

12 **EUROPEAN PATENT APPLICATION**

21 Application number: 84830141.2

51 Int. Cl.³: **H 01 R 4/48**

22 Date of filing: 04.05.84

30 Priority: 10.05.83 IT 942483

43 Date of publication of application:
14.11.84 Bulletin 84/46

84 Designated Contracting States:
AT BE CH DE FR GB LI NL

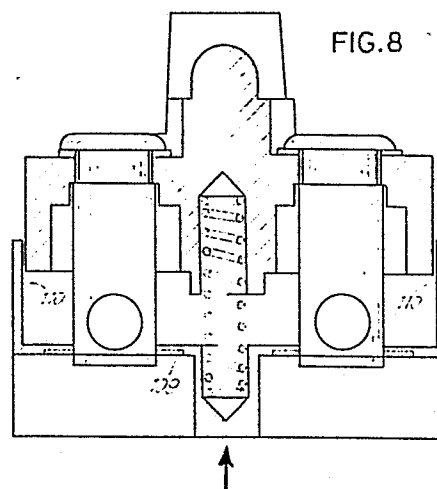
71 Applicant: **ELETTROPLAST S.p.A.**
Via Pienza 35
I-50142 Firenze(IT)

72 Inventor: **Vettori, Brunero**
Via del Proconsolo, 5
I-50122 Firenze(IT)

74 Representative: **Mannucci, Gianfranco, Dott.-Ing.**
Ufficio Tecnico Ing. A. Mannucci Via della Scala 4
I-50123 Firenze(IT)

54 A unit with clamps for engaging the conductors of a cable, particularly a bipolar cable, with the contact elements for lamp holders or the like.

57 A unit with clamps for engaging the conductors of a bipolar cable to the clamps comprising a substantially column-shaped member with a transversal bore, a member which can be moved along the column-shaped member and a spring acting along the axis of said column member on said mobile member; a single element made of insulating material substitutes the mobile members of the two clamps, and is resiliently urged, so that one only thrust operation is carried out in order to engage the conductors in the clamp bores.

