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(54) **Cable sleeve**

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Description

[0001] The invention relates to a coupling device for mutually connecting for electrical conduction at least two cores, each forming part of an electricity cable, which device comprises:

an electrically conducting block with sharp protrusions such that, by exerting a force on the insulating sheath extending round a first core with these protrusions by means of clamping means forming part of the device, this sheath is perforated and the block comes into and remains in conducting contact with the core;
coupling means for electrically connecting a second core to that block ;and
a housing in which the said block and the clamping means are received, which housing has openings for passage of the respective cores.

[0002] Such a cable sleeve is known in diverse embodiments, e.g. from FR-A-2 645 683. It serves to connect a branch cable with a plurality of cores to a for instance continuous main cable with a corresponding plurality of cores or to mutually connect two main cables.

[0003] FR-A-2 645 683 has the disadvantage that an insulating mass has to be applied before the housing is closed, which can result in spilling of the mass.

[0004] It is an object of the invention to embody an electric cable sleeve or coupling device such that mutual connecting of respective cores can take place very rapidly, easily and with great reliability, without this requiring special knowledge or skill.

[0005] This object is achieved by a coupling device according to the invention, which is characterized in that the housing further comprises a filling opening for filling the closed housing with an insulating mass.

[0006] A preferred embodiment has the special feature that the block forms part of a first clamping jaw, which can co-act clampingly with a second clamping jaw by means of operating means.

[0007] A specific embodiment has the further special feature that the coupling means comprise a second electrically conducting block to which a second core can be coupled for electrical conduction, which second block is coupled to the first block for electrical conduction.

[0008] In combination the latter two variants can have the special feature that the second block forms part of the second clamping jaw.

[0009] A preferred embodiment has the characteristic that the housing comprises two shells and at least one of the blocks is fixedly coupled to one of the shells. This embodiment has the advantage that the number of individual components is limited, which facilitates assembly. It is noted in this respect that it is generally recommended to couple only one of the blocks fixedly to the shells. In this manner the two blocks can be placed in advance into clamping operative position by the clamping means. The second shell is subsequently placed over the first shell and held in this position by screwing means, clamping means or the like. Closing of the housing is thus fully independent of the action of the clamping means which is after all essential for a good electrical contact.

[0010] A particular variant has the special feature that the housing consists of metal, for instance cast iron or cast aluminium, and the or each conducting block is arranged in electrically insulating manner relative to the housing.

[0011] Yet another embodiment has the special feature that the housing consists of an electrically insulating material, for instance plastic optionally reinforced with fibres, such as polyurethane, ABS, polystyrene.

[0012] As is usual with cable sleeves, the coupling device according to the invention can be embodied such that after assembly it is filled with an insulating filling mass. This filling mass can for instance consist of polyurethane. It is of importance that the filling mass adheres well to the parts arranged in the housing. This adhesion can be made worse in that during mounting of the device dirt and grease is transferred to the various components via the hands of the fitter. Grease in particular prevents a good adhesion. By embodying any suitable components such that they cannot be touched by hands, the relevant surfaces in any case remain clean and the filling mass can adhere well thereto. There may for instance be one or more recesses, for instance a regular pattern of recesses, a cavity accessible from the outside, a cutaway portion or the like.

[0013] When a number of insulated cores of the main cable are used, the cable cores are physically separated from each other by insulating partitions in the region of the blocks. These partitions can form part of a jaw in which the blocks are arranged and, insofar as a physical separation between the cores in different jaws is desired, can be separated by a separate partition.

[0014] A specific embodiment comprises an electrically insulating mass arranged in one of the shells.

[0015] This variant can advantageously be embodied such that the said mass is integrated with the shell or forms a whole therewith.

[0016] In a particular example the coupling device has the special feature that the said mass is thermoplastic.

[0017] This latter embodiment can be embodied such that the said mass is a foam mass with closed skin.

[0018] A specific choice is that in which the said mass consists of polyethylene (PE).

[0019] Yet another embodiment has the special feature that the said mass is a thermosetter.

[0020] A particularly advantageous embodiment in respect of simple manufacture at low cost and a low weight with use of little material has the special feature that the shell and/or said mass is manufactured by reaction injection moulding. Reaction injection moulding is a technique in which two mutually co-acting chemical components are mixed in an injection moulding machine prior

to injection. Curing takes place in the mould cavity of a mould for a time interval of for instance 2-10 minutes. This technique is directed particularly at the use of thermocuring materials for the said components.

[0021] A particular embodiment of the coupling device has the special feature that the protrusions extend in rows extending in longitudinal direction.

[0022] The number of rows can in principle be chosen as desired. The best results up to the present time have been realized with an embodiment in which the number of rows amounts to two.

[0023] The protrusions must comply with the requirements relating to conductance, low transfer resistance, hardness and resistance to wear. A particular embodiment has the feature that the protrusions consist of brass with a coating of tin.

[0024] A preferred embodiment has the characteristic that the clamping means comprise a plastically deformable first element. The use of such a plastically deformable element has the advantage that after the perforation of the insulating sheath round said first core the pressure force remains substantially constant after a yield threshold of the plastically deformable first element has been exceeded, while the clamping means can nevertheless still undergo a further continuous displacement. Use is preferably made however of a combination of said plastically deformable first element with an embodiment in which the clamping means comprise an elastically deformable second element.

[0025] This elastically deformable second element must effect the desired normal pressure force. Also when creep occurs, i.e. continuous deformation at constant load, the desired pressure force by the clamping means is always assured in this manner.

[0026] A practical embodiment has the special feature that the second element comprises a package of cup springs. It is noted that other compression springs can also be considered suitable. A package of cup springs has the advantage of a small axial dimension.

[0027] A specific embodiment has the special feature that the first element comprises a tube structure which can yield in longitudinal direction under pressure.

[0028] A tube has a relatively great strength in the case of pressure load in longitudinal direction. The tube structure must therefore be adapted such that it yields at a desired pressure in longitudinal direction. The tube structure can for instance have a plurality of peripheral grooves. Alternatively the tube structure can be provided on at least one of its ends with a beaded edge which can co-act for instance with a corresponding shaping surface. In said cases a plastic deformation takes place when a certain axial force is exceeded.

[0029] Yet another embodiment has the special feature that the first element comprises a deformable mass, for instance a paste arranged in an encapsulation, or a yieldable mass, for instance consisting of plastic or lead. In general use will be made of a material with a low yield threshold. As is known, lead is easily deformable. In this respect the drawback to thermoplastic plastics in particular is that yielding already takes place at very slight pressure.

[0030] The invention will now be elucidated with reference to the annexed drawings of an embodiment. In the drawing:

figure 1 shows a cross section through a part of a coupling device according to the invention, prior to assembly;
figure 2 shows a cross section through a coupling device after assembly;
figure 3 shows a partly transparent perspective view of a part of the coupling device in closed situation;
figure 4 shows a partly transparent perspective view of the device in the situation according to figure 2;
figure 5 is a transparent perspective view of a variant;
figure 6 is a cut away perspective view of the inner part of the coupling device of figure 5; and
figures 7, 8, 9 and 10 show cross sections through plastically deformable elements which form part of the coupling means.

