

- [54] **DENTAL PROPHY ANGLE**
- [75] Inventor: **George R. Brahler**, Lawrence, Kans.
- [73] Assignee: **Exitec, Inc.**, Lawrence, Kans.
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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 17,432, March 9, 1970, abandoned.

- [52] **U.S. Cl.** **32/59**
- [51] **Int. Cl.** **A61c 3/00**
- [58] **Field of Search** **32/58, 59, 26, 27**

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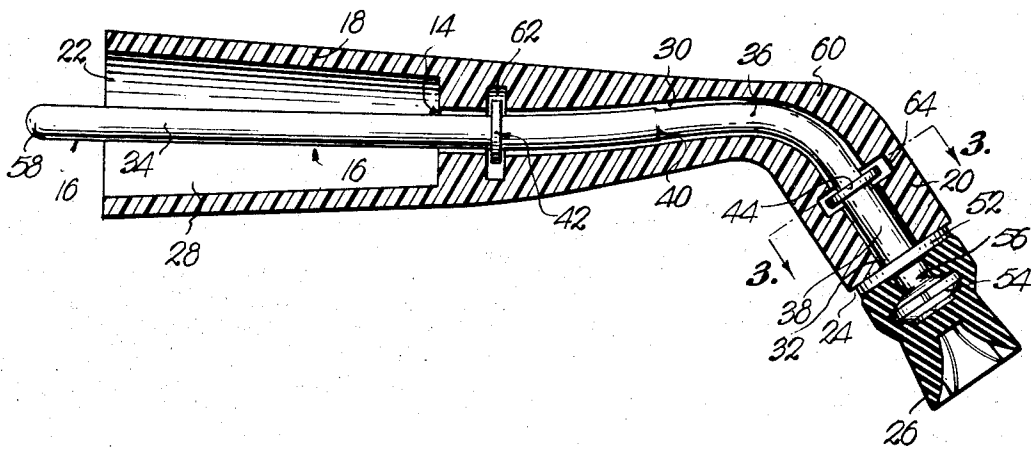
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Primary Examiner—Robert Peshock
Attorney—Schmidt, Johnson, Hovey & Williams

[57] **ABSTRACT**

A dental prophy angle adapted to be coupled with a conventional power source, the angle being used in dental prophylaxis and being of a disposable construction whereby there is no danger of a chain of sepsis from one patient's mouth to another. The dental prophy angle is fabricated from suitable plastic materials and includes a housing having a passageway formed therein and extending from one end of the housing to the other, a flexible, rotatable drive shaft extending the length of the housing within the passageway, the shaft having a base stretch, a reduced stretch, and a head stretch, there being at least a pair of outwardly extending, annular ribs on the shaft, which ribs are received by recesses in communication with the passageway, the base stretch of the shaft being coupled with the power source, the head stretch being angularly offset with respect to the base stretch and having means thereon for receiving a workpiece.

1 Claim, 5 Drawing Figures



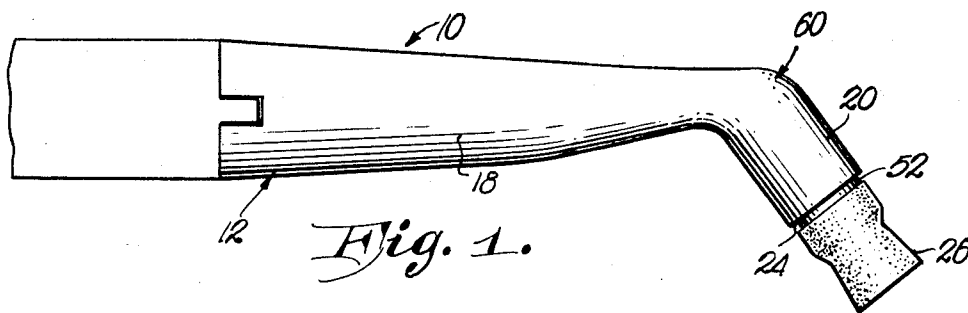


Fig. 1.

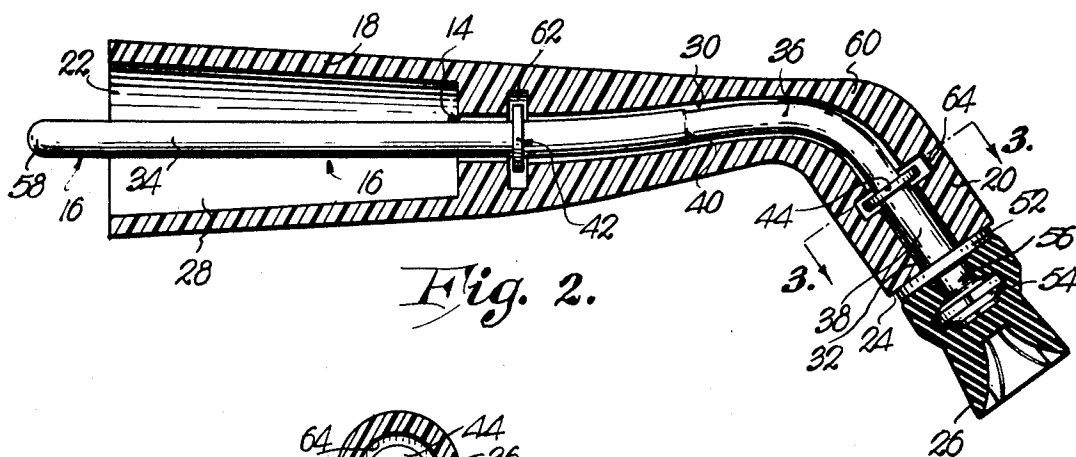


Fig. 2.

