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None

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F2G
F2B
H2E
H2C

(54) Feed-through for cables and pipes

(57) A feed through ducting arrangement comprises elastic fitting members (4, 4') which fill up the empty space of the wall opening (2) and which seal under pressure against each other and on the one hand against the conduits (1) and on the other hand against the soffit (5) of the wall opening (2). For producing that pressure, disposed on the side of the wall having the larger cross-section of opening is a clamping flange (6) which extends around the periphery of the opening and which at least partially engages over the fitting members (4, 4') on the front end thereof, from the edge of the opening. The clamping flange (6) can be axially tightened towards the wall (3.1) and presses the fitting member (4, 4') axially into the reducing wall opening (2).

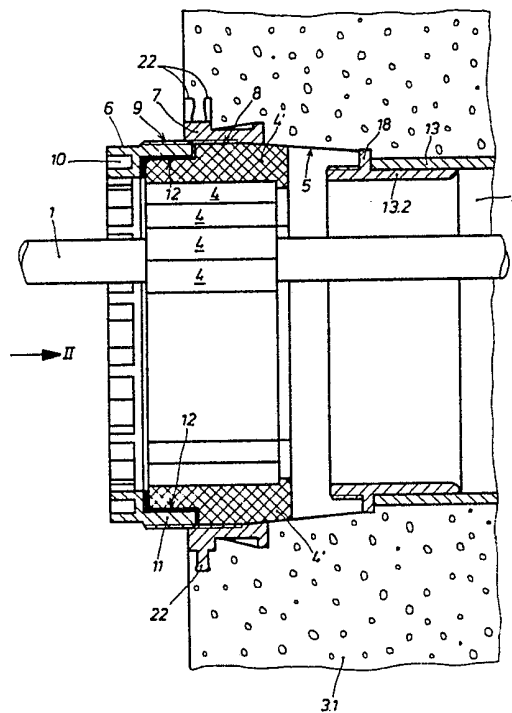


Fig.1

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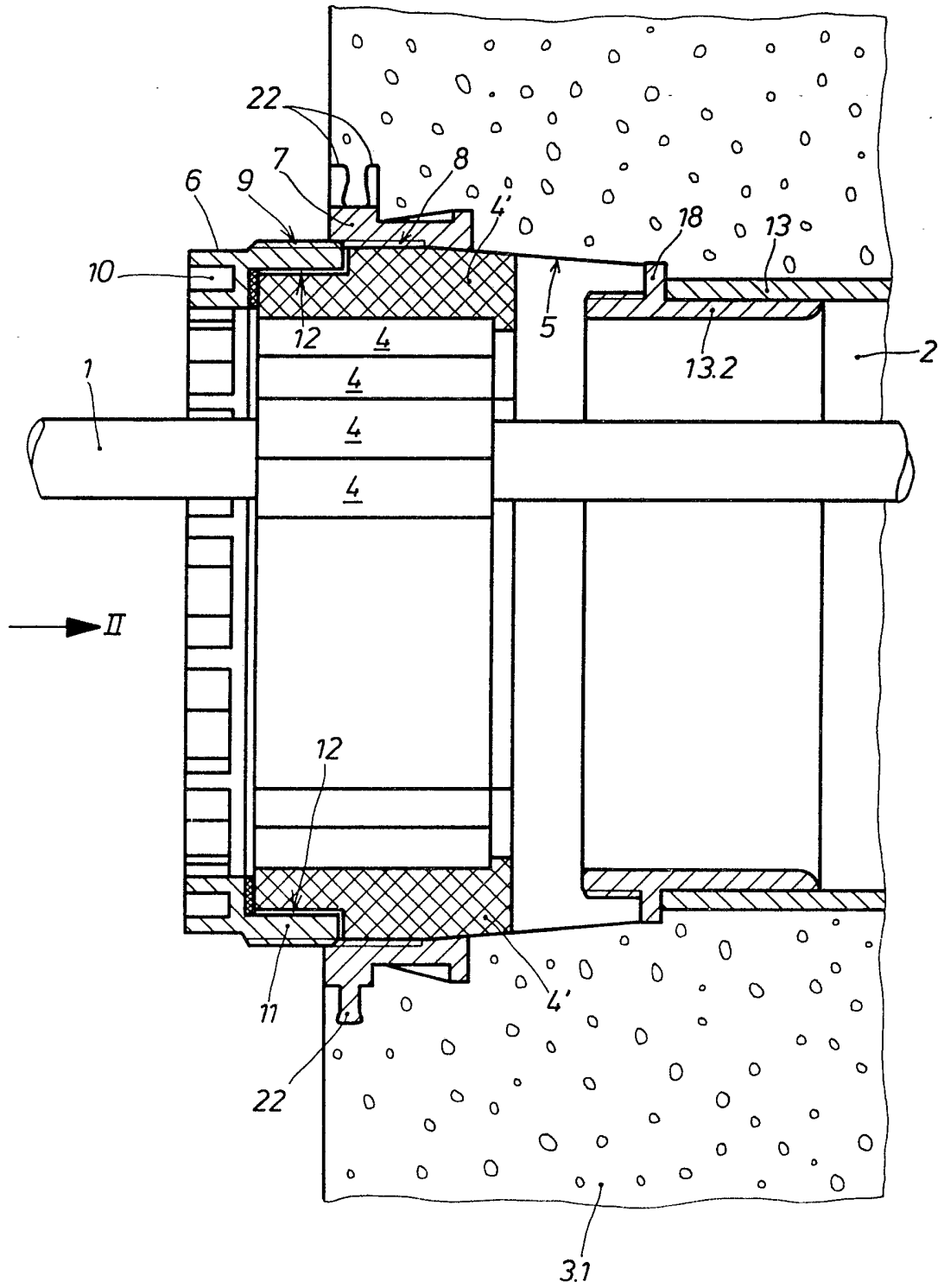


