May 13, 1947. S. A. LEADER 2,420,545

DENTAL FLASK

Filed Dec. 29, 1944 2 Sheets-Sheet 1

Fig. 1

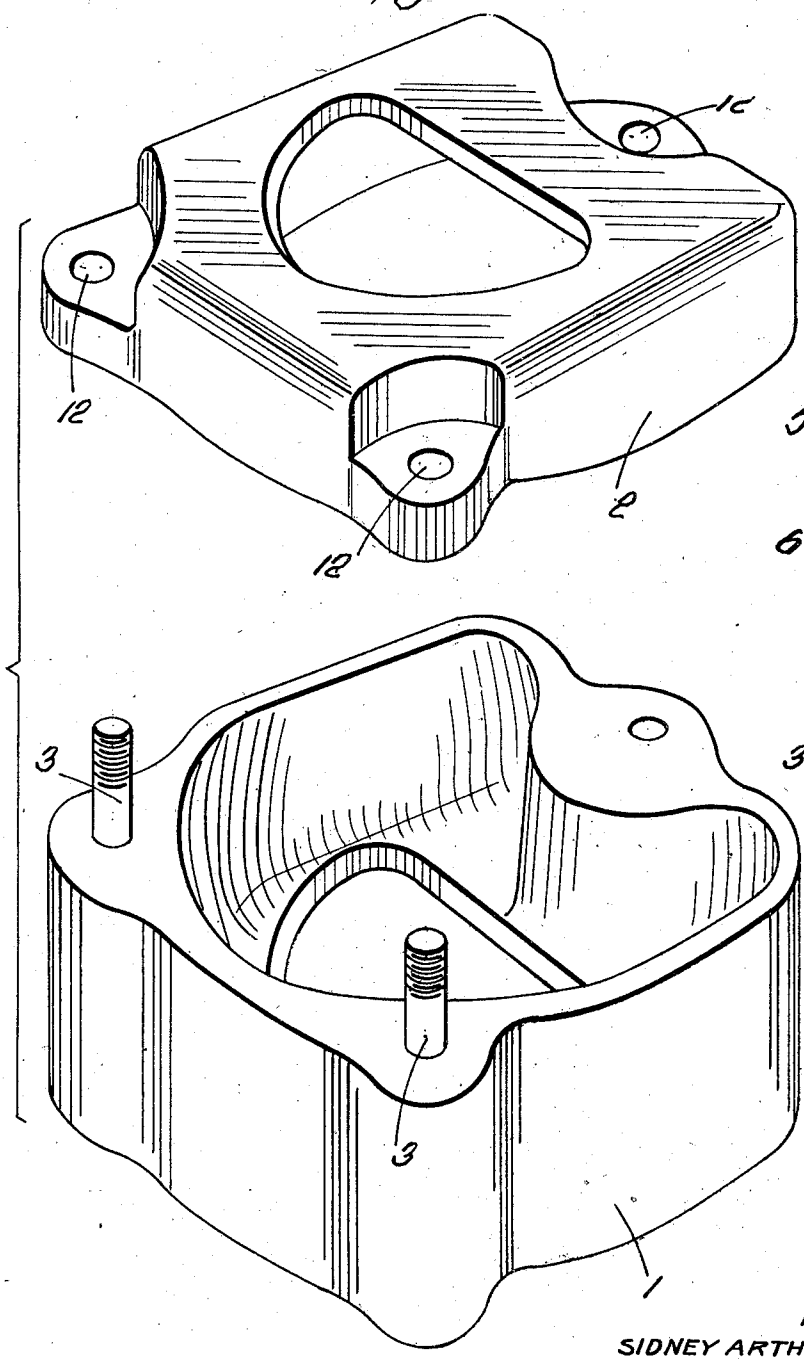
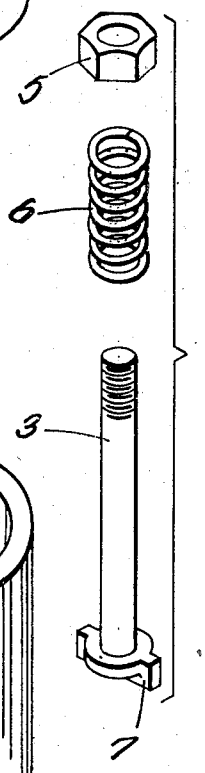