[0031] The coupling device serves to connect for electrical conduction main cores 2, 3, 4, 5 of a main cable 6 to respective branch cores 7, 8, 9, 10 of a branch cable 11. In showing main cable 6 and branch cable 11 the insulating sheath construction which encases the respective insulating cores 2, 3, 4, 5 and 7, 8, 9, 10, is omitted for the sake of clarity.

[0032] In this embodiment the coupling device comprises a lower clamping jaw 12 and an upper clamping jaw 13. In these clamping jaws are received respective stainless steel blocks 14, 15 and 16, 17. These blocks have sharp protrusions with which they can perforate the insulating sheaths of cores 2-5.

[0033] The clamping jaws 12, 13 can be urged with force toward each other by means of screws 18, 19.

[0034] The lower clamping jaw 12 comprises four connecting blocks 20, 21, 22, 23 for electrical connecting thereto of branch cores 7, 8, 9, 10 by means of screws (not shown). These blocks 20-23 can also be manufactured from any suitable electrically conducting material, for instance copper, aluminium, stainless steel. Connecting blocks 20-23 are each connected by means of electrical conductors 24, 25, 26, 27 to a corresponding block 14-17. The conductors 24 and 27 mutually connect the clamping jaws 12 and 13 and therefore protrude, particularly in the situation shown in figure 3, outside the structure of clamping jaws 12, 13.

[0035] In this respect attention is drawn to the fact that the use of connecting blocks 20-23 can also be dispensed with. Use can be made here of clamping or screwing provisions which are arranged directly on the blocks 14, 15, 16, 17, using which provisions the branch cores 7-10 can be coupled directly to blocks 14-17 instead of via conductors 24-27 and connecting blocks

20-23.

[0036] The blocks 14 and 15 respectively the blocks 16 and 17 are directed with sharp protrusions 28 toward a cavity, generally designated with 29, in which the four main cores 2-5 fit, mutually separated by vertical partitions 30, 31 which form part of the respective jaws 12 and 13 and a separate horizontal partition 32 consisting for instance of foam material.

[0037] After placing of the respective cores 2-5 into cavity 29 the clamping jaws 12, 13 are carried toward each other and definitive fixation takes place by tightening the screws 18, 19. Due to this action the protrusions 28 penetrate into the conductive centre of the cores 2-5, whereby the blocks 14-17 and therewith blocks 20-23 come into conductive contact with these cores 2-5. The branch cores 7-10 are connected for electrical conduction to these blocks 20-23 by screwing means generally designated with 33.

[0038] The lower clamping jaw 12 is received as according to figure 1 in a lower shell 34. In the situation of figure 2 an upper shell 35 is coupled sealingly to lower shell 34 after electrical assembly as described above. By means of screwing means (not shown) the shells are permanently connected to one another. Via a filling opening 37, which can be closed off by means of a screw 36, the cavity in housing 34, 35 can be filled with an insulating mass 38.

[0039] By giving the clamping jaws 12 and/or 13 a shape such that at least a significant part of the surface cannot be touched by the fingers of a fitter, fouling of that surface during assembly is thus prevented, which enhances adhesion of the insulating mass to the relevant surface.

[0040] Figure 5 shows a cable sleeve or coupling device 51 according to the invention. This comprises a housing, comprising a lower shell 52 and an upper shell 53. These shells are substantially mutually symmetrical. The upper shell 53 comprises a filling opening closable by a screw cap 54 for filling the closed housing 52, 53 with an insulating mass.

[0041] Figure 6 shows the internal parts of cable sleeve 51. These internal parts comprise a lower clamping jaw 55 and an upper clamping jaw 56. The lower clamping jaw 55 comprises blocks 14' and 15'; the upper clamping jaw 56 comprises blocks 16', 17'. These correspond functionally with blocks 14, 15, 16, 17 in coupling device 1, but differ therefrom in the sense that the protrusions 28 of each block are ordered in two instead of four rows extending in longitudinal direction. For the sake of clarity of the drawing the clamping screws 18, 19, which serve to urge clamping jaws 55, 56 toward each other, are not shown.

[0042] The blocks 14' and 15' are positioned fixedly relative to lower clamping jaw 55. Blocks 16' and 17' are coupled to upper clamping jaw 56 via respective deformable elements 57, 58. These elements 57, 58 are shown in figure 9 which will be discussed hereinbelow.

[0043] The four cable cores 2, 3, 4, 5 are mutually separated by a cross-shaped separation structure 58. The device 1 is embodied such that the lower clamping jaw comprises the four connecting blocks 20, 21, 22, 23 for coupling of the branch cores 7, 8, 9, 10. The device 51 is embodied such that each clamping jaw 55, 56 can be coupled directly to the respective branch cores. Since it will be apparent after studying the coupling device 1 in which manner the desired coupling can be effected, this coupling is not shown in detail in figures 5 and 6.

[0044] Figures 7, 8, 9, 10 show deformable structures, which comprise an elastically deformable element as well as a plastically deformable element. Use is made in all cases of a package of cup springs 59 as elastically deformable element, wherein the number of springs determines the spring constant. This latter is ultimately decisive for the pressure force with which the protrusions 28 press into a cable core. The package of cup springs 59 co-acts in all four cases with a relatively easily yielding structure. In the embodiment according to figure 7 use is made of a housing 60 in which is situated a paste 61. The embodiment according to figure 8 has a generally tubular structure 62 having a rotation-symmetrical form with a plurality of ribs. When a pressure force 63 is exerted the tube structure 62 will display a deformation pattern schematically designated with arrows 64.

[0045] The embodiment of figure 9 is likewise provided with a tubular structure 65 having on its ends respective beaded edges 66, 67. These co-act with a shaping block respectively 68, 69 with respective annular grooves. As the pressure force 63 is exerted when the clamping screws 18, 19 (not shown) are tightened, deformation will take place as symbolically designated with arrows 70, 71. This deformation is of a plastic nature and ensures that the pressure force with which the tin-coated brass protrusions 28 press into a cable core remains substantially constant.

[0046] Finally, the embodiment according to figure 10 comprises a plastically deformable element in the form of a mass 72, consisting of thermoplastic plastic or lead.

Claims

1. Coupling device (1) for mutually connecting for electrical conduction at least two cores, each forming part of an electricity cable, which device comprises:

   an electrically conducting block (14, 15, 16, 17) with sharp protrusions (28) such that, by exerting a force on the insulating sheath extending round a first core with these protrusions (28) by means of clamping means (12, 13) forming part of the device (1), this sheath is perforated and the block (14, 15, 16, 17) comes into and remains in conducting contact with the core;
   coupling means (20, 21, 22, 23) for electrically connecting a second core to that block (14, 15,

16, 17); and
a housing (34, 35) in which the said block (14, 15, 16, 17) and the clamping means (12, 13) are received, which housing (34, 35) has openings for passage of the respective cores;

characterized in that

the housing (34, 35) further comprises a filling opening (37) for filling the closed housing with an insulating mass (38).