Fig.1

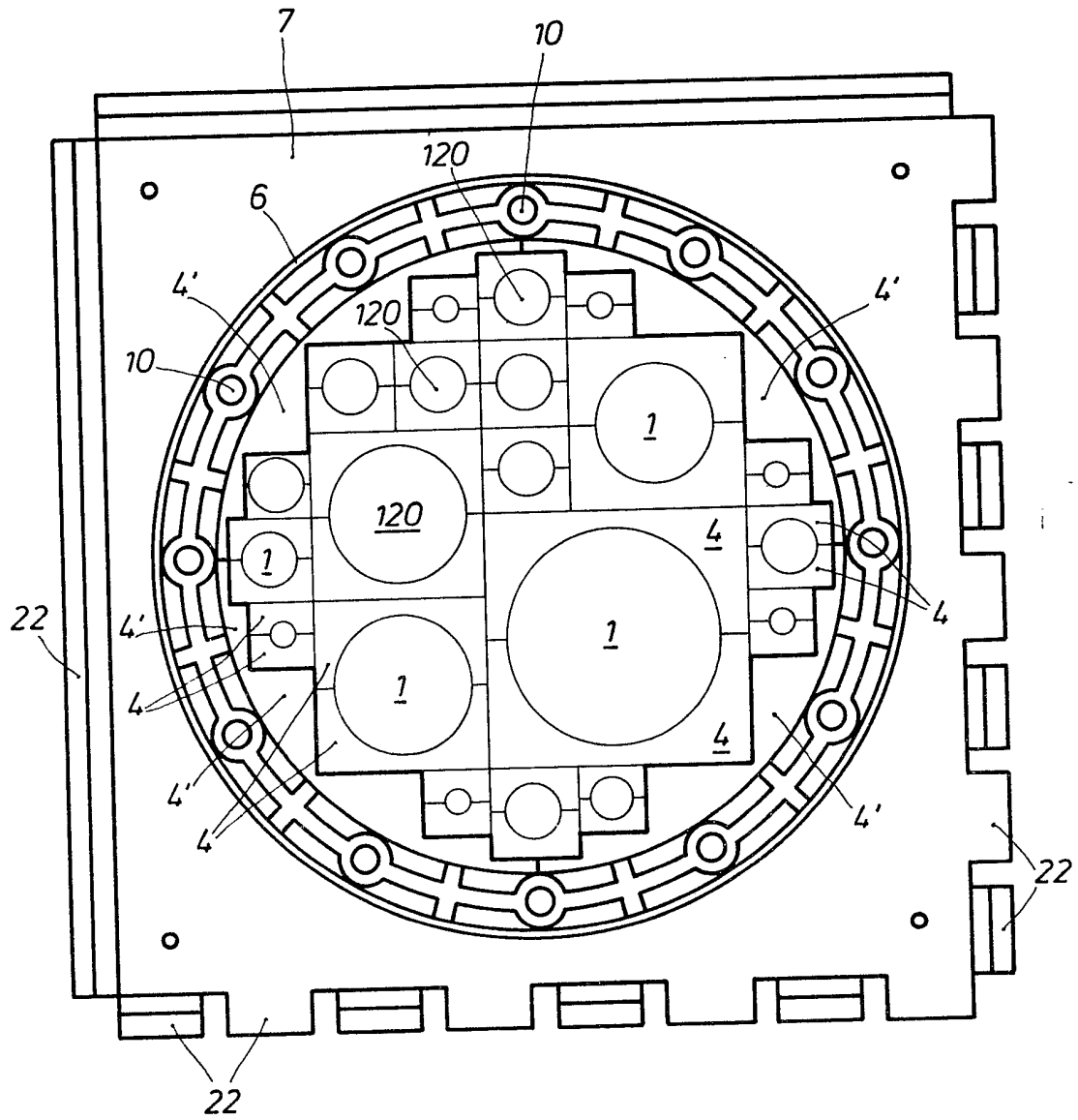
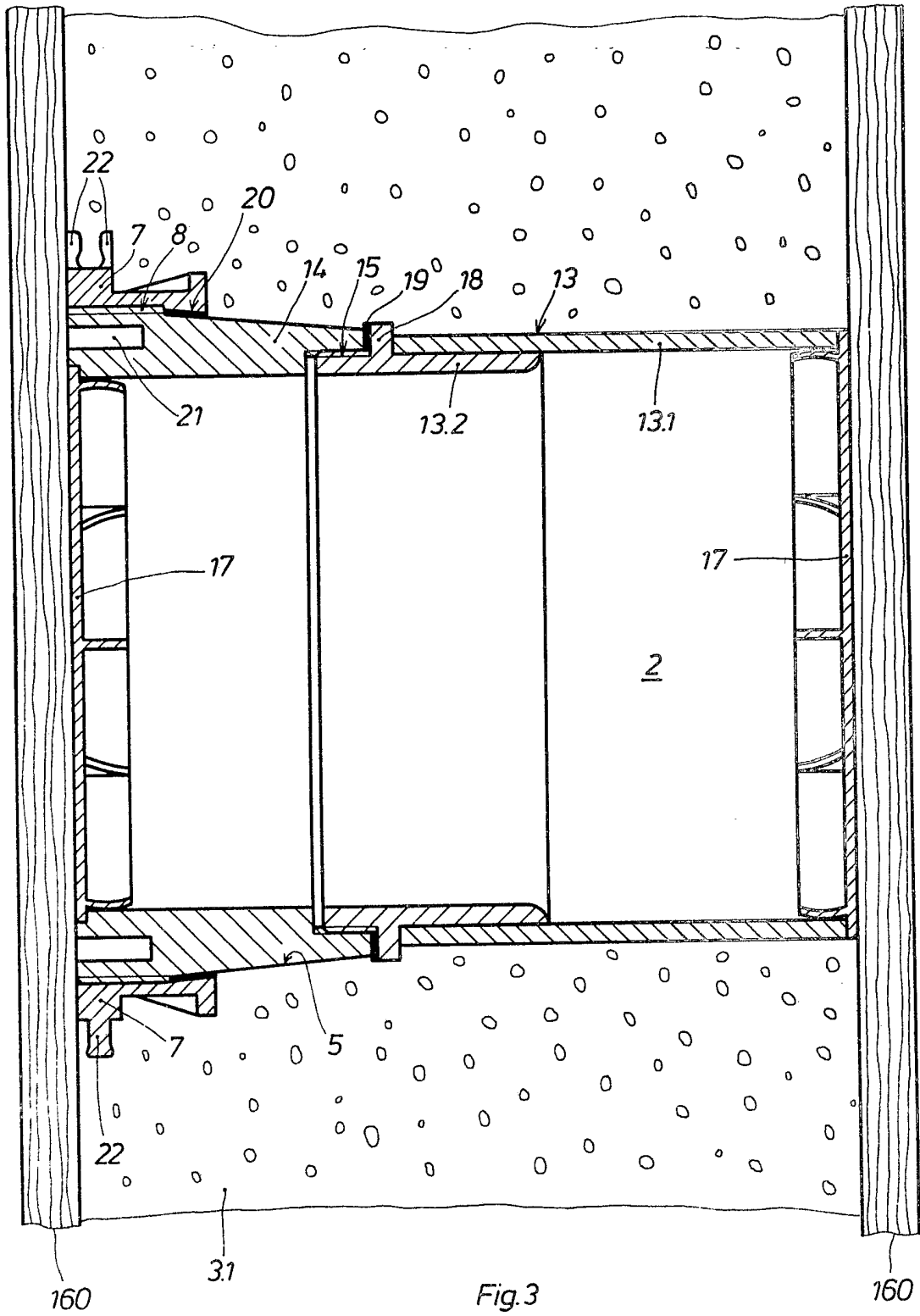


