Oct. 27, 1953 L. J. McCARTY 2,657,326

SECTIONAL CARBON ELECTRODE

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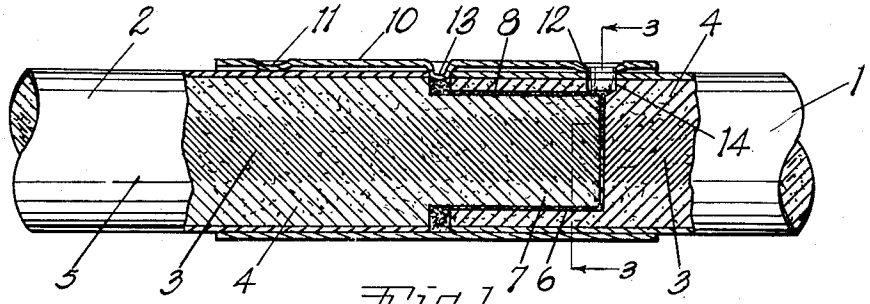


Fig. 1.

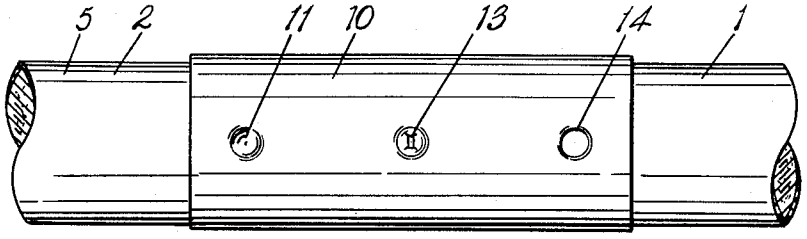


Fig. 2.

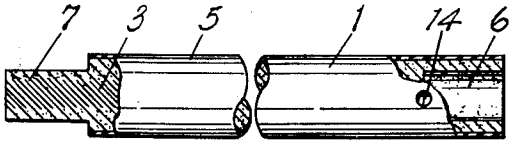


Fig. 4.

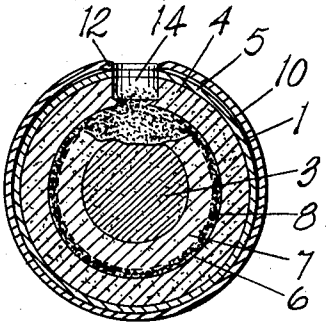


Fig. 3.

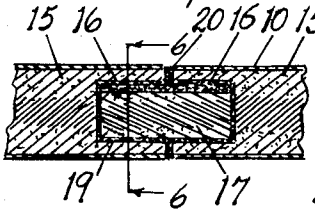


Fig. 5.

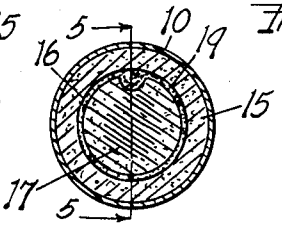


Fig. 6.

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SECTIONAL CARBON ELECTRODE

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7 Claims. (Cl. 313—354)

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This invention relates to improvements in sectional carbon electrode.

The main objects of this invention are:

First, to provide a sectional carbon electrode in which the sections are effectively joined and one in which the joint is maintained or is not disrupted or broken during use.

Second, to provide a sectional carbon electrode having these advantages which is simple and economical to produce.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. 1 is an enlarged fragmentary side elevational view of a sectional carbon electrode embodying my invention partially in longitudinal section, the thickness of the adhesive in the joint being shown greatly exaggerated.

Fig. 2 is a fragmentary side view looking from the top of Fig. 1.

Fig. 3 is an enlarged transverse section on the broken line 3—3 of Fig. 1.

Fig. 4 is a fragmentary side elevational view of one of the sections partially in longitudinal section to show the socket at one end and the dowel at the other.

Fig. 5 is a fragmentary longitudinal section of a modified form or embodiment of my invention taken on a line corresponding to line 5—5 of Fig. 6.

Fig. 6 is an enlarged transverse section on a line corresponding to line 6—6 of Fig. 5.

Carbon electrodes embodying my invention are particularly desirable for use in moving picture projecting machines and the like. Attempts have been made to utilize the pieces of partially used carbon electrodes by joining to other sections but the results have not been entirely satisfactory, owing to the fact that the joints were broken or ruptured in use. The applicant's joint remains intact and effective in use.

Referring to the drawing, the carbon electrode illustrated comprises the sections 1 and 2 which consist of relatively soft carbon cores 3, a harder or denser surrounding carbon 4 and a metal sheath 5. This type of carbon electrode is old in the art. The section 1 is provided with a socket 6 while the section 2 has a coacting dowel 7 telescopingly engaged in the socket. In practice, these parts are a close fit but I have illustrated substantial clearance in order to illustrate the adhesive 8 which is employed to bond the telescoping parts together. There is substantial variation in the manufacture of these telescoping parts but as stated, they desirably have a relatively close fit. The adhesive extends between the adjacent abutting ends as indicated at 9.

