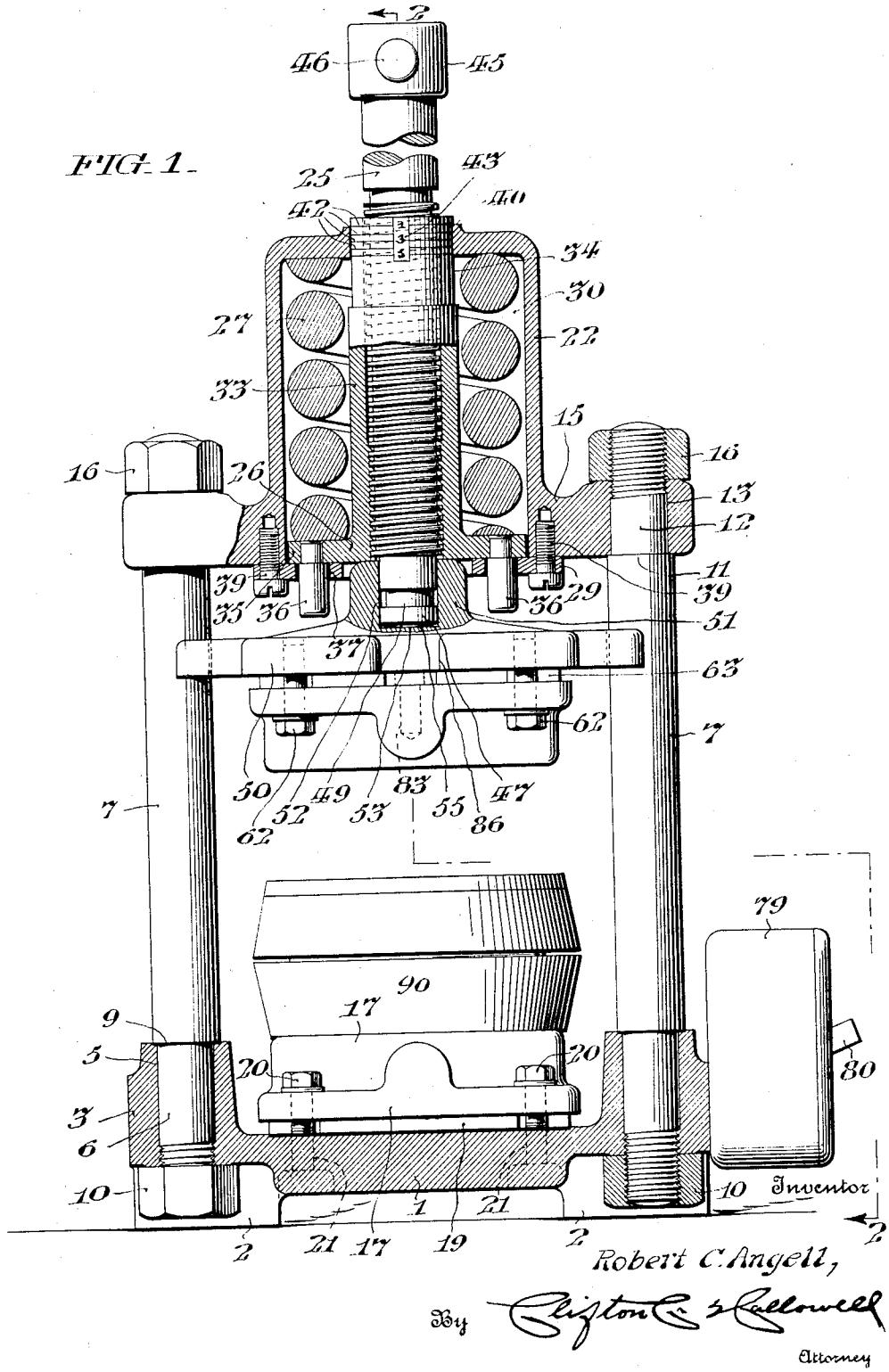
Jan. 2, 1934. R. C. ANGELL 1,941,780

DENTAL FLASK PRESS

Filed Jan. 25, 1933 2 Sheets-Sheet 1

FIG. 1.