Fig. 2



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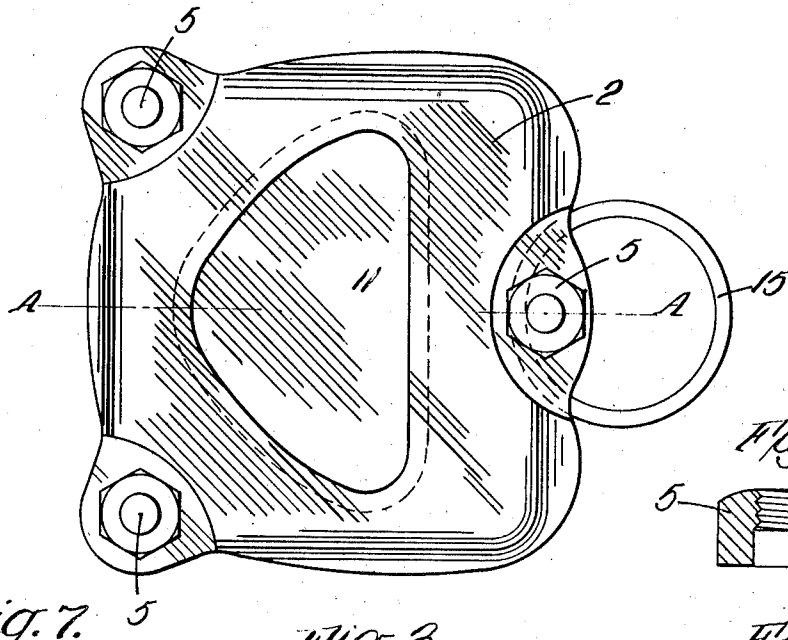


Fig. 3.

Fig. 5.

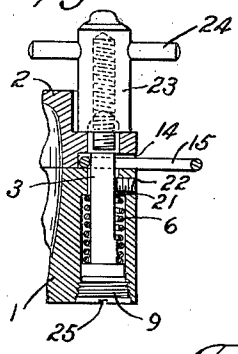


Fig. 7.

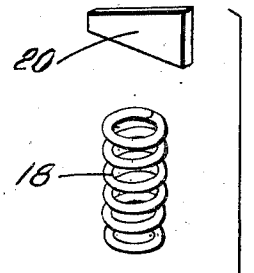


Fig. 6.

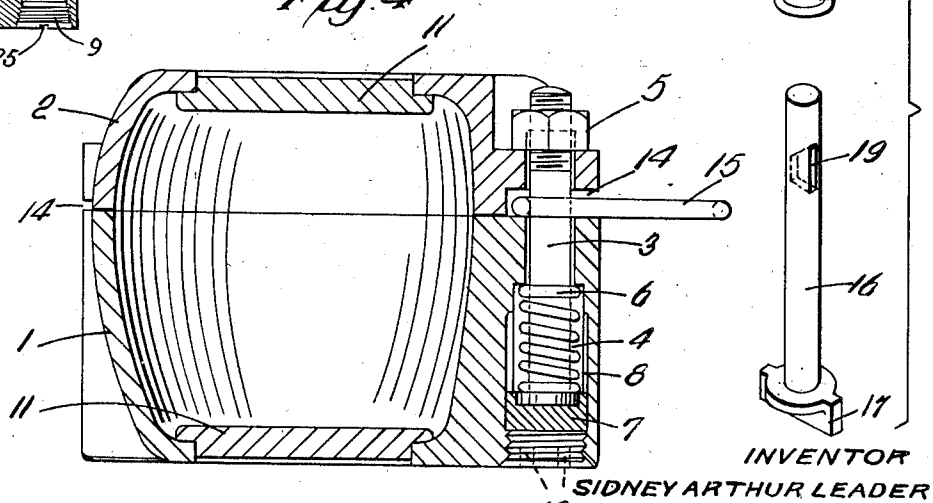


Fig. 4.

