

- [54] **METHOD FOR MAKING ARC EXTINGUISHING CHAMBER**
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|-----------|--------|--------------------------|-----------|
| 1,949,258 | 2/1934 | Paul | 200/150 R |
| 2,052,232 | 8/1936 | Kopeliowitch et al. | 200/150 R |
| 2,539,175 | 1/1951 | Balentine | 200/150 E |
| 3,021,241 | 2/1962 | Schneiderman et al. | 264/275 X |
| 3,128,360 | 4/1964 | Rietz | 200/150 R |
| 3,259,680 | 7/1966 | Schelke | 264/275 |

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- [51] Int. Cl.² H01H 33/68
- [58] Field of Search 29/592, 622, 624, 627, 29/631, 467, 469, 527.1, 527.3, 557, 558, 428; 200/150; 264/237, 271, 272, 275, 277, 278, 299, 328; 83/13, 29, 39

[57] ABSTRACT

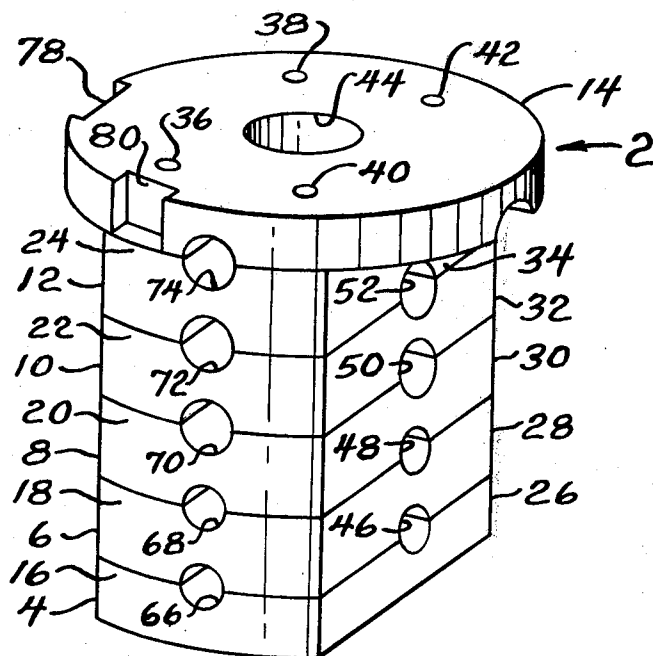
An arc extinguishing chamber for oil filled type circuit interrupter is formed of a fabricated or molded block of suitable insulating material. Intersecting holes are drilled or molded to provide passageways for the contacts, oil entrance and arced products exhaust.

