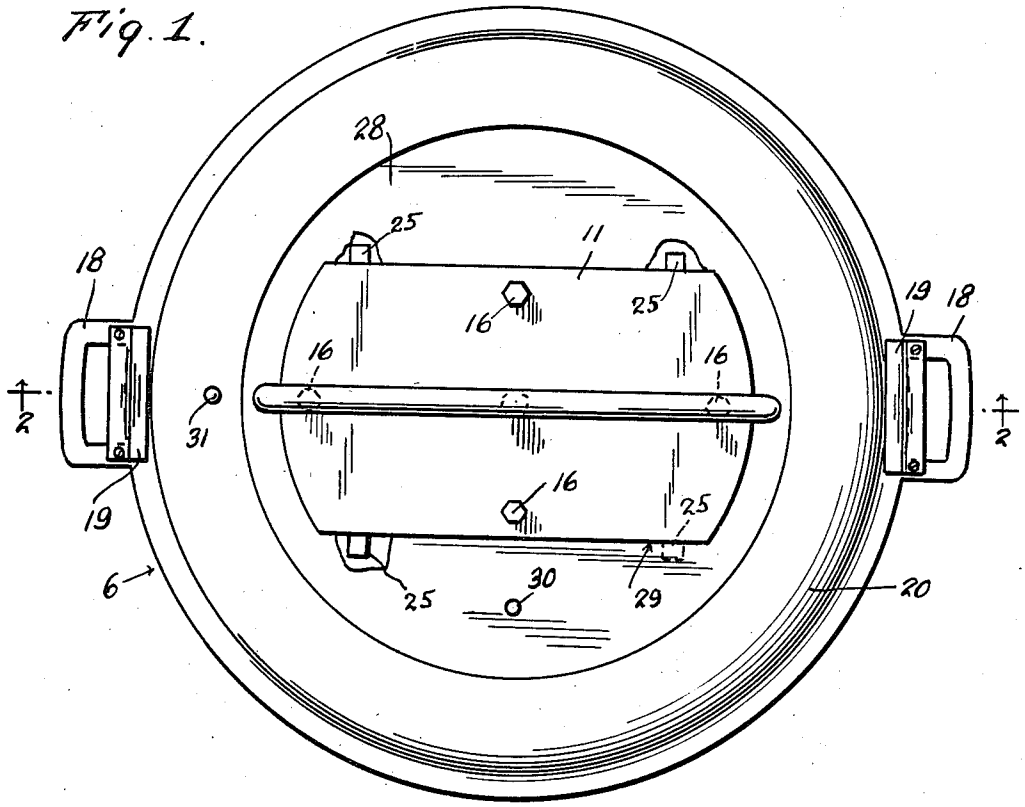
Sept. 3, 1935. F. S. TRUSLER 2,013,368

DRY HEAT MOLDING UNIT FOR MOLDING ARTIFICIAL DENTURES

Filed Jan. 24, 1934 2 Sheets-Sheet 1

Fig. 1.



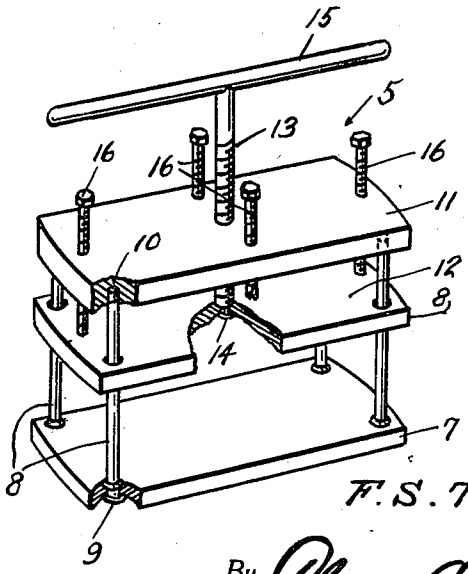
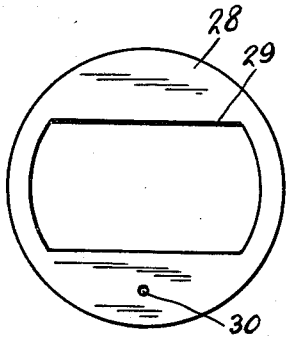


Fig. 3.

Fig. 4.



