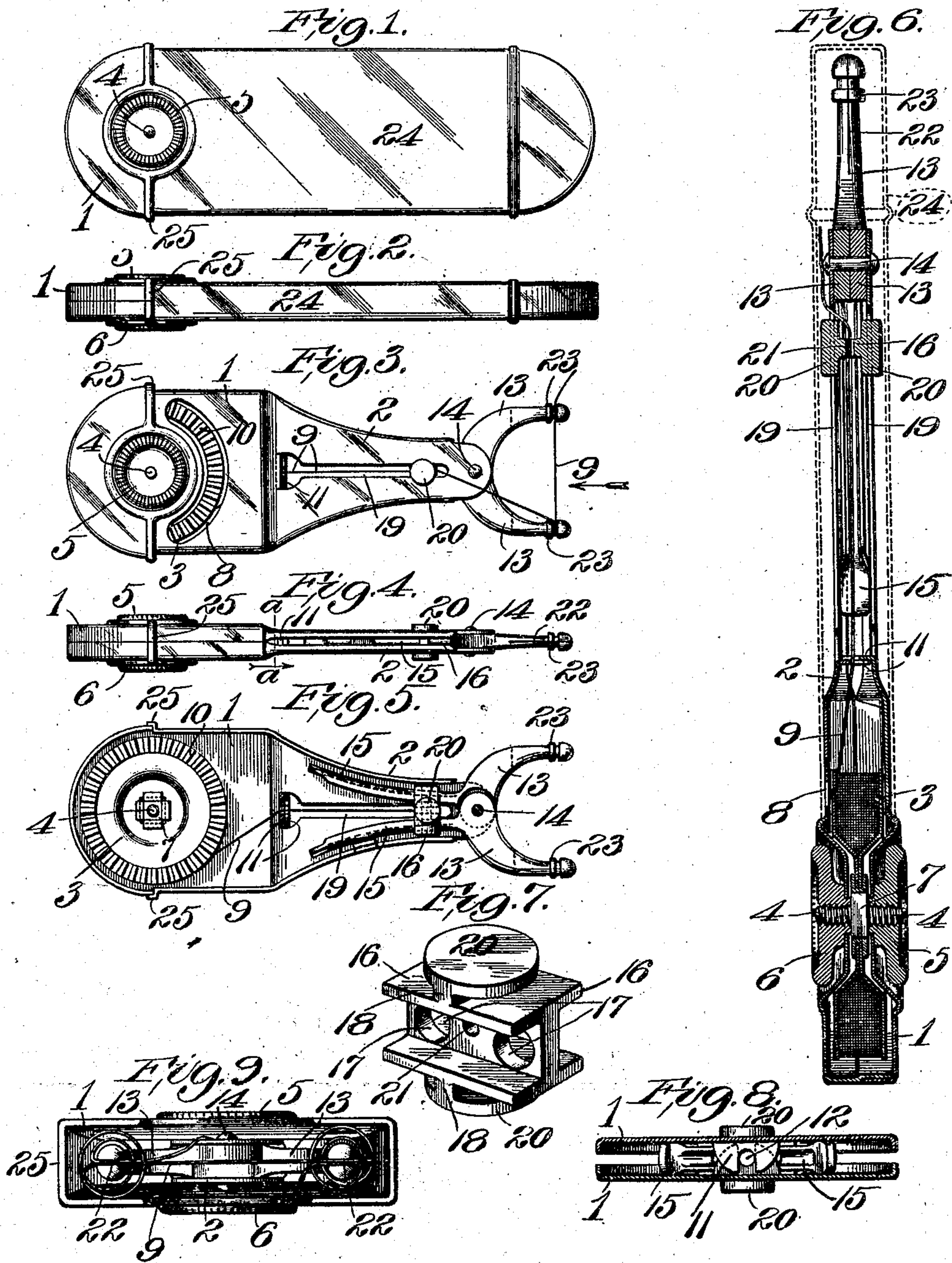


B. DYSART.
DENTAL APPLIANCE.
APPLICATION FILED FEB. 24, 1908.

924,543.