Fig. 2



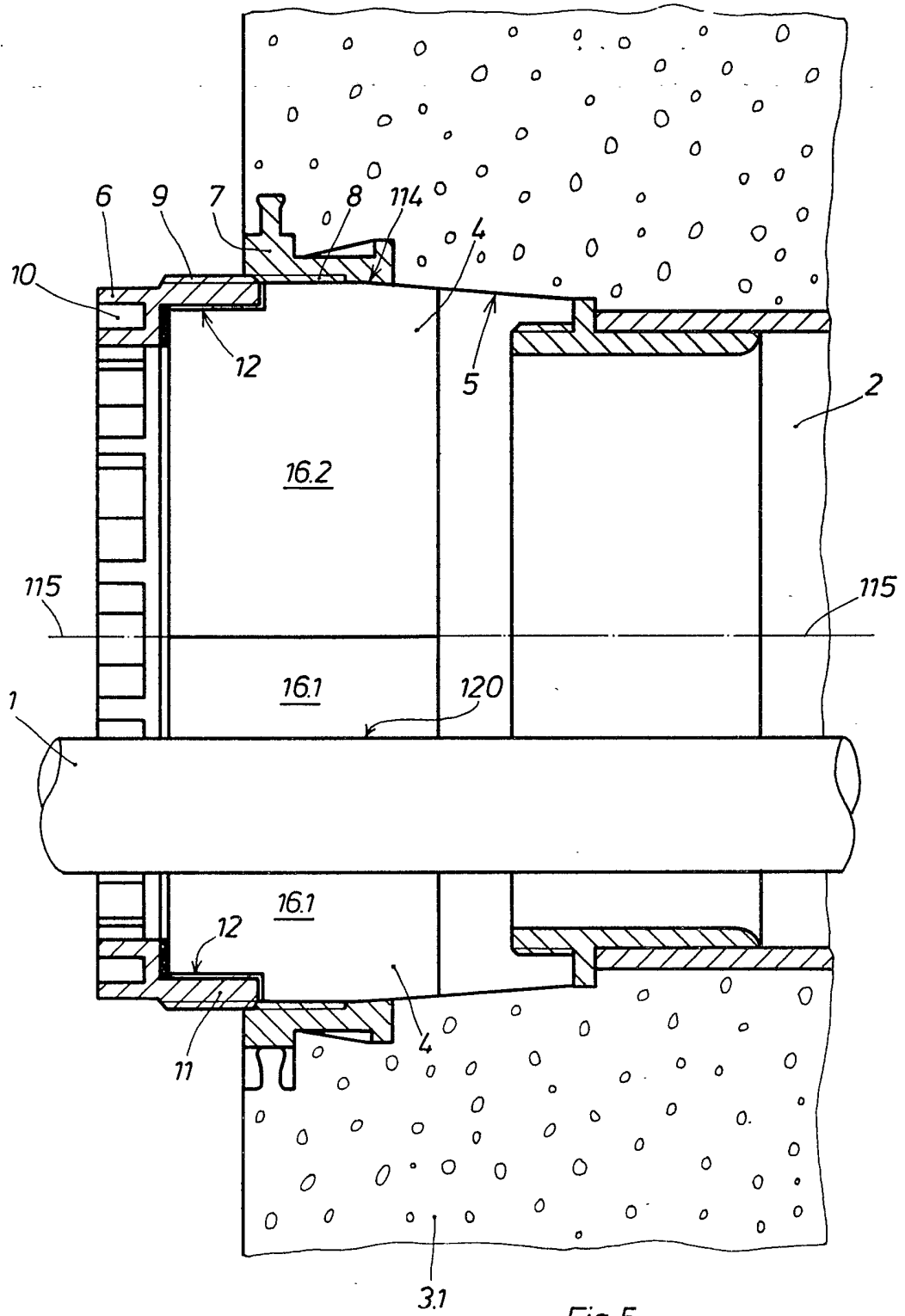


Fig.5

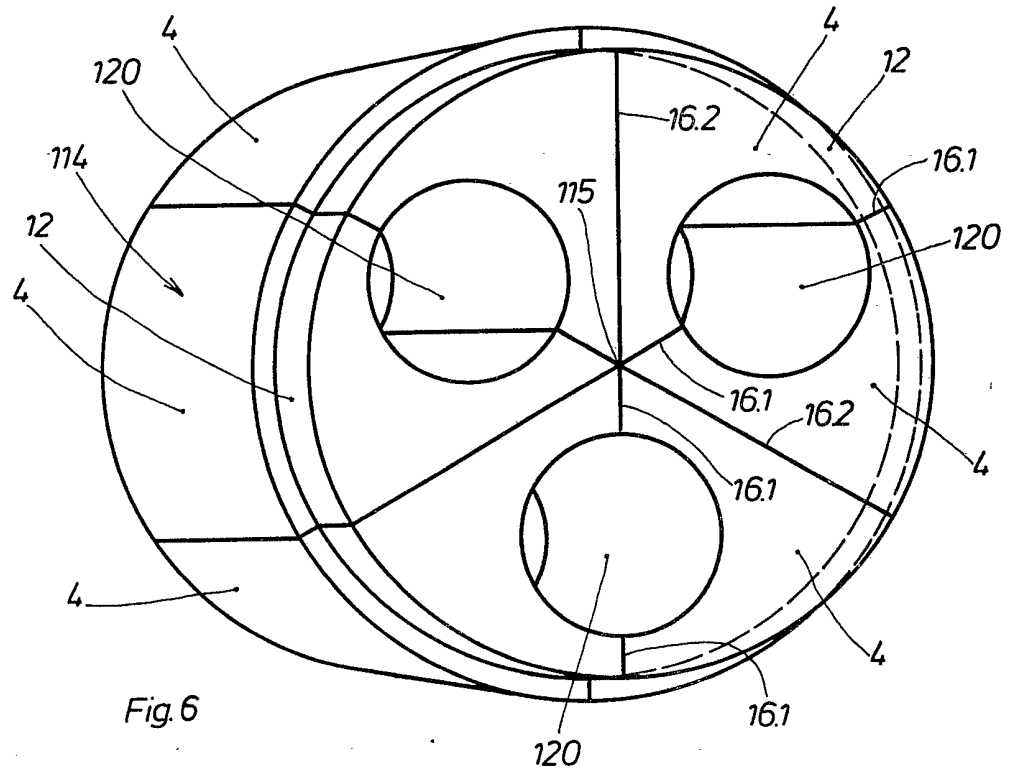


Fig. 6

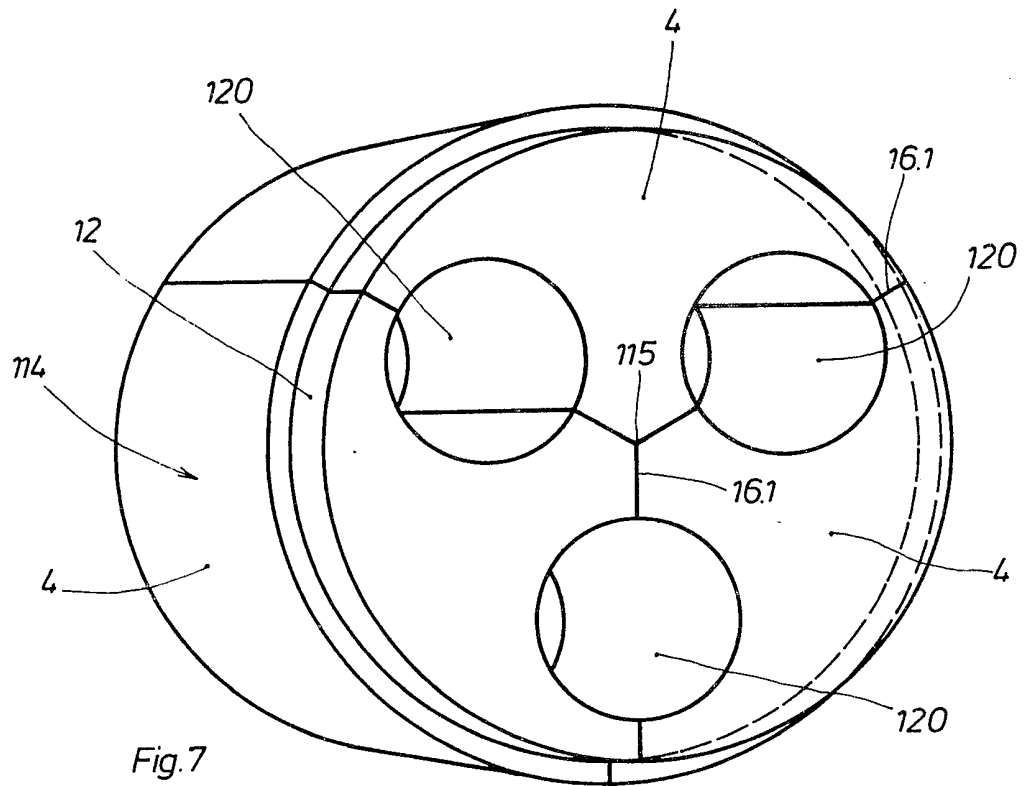


Fig. 7

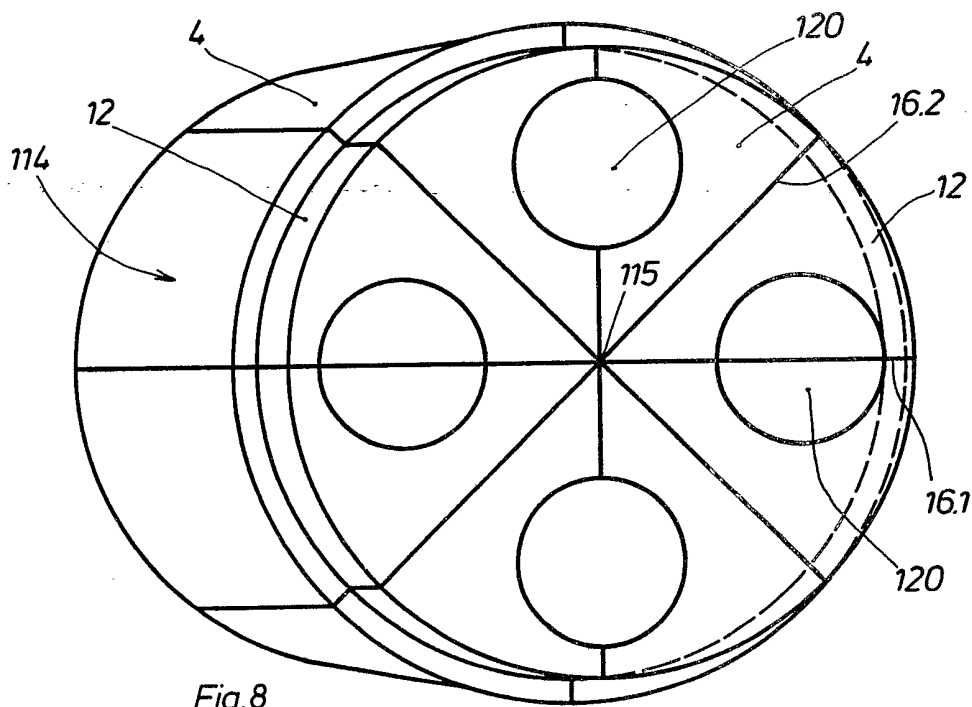


Fig. 8

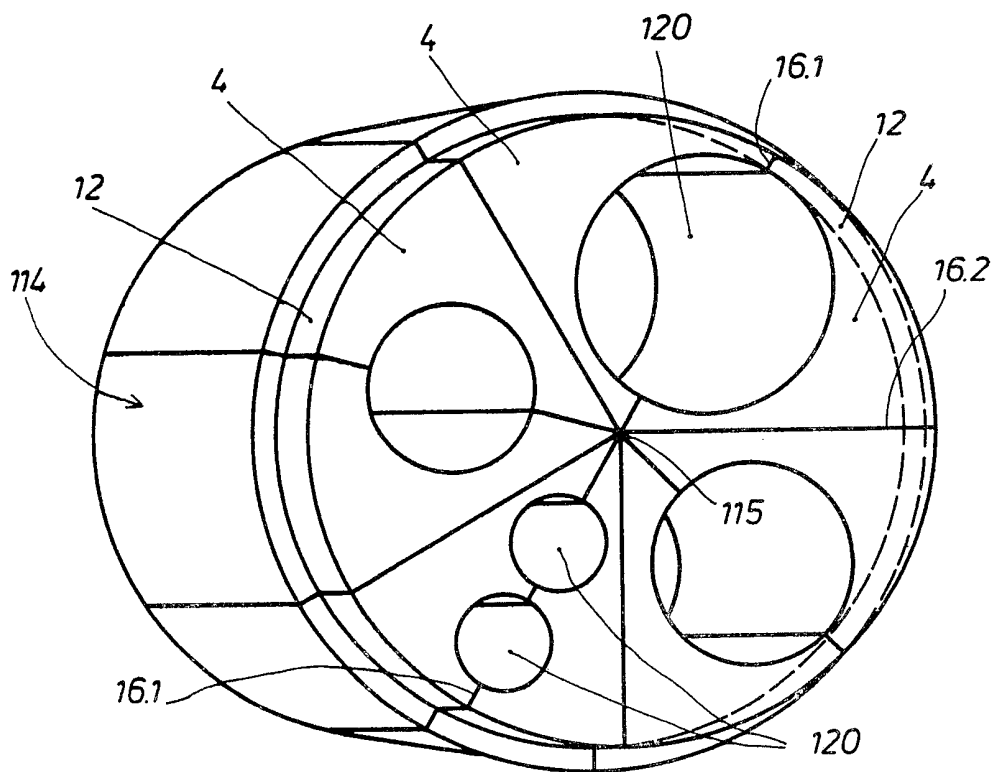


Fig. 9

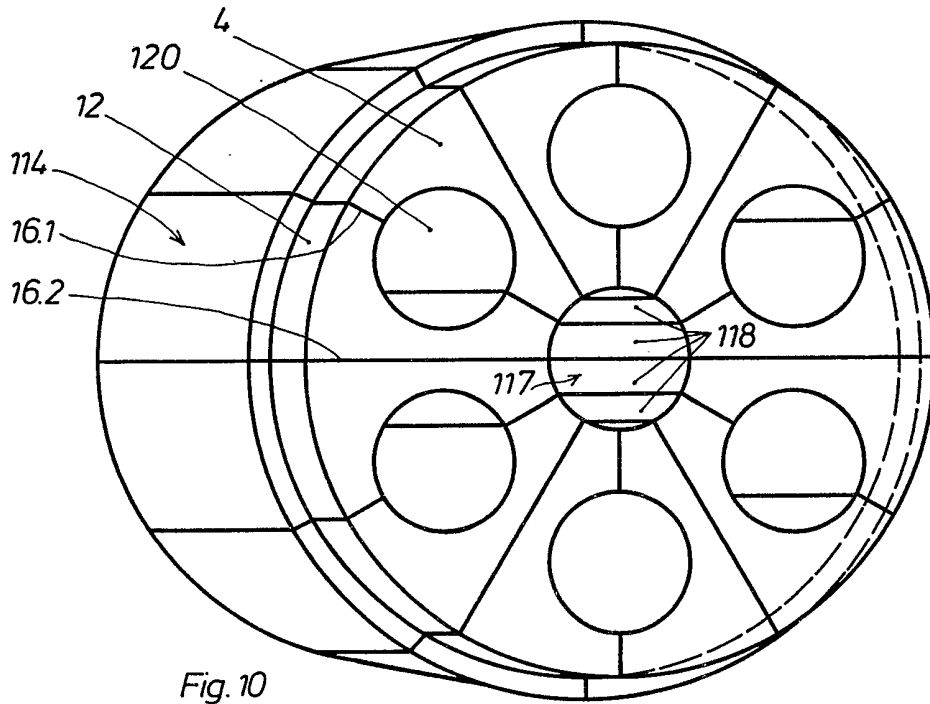


Fig. 10

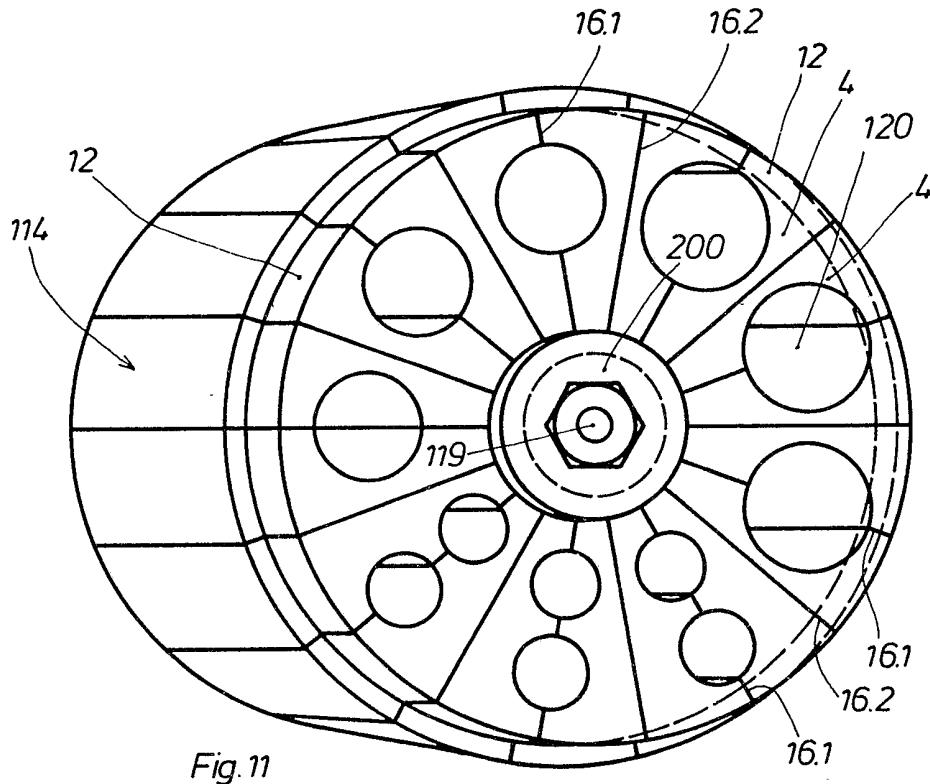


Fig. 11

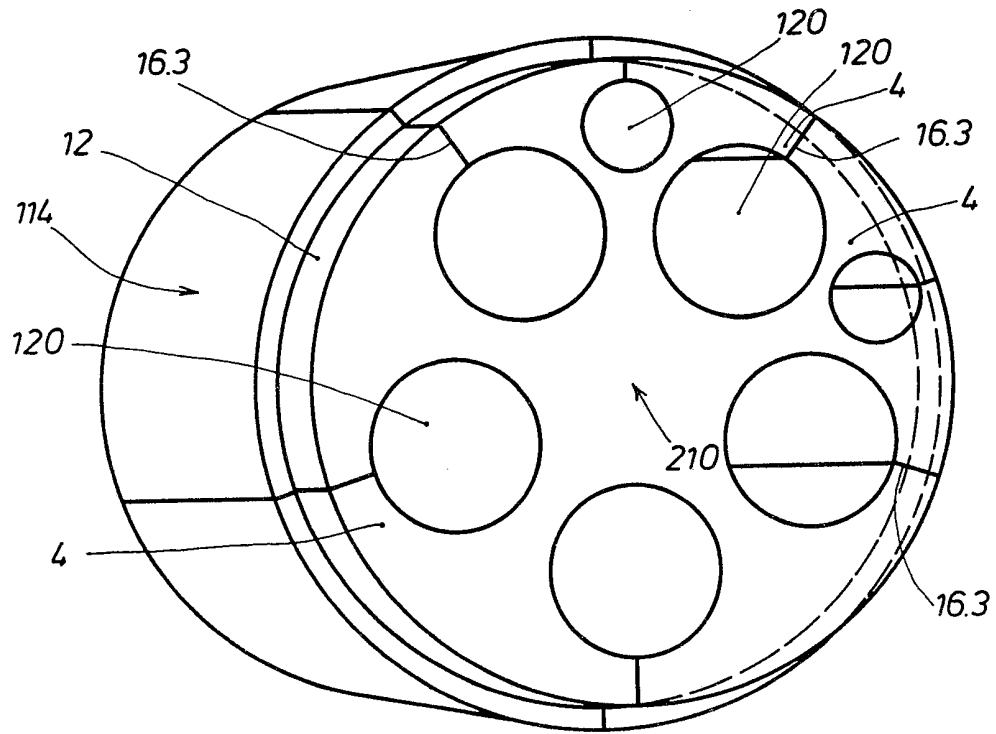


Fig. 12

SPECIFICATION

Feed-through ducting arrangement for feeding conduits such as cables, pipes or the like through an opening in a wall and apparatus for making a soffit for such a feed-through ducting arrangement in a concrete wall

10 The invention relates to a feed-through ducting arrangement for feeding conduits such as cables, pipes or the like through an opening in a wall, comprising partially or entirely elastic fitting members which fill the empty space of the opening in the wall and which seal on the one hand against the conduits and on the other hand against the soffit of the wall opening to be filled, for which purpose the fitting members form conduit receiving means which are adapted in respect of shape and size to the individual conduit cross-sections, and a pressing device for elastically pressing the fitting members into the wall opening.

25 The invention also relates to an apparatus for making a soffit for such a feed-through ducting arrangement in a concrete wall.

30 Feed-through ducting arrangements of the kind set forth above are disclosed in German Patent Specification No. 958,671 and DE-OS No. 26 54 806. They are generally used to form a fire proofing closure or termination by means of which conduit runs between different fire interception sectors which are separated from each other by the wall are partitioned off in a fire-resistant manner. Besides affording the maximum fire-resistant period of time, the ducting arrangement should also have the property of providing the best possible seal for the conduit ducting arrangements, in respect of water, gas and smoke.

40 The known arrangements include a frame assembly which encloses a substantially box-shaped space which is open in the direction of the ducting arrangement, and which, with its inwardly directed peripheral surface, forms the soffit against which the fitting members bear and are pressed. The pressing device which serves to produce the pressing action, like the fitting members themselves, is arranged within the empty space defined by the frame assembly, and can be spread by means of screw bolts in the plane of the frame assembly. More particularly, in the ducting arrangement disclosed in German Patent Specification 50 No. 958,671, the frame assembly is a metal frame assembly which is fitted into the wall by being cast, welded or built thereinto and which must be built into the wall when the wall is being built, while the conduits are generally only laid at a later date, or alternatively sufficiently large openings have to be left in the wall for the metal frame, into which the frame is subsequently cast or built, which must be done with a great deal of care so that, in the finished installed condition, the