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DENTAL FLASK

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Application December 29, 1944, Serial No. 570,230
In Great Britain January 28, 1944

10 Claims. (Cl. 18—33)

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This invention relates to dental flasks.

As is well known many materials used for making dentures and in particular acrylic resins such as those made from a mixture of monomeric and polymerised methyl methacrylate contract during the curing process whereby defects are liable to arise in the finished denture.

Attempts have been made to overcome this disadvantage by tightening the nuts employed in some types of dental flask from time to time during the curing or by the use of clamps such as that described in my United Kingdom specification No. 553,079.

It is an object of the present invention to provide a dental flask having means integral therewith for exerting pressure on the denture material during curing.

It is a further object of the invention to provide in such a flask means for facilitating the removal of the plaster moulds from the flask after curing.

Accordingly, the present invention provides a dental flask comprising an upper and a lower portion, a plurality of spring-loaded alignment posts each slidably disposed in a chamber in either the upper or lower portion of the flask a portion of each of said posts projecting through a hole in the chamber, which is otherwise closed, said projecting portion of each of the posts passing through a hole in the other part of the flask and means for compressing the springs so that the portions of the flask are urged together.

According to a preferred embodiment the present invention provides a dental flask comprising an upper and a lower portion, a plurality of spring-loaded alignment posts each slidably disposed in a chamber in either the upper or lower portion of the flask, a portion of each of said posts projecting through a hole in the chamber, which is otherwise closed, said projecting portion of each of the posts being provided with a screw thread and passing through a hole in the other part of the flask and co-operating with a nut.

Instead of the alignment posts being provided with screw threads and nuts, they may be provided with slots into which wedges are driven to compress the springs.

In use the flask is slightly overfilled with the material from which the denture is to be made and the nuts tightened or the wedges driven in. As the material contracts during the curing process the two parts of the flask are constantly urged together by the action of the springs.

Preferably one of the posts is disposed at the

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back of the flask and is provided with a spring more powerful than the others to ensure that the back teeth of the denture are not higher than the front.

Preferably also the upper and lower walls of the flask are provided with detachable portions asymmetrically disposed so that on tapping these portions after the curing has been completed, the plastic moulds are removed more easily since leverage is exerted thereon.

The chambers are conveniently closed by means of screwed plugs and the bottoms of the posts are conveniently provided either with transversely projecting members co-operating with slots in the walls of the chambers to lock the posts against rotational movement, or a part of each post inside the chamber is provided with a flat which co-operates with a set screw passing through the wall of the chamber to lock the post against rotational movement.

Preferably also the nuts if used are provided with non-threaded portions at the bottoms thereof to facilitate engagement of the nuts with the screw threads of the posts and to allow the bottoms of the nuts to be screwed down below the ends of the screw threads of the posts.

The invention will now be further described by way of example with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of the flask with the upper and lower portions separated and one alignment post removed;

Fig. 2 is a view of one of the alignment posts with its associated spring and nut;

Fig. 3 is a top plan view of the flask;

Fig. 4 is a section on the line A—A of Fig. 3;

Fig. 5 is a sectional view of one of the nuts;

Fig. 6 shows a modified alignment post with its associated spring and wedge, and

Fig. 7 is a fragmentary view showing a modified device for locking the posts against rotational movement and also a preferred form of nut.

