

Aug. 13, 1929.

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1,724,691

DENTAL FLASK CLAMP

Filed March 18, 1927

2 Sheets-Sheet 1

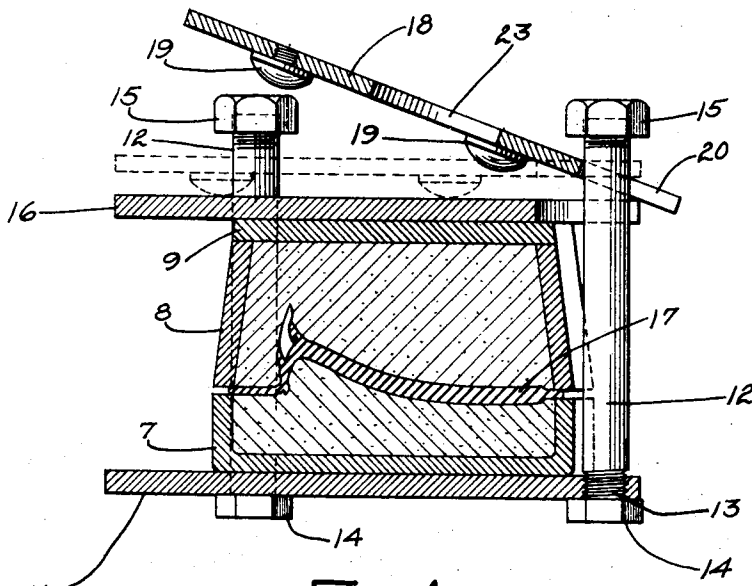


FIG. 1

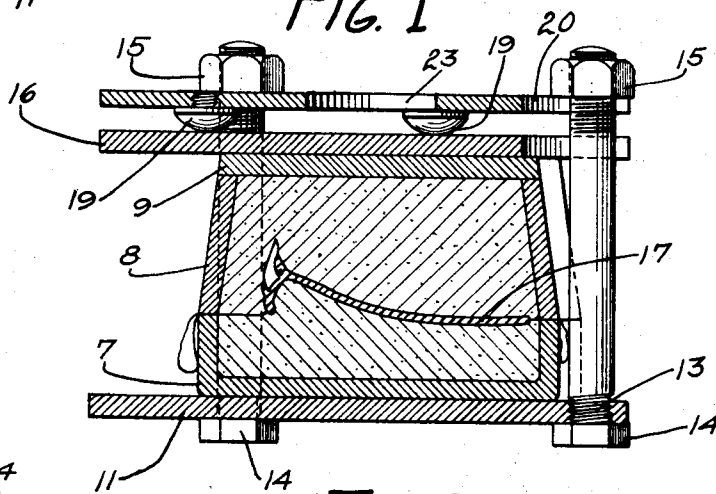


FIG. 3

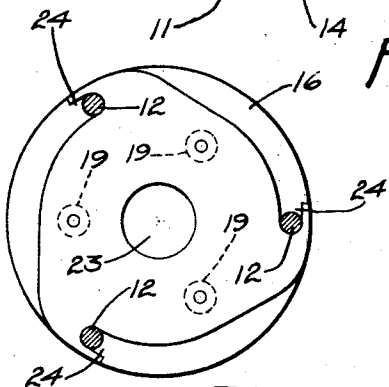


FIG. 6

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2 Sheets-Sheet 2

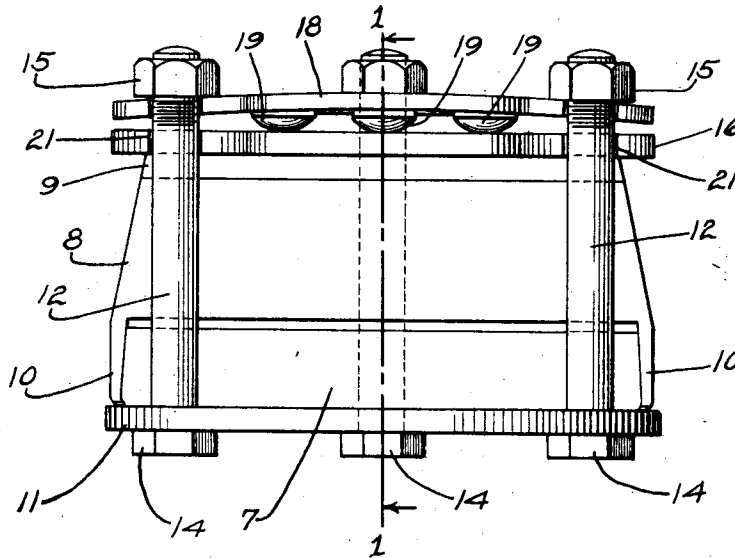


FIG. 2

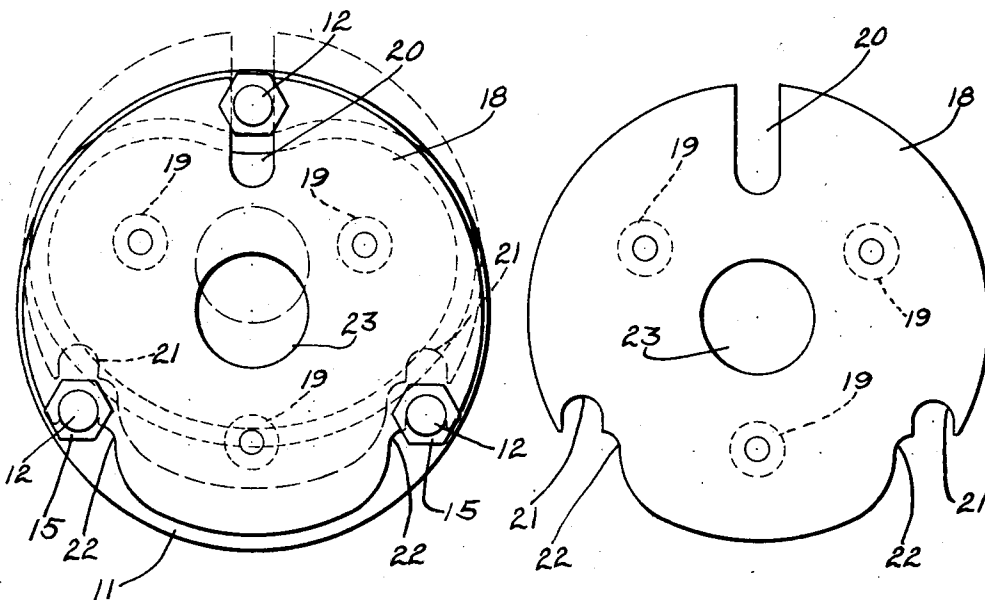


FIG. 4

FIG. 5

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DENTAL FLASK CLAMP.

Application filed March 18, 1927. Serial No. 176,489.

This invention relates to an improved clamping device for sectional dental flasks, and an object of the invention is to provide such a clamping device adapted to resiliently clamp together the sections of the flask.

A further object of the invention is to provide a clamping device for dental flasks comprising a plate having a plurality of spaced clamping bolts terminally mounted therein, in spaced parallel relation and each having a nut received in threaded engagement with the upper end thereof, adapted to be engaged with a tension member, between which and the lower plate, the dental flask is clamped, said tension member having a three point contact with the flask and being adapted to flex when the clamping nuts are tightened thereagainst, whereby a force will be stored up in the tension member which will ultimately cause the adjacent edges of the flask sections to be automatically moved into engagement with each, other when the mold is placed in a vulcanizer and the form material confined therein softens by the application of heat thereto.

Other objects of the invention are to provide such a device of simple and inexpensive construction; to provide a clamping device having a slotted tension member adapted to be moved into and out of engagement with the clamping bolts without the necessity of having to remove the nuts therefrom; in the three point contact of the tension member with the flask; and, in the provision of means adapted to protect the upper wall of the flask from becoming damaged or marred, when the flask is clamped in the device.

