

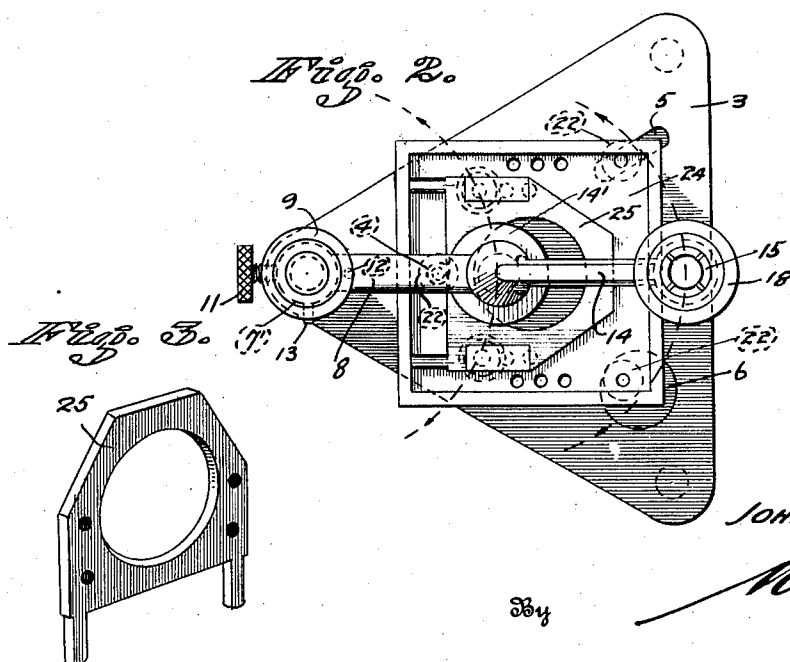
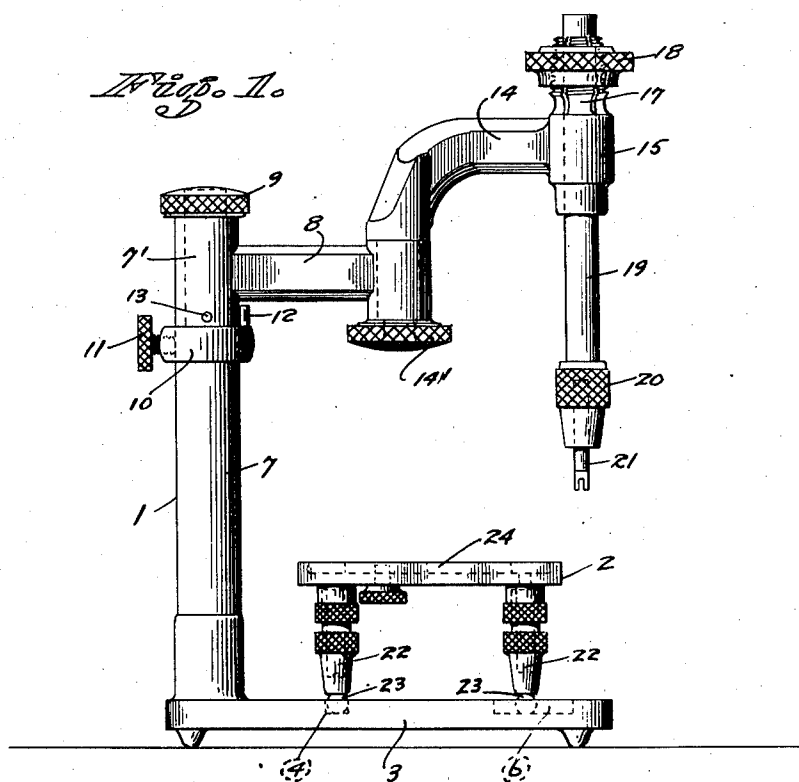
July 21, 1925.

1,546,667

J. A. LENTZ

PARALLELOMETER

Filed Feb. 20, 1924



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PARALLELOMETER.