Patented June 8, 1909.



Attest:
Wm. H. Scott
F. C. Schaefer.

Inventor:
Birney Dysart,
by J. D. Rippling
attor.

UNITED STATES PATENT OFFICE.

BIRNEY DYSART, OF ST. LOUIS, MISSOURI.

DENTAL APPLIANCE.

No. 924,543.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed February 24, 1908. Serial No. 417,358.

To all whom it may concern:

Be it known that I, BIRNEY DYSART, a citizen of the United States, residing at St. Louis, Missouri, have invented a new and useful Dental Appliance, of which the following is a specification.

This invention relates to dental appliances of the type adapted for use in removing substances from between the teeth; and it consists of the novel construction, combination and arrangement of parts herein shown, described and claimed.

The object of the invention is to produce an instrument of the character referred to which shall consist of a magazine portion containing a quantity of dental floss or similar threadlike element, preferably wound on a spool, and having a pair of pivoted arms with means for holding the ends of the threadlike element attached to the ends thereof at such an angle that it may conveniently be inserted between the teeth, and means for oscillating and holding the arms as required to stretch the threadlike element.

Other objects will appear from the following description, reference being made to the accompanying drawings, in which—

Figure 1 illustrates the magazine and case inclosing the operative parts. Fig. 2 is an edge view. Fig. 3 is a view of the device ready for use. Fig. 4 is a view of the device, looking at one edge. Fig. 5 shows the parts in their assembled relation, one part of the supporting case and magazine being removed. Fig. 6 is an enlarged longitudinal sectional view. Fig. 7 is a perspective view of the member whereby the arms to which the dental floss is connected are moved to stretch and relax the dental floss. Fig. 8 is a sectional view on the line *a-a* of Fig. 4 looking toward the right. Fig. 9 is an end view looking toward the bifurcated end of the instrument.

A magazine 1, composed of two matching parts having narrow arms 2 extending from one side, carries a spool 3, of dental floss or similar element, while the operative parts are connected with the narrow case formed by the arms 2. A screw bolt 4 has a knurled head 5 attached to one end and a similarly shaped nut 6 screwed on the opposite end. The screw-bolt 4 extends through the magazine 1 and binds the parts thereof together, holding them in assembled relation. A polygonal enlargement 7 (Fig. 6) on the

screw-bolt 4 fits within a hole in the spool 3, thereby constituting an axis for the spool. The head 5 and nut 6 on the screw-bolt rest within annular depressions, or concavities, in the wall of the magazine, the spool 3 being shaped suitably to conform thereto, all of which will be readily understood by reference to Fig. 6. An arcuate slot 8 may be formed in one wall of the magazine through which the spool 3 may be manually engaged to hold it in any desired position, or revolve it to take up or unwind the thread or floss 9 which is originally wound on the spool. A series of grooves or indentations 10 may be formed on the spool for manual engagement through the slot 8 whereby said spool may be firmly held in, or moved to, any desired position. Two matching interior projections 11,—which may be formed by cutting the walls of the magazine to form tongues and then bending the tongues inward to bear against each other,—are rigid with the walls of the magazine and have notches cut to such depth as to form a hole 12, and through this hole the element 9 is passed.

The end of the arm which is formed by the two arms 2 of the two parts of the magazine carries two arms 13 which are held on a pivot pin 14, said arms extending beyond the end of the arms 2 which support them. Said two arms 13 are shaped relatively, so as to form a bifurcation, their outer ends being about one inch apart, more or less. Each of said arms 13 has an extension 15 extending into the space formed between magazine arms 2, and curving outward from each other toward their inner ends. An I-shaped member 16 extends cross-wise within the part 2 of the magazine and has two holes 17 therein to receive the extensions 15. Webs 18 on the member 16 extend through slots 19 running longitudinally in wall portions of the magazine part 2, and have flat heads 20 for manual engagement whereby said member may be moved back and forth to oscillate the arms 13. The slot 19 defines the scope of movement of the member 16, so that it finds an abutment at each end of the slot. A hole 21 in the web of the member 16 receives the thread 9 which leads through the slot 19 to the outer or anterior end of one of the arms 13.

