively, and against the end walls thereof.

The construction of my reinforcement having its members permanently united together to form an integral structure, renders feasible the production of a reinforcement of various shapes, the tapered coil illustrated in Figs. 1 and 3 being that preferred for use in concrete pipe sections of relatively small size, and at the same time produces a structure of the maximum strength and rigidity for a given weight. Many changes, however, may be made in the form and construction of the reinforcement, without departing from the spirit of the invention, as expressed in the claims hereto appended. For example, the transverse members, instead of being in the form of a continuous coil, may be a series of rings, as shown in Fig. 4; or the longitudinal members, instead of being parallel with the axis of the coil, may be disposed angularly or spirally, as shown in Fig. 5.

I claim:—

1. As a reinforcement for concrete-pipe sections, a hollow metallic skeleton comprising longitudinally disposed members and associated circumferential members, the ends of the longitudinal members projecting beyond the terminal circumferential members, said projecting ends at one end of the skeleton being turned inwardly and those at the other end being turned outwardly to lie substantially flush with the inner and outer surfaces of the pipe respectively.

2. As a reinforcement for concrete pipe sections, a hollow metallic skeleton comprising connected concentric series of longitudinally disposed members, the inner series, at one end, projecting beyond the outer series, and the outer series, at the other end projecting beyond the inner series, the extremities of the projecting ends of the inner series being turned inwardly and those of the outer series being turned outwardly to lie substantially flush with the inner and outer surfaces respectively of the pipe, and associated circumferential members about and connected with the longitudinally disposed members.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JULIUS G. ZWICKER.

Witnesses:
WM. F. BOOTH,
D. B. RICHARDS.