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54 Lampholder.

57 A safety lampholder in which in the absence of a bulb contacts that are accessible within the lampholder socket are electrically isolated from fixed terminals to which a supply cable is connected. The contacts are supported on a carrier and can only be moved into engagement with the fixed terminals by applying a force to a pin or pins extending into the socket. The pin may be sharp so that it cannot be pushed by an unprotected finger, or may lie along the wall of the socket so that its tip does not provide sufficient grip to an inserted finger. The pin and carrier may be relatively movable, movement of the pin relative to the carrier causing the carrier to rotate to a position in which it may move axially towards the fixed terminals.

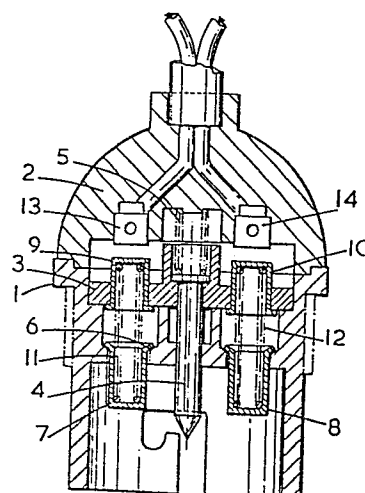


FIG. 1.

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LAMPHOLDER

The present invention relates to lampholders.

Conventional lampholders comprise a body supporting fixed terminals to which electrical cables are connected, the body defining a socket into which a lamp bulb is in use inserted. Contacts often in the form of resiliently mounted pins are exposed within the socket to contact an inserted bulb, the contacts being permanently electrically connected to the fixed terminals.

When no bulb is present in the socket the contacts are exposed and can be easily touched. This can happen for example when replacing a faulty bulb in an overhead lampholder, or by accidentally putting ones finger in an empty socket from which a faulty bulb has been removed. Children are particularly at risk in the latter case when bedside or other free standing lampholders are provided.

Conventional three pin socket outlets into which cable terminating plugs are inserted generally have their live and neutral terminals covered by a shutter, the shutter being pulled away when an earth pin of a plug is inserted into the earth terminal socket. Such socket outlets are relatively safe as if one is to electrically contact the live terminal a pin must first be inserted into the

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earth terminal socket and then a further pin must be inserted into the live terminal socket. In contrast, in conventional lampholders not only are the live and neutral terminals not protected by a shutter
5 but also the common socket in which they are located is large enough to enable a finger to be inserted.

The danger represented by conventional lamp-holders has been previously recognised and various attempts have been made to isolate the contacts
10 within the socket from the cable terminals except when a bulb is present in the socket.

In one prior arrangement, the contact pins are spring mounted in the lampholder body so that unless they are pushed up from within the socket in an axial
15 direction relative to the socket they do not contact the cable terminals. Unfortunately unless the spring force applied to the contacts is large the contacts can be easily pushed up with a finger. On the other hand, if the spring force is large it becomes
20 difficult to insert a bulb into the socket, and even more difficult to remove a bulb as the contacts tend to become embedded in the soft lead provided in at least one terminal of conventional bulbs. Damage to the bulb can result and the lampholder
25 feels far too tight.

In another prior arrangement described in U.S. Patent No. 4,222,623 the contacts are supported on a

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rotatable or linearly movable carrier. When a bulb is inserted the carrier moves transversely relative to the socket against the action of a return spring from a first position in which the contacts are isolated from the cable terminals to a second position in which the contacts are electrically connected to the cable terminals. A spring loaded locking device is provided which releases the carrier for movement only when one of the contacts is depressed. This is not satisfactory however as either the locking device spring and return spring are relatively weak and can therefore be easily overcome by an inserted finger or the springs are relatively strong and an excessively stiff mechanism results.

A further prior arrangement is described in British Patent Specification 2,069,252. This arrangement also relies upon rotation of a carrier, rotation being prevented unless the contacts have been depressed. However the same stiffness problems result as the spring force on the contacts must be considerable if accidental activation is to be prevented. A pressure as high as 7 to 10lbs (3.18 to 4.55 Kg) on both contacts is mentioned.

It is an object of the present invention to provide an improved lampholder.

According to the present invention, there is

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provided a lampholder comprising a housing defining a socket into which in use a lamp bulb is inserted in an axial direction relative to the socket, fixed cable terminals supported by the housing and to which in use power supply cables are connected, contacts accessible within the socket for making electrical connections with an inserted bulb, a carrier mounted in the housing and supporting at least a part of each of the contacts, the carrier being movable as a result of insertion of a bulb between a first position in which the contacts are isolated from the terminals and a second position in which the contacts are electrically connected to the terminals, and means to bias the carrier to the first position in the absence of a bulb, wherein the carrier is engaged by at least one pin which bears against an inserted bulb and moves axially with it relative to the housing as the bulb is inserted into or removed from the socket, the or each pin being arranged so that an inserted finger cannot normally exert sufficient force upon it to move the pin axially, and the carrier being arranged so that it cannot be moved to the second position by an inserted finger unless a force is exerted on the or at least one of the pins sufficient to move the pin axially.

The or each pin may be easily accessible to an

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inserted finger but have a sharpened tip so that it is too painful to push the pin axially with an unprotected finger. Alternatively the or each pin may be located adjacent the inner wall of the socket so as to engage only the outer periphery of an inserted bulb and to make it extremely difficult to move the pin axially without using a tool to engage the pin tip. As the axial force required to connect the contacts and terminals must be applied to the pins, and such a force is difficult to apply, the spring force which must be overcome can be relatively small. The lampholder is thus easy to use and does not feel stiff to the user.

The carrier may be separated from the socket by a partition through which the pin or pins and the contacts extend, the contacts being spring loaded so that pushing them axially does not move the carrier axially. Alternatively, the carrier may be freely accessible within the socket, in which case it is necessary to prevent direct contact between the carrier and an inserted finger by providing one or a plurality of sharp pins the spacing between which and the socket wall is less than a finger width, or to prevent the carrier being moved so as to make an electrical connection even if a finger is pressed directly against it. Movement of the carrier so as to make an electrical connection

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as the result of applying a force directly to it
can be prevented by arranging for the or each pin to
cooperate with the carrier such that as the pin is
moved relative thereto the carrier is caused to rotate,
5 no electrical connection being made without such
rotation.

Embodiments of the present invention will now be
described, by way of example, with reference to the
accompanying drawings, in which :

10 Fig. 1 illustrates a first embodiment of the
invention for receiving a bayonet-type bulb;

Fig. 2 illustrates a second embodiment of the
invention similar to the first but adapted to receive
an Edison screw-type bulb;

15 Fig. 3 illustrates a third embodiment of the
invention for receiving a bayonet bulb;

Fig. 4 illustrates a fourth embodiment of the
invention for receiving a bayonet bulb; and

20 Figs. 5 to 18 illustrate in detail a fifth
embodiment of the invention for receiving a bayonet
bulb, Fig. 5 being a schematic sectional view
illustrating the relative orientations of the
contact carrier and the lampholder housing, Figs.
6 to 9 being respectively a top end view, a socket
25 end view, an axial section on the line 8-8 of Fig. 6,
and an axial section on the line 9-9 of Fig. 6 of
the housing, Figs. 10 and 11 being underside and

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axial section views of the lampholder cap, Figs. 12 and 13 being side and end views of the contact carrier, Figs. 14 being an end view of a latch, Figs. 15 and 16 being side views taken on lines 15-15 and 16-16 of Fig. 14, and Figs. 17 and 18 illustrating terminals suitable for forming the contacts and the fixed terminals respectively.

