

Oct. 28, 1958

C. W. JOHNSON

2,857,909

TOOTH PROTECTOR

Filed Nov. 14, 1955

2 Sheets-Sheet 1

Fig. 1

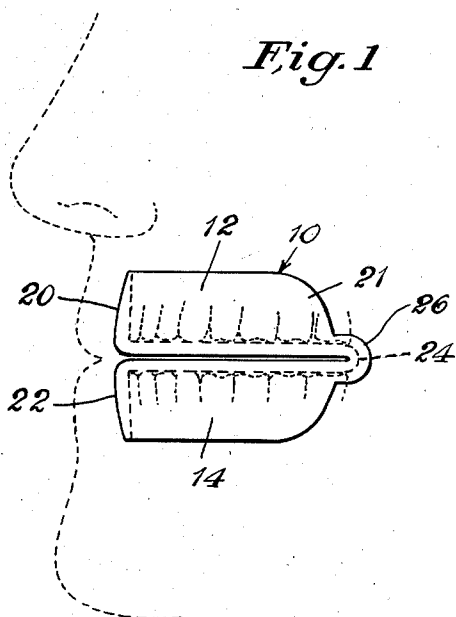


Fig. 2

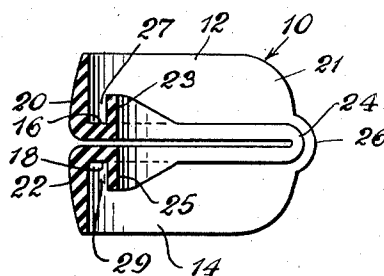


Fig. 3

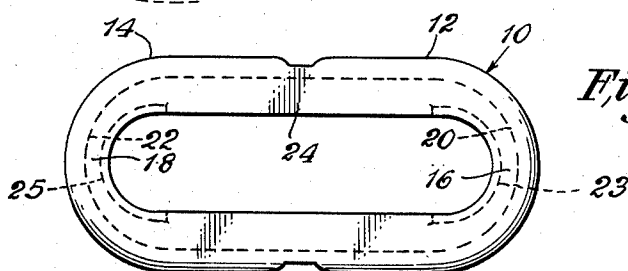


Fig. 4

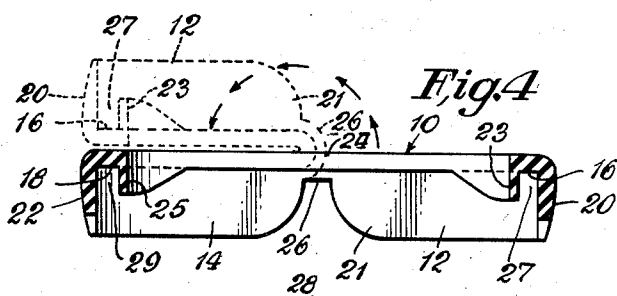


Fig. 5

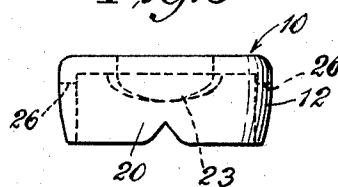
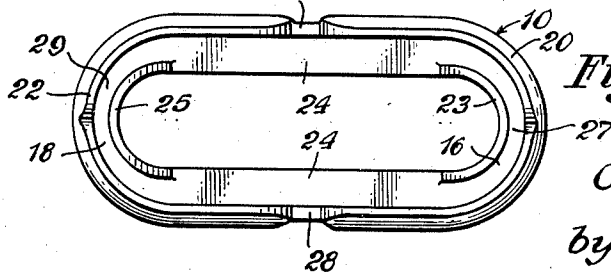