2. Coupling device (1) as claimed in claim 1, wherein the block (14, 15, 16, 17) forms part of a first clamping jaw (13) which can co-act clampingly with a second clamping jaw (12) by means of operating means (18, 19).

3. Coupling device (1) as claimed in claim 1, wherein the coupling means (20, 21, 22, 23) comprise a second electrically conducting block (20, 21, 22, 23) to which a second core (24, 25, 26, 27) can be coupled for electrical conduction, which second block (20, 21, 22, 23) is coupled to the first block (14, 15, 16, 17) for electrical conduction.

4. Coupling device (1) as claimed in claims 2 and 3, wherein the second block (20, 21, 22, 23) forms part of the second clamping jaw (12).

5. Coupling device (1) as claimed in claim 4, wherein the housing (34, 35) comprises two shells (34, 35) and at least one of the blocks (12) is fixedly coupled to one of the shells (34).

6. Coupling device (1) as claimed in claim 5, wherein only one of the blocks (12) is coupled fixedly to one of the shells (34).

7. Coupling device (1) as claimed in claim 1, wherein the housing consists of metal, for instance cast iron or cast aluminium, and the or each conducting block is arranged in electrically insulating manner relative to the housing.

8. Coupling device (1) as claimed in claim 1, wherein the housing (34, 35) consists of an electrically insulating material (38), for instance plastic optionally reinforced with fibres, such as polyurethane, ABS, polystyrene.

9. Coupling device (1) as claimed in claim 8, comprising an electrically insulating mass (38) arranged in one of the shells (34, 35).

10. Coupling device (1) as claimed in claim 9, wherein said mass (38) is integrated with the shell (34, 35) or forms a whole therewith.

11. Coupling device (1) as claimed in claim 9 or 10, wherein said mass (38) is thermoplastic.

12. Coupling device (1) as claimed in claim 11, wherein said mass (38) is a foam mass with closed skin.

13. Coupling device (1) as claimed in claim 11, wherein said mass (38) consists of polyethylene (PE).

14. Coupling device (1) as claimed in claim 9 or 10, wherein said mass (38) is a thermosetter.

15. Coupling device (1) as claimed in claim 10, wherein the shell (34, 35) and/or said mass (38) is manufactured by reaction injection moulding.

16. Coupling device (1) as claimed in claim 1, wherein the protrusions (28) extend in rows extending in longitudinal direction.

17. Coupling device (1) as claimed in claim 1, wherein the number of rows amounts to two.

18. Coupling device (1) as claimed in claim 1, wherein the protrusions (28) consist of brass with a coating of tin.

19. Coupling device (1) as claimed in claim 1, wherein the clamping means (16) comprise a plastically deformable first element (61, 62, 65, 72).

20. Coupling device (1) as claimed in claim 19, wherein the clamping means comprise an elastically deformable second element.

21. Coupling device (1) as claimed in claim 20, wherein the second element comprises a package of cup springs (59).

22. Coupling device (1) as claimed in claim 19, wherein the first element comprises a tube structure (62) which can yield in longitudinal direction under pressure.

23. Coupling device (1) as claimed in claim 19, wherein the first element comprises a deformable mass (61), for instance a paste arranged in an encapsulation (60), or a yieldable mass (72), for instance consisting of plastic of lead.

Patentansprüche

1. Kopplungsvorrichtung (1) zum gegenseitigen Befestigen von mindestens zwei Adern für eine elektrische Verbindung, die jeweils einen Teil eines elektrischen Kabels bilden,
wobei die Vorrichtung aufweist:

einen elektrisch leitfähigen Block (14, 15, 16, 17) mit scharfen Vorsprüngen (28), so daß durch Ausübung einer Kraft auf die Isolierschicht, die sich um einen Kern bzw. Ader erstreckt, mit Hilfe der Vorsprünge (28) durch eine Klemmvorrichtung (12, 13), die einen Teil der Vorrichtung (1) bildet, diese Umhüllung perforiert wird und der Block (14, 15, 16, 17) in leitenden Kontakt mit dem Kern kommt und bleibt;
eine Kopplungsvorrichtung (20, 21, 22, 23) zum elektrischen Verbinden eines zweiten Kerns mit dem Block (14, 15, 16, 17); und
ein Gehäuse (34, 35) in welchem der Block (14, 15, 16, 17) und die Klemmvorrichtung (12, 13) aufgenommen ist, wobei das Gehäuse (34, 35) Öffnungen für den Durchlaß der jeweiligen Kerne bzw. Adern aufweist;

dadurch gekennzeichnet, daß
das Gehäuse (34, 35) ferner eine Füllöffnung aufweist zum Füllen des geschlossenen Gehäuses mit einer Isoliermasse (38).

2. Kopplungsvorrichtung (1) nach Anspruch 1, wobei der Block (14, 15, 16, 17) einen Teil eines ersten Klemmjochs (13) bildet, welches klemmend mit einem zweiten Klemmjoch (12) mit Hilfe einer Betätigungsvorrichtung (18, 19) zusammenwirken kann.

3. Kopplungsvorrichtung (1) nach Anspruch 1, wobei die Kopplungsvorrichtungen (20, 21, 22, 23) einen zweiten elektrisch leitfähigen Block (20, 21, 22, 23) aufweist an welchen ein zweiter Kern (24, 25, 26, 27) für eine elektrische Verbindung gekoppelt werden kann, wobei der zweite Block (20, 21, 22, 23) an den ersten Block (14, 15, 16, 17) für eine elektrische Verbindung angekoppelt ist.

4. Kopplungsvorrichtung (1) nach Anspruch 2 und 3, wobei der zweite Block (20, 21, 22, 23) einen Teil des zweiten Klemmjochs (12) bildet.

5. Kopplungsvorrichtung (1) nach Anspruch 4, wobei das Gehäuse (34, 35) zwei Gehäuseteile (34, 35) aufweist und mindestens einer der Blocks (12) fest mit einem der Gehäuseteile (34) verbunden ist.

6. Kopplungsvorrichtung (1) nach Anspruch 5, wobei nur einer der Blocks fest mit einem der Gehäuseteile (34) verbunden ist.

7. Kopplungsvorrichtung nach Anspruch 1, wobei das Gehäuse aus Metall besteht, z.B. Gußeisen oder gegossenes Aluminium, und der oder jeder leitfähige Block relativ zum Gehäuse in elektrisch isolierender Weise angeordnet ist.

8. Kopplungsvorrichtung (1) nach Anspruch 1, wobei das Gehäuse (34, 35) aus einem elektrisch isolierenden Material (38) besteht, z.B. Plastik ggf. verstärkt mit Fasern, wie z.B. Polyurethan ABS, Polystyren.

9. Kopplungsvorrichtung (1) nach Anspruch 8, mit einer elektrisch isolierenden Masse (38), die in einem der Gehäuseteile (34, 35) angeordnet ist.

