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A. KNAPPWOST
DEVICE FOR PRODUCING BACTERICIDE OH-IONS THROUGH
ELECTROLYSIS FOR DENTAL TREATMENT
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Fig. 1

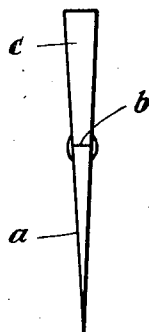
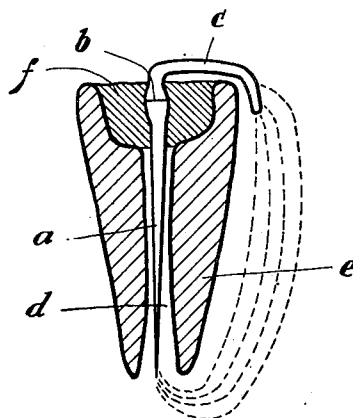


Fig. 2



INVENTOR:
ADOLF KNAPPWOST

By Richardson, David and Nordin

ATTY'S

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DEVICE FOR PRODUCING BACTERICIDE
OH-IONS THROUGH ELECTROLYSIS
FOR DENTAL TREATMENT

Adolf Knappwost, Neuhausen (Urach), Germany,
assignor, by mesne assignments, to Vivadent
Corporation, Boston, Mass., a corporation of
Massachusetts

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7 Claims. (Cl. 128—409)

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Recently the so-called ionophoresis method for root-canal treatment of teeth with dead medulla has found great propagation. With this known method a direct current is sent by means of a direct voltage of about 50 volts taken from a network device through the body in such a manner that an electrode which is to be held in the hand represents the anode, and an electrode introduced into the root-canal the cathode. Thereupon OH-ions are produced in the root-canal by electrolysis which are to exercise a bactericide effect and to render the contents of the canal sterile. The disadvantage of this known method consists in that with the short treatment of but a few minutes every time the depth-effect of the OH-ions is too low; bacteria deeply penetrated into the dentina are not affected. Furthermore this kind of treatment is felt unpleasantly by the patient; besides, the voltage which may be increased to up to 60 volts is not without danger.

The invention has for its task to do away with these deficiencies. According to the invention a short-circuit galvanic element is used that for a longer period (some weeks or months) is so cemented into the tooth-canal that the electrode of precious metal consisting of say palladium or a silver-palladium-alloy, lies in the tooth-canal whilst the electrode of base metal, e. g. of aluminium or zinc, lies outside the tooth, therefore protrudes from the tooth into the oral cavity and thus contacts with the oral moisture.

The base electrode is either bent into the intervening spaces between the teeth or so placed into the fissures of the tooth that it does not bother when chewing. The galvanic spike-organ according to the invention produces a current for which the precious electrode in the tooth canal forms the cathode. As thorough tests have shown, after lying but three days about a hundred more OH-ions separate than with the ionophoresis method mentioned above which needs a battery or a network device. The tests have further shown that the separation of gaseous hydrogen connected with the separation of OH-ions does not produce any trouble, because the hydrogen which forms itself slowly, on the one side dissolves in the electrolyte, on the other side is taken up by the silver-palladium-alloy of which the cathode consists. The sterilising effect produceable by the inventive spike-organ in the tooth-canal is so excellent—as innumerable clinic examinations have proved—that teeth which heretofore fell victims to the stump-extractor, became again able to function.

The figures show the inventive device by way of example of which

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Figure 1 shows the construction of the inventive galvanic spike organ,
Figure 2 the use of same.

According to Figure 1 the organ consists of a spike *a* of palladium or a silver-palladium-alloy which tapers downwards conically. Spike *a* is welded, soldered or clamped at *b* to an electrode of aluminium- or zinc-wire so that there exists a metallic connection. The length of spike *a* is e. g. about 20 mm., that of spike *c* e. g. about 15 mm.

According to Figure 2 spike *a* is introduced into canal *d* of the tooth-root *e* and cemented in at *f*. The base electrode *c* protrudes from the tooth so that it contacts with the oral moisture. The galvanic and short-circuited organ formed by the connection of the two differently noble electrodes *a* and *c* produces a current the course of which is shown diagrammatically by broken lines.

The spike-electrode introduced into the canal of the root may be supplied with a depolarisator which guarantees a longer current.

As depolarisator may serve e. g. depolarising oxide, e. g. copper oxide. This copper oxide is burnt into the noble electrode by means of some binding-medium e. g. of a 10 per cent of magnesium chloride solution.

I claim:

1. A device for electrolytically producing bactericidal OH-ions in a tooth-canal, comprising: an elongated composite electrode having separate portions formed of two metals respectively, separated from each other in the electromotive series, means electrically and mechanically joining said two metal portions at one end of each portion, said electrode being formed as a spike, having the portion nearest the point of the spike formed of the more noble metal and the portion more distant from said point formed of the less noble metal, said spike having the portion thereof nearest the point suitably shaped and sized so as to be capable of introduction into the tooth-canal and having the other portion bent over and capable of extending externally of the tooth, whereby to contact the oral fluids and to establish current flow through said spike and the tissues adjacent the point thereof.

2. A device according to claim 1, in which the portion of said spike nearest the point is formed of palladium.

3. A device according to claim 2, in which said palladium is present in an alloy having from 1 to 80 per cent of silver.

4. A device according to claim 3, in which the less noble metal of the spike is pure aluminum.

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5. A device according to claim 3, in which the less noble metal of the spike is pure silver.

6. A device according to claim 1, in which the noble metal has bound thereto a depolarizer of copper oxide.

7. A device according to claim 6, in which the binder is a 10 per cent solution of magnesium chloride.

ADOLF KNAPPWOST.

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