70 frame ensures sufficient fire-proofing and an adequate seal in respect of gas and water, with respect to the wall. The pressing device fills a part of the space within the frame and comprises on the one hand a screw which is anchored in the metal frame and which applies pressure to the fitting members by way of a metal plate which lies thereon, and thus presses the fitting members together, and on the other hand, a pressing member which fills the empty space above the metal plate and which can be spread by means of screw bolts in the plane of the frame assembly so that the pressing member seals against the metal plate and against the soffit portion of the frame assembly on the side of the metal plate which is remote from the fitting members. The considerable amount of expenditure which is involved in casting, welding or building the frame arrangement into the opening in the wall is avoided in the case of the assembly disclosed in DE-OS No. 26 54 806, in that the frame is in the form of an extruded section and comprises a material which is capable of limited elastic deformation such as for example natural or synthetic rubber, and the extruded section has a steadily curved outside peripheral surface which is cylindrical or which approximates to a cylindrical form. 85 The pressing device comprises at least four components which are of a wedge-shaped profile and which, in the assembled condition, also fill up a part of the empty space within the frame, wherein two wedge members which are directed in the direction of the feed-through ducting arrangement have, passing therethrough, one or more screw bolts provided with support plates or washers, and two further wedge members act on two oppositely disposed surface portions of the soffit of the frame assembly. As the frame comprises a material which is capable of limited elastic deformation, under the action of the pressing device, it is automatically sealed against a suitably shaped opening in the wall or may be sealingly fitted into a pipe or into a core drilling which is subsequently formed in the wall.

100 The above-indicated known ducting arrangements have been successful in practice, but they suffer from the disadvantage that they require a frame which is completely closed in the peripheral direction, and a considerable part of the space within the frame assembly is not available for passing conduits therethrough, as that part of the space is taken up by the pressing device.