The two arms 13 are duplicates of each other. Said arms are split in the same plane, as shown at 22, the separation running in-

ward a considerable distance from the ends of the arms thereby forming two flexible parts at the end of each arm. The extremities of the flexible parts are in the form of rounded heads or enlargements. An annular flange 23 on each arm is separated from the head by a narrow space, such space being in the form of a groove whose walls are the head and flange. The thread or floss is drawn to the end of one of the arms 13 and forced into the split 22, then wound once or twice, or oftener, around the flexible parts of the arm in the groove thereon, then drawn into the slit again, thereby clamping said parts on the thread or floss and securely fastening said element to the arm. The said element is then drawn across to the end of the other arm and is fastened to said other arm in the same manner. The relaxed or slack portion of the element 9 is then rewound on the spool 3 by manual operation which is possible through the slot 8. Then the outer or anterior ends of the arms 13 are spaced and held apart as required to stretch the element 9 therebetween by moving the member 16 toward the inner ends of the extensions 15 of said arms 13. Thus the element 9 may be held under great stress or tension and readily applied between the teeth, since it is substantially at right angles to its support.

The instrument thus constructed may be carried conveniently in the pocket, since it is, or may be, of comparatively small dimensions, particularly in width and thickness. As a pocket instrument, and in any instance, it is desirable that it be kept in a clean and antiseptic condition and that the thread and arms be protected and shielded from contact with other elements and substances. To this end I provide a case 24, open at one end, and adapted to receive the entire operative portion of the instrument and a portion of the magazine. An offset 25, extending around the magazine 1, serves as an abutment for the end of the case 24, making a neat and close fitting joint, and preventing the entrance of foreign particles into the case.

After using a portion of the element 9 it is unnecessary to detach the same from both arms 13 in order to provide a fresh portion for use. It is only necessary to cut off the used portion adjacent to the arm holding the part leading to the spool; then remove the used portion and draw the other portion to the end of the arm from which said used portion was removed and bind said unused portion to said arm, in the manner above described. The slack may be taken up, and the arms spaced to stretch the thread, in the manner previously described. It will be noted, in this connection, that the thread is always bound to one or the other of the arms, and, furthermore, that the stretched portion of the thread is substantially at right angles to the main portion and to the supporting

members, so that the instrument may easily be applied for use upon any of the teeth of the user.

I am aware that there may be many variations in the embodiment of this device within the scope of the appended claims without in the least departing from the spirit and scope of my invention. I do not restrict myself to identical features or details, but

What I claim and desire to secure by Letters Patent is—

1. In a dental appliance of the character described, the combination with a body portion, of a pair of arms pivoted thereto intermediate of their ends, a quantity of dental floss and means in connection with the arms for stretching a strand of the dental floss thereon, as and for the purposes set forth.

2. In a dental appliance of the character described, the combination with the case, means thereon for holding a spool of dental floss, and a spool of dental floss on said means, of a pair of arms attached to the case intermediate of their ends, and means for moving the arms to stretch a strand of dental floss thereon, as and for the purposes set forth.

3. In a dental appliance of the character described, the combination with the body portion, of a pair of arms pivoted thereto intermediate of their ends, one end of each arm projecting beyond the body portion, a quantity of dental floss, means on the projecting ends for engaging with and holding a strand of the dental floss, and means in connection with the other ends for moving the arms relatively to each other and thereby stretching the floss held on the projecting ends, as and for the purposes set forth.

4. In a dental appliance of the character described, the combination with a body portion, and a quantity of dental floss carried thereby, of two members projecting from said body portion, a pair of smaller clamping extensions, formed by a longitudinal slit at the outer extremity of each of said projecting members, operable to clamp onto an interposed strand of the dental floss, and an element operable to move said projecting members effectively to stretch and relax the dental floss connected thereto, substantially as specified.