The particular object of the invention, therefore, is to provide an improved clamping device for a sectional dental flask, and other objects of the invention will appear from the following description and accompanying drawings and will be pointed out in the annexed claims.

In the accompanying drawings, there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown as various changes may be made within the scope of the claims which follow.

In the accompanying drawings forming part of this specification;

Figure 1 is a cross sectional view on the line 1—1 of Figure 2, showing the flask

positioned in the clamping device and further showing the manner of positioning the tension member in engagement with the clamping bolts and the upper portion of the flask;

Figure 2 is an elevational view of Figure 1, showing the flask positioned in the clamping device and the two lower sections thereof being spaced apart as a result of the material confined therein, and also showing the flexed condition of the tension member engaged with the upper ends of the clamping bolts, whereby a constant force will be exerted against the sections of the flask to close the gap therebetween;

Figure 3 is a view similar to Figure 1, but showing the flask sections after having been moved into engagement with one another as a result of the pressure exerted thereagainst by the force stored up in the tension member;

Figure 4 is a plan view of the device, showing the manner of moving the tension member into and out of engagement with the clamping bolts;

Figure 5 is a plan view of the tension member, showing in dotted lines the three buttons or projections provided on one side thereof adapted to engage the upper projection plate or wall of the mold; and

Figure 6 is a sectional plan view showing a modified form of tension member.

In the selected embodiment of the invention here shown, there is illustrated, for purposes of disclosure, a dental flask of ordinary construction, comprising a lower section 7, upper section 8, and a cover plate 9, demountably fitted to the upper section 8. Depending lugs 10 are provided upon opposite sides of the section 8 adapted to be received in grooves or recesses, not shown, provided in the walls of the lower section 7, as shown in Figure 2.

The novel clamping device featured in this invention comprises a lower plate 11 preferably circular in form and having three clamping bolts 12 terminally mounted therein by such means as threads 13 and lock nuts 14, shown in Figures 1, 2, and 3. The clamping bolts 12 are equally spaced apart as shown in Figure 4, and have their upper ends threaded to receive suitable nuts 15.

In order to prevent the cover plate 9 of the dental flask from becoming marred or damaged, when the flask is clamped in this

novel device, a protection plate 16 is provided which is adapted to be positioned upon the cover plate as shown in the drawings, when the flask is positioned upon the lower plate 11. The flask may then be securely clamped between the bottom plate 9 and the protection plate 16 without danger of damaging the flask.

In the drawings, the lower and upper sections of the flask are shown filled with plaster having impressions made therein in the usual manner to provide a mold for a form, such as used to provide a support for a set of teeth. When the material from which the form is constructed, is placed in the mold in the plaster, it is in a more or less plastic state and is firmly pressed into the mold to partially fill the mold provided therein, and around the teeth which have previously been imbedded in the upper section of the flask, as shown in Figures 1 and 3. The flask sections are then clamped together and placed in a suitable vulcanizer, not shown, wherein the flask, with its contents, is heated to a predetermined temperature, which is sufficient to substantially liquefy the rubber or material from which the form is to be made; thereby causing it to be forced into all of the small cavities in the mold, after which the flask may be removed from the vulcanizer and allowed to cool to permit the removal of the form from the flask. When the flask sections are first placed in the clamping device and the flask sections 7 and 8 are forced together, portions of the rubber or material from which the form is to be constructed, is sometimes forced outwardly between the two sections, as shown in Figure 1, thereby preventing the two sections from being moved into engagement with each other as a result of the consistency of the form material before being heated. However, before the form is properly made, the two flask sections 7 and 8 must be forced into engagement with each other, as shown in Figure 3, in order that the wall 17 of the form will be reduced to the proper thickness.