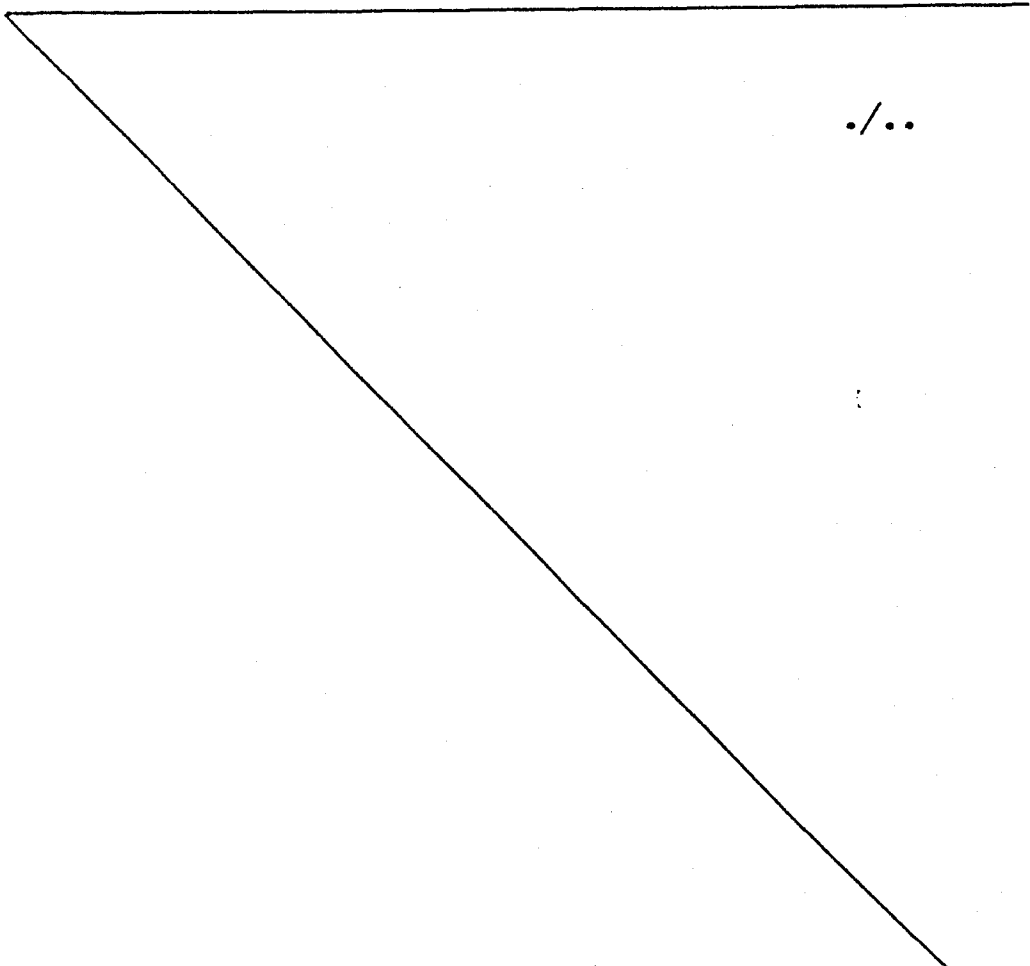


D E S C R I P T I O N

The invention refers to an improved arrangement concerning the clamps for units such as lamp holders, sockets and other components for electric plants; the purpose of the invention is to allow a simpler and quicker connection between the conductors of a cable at least bipolar and the respective clamps.

Clamps are already known which include a substantially

./..



column-shaped member with a transversal bore and a ledge, a member movable along the column member on the mobile member, a spring acting along the axis of the column member on the mobile member the latter being urged to interfere with the bore by the spring and thus engaging and pressing on the bore wire after it has been inserted in the transversal bore.

Usually, in the electrical apparatus of the above mentioned type at least two clamps are provided for the respective conductors, which must be electrically connected with the clamps; with the above arrangement, the thrust operations of the mobile member along the column-shaped member against the action of the spring must be performed twice on both clamps in order to set free the bore where the conductor is to be inserted, this conductor being engaged by the mobile member when the manual thrusting action on the same is stopped.

According to the arrangement of the invention, only a single thrusting action is carried out on the clamp members (which are close with each other), and said mobile members consist of a single element made of insulating material which is urged resiliently and adapted to co-operate with the column-shaped members of the two clamps or of more clamps.

In practice, an element made of insulating material

is provided, this element being in the form of a plate including bores that enable it to slide on the clamp column-shaped members, and subjected to a resilient thrust for the previously mentioned functions.

In the case of two clamps lying side by side, the element made of insulating material is in the form of a crosspiece disposed according to the same alignment of the two clamps, and has an intermediate central zone between the clamps on which pressure is applied against the action of the resilient means for the insertion of the conductors.

The resilient means acting on the element made of insulating material can be formed with the two pre-existing clamp springs, but as an alternative there can be provided also a single central resilient means or a means in any case acting substantially in a symmetrical manner with respect to the position of the two clamps. In this case, in order to prevent any jam, care must be taken so that the plate includes guide tongues or other guide means to slide on the bridge perfectly aligned on the axis of the column-shaped members.

The element made of insulating material can include individual metal components which may be clear or fixed to the same element by hot welding or release fitting and/or anyway disposed to be positioned between each

conductor and the zone of the element made of insulating material which must exert a resilient pressure on the conductor.

Advantageously, in registry with the seat in which the column-shaped member of each clamp slides, in the element made of insulating material there is formed a profile with a side wall which constitutes a ledge or stop for the end of the conductor which is inserted in the clamp transversal bore, so as to define the position thereof and assure insulation with respect to other parts under current. The two ledges or stops in an element made of insulating material which co-operates with the two clamps may be substantially aligned with each other, while the transversal bores of both clamps are aligned to match.

The drawing illustrates schematically a non-limitative example of the invention.

Figs.1 and 2 show an arrangement according to the Model, in a section taken along a plan including the axes of both clamps and in a local section taken along II-II of Fig.1;

Figs.3 and 4 are like Figs.1 and 2, and show an equivalent arrangement, but where completing metal surfaces are included;

Figs.5, 6 and 7 show separately an element made of

insulating material;

Fig. 8 shows a modified embodiment.