5. In a dental appliance of the character described, the combination with a case, of a spool of dental floss carried by said case, two arms supported by said case, and a clamping device at the end of each arm operable to clamp onto a strand of the dental floss and provided with an encircling channel or groove, and an element operable to move said arms effectively to stretch the dental floss, substantially as specified.

6. In a dental appliance of the character described, the combination with a case having a magazine portion, and a quantity of

dental floss inclosed in said magazine portion, of a pair of arms extending from said magazine portion, a clamping device at the end of each arm operable to clamp onto an interposed strand of the dental floss, an enlargement at the end of said clamping device, and an element operable to move said arms effectively to stretch and relax the dental floss, substantially as specified.

7. In a dental appliance of the character described, the combination with the case, of a spool of dental floss held therein, a pair of arms pivoted to the case, engaging means on the arms for holding a strand of dental floss, and a yoke adapted to slide on the arms, substantially as specified.

8. In a dental appliance of the character described, the combination with the case, of a spool of dental floss held therein, a pair of arms pivoted to the case, engaging means on the arms for holding a strand of dental floss, a yoke adapted to slide on the arms, and guiding means for the yoke, as and for the purposes set forth.

9. In a dental appliance of the character described, the combination with the case, of a spool wound with a threadlike element mounted therein, a pair of arms pivoted to the case, engaging means on the arms for holding a strand of dental floss, and means movably connected with the case for adjusting the arms at a greater or less distance apart as desired.

10. In a dental appliance of the character described, the combination with the case, a spool of dental floss and means carried by said case for mounting said spool, of a pair of arms pivoted to the case, means on the ends of the arms for holding a strand of the dental floss, and means movably mounted on the case and cooperating with portions of the arms for stretching the floss held on their ends, substantially as specified.

11. In a dental appliance of the character described, the combination with the case, of a spool of dental floss held therein so as to be readily wound or unwound, a pair of arms pivoted to the case, engaging means on the arms for holding a strand of dental floss, a yoke arranged to slide on the arms, and guides for the yoke carried by the case, substantially as specified.

12. In a dental appliance of the character described, the combination with the case formed of two pieces of material disposed in substantially parallel relation and each provided with a longitudinal slot and a quantity of dental floss in said case, of a pair of arms connected to the case, engaging means on the arms for holding a strand of the dental floss, and means engaging with the slots in the case for adjusting the ends of the arms at a greater or less distance apart to stretch or relax the dental floss, substantially as described.

13. In a dental appliance of the character described, the combination with a case formed out of two parts and including a magazine portion, a spool of dental floss, mounting means for revolubly mounting the spool of floss in the magazine portion, said mounting means serving also to secure in their proper relation the two parts of which the case is formed, a pair of arms secured to both of the parts of which the case is formed, and means in connection with the arms for moving said arms toward or from each other, substantially as set forth.

14. In a dental appliance of the character described, the combination with a magazine portion adapted to hold a spool of dental floss, and a spool of dental floss in said magazine, of a pair of arms pivoted to the magazine, means on the arms for engaging with and holding a strand of the dental floss, and means guided by a portion of the magazine for positively adjusting the arms at a greater or less distance apart, as and for the purposes set forth.

15. In a dental appliance of the character described, the combination of a case formed of two parts, and including a magazine portion adapted to hold a spool of dental floss, a spool of dental floss in said magazine, uniting means for the two portions of the case adapted to admit of separation for inserting a new spool of floss, a pair of arms pivoted to both of the parts forming the case, and means in connection with the arms for holding and stretching a strand of dental floss between the ends of the arms, substantially as described.

16. In a dental appliance of the character described, the combination with the case formed out of two pieces of sheet metal having a magazine portion adapted to hold a spool of dental floss and a spool of dental floss in said magazine, of a pair of arms, means on the arms for engaging with a strand of the dental floss, a yoke arranged to slide on the arms, and guiding means for the yoke, as and for the purposes set forth.