In ordinary practice, the flask sections are usually forced together by such means as bolts or screws, before the flask is placed in the vulcanizer and heated to a temperature wherein the form material can be forced into the small cavities of the mold. It is desirable that means be provided whereby the flask sections may be automatically forced into engagement with one another while the flask is confined within the vulcanizer, and an outstanding feature of this invention is to provide means for thus automatically forcing the two flask sections into engagement with each other, while confined within the vulcanizer.

A tension plate or member 18 is provided, having preferably three projections or buttons 19 secured to one side thereof and

equally spaced apart as shown in Figure 5. These buttons are adapted to engage the top surface of the protection plate 16, as shown in Figures 2 and 3. An open ended slot 20 is provided in one side of the member 18 adapted to receive one of the clamping bolts 12, and notches or recesses 21 are provided in the opposite edge of the plate, adapted to receive the two remaining clamping bolts as shown in Figure 4. Portions of the plate 18 are cut away, as indicated at 22, to provide clearance for the nuts 15, mounted on the upper ends of the clamping bolts 12. The slot 20 is of sufficient length to permit the member 18 to be moved from its operative position, shown in full lines in Figure 4, to the dotted line position shown in the same figure wherein, it will be noted, that the notches 21 have been moved out of engagement with the bolts 12 and nuts 15 so that the plate may be removed from the device by lifting one side thereof to the position shown in Figure 1, after which it may readily be moved out of engagement with the bolts 12.

The tension member is constructed of a suitable elastic material such, for instance, as spring steel, and the buttons 19, secured thereto, are arranged in such a manner that they engage the cover plate 9, when the tension member 18 is placed in engagement with the bolts as shown in Figures 2, 3, and 4. It will also be noted, by reference to Figure 4, that each button 19 is substantially in alignment with two of the clamping bolts so that when the nuts 15 are tightened to the position shown in Figure 2, the member 18 will flex and will be put under tension to exert a pressure against the protection plate 16, thereby automatically tending to force the two flask sections 7 and 8 into engagement with each other. After the flask has been clamped in the device, as shown in Figure 2, the flask and clamp are placed in a vulcanizer and allowed to remain therein for a suitable length of time. After the flask has been confined within the vulcanizer for a short period of time, the form material becomes very soft and plastic, so that the force or energy stored up in the tension member 18 and constantly tending to move the two flask sections into engagement with one another, will automatically move the sections to the position shown in Figure 3, without the necessity of having to open the vulcanizer. It will also be noted that by spacing the buttons 19 as shown and described, a three point contact is obtained between the tension member and the protection plate 16, so that a uniform pressure is applied to the flask sections to move them into engagement with each other.

If desired, the protection plate 16 may be dispensed with and the clamping plate 11 and tension member 18 be placed in direct

engagement, respectively, with the bottom of the section 7 and cover plate 9. In actual practice, however, it has been found desirable to utilize the plate 16, as, by its use, all danger of damaging or marring the surface of the flask cover is eliminated. The clamping device, as a whole, is very simple and inexpensive and may be operated to clamp a flask therein in a comparatively short time. It always insures that a uniform pressure will be exerted on the flask sections to force them together. The size of the clamping device is also such that it is adaptable for use in connection with dental flasks of ordinary sizes and forms. A central aperture 23 is provided in the tension member 18 adapted to receive an instrumentality to facilitate lifting the flask from the vulcanizer.

Figure 6 illustrates a modified form of tension member, the function of which is identical to that of the member 18 shown in the other figures of the drawing, but instead of having a slot 20 therein, it is provided with three notches or recesses 24, each adapted to receive one of the clamping bolts 12, as shown. To remove the tension member shown in Figure 6, the member is slightly rotated to move the notches 24 out of engagement with the bolts 12, after which it may readily be removed from the bolts to permit the removal of the flask from the clamping device.

I claim as my invention:

1. The combination with a dental flask comprising a bottom section and an upper section having a cover plate removably fitted thereto, of a clamping plate engaging the bottom section, a tension member having a three point contact with the cover plate and being adapted to flex under pressure, and a plurality of tie bolts for forcing said plate and member against said bottom and cover respectively to securely retain the flask sections and cover plate in closed position.

