

Feb. 26, 1952

H. S. DE VOE
MUSCLE TONUS REPLACER

2,587,292

Filed Oct. 23, 1950

2 SHEETS—SHEET 1

Fig. 1.

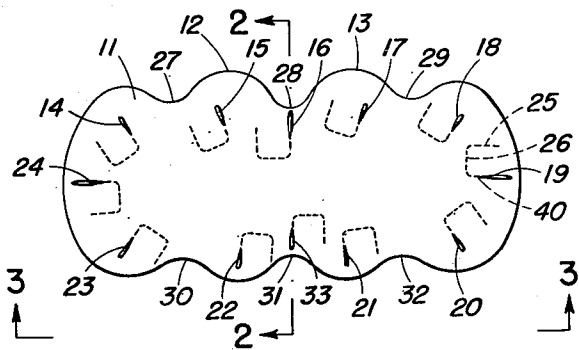


Fig. 2.

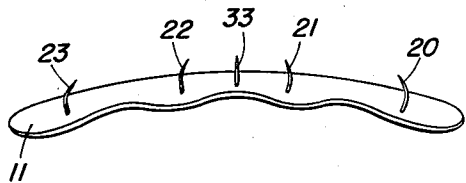
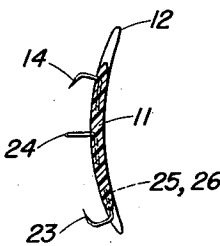


Fig. 3.

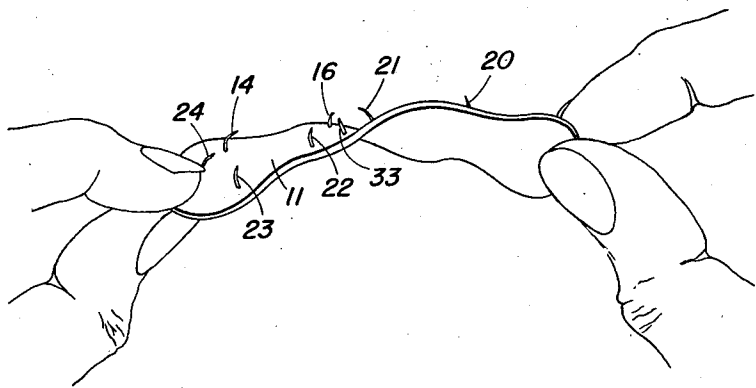


Fig. 4.

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2 SHEETS—SHEET 2

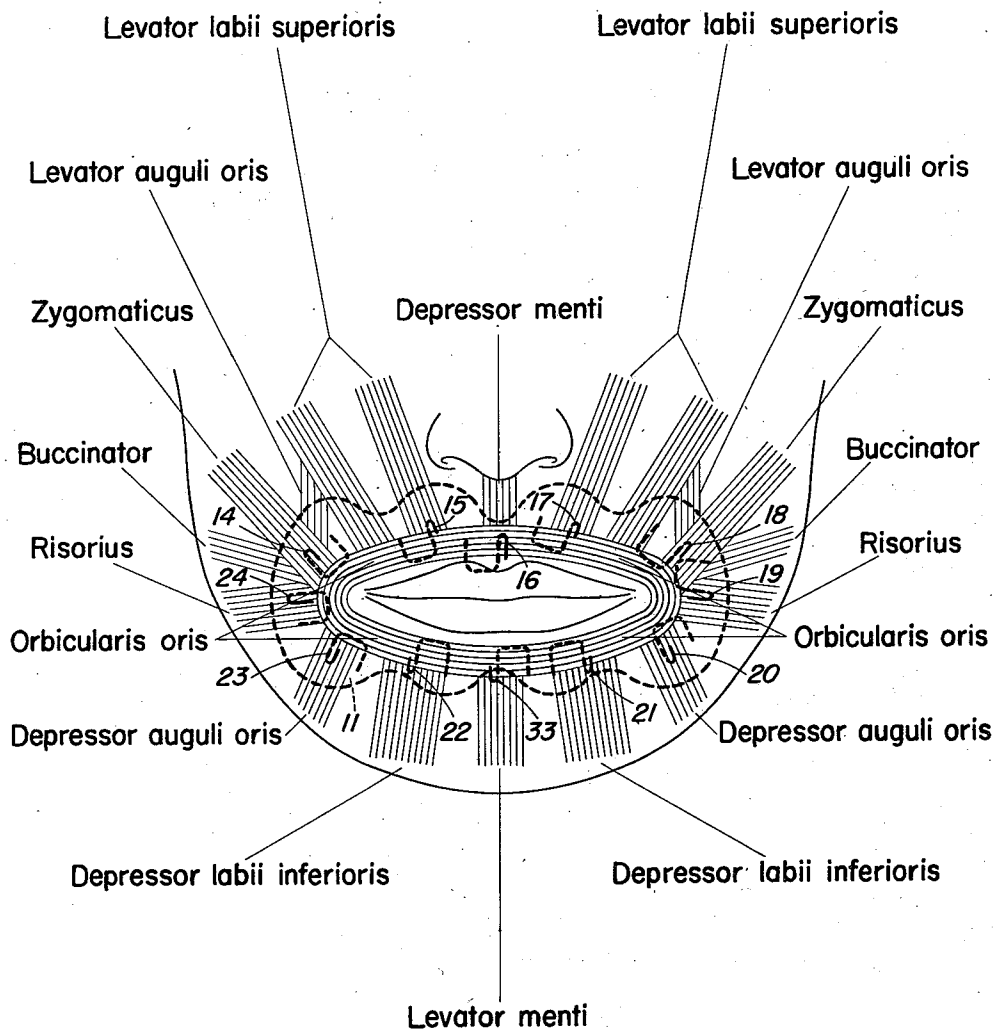


Fig. 5.

