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DENTIST'S TOOTH-MARKING CHEWABLE BODY

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Fig. 1

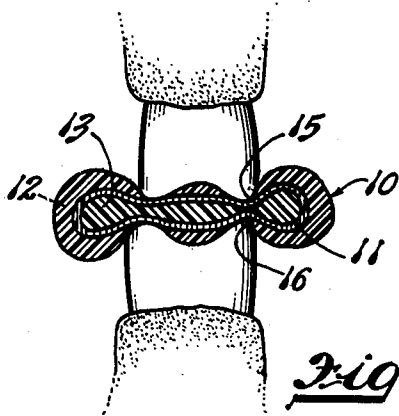
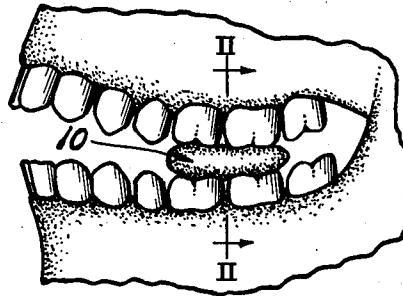


Fig. 2

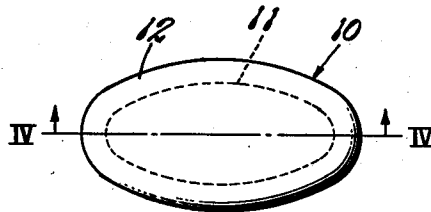


Fig. 3

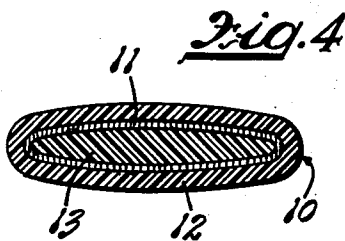


Fig. 4

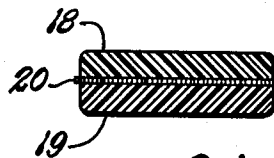


Fig. 5

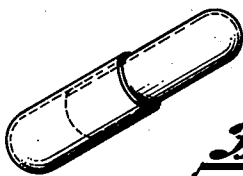


Fig. 6

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DENTIST'S TOOTH-MARKING CHEWABLE
BODY

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4 Claims. (Cl. 32-19)

1

This invention relates to tooth-marking devices employed by dentists for locating high spots on teeth, so that such high spots can be ground off, to improve the fit between the upper and lower teeth.

An object of the invention is to provide a tooth-marking body simulating a bolus of food so that when it is chewed the teeth of the upper and lower jaws will assume the same relative positions that they do during normal mastication, and will produce markings on the teeth that truly indicate the spots thereon that are too high.

Other more specific objects and features of the invention will appear from the description to follow.

Heretofore, it has been the practice to discover high spots between upper and lower teeth by having the patient bite on a sheet of thin marking material similar to carbon paper, typewriter ribbon or the like, the ink or pigment in the sheet being transferred to the teeth at the areas of contact therebetween, which represent the high spots. I have found, however, that the use of the customary thin sheet material for this purpose gives reliable results only when the high spots are radical. It is imperfect, and often misleading, when the discrepancies in height of the different teeth are only slight. I have discovered that the reason for the unsatisfactory results with thin sheet marking devices is that the upper and lower jaws do not assume the same relative positions with respect to each other when chewing on a body of negligible thickness that they do when chewing on the usual foods. As a result, areas that are marked by the previously used marking sheets may not be the areas that interfere during normal mastication, and grinding the teeth at the marked areas may aggravate instead of ameliorating the defective bite.

In accordance with the invention, the true high areas on the teeth are marked by employing a marking body of substantial thickness and resembling actual foods in size and resistance, instead of a sheet of negligible thickness. A simple embodiment of the invention may consist of a sheet of marking material sandwiched between two masses of yieldable material of substantial thickness. With such a device, the yieldable material must be capable of penetration—not merely compression—by the teeth in order for them to be marked. A limitation of this simple form of the invention is that the device must be positioned between the teeth so that the sheet marking core is flatwise and not endwise with respect to the closing movement of the teeth. This requires care on the part of the patient,

2

but gives better results than the conventional marking sheets do.

The best embodiment of the invention is a closed sack of flexible material partially filled with some yieldable material, and itself enclosed in a mass of yieldable material. The sack itself may have a thin coating of marking substance, or the latter may be incorporated in the sack itself, or in the contents of the sack and be capable of penetrating the latter under pressure. The sack may be spherical or egg shaped if fully distended. However, it is not filled beyond the point where it can be substantially flattened between the teeth. Such a sack has the characteristic of flattening between the teeth, when chewed, irrespective of its original orientation when placed between the teeth. The outer mass is capable of being penetrated by the teeth at the area of maximum pressure so that such areas of the teeth contact the sack directly with relatively high pressure, and are marked by the marking material present on the outer surface of the sack, or that seeps through the sack from the filling therewithin.