Referring to Fig. 1, the illustrated lampholder comprises a housing 1, a cap 2, a carrier 3 movable axially relative to the housing, and a pin 4 which extends along the housing axis. The pin 4 has a flanged head against which a compression spring 5 bears. The pin extends through the carrier and through a partition 6 which is integral with the housing, the flanged head of the pin engaging the carrier such that the carrier is pressed down against the partition 6 by the spring 5.

The partition 6 supports contact elements 7 and 8 and the carrier 3 supports contact elements 9 and 10, the elements 7 and 9 being electrically connected by spring 11 and the elements 8 and 10 being electrically connected by spring 12.

The underside of the cap 2 supports fixed terminals 13 and 14 to which a power supply cable is secured in a conventional manner. The cap is secured to the housing by any convenient means, e.g. screws (not shown).

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When a bulb is inserted into the socket defined by the housing its bayonet pins engage in slots (only one of which is shown) such that the bulb moves parallel to the housing axis without turning. The bulb then contacts the tip of the pin 4, pushing it upwards against the spring 5. The carrier 3 is then free to move upwards under the influence of springs 11 and 12. When the bulb has been finally pushed home and turned to engage the bayonet slots its terminals bear against the contact elements 7 and 8, depressing them against springs 11 and 12 to ensure good electrical contact, and the contact elements 9 and 10 bear against the terminals 13 and 14. The bulb is thus electrically connected to the power supply cable.

When the bulb is removed, the carrier 3 moves away from the terminals 13 and 14, isolating the contact elements 7 and 8. If a person inserts a finger into the socket the elements 7 and 8 remain isolated unless the pin 4 is pushed upwards. As the pin tip is sharp this cannot be done with a naked finger without suffering considerable pain, even if the spring 5 is not particularly strong. If the elements 7 and/or 8 are pushed upwards, the carrier 3 does not move and thus the elements 7 and 8 remain isolated. Accidental electrocution is thus avoided.

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Referring now to Fig. 2, the illustrated embodiment is very similar to that of Fig. 1 except for modifications to make the lampholder suitable for receiving an Edison screw bulb. Accordingly where appropriate the same reference numerals are used in Fig. 2 as in Fig. 1. Instead of supporting resiliently movable contact elements the partition 6 fixedly supports the ends of three resilient terminals 15, 16 and 17. The terminal 15 extends over the tip of the pin 4 but is provided with an aperture 18 such that if the terminal 15 is pushed towards the partition 6 the pin 4 protrudes through the aperture 18. The terminal 16 extends through the partition and along the inside of the socket wall. The terminal 17 extends parallel to the terminal 16.

When a bulb is screwed in, it presses the terminals 16 and 17 together, pushes terminal 15 towards the partition 6, and pushes the pin 4 and thus the carrier 3 against the terminals 13, 14. When the bulb is removed, the reverse process occurs. Thus as with the embodiment of Fig. 1 accidental electrocution is avoided.

Referring now to Fig. 3, the illustrated embodiment is again similar to that of Fig. 1, the main difference being that the carrier is not separated from the bulb receiving socket by a partition. Accordingly the same reference numerals

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are used in Fig. 3 as in Fig. 1 where appropriate.

In the embodiment of Fig. 3, the housing 1 and cap 2 are fabricated as a single piece but an annular inwardly extending flange 19 is provided rather than a partition. A carrier 3 can be force fitted into the housing by pushing it past the flange 19. The elements 7, 9 and 8, 10 of the two contacts are wholly supported by the carrier. Insertion of a bulb pushes the pin 4 towards the terminals 13, 14 allowing the carrier 3 to be pushed in the same direction by the bulb to make electrical connections between the terminals and the contacts. Removal of the bulb results in these electrical connections being broken. The normal operation of the embodiment is thus substantially the same as in the case of the embodiment of Fig. 1.

In the embodiment of Fig. 3, if the spacing between the axial pin 4 and the wall of the socket is great enough to receive a finger, it would be possible to push either one of the contact elements 7, 8 or the carrier directly against the force of the spring 5, and thereby bring the contact elements 9, 10 and terminals 13, 14 into electrical contact. This possibility can be avoided however by providing a plurality of pointed pins the spacing between which and the socket wall is too small to admit a finger. For example, the pin illustrated could be

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replaced by a single member having an axial shaft extending through the carrier and three or four pin elements extending parallel to the shaft but radially spaced relative to the shaft. Such an arrangement would allow the pin elements to rotate with an inserted bulb relative to the carrier.

Referring now to Fig. 4, an embodiment is illustrated in which the carrier is freely accessible to an inserted finger but movement of the carrier is prevented unless pins extending along the socket wall are pushed in an axial direction. In this embodiment the pins cannot be pushed by an inserted finger as a result of their being difficult to engage with ones finger rather than as a result of such engagement being painful.

The lampholder of Fig. 4 comprises a single piece housing 20 supporting fixed terminals 21, 22 and receiving a carrier 23 which is force fitted by pushing it over an internal flange 24. The carrier supports sprung contacts 25 arranged to make electrical connections with the terminals 21, 22 when the carrier is moved towards the terminals.

The carrier is generally circular when viewed from the socket but is provided with two oppositely arranged lugs 26, 27 which in the position shown engage in an annular groove 28 located between the flange 24 and a thickened portion 29 of the housing

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20. Two axially extending grooves (not shown) communicate with the groove 28 and when the lugs are aligned with these axial grooves the carrier can move towards the terminals 21, 22.

5 A latch is provided comprising a central portion 30 extending across and above the carrier between the contacts 25 and two pins 31 (only one of which is shown) extending through peripheral slots 32 in the carrier and along slots (not shown)
10 in the inside wall of the socket. Each slot 32 has an inclined edge surface 33 which engages a similarly inclined edge of the respective pin. A spring 34 bears against the central portion 30 of the latch.

 With the pins in the position shown, that is
15 before a bulb is inserted, the carrier cannot rotate relative to the housing because of the presence of the pins and their engagement with the socket wall, and the carrier cannot be moved axially because the lugs 26, 27 bear against the thickened
20 portion 29 of the housing wall. When a bulb is inserted, its end engages the tips of the latch pins 31 pushing them upwards against the spring 34. The inclined portions of the pins slide against the corresponding inclined portions 33 of the carrier,
25 causing it to rotate. This rotation aligns the lugs 26, 27 with the axial grooves so that when the bulb terminals engage the contacts 25 the carrier 23 is

13.

pushed towards the terminals 21, 22 to make electrical connections between the terminals and contacts.

Thus although a finger can be inserted into direct contact with the carrier, the carrier cannot
5 be moved. The tips of the pins 31 do not provide sufficient grip for an inserted finger to move the latch. Accidental electrocution is accordingly avoided.