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MUSCLE TONUS REPLACER

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2 Claims. (Cl. 27-21)

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This invention relates to means for restoring the muscle tonus in the muscles of the face in order to give a natural expression to the mouth of a cadaver. More specifically, it relates to a device which will permit an undertaker or mortician to reshape the expression of the mouth in death by acting on those facial muscles that control the shape of the mouth so as to cause them to react as though their natural muscle tonus were still present.

There have been a number of appliances proposed to close the mouth and lips of a corpse. Their main object is lip closure and support of the lips in the edentulous mouth. A very common fault of these appliances is that the appearance of the lips is too thin, and the mouth too wide, and they have been generally unsatisfactory because they were difficult if not impossible to insert properly, particularly without mutilation of tissue. Because of their continued failure to produce a natural facial expression, many present-day morticians refuse to use these devices and rely on the extremely old technique of sewing the lips together.

It is then an object of this invention to provide an appliance which will overcome the difficulties present today in restoring a natural appearance to the facial muscles of a corpse. It is a further object to provide such an appliance as will be easily insertable and positionable in the mouth of the corpse without tissue mutilation. Still more objects will appear further in the specification.

In summary, these objects are attained by an appliance or device that comprises a supporting base plate and a series of carefully positioned upstanding prongs fixedly anchored therein. These prongs are placed in such a manner that each one grasps one of the muscles of facial expression surrounding the mouth in muscle-aligning manner and draws in these muscles longitudinally. They thus restore to these muscles their lifelike tone and reproduce in death the natural appearance possessed in life without actually contacting the lip muscles. The prongs are fixedly positioned in a support or base preferably made of elastic material so as to simulate the elastic sphincter action of these muscles, and of flexible material so as to automatically assume the shape of the mouth.

In more detail, the concept of this invention is based on the fact that surrounding the aperture of the mouth is a main or central muscle called the orbicularis oris which encircles the aperture of the mouth substantially as a continuous band. It consists of two portions—the labial which occupies the red border of the lips, and is narrow, thick and regular, and the facial, which is wider and thinner, and spreads out into a wide band just beneath the skin around the oral orifice. In the prior techniques, it was these muscles which were contacted by various devices,

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or sewn together, to hold the lips closed. The orbicularis oris muscle is the juncture or meeting place of the other muscles of the mouth, each of the other muscles fanning out more or less radially from this circular band of muscle. It is these fanning or radial muscles that the appliance of this invention proposes to contact, and to draw back into place as though each particular muscle possessed its normal tone and function.

Thus there will be imparted to the orbicularis oris muscle, a tone exactly as it had during life, without actually contacting the muscle proper. It will have a soft flexible appearance, as in life, because there is no firm grip on the orbicularis oris muscle but rather it is free to respond to the tension applied to it by the surrounding fanning muscles.

It is further well known that the orbicularis oris muscle is connected to the bony structure of the face in only three positions. The largest of these is the nasilabial slips, which are narrow bands passing up to be attached to the anterior nasal spines, and which correspond to the external portion of the philtrum. Two other slips are attached to the incisive fossae in the upper jaw, and two smaller slips are inserted in the incisive fossae of the mandible. It is the tonicity of the facial portion of the orbicularis oris, through these bony connectors and the tonicity of the radial group of opposing muscles that causes the lips to be molded to the teeth. To accommodate these bony connectors, the periphery of the prong-supporting base or plate of this invention is molded in a wavy manner with indentations, bays or notches that fit around the connectors. Thus, no unnatural distension occurs.

Reference is now made to the drawings for a specific embodiment of this invention, but it is given for the purpose of illustration only, and is not to be deemed limiting. The scope of this invention should be determined from the appended claims, or from their equivalents.

Figure 1 is a plan view of the device showing the support or base, and the prongs which engage the muscles.

Figures 2 and 3 are end and side views, respectively, through the device of Figure 1.

Figure 4 shows the flexibility and elasticity of the device.

Figure 5 is an idealistic view of the human mouth showing the various muscles which surround the lips, and showing this device in place under the lips and contacting certain radial fanning muscles.

