I. W. LITCHFIELD.

DENTAL FLOSS HOLDER.

APPLICATION FILED MAR. 4, 1914.

1,152,825.

Patented Sept. 7, 1915.

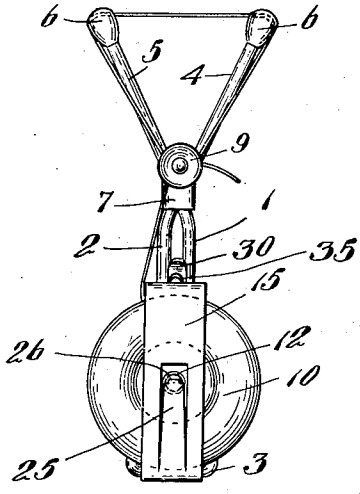


Fig. 1.

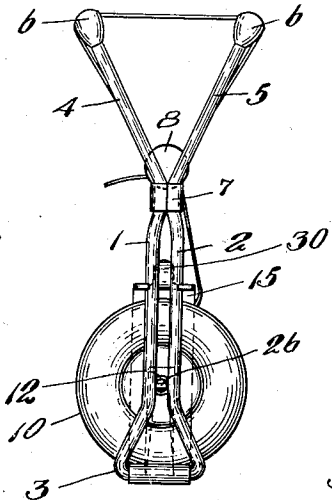


Fig. 2.

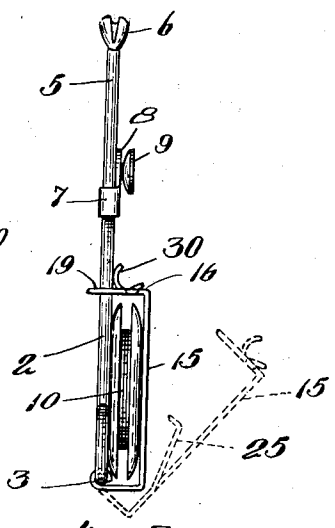


Fig. 3.

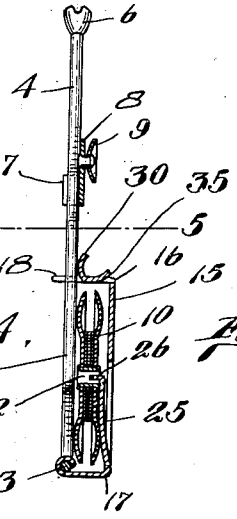


Fig. 4.

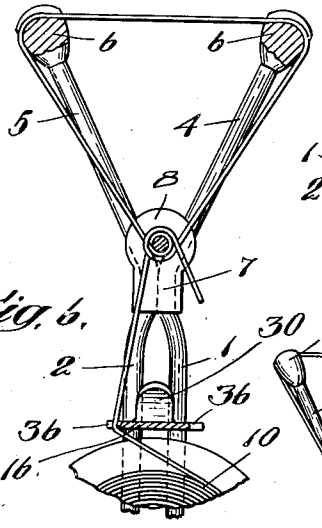


Fig. 6.

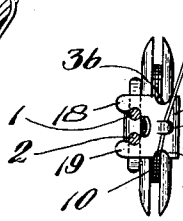


Fig. 5.

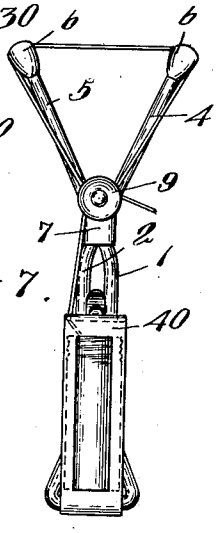


Fig. 7.

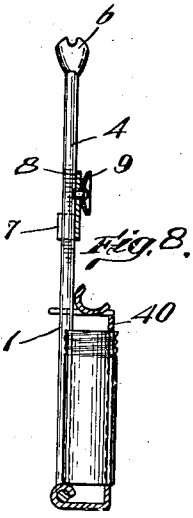


Fig. 8.

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UNITED STATES PATENT OFFICE.

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DENTAL FLOSS-HOLDER.

1,152,825. Specification of Letters Patent. Patented Sept. 7, 1915.

Application filed March 4, 1914. Serial No. 822,270.

To all whom it may concern:

Be it known that I, ISAAC W. LITCHFIELD, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Dental Floss-Holders, of which the following is a specification.