As illustrated in the accompanying drawing, numeral 1 generally denotes the body of a unit or core, or other insulating support, on which two clamps have been mounted side by side. Each of the two clamps comprises a column-shaped member 3 forming a rivet 3A for engaging the body 1 and engaging a corresponding connecting metal laminar member 5 to the operative electric members such as the central and lateral contact terminals for the cap of a lamp. Each column-shaped member 3 has an end edge 3B opposite to the riveting 3A and contains a transversal through bore 7 designed to receive the end of a conductor which has been bared by removing the insulating sheath G of a conductor C. The column-shaped member 3 is surrounded by a small helical spring 9, which rests on the body 1 and can thus be compressed and moved away from the edge 3B. These clamps are completed with a mobile member which is to slide along the column 3 on which it is disposed and that is normally urged against the edge 3B by means of the spring 9.

In the shown embodiment two clamps are provided which are arranged substantially side by side and have bores 7 with parallel axes.

According to the invention, the members which can

be moved along the two columns 3 are joined together and formed by a single mobile member in the shape of a plate 10 made of insulating material. Said plate 10 has a pair of bores 12 which are spaced apart like the two column 3, such that the plate member 10 can be adapted to slide on the two columns, in the same way as the individual mobile members provided previously; the plate 10 is biased by the spring 9 so as to rest against the edges 3B in the position illustrated in Figs.1 and 3, but the same plate 10 can also be urged along arrow F and against the action of the springs 9 until it rests on the body 1; under this condition the edges of the bores 12 will assume a position between the transversal bores 7 of the columns 3 and the body 1. Both conductors C can be then inserted into the bores 7 when only a thrusting operation has been performed along arrow F on the plate 10. After inserting the two conductors, the plate is released and the springs 9 push the plate 10 toward the edges 3B and cause the plate to be in contrast with the conductors C by urging the conductors themselves against the wall of the bores 7 which is situated on the side of the respective edge 3B, as shown in Figs.2 and 4.

Thus a single operation on the plate 10 is sufficient to compress both springs 9 and insert both conductors C,

instead of operating selectively for each clamp.

As can be clearly seen in the drawing, the plate 10 can be shaped with step profiles in registry with the bores 12 for forming at least two shoulders or ledges 10S, which correspond to the bores 7; these ledges 10S provide a limitation in the insertion of the conductors C and form also a space boundary around the bores 12. In this way any possible deviation of the filaments forming the conductors C is avoided together with the risk that these filaments might approach metal parts subjected to current which are connected to the other conductor.

In Figs.1 and 2 the entire plate 10 is only made of insulating material. In Figs.3 and 4 the plate is provided with metal surfaces surrounding the bores 12. These metal surfaces can practically be received within depressions 10D surrounding said bores; said plates can be annular. The insert pieces forming the metal surfaces and denoted with 14, come into contact with the respective conductors C and avoid a direct contact of the latter with the insulating material - mostly synthetic resins - which constitutes the plate 10. This arrangement is necessary in the presence of relatively high amperages, for which a metal surface may be required by the law.

According to Figs. 8 and 9, the arrangement is similar to that of Figs. 1 and 2 or 3 and 4, except that, instead of the spring 9, a single spring 109 is provided around the two columns 3 and acts centrally; in this case, in order to prevent any jam, it is suitable to adopt guide means which are indicated by 110 in the drawing.

It has already been mentioned that the plate 10 enables to uncover simultaneously the bores 7 of the two clamps for the introduction of the two conductors by a single operation. It has also been noted that the plate can constitute a protection to prevent a possible deviation of the conductor filaments. In the particular case of certain units, such as those contained within a cap, particularly in the case of lamp holders, there is the further advantage of reducing the dimensions required to respect the law specifications of maintaining a certain distance between the contacts under current and the cap bottom, which includes a metal locking nut (nipple). Since the invention provides an insulating plate, the distance between the plate and the cap bottom can be reduced and the cap height can be made lower than that required today, thus involving lower costs and lower dimensions of the lamp holder.