Referring to Figs. 1 to 5 of the drawings, the flask has a lower part 1 and an upper part 2. Three alignment posts 3 are disposed in chambers 4. Each alignment post is threaded at its upper end to receive a nut 5 and is surrounded by a spring 6. The bottom of each alignment post is provided with a transversely projecting member 7 co-operating with slots 8 in the wall of the chamber to prevent rotational movement of the alignment post. The bottom of each chamber is closed by a screwed plug 9 having two blind holes 10 for the reception of a key to screw and un-

screw the plug. The upper and lower parts are each provided with a removable member 11 (which is removed in Fig. 1 but present in Figs. 3 and 4). The alignment posts project through holes 12 in the upper part which is provided with recesses as shown to receive the nuts which have their lower parts 13 free from screw threads as shown in Fig. 5 for the purpose referred to above.

Parts are removed from the lower and upper portions 1 and 2 to provide recesses 14 into which levers can be inserted after the curing operation to facilitate the separation of the portions 1 and 2. One of the recesses 14 is also sufficiently large to receive a ring 15 as shown which facilitates the removal of the flask from the hot liquid or chamber, e. g. oven, in which the curing normally takes place.

Referring now to Fig. 6 of the drawings, the alignment post, spring and nut of Fig. 2 is replaced by the alignment post 16 having projecting members 17 (similar to the members 7 in Fig. 2). The spring 18 is similar to the spring 6 in Fig. 2. The alignment post has a slot 19 to receive the wedge 20.

The flask according to the present invention has the advantage that the clamping means is integral with the flask, the spring is enclosed and thus protected from contamination by the plaster. If desired a greater pressure can be exerted on the back of the flask by the use of a more powerful spring in the back chamber.

Furthermore the plaster can be easily removed by tapping the members 11 and the flask is of robust construction.

Referring now to Fig. 7 of the drawings, this shows a modification of the flask shown in Fig. 4, in which instead of the post 3 being locked against rotational movement by the projecting member 7 co-operating with the slots 8 the locking is effected by the set screw 22 bearing against the flat 21 on the post 3. This modification also shows a preferred form of nut 23 having a tommy bar 24 which avoids the use of a spanner. It also shows in place of the blind holes 10 a cut 25 into which a screw driver can be inserted for removing the screwed plug 9. The bolt 3 is tapered to the thread thereof, which frees the upper part 2, which is very desirable in dental practice when the upper part cannot descend vertically owing to undercuts in the denture but nevertheless the upper part 2 registers accurately when the bolt 3 rises on tightening the nut. Preferably the chambers 4 contain graphite or other lubricant.

I claim:

1. A dental flask comprising an upper and a lower portion, a plurality of chambers each having one closed end and an opening at the other end in one of said portions, a post slidably disposed in each of said chambers and having a portion projecting through said opening in said chamber, a spring in each chamber normally urging the post therein toward the closed end of said chamber, said projecting portion of each of said posts registering with a hole in the other portion of the flask and means cooperating with said other portion of said flask and said post for compressing the springs so that the two portions of the flask are urged together.

2. A dental flask comprising an upper and a lower portion, a plurality of chambers each having one closed end and an opening in the other end in one of said portions, a post slidably disposed in each of said chambers and having a screw threaded portion projecting through said opening in said chamber, a spring in each chamber normally urging the post therein toward the closed end of said chamber, said screw threaded projecting portion of each of said posts registering with a hole in the other portion of the flask and a nut co-operating with each of said screw threaded projecting portions and said other portion of said flask to urge the two portions of the flask together.

3. A dental flask comprising an upper and a lower portion, a plurality of chambers each having one closed end and an opening at the other end in one of said portions, a post slidably disposed in each of said chambers and having a slotted portion projecting through said opening in said chamber, a spring in each chamber normally urging the post therein toward the closed end of said chamber, said slotted projecting portion of each of said posts registering with a hole in the other portion of the flask and a wedge co-operating with each of said slotted projections and with said other portion of said flask to urge the two portions of the flask together.

4. A dental flask comprising an upper and a lower portion, a plurality of chambers each having one closed end and an opening at the other end in one of said portions, a post slidably disposed in each of said chambers and having a portion projecting through said opening in said chamber, a spring in each chamber normally urging the post therein toward said closed end said projecting portion of each of said posts registering with a hole in the other portion of the flask and means cooperating with said post and said other portion of said flask for compressing the springs so that the two portions of the flask are urged together, one of said posts having a spring more powerful than those of the other posts.