Inventor

Robert C. Angell,

By Clifton C. Gallowell

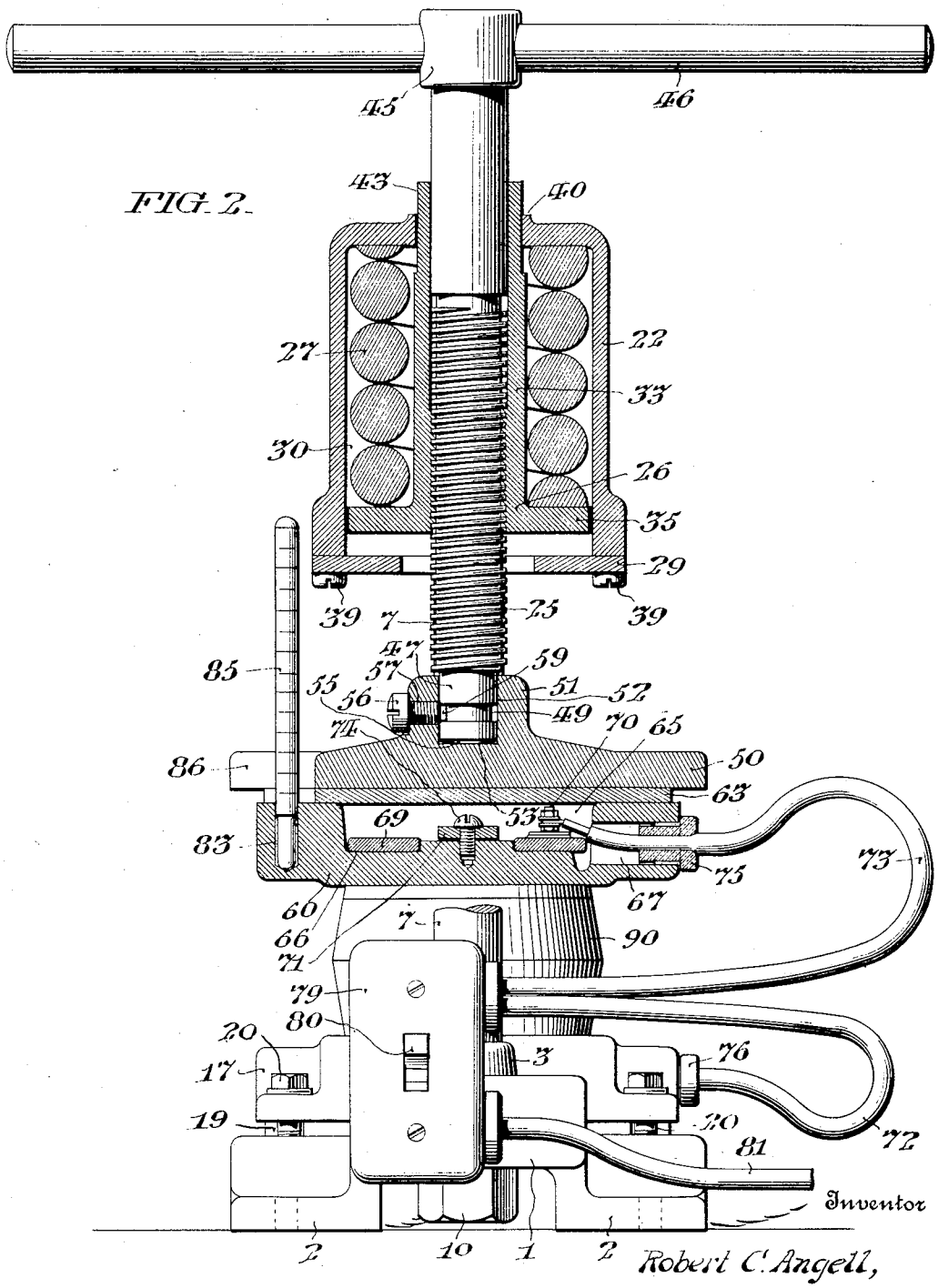
Attorney

Jan. 2, 1934. R. C. ANGELL 1,941,780

DENTAL FLASK PRESS

Filed Jan. 25, 1933 2 Sheets-Sheet 2

FIG. 2.



Inventor

Robert C. Angell,

By Clifton C. Hallowell

Attorney

Patented Jan. 2, 1934 1,941,780

UNITED STATES PATENT OFFICE

1,941,780

DENTAL FLASK PRESS

Robert C. Angell, Prince Bay, N. Y., assignor to The S. S. White Dental Manufacturing Company, a corporation of Pennsylvania

Application January 25, 1933. Serial No. 653,435

4 Claims. (Cl. 18—33)

My invention relates particularly to that class of presses that are adapted to apply a yielding pressure upon the flask, and is especially directed to that type of presses that may be properly termed dry heat presses and in which the heat is generated by an electric current, preferably applied through the platens between which the flask is pressed.