C L A I M S

1. A unit with clamps for engaging the conductors of a cable - particularly a bipolar cable - to the contact elements, for lamp holders and the like, each clamp including a substantially column-shaped member with a transversal bore, a mobile member along the column-shaped member and a spring acting along the axis of the column member on said mobile member, characterized in that a single element made of insulating material substitutes the clamps mobile members and is urged resiliently, so that only a thrusting operation is carried out in order to engage the conductors in the clamp bores.

2. A unit as claimed in the preceding claim , characterized in that the element made of insulating material is in the form of a plate with bores adapted to enable sliding on the clamp column-shaped members, and is subjected to a resilient thrust toward a stop position.

3. A unit as claimed in the preceding claims, with two clamps disposed side by side, characterized in that the element made of insulating material is in the form of a crosspiece extending along the same alignements of the two clamps, and has an intermediate central zone between the clamps, on which it acts against the action

of the resilient means for the insertion of the conductors.

4. A unit as claimed in any of the preceding claims, characterized in that the resilient means acting on the element of insulating material consist of a spring which acts in an intermediate position.

5. A unit as claimed in any of claims 1 to 3, characterized in that the resilient means acting on the element made of insulating material are formed with the two springs being disposed around the clamp column-shaped members.

6. A unit as claimed in the preceding claims, characterized in that the element made of insulating material includes individual metal components that may be fixed to the same element by any suitable manner and are positioned between each conductor and the zone of the element made of insulating material which is to press resiliently on the conductor.

7. A unit as in the preceding claims, characterized in that, in registry with the seat in which the column-shaped member of each clamp slides, in the element made of insulating material there is formed a profile with a side wall which constitutes a ledge or stop for the end of the conductor which is inserted in the transversal bore of the clamp and can also form a spacing between

the members subjected to current.

8. A unit with clamps for engaging the conductors of a cable, particularly a bipolar cable, to the contact elements, for lamp holders or the like; the whole as described above and represented in the accompanying drawing.

