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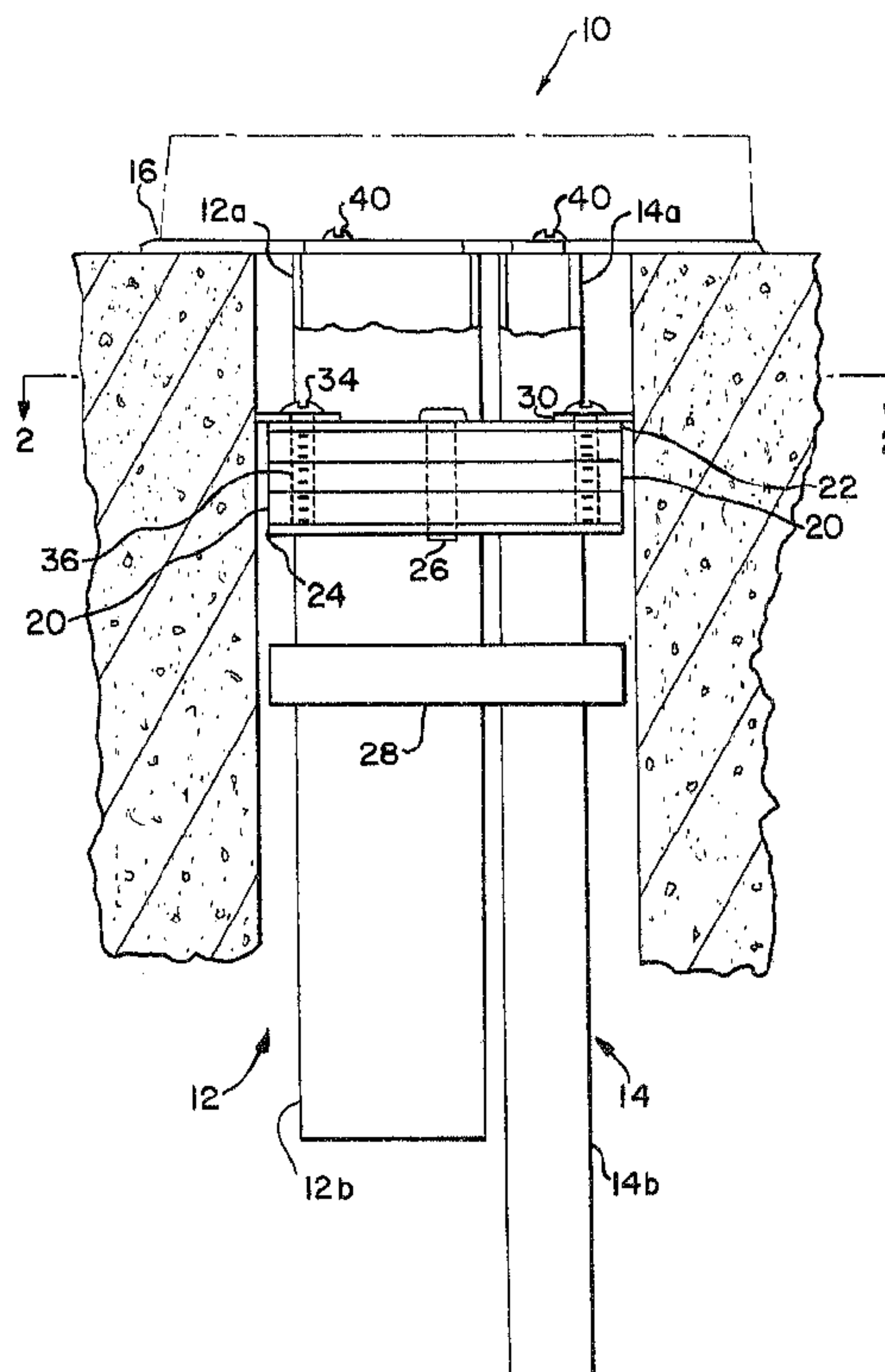
(72) Inventeur/Inventor:
Wuertz, Emil S., US

(73) Propriétaire/Owner:
HUBBELL INCORPORATED, US

(74) Agent: FINLAYSON & SINGLEHURST

(54) Titre : DISPOSITIF DE CABLAGE A PROTRUSION ET A AUTO-ANCRAGE

(54) Title: SELF-ANCHORING POKE-THROUGH WIRING DEVICE



(57) Abrégé/Abstract:

A poke-through wiring device and, more particularly, a self-anchoring poke-through wiring device which is positioned in a floor aperture of a concrete building floor for conducting electrical power and telecommunication signals between the work spaces of multi-storied building. The device incorporates anchoring clips in the shape of flat, essentially rectangular or polygonal plates which are securely fastened by means of screw fasteners in surface contact with at least one plate of a sandwich-type fire retardant disc structure, and with the clips projecting radially outwardly thereof so as to have the outer edge or at least the corner of each anchoring clip firmly contacting and grippingly engaging into the concrete wall surface of the perimeter of a floor aperture, thereby causing the entire poke-through wiring device or fitting to be firmly anchored in the aperture in a predetermined angular orientation relative to the aperture axis as required by the specific installation.



SELF-ANCHORING POKE-THROUGH WIRING DEVICE

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ABSTRACT OF THE DISCLOSURE

A poke-through wiring device and, more particularly, a self-anchoring poke-through wiring device which is positioned in a floor aperture of a concrete building floor for conducting electrical power and telecommunication signals between the work spaces of multi-storied building. The device incorporates anchoring clips in the shape of flat, essentially rectangular or polygonal plates which are securely fastened by means of screw fasteners in surface contact with at least one plate of a sandwich-type fire retardant disc structure, and with the clips projecting radially outwardly thereof so as to have the outer edge or at least the corner of each anchoring clip firmly contacting and grippingly engaging into the concrete wall surface of the perimeter of a floor aperture, thereby causing the entire poke-through wiring device or fitting to be firmly anchored in the aperture in a predetermined angular orientation relative to the aperture axis as required by the specific installation.

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1 SELF-ANCHORING POKE-THROUGH WIRING DEVICEBACKGROUND OF THE INVENTION1. Field of the Invention

5 The present invention relates to a poke-through wiring device and, more particularly, relates to a self-anchoring poke-through wiring device which is positioned in a floor aperture of a concrete building floor for conducting electrical power and telecommunication signals between the work spaces of multi-storied buildings.

10 During the erection of building structures of various types; for instance, such as modern multi-storied office buildings possessing concrete floors, it is frequently necessary, and also commonly accepted practice, to normally provide fire-rated poke-through fittings and devices for conducting insulated conductors, wires, cables and the like for electrical power and telecommunication signals through holes or apertures which are formed in concrete building floors, and which electrical power and other kinds of signals, such as telecommunication signals, may be readily transmitted from a suitable source; for instance, a junction box located at or proximate one face of the concrete floor by means of the poke-through fitting through the aperture in the concrete building floor to a suitable outlet or service head which is located at the opposite face of the floor.

25 Hereby, in order to accomplish the foregoing purpose in positioning a feed-through fitting of the type described herein, and which has a poke-through fire barrier provided thereon within the aperture formed in the concrete floor, to be able to pass the insulated

-2-

1 conductor or conductors through the fitting and fire
barrier from one face of the floor to the other face of
the floor, and to produce suitable connections in an
electrical outlet or service head which is mounted over
5 the aperture in the floor, generally the top face of the
floor; the poke-through device may be equipped with
gripping structure enabling the poke-through wiring
device to be inserted from above into the floor aperture
formed in the concrete floor and to resultingly anchor
10 itself in a predetermined orientation in the aperture,
while suspending a junction box below the floor aperture,
as may be required. Consequently, the capability of
being able to introduce the poke-through wiring device or
fitting into the floor aperture from above and to enable
15 it to be anchored in a predetermined oriented position in
the aperture eliminates the need for cooperating
electricians of working in tandem on the floors above and
below the flow aperture in order to obtain an
appropriately oriented installation of the poke-through
20 fitting, thereby significantly reducing attendant labor
costs.

2. Discussion of the Prior Art

In order to accomplish the foregoing; in
essence, to provide the self-anchoring of the poke-
25 through fittings or wiring devices or fitting it has
heretofore been contemplated, in one specific instance,
to compress fire-resistant discs, such as are made from
an intumescent material, between two metal plates in a
sandwich structure, and to thereby squeeze the
30 intumescent discs so as to expand radially outwardly into
contact with the perimeter of an aperture wall in a

-3-

1 concrete floor to thereby securely retain the fittings
therein. Although that type of structure imparts a self-
anchoring feature to the fittings, it does not facilitate
orienting the fittings in their extended angular
5 positions so as to enable installing the wiring devices
or poke-through fittings without the need for cooperating
electricians working on opposite floors. Device of that
type are described in Carroll, et al. U. S. Patent
4,272,643.

