Oct. 11, 1932. J. ZRNA 1,882,204

TOOTH CLEANER

Filed Sept. 30, 1931

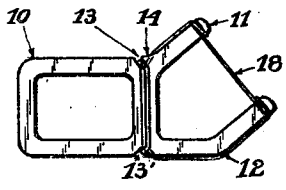


FIG. 1.

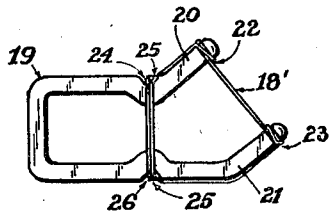


FIG. 6.

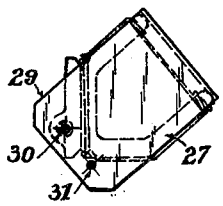


FIG. 8.

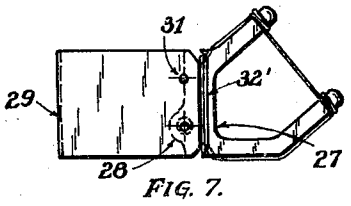


FIG. 7.

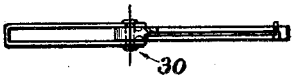


FIG. 9.

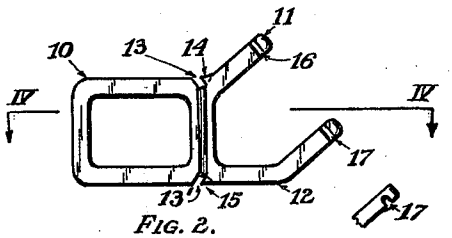


FIG. 2.

FIG. 3.

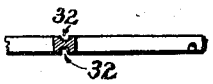


FIG. 4.

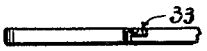


FIG. 5.

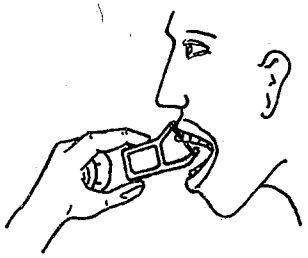


FIG. 10.

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UNITED STATES PATENT OFFICE

JOHN ZRNA, OF CHICAGO, ILLINOIS

TOOTH CLEANER

Application filed September 30, 1931. Serial No. 565,981.

My invention pertains to a device for cleaning the spaces and cavities between the teeth and for extracting food particles, food tissue or the like from between the teeth. My invention relates particularly to a highly efficient and sanitary instrument or holder adapted to hold a flexible band or thread adapted to be inserted between the teeth, said band or thread being easily and quickly replaceable.

An object of my invention is the provision of a highly serviceable holder which has means whereby an ordinary flexible band or thread may be quickly secured thereon to provide a device for cleaning the teeth, and which band may be quickly removed if broken or unclean, and replaced.

A further object of my invention is the provision of an efficient and sanitary holder for an elastic rubber band having means whereby a portion of said rubber band may be held in stretched and projected position with respect to the main part of said holder and permitting convenient insertion and movement between the teeth.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawing.

This invention (in a preferred form) is illustrated in the drawing and hereinafter more fully described.

On the drawing:

Fig. 1 shows a side elevation of my tooth cleaner with a rubber band properly mounted thereon.

Fig. 2 shows a similar view of my tooth cleaner with the rubber band removed.

Fig. 3 shows a fragmentary side elevational view showing the slits in the sides of my device.

Fig. 4 is a cross sectional view taken on line IV—IV of Fig. 2 showing the annular groove around the body of my tooth cleaner.

Fig. 5 is a fragmentary view of the end of one of the arms and showing the side slits.

Fig. 6 shows a modified form of my tooth cleaning device which merely embodies a U-shaped member and having structural details somewhat similar to my preferred form.

Fig. 7 is a side elevational view of a second modified form of my invention embodying the principles of my preferred form and including a casing into which the yoke portion may be inserted through a hinged connection.

Fig. 8 is a view of the device shown in Fig. 7 but showing the tooth cleaning portion in dotted lines with the casing.

Fig. 9 is a view taken from above and looking at Fig. 7 and showing the open edge of the casing.

Fig. 10 is a view illustrating the manner of using my tooth cleaning device.

As shown on the drawing:

The reference numeral 10 indicates a substantially rectangular body of my preferred device which is preferably made of a hard rubber, bakelite, or other material capable of being molded and which has a slight degree of elasticity. An arm 11 is formed integral with the corner of the body 10 and extends radially and at an obtuse angle to the two adjacent sides of the body.