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To reinforce the joint and provide an electrical conductor, I employ a metal sleeve 10 which is desirably staked at 11 and 12 to engage the sheath of the sections, there being an indentation 13 disposed between the abutting ends to further prevent shifting of the sleeve.

The section 1 having the socket therein is provided with a vent 14 which opens to the bottom of the socket and through the sheath and in the embodiment illustrated through the sleeve although the sleeve is rarely of such a fit as to render the vent opening thereto necessary as the gases may escape at the ends of the sleeve. In use, gases accumulate in the joint which applicant believes is largely due to the burning of the adhesive, the accumulation of gases frequently being such that there is an explosive action which ruptures or breaks the joint. Applicant's vent allows the gases to escape and the joint is not ruptured or broken when the electrodes are in use. This enables the effective joining of sections and the full use thereof.

Fig. 4 is an illustration of one of the carbon sections of the embodiments of Figs. 1 to 4. The section is formed with a socket 6 at one end and a dowel 7 at the other. In the embodiment shown in Figs. 5 and 6 the sections 15 are provided with sockets 16 at both ends, only one end being illustrated. The dowel 17 is a separate carbon electrode element and telescopes with the adjacent sockets as is illustrated in Fig. 5. This dowel 17 is provided with a longitudinal groove 18 extending from end to end thereof and therefore opening to the bottoms of the sockets.

The adhesive is indicated at 19 and again it is pointed out that it is shown in an exaggerated thickness for convenience in illustration. In this embodiment the venting opening is between the ends of the sections 20, the venting groove opening between the sections. The sections are not in such close abutting relation as to prevent this venting between the ends thereof. This embodiment provides a joint which is also very secure and not likely to become ruptured or broken in use as the result of gas accumulating in the joint which as pointed out very frequenly results in the breaking or rupturing of the joints in sectional carbon electrodes.

Applicant has illustrated and described two practical embodiments of his invention. He has not attempted to illustrate or describe other embodiments or adaptations which he contemplates as it is believed that this disclosure will enable those skilled in the art to embody or adapt his invention as may be desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A carbon electrode comprising sections having metal sheaths, dense bodies adjacent the sheaths and soft cores within the bodies, one section having a socket in its body and the other a dowel on its body telescopingly engaged with the socket, the joint including a bonding adhesive having the property of gasifying at high temperature for the telescoping parts of the sections, and a coupling sleeve embracing the sections at the joint to reinforce the same and provide an electrical connection for the sheaths of the sections, the section having the socket having a vent opening formed through its sheath and body to the bottom of the socket to permit the escape of gas from the socket.

2. A carbon electrode comprising sections having metal sheaths, dense bodies adjacent the sheaths and soft cores within the bodies, one section having a socket in its body and the other a dowel on the body telescopingly engaged with the socket, the joint including a bonding adhesive having the property of gasifying at high temperature for the telescoping parts of the sections, the section having the socket having a vent opening formed through its sheath and body to the bottom of the socket to permit the escape of gas from the socket.

3. A sectional carbon electrode, one section having a socket and the other a dowel telescopingly engaged with the socket, the joint including a bonding adhesive having the property of gasifying at high temperature for the telescoping parts of the sections, the section having the socket having a vent opening to the socket to permit the escape of gas from the socket.

4. A carbon electrode comprising sections having metal sheaths and having aligned sockets in their meeting ends, a carbon connecting dowel for said sections telescoped within said sockets, said dowel having a longitudinal peripheral groove extending from end to end thereof, the joint including a bonding adhesive having the property of gasifying at high temperature for the telescoping parts, said groove constituting a vent extending across the adjacent ends of the sections, and a metal coupling sleeve embracing the joint of said sections to reinforce the same and provide an electrical connection for the sheaths.

5. A carbon electrode comprising sections having metal sheaths and having aligned sockets in their meeting ends, and a carbon connecting dowel for said sections telescoped within said sockets, said dowel having a longitudinal peripheral groove extending from end to end thereof, the joint including a bonding adhesive having the property of gasifying at high temperature for the telescoping parts, said groove constituting a vent extending across the adjacent ends of the sections.

6. A sectional carbon electrode, the sections having aligned sockets in their meeting ends, and a carbon connecting dowel for said sections telescoped within said sockets, said dowel having a longitudinal peripheral vent groove opening between the abutting ends of the sections, the joint including a bonding adhesive having the property of gasifying at high temperature for the telescoping parts.

7. A carbon electrode comprising a plurality of sections having dowel and socket telescoping engagement, the joint including a bonding adhesive having the property of gasifying at high temperature for the telescoping parts, the bottom of the socket being vented to the atmosphere to permit the escape of gas from the socket.

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