Application filed February 20, 1924. Serial No. 694,083.

To all whom it may concern:

Be it known that I, JOHN A. LENTZ, a citizen of the United States, and a resident of Phoenix, county of Maricopa, and State of Arizona, have invented a new and useful Paralleloimeter, of which the following is a specification.

The present invention relates to improvements in parallelometers and has reference more particularly to that class of parallelometers used by dentists.

The principal objects of the invention are to allow of the definite positional adjustment of pins, posts, attachments, or other parts to some model denture or other object and to each other; to allow of the paralleling of such parts while maintaining some definite angular relation to some model, denture or other object; to allow of the movement of some part, such as a marker, over various parts of a model, denture or other object without the marker losing parallelism to its original position; to permit the paralleling device to remain vertical at all times, while the model or other object to which adjustments are to be made is tilted to meet requirements; to permit any point of the model, when once given proper angular position, to be reached by the paralleling device; after a definite relative position of model and part to be adjusted has been secured, to allow this position to be definitely located so that the part may be swung out of the way and returned to the exact position it previously occupied.

The preferred form of the invention is illustrated in the accompanying drawing in which Figure 1 shows a side view of my parallelometer, Figure 2 a top plan view of the same, and Figure 3 a perspective detail view of a model frame of an articulator adapted to have a model secured thereto. While I have shown only the preferred form of the invention I wish to have it understood that various changes or modifications may be made within the scope of the claims here-to attached without departing from the spirit of the invention.

The parallelometer consists essentially of a paralleling device (1) and a tripod (2).

The paralleling device consists of a base (3) provided with three depressions, positionally arranged like the angles of an equilateral triangle, with flat bottoms lying in the same plane.

Depression (4) is circular in outline with perpendicular walls and adapted to contact with a ball of the same diameter as that of the circular depression. Depression (5) has two perpendicular parallel walls adapted to contact with a same sized ball and extended longitudinally on either side of the ball in a general line with the first depression. Depression (6) is sufficiently extended laterally to avoid contact with its respective ball except at the bottom.

From the back of the base rises a standard (7) having a sleeve (7') rotatable on its reduced upper end, which sleeve has a horizontally swinging arm (8) extending therefrom, fastenable by means of a nut (9). A collar (10) revolvable on standard (7) and fastenable by means of thumb screw (11), can be adjusted to engage by means of the pin (12) the stud (13) of the sleeve (7'), and to act as a stop to movement of the arm (8) at any point desired. From the arm (8) extends another horizontally swinging arm (14) fastenable by means of nut (14'). The end of arm (14) is formed into a sleeve (15) split in its upper portion and terminating in a tapered threaded extremity (17), to which is fitted the tapered nut (18). A cylindrical tube or bar (19) is adapted to slide in sleeve (15) and be held by the turning nut (18). The lower end of the member (19) is provided with a chuck (20) for holding various mandrels, markers, graphite points, etc. as shown at (21).

The tripod (2) consists of three legs (22) adjustable in length, terminating in balls (23), preferably of the same size and normally forming an equilateral triangle. Above, the legs are fastened to a platform (24) adapted by a surrounding wall to hold a tile or glass slab not shown, to which a model or impression may be mounted with plaster of Paris or similar substance. Also the platform may be adapted to hold the model frame of an articulator (25), Figure

3, allowing a model to be moved from an articulator to the parallelometer and back without removing the model from the model frame.

5 To use my device the operator may proceed as follows:

If it is desired to set a pin in the model of a tooth such as is used in making porcelain jacket crowns, the impression of the tooth being secured it is mounted in plaster on the tile ready for packing with amalgam or other suitable material. The pin to be used is mounted in the chuck (20) and all adjusting screws (11), (9), (14') and (18) being free, the pin is placed as desired. If it does not meet the impression at the desired angle, legs (22) are adjusted to meet conditions.

