

Nov. 2, 1937.

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2,097,701

MACHINE FOR CONDITIONING FALSE TEETH

Filed Nov. 11, 1935

2 Sheets-Sheet 1

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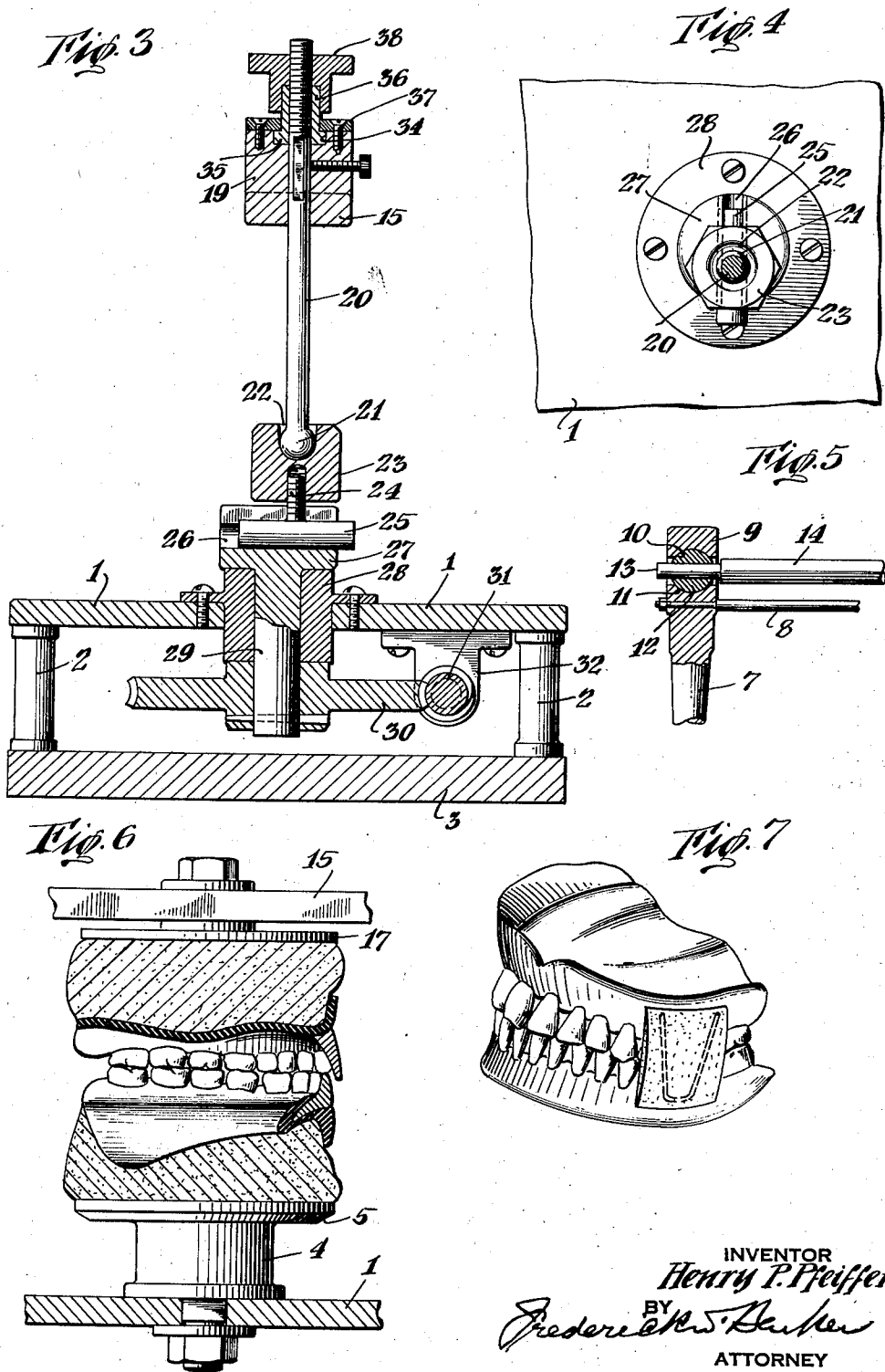
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UNITED STATES PATENT OFFICE

2,097,701

MACHINE FOR CONDITIONING FALSE
TEETH

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Application November 11, 1935, Serial No. 49,225

4 Claims. (Cl. 32—32)

This invention relates to machines for conditioning false teeth, and my improvement is directed particularly to mechanism having means for holding stationary one set of teeth and means for holding the other set opposed thereto in occlusive relation while it is being subjected to movement in an ellipsis; such ellipsoidal movement simulating approximately the masticatory action of the human lower jaw.