115 The invention is based on the problem of so designing a feed-through ducting arrangement of the kind set forth in the opening part of this specification, that the pressing device is arranged outside the empty space of the opening of the wall, and therefore the wall opening is available in its entirety for passing conduits therethrough.

According to the invention, that problem is solved by a feed-through ducting arrangement for feeding conduits such as cables or pipes through an opening in a wall, the arrangement comprising entirely or partially elastic fitting members which fill the empty space of the opening in the wall and which seal on the one hand against the conduits and on the other hand against the soffit of the wall opening, for which purpose the fitting members form conduit receiving means which are adapted in respect of shape and size to the individual conduit cross-sections, and a pressing device for elastically pressing the fitting members into the wall opening, the internal cross-section of which opening diminishes from one side of the wall to the other so that the soffit surface extends in a pyramidlike or frustoconical configuration, and the pressing device having a clamping flange extending along the periphery of the opening on the side of the wall embracing the wider end of the opening and partially engaging over the fitting members at the front end thereof, from the edge of the wall opening, having been used to press them axially into the wall opening.

When, with the fitting members being mounted in the wall opening and, together with the conduits, completely filling out the cross-section of the wall opening, the clamping flange is tightened towards the wall, then as a result, the packing which is formed from the assembly of all fitting members is pressed axially more deeply into the wall opening which reduces in width, whereby the fitting members are pressed against each other, against the conduits and against the soffit of the wall opening, thereby giving the desired sealing action and the fireproofing action required, without also requiring a frame assembly for enclosing the fitting members. The fitting members may comprise a fire proofing material which hardens when subjected to fire and which expands before it hardens, or may contain such a material, so that even in the case of conduit casings, in particular cable sheathings, which melt or burn away in the heat of a fire, a sealed closure is formed between the fire proofing material and the core of the conduit which is not affected in the event of a fire, and the residues or remains of the conduit are sealingly embedded in the fire proofing material.