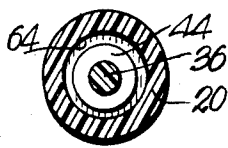


Fig. 3.

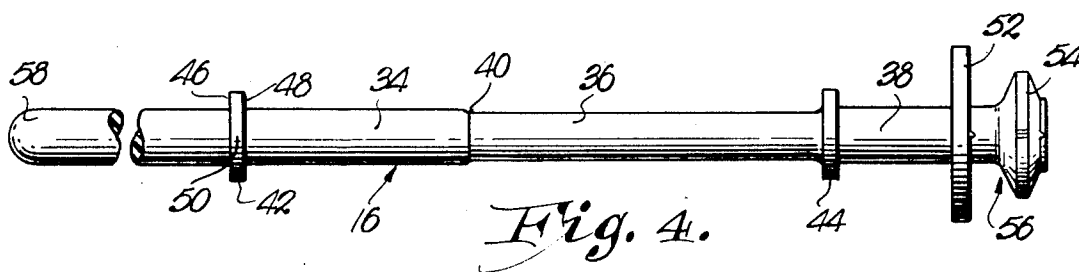


Fig. 4.

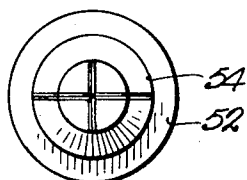


Fig. 5.

INVENTOR.
George R. Brahler

BY

Schmidt Johnson, Hovey & Williams
ATTORNEYS.

DENTAL PROPHY ANGLE

CROSS REFERENCES

This is a continuation-in-part of application Ser. No. 17,432, filed Mar. 9, 1970 and now abandoned, and entitled "Dental Propy Angle."

It is the most important object of this invention to provide an angle for use in dental prophylaxis, which dental prophy angle is adapted to be coupled with a typical power source, as is conveniently provided in dental equipment, the entire prophy angle being disposable after a single use whereby to preclude any possibility of a chain of sepsis from the mouth of one patient to the mouth of a succeeding patient.

To accomplish the disposability, the angle is formed from a housing fabricated from a suitable plastic material, the housing having a passageway formed therein and extending from one end of the housing to the other, there being a flexible plastic, rotatable drive shaft extending the length of the housing, the drive shaft having a base stretch which is adapted to be coupled with the power source, a reduced stretch which traverses an area of bend, and a head stretch having button means thereon for coupling a workpiece to the shaft whereby, upon rotation of the shaft, the workpiece will be rotated.

Yet another important object of this invention is to provide means for locating the shaft within the passageway and for permitting the rotation thereof, such means taking the form of at least a pair of outwardly extending, spaced annular ribs, one of the ribs being on the base stretch of the shaft, the other being located at the juncture of the reduced stretch and the head stretch, there being recesses defined by said housing and in communication with the passageway, the recesses receiving the ribs for free rotation therewithin.

Other objects include details of construction which will become apparent from the following specification and accompanying drawings, wherein:

FIG. 1 is an elevational view of the dental prophy angle;

FIG. 2 is a substantially central, longitudinal sectional view thereof;

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is a fragmentary, elevational view of the drive shaft; and

FIG. 5 is an end elevational view of the drive shaft taken from the right side of FIG. 4.

The prophy angle 10 includes a housing 12 which may be molded from plastic in two identical half sections, the housing having a passageway 14 formed therein which receives a drive shaft 16. The "prophy angle" as thus broadly constituted, is utilized in the dental profession for various purposes, such as cleaning teeth or the like, the prophy angle being attached to a suitable power source, which power source is conventionally in the nature of a straight handpiece which is powered by means such as an air motor, pressurized water, suitable belt and pulley arrangements or equivalent power devices whereby power is delivered to the straight handpiece for ultimate delivery to the particular tool which is coupled to the handpiece.

Thus, in the present invention, it is intended to provide a disposable dental prophy angle which can be readily coupled with the power source conventionally provided in a straight dental handpiece. To this end, it

is contemplated that all of the components of the prophy angle 10 will be fabricated from a suitable plastic material whereby the same may be readily and economically molded, the housing 12 being molded in mating half sections which can be suitably secured together whereby to provide an enclosure for drive shaft 16 and, at the same time, define the passageway 14 in which the drive shaft 16 is received.

The housing 12 includes a shank portion 18 of a conical configuration which is tapered toward a head portion 20, the head portion 20 of the housing 12 being angularly offset with respect to the shank portion 18 thereof, all as is clearly shown in the drawings, it being appreciated that the degree of angular offset of head portion 20 with respect to shank portion 18 may be varied, depending upon the particular use to which the prophy angle 10 is to be put.