10. Kopplungsvorrichtung (1) nach Anspruch 9, wobei die Masse (38) mit dem Gehäuseteil (34, 35) integriert ist oder ein Ganzes damit formt.

11. Kopplungsvorrichtung (1) nach Anspruch 9 oder 10, wobei die Masse (38) thermoplastisch ist.

12. Kopplungsvorrichtung (1) nach Anspruch 11, wobei die Masse (38) eine Schaummasse mit geschlossener Haut ist.

13. Kopplungsvorrichtung (1) nach Anspruch 11, wobei die Masse aus Polyethylen (PE) besteht.

14. Kopplungsvorrichtung (1) nach Anspruch 9 oder 10, wobei die Masse (38) ein Thermosetter ist.

15. Kopplungsvorrichtung (1) nach Anspruch 10, wobei der Gehäuseteil (34, 35) und/oder die Masse (38) hergestellt wird durch Reaktionsinjektionsguß.

16. Kopplungsvorrichtung (1) nach Anspruch 1, wobei die Vorsprünge (28) sich in Reihen in Längsrichtung erstrecken.

17. Kopplungsvorrichtung (1) nach Anspruch 1, wobei die Anzahl der Reihen zwei beträgt.

18. Kopplungsvorrichtung (1) nach Anspruch 1, wobei die Vorsprünge (28) aus Messing mit einer Zinnbeschichtung bestehen.

19. Kopplungsvorrichtung (1) nach Anspruch 1, wobei die Klemmvorrichtung (16) ein plastisch deformierbares erstes Element (61, 62, 65, 72) aufweist.

20. Kopplungsvorrichtung (1) nach Anspruch 19, wobei die Klemmvorrichtung ein elastisch deformierbares zweites Element aufweist.

21. Kopplungsvorrichtung (1) nach Anspruch 20, wobei das zweite Element eine Packung von Tellerfedern (59) aufweist.

22. Kopplungsvorrichtung (1) nach Anspruch 19, wobei das erste Element eine Rohrstruktur (62) aufweist, welche in Längsrichtung unter Druck nach-

geben kann.

23. Kopplungvorrichtung nach Anspruch 19, wobei das erste Element eine deformierbare Masse (61) aufweist, z.B. eine Paste, die in einer Einkapselung (60) untergebracht ist, oder eine nachgiebige Masse (72), z.B. bestehend aus Plastik oder Blei.

Revendications

1. Dispositif de couplage (1) pour connecter mutuellement pour conduction électrique au moins deux âmes, chacune formant partie d'un câble d'électricité, lequel dispositif comprend :

un bloc électriquement conducteur (14,15,16,17) ayant des protubérances effilées (28) de sorte que, en exerçant une force sur le manchon isolant s'étendant autour d'une première âme avec ces protubérances (28) au moyen d'un moyen de serrage (12,13) formant une partie du dispositif (1), ce manchon est perforé et le bloc (14, 15, 16, 17) vient dans et demeure en contact conducteur avec l'âme ;
un moyen de couplage (20, 21, 22, 23) pour connecter électriquement une seconde âme au bloc (14, 15, 16, 17) ; et
un logement (34, 35) dans lequel ledit bloc (14, 15, 16, 17) et le moyen de serrage (12, 13) sont reçus, lequel logement (34, 35) comporte des ouvertures pour le passage des âmes respectives ;

caractérisé en ce que

le logement (34, 35) comprend, en outre, une ouverture de remplissage (37) pour remplir le logement fermé d'une masse isolante (38).

2. Dispositif de couplage (1) selon la revendication 1, dans lequel le bloc (14, 15, 16, 17) forme une partie d'une première mâchoire de serrage (13) qui peut co-agir pour serrage avec une seconde mâchoire de serrage (12) au moyen d'un moyen d'actionnement (18, 19).

3. Dispositif de couplage (1) selon la revendication 1, dans lequel le moyen de couplage (20, 21, 22, 23) comprend un second bloc électriquement conducteur (20, 21, 22, 23) auquel une seconde âme (24, 25, 26, 27) peut être couplée pour conduction électrique, lequel second bloc (20, 21, 22, 23) est couplé au premier bloc (14, 15, 16, 17) pour conduction électrique.

4. Dispositif de couplage (1) selon les revendications 2 et 3, dans lequel le second bloc (20, 21, 22, 23) forme une partie de la seconde mâchoire de serrage (12).

5. Dispositif de couplage (1) selon la revendication 4, dans lequel le logement (34, 35) comprend deux coques (34, 35) et au moins un des blocs (12) est couplé de manière fixe à une des coques (34).

6. Dispositif de couplage (1) selon la revendication 5, dans lequel un seul des blocs (12) est couplé de manière fixe à une des coques (34).

7. Dispositif de couplage (1) selon la revendication 1, dans lequel le logement est constitué de métal, par exemple de fonte ou d'aluminium fondu et le ou chaque bloc conducteur est disposé de manière électriquement isolante par rapport au logement.

8. Dispositif de couplage (1) selon la revendication 1, dans lequel le logement (34, 35) est constitué d'un matériau électriquement isolant (38), par exemple du plastique facultativement renforcé avec des fibres tel que du polyuréthane, ABS, polystyrène.

9. Dispositif de couplage (1) selon la revendication 8, comprenant une masse électriquement isolante (38) disposée dans une des coques (34, 35).

10. Dispositif de couplage (1) selon la revendication 9, dans lequel ladite masse (38) est intégrée avec la coque (34, 35) ou forme un tout avec celle-là.

11. Dispositif de couplage (1) selon la revendication 9 ou 10, dans lequel ladite masse (38) est thermoplastique.

12. Dispositif de couplage (1) selon la revendication 11, dans lequel ladite masse (38) est une masse de mousse avec une pellicule fermée.

13. Dispositif de couplage (1) selon la revendication 11, dans lequel ladite masse (38) est constituée de polyéthylène (PE).

14. Dispositif de couplage (1) selon la revendication 9 ou 10 dans lequel ladite masse (38) est un thermodurcisseur.

15. Dispositif de couplage (1) selon la revendication 10, dans lequel la coque (34, 35) et/ou ladite masse (38) est fabriquée par moulage par injection par réaction.

16. Dispositif de couplage (1) selon la revendication 1, dans lequel les protubérances (28) s'étendent en rangées s'étendant dans la direction longitudinale.

17. Dispositif de couplage (1) selon la revendication 1,

dans lequel le nombre de rangées est égal à deux.

18. Dispositif de couplage (1) selon la revendication 1, dans lequel les protubérances (28) sont constituées de laiton ayant un revêtement d'étain.

19. Dispositif de couplage (1) selon la revendication 1, dans lequel les moyens de serrage (16) comprennent un premier élément plastiquement déformable (61, 62, 65, 72).

20. Dispositif de couplage (1) selon la revendication 19 dans lequel les moyens de serrage comprennent un second élément élastiquement déformable.

21. Dispositif de couplage (1) selon la revendication 20, dans lequel le second élément comprend un emballage de ressort en coupelle (59).