[56] References Cited

UNITED STATES PATENTS

- 1,914,137 6/1933 Leeds 200/150 R

1 Claim, 4 Drawing Figures



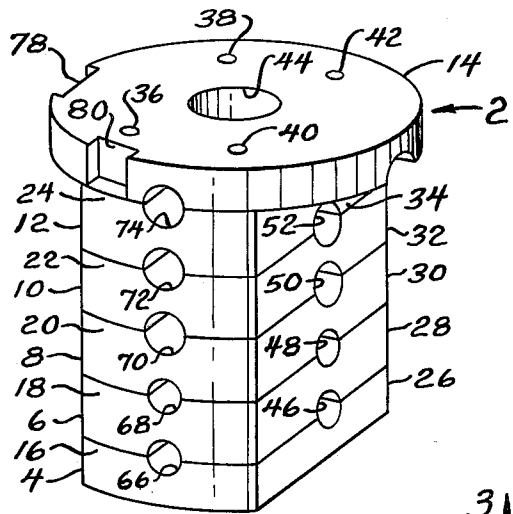


Fig. 1

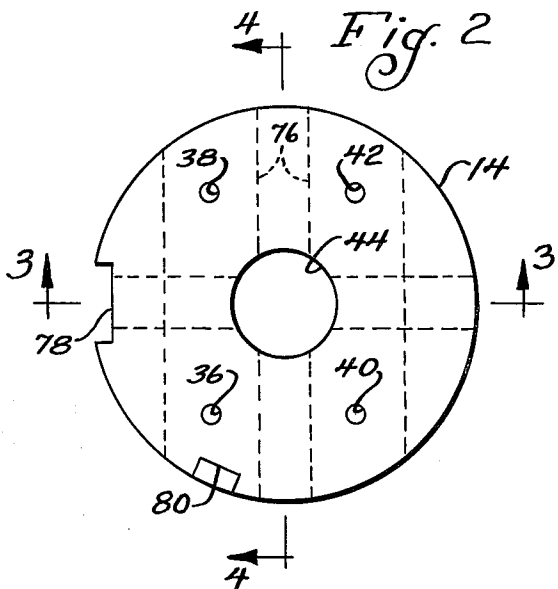


Fig. 2

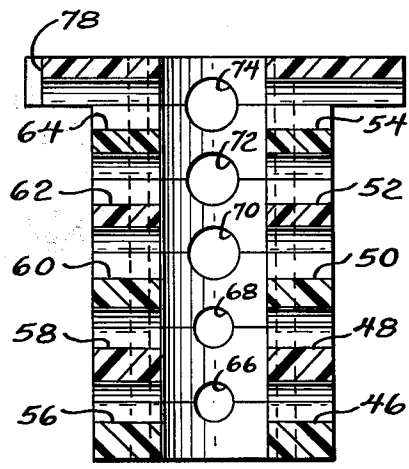


Fig. 3

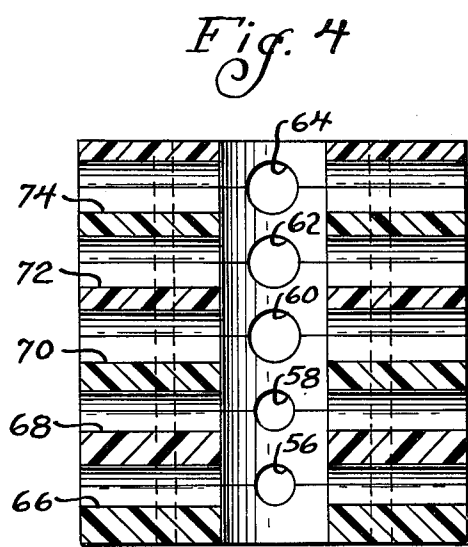


Fig. 4

METHOD FOR MAKING ARC EXTINGUISHING CHAMBER

BACKGROUND OF THE INVENTION

Arc extinguishing chambers for circuit interrupters of the liquid dielectric filled type have been constructed in the past by stacking a plurality of non-conducting fibrous plates. These plates were of varying, and sometime, alternating or repetitive shapes so as to form the desired arc chamber and passageways. The plates were secured to each other and with respect to the overall circuit breaker assembly by pins or rods passing through holes in each of the plates. Or in the alternative, the plates might be indexed with respect to each other by forming embossed areas on each of the plates. Such an arrangement for indexing the plates is disclosed in U.S. Pat. No. 3,080,467 assigned to the assignee of the instant application. Thus, in the prior art method of assembling an arc extinguishing chamber utilizing a plurality of specially formed plates, which due to variations in their form had to be stacked in a particular order, assembly required considerable labor and considerable care to assure proper stacking.

It is accordingly an object of this invention to provide an arc extinguishing chamber for a circuit interrupter of the liquid dielectric filled type which is easier to assemble and construct and provides the desired operating performance.

SUMMARY OF THE INVENTION

The object of this invention in one form thereof is accomplished by fabricating or molding a block of suitable insulating material with suitable holes molded or drilled therein to provide a through passage for the contacts, and passages intersecting the through passage for oil insertion, and for arced product exhaust. With the arc extinguishing chamber formed as an integral assembly, it is readily incorporated in the circuit interrupter.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of an arc extinguishing chamber made in accordance with a preferred method of this invention;

FIG. 2 is a top plan view of the arc extinguishing chamber shown in FIG. 1;

FIG. 3 is an elevation view of the arc extinguishing chamber in transverse section taken along the line 3—3 in FIG. 2.