10 An anchoring structure for poke-through wiring
devices or fittings of the type considered herein is set
forth in Shine U. S. Patent 4,323,724, in which, fastened
to a fire-retarding intumescent disc assembly, a split
notched, ring-shaped resilient dished spring washer has
15 anchoring surfaces adapted be wedged against the
perimeter wall surface of a concrete floor aperture so as
to securely anchor the entire poke-through wiring device
or fitting therein in a predetermined angular orientation
relative to the axis of the aperture. Although the
20 fitting as elucidated in this patent publication imparts
an essentially adequate self-anchoring feature to the
poke-through fitting, in order to be able to remove the
fitting from its installed position in the concrete floor
aperture, this necessitates the entire fitting having to
25 be forcibly pulled out, thereby practically either
completely destroying or seriously damaging structural
components thereof, necessitating expensive replacement
thereof, in addition to entailing high labor costs in
installing a new poke-through fitting.

30 Another structure for the anchoring of a poke-
through wiring device or fitting in a concrete floor

-4-

1 aperture is described in Spencer U. S. Patent 4,496,790,
wherein a pair of substantially diametrically oppositely
arranged resilient clips protrude beyond the diameter of
a fire retarding plate-sandwich structure of a poke-
5 through fitting on which they mounted by means of screw
fasteners so as to contact, in a gripping manner, the
perimeter of an aperture wall formed in a building floor
which is constituted of a concrete material, thereby
enabling the device to anchor itself in a predetermined
10 angular orientation upon insertion therein, while
facilitating removal and repositioning of the fitting
through loosening of the screw fasteners and,
resultingly, of the clips.

However, although the foregoing anchoring
15 structure incorporating resilient clips improves upon the
structure described in Shine U. S. Patent 4,323,724 by
enabling the clips to be removed through the loosening of
the screw fasteners, and enabling the repositioning of
the fitting subsequent to its being withdrawn from the
20 floor aperture, the utilization of resilient clips which
are of an essentially V-shaped configuration and in which
the freely-flexible clip leg portion of the V-shape
contacts the concrete wall fails to provide for an
adequate gripping engagement with the wall of the
25 concrete floor aperture, since the considerable
flexibility and delicate nature inherent to this
particular clip design does not allow for the exertion of
a strong radial gripping force to be produced by this
anchoring structure of the poke-through wiring device.
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1 SUMMARY OF THE INVENTION

Accordingly, in order to obviate or ameliorate the drawbacks encountered in the prior art, and to concurrently render the self-anchoring structure of poke-through wiring devices simpler in function and structure, rather than employing the annular serrated, dished washer construction of the Shine U. S. Patent 4,323,724, or the V-shaped resilient clips of the Spencer U. S. Patent 4,496,790, the present invention contemplates the provision of anchoring means in the shape of flat, essentially rectangular or polygonal plates which are securely fastened by means of screw fasteners in surface contact with at least one plate of a sandwich-type fire retardant disc structure, and with the clips projecting radially outwardly thereof so as to have the outer edge or at least the corner of each anchoring clip firmly contacting and grippingly engaging into the concrete wall surface of the perimeter of a floor aperture, thereby causing the entire poke-through wiring device or fitting to be firmly anchored in the aperture in a predetermined angular orientation relative to the aperture axis as required by the specific installation. The employment of the flat and sturdy metal plates forming the anchoring clips ensures not only a rigid anchoring of the entire wiring device within the floor aperture but also allows for the use of inexpensive and simple structure in the shape of the flat clips, the latter which can be readily removed by simply loosening their mounting screws, thereby enabling the removal of the entire wiring device or fitting from the floor aperture in a simple manner, or enabling the repositioning thereof within the aperture by

-6-

a single electrician and with only the use of a simple tool, such as a screwdriver or the like.