Fig. 6



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Fig. 7

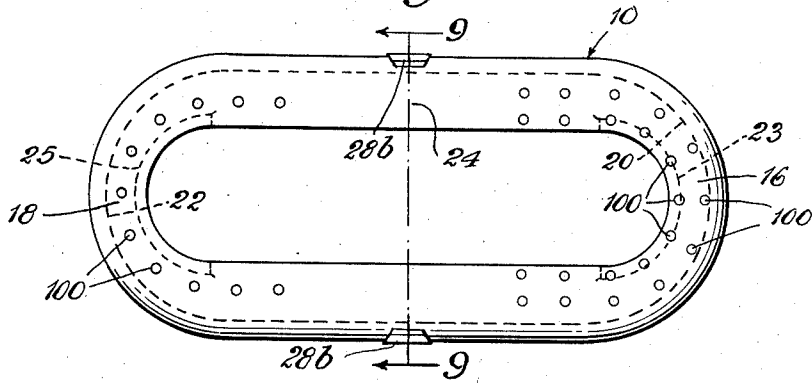


Fig. 8

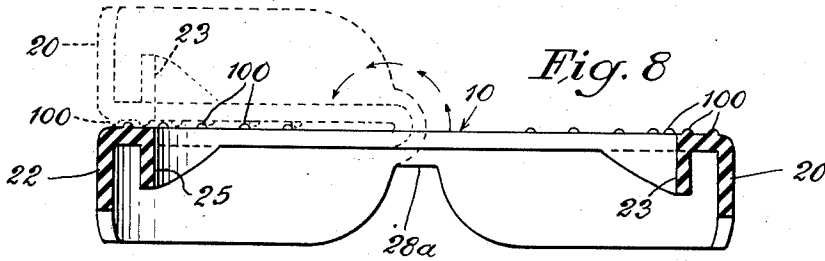


Fig. 10

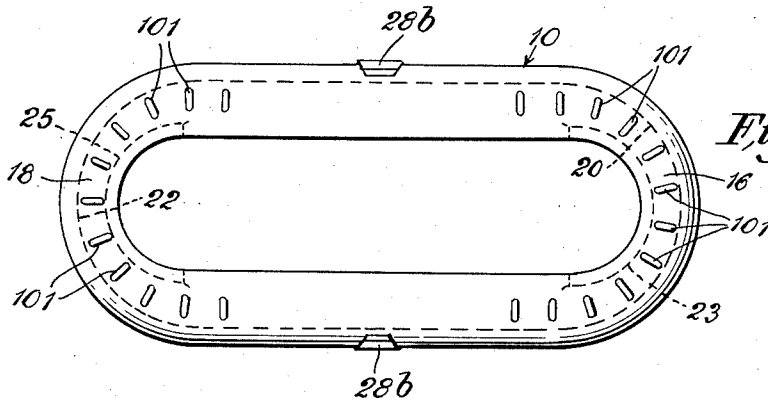
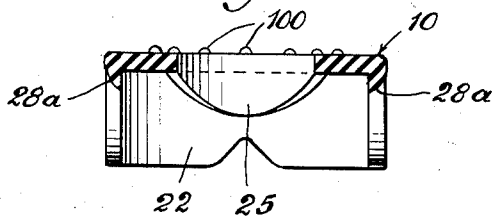


Fig. 9



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2,857,909

TOOTH PROTECTOR

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Application November 14, 1955, Serial No. 546,362

11 Claims. (Cl. 128—136)

The present application is a continuation in part of my copending application Serial No. 538,202, filed October 3, 1955, for "Tooth Protector," which is a continuation in part of my earlier application Serial No. 448,646, filed August 9, 1954 (both now abandoned) as is this application.

My invention relates to a mouthpiece or tooth guard of the insertable type which can be positioned and removed easily from the mouth and, while inserted, will retain its position firmly and rigidly. At the same time, my mouthpiece will allow the wearer to engage in athletics or the like, which require various types of vocal communication.

A primary object of my invention is a new and improved mouthpiece or tooth protector which will allow the wearer to engage in normal conversation.

Another object is a mouthpiece of the above type which is adapted to firmly grip both the upper and lower teeth.