An arm 12, which is formed integral with the body 10, extends from the corner of said body adjacent the arm 11, and comprises a relatively short portion which is parallel to the longer sides of the body 10, and an outer angular integral portion which is substantially parallel to arm 11.

As clearly shown in Figs. 2, 4 and 5, transverse grooves 32 are formed on both the opposite flat sides of the body 10 from which arms 11 and 12 project, said grooves connecting with notches 13 and 13′ formed in opposite edges of said body, as shown in Figs. 1 and 2. Said notches 13 and 13′ are made so as to form short studs 14 and 15 with

portions of arms 11 and 12. A short recess 33 is formed adjacent each of the notches 13 and 13′ and longitudinally on each of the arms 11 and 12 so as to provide means whereby an elastic or other element will be held substantially along the center of the outside edge of each arm.

A short slit 16 is formed in the side of the arm 11 at the end thereof, as shown in Fig. 3, and a similar slit 17 is formed in the side of the outer portion of arm 12 preferably on the same side as the slit 16.

My tooth cleaner as above described is constructed particularly to quickly and efficiently have removably mounted thereon a rubber band 18 in the manner shown in Fig. 1. A rubber band 18 is first wound around the grooved side of the body 10 two or more times, after which the free loop portion which is retained in the fingers is inserted in slits 16 and 17 of arms 11 and 12 respectively so that the portions of the rubber band 18 will lie along the outer edge of said arms, and a slightly stretched portion will extend from one to the other of the arms 11 and 12, as clearly shown in Fig. 1.

Each form of my tooth cleaner is used in the manner shown in Fig. 10, the device being held between the thumb and forefinger so that arm 11 points either upwardly or downwardly, depending upon whether the upper or lower teeth are being cleaned. The cleaner is inserted so that the shorter arm 11 is outside the mouth while the longer arm is inside the teeth, the taut portion of the rubber band being inserted between the teeth and pulled out one or more times. As the rubber band is withdrawn it will carry with it food particles and other matter which has lodged either between or on the front or back of the teeth. The elasticity of the rubber band permits turning the tooth cleaner when the rubber band is between the teeth so as to cause portions of said rubber band to remove food particles from the front or back sides of the teeth, and further, such elasticity prevents cutting of the gums when the user inserts the device too far, as it will merely stretch and bend.

The rubber band may be quickly and easily replaced in the manner afore-described, thereby insuring a sanitary cleaner at all times.

Fig. 6 shows a modified form of my tooth cleaning device similar to the afore-described preferred form except in that it comprises an elongated U-shaped member 19 terminating in one angularly projecting arm 20 and a longer curved arm 21, said arms being substantially parallel. The arms 20 and 21 having side slits 22 and 23 respectively in the ends thereof which are similar to those described in my preferred form.

The arm 20 curves inwardly of the outer edge of the integral portion of the U-shaped member 19, as shown in Fig. 6, and a notch 24 is formed in the outer edge of said arm opposite said inwardly curved portion and substantially perpendicularly to the outer portion of said arm 20, thereby forming a pronounced shoulder 25.

The longer arm 21 is curved inwardly at a point opposite the notch 24, and a notch 26 is formed in the outer edge of arm 21 directly opposite said inwardly curved portion.

An elastic endless band 18′ is first wound about said member 19 to fit into notches 24 and 26, and the remaining portion thereof is then looped into the side slits 22 and 23 and about the ends of arms 20 and 21 in the manner shown in Fig. 6 and so that the portion between said slits will be slightly stretched.

Fig. 7 shows a second modified form of my device embodying a cleaning device similar to that shown in Fig. 6 except that the U-shaped member 27, which has an annular groove 32′, notches and slits similar to those previously described, is comparatively short, and the connecting portion thereof has a peripheral apertured ear 28. Said U-shaped member is hingedly pivoted to the opposite walls of a relatively thin casing 29 by means of a short rivet 30 which passes through said apertured ear and is secured in apertures in said walls. The casing 29 has one open edge and is of a size to conveniently receive the U-shaped member 27 when it is turned on its pivot to the position shown in Fig. 8, thereby providing a casing which will keep the tooth cleaner clean and sanitary, particularly when carried in a pocket. An inwardly extending stud 31 is secured on the inside of one of the walls of casing 29 and near the open edge thereof, the longer arm of the U-shaped member 27 being adapted to depress said stud to push the casing wall outwardly, whereby the tendency of said wall to maintain normal position will cause said stud to press against said longer arm to hold the tooth cleaner within the casing.

I am aware that many changes may be made and numerous details of the invention and construction thereof may be varied through a wide range without departing from the principles of this invention, and I therefore do not desire to limit the patent granted thereon otherwise than necessitated by the prior art.