Referring now to Figs. 5 to 18, a further
10 embodiment of the invention will be described. The principal of operation of this embodiment is similar to that of the embodiment of Fig. 4 but its constructional detail differs in several respects.

Fig. 5 schematically illustrates the lampholder
15 housing 35 which supports fixed spring strip terminals 36 and a carrier 37 which supports spring strip contacts 38. When a bulb is inserted the carrier initially rotates to move the contact 38 shown in Fig. 5 to the right and thereafter the carrier moves
20 towards the terminal 36 to make sliding contact between the terminal 36 and the contact 38. It will be seen that the carrier supports two axially extending arms 39. The latch member which causes the carrier to rotate is not shown in Fig. 5.

25 Figs. 6 to 9 illustrate the housing 35 of Fig. 5 in detail, Figs. 6 and 7 being respectively top and bottom views taken on lines 6-6 and 7-7 of Fig. 5,

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and Figs. 8 and 9 being axial sections taken on lines 8-8 and 9-9 of Fig. 6. The terminals 36 of Fig. 5 are inserted through apertures 40 (Figs. 6 and 7), wires being fed to the terminals radially from a position on the housing axis, beneath lugs 41, and into through holes 42.

The housing defines conventional bayonet slots 43, axial slots 44 arranged on opposite sides of the housing, and axial keyways 45 also arranged on opposite sides of the housing. The inside of the housing also defines recessed areas 46.

Figs. 10 and 11 illustrate the lampholder cap, the cap being provided with apertures 47 which engage over lugs 48 (Fig. 8) such that the cap is a snap fit on the housing. Keyways 49 cooperate with grooves 50 (Fig. 6) to ensure correct orientation of the cap on the housing.

Figs. 12 and 13 illustrate the carrier 37 previously shown in Fig. 5 and its arms 39. The carrier is provided with two slots 51 with inclined edges 52, 53, two slots 54 immediately adjacent respective arms 39, and two slots 55 to receive the terminals 38 (Fig. 5). The inclined edges 53 are provided on projections 56. For the sake of clarity, only one arm 39 and one projection 56 are shown in Fig. 13. The arms 39 are resilient and support hooks 57 on their ends.

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Referring now to Figs. 14 to 16, various views of a latch are shown. The latch comprises a central portion 58 supporting a pin 59 and two end portions or pins 60 defining inclined surfaces 61.

5 Referring to Figs. 17 and 18, the carrier contact 38 and fixed terminal 36 are illustrated. The carrier contact comprises a central apertured portion 62 which when the pin is mounted in the carrier is located within the slot 55 (Fig. 12), the
10 slot being shaped such that the contact aperture is positively engaged. The contact is thus a simple push in fit. The fixed contact 36 comprises an aperture having a first portion 63 of circular cross section larger than the diameter of an insulated
15 wire to which it is to make a connection and a second portion 64 in the form of a slot the width of which is less than the diameter of the conductor wire. The head of the terminal supports a flange 65. In use, the terminal is pushed into the slot
20 40 (Fig. 6) until the circular aperture 63 is aligned with the through holes 42 (Fig. 8). The unstripped wire is then pushed through the terminal so that its end is located in the hole 42. The terminal is then pushed fully in so that the flange 65 engages in
25 a slot 66 shown in outline in Figs. 6, 8 and 9. This final movement of the terminal secures it in position and also simultaneously forces the conductor wire

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into the terminal slot 64, the edges of the slot cutting through the wire insulation. Pre-stripping of the wire insulation is thus not necessary.

To assemble the illustrated lampholder, the terminals 36 are pushed partially into the housing and the contacts 38 are pushed fully into the carrier as described above. The latch pins 60 are located in the carrier slots 51 and a compression spring is placed over the latch pin 59. This sub assembly is then pushed into the housing with the latch engaging grooves 44 until the carrier hooks 57 snap into the housing recesses 46. A cable is then passed through the cap and secured to the terminals, and the cap is snapped onto the housing. The lamp holder is then complete.

If an attempt is made to push the carrier towards the terminals with a finger, the carrier is prevented from moving as it comes into contact with the keyways 45. If a bulb is inserted, the latch pins are engaged and the latch moves axially. The cooperating inclined surfaces 52, 53 and 61 of the latch and carrier cause the carrier to rotate until the keyways 45 are aligned with the slots 54, whereafter the carrier is pushed into the housing until the terminals 36 engage the contacts 38.

Although in the embodiments of Fig. 4 and Figs. 5 to 18 the carrier is first rotated and then moved axially, it could be arranged that no axial

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movement of the carrier is necessary, merely a rotational movement caused by cooperation with an axially moved latch mechanism.

It will be appreciated that switch devices
5 may be incorporated in the lampholders if so required. Furthermore, it will be appreciated that the embodiments of Figs. 3 to 18 may be easily adapted to accommodate screw-type bulbs. If the lampholder has the structure of Figs. 5 to 18 but is adapted
10 for a screw type bulb, the pins which extend along the socket wall can be recessed in grooves so that they do not protrude above the lampholder screw thread. Thus only a bulb which engages in the screw thread can engage the tips of the pins.

15 The embodiment of Figs. 5 to 18 has a snap-on cap. As an alternative however the head of the lampholder housing can be extended to define a tube through which the supply cable runs. A bore communicates with the tube and a screw which extends
20 through and engages a thread in the lampholder cap engages in the bore. The screw thus secures the cap in position and when tightened traps the cable within the tube to prevent it from being pulled out accidentally.

25 It will also be appreciated that the above lampholder safety mechanisms can be provided in an adaptor which can be fixed to a conventional lamp-holder. An adaptor of this type could prove useful

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where the purchaser does not want to remove existing lampholders and wire in new ones. In the case of adaptors for bayonet fittings, the adaptor could have a structure such that it locks onto the spring mounted contacts in the conventional lampholder. as a result of these contacts engaging in suitable recesses. The adaptor could not then be removed accidentally. The bayonet pin of the adaptor could be made removable however so that the adaptor could be removed using a pair of pliers if so desired.

It is possible to combine a sharpened centre pin with a latch actuated by pins extending along the socket wall. The latch and a rotatable carrier cooperate as in the embodiment of Figs. 5 to 18 but the latch and carrier are locked together until the centre pin is depressed. This can be achieved by for example providing a square section portion on the centre pin which engages in mating square apertures in the latch and carrier unless the centre pin is depressed. This combined centre pin and latch arrangement is very safe indeed as it is necessary to push both the centre pin and the latch pins to move the carrier.

In the latch and carrier mechanisms described, rotation of the carrier is achieved by cooperating faces of the latch and carrier sliding relative to each other. In the case of bayonet bulb fittings,

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it is possible to cause or assist rotation by providing suitable slotted members secured to the carrier, the bulb bayonet pins engaging the slotted members as the bulb is inserted.