Another object is a mouthpiece of the above type which presses firmly against both the upper and lower teeth at all times, even when the wearer has his mouth open during speaking, yelling, or the like.

Another object is a mouthpiece of the above type which is rugged in construction, is designed for extended use, and at the same time is easy to manufacture and can be produced relatively inexpensively.

Another object is to provide a mouthpiece of the above type which, when bent, exerts a lateral inward thrust against the teeth along the sides of the jaw.

Another object is to provide such a mouthpiece which avoids lateral outward flare in use, which presents no interference with tongue action or speech, and which prevents excessive flow of saliva.

Another object is to provide such a mouthpiece which is formed to receive the cusps of the teeth, and which will fit, or adapt itself to, crooked teeth.

Another object is to provide a mouthpiece which is formed to prevent any tendency of the mouthpiece to be suctionally drawn from the teeth during use, as when the user partially opens his mouth.

Other objects will appear from time to time in the ensuing specification and drawings in which:

Figure 1 is a side elevational view of my mouthpiece with the user being schematically shown;

Figure 2 is a side sectional view of the mouthpiece;

Figure 3 is a bottom view of the mouthpiece with the top and bottom sections in their normal positions;

Figure 4 is a sectional view of the mouthpiece similar to Figure 2 but showing the sections of the mouthpiece in their normal or distended positions;

Figure 5 is an end view of the mouthpiece shown in Figure 4;

Figure 6 is a top view of the mouthpiece shown in Figure 3;

Figure 7 is a top view of a variant form of mouthpiece;

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Figure 8 is a view similar to Figure 4 of the form shown in Figure 7;

Figure 9 is a section on the line 9—9 of Figure 7; and

Figure 10 is a view similar to Figure 7 illustrating a different form of surface on the mouthpiece.

In Figure 1 the mouthpiece is shown generally at 10 disposed in the user's mouth and gripped by the teeth. It includes top and bottom U-shaped sheaths or guards 12 and 14 which are similar if not substantially identical. Each is composed of a plate-like portion 16 and 18 respectively which is engaged by the teeth as shown in Figure 1 and an upstanding shield or guard 20 and 22 respectively which cover the teeth and slightly overlap the gums of the user. The plates are also provided with a central inner flange 23 and 25 so that the front teeth, both uppers and lowers, fit in a short groove or channel 27 and 29.

The sheaths or guards are joined together at their extremities by hinge sections 24 which are adapted to bias the sheaths away from each other from the position shown in Figure 2 until they lie approximately 180° apart as shown in Figure 4. It should be understood that the wall sections of all parts of the mouthpiece are relatively thin and in effect the hinge sections 24 constitute connected extensions of the arms of the two U-shaped sheaths.

The width of the mouthpiece as shown in either Figures 3 or 6, is slightly less than the normal distance across the mouth of the user so that the sides of the mouthpiece from one hinge section to the other have to be flexed out slightly before the teeth of the user can slide inside the upstanding shield or guard of the mouthpiece to engage the plate-like portions.

In Figure 5, I have shown the guards 20 and 22 along the sides of the mouthpiece turn slightly inwardly so as to conform to the natural tooth configuration of the user although this could vary somewhat.

The sheaths all slope in at 21 toward the hinge sections 24 and are interconnected by an elastic bridge or strap 26 which is disposed between the sloping portions 24 and confined to the outer edge of the hinges as at 28 in Figure 6. The dimensioning, toughness and elasticity of the straps is such that the protector is biased firmly against the teeth in the Figure 4 broken line position.