I claim as my invention:

1. A tooth cleaning device comprising a U-shaped member having a portion of one arm projecting at an obtuse angle with the remainder of said arm and having a transversely projecting abutment at the juncture of said portions; an angular projection formed integral with the other arm of said member and substantially parallel with said first mentioned arm, said arm and said projection having side slots and said longer arm

of said member having an abutment projecting transversely and in a direction opposite to said first mentioned abutment.

2. An improved tooth cleaning device comprising a U-shaped member having a short and a longer arm and having substantially flat sides, one arm of said U-shaped member comprising a shank portion and an integral arm projecting at an angle from said shank portion, the end of said arm having a transversely opening slot; an outwardly projecting stud at the juncture of said shank and arm portions; a longer arm projecting in a direction substantially parallel to said first mentioned arm and formed integral with said U-shaped member, said arm having a side slot, and an outwardly projecting stud on the shank portion of said longer arm.

3. A tooth cleaning device comprising a substantially rectangular body; an arm projecting from one corner of said rectangular body and having a side recess, said arm being formed integral with said body; a longer arm formed integral with said body and extending in a direction substantially parallel to the two sides of said body and terminating in an outer portion substantially parallel to said first mentioned arm, said outer portion having a recess; and an annular groove formed longitudinally in that side of said body from which said arms project, said groove forming pronounced shoulders with said arms.

4. A device comprising a flat thin body and an integral U-shaped member having two integral arms, one of said arms of said members being longer than the other and each of said arms having a side slot substantially at the junctures of said arms and said body, said arms having substantially parallel recesses at their respective ends; and an elastic element removably attached about the ends of said arms and extending from one to the other end of said arms.

5. A tooth cleaning device comprising a relatively thin body having one end bifurcated to form a longer arm and a shorter arm, each of said arms having a slot adjacent its end said body having an edge recess on each longitudinal edge thereof at substantially the juncture of each arm, said recesses forming pronounced shoulders with the side of each arm; and a cable detachably engaging said slots and extending from one arm to the other.

6. A tooth cleaning device comprising a U-shaped member having an annular groove about its shank portion, said groove forming pronounced shoulders with the outer edges of said member, said member terminating in substantially parallel arms having slots therein; an elastic member removably mounted about said U-shaped member and having a portion thereof extending from one arm to the other; and a relatively thin casing having an open edge, said U-shaped member being pivotally mounted in said casing whereby said member may be turned and concealed therein. and means for yieldably and removably holding said member from rotation.

7. A tooth cleaning device comprising a casing having an open side; a yoke shaped member pivotally secured between the walls of said casing, said yoke shaped member having annular grooves in its shank portion, and the extremities of said yoke member having notches; and an elastic element removably wound about said annular grooves and about the ends of said yoke and normally held in position by said notches and by said grooves.

8. A tooth cleaning device comprising a casing having an open side; a U-shaped member hingedly and yieldingly secured between the walls of said casing, said U-shaped member having peripheral notches on its opposite edges and having slits adjacent the ends of the arms thereof; means in said casing adapted to yieldingly and removably retain the U-shaped member within said casing; and an elastic element wound about said U-shaped member so that a portion thereof extends from one arm thereof to the other arm.

9. A tooth cleaning device comprising a relatively thin body; an integral arm projecting radially from said body and having an end recess; a longer arm formed integral with said body and extending in a direction substantially parallel to said first mentioned arm, said longer arm having an end recess, and said body having an abutment formed on each longitudinal edge at the points of juncture of said arms and said body.

10. A tooth cleaning device comprising a substantially rectangular body; an arm projecting from one corner of said rectangular body and having a side recess, said arm being formed integral with said body; a longer arm formed integral with said body and extending in a direction substantially parallel to the two sides of said body and terminating in an outer portion substantially parallel to said first mentioned arm, said outer portion having a recess, and a notch in each longitudinal edge of said body at substantially the point of juncture of said arms and said body.

11. A tooth cleaning device comprising a relatively thin body; an integral arm projecting radially from said body and having an end recess; a longer arm formed integral with said body and extending in a direction substantially parallel to said first mentioned arm, said longer arm having an end recess and said body having an abutment formed on each longitudinal edge at the points of juncture of said arms and said body, and an elastic element removably mounted from one to the other of said arms.

12. An improved tooth cleaning device comprising a body having one end bifurcated and terminating in a short and a longer arm, said longer arm being obtuse and having an end slot, said body having a recess in each of its longitudinal edges at substantially the juncture of said arms and said body.

In testimony whereof I have hereunto set my hand this 28th day of September, 1931, in Chicago, Cook County, Illinois.

JOHN ZRNA.