Frequently, the effect of pressing the fitting members by means of the clamping flange, and the resulting friction of the fitting members against each other are sufficient to eliminate the possibility of axial movement of the fitting members relative to each other, under the effect of different pressures on both sides of the wall. However, particularly in the middle cross-sectional area of the wall opening, it is not always possible to ensure that the fitting members are secured in that way so that they cannot move, if the ducting arrangement is

intended to provide a seal capable of resisting higher pressure differences and/or the wall opening is of large cross-sectional area. In order therefore reliably to prevent the fitting members from moving axially relative to each other in that way, even under unfavourable conditions and in particular also in the middle cross-sectional area of the opening in the wall, the ducting arrangement in accordance with the invention may be further developed such that the fitting members fill the cross-section of the wall opening in a sector-like or sector portion-like configuration, being in one piece throughout in a radial direction, and for that purpose, have joint surfaces which extend from the surface that bears against the soffit, inwardly towards the axis of the opening in the wall, and that at least one of the conduit receiving means is arranged at one of said joint surfaces, wherein said joint surface may terminate at or cut the respective conduit receiving means. The advantage which is achieved thereby is that each fitting member extends radially to the soffit of the wall opening and is therefore pressed thereagainst by the clamping flange, thereby preventing the fitting members from moving axially with respect to the soffit and thus also directly relative to each other. Each individual fitting member is fixed to the soffit directly by the clamping flange and is also held secure against high pressure differences. As the conduit receiving means are provided at the joint surfaces, the conduits can be easily fitted into the conduit receiving means by the fitting members, at the joint surfaces thereof, being separated from each other or being resiliently spread apart from each other to such a degree as is required for inserting the conduits into the respective conduit receiving means from the exterior in a radially inward direction. In that connection, it is possible to provide not just one conduit receiving means at a joint surface, but to provide a plurality of conduit receiving means along the joint surface, in which case, as will be appreciated, the conduit receiving means are generally of smaller cross-section; finally, it will be appreciated that, within the scope of the invention, it is also possible to have joint surfaces at which there is no conduit receiving means at all.

Generally, the joint surfaces extend to the axis of the opening in the wall. However, it is also possible for the joint surfaces to extend only as far as a central aperture which is surrounded by the fitting members. The central aperture may also serve as a conduit receiving means. However, particularly if the wall opening is an opening of large cross-section, it is desirable for a clamping tie member to be disposed in the central aperture, the tie member connecting two clamping flanges which, on both sides of the fitting members in the axial direction of the arrangement, extend radially outwardly over the fitt-

ing members at the edges thereof which form the central aperture. In the pressed condition, the sealing members seal against the tie member in the same manner as against the conduits, although in that arrangement the fitting members are also directly connected axially together and against each other in the central area of the opening in the wall by way of the tie member and the two clamping flanges which are drawn together thereby, and that stabilises the fitting members relative to each other in a highly advantageous manner even in the event of high pressure differences on the two sides of the wall, so that the radially inward ends of the fitting members also cannot be displaced axially relative to each other by virtue of the pressure difference. A similar stabilising effect can be achieved, while omitting the tie member and the two clamping flanges, by all joint surfaces terminating in a respective one of the conduit receiving means and by all fitting members being formed in one piece with each other in the central area between the conduit receiving means. In that case, the fitting members in their entirety form a one-piece packing means, the conduit receiving means of which are slit towards the outer peripheral surface by the respective joint surfaces, wherein said joint surfaces can be spread apart, with resilient deformation of the packing member, and the conduit can be introduced into the associated conduit receiving means between the spread-apart joint surfaces.

If the wall is a metal wall, in particular a steel wall, for example, in ship building, then, in a preferred embodiment, the soffit is formed by the peripheral wall surface of a sleeve which is of a pyramid-like or frustoconical configuration and which is fitted into the wall, for example by welding. An embodiment which is advantageous in that context is characterised in that, at its edge which is of larger cross-section, the sleeve carries a securing flange, that bears against the wall, and that clamping bolts for the clamping flange are provided on the side of the securing flange which is remote from the sleeve.

In contrast, in the case of a brick or concrete wall, the soffit is preferably formed directly at least by a portion of the wall opening itself. Advantageously, the soffit has its edge which defines the larger cross-section facing towards an anchor ring which is let into the wall opening flush with the outward side of the wall, and towards which the clamping flange can be braced in order to press against the fitting members. Because the anchor ring is fitted flush into the wall opening, it can be secured in the concrete form or shuttering before the wall is poured, without requiring any apertures through the concrete form or shuttering, for fitting the ducting arrangement. It is desirable for the anchor ring, at its

inward peripheral surface, to have a female screwthread into which the clamping flange fits by means of a male screwthread. The packing formed by the fitting members is pressed in a simple manner by rotating the clamping flange in the anchor ring. In a preferred embodiment, the clamping flange has a collar portion which carries its male screwthread and for which the fitting members have rabbet-like recesses so that the collar portion which engages into the recesses defines an annular enclosure around the fitting members. In that way, it holds the packing formed from the fitting members together even in that part thereof in which the fitting members still project freely out of the opening in the wall.

A very important requirement for successful use of the ducting arrangement according to the present invention in relation to concrete walls is the provision of a smooth and hole-free soffit surface on the wall opening, as a sealing seat for the fitting members which are to be pressed thereagainst when the ducting arrangement is in the fully assembled condition.

According to another aspect of the invention, apparatus for making a soffit in a concrete wall for mounting a ducting arrangement when made according to the invention comprises a liner tube, a form tube which is releasably screwed thereto and which moulds the required soffit, the form tube having an outside wall which converges in accordance with the desired shape of the soffit towards the liner tube into which the liner tube is screwed, an anchor ring which surrounds the end of the form tube which is remote from the liner tube and which is arranged for the form tube to be released from the anchor ring after concrete poured round the liner tube, form tube and anchor ring to form the wall has hardened while the form tube is unscrewed from the liner tube to expose the moulded soffit. Accordingly, the liner tube and the anchor ring form what might be called lost shuttering or form portions which remain in the wall, while the form tube, after the concrete has set, is screwed out of the wall opening to expose the soffit in order to make the soffit freely accessible so that it can be inspected for holes or other defects and, if required, subsequently made good. Then, after the conduits have been introduced through the wall opening, the fitting members only have to be fitted into the soffit and subjected to pressure by means of the clamping ring which in turn is braced with respect to the anchor ring. Moreover, in an advantageous embodiment, the form tube is also screwed to the anchor ring, in addition to being screwed to the liner tube, and both screwthreads have the same direction and pitch so that, when the form tube is unscrewed, it is released at the same time both

from the liner tube and from the anchor ring. In addition, as viewed from the form tube, on the other side of the screwthread which serves to screw together with the liner tube and the form tube, the liner tube may be provided with outwardly directed projections for anchoring the liner tube in the concrete wall. Likewise, the anchor ring may be provided at its edge with outwardly projecting projections which are provided both for fitting a plurality of anchor rings together in juxtaposition and also for anchoring the anchor ring in the wall. Moreover, there is the possibility, which is highly advantageous in regard to fitting a plurality of anchor rings together in that way of the outside configuration of the anchor ring being square or rectangular.

The invention is described in greater detail hereinafter with reference to examples of the invention shown in the accompanying drawings, in which:

Figure 1 shows a view in axial section through a feed-through ducting arrangement, in the finished condition of being fitted in a concrete wall;

Figure 2 shows a front view of the ducting arrangement shown in Figure 1, viewing in the direction of the arrow II shown in Figure 1;

Figure 3 shows a view in axial section, corresponding to that shown in Figure 1, of an apparatus for making a soffit for the ducting arrangement shown in Figure 1 in a concrete wall;

Figure 4 shows a view in axial section, like that shown in Figure 1 of another embodiment of a ducting arrangement, as is particularly suitable for steel walls;

Figure 5 shows a view in axial section through yet another embodiment of a ducting arrangement also in the finished condition of being fitted in a concrete wall;

Figure 6 shows a perspective view only of fitting members in the ducting arrangement shown in Figure 5; and

Figures 7 to 12 show perspective views similar to Figure 6 respectively of further form of fitting member.