Referring to the form of Figures 7, 8, and 9, I illustrate in the first place the employment of means for preventing a suctional sealing of the parts together when the mouthpiece is bent to the dotted line position of Figures 4 or 8. I illustrate, for example, in Figures 7 and 8, a plurality of the projections 100 which are shown as arranged in rows which conform generally to the contour of the mouthpiece as will be clear from Figure 7. Under some circumstances I find it advantageous to so arrange or align these projections 100 on the opposite end of the mouthpiece that they are staggered and thus effectively increase the distribution of the projections 100 throughout the opposed surfaces. It will be understood that in the absence of such projections there may be an occasional tendency for the opposed flat wet rubber surfaces to adhere. In such a case when the user opens his mouth or separates his teeth there may, under some circumstances, be a tendency for the two parts to adhere in the dotted line position of Figures 4 or 8, causing a partial withdrawal of the teeth of one or both jaws from the mouthpiece. I find that this tendency does not exist when I prevent a surface to surface plane contact of the opposed ends of the mouthpiece. Similarly in Figure 10, I may employ different contours or shapes of the projections. In Figure 10, I illustrate a series of ridges 101 which may be so arranged as to cross each

other when the upper part of the mouthpiece is in the dotted line position of Figure 8.

In order to obtain a maximum desired grip, I also find it advantageous to build out the wall 28 as shown in Figure 9. For example in the form of Figure 7 I illustrate an outward bevel of the wall 28a which terminates in a species of a ledge or step 28b outside of the curved junction between the sides and bottom of the mouthpiece.

The use, operation, and function of my mouthpiece are as follows:

Each of the sheaths is formed as a generally U-shaped section joined together by extensions which merge together in hinge sections. The flexibility of the hinge sections is such that the mouthpiece tends to assume a substantially flat position as shown in Figure 4. The user must bend the mouthpiece in the middle across the hinge sections until it assumes the dotted line position shown in Figure 4 at which time it can be slipped into the mouth of the user. At the same time, the sides must be flexed outwardly a slight amount so that the teeth of the user will slide inside of the upstanding shields. Thus the normal bias and flexibility of the mouthpiece gives an inwardly directed locking action along the sides of the teeth and a further gripping action due to the outward bias of the U-shaped section away from each other under the influence of the hinge sections. Thus the user can open his mouth with complete freedom as the resiliency of the hinge sections will force the two sheaths to move apart and follow the normal movements of the mouth during either normal conversation, hollering, talking or the like. The two opposed plate-like portions 16 and 18 are interposed between the teeth and prevent the teeth of the user from directly engaging each other. At the same time, the tongue will not contact these plate-like portions as they do not ride up or rise along the inner-surface of the teeth in the rear areas and the forward troughs insure a firm mounting. Thus normal conversation will not be hindered.

Due to the normal inward bias of the sides of the mouthpiece, the inclined guard portions will have a tendency to ride up on the upper teeth and down on the lower teeth which improves its gripping action.

It should be understood that the mouthpiece can be made of any suitable flexible material, and at the present time rubber is being used. However, this should not be considered a limitation. The rubber, of course, can be either vulcanized or relatively semi-soft as desired.

I have only shown the sides of the guard portions as having a height sufficient to cover the teeth and possibly overlap the gums only slightly; however, it should be understood that they can rise above the plate portions any appreciable degree.

The hinges bias the plates apart and firm resiliency is acquired by the bridges or straps which, while they firmly bias the plates against the teeth, nevertheless lie outside the teeth and do not form a mass or bundle to separate the rear molars excessively.

This mouthpiece will not prevent or hinder talking, it will not hinder the breathing of the user, and it need not necessarily be removed while the user is drinking. It can be used in any type of athletics, be it a field sport such as football and soccer, or arena sports such as boxing and wrestling. It has proven particularly advantageous in football where various types of conversation are highly desirable, if not absolutely necessary and at the same time protection of the teeth of the various players can be acquired.

The device is light and flexible and can be easily bent into the Figure 2 configuration and inserted in the mouth. At the same time, it can be easily withdrawn by merely gripping the inside of the plate-like portions and exerting forward pressure. It is very flexible and does not require the user to open his mouth to an excessive degree to either insert or withdraw it.

While I have shown and described the preferred form of my invention, it should be understood that many changes, alterations, and substitutions can be made. I, therefore, wish that my invention be unrestricted except as by the appended claims.

