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(54) **INTERDENTAL BRUSH**

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(57) **ABSTRACT**

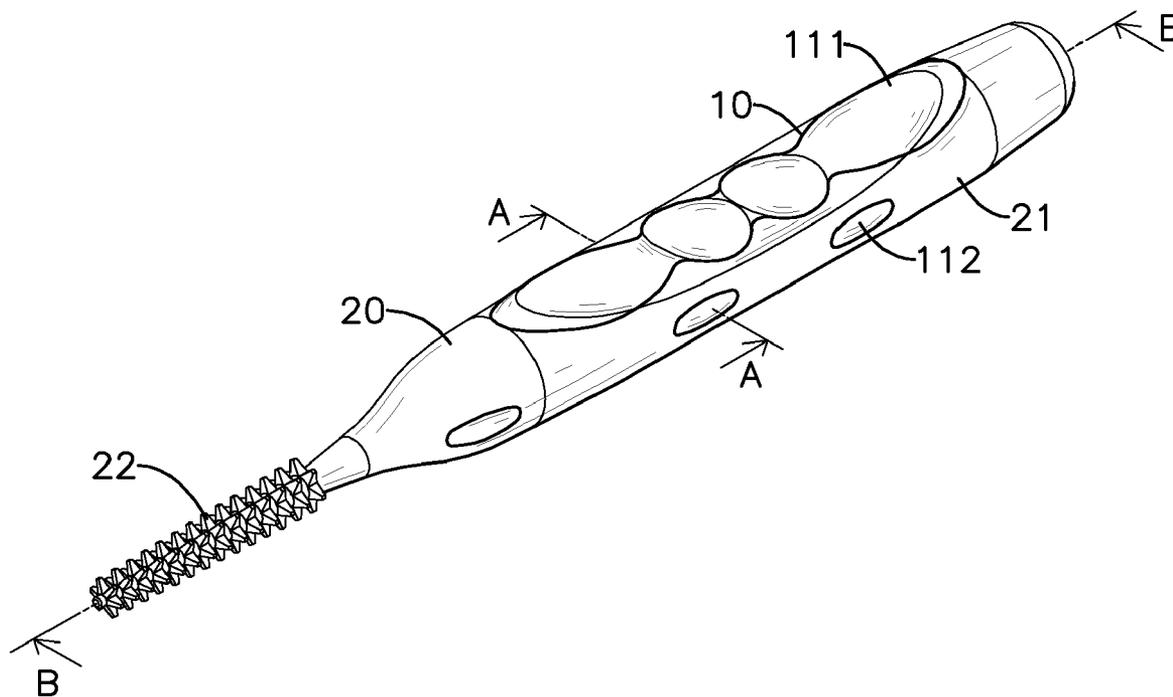
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An interdental brush has a hard body, an encapsulation layer and a plurality of soft and elastic bristles. The hard body takes a straight form and has a grip portion and a slender bristle portion. The hard body is sheathed by a soft and elastic material to form the encapsulation layer by means of insert molding. A grip is formed by sheathing the grip portion with the encapsulation layer to enhance holding comfort. The plural elastic bristles aligned in a radial fashion are formed on a surface of the encapsulation layer corresponding to the bristle portion. Given the foregoing interdental brush structure, the elastic bristles on the bristle portion can be deeply slid in between teeth for cleaning. The soft and elastic nature of the bristles ensures gums are not injured during cleaning.