5. A dental flask comprising an upper and a lower portion, each of said portions having a detachable asymmetrically disposed plate forming part of a horizontal surface thereof, a plurality of chambers each having one closed end and an opening at the other end in one of said portions, a post slidably disposed in each of said chambers and having a portion projecting through a hole in said chamber, a spring in each chamber normally urging the post therein toward the closed end of said chamber, said projecting portion of each of said posts registering with a hole in the other portion of the flask and means cooperating with said posts and said other portion of said flask for compressing the springs so that the two portions of the flask are urged together.

6. A dental flask comprising an upper and a lower portion, a plurality of chambers having open opposite ends in one of said portions, a plug threaded into one end of each of said chambers, a post slidably disposed in each of said chambers and having a portion projecting through the other open end of said chamber, a spring in each of said chambers normally urging the post therein toward said plug, said projecting portion of each of said posts registering with a hole in the other portion of the flask and means cooperating with said posts and said other portion of said flask for compressing the springs so that the two portions of the flask are urged together.

7. A dental flask comprising an upper and a lower portion, a plurality of longitudinally slotted chambers each having one closed end and an

opening at the other end in one of said portions, a post one slidably disposed in each of said chambers and having a transversely projecting member cooperating with said longitudinal slot and also a portion projecting through said opening in said chamber, a spring in each chamber normally urging the posts therein toward said closed end said projecting portion of each of said posts registering with a hole in the other portion of the flask and means cooperating with said posts and said other portion of the flask for compressing the springs so that the two portions of the flask are urged together.

8. A dental flask comprising an upper and a lower portion, a plurality of chambers each having one closed end and an opening at the other end in one of said portions, a cylindrical post slidably disposed in each of said chambers and having a portion projecting through said opening in said chamber and a flat on a portion of the post inside the chamber, a spring in each chamber normally urging the post therein toward said closed end, a set screw passing through the wall of the chamber and adapted to bear against the flat to prevent rotational movement of said post, said projecting portion of each of said posts registering with a hole in the other portion of the flask and means cooperating with said posts and said other portion of said flask for compressing the springs so that the two portions of the flask are urged together.

9. A dental flask comprising an upper and a lower portion, a plurality of chambers each having one closed end and an opening at the opposite end in one of said portions, a post slidably disposed in each of said chambers and having a portion projecting through said opening in said chamber, said projecting portion of each of said posts registering with a hole in the other portion of the flask, a spring in each chamber and disposed around each of said posts normally urging said post toward said closed end of said chamber

and means cooperating with said posts and said other portion of said flask for compressing the springs so that the two portions of the flask are urged together.

10. A dental flask comprising an upper and a lower portion, three chambers having opposite open ends in the lower portion, a cylindrical post slidably disposed in each of said chambers and having a screw threaded portion projecting through an open end of said chamber and also a flat on a portion of the post inside the chamber, a plug closing the opposite open end of each of said chambers, a coil spring around each of said posts normally urging said post toward said plugs the spring around one of the posts being more powerful than the others, a set screw one passing through the wall of each chamber and adapted to bear against the flat of said posts therein to prevent rotational movement, said projecting portion of each of said posts registering with a hole in the top portion of the flask, and a nut provided with a non-threaded portion at the bottom thereof co-operating with each of said screw threaded portions and said top portion of said flask to urge the top and lower portions of the flask together.

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REFERENCES CITED

The following references are of record in the file of this patent:

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Certificate of Correction

Patent No. 2,420,545. May 13, 1947.

SIDNEY ARTHUR LEADER

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows: Column 5, line 2, claim 7, after "post" strike out "one"; column 6, line 16, claim 10, after "screw" strike out "one"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of July, A. D. 1947.

[SEAL]

LESLIE FRAZER,
First Assistant Commissioner of Patents.