FIG. 4 is an elevation view of the arc extinguishing chamber in transverse section taken along the line 4—4 in FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, there is shown in FIG. 1 a perspective view of an arc extinguishing chamber made in accordance with one of the preferred methods of this invention. As shown in FIG. 1 the chamber 2 is fabricated by assembly of insulating blocks 4, 6, 8, 10, 12 and 14. Blocks 4, 6, 8, 10 and 12 are shown to be of the same shape, having opposed arcuate sides 16, 18, 20, 22 and 24 which are shown and the opposite sides not shown in FIG. 1. The arcuate sides are connected by planar sides 26, 28, 30, 32 and 34 shown and opposing planar sides not shown. The uppermost insulating

block 14 is shown to have a cylindrical shape, the radius and diameter of which is the same as that of the opposed arcuate surfaces of the remaining blocks. Referring to FIGS. 1 and 2 the opposed planar sides are in fact chords of the cylindrical shape of block 14.

As shown in all of the Figures, the blocks 4, 6, 8, 10, 12 and 14 are secured to each other by pins 36, 38, 40 and 42 passing through and secured in holes formed in alignment in the blocks. The pins as are the blocks, are formed of a suitable insulating material such as a fiber as is well known is the art. The blocks 4, 6, 8, 10, 12 and 14 may in addition to the pins, or as an alternative thereto, be secured to each other by a suitable adhesive placed between their adjoining surfaces.

After assembly of the blocks 4, 6, 8, 10, 12 and 14 into a solid or unitary block 2, the block is suitable secured or supported so as to drill through hole 44 which receives in spaced relationship the contacts of the circuit breaker. Similarly, the block 2 is supported in a jig or otherwise to drill the oil entrance holes 46, 48, 50, 52, 54, 56, 58, 60, 62 and 64. As is best seen in FIGS. 2 and 3, oil entrance holes 46, 48, 50, 52 and 54 are coaxial with oil entrance holes 56, 58, 60, 62 and 64 respectively, such that they may be drilled as continuations of each other, with the drill passing through the contact through hole 44. In this manner oil entrance holes 46 and 56 may for instance be drilled by the same drill.

As in the case of the oil entrance holes, arced product exhaust holes 66, 68, 70, 72 and 74 are drilled in the block 2. Referring to FIG. 2, the arced product exhaust holes 66, 68, 70, 72 and 74 may be drilled completely through the block to form an opposite set of arced product exhaust holes as represented by the dashed lines 76.

Referring to FIGS. 1-3, notches 78 and 80 are provided for insuring proper alignment and support of the arc extinguishing chamber 2 in the circuit breaker. The arc chamber as utilized in a circuit breaker is mount in a cylindrical tube formed of insulating material. The tube has an inner diameter just slightly larger than the diameter of the arcuate sides 16, 18, 20, 22 and 24, and is provided with apertures in alignment with the arced product exhaust holes. A chamber is formed by the inner surface of the tube and the planar surfaces 26, 28, 30, 32 and 34 to provide an oil reservoir serving the oil entrance holes.

In another embodiment of this invention, the arc chamber 2 is formed as shown in the figures, except that instead of being assembly of multiple blocks and thereafter drilled, it is molded as a complete assembly. The molding die for the entire block is provided with inserts so as to form the through hole 44, the oil entrance holes 46-64 and the arced product exhaust holes in a single molding operation.

It should be apparent to those skilled in the art, that while what has been described are considered at the present to be the preferred embodiments of this invention, in accordance with the Patent Statutes, changes may be made in the disclosed method of making an arc extinguishing chamber without actually departing from the true spiral and scope of this invention.

I claim:

1. A method for making an arc extinguishing chamber for a bulk oil circuit breaker wherein a stack of blocks are first secured in a unitary assembly to form a solid block, and thereafter a through hole for receiving the circuit breaker contacts, holes intersecting said through hole to provide passages for entrance of oil into said through hole, and holes intersecting said through hole for exhausting arced products from said through hole are drilled in said solid block.

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