This invention relates to dental floss-holders and has for its object the provision of a device which is simple, inexpensive and efficient. A device of this character, to be effective must be arranged to reach conveniently and quickly all of the front and back teeth. This result may be accomplished by supporting the floss so that its engaging-portion occupies a position at right angles to the longitudinal axis of the handle-portion or thereabout, and by arranging said engaging-portion in the same plane with its supports and the handle-portion. Furthermore, the engaging-portion of the floss should be stretched tightly but not unduly strained, and the strain well distributed, otherwise it is liable to break. This result may be accomplished by first securing the floss at a fixed point, and then passing the floss over the ends of the two arms of a fork and then securing its end-portion at a fixed point, the securing means being arranged at or near the point of divergence of the two arms of the fork, or between the fork and the floss supply. When thus arranged the strain is well distributed throughout the entire length of the floss which is drawn from the supply. The provision of means for securing a length of floss at two points also obviates the necessity of utilizing the supply as a means for holding one end thereof, which latter method is unsatisfactory for the reason that the strain on the floss causes it to sink into the supply when drawn tightly. Furthermore, the structure of the device should be such that the floss can be quickly and tightly strung and secured in the manner above set forth with one hand while the device is being held by the other hand. Furthermore, the structure of the device should be such that a small amount of metal only is utilized in that portion thereof which supports the floss and enters the mouth, so that there is little or no liability of injuring the teeth and gums and in this connection the ends of the arms of the fork should be made spherical or otherwise enlarged and devoid of rough surfaces and projections and recesses.

As there are at the present time on the market bobbins and phials containing floss, I prefer to construct the device so as to hold these well known forms, and in the case of a bobbin a pivot will be provided in connection with the holding-means and also a brake thereby to admit of the floss being readily drawn from the supply and its withdrawal regulated. The means for holding the bobbin or other form of floss-holder should be such that it can be easily and quickly operated to remove one and substitute therefor another floss-holder, and the device of my present invention has its handle-portion composed of two essential members arranged to receive the bobbin or floss-holder between them, one of said members being pivotally connected to the other member, whereby they may be separated to admit of the removal of a floss-holder and the introduction of another. As the supplies of floss are drawn from a spool or other form of floss-holder a cutting-device should be provided, which will be arranged as near the supply as possible, so that but a short length will be exposed. Furthermore, the structure should be such that the device will occupy but little space and may be carried conveniently in the pocket or may be suspended from a hook if desired. All of these features are embodied in my device, yet the device may be easily and cheaply constructed.

Figure 1 is a front elevation of a dental floss holder embodying this invention. Fig. 2 is a rear elevation of the same. Fig. 3 is a side elevation of the same. Fig. 4 is a transverse vertical section of the same. Fig. 5 is a transverse horizontal section on the line 5—5 Fig. 4. Fig. 6 is an enlarged front elevation of the upper end-portion of the device illustrating the manner of engaging the floss. Fig. 7 is a front elevation, and Fig. 8 is a transverse vertical section of a modified form of my invention.

In the embodiment of my invention here shown, see Figs. 1 to 6, a piece of wire is bent to form a pair of substantially parallel portions 1, 2, with a loop-like portion 3 at one end and a pair of diverging arms 4 and 5, at the other end. The parallel portions with the loop-like portion serve as and constitute a handle-portion and the diverging arms serve as and constitute a fork to hold the floss. The ends of the arms 4 and 5 are made more or less spherical as at 6, and have smooth surfaces, thereby to prevent injury