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CLAIMS:

1. A lampholder comprising a housing defining a socket into which in use a lamp bulb is inserted in an axial direction relative to the socket, fixed cable terminals supported by the housing and to
5 which in use power supply cables are connected, contacts accessible within the socket for making electrical connections with an inserted bulb, a carrier mounted in the housing and supporting at least a part of each of the contacts, the carrier
10 being movable as a result of insertion of a bulb between a first position in which the contacts are isolated from the terminals and a second position in which the contacts are electrically connected to the terminals, and means to bias the carrier to the
15 first position in the absence of a bulb, wherein the carrier is engaged by at least one pin which bears against an inserted bulb and moves axially with it relative to the housing as the bulb is inserted into or removed from the housing, the or each pin
20 being arranged so that an inserted finger cannot normally exert sufficient force upon it to move the pin axially, and the carrier being arranged so that it cannot be moved to the second position by an inserted finger unless a force is exerted on the
25 or at least one of the pins sufficient to move the pin axially.

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2. A lampholder according to claim 1, wherein the or each pin has a tip the cross section of which is such that it cannot be pushed axially by an unprotected finger.

5 3. A lampholder according to claim 2, comprising a single pin located along the lampholder axis.

4. A lampholder according to claim 1, wherein the or each pin is located adjacent the socket wall.

10 5. A lampholder according to claim 1, 2, 3 or 4, wherein the carrier is separated from the socket by a partition forming an element of the housing, the contacts and the or each pin extending through the partition.

15 6. A lampholder according to claim 5, wherein each contact comprises a first element supported by the partition and a second element supported by the carrier, a compression spring electrically connecting the first and second elements.

20 7. A lampholder according to claim 6, comprising a return spring located between the housing and the carrier, axial movement of the or each pin towards the fixed terminals causing the return spring to compress such that the carrier is moved towards the fixed terminals by the compression springs.

25 8. A lampholder according to claim 1, 2, 3 or 4, wherein the carrier is directly accessible within the socket and each contact is wholly supported thereby.

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9. A lampholder according to claim 8, wherein each contact comprises a resilient structure to ensure good electrical connections.

10. A lampholder according to any preceding
5 claim, wherein movement of the carrier between the first and second positions requires rotation of the carrier relative to the housing, the or each pin being movable axially relative to the housing and carrier and the carrier and pin having cooperating surfaces
10 such that axial movement of the pin causes the carrier to rotate whereas the carrier cannot be rotated without relative axial movement of the pin.

11. A lampholder according to claim 10,
wherein movement of the carrier from the first to
15 the second positions requires firstly rotation of the carrier relative to the housing and secondly axial movement of the carrier relative to the housing, axial movement of the carrier prior to said rotation being prevented by cooperating surfaces
20 of the carrier and housing.

12. A lampholder according to claim 10 or 11,
comprising two bulb engaging pins supported by a latch member, the latch member being engaged in axial grooves within the housing to prevent rotation
25 relative thereto.