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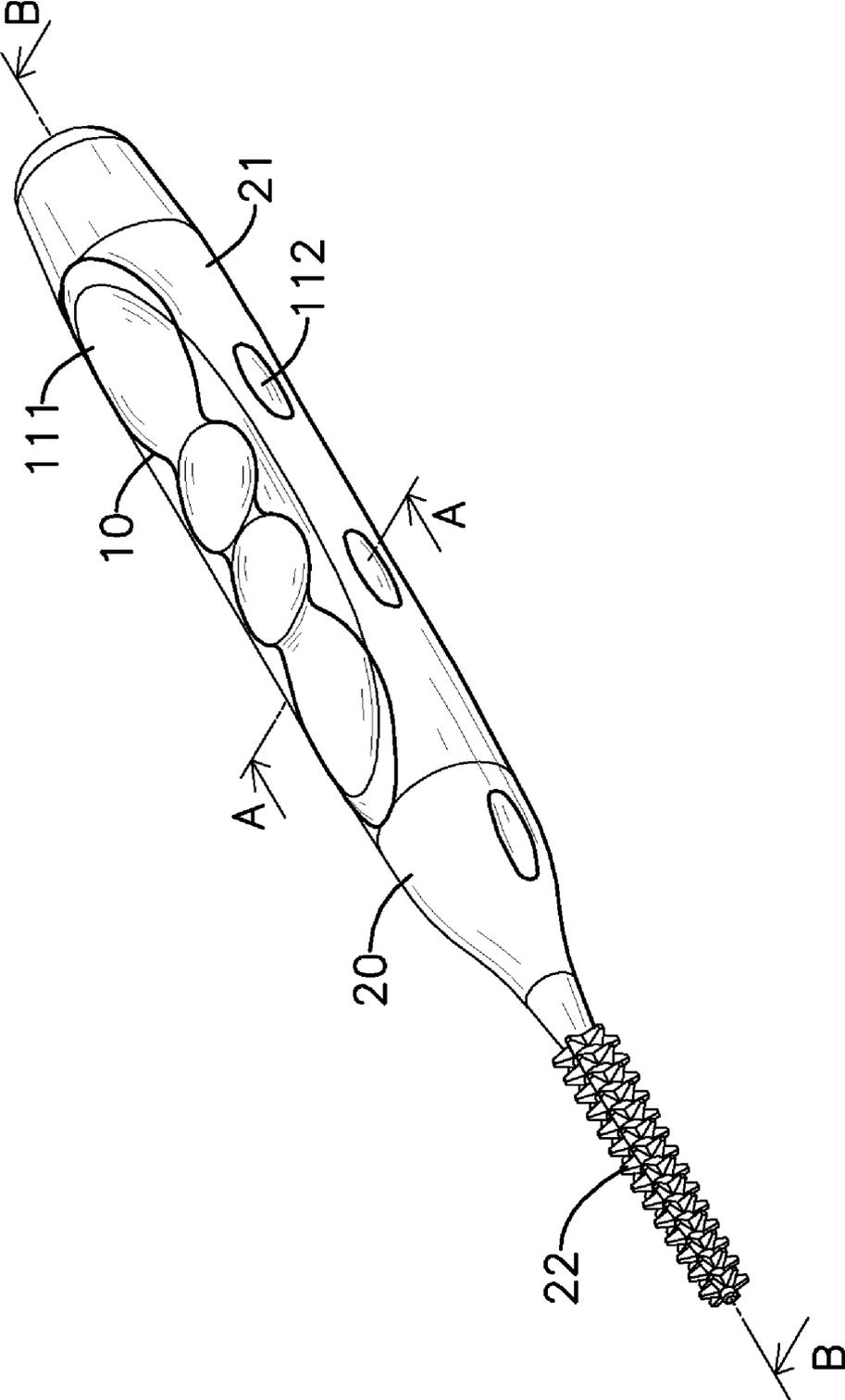