22. Dispositif de couplage (1) selon la revendication 19, dans lequel le premier élément comprend une structure tubulaire (62) qui peut se dilater dans la direction longitudinale sous pression.

23. Dispositif de couplage (1) selon la revendication 19, dans lequel le premier élément comprend une masse déformable (61), par exemple une pâte, disposée dans une encapsulation (60), ou une masse déformable (72) par exemple qui est constituée de plastique de plomb.

FIG. 1

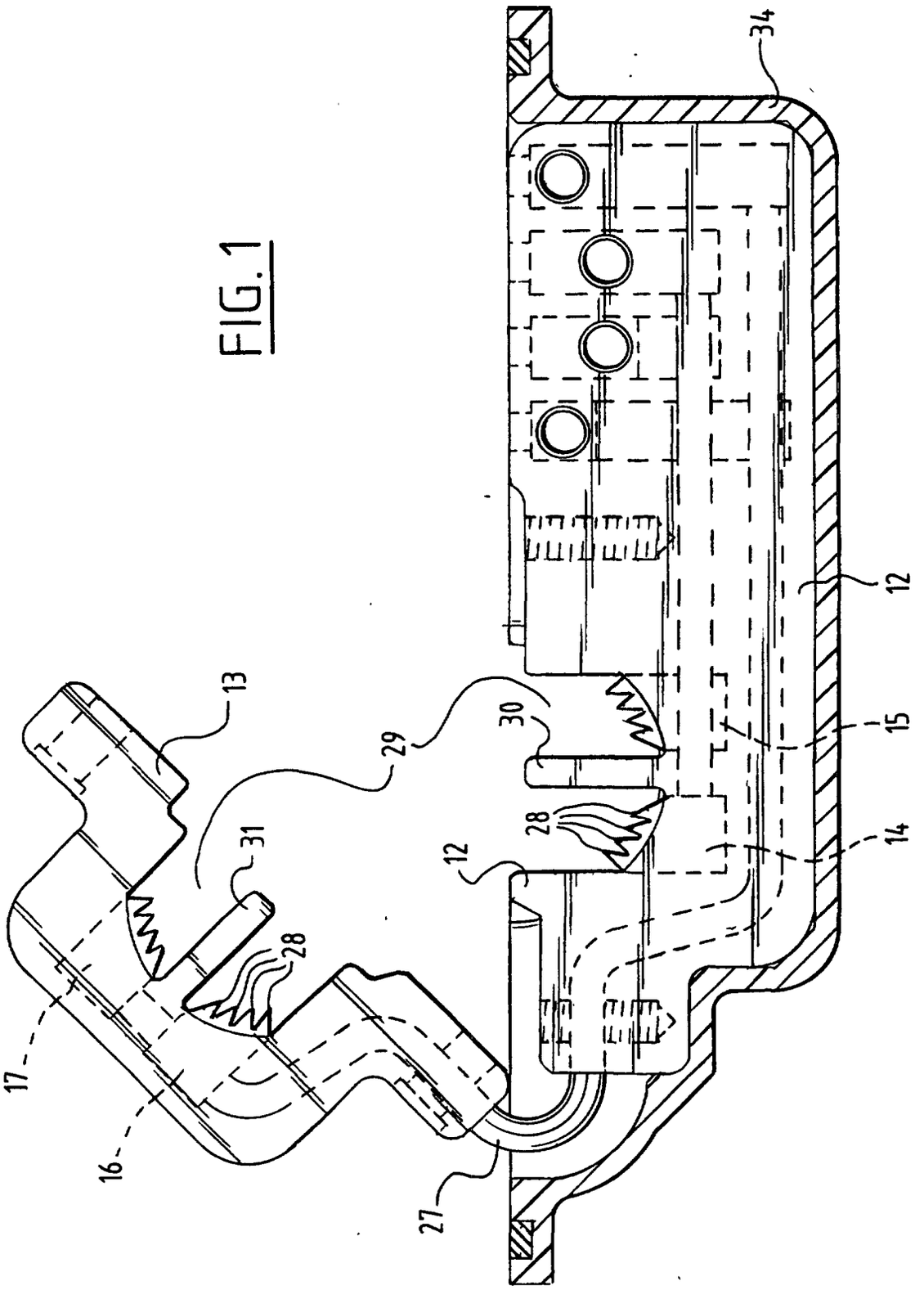


FIG. 2

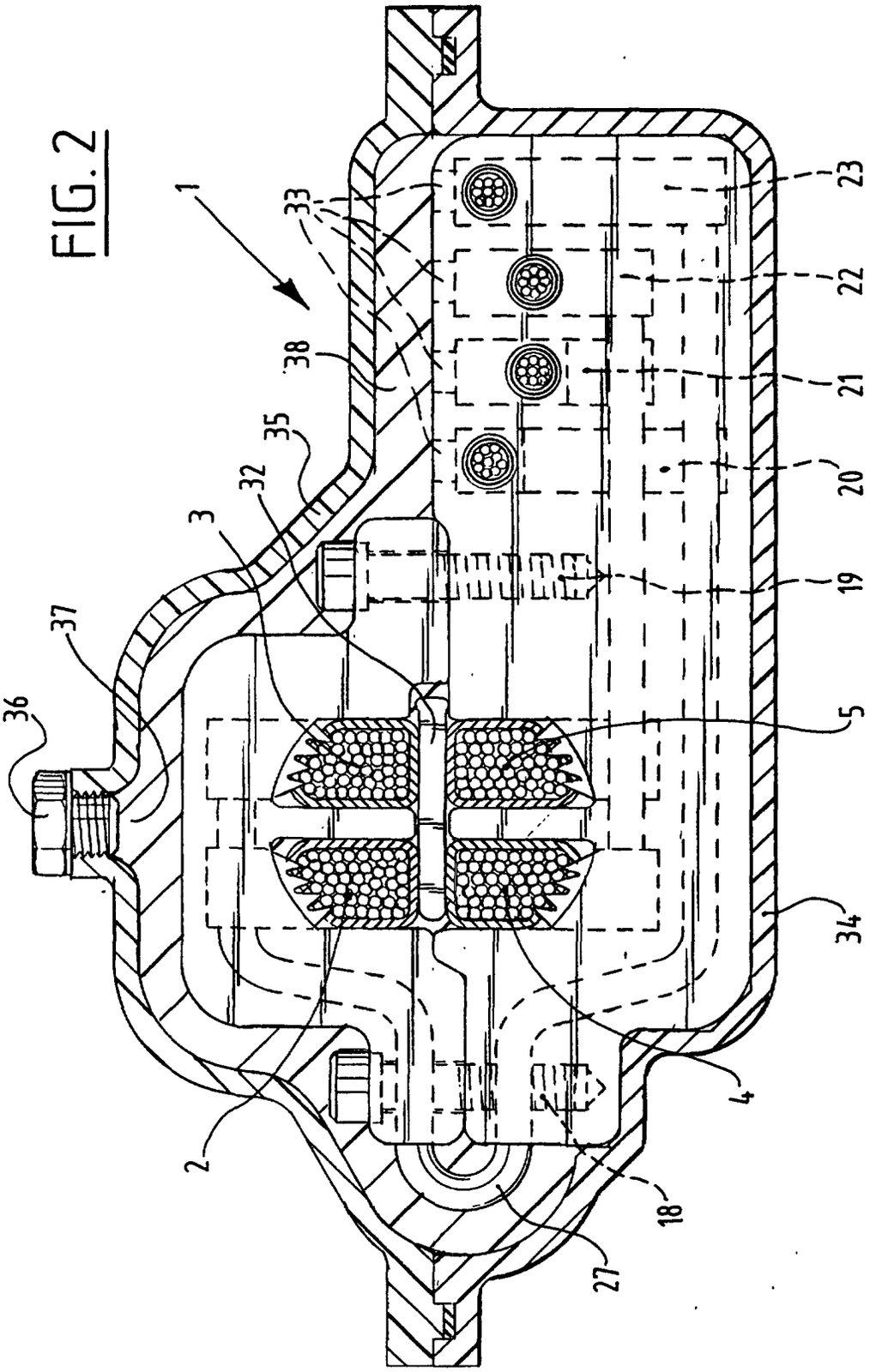


FIG. 3

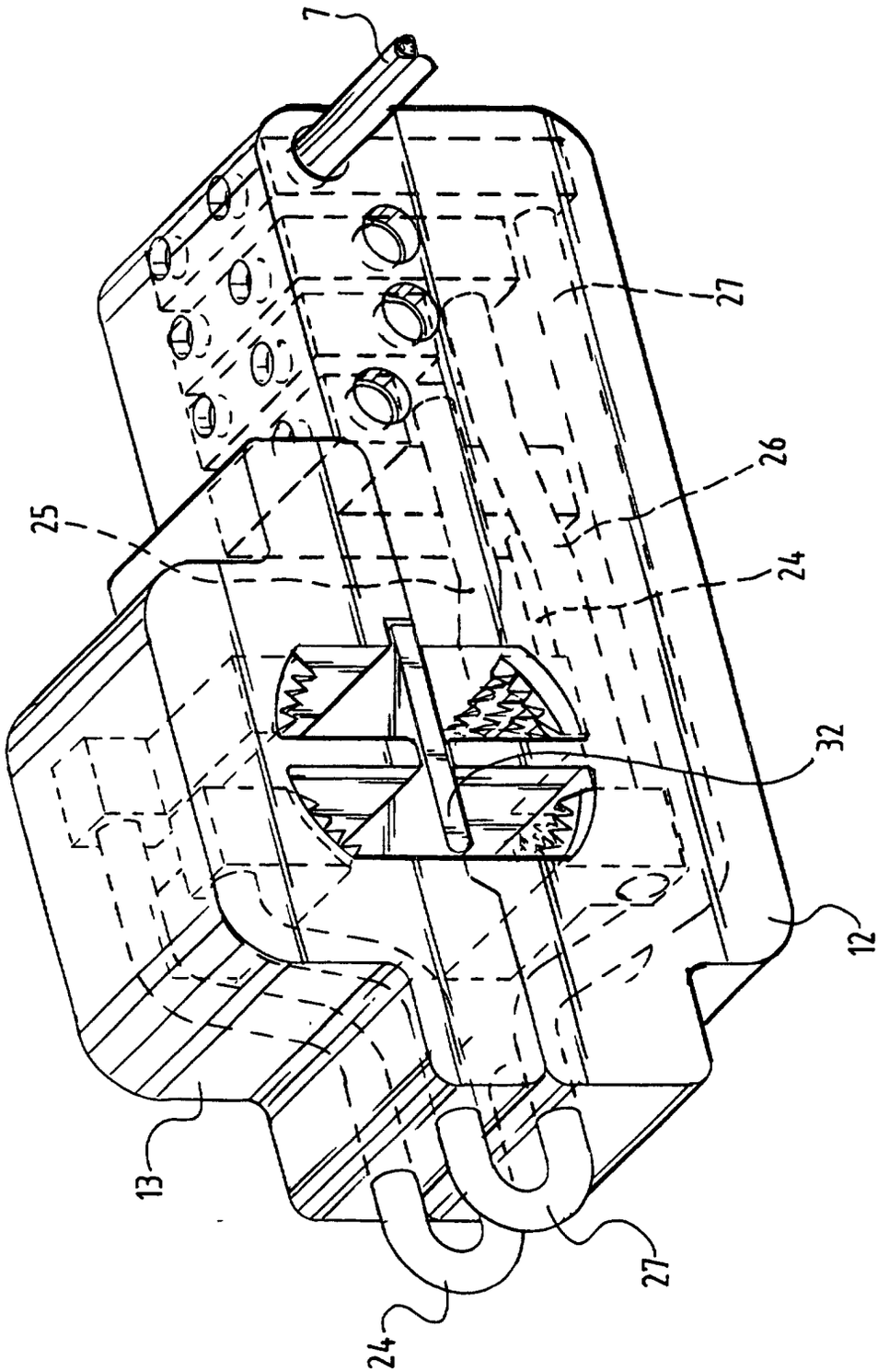
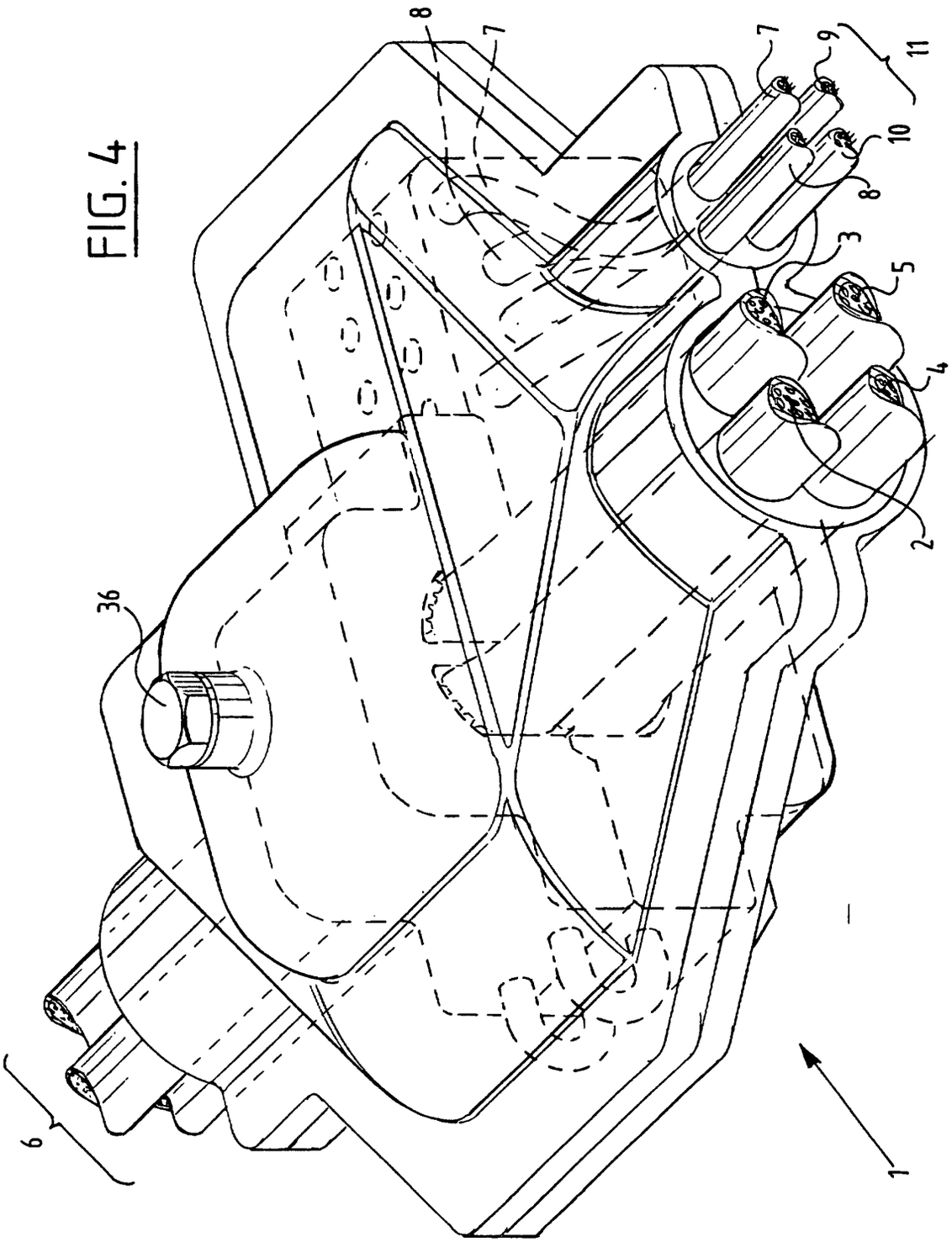