The machine part carrying the teeth set for one of the jaws, besides being subjected to elliptical movement in a horizontal plane, is caused to impose pressure upon the other set to induce, with the aid of an abrasive, a grinding action between the sets of teeth for performing the conditioning process. Such pressure may be imposed by the weight alone of the upper machine part, or this weight may be supplemented by spring tension.

Further my invention includes the provision of positive stop means, which may be regulated by micrometer means, to limit the degree to which the grinding operation may extend.

Still further my invention includes the provision of adjustment means whereby the range of the ellipsis may be varied at will, for wider or narrower paths of grinding operation.

Other features and advantages of my invention will hereinafter appear.

In the drawings:—

Figure 1 is a top plan view of my improved machine.

Fig. 2 is a side sectional view taken on the line 2—2 of Fig. 1, showing sets of teeth positioned for conditioning.

Fig. 3 is a front sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a detail plan view taken on the line 4—4 of Fig. 2.

Fig. 5 is a detail section taken on the line 5—5 of Fig. 2.

Fig. 6 is a side sectional detail showing the sets of teeth as mounted with plaster of Paris within the machine, and

Fig. 7 is a perspective view showing the sets of teeth as adjusted in occlusive relation and set with wax prior to placement in the machine.

In carrying out my invention I provide a plate or table 1, mounted as by legs 2 upon a base 3 and adapted on its upper surface to support the teeth conditioning mechanism.

Upon table 1 is fixedly supported a mount 4 upon which a disk 5 is secured, said disk having a series of holes 6 therethrough to serve as lodgement means for plaster of Paris that is employed

as a bed for teeth which are to be conditioned.

Posts 7 secured upon table 1 at one end thereof, and connected by a tie rod 8, each have a bearing head 9 which contains a socket composed of upper and lower opposed channels 10, 11. These channels are each concaved in cross-section and adapted to revolvably and slidably contain between them spherical members 12 which respectively are pierced and slidably mounted on bearing ends 13 of a shaft 14 that fixedly carries an arm 15 transversely disposed with respect to said shaft. Said arm 15, which is given a curve 16 to elevate it suitably for a purpose to be referred to hereinafter, is adapted to extend forwardly from shaft 14 and is of substantial thickness to accord it a desired degree of weight.

Secured to the underside of arm 15 is a disk 17, positioned to be in opposed relation to disk 5 and having lodgement holes 18 for plaster of Paris.

Arm 15, toward its forward end, has a vertical boss 19 which is pierced for the slidable reception of a rod 20, whose lower end is provided with a ball-like member 21, which is adapted to engage in a cup-shaped depression 22 formed in nut-like block 23. Said block 23 is engaged at its under side by a screw 24 which is centered upon and carries a transversely disposed cylindrical member 25 that is adapted to slidably engage a groove 26 provided therefor in a mount 27 which is revolvably supported by a fixed bearing member 28 secured to the table 1. A shaft 29 extended from mount 27 through bearing member 28 carries a worm gear wheel 30 below table 1. The gear 30 meshes with a worm shaft 31 that is journaled in bearings 32 depending from plate 1, said shaft carrying a pulley 33 for power driving. The ratio of worm to the gear is such that the relatively high speed of the shaft is translated through said gear to a suitably low speed for shaft 29 and mount 27.

The purpose of mounting arm 15 in the bearing heads 9 in the manner described is that the shaft 20 carried by the forward portion of said arm may be capable with said arm of describing an ellipsis while power is applied to drive shaft 31. Obviously, if screw 24 is centered in mount 27, to be in axial alignment with the axis of shaft 29 the rotation of said shaft can have no effect upon shaft 20 which will under such condition merely remain stationary during such rotation. But if screw 24 be axially offset, ever so slightly, the effect is to sway shaft 20 and hence arm 15, causing a movement thereof in an orbit

about the axis of shaft 29. To produce this effect the nut-like member 23, which has been tightened by screw 24 against mount 27, to be rotatable therewith, is loosened from said screw and then is shifted, with member 25, axially of said member, in groove 26, so that one end of member 25 projects beyond groove 26—whereas in the normal state the length of member 25 coincides with the length of groove 26 so that the ends of said member are flush with the groove ends.

Just according to the extent of shifting member 25 axially so is the orbit or elliptical path varied in extent for the shaft 20 and consequently for the arm 15, with the degree of adjustment determined by tightening nut member 23 upon screw 24.