FIG. 1

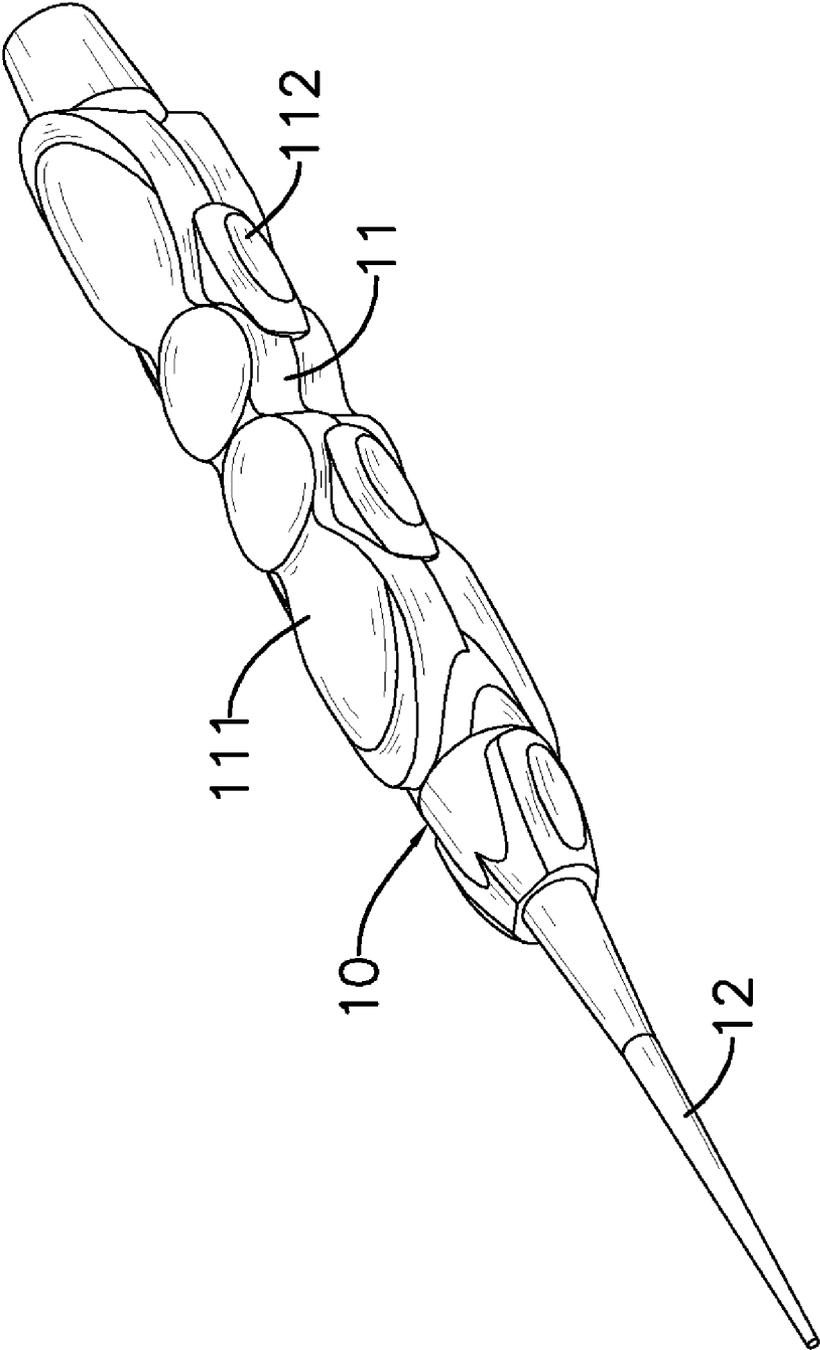


FIG. 2

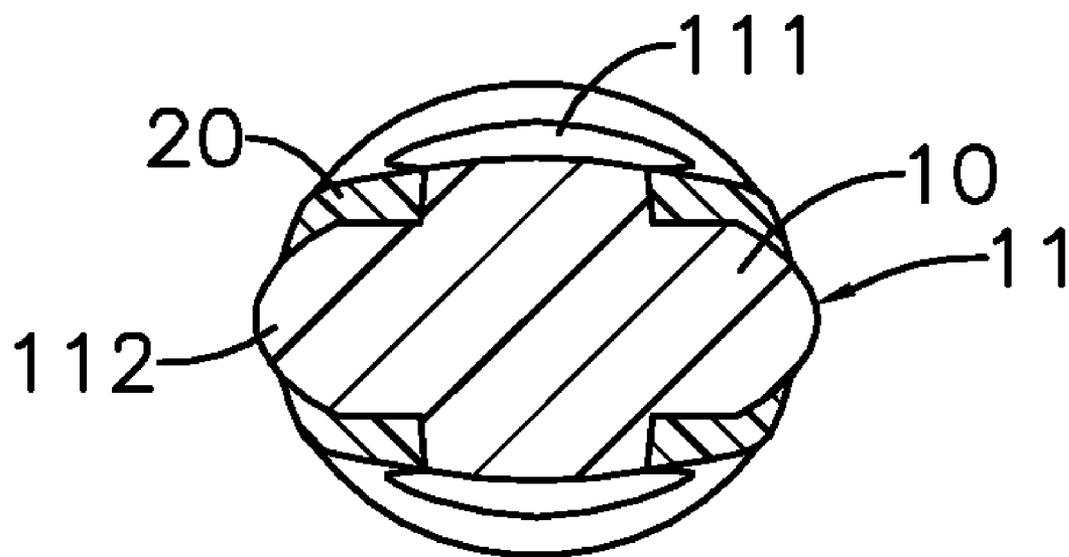


FIG. 3

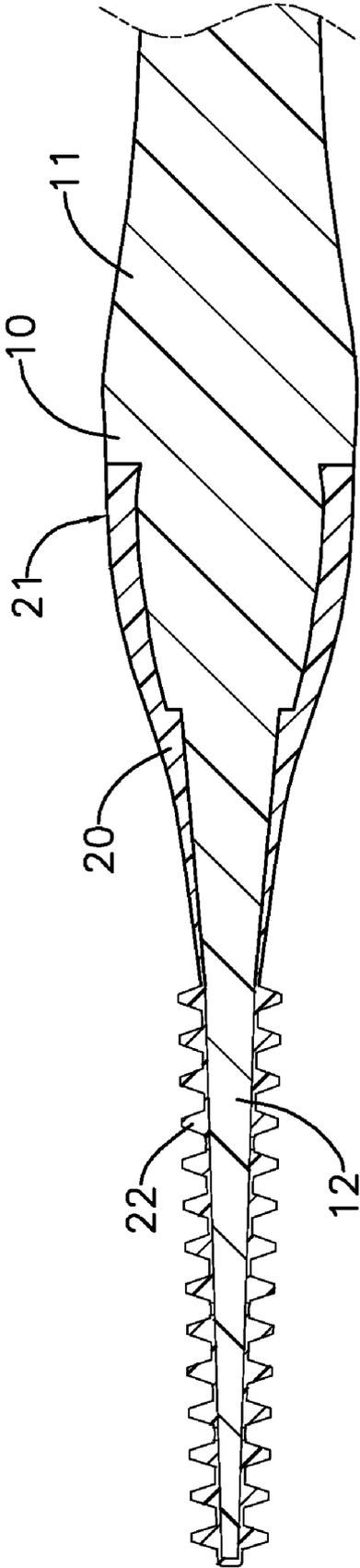


FIG. 4

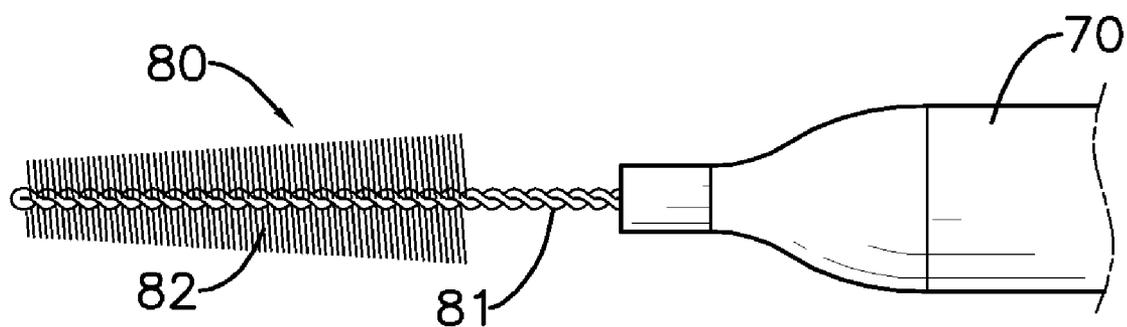


FIG. 5  
PRIOR ART

**INTERDENTAL BRUSH**

**BACKGROUND OF THE INVENTION**

**[0001]** 1. Field of the Invention

**[0002]** The present invention relates to an interdental brush, and more particularly to an interdental brush having soft and elastic bristles that clean without hurting gums.