FIG. 1

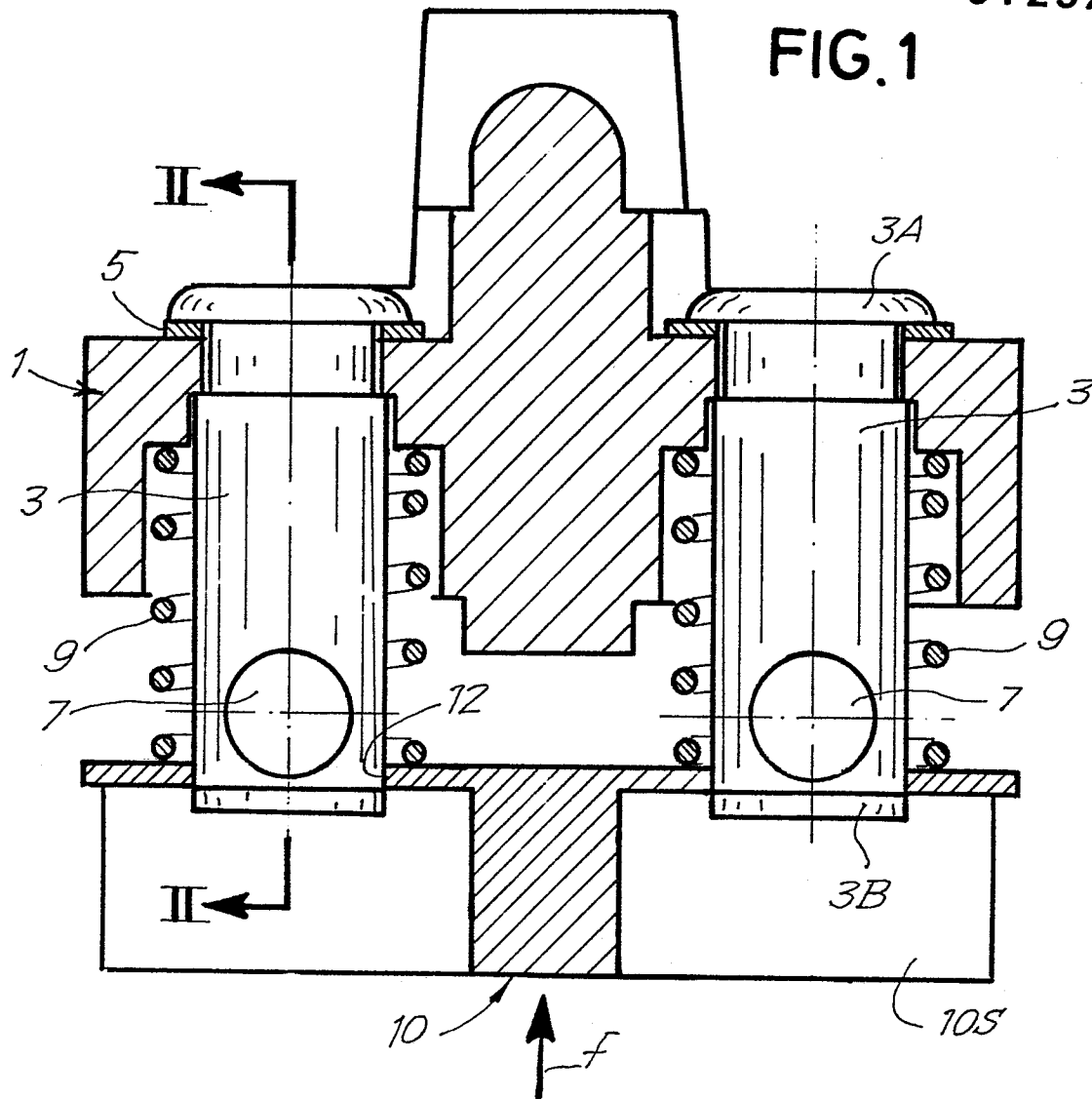


FIG. 2