FIG. 4



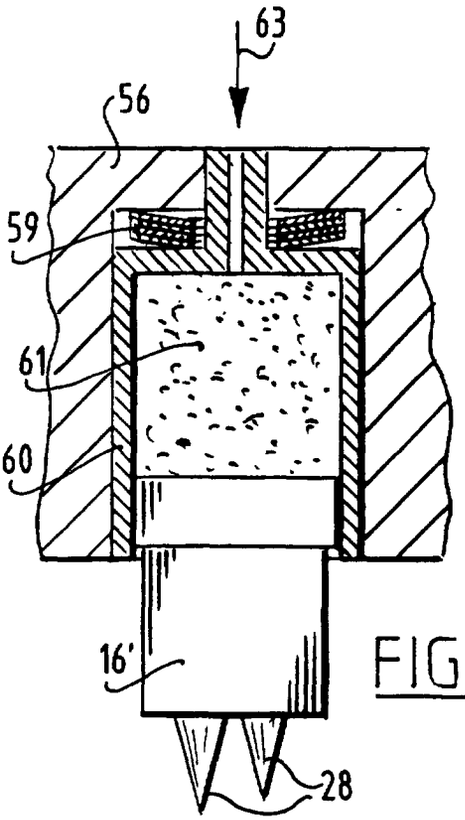


FIG.7

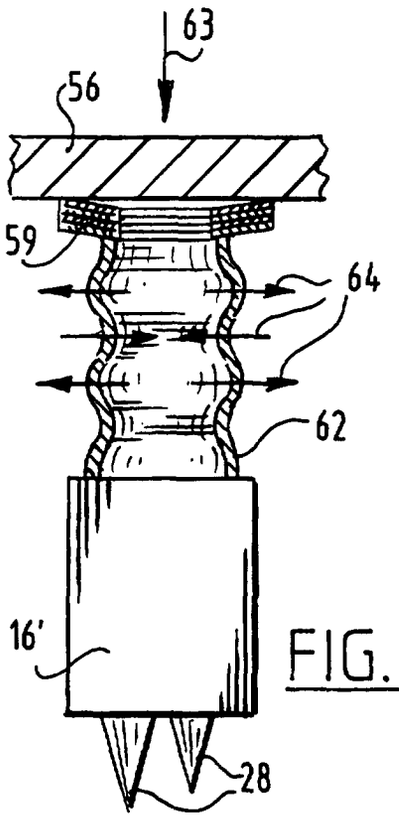


FIG.8

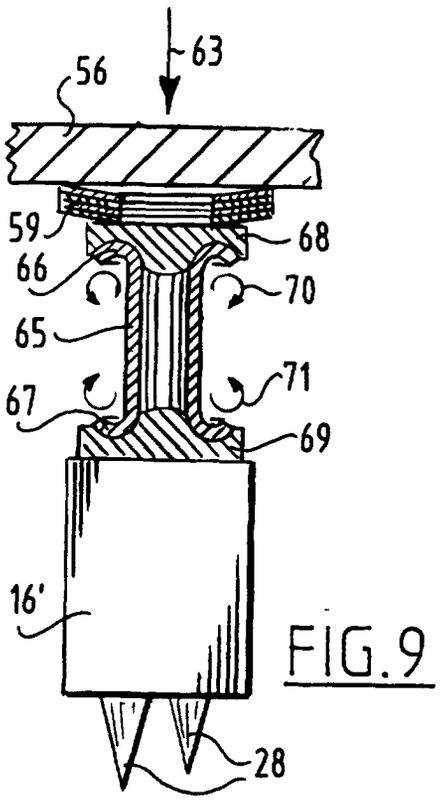