**[0003]** 2. Description of Related Art

**[0004]** Keeping mouth and teeth clean and healthy is a critical part of personal hygiene. The basic tools used by ordinary people to clean teeth are normally tooth brushes, tooth picks and dental floss picks. Tooth brushes are usually applied to routine cleaning work such as brushing teeth after getting up and before going to bed while tooth picks and dental floss picks are applied to clean food debris left between teeth after meals. Because tooth picks and dental floss picks are long and thin in shape and the tip or dental floss thereof are smaller than gaps between teeth, they can be easily and deeply slid in between teeth to remove the food debris lodged between teeth. However, tooth picks and dental floss picks are dedicated to clean up food debris between teeth only and have no other cleaning effect to the portions between teeth, which are also inaccessible to conventional tooth brushes.

**[0005]** To solve the foregoing issue, so-called interdental brushes were introduced to the market for cleaning between teeth. With reference to FIG. 5, the interdental brush has a grip (70) and bristle structure (80) mounted on one end of the grip (70). The bristle structure is formed by folding a steel wire in two strands (81) and twisting the two strands (81) in a spiral fashion. Bristles (82) are inserted in between the two strands (81) are mounted to one end of the grip (70) to form an interdental brush.

**[0006]** As a result of the long and thin shape of the interdental brush, the interdental brush can be easily slid in between teeth and by reciprocal movement, the bristles (82) brush and clean portions between neighboring teeth.

**[0007]** Despite certain cleaning effects, a line diameter of the strands of steel wires are quite small because bristles (82) of the bristle structure (80) are inserted in between the twisted strands of steel wires (81), the steel wire (81) is a rigid material and the bristle structure (80) takes a slender form. All these mean that the twisted strands of steel wires (81) resemble a saw with a plurality of sawteeth. Once the steel wire directly contacts with gum and an applied force is inappropriate, it may very likely injure the gum. Therefore, existing interdental brushes need to be further refined accordingly.

**SUMMARY OF THE INVENTION**

**[0008]** The main objective of the present invention is to provide an interdental brush having a plurality of soft and elastic bristles ensuring effective cleaning and safe operation while brushing between teeth.

**[0009]** To achieve the main objective, an interdental brush in accordance with the present invention has a hard body, an encapsulation layer and a plurality of soft and elastic bristles.

**[0010]** The hard body takes a straight form and has a grip portion and a slender bristle portion.

**[0011]** The encapsulation layer is formed by a soft and elastic material and sheathed on the grip portion and the slender bristle portion of the hard body.

**[0012]** The plural soft and elastic bristles are integrally extended from an outside surface of the encapsulation layer corresponding to the bristle portion.

**[0013]** The slender bristle portion can be deeply inserted in between teeth. The elastic bristles of the encapsulation layer corresponding to the bristle portion can effectively perform cleaning between teeth. Owing to the soft and elastic nature of the encapsulation layer on the bristle portion, gums are not injured when the interdental brush passes between teeth. As such, the interdental brush having the foregoing structure makes cleaning between teeth safe and easy.

**[0014]** Other objectives, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

**BRIEF DESCRIPTION OF THE DRAWINGS**

**[0015]** FIG. 1 is perspective view of an interdental brush in accordance with the present invention;

**[0016]** FIG. 2 is a perspective view of a hard body of the interdental brush in accordance with the present invention;

**[0017]** FIG. 3 is a cross-sectional view taken along line A-A in FIG. 1;

**[0018]** FIG. 4 is across-sectional view taken along line B-B in FIG. 1; and

**[0019]** FIG. 5 is a partial side view of a conventional interdental brush in accordance with the prior art.

**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

**[0020]** With reference to FIG. 1, an interdental brush of an embodiment in accordance with the present invention has a hard body (10), an encapsulation layer (20) and a plurality of soft and elastic bristles (22). The hard body (10) has a grip portion (11) and a slender bristle portion (12). The encapsulation layer (20) is formed on the hard body (10).