Since the arm 15 carries one set of teeth in opposed relation to the other fixed set, as will be hereinafter described, so the orbital movement given arm 15 causes the set of teeth movable therewith to have a grinding action of an elliptical nature upon said stationary set of teeth.

The rod or shaft 20, which I also term a pole, is the element which provides, in the path of the ellipsis described thereby, the pull and push that performs the function of reproducing the path of curvature between the sets of teeth in similitude to the natural masticatory movement of the human lower jaw upon the upper jaw.

In preparing the sets of false teeth for conditioning they are placed together in occlusive relation as shown in Fig. 7 and are held in that relation with wax in the manner well known in this art and then in the manner also well understood are mounted respectively in plaster of Paris upon the disks 5, 17. The depths of the plaster beds determining the extent of space separating arm 15 from the table.

When the false teeth are set in this relation the wax holding the sets together is removed and the shaft 20 is to be adjusted in its relation to arm 15 so that the ball 21 at the end of said shaft is held clearly above the base of socket 22. This means that the upper set of teeth, under the full weight of arm 15, is supported upon the lower set, and the amount of clearance separating ball 21 from the base of socket 22 represents, in the degree of drop permitted for shaft 20, the extent to which the grinding operation between the sets of teeth can be performed.

It is to be understood that the sets of teeth, in their occlusive relation and as set in the apparatus, are placed exactly toward the axis of shaft 29, which axis is immovable, so that the elliptical movement that ensues in the operation of the machine simulates the planetary motion of the lower jaw and thus communicates a natural grinding action between the upper and lower sets of teeth.

In providing means of axial adjustment for shaft 20 relatively to arm 15 and the rest position of the upper set of teeth upon the lower set, I employ these instrumentalities: Seated in a recess 34 in the top of boss 19 is a collar 35 forming the base of an interiorly threaded sleeve 36, which sleeve is screwed upon shaft 20. A plate 37, secured to boss 19, and orificed for the reception of sleeve 36, engages collar 35 to revolvably retain sleeve 36, and a knurled thumb nut 38, fitting over shaft 20 is connected to sleeve 36 as by set screw 39. Thus, upon rotating thumb nut

38 shaft 20 may be raised or lowered through boss 19. When shaft 20 is shifted to a desired position it is to be set therein by means of a set screw 40 entered through boss 19 and impinging upon the shaft 20 for that purpose.

The thumb nut 38 may be provided with numeral indications to register for example degrees of vertical adjustment for shaft 20 for the predetermined regulation of the depth to which the teeth are to be ground.

To supplement the pressure imposed by the weight of arm 15 in the teeth grinding action I may add the tension of a spring 41 which connects said arm to the table.

Variations within the spirit and scope of my invention are equally comprehended by the foregoing disclosure.

I claim:—

1. A machine for conditioning false teeth comprising a table, means thereon to fixedly support a set of false teeth, bearing means carried by said table at one end thereof, an arm loosely journaled at one end in said bearing means, said arm supporting a companion set of false teeth in occlusive, gravity pressure relation to said fixedly supported set, a revoluble member, having a horizontal groove, mounted on said table, means to rotate said member, an axially adjustable, cylindrical member carrying a centered upstanding screw, a nut-like block having a cup-shaped depression in its upper surface, and a pole having a ball-like end revolvably fitting said depression, said pole, according to the degree of axial adjustment of said cylindrical member, communicating movement through an ellipsis to said pole and thence to said arm and the set of teeth carried thereby.

2. The subject matter of claim 1 characterized by the provision of tensional means, connected to said arm and said table, supplementary to gravity, in applying pressure of one set of teeth upon the companion set for the grinding operation.

3. A machine for conditioning false teeth embodying means to fixedly support a set of false teeth, an arm supporting a companion set of false teeth in occlusive, gravity pressure relation to said fixedly supported set, bearing means loosely journalling one end of said arm, a revoluble member having a groove, an adjustable element mounted in said groove, a block carried by said adjustable element and a pole having its lower end projecting into said block, said pole, according to the degree of adjustment of said adjustable element, communicating movement to said supporting arm and the set of teeth carried thereby.

4. A machine for conditioning false teeth embodying means to fixedly support a set of false teeth, an arm supporting a companion set of false teeth in occlusive, gravity pressure relation to said fixedly supported set, bearing means loosely journalling one end of said arm, a revoluble member having a horizontal groove, an axially adjustable element mounted in said groove and having a centered upstanding screw, a block carried by said screw, and a pole revolvably carried by said block, said pole, according to the degree of adjustment of said adjustable element, communicating movement through an ellipsis to said pole and thence to said supporting arm and the set of teeth carried thereby.

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