More particularly, the detachable anchoring means comprises a plurality of discrete flat non-resilient, rigid metal plate elements each of polygonal shape and oriented so as to extend generally perpendicularly to the longitudinal axial direction of a wiring device prior to insertion of the wiring device into an aperture in the concrete floor slab. Each flat plate element has an edge or corner portion protruding radially outwardly of the fire retarding structure to an extent beyond the diameter of the floor aperture so as to, upon insertion into the aperture, cause the outer portions of each plate element to be extensively and permanently bent upwardly and resultingly deformed for grippingly engaging the concrete wall surface of the floor aperture.

Accordingly, the present invention seeks to provide a simple and inexpensive self-anchoring structure for a poke-through wiring device or fitting which is insertable into aperture formed in the concrete floor of a building structure.

Further the present invention seeks to provide a self-anchoring poke-through wiring device of the type described herein, in which the anchoring engagement within the floor aperture is provided by flat metallic plate-like polygonal clips which are detachably fastened to a fire retarding structure of the poke-through wiring device.

Still further an aspect of the present invention resides in the provision of an anchoring structure for the poke-through fitting of the type considered herein, wherein the anchoring action provided through the intermediary of simple flat metal plates which are detachably mounted in surface contact with the fire retarding structure and are readily loosenable therefrom in order to afford the simple mounting and repositioning of the entire poke-through wiring device within the floor aperture of a building.

- 6A -

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other features and advantages of the inventive self-anchoring poke-through wiring device may now be more readily ascertained from the following detailed description of an exemplary embodiment thereof, taken in conjunction with the accompanying drawings; in which:

-7-

1 Figure 1 illustrates a longitudinal, partially
sectional view through a poke-through wiring device
incorporating the anchoring clip structure pursuant to
the present invention;

5 Figure 2 illustrates a sectional view taken
along line 2 - 2 in Figure 1; and

 Figure 3 illustrates a detail plan view of an
anchoring clip for the poke-through wiring device
pursuant to the invention.

10 DETAILED DESCRIPTION

 Referring now in detail to the drawings, and
specifically Figure 1, there is disclosed a typical poke-
through wiring device 10 or fitting which is mountable so
as to extend through a floor aperture formed in a
15 concrete floor of a building structure, as is known in
the technology. Hereby, the floor aperture may be of
standard circular configuration, as is well known, and is
adapted to receive tubular channels 12 and 14 of the
fitting 10 for, respectively, the insulated wiring and
20 signal lines for electrical power and telecommunications
equipment extending from one floor space to a
superimposed upper floor space of a building structure,
such channels 12 and 14 being primarily constructed from
metallic tubing or conduits and the like, as is known in
25 the building construction technology. The one end of the
tubing structure or channel structure 12 and 14 is
connected to a floor plate assembly 16 forming the bottom
of a service head or power outlet (not shown) which is
positionable on the upper face of the building floor, and
30 of a size which is larger than that of the floor aperture
extending downwardly through the concrete floor.

-8-

1 Within the floor aperture, along the extent of
the poke-through wiring device 10, the tubular channels
12 and 14 are axially separated into respective upper and
lower portions 12a, 12b; 14a, 14b by an interposed fire
5 barrier arrangement 18 consisting of a plurality of
superimposed intumescent circular disc members 20 (three
shown), each having suitably dimensioned openings or
knock-outs formed therein in alignment with the
respective channels 12, 14, facilitating the passage
10 therethrough of the electrical insulated conductors,
wires, and/or other cables for electrical power and
telecommunication signal transmission between the
building floors. The intumescent-material disc members
20 are essentially sandwiched between a pair of disc-like
15 circular metal plates 22 and 24, each having the
contiguous ends of the respective channel portions 12a,
14a and 12b, 14b attached thereto, such as by welding or
suitable fastening means. The interposed intumescent
disc members 20 may be fastened to the plates 22 and 24
20 of the channel structure 12 and 14 through suitable
through-extending screw fasteners 26 so as to form a
unitary sandwich-type intumescent fire-retarding fire-
rated barrier arrangement, as is well known in the modern
building technology, and which will seal the floor
25 aperture when the latter is exposed to heat and/or fire,
as a result of the expansion of the intumescent disc
members 20, causing the intumescent material to sealingly
contact the wall of the aperture.

Moreover, a further lower fire barrier in the
30 shape of a disc 28 of intumescent material may also be
positioned spaced below the fire barrier arrangement 18

-9-

1 so as to have the lower portions 12b, 14b of the channels
12 and 14 extend therethrough.