FIG.9

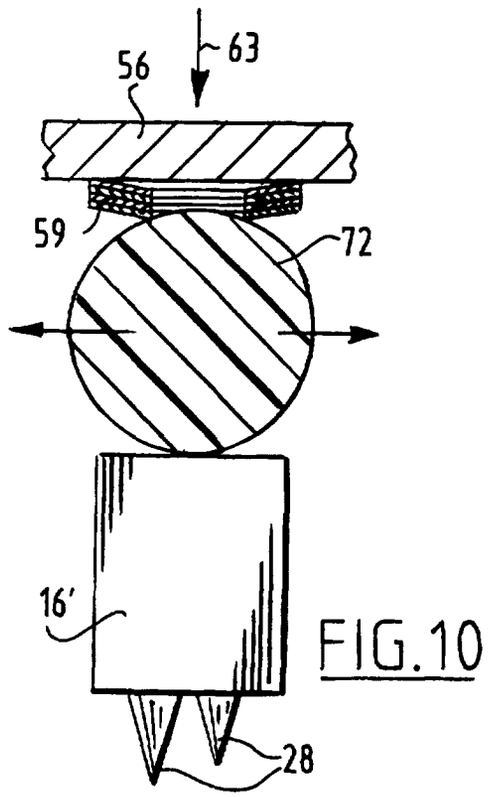


FIG.10

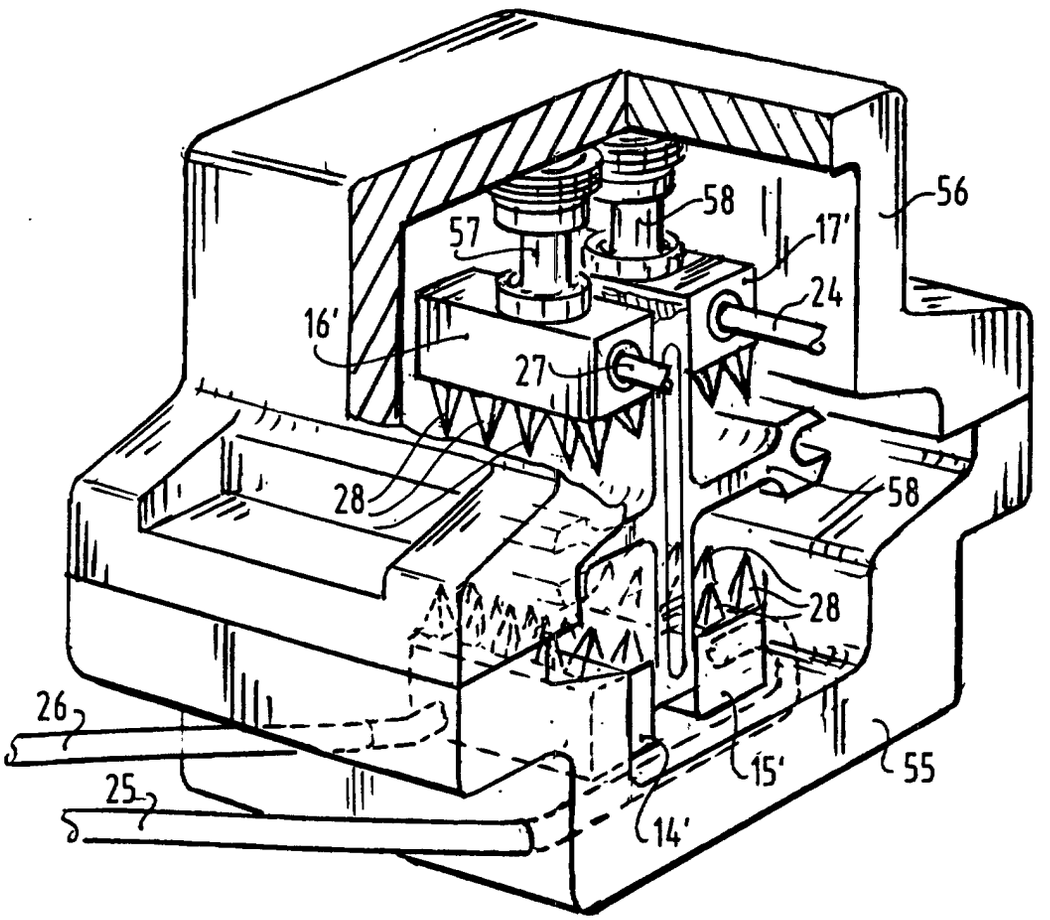


FIG.6

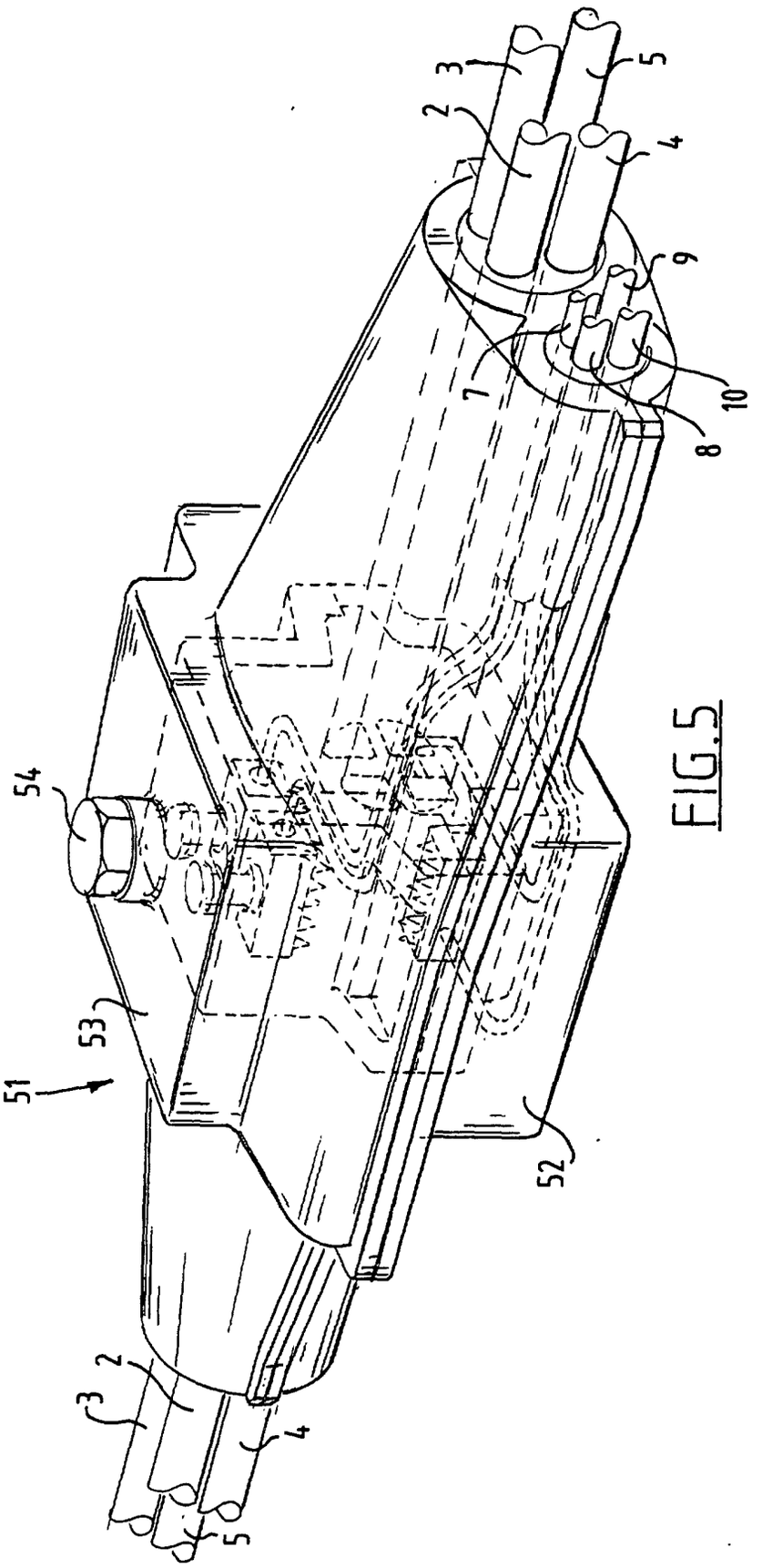


FIG.5