(No Model.) 2 Sheets—Sheet 1.

E. H. ANGLE.

TOOTH REGULATOR.

No. 523,192. Patented July 17, 1894.

Fig. 1.

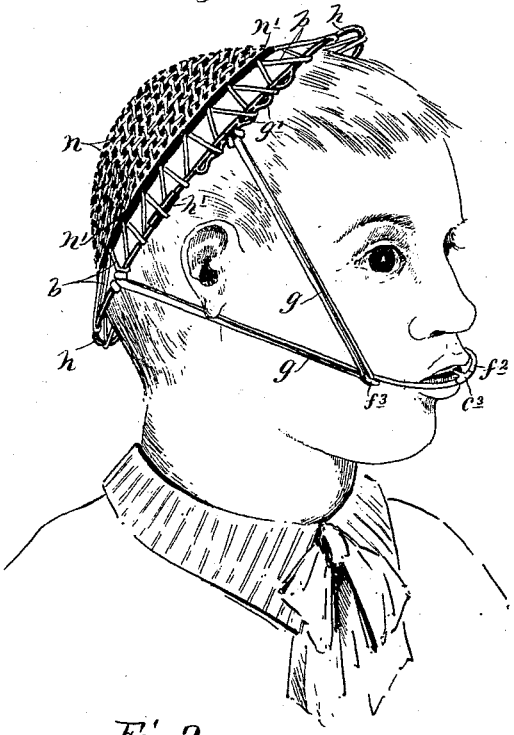
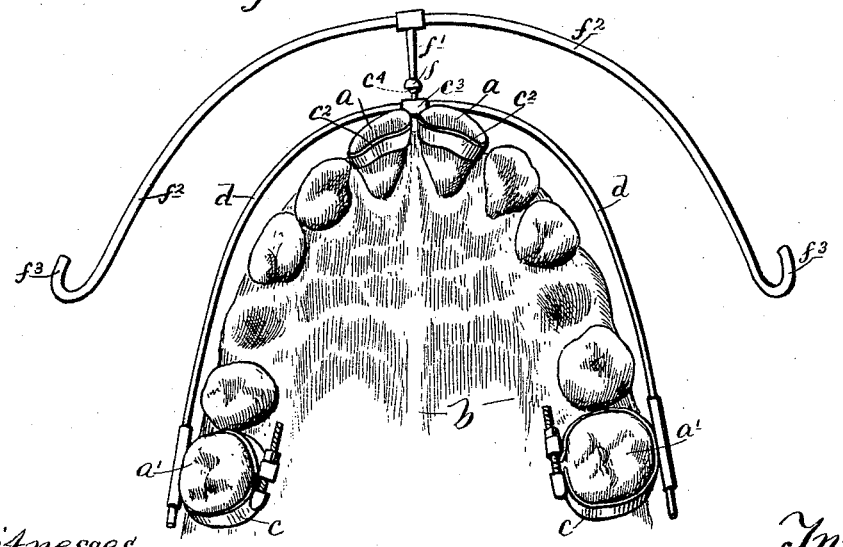


Fig. 2.



Witnesses.
E. F. Elmore
Frank Allerchant.

Inventor.
Edward H. Angle,
By his Attorneys.
Jas. F. Williamson

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

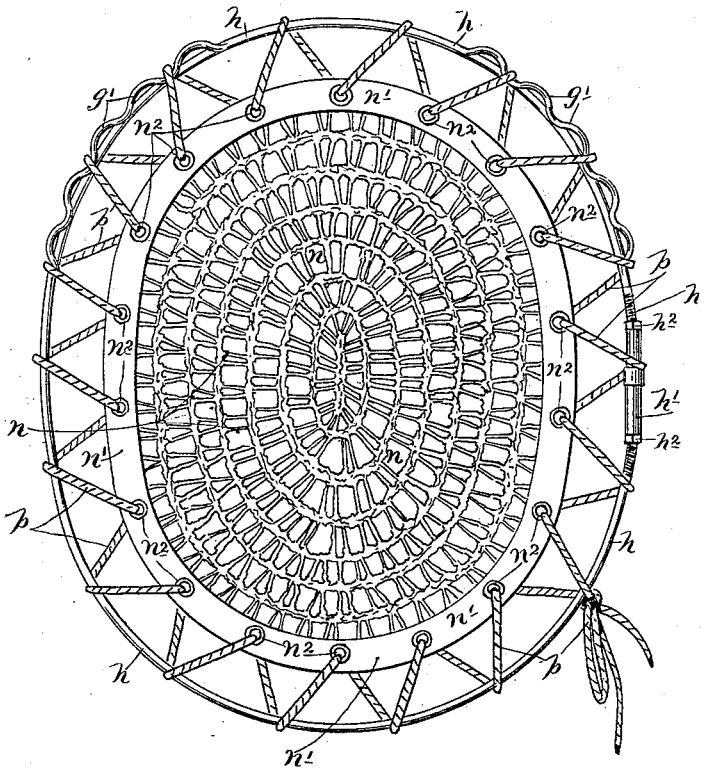


Fig. 6.

