

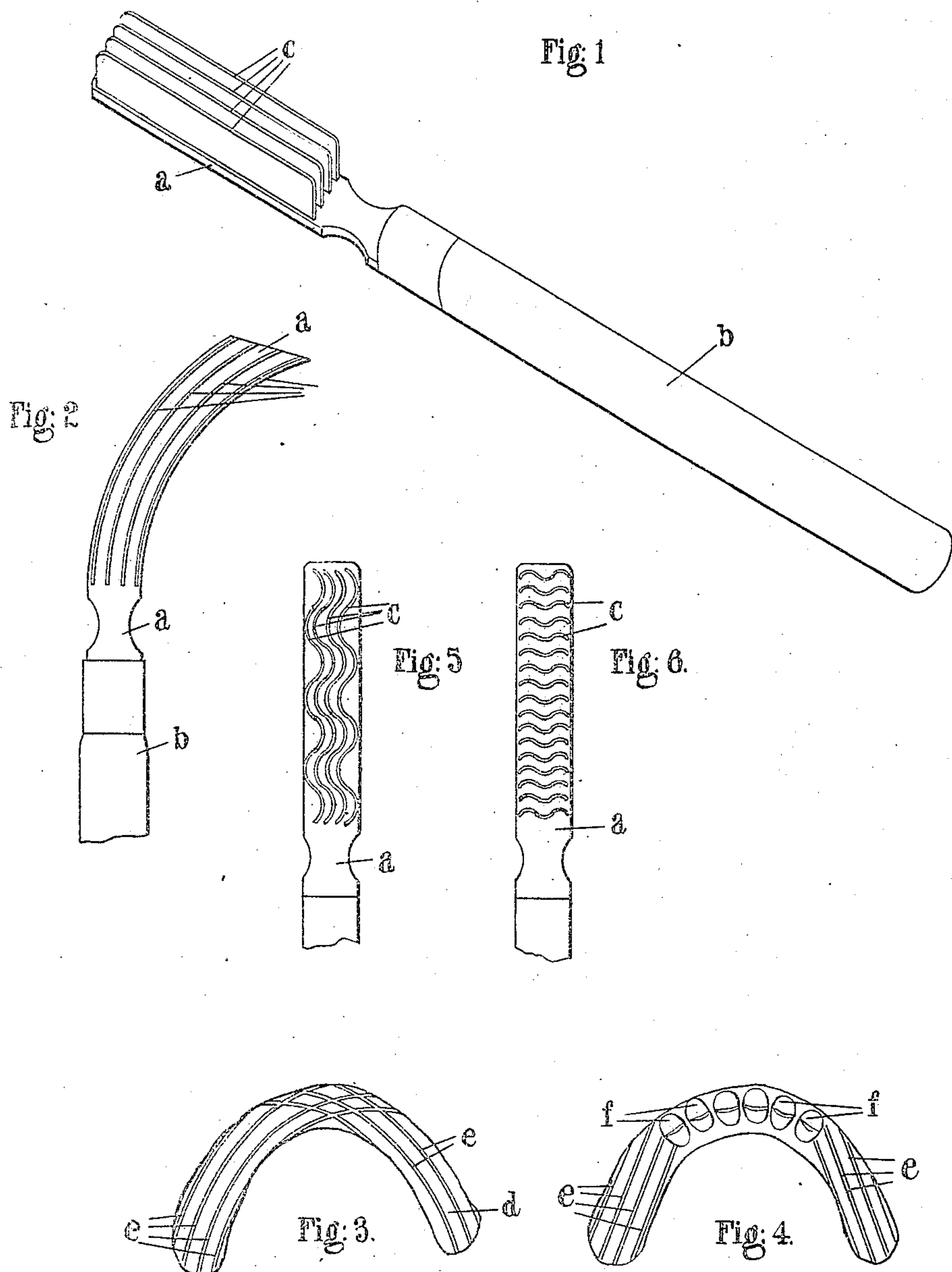
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J. MILLER.

INSTRUMENT FOR SOFTENING DENTAL TRIAL PLATES.

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Witnesses

Walter F. H. Foss
John A. Jordan

Inventor
Joseph Miller
per *Herbert Leffman*
Attorney.

UNITED STATES PATENT OFFICE.

JOSEPH MILLER, OF BEXHILL, ENGLAND.

INSTRUMENT FOR SOFTENING DENTAL TRIAL-PLATES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH MILLER, dentist, a subject of the King of Great Britain, residing at 1 Cantelupe road, Bexhill, in the county of Sussex, England, have invented a new and useful Instrument for use in Softening Dental Trial-Plates, of which the following is a specification.

The subject of this invention is an instrument designed to facilitate the work of a dentist in taking the "bite" of a human mouth, so that the operation may be performed more speedily and with more satisfactory results than hitherto. In the preparation of an artificial denture the first step is to take a cast of the patient's mouth, and from this cast a preliminary plate is made in wax or other suitable material, this plate having a thickened ridge around it in the position where the teeth should come, intervals being left in the ridge to correspond with any natural teeth which may be retained by the patient. This plate is commonly known among dentists as the "bite" or "trial-plate." Where all the teeth are absent, the thickened ridges of the upper and lower trial-plates represent an unbroken line corresponding to the alveolar borders of the upper and lower jaws. These ridges are usually set up or made slightly fuller or deeper than is required to give the normal approximation of the jaws when at rest, and before trying the bite in the patient's mouth the surfaces of the ridges of one or both of the trial dentures are softened in order that in closing the mouth the patient may cause the softened wax or composition to yield and to be pressed out slightly, thus giving the normal relationship of the jaws after one or more trials. Where there are any natural teeth remaining, the impressions of these are of course also shown on the softened surface of the opposite trial-plate.