**[0021]** With reference to FIG. 2, the hard body (10) is formed by injection molding of plastic material and takes a straight form. The grip portion (11) is wider than the bristle portion (12) and has a length good for holding. In the preferred embodiment, a rough portion is further formed on the grip portion (11). For example, multiple continuous recesses (111) are formed on a top surface and an opposite bottom surface of the grip portion (11) so that the grip portion (11) has a wide and thin cross section (with reference to FIG. 3). Multiple protrusions (112) are formed on two opposite side surfaces of the grip portion (11). The continuous recesses (111) and the protrusions (112) are exposed beyond the encapsulation layer (20). Therefore, the grip portion (11) of the hard body (10) is not completely sheathed by the encapsulation layer (20).

**[0022]** The slender bristle portion (12) of the hard body (10) serves as a foundation of the plural bristles (22) of the interdental brush in accordance with the present invention. As the bristle portion (12) and the grip portion (11) are integrally formed, the bristle portion (12) has proper rigidity to support a smoothly reciprocal movement of the bristles between teeth.

**[0023]** Furthermore, the encapsulation layer (20) is formed on the hard body (10) by using a soft and elastic material (e.g. silica gel) processed by insert molding. With reference to FIGS. 1 and 4, the grip portion (11) is sheathed by the encapsulation layer (20) to form a grip (21). The plural soft and

elastic bristles (22) are integrally extended from an outside surface of the encapsulation layer (20) corresponding to the bristle portion (12). In the preferred embodiment, those elastic bristles (22) tapers upwardly from bottom to top to form a cone and are corresponding to the bristle portion (12) in a radial alignment with multiple rings around the encapsulation layer (20).

[0024] The substantial structure of the interdental brush in accordance with the present invention can be comprehended by the foregoing description. Soft and elastic bristles (22) are corresponding to the bristle portion (12) of the hard body (10). The slender bristle portion (12) can be deeply inserted in between teeth. The elastic bristles (22) formed on the bristle portion (12) can effectively perform cleaning between teeth. Owing to the soft and elastic nature of the encapsulation layer (20) on the bristle portion (12), gums are not injured when the interdental brush passes between teeth. Besides, as the grip portion of the hard body is further not completely sheathed by the encapsulation layer, both the rigidity and elasticity of the grip can be balanced to enhance a holding comfort. As such, the interdental brush having the foregoing structure makes cleaning between teeth safe and easy.

[0025] Even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and features of the invention, the disclosure is illustrative only. Changes may be made in the details, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

What is claimed is:

- 1. An interdental brush, comprising:  
a hard body taking a straight form and having a grip portion and a slender bristle portion; and  
an encapsulation layer formed by a soft and elastic material and sheathed on the grip portion and the slender bristle portion of the hard body; and  
a plurality of soft and elastic bristles integrally extended from an outside surface of the encapsulation layer corresponding to the bristle portion.
- 2. The interdental brush as claimed in claim 1, wherein the grip portion of the hard body is wider than the slender bristle portion and has a rough portion thereon with a length for holding.
- 3. The interdental brush as claimed in claim 2, wherein the rough portion comprises:  
multiple continuous recesses formed on a top surface and an opposite bottom surface so as to have a wide and thin cross-section thereof; and  
multiple protrusions formed on two opposite side surfaces thereof,  
wherein the continuous recesses and the protrusions are exposed beyond the encapsulation layer.
- 4. The interdental brush as claimed in claim 1, wherein the soft and elastic bristles are radially aligned.
- 5. The interdental brush as claimed in claim 2, wherein the soft and elastic bristles are radially aligned.
- 6. The interdental brush as claimed in claim 3, wherein the soft and elastic bristles are radially aligned.

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