A. P. ROGERS.

ORTHODONTIC APPARATUS.

APPLICATION FILED DEC. 13, 1919.

1,363,534. Patented Dec. 28, 1920.

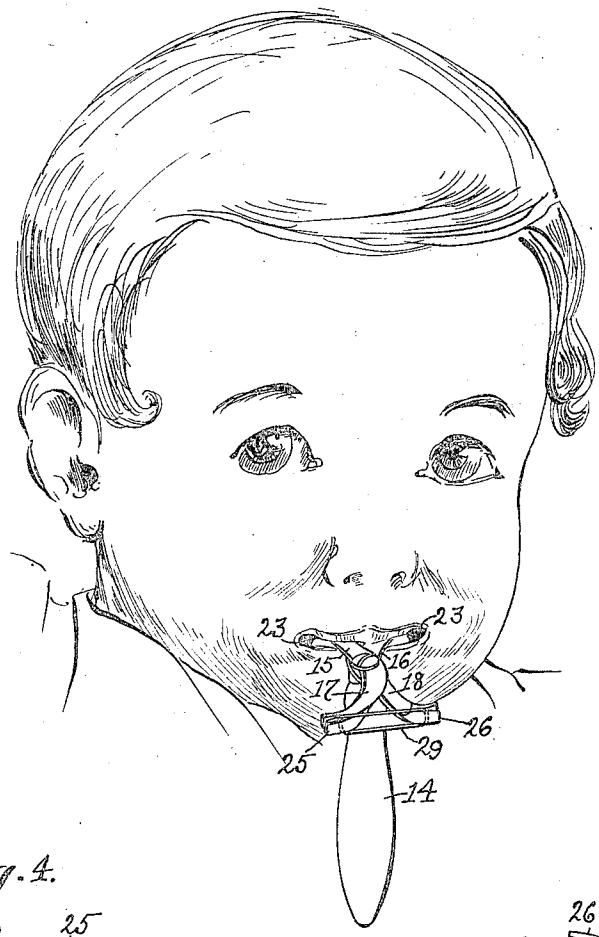



Fig. 1.

Fig. 4.

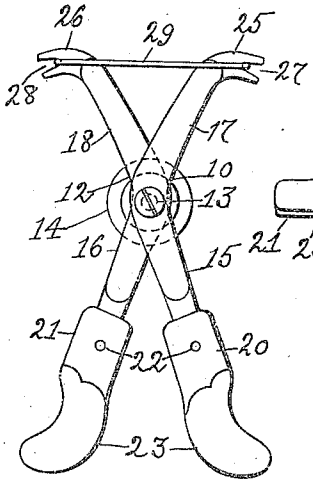
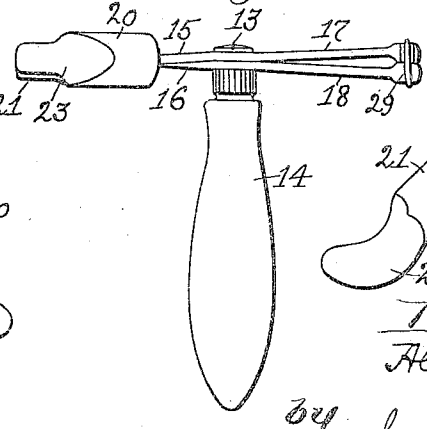



Fig. 2.



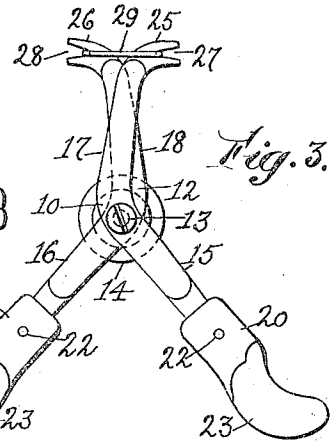




Fig. 3.

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# UNITED STATES PATENT OFFICE.

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## ORTHODONTIC APPARATUS.

1,363,534. Specification of Letters Patent. Patented Dec. 28, 1920.

Application filed December 13, 1919. Serial No. 344,635.

*To all whom it may concern:*

Be it known that I, ALFRED P. ROGERS, a citizen of the United States, residing in Newton, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Orthodontic Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to orthodontic apparatus and particularly to a device for exercising and strengthening the muscles of the face immediately surrounding the mouth and particularly the orbicularis oris, to thereby assist in correcting irregularities and malformation of the dental arches.

The invention has for its object to provide a simple, efficient and convenient device for the purpose specified.

To this end, the device is provided with members capable of insertion into the mouth and of engaging the sides or corners thereof, and movable in one direction by contraction of the mouth, against the action of a spring or yielding member which coöperates with the movable members to resist or oppose the action of the orbicularis oris muscle.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 illustrates the manner in which a device embodying the invention is used;

Fig. 2, is a side elevation of the device shown in Fig. 1, and Figs. 3 and 4, are plan views illustrating the device in different positions of operation.