This invention relates to the means employed for softening the ridges of the trial-plates in the above-described process. Hitherto warm water has been used in some cases for effecting the softening, the ridges being dipped in the water for a short time before the bite is tried in the patient's mouth. The objection to this procedure is that the warm water or the steam from the water softens the middle portion of the trial-plate and tends generally to distort and spoil the accuracy of this plate. In other cases the blade of a knife or spatula has been used, this blade being heated over a flame, after which the

ridge of the trial-plate is rapidly cut or slashed by the blade longitudinally and transversely to the desired depth, working from one side of the denture gradually round to the other side until the whole surface of the ridge is scored over. However quickly this may be done the knife rapidly loses its heat, necessitating frequent reheating, and in the time thus necessarily occupied, the surfaces of the wax or the like first softened cools and hardens, so that it is practically impossible to secure uniform softening of the whole surface of the ridge, which is so essential to securing a correct result. In the present specification there is described an instrument specially designed to effect this softening operation rapidly and thoroughly. This is illustrated in the accompanying drawings, in which—

Figures 1 and 2 show two useful forms of the instrument. Figs. 3 and 4 illustrate the use of the instruments shown in Figs. 1 and 2. Figs. 5 and 6 show modified forms of the invention.

The instrument shown in Fig. 1 consists of a flat blade *a*, of copper or other metal, fastened in a suitable handle *b*. Upon the blade are provided several thin longitudinal ridges or strips of metal *c*, projecting at right angles to the surface of the blade. These may be fastened to the blade in any desired manner. For instance, they may be set in slots in the blade; but they are preferably attached by silver solder. The whole of the metal part of the instrument may be electroplated or otherwise protected, if necessary.

In the form shown in Fig. 2 the blade *a* is curved to approximately the shape of the alveolar border of the mouth, and the ridges *c* also follow this curve.

To soften the surface of the trial-plate, the instrument is heated in a gas or spirit flame or otherwise, and then pressed on the ridge until the latter is softened to the required depth. For softening the ridge of a complete trial denture the curved tool shown in Fig. 2 is used, two successive applications of this tool being sufficient to soften the whole ridge of one plate. After the application of the softening instrument the trial-plate will have the appearance shown in Fig. 3. Here the ridge of the plate, which is composed of wax or a suitable composition, is indicated by *d*, while the traces left by the softener are shown at *e e*. For a partial denture or one in which some of the teeth have been already

inserted for trial purposes the straight tool of Fig. 1 is used where most convenient. Such a use is illustrated by Fig. 4, in which *ff* are teeth already on the plate *d*, and the straight marks made by the ridges *c* of the tool are shown at *e*.

One heating of the tool will suffice for softening the whole ridge to any required depth, and consequently the softening can be evenly effected, so that complete accuracy can be secured in taking the trial-bite. The taking of the trial-bite can be effected so quickly that there is no risk of the softening of the remaining surface of the trial-plate through repeated handling and trial in the patient's mouth. Moreover, the operation is less troublesome to the patient when it can be effected thus quickly and easily.

Finally, it is to be understood that the invention is not limited to the exact construction of the instrument or instruments as above set forth. For instance, it is not by any means necessary that the ridges *c* should be longitudinal and follow the shape of the blade; but this construction is preferable as a rule, because it permits the tool to be drawn along the ridge slightly in use. In alternative forms the ridges may be longitudinal but sinuous, as shown in Fig. 5, or they may be transverse, as in Fig. 6, or instead of ridges on the surface of a blade for scoring the bite surface of the soft denture any other forms of projections, such as pins or spikes, may be used set in suitable ways and successions upon the surface of the blade, or any convenient combinations of plain ridges and waved ridges, with or without pins or spikes, may be used. Further, each tool, or the curved tool particularly, may have the ridges or projections on both of its faces, so that after one set of projections has been used on one side of the

trial-plate the other set can be used on the other side by simply turning over the tool. Instead of making the curved tool of the shape of half the alveolar ridge said tool can be made to the shape of the complete ridge, if preferred, its breadth or width being such that the one tool can be used equally well for small or large dentures.

The blade of copper or the like on which the projecting operative surfaces are mounted should be of sufficient thickness to retain the heat for a time, so that the tool will not cool down too rapidly.

What I claim is—

1. An instrument for use in softening the ridges of trial dentures and the like, comprising a back plate and a handle attached thereto, and metallic projections attached to said back plate and adapted to be heated and used for softening the denture.

2. An instrument for use in softening the ridges of trial dentures and the like, comprising a back plate and a handle connected thereto, and a plurality of ridges of metal formed by strips attached at one longitudinal edge of the plate.

3. An instrument for use in softening the ridges of trial dentures and the like, comprising a back plate curved to approximately the shape of half the surface of the ridge of an average denture, a handle connected to the plate, a plurality of metallic projections on the plate adapted to be heated and used for impressing and softening the denture.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH MILLER.

Witnesses:

HUBERT A. GILL,
LEONARD E. HAYNES.