to the teeth and gums, and the extremities of said spherical ends are each formed with a shallow groove to receive the floss and said grooves are made quite wide and have smooth rounded walls, so that the ends of the arms of the fork are entirely devoid of projections or sharp edges which might injure the teeth and gums. The arms 4 and 5 are held in fixed relative positions by a clip 7 which embraces the parallel portions 1, and 2, and which is arranged close to the point of divergence of said arms, hence being at the base of the fork. Holding-means for the ends of the floss are here shown as arranged on said clip, and said holding-means consists of a disk 8 and a concavo-convex plate 9, arranged one upon the other and rigidly secured together by a center-rivet, said plate 9 having its convex face arranged adjacent the disk, thereby to provide a groove between the plate and disk with converging side walls arranged at a very acute angle. The end-portions of the length of floss is carried around in the groove thus provided and are firmly held by frictionally engaging the walls of said groove at or near the bottom thereof. This holding-means, it will be noted, is arranged at the point of divergence of the two arms of the fork and the disk 8 may be and is here shown as a part of the clip. In the form of my invention shown in said figures a retaining-plate 15 is arranged to hold a bobbin 10 upon which a large supply of floss is wound, said bobbin being one of the commercial forms of floss-holders now on the market and having a center-hole 12 through it. Said retaining-plate is composed of sheet metal and is bent at its ends, as at 16, 17, thereby to form a recess between said bent end-portions for the bobbin. The bent end-portion 17 is carried around a short straight portion at the end of the loop-like portion 3 of the handle, thereby to pivotally connect the retaining-plate to the lower end of the handle in order that it may be swung outward to place a bobbin between them. Said retaining-plate has a tongue 25, which is somewhat resilient, and said tongue is or may be struck up from the plate and bent inward at its extremity to form a projection 26, which is arranged to enter the center-hole in the bobbin, thereby to pivotally support the bobbin, and said tongue also bears frictionally against the side of the bobbin, thereby to serve as a brake to retard its rotation, thus holding the bobbin under slight tension whereby the withdrawal of the floss is regulated. The bent end-portion 16 of the retaining-plate has two ears 18 and 19 at its extremity, arranged with a space between them, to receive the parallel portions 1 and 2 of the handle, and said portions 1 and 2 are made somewhat resilient and the adjacent sides of the ears are formed with notches corresponding to the shape of said portions 1 and 2, so that said notched ears may be snapped into locking engagement with the parallel portions 1 and 2, thereby to lock the retaining-plate. Said retaining-plate also has at its bent end-portion 16 a tongue 30, adapted to be engaged by the finger for the purpose of moving the plate on its pivotal connection to disengage it from the parallel portions 1 and 2. Said bent end-portions 16 also has arranged on it a cutting-device for the floss, here shown as a spur 35 which is struck up from the plate and formed with a sharpened edge, so that the floss may be carried beneath it and drawn taut and thereby cut; also said bent end-portion 16 of the plate may have small recesses 36 in its edges to serve as guides for the floss.

To place a bobbin in position the retaining-plate is swung outward, the bobbin placed on its inner face with its center-hole in engagement with the tongue, then said plate is swung inward into locking engagement with the handle-portion. A short length of the floss may be drawn from its supply and first carried around the holding-means and frictionally engaged therewith, then carried over the grooved ends of first one and then the other arm of the fork and then again carried to and about the holding means, thereby to lock its other end, care being taken to draw the floss taut after it has been carried over the grooved ends of the arms and before it is a second time wound about the holding-means, so that when wound and locked it will be held taut. This method of drawing off a supply of floss and passing it over the ends of the arms of the fork and locking it at both ends may be carried out with one hand while the device is held by the other hand. In the construction here shown, it will be noted that the floss is held by the fork at right angles to the longitudinal axis of the handle-portion and also that the fork is in the same plane with the handle-portion.

In Figs. 7 and 8, a modification of my invention is shown wherein a retaining-plate 40, similar to the plate 15, is provided for holding a phial containing a supply of floss, said plate having a hole through it of less width than the diameter of the phial, in lieu of the tongue 26 and otherwise is substantially the same as plate 15.

I claim:—

1. A dental floss holder constructed of wire bent to form a pair of parallel portions, said parallel portions being together bent into a loop like portion at one end to serve as a handle, the wire lengths beyond the parallel portions at the end opposite the loop being divergent to provide arms, the ends of the arms being grooved, a clip embracing the wire strands at the juncture of the parallel

end divergent portions, said clip serving to maintain the strip in parallelism and floss holding means carried by the clip and supported to one side of the parallel portions.

2. A dental floss holder consisting of a single length of wire constructed to form parallel portions throughout the greater length thereof, the wire terminals beyond the parallel portions being projected on divergent lines to form arms, a clip binding the wire length in parallel portions, said clip being adjacent the divergent arms and a floss gripping element carried by the clip and disposed at one side of the end adjacent the meeting point of the divergent arms, the parallel portions of the holder beyond the divergent arms being formed remote from said arms in a return bend to provide a handle, and a bobbin support carried by the terminal of the handle below and approximately in line with the floss gripping element.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

ISAAC W. LITCHFIELD.

Witnesses:
BERNICE J. NOYES,
H. B. DAVIS.