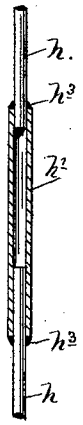


Fig. 5.

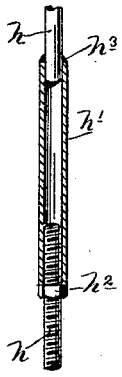
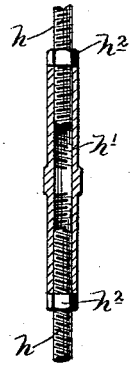


Fig. 4.



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E. F. Elmore
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UNITED STATES PATENT OFFICE.

EDWARD H. ANGLE, OF MINNEAPOLIS, MINNESOTA.

TOOTH-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 523,192, dated July 17, 1894.

Application filed May 7, 1894. Serial No. 510,348. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. ANGLE, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Head-Baskets for use with Tooth-Regulating Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to teeth regulating devices; and has for its object to provide a basket or head-net, for holding what is known to the dental profession as the "angle traction bar," employed as a part of my regulating devices for treating cases known as excessive protrusion of the incisors and cuspids. My devices for this purpose, are described in my former patent, No. 415,829, of date November 26, 1889, entitled tooth-regulator.

As shown in the said patent, a common skull-cap was employed for the attachment of the elastic-bands, to hold the traction-bar in position and give the requisite pressure thereto from the head as a base of resistance. In my experience, I found that the skull-cap was not entirely satisfactory, for the reason that the elastic bands would be drawn tight against the face with considerable resulting discomfort to the wearer; and it was also necessary to have a supply of skull-caps, in order to fit the different sizes of heads.

My present invention has for its object to overcome all these objections, by providing what might be called a head-basket or net, comprising a ring or rim of considerable larger size than the head, and a netting which is connected to the rim by an adjustable lacing, whereby the whole strain may be applied from the netting to the back of the head, with the rim standing entirely free from the head and holding the elastic bands out of contact, or at least without any chafing action on any portion of the face. The rim is preferably made, so as to be adjustable to vary the length of the same and consequently the dimensions of the ellipse formed thereby; which rim adjustment may be employed, together with the lacing adjustment, for adapting the basket to a wide range in the sizes of heads. Ordinarily, the range afforded by the lacing, which connects the netting to the rim will be sufficient.

From the foregoing statement, it is obvious that a single basket or head-net may be interchangeably used on any number of heads, regardless of size.

My invention is illustrated in the accompanying drawings, wherein, like letters referring to like parts—

Figure 1 is a perspective view, showing my device in working position on a person. Fig. 2 is a plan view, showing a human jaw and my regulating devices, with which my improvement is to be used. Fig. 3 is a plan view of the basket detached. Figs. 4, 5 and 6 are sectional views, with some parts broken away, showing different constructions, with which the rim of the basket may be lengthened or shortened.

Referring especially to Fig. 2, a represents a pair of central incisors in the jaw b, which need to be forced backward, to avoid excessive protrusion. c represents clamping bands secured to the molars a', for purposes of guiding anchorage, and are provided with short tube sections c', outside the dental arch. c^2 represents bands placed over and cemented to the incisors a and made fast to a short tube section c^3, outside the dental arch, at the crown of the same. d represents a wire rod, extending through the tube-sections c' and c^3. The tube-section c^3 is provided with a knob c^4 of ball-like form, to which is fitted a socket f on a stem f', fixed to the central part of the traction bar f^2. The traction-bar f^2 has hook-like ends f^3, to which elastic bands or ligatures g are to be applied and used, in connection with a support for the same attached to the head. These parts, so far described by reference letters, are identical or may be identical with the corresponding parts, shown in my above referred to patent.