13. A lampholder according to claim 10, 11 or 12, wherein the carrier supports two limbs the ends of

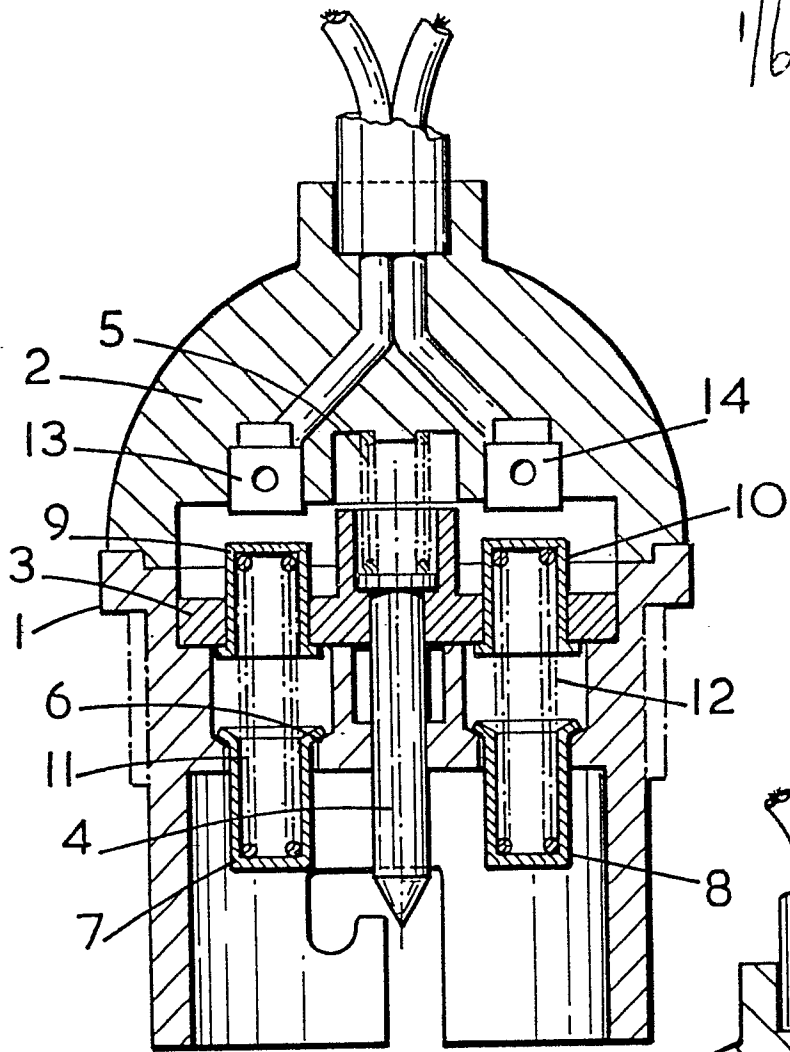
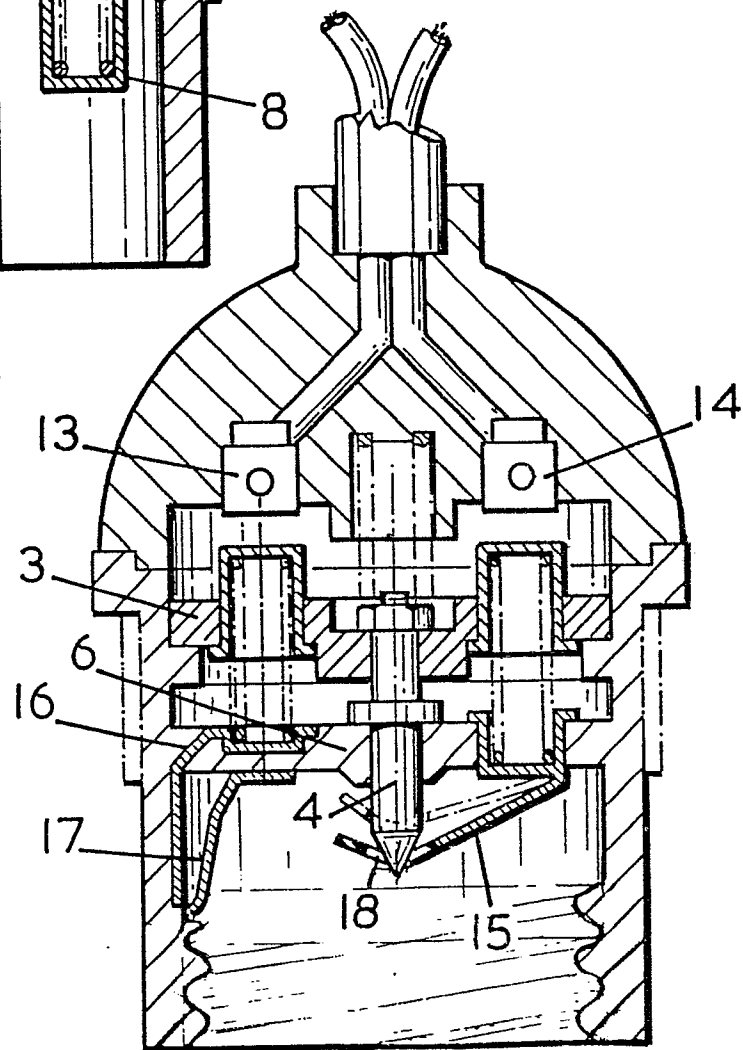
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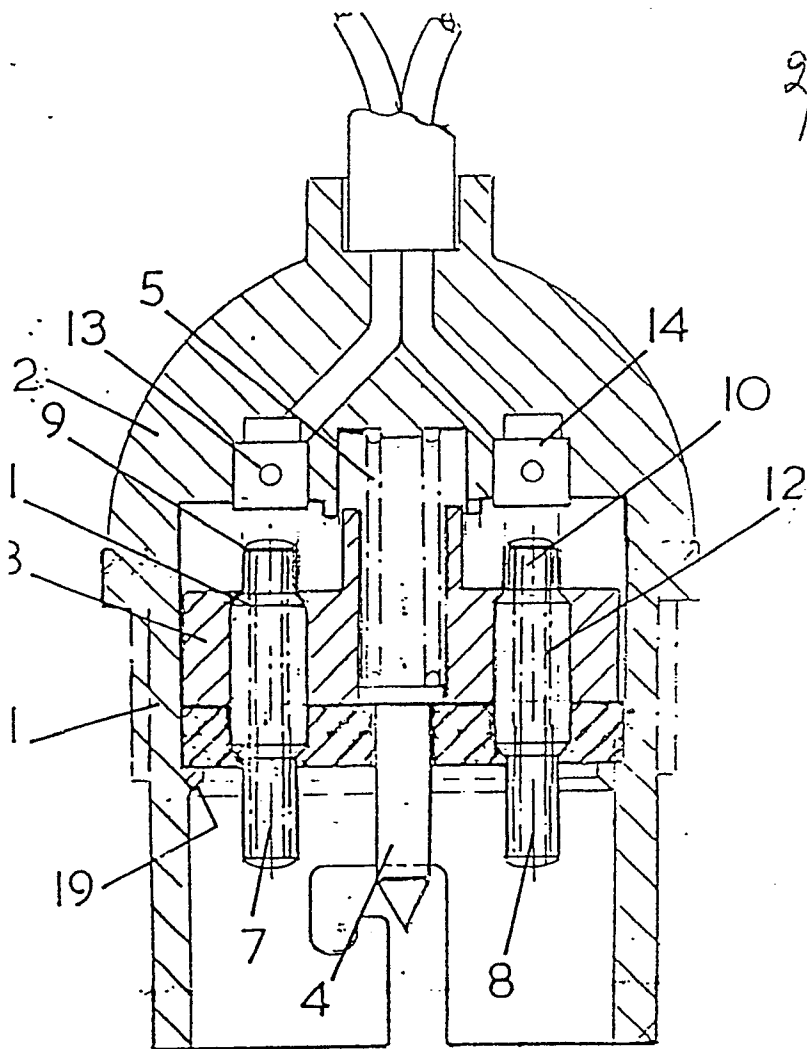
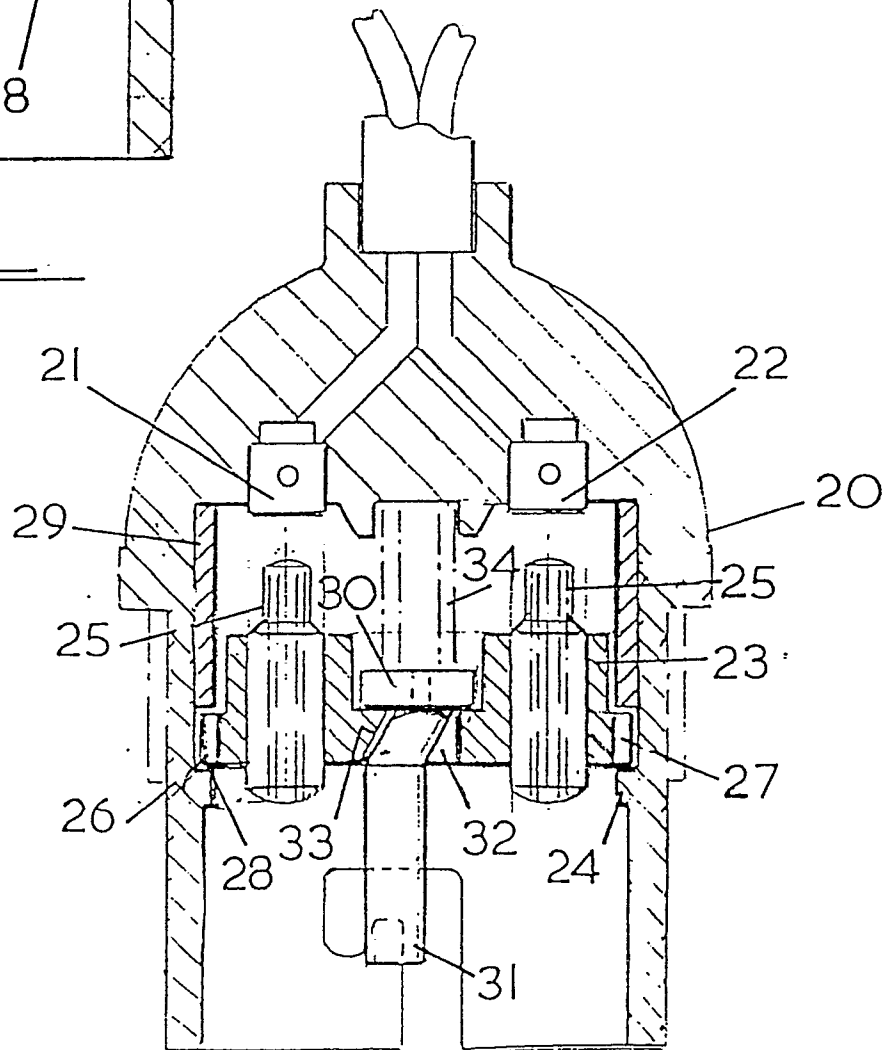
which define hook members, the hook members being received in recesses defined by the housing to retain the carrier therein.

14. A lampholder according to any one of
5 claims 1, 2, 3, 4, 5, 8 or 9, wherein each fixed terminal comprises a spring strip inserted through an aperture in the housing.

15. A lampholder according to claim 14, wherein each terminal comprises a circular aperture
10 communicating with a slot, and the housing defines a through hole positioned such that an insulated wire may be inserted through the aperture into the hole and the terminal may then be pressed down to force the wire into the slot, thereby cutting through the
15 insulation to make electrical contact with the wire.

16. A lampholder according to any preceding claim, wherein the biasing means comprises a compression spring arranged along the lampholder axis and bearing at one end against the lampholder
20 housing and at the other end directly or indirectly on the carrier.