2. The combination with a dental flask comprising a plurality of separable sections, of a resilient clamping device for securing together said sections, said clamping device having a three point contact with one of said sections whereby a uniform pressure is exerted thereagainst.

3. The combination with a dental flask comprising a plurality of separable sections, of a resilient clamping device for securing together said sections, said device comprising a plate having a plurality of tie bolts mounted thereon, the upper ends of which are adapted to receive a tension member having projections thereon, adapted to engage one of the flask sections whereby said member will be spaced therefrom so that it will flex when the tie bolts are tightened, thereby causing the flask sections to be held together under tension whereby they will

automatically adjust themselves to the condition of the material confined therein.

4. A device of the class described, comprising a plate having a plurality of spaced clamping bolts rigidly mounted thereon, each having its upper end threaded and adapted to receive a nut, a tension member having open-ended slots adapted to receive the upper ends of the clamping bolts, said tension member co-operating with said plate and bolts to clamp a sectional dental flask therebetween, whereby the sections thereof will be securely held together under a tension, and said slots permitting said tension member to be removed from said bolts without removing the nuts therefrom.

5. A device of the class described, comprising a plate having a plurality of clamping bolts terminally mounted therein, in spaced parallel relation, a nut received in threaded engagement with the upper end of each bolt, a slotted tension member removably engaged with said bolts and nuts and co-operating with said plate to clamp a sectional dental flask therebetween, and said tension member having three projections or buttons on the lower face thereof adapted to engage the dental flask whereby the plate will be spaced from the flask and will have a three point contact therewith, whereby when the nuts are tightened, the tension member will flex and resiliently secure together the sections of the flask.

6. A clamping device for dental flasks, comprising a base plate having three clamping bolts terminally mounted therein and arranged in spaced parallel relation, a clamping nut received in threaded engagement with the upper end of each bolt, a protection plate adapted to be seated upon the upper wall of a sectional dental flask, when positioned upon said base plate, and a tension member removably engaged with said clamping bolts and having a three point contact with said protection plate whereby, when said clamping nuts are tightened, said member will flex and yieldably secure together the sections of the flask.

7. In a clamping device for dental flasks, the combination of a non-flexible base plate, a plurality of threaded studs terminally secured therein and outwardly projecting from one side thereof, clamping nuts mounted upon the projecting ends of said studs, a tension plate adapted to be engaged with said nuts and between which and said base plate, the flask is adapted to be clamped, and said tension plate having a plurality of open ended slots adapted to receive said studs and whereby the tension plate may be removed from the studs without removing the nuts therefrom.

8. In a clamping device for dental flasks, the combination of a non-flexible base plate, a plurality of threaded studs terminally se-

cured therein in spaced parallel relation and outwardly projecting from one side thereof, clamping nuts mounted upon the projecting ends of said studs, a tension plate adapted to be engaged with said nuts and between which and said base plate, the flask is adapted to be clamped, and said tension plate having a plurality of tangential open ended slots adapted to receive said studs and whereby the tension plate may be removed from the studs without removing the nuts therefrom.

9. A clamp for dental flasks, comprising a base plate having a plurality of studs secured therein in spaced relation, nuts adjustably mounted upon the projecting ends of said studs, a tension plate adapted to be engaged with said studs and nuts and between which and said base plate, the flask is adapted to be clamped, and means per-

mitting said tension plate to be disengaged from said studs and nuts without removing the nuts from the studs.

10. A clamp for dental flasks, comprising a base plate having a plurality of studs secured therein in spaced relation, nuts adjustably mounted upon the projecting ends of said studs, a tension plate adapted to be engaged with said studs and nuts and between which and said base plate, the flask is adapted to be clamped, means for spacing said tension plate from the upper wall of the flask, to permit said plate to flex, when said nuts are tightened, and means permitting said tension plate to be disengaged from said studs and nuts without removing the nuts from the studs.

In witness whereof, I have hereunto set my hand this 14th day of March, 1927.

LAURITZ B. ANDRESEN.