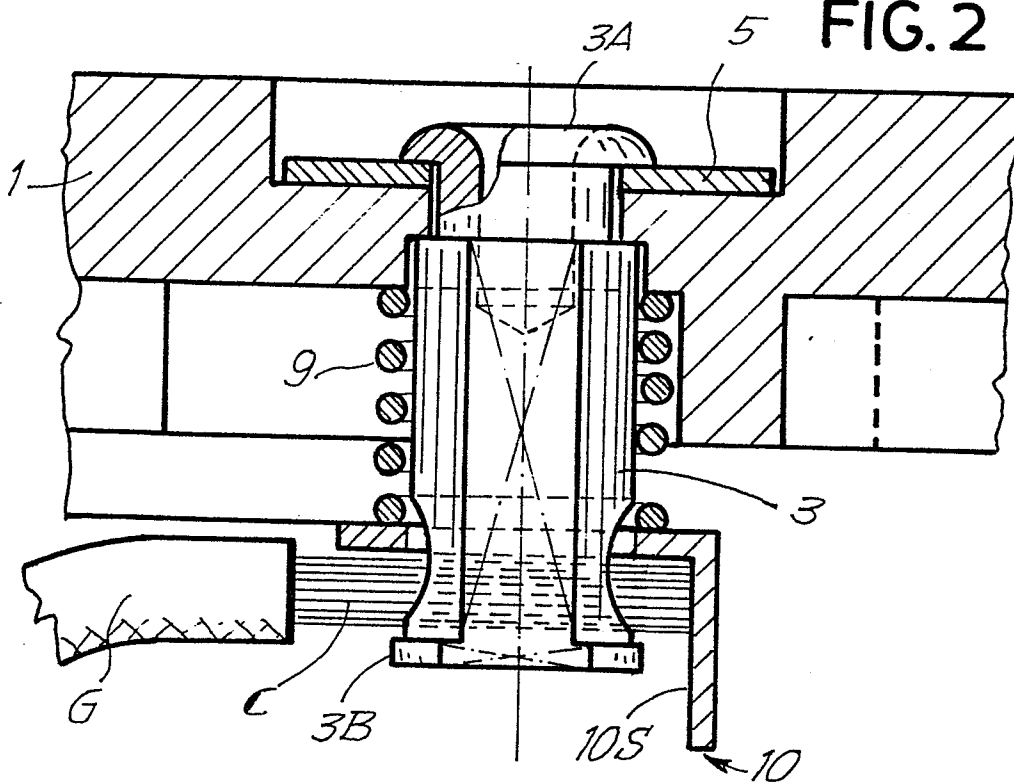


FIG. 3

