Aug. 7, 1934. H. SWEET 1,969,588

METALLIC FIBER PIPE FITTING AND METHOD OF MAKING SAME

Filed Feb. 2, 1932

Fig. 1.

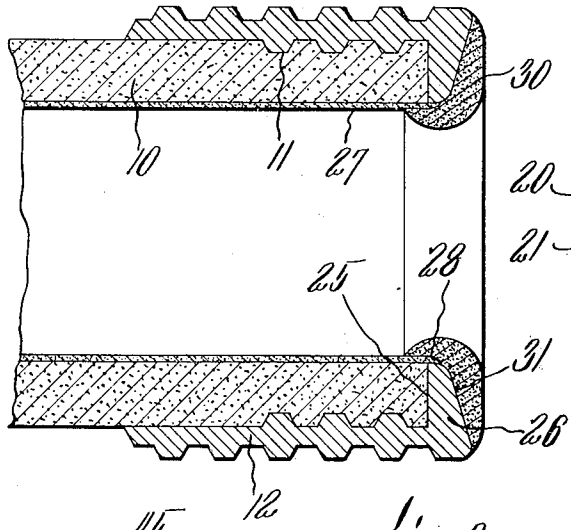


Fig. 2.

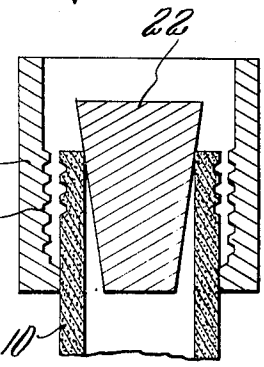


Fig. 3.

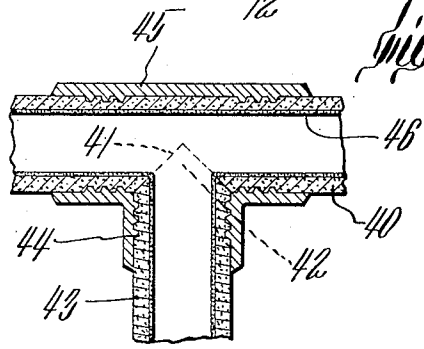


Fig. 4.

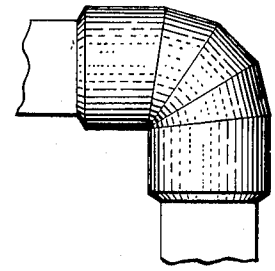


Fig. 5.

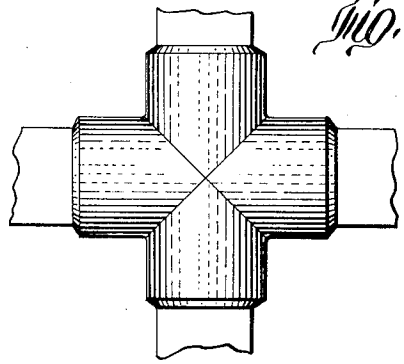
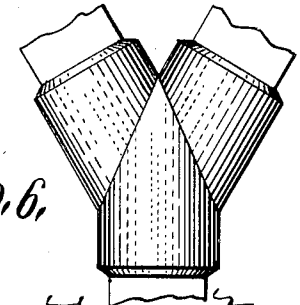


Fig. 6.



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METALLIC FIBER PIPE FITTING AND METHOD OF MAKING SAME

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Application February 2, 1932, Serial No. 590,423

5 Claims. (Cl. 285—148)

This invention relates to fiber-pipe fittings and method of making the same. Fiber piping for various uses has many recognized advantages. Such piping may be made in various ways, such for example as by winding a sheet of wet wood pulp about a mandrel under pressure until the desired wall thickness is obtained, and drying the resulting tube thus formed. The tube may be treated by impregnation with pitch or other waterproofing material to render it water repellant. By treating the interior of the tube with a suitable type of waterproofing material such as blown or oxidized asphalt, an effective lining is readily formed which renders the tube suitable for use as water piping. While fiber piping has come into extended use and has been employed for an increasing variety of purposes, the question of satisfactory couplings has always been a considerable problem, various solutions of which have been employed with varying degrees of satisfaction. This invention relates to a type of fitting which can be embodied not only in such fittings as elbows, T-joints, crosses, and Y-joints, but also may take the form of an end fitting for a section of fiber coupling adapted to strengthen the end portions of the section and to facilitate the formation of a strong fluid-tight joint with another similarly equipped section of pipe. In forming fittings according to the invention, the end portions of one or more sections of fiber tube are suitably shaped as hereinafter set forth in more detail; these end portions are then inserted in a suitable die or mold; then molten metal is cast in the mold about the tube end or ends which are held in the mold, the metal entering the small surface irregularities of the fibers, as well as any additional recesses formed therein for locking purposes, and shrinking tightly against the exterior of the tube end or ends in the course of solidifying. In casting end fittings on tube sections to serve as coupling members, these fittings may be suitably molded in the casting operation so as to present an exterior surface which is screw-threaded or otherwise formed to interact with a corresponding coupling member. Cast metal fittings of the kind hereinafter described can be used to advantage not only on felted fiber tubing of the type referred to, but also on other varieties of fiber pipe such as wood stave pipe or helically wound paper tubing.

For a more complete understanding of the invention, reference may be had to the description thereof which follows, and to the illustration thereof of certain embodiments on the drawing, of which,—

Figure 1 shows in section an end portion of a section of fiber pipe having a coupling fitting thereon embodying the invention.