FIG. 1FIG. 2

FIG. 3FIG. 4

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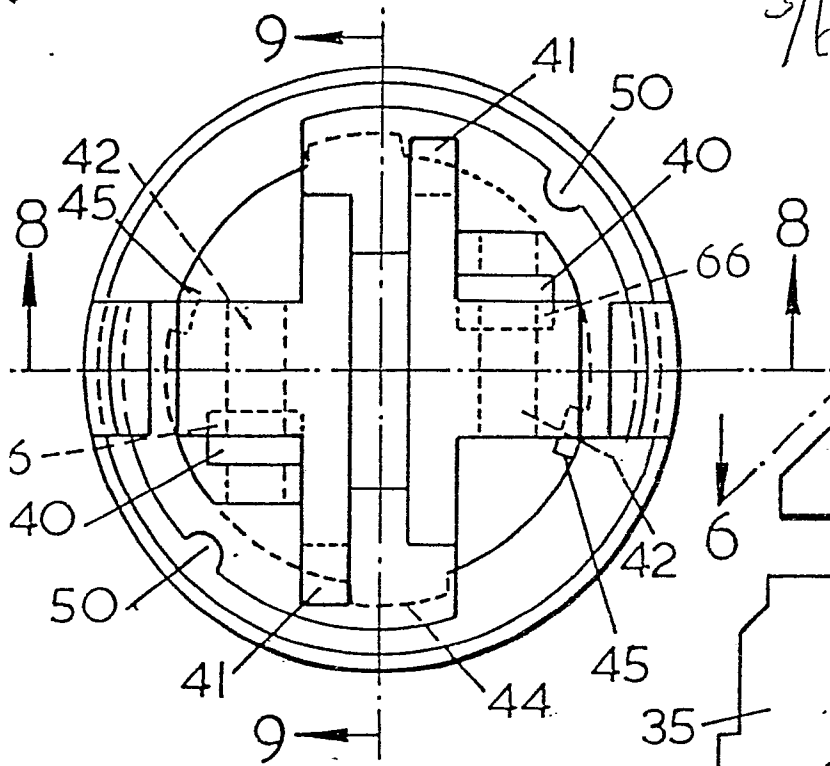