The principal objects of my invention are to provide a dental flask press having its component parts so coordinated as to afford a balanced, compact, inexpensive and efficient structure in which safety and ease of uniform operation are paramount.

Other objects of my invention are to provide a dental flask press in which the denture material within the mold in the flask may be so yieldingly accommodated as to insure its entrance into all parts of the mold cavity to form a denture structure of uniform density.

Further objects of my invention are to provide a dental flask press with means whereby the relative movement of the press parts in their compressing action on the flask automatically indicates at all times the pressure being exerted upon the denture material within said flask.

My invention contemplates such a swiveled connection between the upper platen and the power shaft as to permit a limited tipping of said platen relative to the axis of the shaft whereby it may accommodate itself to flasks in which the top may be slightly tilted with respect to the flask supporting surface of the lower platen, or wherein the top and bottom of the flask are not parallel.

Specifically stated, the form of my invention as hereinafter described comprehends a dental flask press having a base provided with standards supporting a yoke frame having a spring housing through which the actuating screw threaded shaft and its flanged sleeve-nut extend, a heavy spiral spring surrounding the sleeve-nut and shaft and bearing at its opposite ends against the flange of said sleeve-nut and the upper wall of said housing respectively and tending to force them apart, an upper platen insulatably connected with the upper platen carrier which is swivelly connected with said screw threaded shaft, said upper platen being movably related cooperatively with an opposed stationary platen insulatably supported on said base, and a thermometer carried by one of said platens to indicate the variations in the temperature.

My invention also includes all of the various novel features of construction and arrangement as hereinafter more definitely specified.

In the accompanying drawings, Figure 1 is a central vertical sectional view of a presss constructed in accordance with my invention, certain parts being shown in elevation for convenience of illustration; and Fig. 2 is a central vertical sectional view taken transversely to the plane of section shown in Fig. 1 on the staggered dot and dash line 2—2 indicated in said figure and showing the lower portion of the press structure in elevation for convenience of illustration.

In said figures, the base 1 rests upon its feet 2 and has the upwardly projecting bosses 3 having bores 5 through which the reduced lower threaded ends 6 of the yoke supporting standards 7 extend, and said standards are retained, with their shoulders 9 against the top of said bosses, by the nuts 10.

The upper ends 12 of said standards 7 are similarly reduced and threaded to form the shoulders 11 and extend through suitable apertures 13 in the yoke 15 which is supported on said shoulders 11 and retained thereon by the nuts 16.

An electrically heated platen 17 is mounted on the base 1 with an interposed plate 19 of heat insulating material, and is retained thereon by the stud bolts 20 in threaded engagement with suitably disposed threaded apertures 21 in said base.

The yoke 15 comprising a flat topped dome or housing 22 for the actuating shaft assembly including the threaded shaft 25, the collar or nut 26 cooperative therewith, and the spring 27, includes the retaining plate 29 partially closing the lower end of the housing chamber 30 and affording a support upon which the collar or nut 26 normally rests.

Said collar or nut 26 comprises the sleeve 33 in threaded engagement with the screw-threaded shaft 25 and the horizontal flange 35 provided with the depending guide studs 36 preferably riveted thereto and preventing rotation of said nut 26 by extending through suitably provided apertures 37 in the retaining plate 29 which is secured to the under face of the yoke 15 by the stud-bolts 39.

In the normal position of the collar or nut 26 the upwardly extending sleeve 33 has its reduced end portion 34 projecting through and slightly above the upper face 40 of the housing 22 and said reduced end portion is conveniently provided with graduations comprising scores 42 indicating graduated pressures, and said scores 42 are associated with the panel 43 faced on said sleeve and having the numerals thereon indicating the pressure values of the spring effort when compressed.

The threaded shaft 25 has the upper terminal head fitting 45 through which the handle-bar 46 extends and by which it may be rotated, and said shaft has its lower reduced end portion 47 provided with the annular groove 49 by means of which the upper platen carrier 50 is swivelly engaged to the shaft 25.

Said upper platen carrier 50 comprises a plate having a substantially flat under surface and having an upwardly projecting boss 51 provided with a cylindrical socket 52 therein to receive the reduced end portion 47 of said shaft 25, loosely fitted therein to permit tipping of the platen 60 relative to the shaft axis, and to provide an end bearing surface 53 against which the spheriform end 55 of the threaded shaft 25 bears.