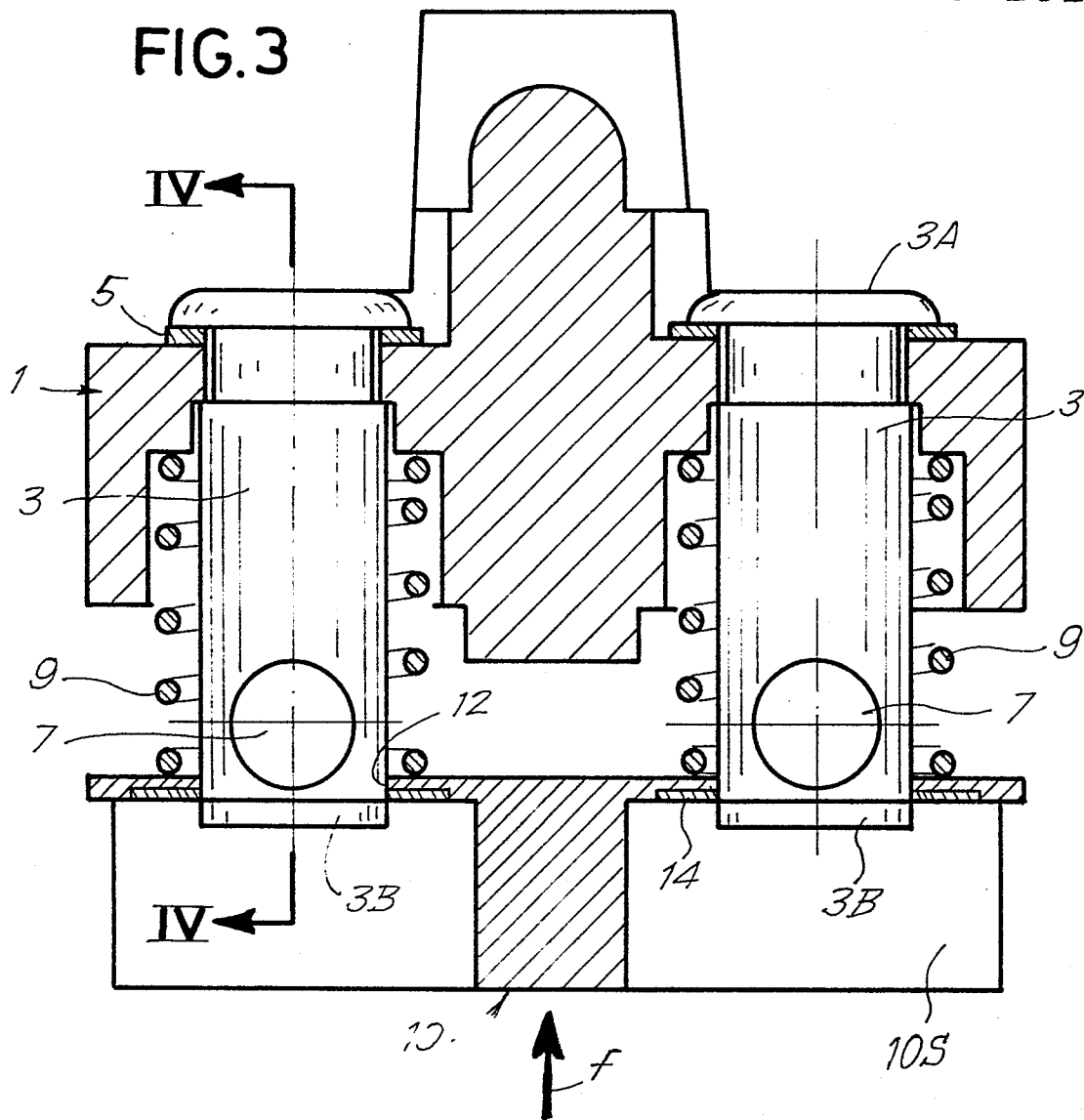
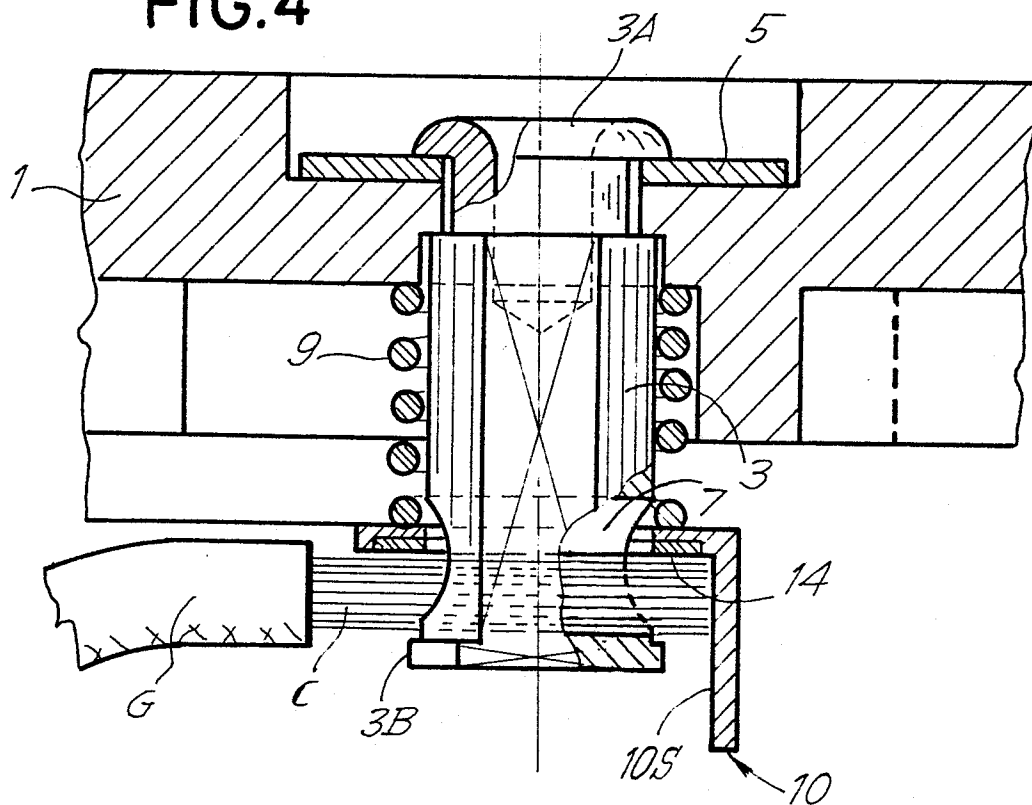