For the sake of greater clarity, the respective Figures of drawings show only individual conduits 1, or a small number thereof. The conduits 1 extend through an opening 2 in a concrete wall 3.1, as shown in Figures 1, 3 and 5, or a steel wall 3.2, as shown in Figure 4. The feed-through ducting arrangement itself comprises completely or partially elastic fitting members 4 and 4', for example of neoprene, which fill up the empty space formed by the wall opening 2. The fitting members 4 and 4' are sealed on the one hand against the conduits 1 and on the other hand against the soffit 5 of the wall opening 2 which is to be filled, and obviously also against each other. The sealing effect is essentially produced by the fitting members which

are denoted by reference numeral 4 forming conduit receiving means 120 which are adapted in respect of shape and size to the individual conduit crosssections, thereby affording the possibility of bearing sealingly under pressure against the conduits 1. In addition, if the fitting members 4 extend as far as the soffit 5, as shown in Figures 5 to 12, the fitting members 4 may finally also bear sealingly against the soffit 5, under the sealing pressure. However, there is also the possibility, as shown in Figures 1, 2 and 4, of providing particular fitting members 4' at the edges, which provide the seal against the soffit 5. At any event, the sealing pressure required is applied by a pressing device for elastically pressing the fitting members 4 and 4' into the opening 2 in the wall.

More particularly, the internal cross-section of the wall opening 2 reduces from one side of the wall to the other, being therefore from left to right in the sectional views shown in the drawings, for which purpose the soffit surfaces extend in a pyramid-like or frustoconical configuration. The external peripheral surfaces of the fitting members 4 and 4', which bear against the soffit 5, are adapted to the above-indicated shape and inclination of the soffit surface. The pressing device essentially comprises a clamping flange 6 which extends along the periphery of the opening 2 on the side of the wall at which the opening 2 is of larger cross-section. The clamping flange 6 at least partially engages over the fitting members 4 and 4', on the front end thereof, from the edge of the opening in the wall, and presses them axially into the opening 2 in the wall when the clamping flange 6 is tightened axially towards the wall 3.1 or 3.2.

In the case of a concrete wall as shown in Figures 1 to 3 and 5, the soffit 5 is formed directly at least by a portion of the wall opening 2 itself. The edge of the soffit which is at the side of the wall at which the opening 2 is of larger cross-section faces towards an anchor ring 7 which is let into the wall opening 2 flush with the outside of the wall, and towards which the clamping flange 6 can be urged for applying pressure to the fitting members 9 and 4'. For that purpose, in the illustrated embodiments, the anchor ring 7 is provided at its inward peripheral surface with a female screwthread 8 into which fits a male screwthread 9 on the clamping flange 6. At its face, the clamping flange 6 has holes 10 for fitting a key or tool (not shown) for turning the clamping flange 6. The male screwthread 9 is disposed on a collar portion 11 of the clamping flange 6. Rabbet-like recesses 12 are provided in the fitting members 4 and 4' for receiving the collar portion 11 so that the collar portion 11, engaging into the recesses 12, embraces the fitting members 4 and 4' in an annular configuration and also holds them together at the location where they project

axially out of the opening 2 in the wall- When the clamping ring 6 is rotated in the tightening direction in the anchor ring 7, then the clamping ring 6 urges the fitting members 4 and 4' axially deeper into the reducing wall opening 2 whereby the fitting members 4 and 4' are more firmly pressed together and a higher sealing pressure is produced between the fitting members 4 and 4' themselves, the fitting members 4, 4' and the conduits 1, and finally between the fitting members 4 and 4' respectively and the soffit 5 of the opening 2 in the wall.

In the embodiments illustrated in Figures 5 to 11, the fitting members 4, being of a one-piece construction throughout in a radial direction, fill the cross-section of the wall opening by a sector-like or sector portionlike configuration. For that purpose, the fitting members 4 have joint or separating surfaces 16.1 and 16.3 which, from the surface 114 which bears against the soffit 5, extend inwardly towards the axis 115 of the wall opening 2. The conduit receiving means 120 are disposed at the surfaces 16.1 and 16.3; the joint surfaces, as in the case of the surfaces 16.3, may terminate in the respective conduit receiving means 120 or, as in the case of the surfaces 16.1, may cut through the conduit receiving means 120. The latter case is shown in the embodiments illustrated in figures 5 to 11, while the former situation is shown in the embodiment illustrated in Figure 12.

In that arrangement, a plurality of conduit receiving means 120 may be disposed along a joint surface 16.1, being cut thereby, as shown in Figures 9 and 11. It will be appreciated that the cross-sections of such conduit receiving means 120 are naturally smaller, for reasons of space, than in the case of a joint surface 16.1 which has only a single conduit receiving means. In particular, the arrangement may have only joint surfaces 16.1 which intersect conduit receiving means 120, as shown in Figure 7, but generally, in addition, there are also joint surfaces 16.2 at which there are no conduit receiving means 120 at all, as shown in Figures 6 and 8 to 11.

The joint surfaces 16.1 and 16.2 may extend as far as the axis 115 of the wall opening, as shown in Figures 6 to 9. It is also possible however for the surfaces 16.1 and 16.2 to extend only as far as a central aperture 117 which is enclosed by the fitting members 4, as shown in Figure 10- The central aperture 117 may also serve as a conduit receiving means at which the joint surfaces 16.1 and 16.2 terminate. However, the central aperture 117 may also accommodate a clamping tie member or anchor member 119 which seals against the inward peripheral surfaces 118 of the fitting members 4, that form the central aperture 117, and which connects two clamping flanges 200 which,

disposed on both sides of the fitting members 4 in the axial direction of the arrangement, engage radially outwardly over the fitting members 4 at their edges which form the central aperture 117, and thereby prevent axial displacement of the radially inward ends of the sectorshaped fitting members 4 relative to each other, which has a highly advantageous effect in stabilising the overall assembly of the fitting members 4, particularly when the cross-section of the wall opening 2 which is to be closed by the fitting members 4 and/or the pressure difference which is to be sealed off by the ducting arrangement is large.

Finally, there is the possibility which is shown in Figure 12, of all joint surfaces 16.3 terminating at a respective one of the conduit receiving means 120, with the fitting members 4 being formed in one piece with each other in the central region 210 between the conduit receiving means 120. The one-piece nature of the assembly in the central region 210 thereof provides a similarly stabilising effect as the tie member 119 described with reference to Figure 11. In the embodiment illustrated in Figure 12, the elasticity of the material used permits the joint surfaces 16.3 which open into the conduit receiving means 120 to be spread apart elastically as far as is required for inserting the conduits 1 radially inwardly into the conduit receiving means 120.

The apparatus shown in Figure 3, for making the soffit 5 for a ducting arrangement as shown in Figures 1, 2 and 5 in the concrete wall 3.1 includes a liner tube 13, a form tube 14 which is releasably screwed thereto and which forms the subsequent soffit 5, the form tube 14 having an outside wall which converges in accordance with the desired soffit towards the liner tube 13, to form a narrower outer cross-section, and finally, the anchor ring 7 which is carried on the end of the form tube 14 which is remote from the liner tube 13, and which is released from the form tube 13 when, with the apparatus being cast in the concrete wall 3.1, after the concrete has set, the form tube 14 is unscrewed from the liner tube 13 in order to expose the soffit 5, to inspect the soffit and if necessary to make the soffit 5 good as a sealing seat for the fitting members 4 or 4'. The form tube 14 is also screwed to the anchor ring 7, besides being screwed to the liner tube 13. Both screwthreads 8 and 15 have the same direction and thread pitch so that, on being screwed out, the form tube 14 is released simultaneously both from the liner tube 13 and from the anchor ring 7 which both remain in the concrete wall 3.1. In particular, as in the embodiment illustrated, the liner tube 13 may comprise two telescopically movable members 13.1 and 13.2 which are secured together by adhesive means at a length which is defined

by the thickness of the wall, so that the overall length of the apparatus including the form tube 14 and the anchor ring 7 precisely corresponds to the subsequent wall thickness, and the apparatus can therefore be fitted between two wall forms or shutterings 160, without requiring apertures therethrough. The openings at the ends of both the form tube 14 and the liner tube 13 may be temporarily closed by clamping caps 17 in order to prevent concrete from penetrating into the empty space formed by the form and liner tubes 13 and 14. The screwthread 15 on the liner tube 13, which carries the form tube 14, is disposed on the part 13.2 of the liner tube 13, which is on the inside. In addition, disposed on the part 13.2 of the liner tube 13, on the far side of the screwthread 15, as viewed from the form tube 14, are outwardly directed projections 18, for example in the form of a collar, which permit the liner tube 13 to be anchored in the concrete wall 3.1. In the position of the form tube 14 shown in Figure 3, in which it is screwed on to the liner tube 13, the form tube 14 may be sealed with respect to the liner tube 13 by means of a sealing ring 19 in order to prevent concrete from penetrating into the screwthread 15 between the liner tube 13 and the form tube 14. Similarly, a seal 20 may also be provided between the form tube 14 and the anchor ring 7. The form tube 14 also has recesses 21 at its end, for fitting a key or tool. Finally, as Figures 1 to 3 also show, the anchor ring 7 may be provided at its edge with outwardly projecting projections 22 which on the one hand serve to anchor it in the wall 3.1 and which on the other hand can be formed so that a plurality of anchor rings 7 can be fitted together in juxtaposition, which is particularly simple when, as shown in Figure 2, the external configuration of the anchor ring 7 is rectangular or square.