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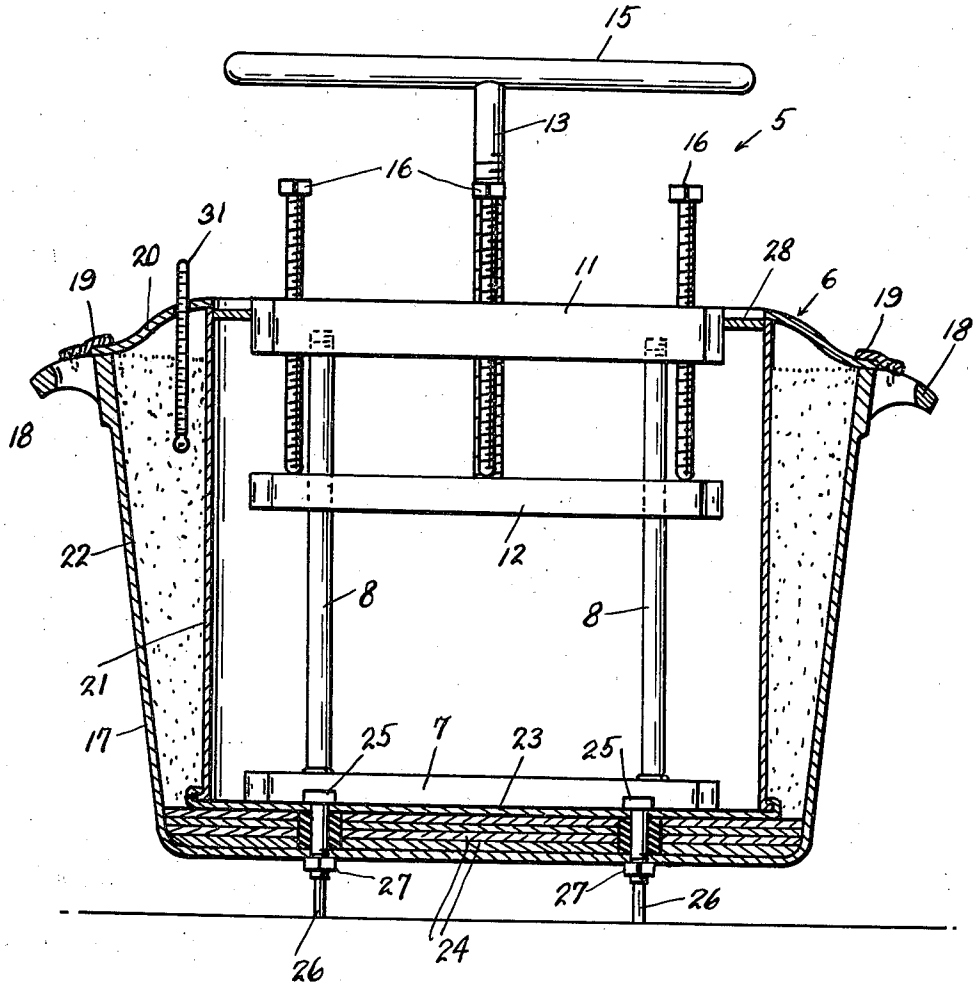
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Fig. 2.



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DRY HEAT MOLDING UNIT FOR MOLDING ARTIFICIAL DENTURES

Frank S. Trusler, Vernon, Tex.

Application January 24, 1934, Serial No. 708,145

3 Claims. (Cl. 18—7)

This invention relates to an ingenious method and means susceptible of practicable employment in the perfection of a novel technique for making artificial dentures.

It is a matter of common knowledge to those skilled in this particular line of endeavor, and those familiar with the prior state of the art that devices for accomplishing this task are of numerous types and are employed in the many and diversified methods of constructing artificial dentures in the profession.

Being reasonably well conversant with the development of the art to date and mindful of the many contingencies and difficulties encountered in perfecting work of this class I have discovered the need for the development and presentation of what I call a "dry heat technique" calculated to better fulfill the requirements of appliances of this type and of such nature as will find favor and endorsement in the trade and the profession.

One phase of the invention is directed toward and relates to the provision of a more satisfactory type of dental flask press, the same being not only aptly fitted for the special purposes intended, but characterized by features of accommodation and adaptation which transcend those found in similar prior art presses.

In keeping with the logical ideas which have prompted this development I have accomplished this desired end through the adoption and use of a triple plate press wherein the intermediate plate is vertically adjustable by a hand regulated feed screw, scientifically mounted and balanced for uniformity of action, and backed up by selectively useable set screws designed to promote proper reproduction work and to avoid distortion by overcoming unequal stresses and strain.

No less important is the adoption and use of a special heater with which the unique press is coordinated, said heater being expressly designed and constructed to provide controlled heat uniformly gauged and maintained and of an indirect nature to insure against disastrous results in the formation of the work such as are frequently encountered in present day arrangements.

Referring now to the illustrative drawings wherein like numerals are employed to designate like parts throughout the views:

Figure 1 is a top plan view of the complete assembly showing the association of the improved dry heat device and companion dental press.