FIG. 4



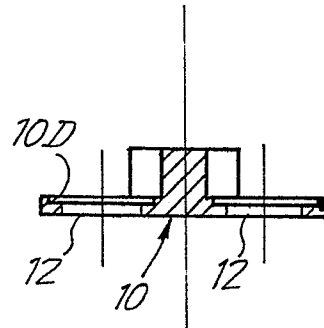


FIG. 6

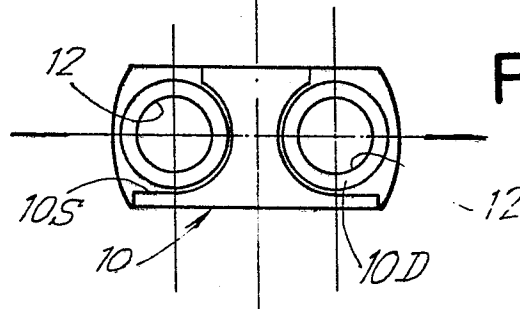


FIG. 5

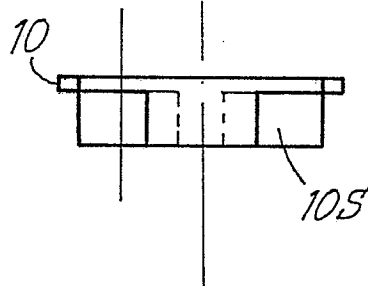


FIG. 7

FIG. 8

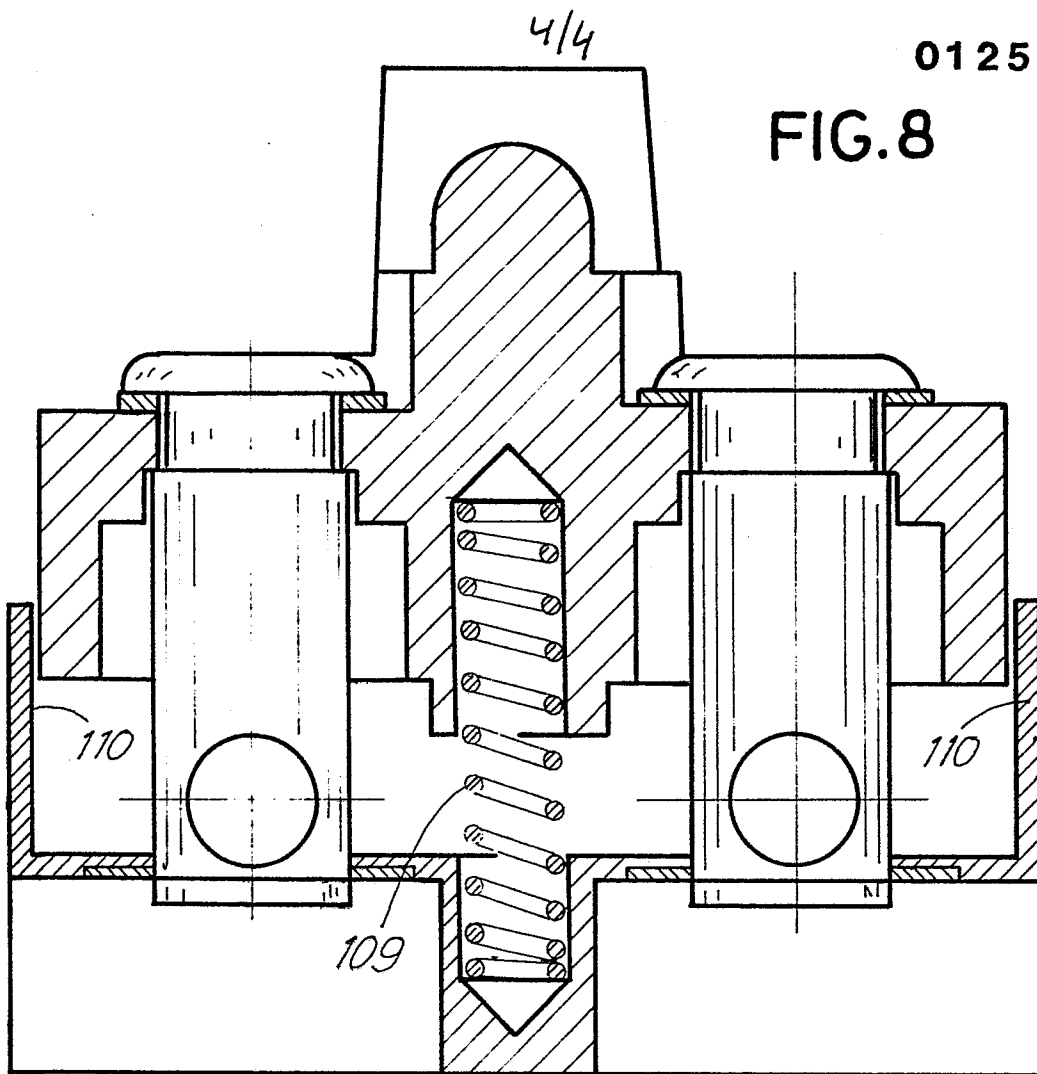


FIG. 9