In order to provide the inventive anchoring
structure for the poke-through wiring device or fitting
5 10 within the concrete floor aperture, the present
invention, as is more clearly ascertainable from Figs. 2
and 3 of the drawings, provides for at least two
anchoring clips 30 each consisting of a flat metal plate
element, as shown in detail in Fig. 3, and which are
10 mounted at somewhat diametrically opposite locations on
the end plate 22 for the channel portions 12a and 14a,
with each plate element 30 shown as being of generally
rectangular or square configuration, although it is
readily apparent that other suitable polygonal or multi-
15 sided external shapes, such as pentagons, hexagons,
octagons, or even round, oval and similar suitable
configurations would also be conceivably employable by
the invention. Each of the plate elements 30 forming an
anchoring clip is provided with a central hole 32 through
20 which there may be inserted a suitable screw fastener 34
for threadingly engaging mating threaded bores 36 formed
in the plate 22 and the intumescent-material disc members
20. The flat metal plate elements 30 are each fastened
to be in surface-contact with the plate 22 and only the
25 outer edge portions 38 of the plate elements 30 protrude
radially outwardly of the circumference or diameters of
the plate 22 and disc members 18 to such an extent as to
be able to grippingly engage in a slightly flexural
relationship the wall surface of the perimeter of the
30 floor aperture, thereby firmly anchoring the entire poke-
through wiring device 10 in a predetermined angular

-10-

1 orientation relative to the central axis of the floor
aperture.

When it is desired to remove the wiring device
10 from or to reposition it within the floor aperture, it
5 is merely necessary to remove bottom plate 16 of the
service head at the upper face of the floor aperture by
loosening and removing fasteners 40 which extend through
and engage into threaded apertures in suitable plate
positioning members, and to thereafter loosen the screw
10 fasteners 34 to enable removal of the clips 30. This
will eliminate the anchoring engagement of the wiring
device 10 with the wall of the floor aperture, and enable
it to be manipulated by a single person or electrician
for suitable replacement and/or repositioning in the
15 floor aperture, as desired.

Preferably, although not necessarily, each of
the anchoring clips 30 may be formed from a suitable
high-strength metal such as galvanized steel or the like,
possessing a thickness of about 0.03 to 0.04 in. and
20 which is slightly axially deflectable at the radially
outwardly located edge of each clip as it is being pushed
into the floor aperture so as to grippingly engage the
peripheral wall surface thereof, thereby firmly clamping
and anchoring the entire poke-through wiring device or
25 fitting 10 in place within the aperture in a
predetermined orientation. From the foregoing, it
becomes readily apparent that the invention is directed
to an extremely simple and inexpensive, yet novel and
functionally highly efficient anchoring structure for
30 poke-through wiring devices of the type considered
herein.

1 While there has been shown and described what
is considered to be a preferred embodiment of the
invention, it will of course be understood that various
modifications and changes in form or detail could readily
5 be made without departing from the spirit of the
invention. It is therefore intended that the invention
not be limited to the exact form and detail herein shown
and described, nor to anything less than the whole of the
invention herein disclosed and as hereinafter claimed.

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-12-

WHAT IS CLAIMED IS:

1. A self-anchoring poke-through wiring device for insertion into an aperture extending through a concrete slab floor of a building structure, said device facilitating electrical power and telecommunication signal transmission between a service head and a junction box located at opposite faces of the floor, said service head including a plate member positionable on the upper face of said floor so as to cover said aperture; channel means of said wiring device for conducting insulated wires and telecommunication signal through said floor aperture between said junction box and said service head, said channel means having upper and lower channel portions, said upper channel portion being fastened to and depending from said plate member into said aperture, fire retarding structure interposed between and fixedly connected to said upper and lower channel portions for sealing the aperture in response to encountered heat and fire to form a fire barrier in said floor aperture; and detachably fastened means mounted on said fire retarding structure for positioning said wiring device in said aperture and anchoring said device to the peripheral wall surface of said aperture in predetermined angular orientation relative to the axis thereof, said anchoring means comprising a plurality of discrete flat non-resilient, rigid metal plate elements each of polygonal shape and oriented so as to extend generally perpendicularly to the longitudinal axial direction of the wiring device prior to insertion of said wiring device into the aperture in said concrete floor slab, each said flat plate element having an edge or corner portion protruding radially outwardly of said fire retarding structure to an extent beyond the diameter of the floor aperture so as to, upon insertion into said aperture, cause the outer portions of each plate element be extensively and permanently bent upwardly and resultingly deformed for grippingly engaging the concrete wall surface of said floor aperture.