Referring to my basket, for use in connection with the said parts, h represents the rim composed of a wire rod or other suitable spring material, curved into substantially elliptical form, with the ends of the same preferably connected by a tubular joint section h'. This

joint section h' may be screw-threaded, with the threads of the same running right and left from its center outward, and engaged with corresponding right and left screw-threads on the ends of the main rod h, as shown in Fig. 4, or may be threadless, as shown in the other views. If threaded, as shown in Fig. 4, the section h' may be made to act either with a drawing or spreading action on the opposite ends of the main rod h, thereby either contracting or enlarging the dimensions of the rim, according to the direction in which the section a' may be turned, with an action similar to that of a turn-buckle, and be locked to the section h' by jam-nuts h^2. If threadless, as the joint section h' is shown in Figs. 5 and 6, one end of the rim h may be soldered to the tubular section h', as shown at h^3, and the other end may be screw-threaded and limited in its inward movement by one of the nuts h^2, as shown in Fig. 5; or both ends of the ring may be threadless and be soldered to the tube section h' in the desired position. In both of these cases, as shown in Figs. 5 and 6, reliance will be placed on the spring in the ring h, under the tension from the lacing strings and netting, to cause the ends of the ring h to approach each other, as far as permitted within the tube section h'. With the form shown in Fig. 6, the solder h^3 is, of course, easily fusible; and hence, the rod may be readily adjusted, when necessary, and be resoldered to the tube h', in its adjusted position.

The centrally disposed netting n, is provided with a marginal band n' of any suitable flexible material having eyes n^2, through which are passed the adjustable lacing strings p, by which the netting is adjustably connected to the wire rim h h'. With this construction, the netting may be more or less slack, and thereby be adjusted, in respect to the rim, as may be required to adapt the basket for use on different sizes of heads, while, at the same time, bringing the rim into the proper position for the best support of the regulating devices. When the basket is in working position, as shown in Fig. 1, the ligatures or elastic bands g, are secured to the rim in the proper positions to give the desired line of strain and are attached at their forward ends, to the hooks f^3 of the traction bar f^2. For keeping the ligatures g from slipping on the rim, the said rim h may have brazed or otherwise secured thereto, corrugated strips g'; and the ligatures g may either be secured in the eyes, formed by the loops or raised corrugations of the strips g' in relation to the rim h, or be secured in the depressed part of the strip. These strips g', or other equivalent devices, for preventing the slippage of the ligatures g on the rim h, are chiefly needed at the upper and forward part of the rim, on account of the line in which the strain from the ligatures will fall, when applied to that part of the rim; but it will be understood, of course, that such devices might be attached to any part of the rim, to prevent the slippage of the ligatures thereon. The importance of this feature will, of course, be readily understood, from the fact that the ligatures g must be sustained in proper position, in order to bring the strain therefrom on the traction bar, in the required lines, for the proper action of the bar to regulate the teeth.

With this basket, constructed and applied as described, it must be obvious that the rim h and the ligatures g will stand away from the head and prevent any chafing action from the said ligatures on the face of the wearer. The rim h is preferably composed of spring wire; but it will be understood, of course, that it may be composed of any other suitable non-collapsible material. Likewise, the body of the basket has been shown as preferably composed of netting; but it will be understood that it might be of any other suitable flexible material.

Although the head-basket, herein shown and described, was especially designed for use in connection with tooth regulating devices, it will be understood that the same might be used for other purposes, such as supporting bandages, or other appliances about the face or head.

The great advantage of this form of basket, for co-operation with tooth regulating devices, is that any amount of pressure is rendered available from the back of the head, as a base of resistance, and is spread over a large area of surface on the head. It is well-known, that, for the purpose had in view, considerable pressure must be applied in many cases to the traction bar f^2 through the elastic ligatures g, which are selected with reference to the required strain or tension. With handkerchief-like bandages or skull-caps, as were formerly used, the pressure all fell on the head, in the direct line of strain, and was confined to a small surface. The result was, that in many cases, the patient could only wear the bandage or skull-cap for a very short interval, at a time, without producing violent headaches on account of the localized pressure and the interference with the capillary circulation. With this basket, the rim stands entirely away from the head, and the netting distributes the strain over so large a surface on the head, that there is no interference—at least no material interference—with the circulation, and the basket may be continuously worn by the patient without any serious discomfort.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. A head basket, for cooperation with tooth regulating devices, comprising a rim of wire or other suitable non-collapsible material and a body of netting or other flexible material secured thereto, substantially as and for the purposes set forth.

2. A head-basket, for cooperation with tooth regulating devices, comprising a non-collapsible rim, a body of flexible material, and lac-

ing strings adjustably connecting said parts together, substantially as described.

3. In a head-basket, for cooperation with tooth regulating devices, the combination with the divided rim h, of the tubular joint section h', for adjustably securing the ends of said rod, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD H. ANGLE.

Witnesses:
EMMA F. ELMORE,
JAS. F. WILLIAMSON.