Figure 2 is a vertical sectional view, with portions in elevation, the section being taken approximately on the plane of the line 2—2 of Figure 2.

Figure 3 is a fragmentary sectional and elevational view of the dental press, as a unit, disclosing the features of construction.

Figure 4 is a top plan view of a removable heat retaining closure or lid.

Referring now to the drawings by detail reference characters and devoting attention primarily to Figure 2 it will be observed that the dental flask press is indicated, as a unit, by the numeral 5 while the dry heat device is differentiated by the numeral 6. These two parts are especially fashioned for coordinate relationship and embody mutual features performing their proportionate share necessary to the accomplishment of complete and dependable results.

I shall first describe in detail the dental press unit 5. This comprises a substantially rectangular base plate 7 to the corners of which upstanding bolts 8 are connected. By preference the lower ends of the bolts are indicated at 9 and rotatably connected with the base plate and rise therefrom to function as uprights or standards. The upper end is screw threaded as at 10 and threads into a socket in the under or bottom of the top plate 11, this plate being of corresponding shape and dimension. The intermediate or remaining plate, which is also rectangular, is denoted by the numeral 12 and is in the nature of a follower plate and serves primarily as a clamping and pressure producing plate to uniformly bear upon and successfully close the molded denture contained in the flask (not shown). In practice the flask is placed between the base plate 7 and the movable pressure plate 12. The corner portions of the plate 12 have apertures which loosely slide upon the standards or uprights 8. This plate 12 is raised or lowered through the instrumentality of a feed screw 13 threadedly connected with the top plate 11 at the center thereof and swivelly connected as at 14 with the central portion of the follower plate. A suitable handle 15 is provided to facilitate operation of this feed screw.

To promote uniformity and stability of action I have found it practicable to utilize a plurality of set screws. I have shown four of the set screws and they are denoted by the numerals 16 and threaded downwardly through the top plate with their lower ends engageable with the top surface of the follower plate 12. These set screws are selectively usable depending upon the direction of thrust or pressure required as the molding operation is carried on. It will be ob-

served that two of the set screws are at opposite ends of the plate 11 and the remaining two opposite each other on the longitudinal sides and substantially opposite the feed screw 13. This provides for the desired equidistant placement and promotes uniformity and selectivity of action. Once the proper adjustments of the follower plate 12 is had, the set screws can be turned down to firmly lock the follower plate against displacement. It will be noticed that the openings at the corners of the plate 12 is sufficiently large to allow slight self-levelling action of said plate. Moreover the swivel connection 14 may be sufficiently loose to permit this result to be attained.

Considering now the construction of the heater it will be observed that the numeral 17 in Figure 2 designates a cast iron vessel which is here used as a sand pot. If desired it may be provided at its top with diametrically opposed hand grips 18 for convenient handling. Also at this point I provide retaining clips 19 which serve as retainers for the annular cover 20. This cover has its outer marginal edge resting upon the rim of the pot or vessel and its inner peripheral edge resting upon the internal shell. This shell is in effect an inner receptacle and is fixedly mounted in the outer vessel. It comprises an upstanding relatively thin metal wall 21 spaced from the rim of the vessel to provide a compartment for the reception of the heat retaining sand or equivalent material 22. The bottom of this inner receptacle is spaced above the bottom of the pot and between this elevated bottom 23 and the bottom of the outer vessel I provide superimposed sheets of asbestos 24. These sheets of asbestos are circular in form and correspond in diameter to the interior of the outer vessel.

Special attention is invited to a plurality of assembling bolts 25. The headed ends of these bolts are located on the interior of the inner receptacle and occupy an order or position providing a space between themselves which is just such as to permit the base 7 of the press to be located therebetween. Hence the headed ends of the bolts prevents shifting of the press. The bolts extend down through and beyond the bottom of the outer vessel or pot as indicated at 26. These extending ends are employed as stabilizing pins. By engaging the grate or grid on the stove (not shown) they prevent shifting or movement of the entire heater and press. Thus by virtually locking the heater to the stove and the press to the heater mishaps are avoided. Incidentally the numerals 27 designate the external retaining nuts for the bolts and these are clamped firmly against the under side of the bottom of the vessel to connect the liner or shell to the vessel and to hold the asbestos sheets assembled. This triple function of the bolts 25 must not be overlooked. I next call attention to a removable lid 28 which fits snugly into the upper open end of the shell or liner and which has an opening 29 which surrounds the edge portion of the top plate 11 of the press. This is provided to effectively trap the heat and to insure effective and expeditious heating results. If desired this lid may be provided with a port 30 which can be used as a vent as well as an opening through which a thermometer may be inserted to gauge the internal temperature of the space in which the press is located. The numeral 31 in Figure 2 designates a gauge carried by the cover and located in the sand 22 as a further precautionary feature.