A full understanding of the invention may be had from the following detailed description of certain embodiments thereof, when read in connection with the drawing, in which:

Fig. 1 is an elevation view showing a marking bolus in accordance with the invention positioned between the upper and lower teeth of a patient;

Fig. 2 is a cross section in the plane II—II of Fig. 1;

Fig. 3 is a side elevation of the marking bolus in its unused form;

Fig. 4 is a cross section in the plane IV—IV of Fig. 3;

Fig. 5 is a perspective view of a capsule in which the bolus of Fig. 3 may be contained prior to use; and

Fig. 6 is a cross section showing a simplified embodiment of the invention.

Referring to Figs. 3 and 4, the preferred embodiment of the invention is shown as a generally egg-shaped body hereinafter referred to as a bolus 10. It consists of a sack 11 surrounded by a thick layer 12 of yieldable material, and containing a filling 13 to prevent complete collapse of the sack. The sack 11 may have an outer coating of marking material such as carbon paper, or an ink-impregnated fabric such as typewriter ribbon. Alternatively, the sack 11 itself may be of an ink permeable fabric, and the filling 13 can contain an ink capable of flowing through the sack in response to pressure.

The outer layer 12 can be of a variety of ma-

3

terials, such as natural or synthetic sponge, sponge rubber, or yieldable plastic material. The desideratum of this layer 12 is that it afford resistance to compression resembling that of food substances, but be capable of penetration by the teeth under heavy chewing pressure, to permit the high areas of the teeth to be marked by direct contact with the surface of the sack 11. Materials that appear to be well suited for this outer layer 12 are the usual chewing gums, and synthetic plastics such as silicone polymers. These silicones are plastic like putty, can be chewed like gum and offer much the same resistance to chewing as ordinary chewing gum.

The filling 13 within the sack 11 may be a gas, a liquid, or a plastic solid substance. Its primary function is to prevent the sack 11 from folding on itself while being chewed, and to cause it to always flatten out between the teeth when the latter close on it, regardless of the shape or orientation of the sack at the start of the closing movement of the teeth. The quantity of the filling material 13 must not be too great, else the sack would burst before it would flatten between the teeth, nor too small else it cannot perform its stated function of preventing the sack from folding on itself and wadding up during the chewing operation.

By using the proper quantity of a liquid or solid (plastic) filling 13, the sack 11 can be of nonstretching material. If a stretchable material such as rubber is employed for the sack 11, a larger quantity of the filling material can be employed. Ordinarily, the known stretchable materials such as rubber are less suitable than known non-stretchable materials, because of the greater resistance of the latter to puncture by the biting edges of the teeth.

The filling 13 can be a liquid or plastic ink capable of permeating a sack 11 of closely woven fabric, for example, and the covering layer 12 can be a plastic that is not soluble in and does not readily mix with the ink.

Figs. 1 and 2 show how the sack 11 is flattened and portions of the opposite walls thereof forced together between high areas 15 and 16 of juxtaposed teeth in the upper and lower jaws, as the bolus 10 is chewed. After the opposed wall portions of the sack contact each other, final movement of the opposed teeth together develops high pressures between the high areas of the teeth and the sack, to transfer the marking material in or on the sack to the tooth surfaces.

Fig. 6 shows what is probably the simplest embodiment of the invention. It is a bolus in the

4

form of a sandwich having outer layers 18 and 19 of a chewable medium such as gum or sponge rubber on opposite sides of a sheet of marking material 20. The sheet 20 can be a carbon paper or a fabric impregnated with ink, similar to a typewriter ribbon. This form of the invention has the limitation, previously mentioned, that the patient must, during the chewing operation, maintain the bolus in the same orientation with the marking element 20 flat between the teeth. However, it can be used to obtain more correct marking of the high areas of the teeth than can be obtained with the conventional thin sheet marking materials now in general use.

For protection prior to use, the bolus can be packaged in a capsule as shown in Fig. 5. Such a package is particularly desirable when the outer layer 12 of the bolus 10 is one of the silicone polymers mentioned previously, because they are capable of cold flow.

Although for the purpose of explaining the invention, a particular embodiment thereof has been shown and described, obvious modifications will occur to a person skilled in the art, and I do not desire to be limited to the exact details shown and described.

I claim:

1. A device adapted to be chewed between the teeth for marking high areas of the teeth comprising a bolus consisting of a closed sack containing a substance capable of flowing and surrounded by an outer member capable of penetration by the teeth while offering appreciable resistance to such penetration, said sack having a thin wall of flexible material capable of imparting marks to teeth when highly compressed therebetween.

2. A device according to claim 1 in which said sack contains a quantity of said substance sufficient to only partially distend it.

3. A device according to claim 2 in which said substance contains a marking ink to which said sack is permeable and said outer member is impermeable.

4. A device according to claim 1 in which said substance is compressible.

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