Nuts (18) and (14') are set, and the collar (10) is swung till the pin (12) engages with the stud (13), and is secured by set screw (11). Arms (8) and (14) being now held as a unit are swung outwardly to clear the tripod, the impression is packed and, at the proper stage, the chuck (20) is brought back together with the pin and locked, if desired, by the nut (9), and packing completed.

If it is desired to mark on the teeth of a model the lines showing proper location of clasps, the model being mounted on the tripod and tilted to the desired angle, a graphite rod held in the chuck (20) with the nuts (18), (14'), (9) and (11) free, can be moved over the lateral surfaces of the teeth freely as desired and show the proper outlines for the clasps at the angle at which the model is set. By repeating the operation at different angles of the model, the most desirable angle by which the clasps should approach the model and the best location of the clasps can be determined.

In paralleling attachments for plate work or removable bridgework, the model having been given the desired angle by adjustment of the tripod, any attachment set while held by means of a specially adapted mandrel in the chuck will necessarily be parallel to any other attachment set in the same way.

If desired for any reason, the tripod can be given any one of three possible positions on the base, or the title, which is preferably square, may be given any one of four possible positions in the platform—in other words, twelve positions of the model may be selected without affecting the paralleling effect. Or if it is for any reason desirable to make the model movable while maintaining a fixed position of the chuck, the base of the parallelometer may be converted into a flat surface by omitting the recesses or laying a plane on top of the base.

I claim:

1. In a device of the character described, a base, a tripod having extensible legs resting on the base so as to prevent horizontal

motion of the tripod while the legs are manipulated for adjusting the angular position of an object lying on the tripod relative to the base and a paralleling element having supporting means allowing the same to move over any point of the object while remaining parallel to the original position.

2. In a device of the character described, a base, means for supporting an object with freedom of angular adjustment relative to the base, a standard mounted on the base having an horizontal arm pivoted thereto, a second horizontal arm pivoted to the free end of the first arm, and a vertical element adjustably supported in the latter arm free to be moved by manual guidance over any point of the object while remaining parallel to its original position.

3. In a device of the character described, a base, means for supporting an object with freedom of angular adjustment relative to the base, a standard mounted on the base having an horizontal arm pivoted thereto, a second horizontal arm pivoted to the free end of the first arm, and a vertical element adjustably supported in the latter arm free to be moved by manual guidance over any point of the object while remaining parallel to its original position, means being provided at each pivot for locking the pivoted element against pivotal motion.

4. In a device of the character described, a base, means for supporting an object with freedom of angular adjustment relative to the base, a standard mounted on the base having an horizontal arm pivoted thereto, a second horizontal arm pivoted to the free end of the first arm, and a vertical element adjustably supported in the latter arm adapted to be moved over any point of the object while remaining parallel to its original position, means being provided for identifying any desired position of the first arm so that the latter may be returned to the identical position after having been removed.

5. In a device of the character described, a base, means for supporting an object with freedom of angular adjustment relative to the base, a standard mounted on the base having an horizontal arm pivoted thereto, a second horizontal arm pivoted to the free end of the first arm, and a vertical element adjustably supported in the latter arm adapted to be moved over any point of the object while remaining parallel to its original position, the standard having a collar rotatable thereon with means for setting the same and a pin rising from the collar adapted to be engaged with a pin associated with the first arm for marking the position of the same.

6. In a device of the character described, means for supporting a tripod having extensible legs on a base so as to allow each

leg to be independently adjusted while preventing horizontal play of the tripod, comprising means for confining the end of one leg to universal motion around a central point, and means for limiting the end of a second leg to rectilinear motion.

7. In a device of the character described, a base formed with three spaced recesses therein, and a tripod having extensible legs

thereon terminating in balls adapted to be received in the said recesses, one of the recesses being formed to just fit one of the balls, a second recess allowing of rectilinear motion only of the second ball and the third recess allowing of unlimited motion of the third ball.

JOHN A. LENTZ.