FIG. 6

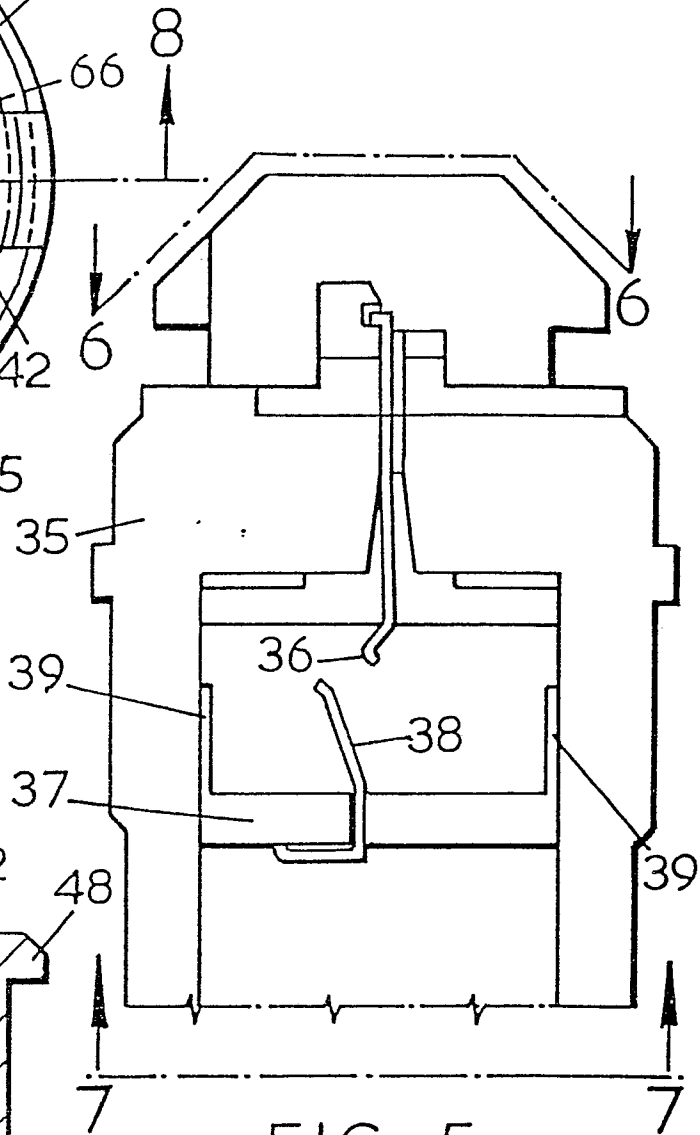


FIG. 5

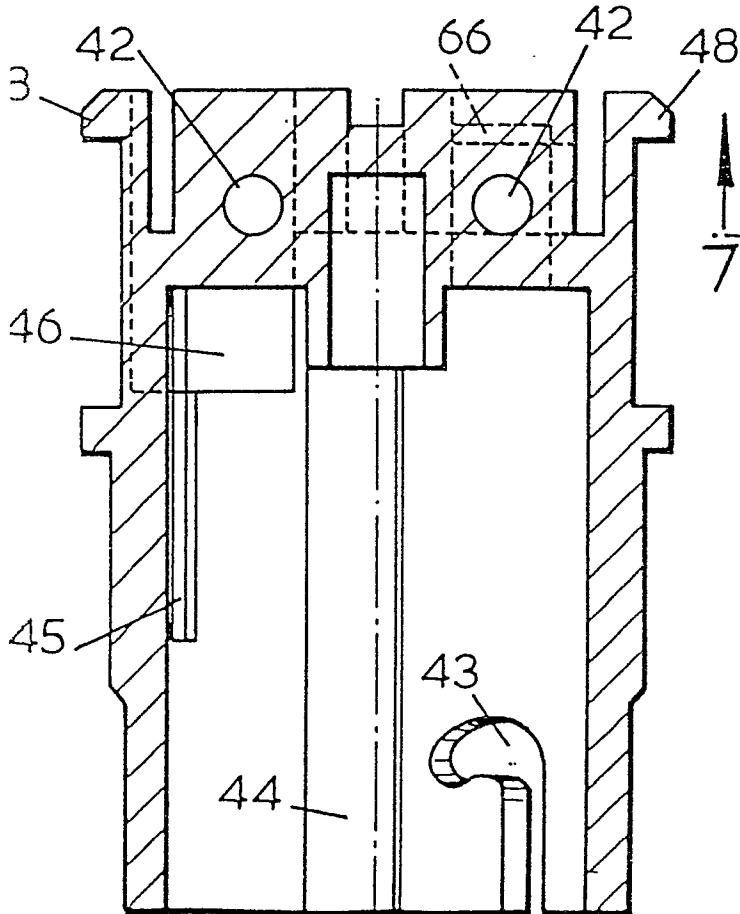


FIG. 8

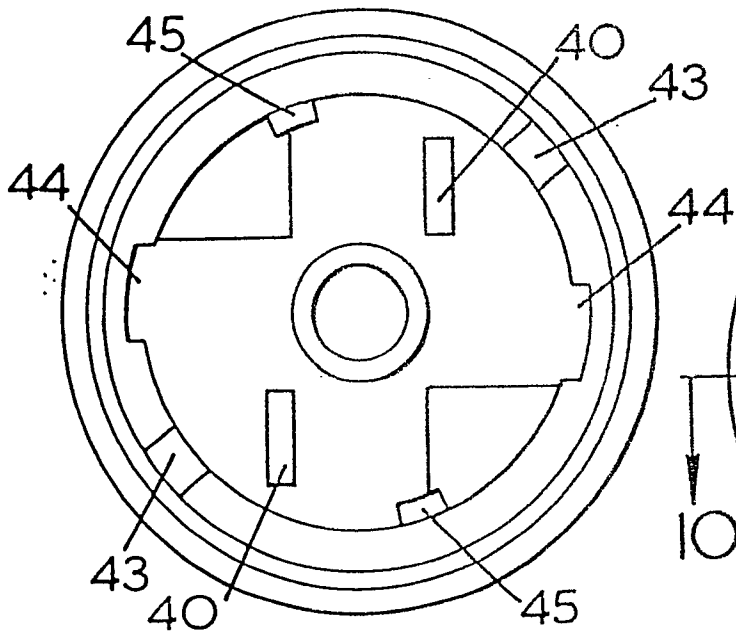


FIG. 7

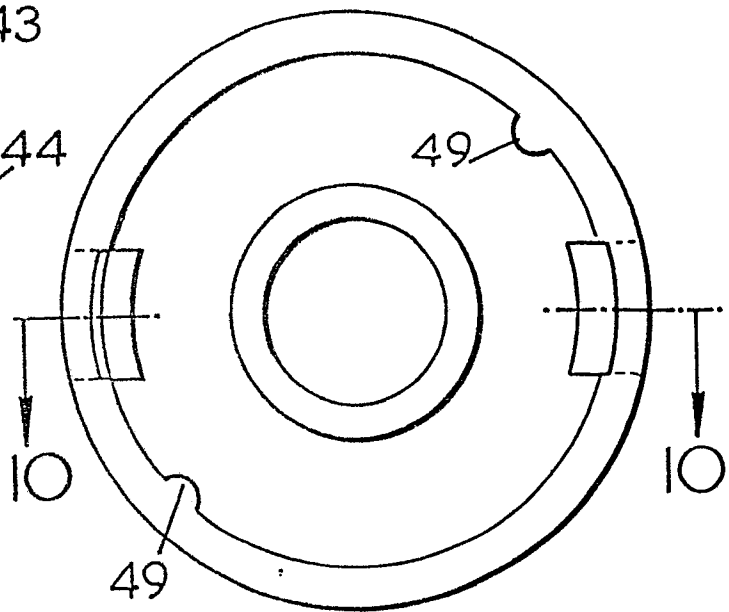


FIG. 11

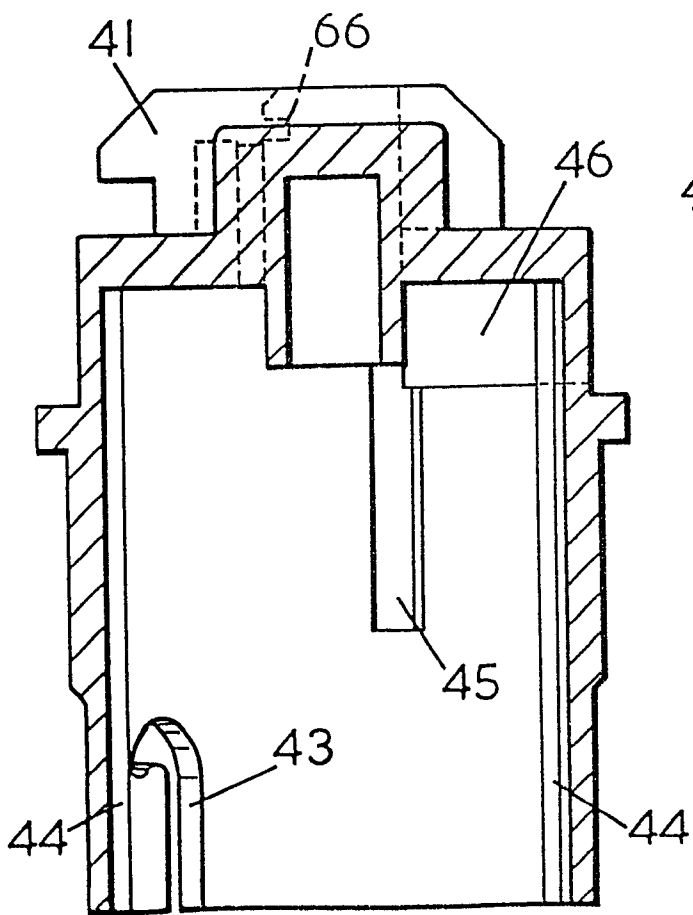


FIG. 9

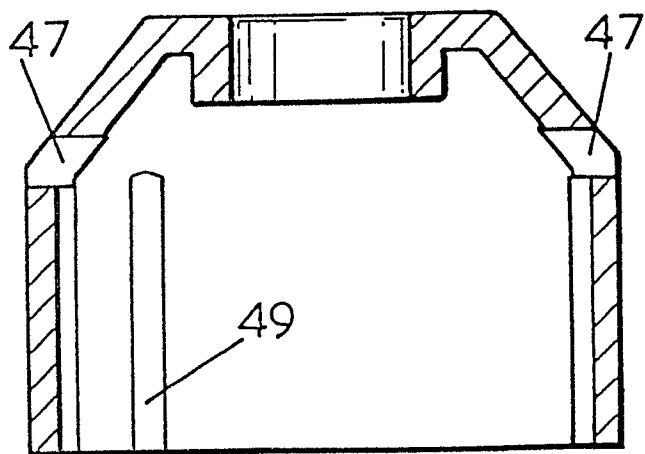
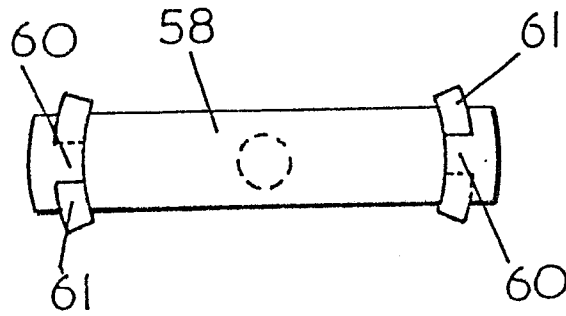