I claim:

1. In a mouthpiece, a pair of sheath-like members adapted to conform generally to and fit over the teeth of the user, said members being, by their flexibility, adapted to conform to teeth of various size and irregular contour, and hinge sections connecting the ends of the sheath-like members and adapted, when the sheath-like members are in position within the mouth, to direct an inward thrust of the sides of the sheath-like members laterally against the teeth, said sections having a reinforcing strap outside of the normal tooth line for biasing the members firmly against the teeth of the user.

2. In a mouthpiece, a pair of sheath-like members adapted to generally conform to and fit over the teeth of the user, and hinge sections connecting the ends of the sheath-like members and adapted to normally bias the members pivotally apart a distance in excess of the maximum mouth opening of the user, said sections having a reinforcing strap outside of the normal tooth line for biasing the members firmly against the teeth of the user, said sheath-like members being generally angular in cross-section and including a lateral flange formed and adapted to engage the outsides of the teeth, a flange generally at right angles thereto adapted to receive the cusps of the teeth, said last mentioned flange being relatively narrow, whereby the space within the sheath-like members is substantially open, and a second lateral flange formed and adapted to engage the insides of the teeth.

3. In a tooth protector, a pair of U-shaped flexible tooth shields adapted to fit over the teeth, the shields being connected together at their extremities, the sides of the shields being adapted to flex toward each other so as to be normally spaced apart a distance slightly less than the distance between the rows of the teeth across the mouth, the opposed surfaces of the shields being formed with surface irregularities distributed and adapted to prevent sealing contact when the parts are in use.

4. The structure of claim 3 characterized in that the surface irregularities are constituted by a plurality of staggered rows of projections.

5. The structure of claim 3 characterized in that the surface irregularities include a plurality of ridges, the ridges of the opposite shields crossing each other when the shields are opposed in use.

6. The structure of claim 2 further characterized in that the reinforcing strap outside of the normal tooth line is connected to and integral with the lateral flanges formed and adapted to engage the outsides of the teeth and also integral with the hinge sections.

7. In a tooth protector, a pair of U-shaped, flexible, tooth shields adapted to fit over the teeth, the shields being connected together at their extremities, the opposed surfaces of the shields being formed with surface irregularities distributed and adapted to prevent sealing contact when the parts are in use.

8. In a mouthpiece, a pair of sheath-like members adapted to conform generally to and fit over the teeth of the user, said members being, by their flexibility, adapted to conform to teeth of various size and irregular contour, and hinge sections connecting the ends of the sheath-like members and adapted to normally bias the members pivotally apart a distance in excess of the maximum mouth opening of the user, said sections having a reinforcing strap connected to the sheath-like members outside of the normal tooth line for biasing the members firmly against the teeth of the user.

9. The structure of claim 8 further characterized in that each reinforcing strap is connected to and integral with both the sides of the sheath-like members and the hinge sections.

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10. In a mouthpiece, a pair of sheath-like members adapted to generally conform to and fit over the teeth of the user and hinge sections connecting the ends of the sheath-like members and adapted to normally bias the members pivotally apart a distance in excess of the maximum mouth opening of the user, the sides of the sheath-like members being normally spaced from each other a distance slightly less than the normal lateral distance between the rows of teeth of the user to effect a laterally inward gripping action along the sides of the sheath-like members, the sheath-like members being generally angular in cross section and including a lateral flange formed and adapted to engage the outsides of the teeth, a flange generally at right angles thereto adapted to receive the cusps of the teeth, said last mentioned flange being relatively narrow, whereby the space within

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the sheath-like members is substantially open, and a second lateral flange formed and adapted to engage the insides of the teeth and confined solely to the front of the sheath-like members.

11. The structure of claim 10 further characterized in that said hinge sections have a reinforcing strap outside of the normal tooth line for biasing the sheath-like members firmly against the teeth of the user.

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