-13-

2. A poke-through wiring device as claimed in claim 1, wherein said fire retarding structure comprises a plurality of superimposed discs each consisting of an intumescent material; first and second metallic plate members having said intumescent discs fixedly positioned therebetween, said first and second metallic plate members being fastened to the continuous ends of respectively the upper and lower channel portions, at least said first metallic plate member having threaded bores formed therein proximate the circumferences thereof, each said clip-forming flat plate element having a central through hole; and screw fastener means being extendable through said central hole for threadingly engaging said aligned threaded bores and fixedly clamping said flat plate elements in surface-contacting engagement with said first metallic plate member.

3. A poke-through wiring device as claimed in claim 1, wherein each said flat plate element has a square shape.

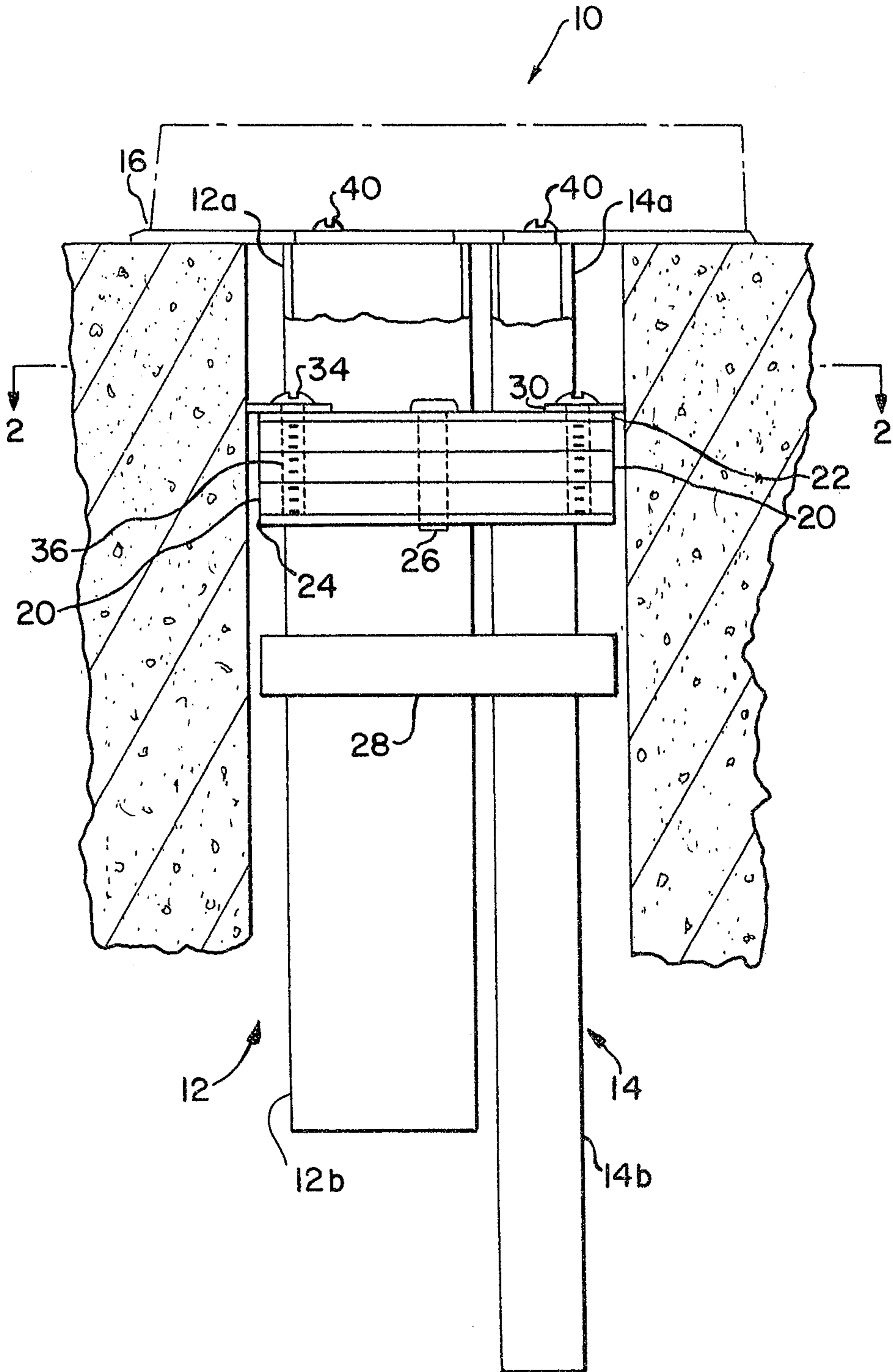
4. A poke-through wiring device as claimed in claim 1, wherein two of said flat elements are mounted diametrically opposite each other on said first metallic plate member so as to radially protrude therefrom into gripping engagement with the peripheral wall of said floor aperture.