FIG. 10

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FIG. 14
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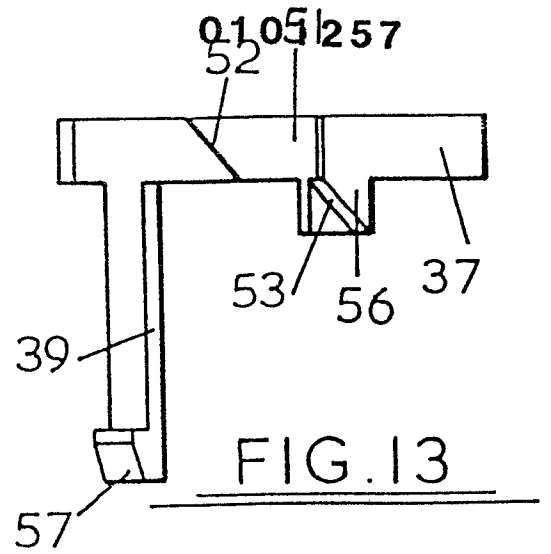


FIG. 13

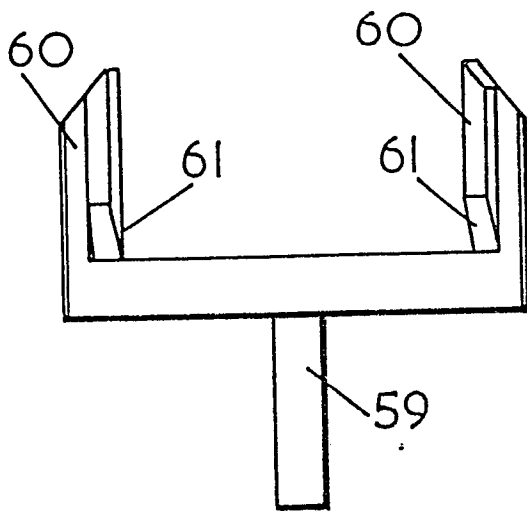


FIG. 15

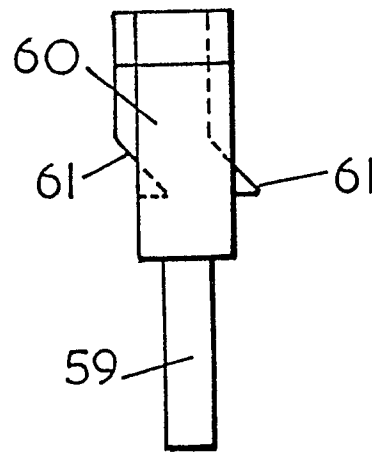


FIG. 16

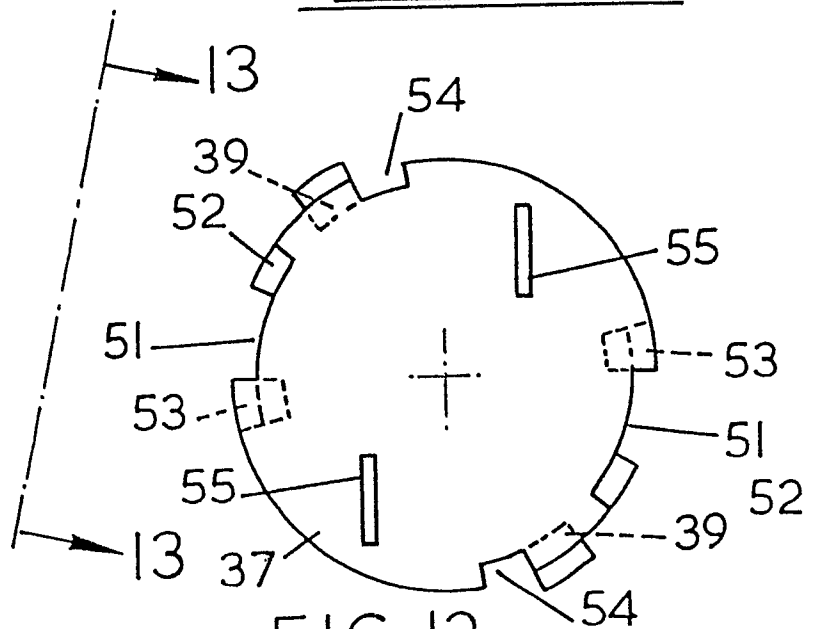


FIG. 12

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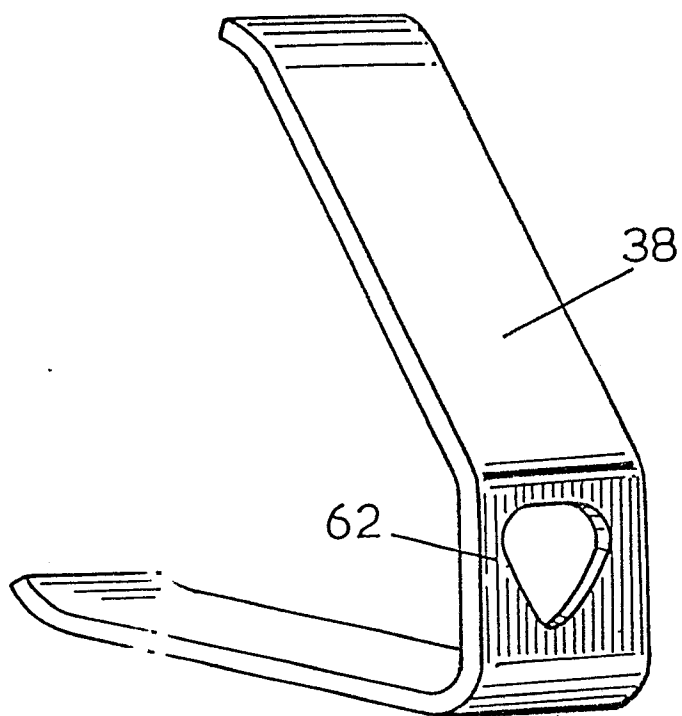


FIG. 17

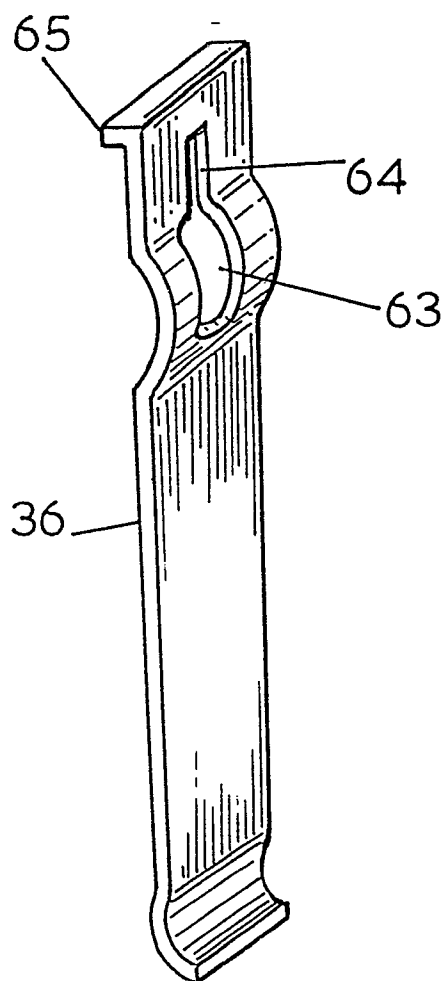


FIG. 18



European Patent
Office

EUROPEAN SEARCH REPORT

0101257

Application number

EP 83 30 4504

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
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			H 01 R 33/00
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 15-11-1983	Examiner MOBOUCK G.C.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			