When the impression of the dental arch and ridge has been taken and from it a cast prepared, we find, in many cases, outstanding ledges, with nothing at the base for support. In such cases with nothing to control the pressure used in closing the flask, a broken cast is the result. With the four set screws 16 employed the molding can be done slowly, with regulated pressure.

In some cases we often have an excess of denture material at one place to bind and prevent complete closure of the flask. With my arrangement it is permissable to release the pressure on the opposite side, and the full side may be closed with perfect safety. This technique is not permissable with any other make or style of denture press.

The denture material should be molded at a certain temperature in a given length of time. Without the correct number of adjustable set screws at the particular place in many cases this would be impossible.

Then too, the entire flask, molding press and all can be unitarily removed instantly from the "heat". Moreover, when the molding has been completed with the flask closed, there is nothing to do but cool slowly in the same molding press. With the electrically heated presses it is necessary to release the pressure and promptly transfer the case to a flask press. This is extra work and poor practice, as the relaxing sponge-like denture material may draw the teeth from their intended fixed places and when the pressure again is applied the teeth are out of relation.

Very little practice is required to learn how to regulate the temperature by turning the flame of the gas or oil stove up or down as needed.

The preheating of the flask is done as the temperature of the heat retainer is being obtained. No extra hot plate to be used as the technique of all electrically heated presses require. This is another advantage as it saves time and expense. Besides that volume of heat dries out and heats up the flask and investment material uniformly and at the same time obtains the right temperatures for pressing.

With a dry heat electric press such as is now frequently used, the heat must penetrate the flask, and if any of the denture material comes in contact with the flask it burns. Many times the investment is overheated and the denture is scorched causing it to be brittle and discolored.

When the temperature of the sand in the side walls shows 300 degrees F. the thermometer of the top plate of the press near the molding flask will show about 270 degrees F. the right temperature for molding in most cases.

The method of assembling the flask and disposition thereof in the press while removed from the heater being well known, need not be described. It might be mentioned however that after the press is inserted into the heating space or shell of the heater it is surely retained in place by the heads of the bolts 25 and already described. Moreover effective retention of heat is insured by the subsequent placement of the lid 28. This dependable assembly and coordination of heater and press obviously permits the desired result to be accomplished in a dependable and satisfactory manner.

The cover 28 having the holes 30 therein will not provide an air-tight closure for the top of the chamber in which the press is located so that very little if any pressure occurs in the chamber and thus denture is simply molded and not vulcanized.

It might also be mentioned that the heater herein shown and described can also be used to great advantage in wet pressing technique as is used by some dentists in the development of artificial dentures.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Minor changes in shape, size, and rearrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

Having thus described my invention, what I claim as new is:

1. In a structural assembly of the class described, an outer vessel, an inner receptacle located in said vessel with its vertical wall spaced from the corresponding wall or rim of the outer vessel, a plurality of disk like sheets of asbestos interposed between the bottom of said vessel and receptacle, bolts passing downwardly through the bottom of the receptacle and vessel and projecting beyond the bottom of said vessel to serve as stabilizing pins and to connect the receptacle and vessel together and to retain the asbestos sheets in place.

2. A dry heat molding unit for molding artificial dentures comprising a flask press including a non-circular base, uprights having their lower ends connected with the base, a follower plate slidably supported by the uprights, a top member connected with the upper ends of the uprights, a plurality of set screws passing through threaded holes in the top member engaging the follower member, a jacketed receptacle, the jacket of which contains sand, for receiving the press, projections on the upper face of the bottom of the receptacle engaging the edges of the base for holding the same in position, and a cover for enclosing the space between the top of the receptacle and the top member of the press, said cover having a vent therein, the screws projecting above the receptacle.

3. In a dry heat molding unit for molding artificial dentures, a flask press, a receptacle for receiving the flask press, said press comprising a base member of non-circular shape, uprights rising from the base member, a top member connected with the upper ends of the uprights, a follower slidably arranged on the uprights, and a plurality of adjusting screws passing through threaded holes in the top member and engaging the follower, said receptacle including inner and outer members spaced apart, sand placed in the space between the two members, a cover member for the upper part of said space, a cover member for enclosing the space between the top member of the press and the top of the inner part of the receptacle, layers of non-conducting material placed between the bottoms of the two parts of the receptacle, bolts passing through the bottoms and the layers and having their heads located on the bottom of the inner part of the receptacle and engaging the non-circular bottom member of the press for holding the press in position, nuts on the bolts engaging the underface of the bottom of the outer part of the receptacle.

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