It is generally recognized in the practice of modern orthodontia that the strength and development of certain facial muscles materially affect the formation of the dental arches. The muscle immediately surrounding the mouth and which is known to the medical and dental profession as the orbicularis oris, is sometimes found in children in a weakened or partially developed condition. The resistance or pressure of this muscle constantly applied to the teeth operates to control to a large degree, the correctness of their position, that is whether they protrude or recede from their normally intended position. Those children habitually suffering from mouth breathing of long duration frequently suffer from malocclusion of the teeth due to weakened and inharmonious action of the muscles of the lips. Other facial maldevelopments with the accompanying malformation of the dental arches often accompany undeveloped orbicularis oris muscles.

The present invention contemplates a convenient device by which undeveloped or weak facial muscles and particularly the orbicularis oris, may be exercised and developed.

In the present instance, I have shown one form or construction of muscle exercising device, which consists of two movable members in the form of levers 10, 12, mounted upon a pivot 13 carried by a handle 14, which is arranged substantially at right angles to the levers 10, 12. The levers 10, 12, are suitably bent so that when mounted on their pivot 13, their front arms 15, 16, diverge from each other while their rear arms 17, 18, are in substantially close proximity to each other and overlap as shown in Fig. 3. The outer ends of the front arms 15, 16, are preferably provided with non-metallic pieces 20, 21, of hard rubber or like material which may be removably and adjustably mounted on the arms 15, 16, or which may be secured in fixed relation to said arms by pins or rivets 22 or otherwise.

The non-metallic pieces 20, 21, are preferably provided with curved tips 23, for engagement with the sides or corners of the mouth. The rear arms 17, 18, of the levers are provided with bent ends 25, 26, which extend away from each other and are provided with slots 27, 28, for the reception of a rubber band 29, which forms one form of spring member. The spring member 29 normally serves to draw the arms 17, 18, together and to separate the arms 15, 16, of the levers.

In operation the arms 15, 16, of the levers are inserted into the mouth of the child or other patient with the curved tips 23 engaging the corners or sides of the mouth.

The device is conveniently held by the child grasping the handle 14, and while so held, the mouth is contracted or drawn up, which action moves the arms 15, 16, toward each other from substantially the position shown in Fig. 3 to that shown in Fig. 4. The movement of the arms 15, 16, toward each other by the muscles of the mouth is resisted by the spring member 29 which is extended by the arms 17, 18, moving away from each other. The muscles of the mouth are then relaxed, and the levers are returned

to their normal or starting position by the spring member, whereupon the patient again contracts the mouth and then relaxes the same.

This exercise is repeated for brief periods of time, which are lengthened as the muscles gain in strength. It will be observed that as the mouth is contracted, the lip muscles and also the facial muscles in the immediate vicinity of the mouth are forced to exert themselves against the resistant force of the spring member 29 and are thus gradually developed and strengthened day by day.

These exercises are performed periodically each day for an extended period depending on the condition of the muscles, and as the latter grow stronger the spring member is gradually increased in strength, which may be effected by additional loops in the rubber band or by substituting stronger bands or other forms of spring members, so that as the muscles grow stronger they are required to do more work in moving the arms 15, 16.

The orthodontic results obtained by the use of a device embodying this invention have been found to be extremely satisfactory, for as the muscles grow stronger, they exert greater pressure upon the malformed arches through the medium of the teeth, thus affording great assistance in the correction of these malformations as well as aiding materially in maintaining them in their corrected position.

I have herein shown one embodiment of the invention, but it is not desired to limit the invention to the particular construction shown.

Claims:

1. A device of the character described, comprising a pair of movable arms capable of being inserted into the mouth of a person and of being moved by the contraction of the mouth, a support for said arms extended substantially at right angles to the latter and capable of being held by the hand of the patient, and means to resist movement of said arms by said mouth.

2. A device of the character described, comprising a pair of levers pivoted intermediate their ends and having diverging front arms capable of being inserted into the mouth of a person, a handle extended substantially at right angles to said levers and upon which the latter are pivoted, and a spring member connecting the rear arms of said levers to resist movement of the latter by the contraction of the mouth.

3. A device of the character described, comprising a pair of levers pivoted intermediate their ends and having diverging front arms capable of being inserted into the mouth of a person and having their rear arms provided with bent ends extended away from each other and provided with slots, a handle upon which said levers are pivoted, and a spring member entered into the slotted ends of said rear arms to connect the latter together and resist movement of the front arms toward each other when the mouth is contracted.

4. A device of the character described, comprising a pair of levers pivoted intermediate their ends and having diverging front arms capable of being inserted into the mouth of a person and provided with curved non-metallic tips to engage the corners of the mouth, a support for said levers, and a spring member connecting the rear arms of said levers to resist movement of the front arms toward each other by the contraction of the mouth.

5. A device of the character described, comprising movable members capable of being inserted into the mouth of a person and engaged with the corners of said mouth, and means coöperating with said movable members to resist movement of the latter by the contraction of the mouth and a handle extended substantially at right angles to said levers and capable of being held by the hand of a patient.

In testimony whereof I have signed my name to this specification.

ALFRED P. ROGERS.