

The invention relates to a system for joining, free of weld points, pipes butting together at right angles in temperature-control equipment, and where two pipes in line with each other butt against an intermediate one, there being a bore through the latter pipe (1) in line with the butting pipes, while a common bush (2) is inserted in the ends towards each other of the butting pipes, passing through the intermediate pipe and screwing into one of them.

Such a piping system is typically installed on the outside walls of a building at the facade cladding. In this the pipe sections forming the uprights and cross-members are heated by solar radiation, so that they can be used for room heating. Thus the piping system forms a feed and return system for a medium delivering the heat, and a feed and return system for that transporting it away. Erection of such a piping system presents problems, since the connecting points must fulfil certain conditions from the technical point of view to give satisfactory flow.

Under Swiss Patent Application 529 963 a system of this kind is known, in which sealing of the butting pipes to the intermediate through pipe is by sealing rings, fitting between the outside of the through pipe and the end faces of the butting pipes, and clamped between them. The sealing ring can be very easily damaged when screwing the butting pipe home, causing sealing problems between the parts to be joined together.

The object of the invention is to form a system of



this kind such as to prevent damage to the sealing rings on assembly.

In the invention this object is achieved by an auxiliary bush with external thread, screwed into the other butting pipe and fitting closely on to part of the end portion of the bush. Part of the bush end portion (1) which protrudes beyond the auxiliary bush has an external thread, on to which an annular nut with internal thread screws, clamping the bush against the auxiliary bush. On assembly of the equipment in accordance with the invention, the bush is screwed at one end into one of the butting pipes. The auxiliary bush is screwed into the other butting pipe, so that a sealing ring can be fitted at the end of the butting pipe equipped with the auxiliary bush, and which is merely pressed when tightening the pipes up. Twisting of the sealing ring during assembly is thus avoided. To screw the annular nut home, this can be provided with an internal hexagon at the end. To allow liquid flow in the through pipe, the external diameter of the middle tubular section of the bush is preferably smaller than the internal diameter of the through pipe.

To accommodate a sealing O-ring, the ends of the butting pipes can preferably be provided with annular recesses, in which the O-ring can be inserted. Due to the similarity of the liquid currents intersecting in the piping system, it is no problem if the joint between the pipes at the intersection point is not sealed one hundred

percent. It is merely essential that absolute sealing from the outside is guaranteed.

The invention is explained more precisely below by means of several examples and with reference to the drawings. These show;

Fig.1 A design of a pipe intersection in sectional view,

Fig.2 The connecting bush in Fig. 1, and

Fig.3 A view in the direction of Arrow III in Fig. 1.

Fig.1 shows a through pipe (80) and containing a bore (82) through it. A pipe (84) and a pipe (86) are joined to this pipe (80). The pipe (84) has an internal thread (88) at the end and a recess at the outer end (90) in which an O-ring (92) is inserted. A long bush (94) is screwed into the pipe (84), its shape being particularly as shown in Fig. 2. The bush (94) comprises four sections, namely an end section (96) screwing into the pipe (84), a middle section (98) extending through the through pipe (80), a smooth section (100) extending in the outer end portion of the butting pipe (86), and a section (102) with an external thread adjoining the smooth section.

The butting pipe (86) has an internal thread (104) at the end, into which an auxiliary bush (106) is screwed. This auxiliary bush, which has a smooth inner surface, protrudes beyond the pipe (86) and forms with a recess (108) at the end of the pipe (86) an annular groove (110), in which an O-ring (112) is inserted, to form a seal between the pipe (86) and the pipe (80). An annular nut (114) screwed on to the external thread (102) of the outer section of the bush (94) secures the bushes, the butting pipes,

and

the through pipe together.

To assemble the pipes (84) and (86) with the pipe (80) the bush (94) is screwed into the pipe (84). The bush is then passed through the bore (82) in the pipe (80). After this the end of the pipe (86) equipped with the auxiliary bush (106) is passed over the portions (100,102) of the bush (94), the O-ring (112) having been previously inserted in the groove (110). From the side of the pipe (86) the annular nut (114) is now inserted, and screwed home by a suitable long tool on to the external thread of the portion (102) of the bush (94). To allow this to be done, the annular nut contains an internal hexagon (116), as can in particular be seen from Fig.3.



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PATENT CLAIMS

1. A device for joining together, without welding, of pipes (80,84,86) butting together substantially at right angles in a pipe line system of temperature control equipment installation, in which two pipes (84,86) in line with each other butt against a through pipe (80), there being a through bore (82) formed in the through pipe (80) and which is in line with the pipes (84,86) butting against it, and in the adjacent ends of the butting pipes (84,86) a common bush (94) is inserted, passing through the through pipe (80) and screwed into one of the pipes (84,86), characterised in that an auxiliary bush (106) provided with an external screwthread is screwed into the other butting pipe (84,86) and is a close fit on a portion (100) of the end of the bush (94), that an end portion (102) of the bush (94) which protrudes beyond the auxiliary bush (106) is provided with an external screwthread for part of its length, and that an annular nut (114) provided with an internal screwthread is screwed on to this part and clamps the bush (94) against the auxiliary bush (106).

2. A device in accordance with claim 1, characterised in that the nut (114) is formed with an internal hexagon (116).

3. A device in accordance with claims 1 or 2, characterised in that the external diameter of a tubular



portion (98) is less than the internal diameter of the through pipe (80).

4. A device in accordance with one of claims 1 to 3, characterised in that the wall of the tubular portion (98) is formed with through bores.

5. A device in accordance with one of claims 1 to 4, characterised in that the ends of the butting pipes (84,86) are formed with annular recesses (90,110) to accept O-rings (92,112).