The upper platen carrier 50 is retained in swivelled engagement with said shaft 25 by the retaining screw 56 which is in threaded engagement with a radial aperture 57 provided in said boss 51 and disposed in registry with the groove 49, as shown in Fig. 2, and which has its reduced end 59 projected into said groove 49, thus permitting relative rotation of said shaft 25 and platen carrier 50 to effect vertical reciprocation thereof by reason of the cooperative action of the shaft 25 and nut 26.

The flat under surface of the platen carrier 50 affords convenient attachment of the electrically heated upper platen 60 which is attached to the platen carrier 50 by the stud bolts 62 with a plate 63 of heat resisting material interposed between it and the flat under surface of said platen carrier 50.

Each of the platens 17 and 60 are recessed to form the heat chamber 65 having a broad annular groove 66 and provided with a lateral passageway 67 through which electric current conducting wires may be threaded, see Fig. 2, the open side of the chambers 65 being closed by the heat insulating plates 19 and 63 respectively.

Disposed in the groove 66 of each of the platens 17 and 60 is an annular heating unit 69 having terminals 70, such as illustrated in the upper platen in Fig. 2, to which the wires of the electric conductors 72 and 73 are respectively attached. Said units 69 are preferably retained in said groove 66 by the strap 71 having its ends overlying said units 69 and clamped down thereon by the screw 74.

The conductor 72 extends through the insulation bushing 75 in the passageway 67 of the upper platen 60, and the conductor 73 extends through the insulation bushing 76 in the lower platen 17. Said conductors 72 and 73 are connected through the switch 79, having the controlling lever 80, with the power supply cord or conductor 81 which may be provided with the usual plug to engage in any available plug socket.

The upper platen 60 is provided with a socket 83 arranged to receive the thermometer 85, which indicates the heat of said platen and which projects upwardly through a suitably provided recess 86 in the edge of the upper platen carrier 50.

As illustrated in Fig. 1, the press is in its normal or inoperative position with a flask 90 resting upon the lower platen 17 loaded and ready to be pressed, and, as illustrated in Fig. 2, the press is shown in position to exert yielding pressure upon said flask.

Obviously, the pressure that is brought to bear upon the flask 90 is yielding, for, as illustrated in Fig. 2, any rotation of the threaded shaft 25 after the descending platen 60 engages the flask 90 tends to force the nut 26 upwardly to compress the spring 27 so that the pressure increases in accordance with the compression of said spring.

My invention is advantageous in that by so disposing the spring and threaded power shaft on a common axis, the pressure exerted by rotation of said shaft is so balanced that a direct centralized axial yielding thrust is exerted upon the upper platen 60 to force it toward the lower platen 17 in such a manner that the resultant pressure will substantially coincide with the shaft axis; more specifically, the coincidence of the axes of the housing, spring, nut and screw shaft effects a balancing of the axial forces acting on these cooperative members without appreciable bending moments that might be due to any relative offset of these acting axial forces.

I do not desire to limit my invention to the precise details of construction and arrangement as herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention as defined in the appended claims.

Having thus described my invention, I claim:

1. A dental flask press comprising a frame having a mounting for an actuating screw-shaft, an electrically heated flask supporting platen on said frame, a screw-threaded-shaft rotatable in said mounting, a nut having a flange and a sleeve in threaded engagement with said shaft, a spring embracing said sleeve and having one end bearing against said frame and the other end bearing against said flange and tending to thrust said nut toward said platen, a retainer for said nut limiting its spring pressed movement, and an electrically heated platen carried by said shaft and axially movable therewith to press a flask, such pressure being gradually increased by relative axial movement of said nut on said shaft to effect compression of said spring.

2. A press comprising a frame having a support for the article to be pressed and having a mounting for a screw-threaded shaft assembly, a screw-threaded shaft rotatable in said mounting, a nut having a flange and a sleeve threaded on said shaft and provided with graduations indicating its position in said frame, a spring embracing said sleeve and bearing against said flange to force said nut toward said support, a retainer serving to limit the spring pressed movement of said nut, means preventing the rotation of said nut, and a platen swivelly mounted on said shaft in opposition to said support.

3. In a device of the class described, the combination with a frame, of a platen supported in stationary relation with said frame, a nut movably captive in said frame, a shaft in threaded engagement with said nut, a spring embracing said shaft tending to force said frame and nut in opposite directions, and a platen movable axially with said shaft relative to the stationary platen.

4. In a device of the class described, the combination with a frame including a stationary flask support, of a spring housing in stationary relation to said flask support, a nut in said housing movable toward and from said support, a shaft in threaded engagement with said nut, and a spring in said housing tending to force said nut toward said support.

ROBERT C. ANGELL.