More particularly in the figures, there is shown the base or supporting piece 11. This is a thin elastic piece, the center of which is closed with a thin elastic material so that every stress placed on the upper lip or on the corners of the mouth has a reciprocal action on the other side; and so that the tension created on the top helps pull up the lower, and vice versa. The support 11 may

be made from elastic, plastic, or from plastic and metal, in such a manner that the base is soft enough to assume automatically the shape of the mouth when inserted. It will always lie flat and not bulge out the lips or face in any way. Thus no manual adaptation of the device to the shape of the mouth is needed.

In this base 11 there are embedded prongs 14 to 24. Each prong is placed in a specific location and at a specific angle. In order to provide the upstanding or projecting prongs with a firm anchor so that they will not be displaced or pulled out of line but will be held firmly in muscle-aligning position, they are provided with anchor 25—26—40, in Figure 1. The components of this anchor are embedded in the base 11 and hold the prongs 14 to 24 firmly and non-twistably in line. Any sort of an anchor that will provide the necessary rigid support will be adequate, the one illustrated being a three-sided rectangle with the upstanding prong attached to one corner of the rectangle. A square, triangular or circular anchor for the prong, or a solid or perforate square, triangle, oval or T-shaped piece of metal or other hard substance will work equally as well provided it holds the upstanding prong firmly in the desired alignment with its respective muscle.

In Figure 1, there are shown in the periphery of base 11, scallops or wavy indentations or notches 27, 28 and 29. The various indentations are cut to different depths and so located as to fit around the various muscle attachments and the frenum. The periphery of the appliance is designed as it is so that each notch will fit over its own muscle or ligament attachment and thus hold the whole appliance in its correct position. Notch 28 accommodates and fits around the nasolabial slips attaching to the bony structure directly below the nose. Notches 27 and 29 accommodate the slips that are attached to the incisive fossae. Thus an embodiment of this invention rests on the teeth and fits between the various slips resulting in a flat natural contour. The lower edge of the support 11 has scallops or indentations or notches 30, 31 and 32 to pass around the slips attached to the bony structure of the lower jaw. These depressions also serve to assist the user in slipping the appliance exactly in its correct place in the mouth.

In Figure 5, the precise function of each of the prongs or hooks may be seen. The base 11 is shown as a dotted line underlying the idealistic representation of the facial muscles and each prong is shown anchored in position. In the center is prong 16 attached to the depressor menti muscle.

Each hook or prong has its own action and reason for being. There are three large hooks and nine smaller ones. The size of these is determined by the thickness of the overlying tissue and by the amount of action they are designed to give. The position and angle of these are designed in each case to counteract the loss of tone of a specific muscle or muscle group.

Hook 16 gives tone to the levator labii superioris alaeque nasi and the depressor septi (menti) muscles. It holds the center of the lip down (area of the philtrum).

Hooks 15 and 17 give tone to the levator labii superioris muscles. They hold the lip down on either side of the center.

Hooks 21 and 22 give tone to the levator and depressor labii inferioris muscles. They hold up the lip on either side of the center.

Hook 33 gives tone to the levator menti to help hold up the center of the lower lip.

Hooks 14, 23, 24 and 18, 19, 20 give tone to the orbicularis oris, levator anguli oris, depressor anguli oris, zygomaticus major and minor, risorius, buccinator and all other coordinating muscles of this group for facial expression.

The muscle which is the most difficult to hold in place is the orbicularis oris and therefore prongs 16, 24 and 19 are usually a little larger than the rest. Prongs 16, 24 and 19 should be about 4 mm. in height, whereas the others are between 2 and 3 mm.

The three legs of the base are placed as they are so that stability is given to the prong against a pull in any direction.

The prongs should always be perpendicular to the fibres of the orbicularis oris muscle which circles the mouth and is the main muscle for closing this orifice. This muscle closes the mouth by contract of its fibres, much as an elastic band would pull toward the center if stretched into a larger circle. The prongs must be perpendicular to the surrounding muscle in order to replace the contracting action which was present in life (tonus). The prong must be parallel to the opposing muscles so as to counteract the opening tendency caused by their loss of tone. The opposing muscles are the ones that radiate out from the orbicularis oris.

None of these prongs points toward the center of the lips as such, but rather each is designed to be parallel to the muscle to which it is supplying the tonus. Thus the prongs holding the zygomaticus and depressor anguli oris muscles point across the lips rather than toward the center, but they yet replace the natural tone of those particular muscles. They in effect replace the contracting action which these muscles possess in life, and by being parallel to the muscle, they pull in the same direction on these muscles that the orbicularis oris did in life.

I claim:

1. A lip-closing appliance for a corpse comprising a thin sheet of stretchable elastic material of greater length than a person's mouth and of a width adapting it to cover teeth and overlap the upper and lower gums, and flesh-penetrating spurs spaced transversely from each other along side edges and end edges of said sheet and projecting forwardly from the sheet and terminating in sharp free ends presented inwardly away from marginal edges of the sheet and disposed in position for exerting pull longitudinally of the facial muscles extending radially from the orbicularis muscle surrounding the mouth.

2. The structure of claim 1 wherein upper and lower edges of the sheet are scalloped and thereby each formed with a center recess and with recesses spaced from opposite sides of its center recess by portions having arcuate edges merging into side edges of the said recesses.

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