17. In a dental appliance of the character described, the combination with the case formed of two pieces of sheet metal and having a magazine portion adapted to hold a spool of dental floss and a spool of dental floss in said magazine, of a pair of arms pivotally secured to the case, means on the arms for engaging with a strand of the dental floss, and a yoke adapted to slide on the arms, substantially as specified.

18. In a dental appliance of the character described, the combination with the case, of a spool of dental floss, means carried by the case for revolubly mounting the spool thereon, the mounting means having a portion adapted for manual engagement, means on the spool cooperating with a portion of the mounting means whereby the spool will be

held in fixed relation thereto and be caused to revolve with the mounting means, a pair of arms pivoted to the case, engaging means on said arms for holding a strand of dental floss, a yoke arranged to slide on the arms, and a guide for the yoke.

19. A dental appliance comprising, in combination, two pivotally-connected arms, a magazine, a quantity of dental floss in said magazine, means whereby a strand of said dental floss may be secured to said arms near their ends, and an element supported by said magazine for moving one of said arms on its pivot as required to stretch the strand of dental floss secured to said arms, substantially as specified.

20. A dental appliance of the character described comprising, in combination, a magazine, a quantity of dental floss in said magazine, an arm connected to said magazine, a second arm pivotally mounted with respect to said first-named arm, means for securing a strand of said dental floss near the ends of said arms, and an element for oscillating said second arm on its pivot as required to stretch the strand of dental floss, substantially as specified.

21. A dental appliance comprising two arms, a pivot holding said arms, a strand of dental floss, means for attaching said strand near the ends of said arms, and means for moving said arms on their pivots effectively to stretch the strand of dental floss, substantially as specified.

22. In a dental appliance, the combination with a pair of arms, a strand of dental floss, means for attaching a strand of the dental floss to said arms transversely to the axis thereof, and an inclosure covering the unused part of the dental floss, of means for moving one of said arms to stretch the dental floss, substantially as specified.

23. A dental appliance comprising a magazine, a quantity of dental floss in said magazine, two arms, there being an inclosed passage from said magazine toward said arms wherein the dental floss may be drawn, means for binding the dental floss to the ends of the arms, means for moving said arms apart, and a case arranged to receive the said arms and passage, substantially as specified.

24. In a dental appliance, the combination with a magazine, a quantity of dental floss carried in said magazine, two arms attached

to said magazine, means for binding the dental floss to said arms, and means for oscillating said arms to stretch and relax the dental floss, of a casing having an open end arranged to receive the said arms and said oscillating means, and an abutment on said magazine for the end of said case, substantially as specified.

25. In a dental appliance of the character described, the combination with the case, a spool of dental floss, and means in said case for holding said spool, of a pair of arms attached to said case, means whereby a strand of said dental floss may be attached near the ends of said arms, and an element operable to move said arms effectively to stretch the dental floss held thereby, substantially as specified.

26. In a dental appliance of the character described, the combination with a pair of arms, a strand of dental floss, means for holding said dental floss near the ends of said arms, an element operable to move said arms effectively to stretch the dental floss, and guiding means for said element, substantially as specified.

27. In a dental appliance of the character described, the combination with an arm, and a pair of clamping members on said arm, of a strand of dental floss interposed between said clamping members and wound one or more times around said clamping members effectively to clamp said members firmly on the interposed part of said dental floss, and means holding said dental floss taut, substantially as specified.

28. In a dental appliance of the character described, the combination with an arm, and a strand of dental floss, of a pair of clamping members on said arm operable effectively to clamp onto an interposed part of the dental floss and hold said floss firmly, and a second arm having means to engage with and hold said floss, substantially as specified.

In testimony whereof, I hereunto affix my signature to this specification this 21st day of February, 1908, in the presence of two witnesses.

BIRNEY DYSART. [l. s.]

Witnesses:

FREDERICK C. SCHAFER,
J. D. RIPPEY.