Housing 12 presents an open end 22 which is normally proximal to the point of coupling of the prophy angle with the power source and an opposed end surface 24 which is normally proximal to the workpiece 26, such as a rubber cup for instance, which is coupled with the prophy angle 10.

The passageway 14 which is defined by the housing 12 and which extends from one end 22 to the other end 24 thereof, is initially in the form of a conical cavity 28 which then decreases in dimension to a generally cylindrical passage 30, which passage 30 extends through the remainder of shank portion 18 of the housing 12 and through the head portion 20 of housing 12 to the end surface 24 thereof, the passageway 30 opening out of the housing 12 whereby to present an open head end 32.

The flexible shaft 16, which is fabricated from a suitable plastic material, is best shown in FIG. 4 of the drawings, the shaft 16 including a base stretch 34; a centrally positioned reduced stretch 36; and a head stretch 38, the base stretch 34 and the head stretch 38 being of the same diameter, the reduced stretch 36 being of a diameter smaller than that of stretches 34 and 38. A step or shoulder 40 is presented between the base stretch 34 and the reduced stretch 36.

Shaft 16 also carries at least a pair of outwardly extending, spaced annular ribs 42 and 44, the rib 42 being formed as a part of base stretch 34 and the rib 44 being formed at the juncture between the reduced stretch 36 and the head stretch 38. Each of the ribs has opposed, flat faces such as 46 and 48 and an outermost rim or edge 50.

The shaft 16 also has formed as a part thereof, an outwardly extending, annular stop member 52, said stop member being of a diameter greater than that of the head stretch 38 of which it is a part, and also greater than the diameter of the ribs 42 and 44, the diameter of said ribs 42 and 44, in turn, being greater than that of any stretch of the shaft 16. Head stretch 38 of the shaft 16 also has formed as a part thereof a button 54, the button 54 being at the other end 56 of the shaft 16, which other end 56 is opposite to the one end 58 which is coupled with the power source (not shown).

When the shaft 16 is disposed within the housing 12 and the prophy angle 10 is ready for operation, the shaft 16, which is of cylindrical cross-sectional configuration, lies within the passageway 14, as illustrated for instance in FIG. 3, the shaft being positioned in such a manner that the base stretch 34 and a portion of the re-

duced stretch 36 lie in one plane, the remainder of reduced stretch 36 and the head stretch 38 being angularly offset, the reduced stretch 36 traversing the area of bend 60 of the housing 12 and passageway 14.

In order to permit and facilitate ready rotation of the shaft 16 within the passageway 14, and to prevent longitudinal movement of the shaft 16 within the passageway 14, each of the ribs 42 and 44 is received within a corresponding recess 62 and 64 respectively, which recesses are defined by the housing 12 and are in communication with the passageway 14, all as clearly illustrated in FIG. 2 of the drawings. The recesses 62 and 64 are each of annular configuration and are of a diameter greater than the ribs 42 and 44 which are received therein respectively.

The stop member 52 is positioned against the end surface 24 of the housing 12 whereby to also prevent longitudinal retraction of the shaft 16 into the housing 12 as the shaft is rotated upon actuation of the power source to which the shaft 16 is coupled. The stop member 52 also serves to maintain button 54 at the desired spaced interval from end wall 24 of the housing 12 whereby the workpiece, such as cup 26, may be readily snap-fitted over the button 54 and thereby rotated as the shaft 16 is rotated within the housing 12.

It has been found that the provision of reduced stretch 36 in shaft 16 facilitates the rotation of the shaft 16 and also that, depending upon the degree of annular offset of head portion 20 of housing 12 with respect to shank portion 18 thereof, the stretch 36 can be further reduced if the angle of offset is greater. In other words, the higher the degree of angular offset of the shaft and the housing, the further reduction in diameter of the reduced stretch 36 of shaft 16.

Thus there is provided a dental prophylaxis angle

which is readily and economically fabricated from suitable plastic material whereby the prophylaxis angle may be driven by conventional equipment and utilized for a single prophylaxis treatment, the entire prophylaxis angle then being discarded whereby to preclude the possibility of a chain of sepsis from one patient to another.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

- 1. A dental prophylaxis angle comprising:
 - a housing having a passageway formed therein and extending from one end of the housing to the other, said housing having a shank portion and a head portion, the head portion being angularly offset with respect to said shank portion;
 - a flexible, rotatable drive shaft extending the length of said housing within said passageway, said shaft having a base stretch, a central stretch, and a head stretch, the base stretch of the shaft being within the shank portion of the housing, the head stretch of the shaft being within the head portion of the housing, there being an area of bend in the shaft between the base stretch and the head stretch, the central stretch of the shaft occupying said area of bend and traversing the angular offset between the shank portion and the head portion of the housing; and

at least a pair of outwardly extending, spaced, annular ribs on said shaft, one of said ribs being on the said base stretch, the other being at the juncture of the central stretch and the head stretch, said ribs having a diameter greater than that of the passageway, there being recesses formed in the housing and in communication with said passageway and receiving said ribs.

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