It will be seen directly from Figure 2 and Figures 5 to 12 that, except for small wedge portions remaining at the edge, which in Figure 2 are formed by the fitting members 4', the entire area of the opening of the ducting arrangement is available for fitting conduits 1 therein, and the ducting arrangement according to the invention therefore has a useful area of optimum size, while at the same time requiring only a small area in the building structure.

Figure 4 shows an embodiment of the ducting arrangement in relation to a steel wall 3.2, wherein the soffit 5 is formed by the peripheral wall surface of a sleeve 24 which is of a pyramid-like or frustoconical configuration an which is welded into the wall 3.2 at 25. At its edge which is of larger cross-section, the sleeve 24 carries a securing flange 26 which is fitted to the wall 3.2, with the sleeve 24 projecting through the wall 3.2. Clamping pins or bolts 27 for the clamping flange 6 are

provided at the side of the securing flange 26, that is remote from the sleeve 24. The clamping pins or bolts 27 carry clamping nuts 28 which press by way of support plates or washers 29 against the clamping flange 6.

In a further alternative the wall 3 is a brick wall, the soffit 5 being formed directly or at least by a portion of the wall opening itself.

75 CLAIMS

1. A feed-through ducting arrangement for feeding conduits such as cables or pipes through an opening in a wall comprising entirely or partially elastic fitting members which fill the empty space of the opening in the wall and which seal on the one hand against the conduits and on the other hand against the soffit of the wall opening, for which purpose the fitting members form conduit receiving means which are adapted in respect of shape and size to the individual conduit cross-sections, and a pressing device for elastically pressing the fitting members into the wall opening, the internal cross-section of which opening diminishes from one side of the wall to the other so that the soffit surface extends in a pyramidlike or frustoconical configuration, and the pressing device having a clamping flange extending along the periphery of the opening on the side of the wall embracing the wider end of the opening and partially engaging over the fitting members at the front end thereof, from the edge of the wall opening, having been used to press them axially into the wall opening.

2. A ducting arrangement according to Claim 1, in which the fitting members fill the cross-section of the wall opening in a sector-like or sector portion-like configuration, being in one piece throughout in a radial direction, and for that purpose, have joint surfaces which extend from the surface that bears against the soffit, inwardly towards the axis of the wall opening, and at least one of the conduit receiving means being arranged at one of said joint surfaces, wherein said joint surface terminates at or cuts the respective conduit receiving means.

3. A ducting arrangement according to Claim 2, in which the joint surfaces extend to the axis of the wall opening.

4. A ducting arrangement according to Claim 2, in which the joint surfaces extend to a central aperture which is surrounded by the fitting members.

5. A ducting arrangement according to Claim 4, which has disposed in the central aperture a clamping tie member which connects two clamping flanges which, on opposite sides of the fitting members in the axial direction of the arrangement, extend radially outwardly over the fitting members at the edges thereof which form the central aperture.

6. A ducting arrangement according to Claim 2, in which all joint surfaces terminate

in a respective one of the conduit receiving means and the fitting members are formed in one piece with each other in the central area between said conduit receiving means.

5 7. A ducting arrangement according to Claim 1, in which in the case of a metal wall, the soffit is formed by the peripheral wall surface of a sleeve which is of a pyramidlike or frustoconical configuration and which is fitted into the wall.

10 8. A ducting arrangement according to Claim 7, in which at its edge which is of larger cross-section, the sleeve carries a securing flange that bears against the wall and from which the sleeve projects through the wall, clamping bolts for the clamping flange being provided on the face of the securing flange which is remote from the sleeve.

15 9. A ducting arrangement according to Claim 1, in which in the case of a brick or concrete wall, the soffit is formed directly at least by a portion of the wall opening itself.

20 10. A ducting arrangement according to Claim 9, in which the edge of the soffit which defines the wider end of the opening faces towards an anchor ring which is let into the wall opening flush with the outward side of the wall, and towards which the clamping flange is braced in order to press against the fitting members.

25 11. A ducting arrangement according to Claim 10, in which at its inner peripheral surface, the anchor ring has a female screwthread into which the clamping flange fits by means of a male screwthread.

30 12. A ducting arrangement according to Claim 11, in which the clamping flange has a collar portion which carries the male screwthread and for which the fitting members have recesses so that the collar portion which engages into said recesses defines an annular enclosure around the fitting members.

35 13. Apparatus for making a soffit in a concrete wall for mounting a ducting arrangement according to Claim 1, comprising a liner tube, a form tube which is releasably screwed thereto and which moulds the required soffit, the form tube having an outside wall which converges in accordance with the desired shape of the soffit towards the liner tube onto which the liner tube is screwed, an anchor ring which surrounds the end of the form tube which is remote from the liner tube and which is arranged for the form tube to be released from the anchor ring after concrete poured round the liner tube, form tube and anchor ring to form the wall has hardened while the form tube is unscrewed from the liner tube to expose the moulded soffit.

40 14. Apparatus according to Claim 13, in which the form tube is also screwed to the anchor ring, in addition to being screwed to the liner tube, and both screwthreads have the same direction and pitch.

45 15. Apparatus according to Claim 13 or

50 Claim 14, in which, as viewed from the form tube beyond the screwthread which serves to screw together the liner tube and the form tube, the liner tube is provided with outwardly directed projections for anchoring the liner tube in the concrete wall when the concrete has hardened.

55 16. Apparatus according to any one of Claims 13 to 15 or a ducting arrangement according to one of Claims 10 or 11 in which the anchor ring is provided at its outer edge with outwardly projecting projections which are provided for fitting a plurality of anchor rings together in juxtaposition and for anchoring in the wall.

60 17. Apparatus or ducting arrangement according to Claim 16 in which the outside configuration of the anchor ring is rectangular.

65 18. A feed-through ducting arrangement substantially as hereinbefore described with reference to Figures 1 and 2 of the accompanying drawings.

70 19. A feed-through ducting arrangement substantially as hereinbefore described with reference to Figure 4 of the accompanying drawings.

75 20. A feed-through ducting arrangement substantially as hereinbefore described with reference to Figures 5 and 6 accompanying drawings.

80 21. A feed-through ducting arrangement substantially as hereinbefore described with reference to Figure 7 accompanying drawings.

85 22. A feed-through ducting arrangement substantially as hereinbefore described with reference to Figure 8 accompanying drawings.

90 23. A feed-through ducting arrangement substantially as hereinbefore described with reference to Figure 9 accompanying drawings.

95 24. A feed-through ducting arrangement substantially as hereinbefore described with reference to Figure 10 accompanying drawings.

100 25. A feed-through ducting arrangement substantially as hereinbefore described with reference to Figure 11 accompanying drawings.

105 26. A feed-through ducting arrangement substantially as hereinbefore described with reference to Figure 12 accompanying drawings.

110 27. Apparatus for making a soffit in a connecting wall for mounting a ducting arrangement according to Claim 1 and substantially as hereinbefore described with reference to Figure 3 of the accompanying drawings.