Figure 2 is a cross-sectional view of an end portion of a pipe section together with a suitable molding means by which a coupling fitting may be cast on the pipe end.

Figure 3 is a sectional view of a T-joint embodying the invention.

Figure 4 is an elevation of an elbow.

Figure 5 is an elevation of a cross.

Figure 6 is an elevation of a Y-joint.

In making the coupling fitting illustrated in Figure 1, the end portion of a section 10 of fiber pipe may be provided with a number of recesses 11 which, as shown on the drawing, may take the form of circumferential grooves. A sleeve 12 of suitable metal is thereupon cast about the end portion of the pipe 10, the metal entering the grooves 11 to interlock therewith and to provide longitudinal strength for the finished joint. It is evident that the recesses 11 may consist of one or more dents or depressions in place of the grooves, any such recess being effective to receive the molten metal to form a locking tongue or knob of metal projecting inwardly into the wall of the pipe section. A suitable mold 20 may be employed to receive the pipe end about which the fitting is to be cast. The interior surface of this mold may be suitably shaped with a screw-thread matrix as at 21 so that a screw-thread will be cast on the exterior surface of the sleeve 12. In order to keep the interior of the tube 10 clear of the metal, a suitable plug or core 22 may be employed in conjunction with the mold 20. The melting point of the metal employed in the formation of the sleeve 12 must be as low as possible in order to minimize the charring of the fiber and also to avoid as far as possible difficulties arising from the boiling of pitch with which the tube may have been previously impregnated. To this end, lead or an easily melting alloy of lead may be employed. If desired, other metals or alloys such as aluminum, brass, or an equivalent, can be employed. It is desirable that if the pipe is intended for use as water piping, the metal employed be of such a nature as to resist rust or corrosion. The threaded fitting may be employed to enter a corresponding coupling collar (not shown) which may be of metal, fiber, or any other convenient material. The metal sleeve 12 is preferably extended over the end face 25 of the tube 10, as at 26, so that the end face of the tube is protected from mechanical injury and from deterioration through possible access of

water or other liquid thereto. After the sleeve 12 has been cast on the end portion of the tube 10, and has been allowed to cool, it may be machined to remove burrs and to shape the end portion 26. The end face may be beveled as at 31 to hold packing material for sealing the joint when the pipe section is coupled to another. The interior of the pipe is then coated as at 27 with suitable waterproofing compound such as blown asphalt. This coating preferably extends over the boundary line 28 between the fiber and metal at the end of the pipe 10. A coating of soft asphalt or mastic may then be applied to the end of the pipe fitting as at 30, this mastic covering the end face of the metal sleeve 12 and extending within the pipe to lap the end of the inner coating 27 and also the boundary 28 or junction line between the fiber and metal. When the pipe section is joined to another section, this mastic coalesces with a similar mastic coating on the end of the other pipe section so as to seal the joint between the end faces of the abutting fittings.

Figure 3 shows in section a T-joint embodying the invention. In making a joint of this type, a section of fiber pipe 40 is notched as at 41 to receive the suitably shaped end portion 42 of a second piece of fiber piping 43. The latter may be notched or grooved as at 44 for locking purposes as hereinbefore described. The pipe sections 40 and 43 are then held together in a suitable mold in the position shown and a sleeve 45 of metal is poured into the mold to surround the joined portions of the pipe sections, so that a strong T-fitting is thereby constructed. Thereafter, the interior of the fitting may be suitably supplied with a coating 46 of waterproofing material, this coating serving to seal the lines of juncture between the two pipe sections and to provide a smooth interior surface for the fitting.

To form an elbow as illustrated in Figure 4, a sufficient number of wedge-shaped pipe sections may be placed together to connect ends of a pair of pipe sections arranged at an angle to each other as shown, this structure being supported in a mold and surrounded by a unitary casting or sleeve of metal.

In like manner, four sections of fiber piping may be shaped at their ends and held together in a suitable mold to form a cross coupling as illustrated in Figure 5.

Figure 6 shows in elevation a Y-joint fitting formed by holding suitably shaped ends of three pipe sections together and casting a unitary metal sleeve about the joint to form the fitting as shown. In each case, after the exterior metal sleeve has been cast, the interior of the fitting may be provided with a smooth coating of suitable waterproofing material to seal the lines of juncture between the section ends.

It is evident that other shapes of fittings can be readily constructed in similar fashion.

I claim:—

1. A fitting for fiber piping, comprising a section of fiber pipe, and a molded sleeve of metal having a relatively low melting point cast about a portion of its exterior surface.

2. A fitting for fiber piping, comprising a section of fiber pipe having an exterior recess, and a molded sleeve of metal having a relatively low melting point cast about a portion of the exterior surface of said pipe and filling said recess.

3. A fitting for fiber piping, comprising a section of fiber pipe, and a molded sleeve of metal having a relatively low melting point cast on an end portion of said pipe, said sleeve having a screw-thread molded in the exterior surface thereof.

4. A fitting for fiber piping, comprising a section of fiber pipe having an exterior recess adjacent to an end thereof, and a molded sleeve of metal having a relatively low melting point cast about the end portion of said pipe and filling said recess, said sleeve having a screw thread molded in its exterior surface.

5. A fitting for fiber piping, comprising a section of fiber pipe with circumferential grooves in the outer surface of an end portion thereof, a molded sleeve of metal having a relatively low melting point cast about said end portion and filling said grooves, and a coating of waterproof mastic covering the end edge of the fitting and sealing the surface boundary between the fiber and metal.

HARRY SWEET.