5. A poke-through wiring device as claimed in claim 1, wherein each said flat plate element consists of galvanized steel.

6. A poke-through wiring device as claimed in claim 1, wherein each said flat plate element consists of Type 302 or 304 annealed stainless steel.

7. A poke-through wiring device as claimed in claim 6, wherein each said flat plate element has a thickness of about 0.03 to 0.04 inches.

FIG. 1



INVENTOR

EMIL S. WUERTZ

Zulaypor & Singelhurst

PATENT AGENTS

FIG.2

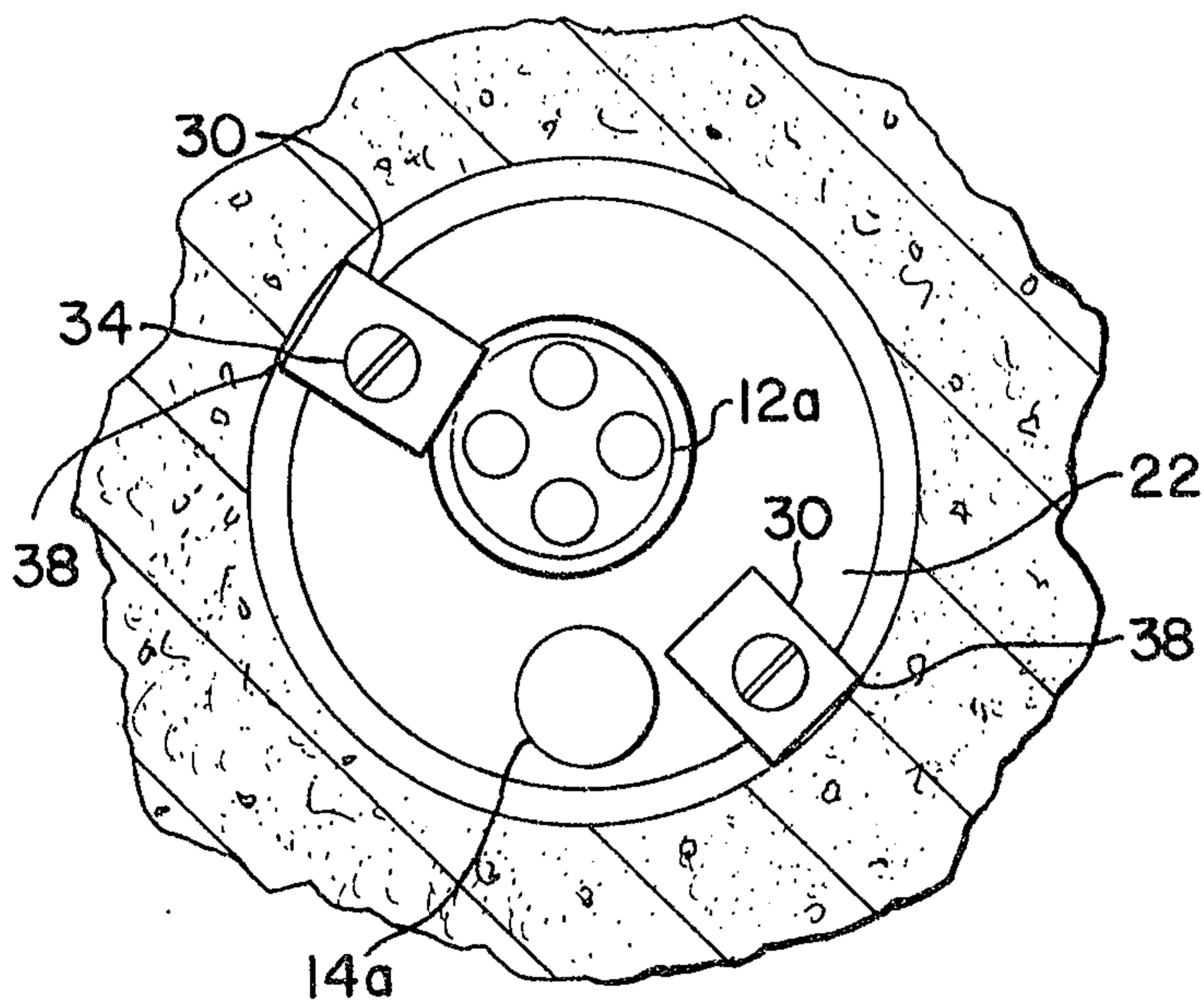
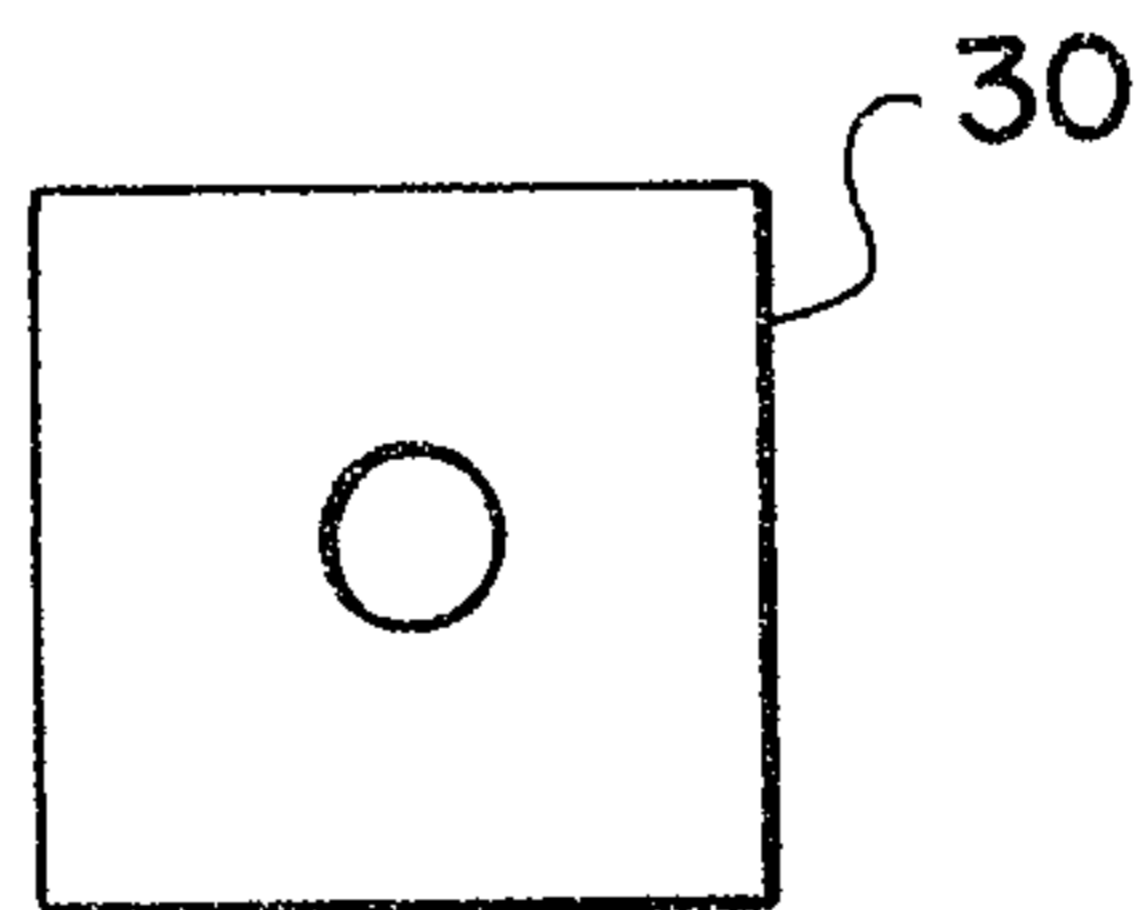


FIG.3



INVENTOR

EMIL S. WUERTZ
Julius & Singledurst
PATENT AGENTS

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