

Licensing and Technology Transfer Opportunity: Manipal University

Title of Technology Available:

Device for mounting and orienting dental casts on a dental articulator

Brief Description of Invention:

The current invention is a device which can be attached onto any commercially available conventional articulator for the purpose of mounting maxillary and mandibular casts without having to irreversibly alter the articulators and without using gypsum products. The device can also be used to orient and reorient maxillary and mandibular casts in three dimensions.

Brief Background of Invention:

Patients suffering from tooth decay or severe dental diseases that cannot be treated by conservative methods, often require removal and replacement of either one, multiple or all teeth. These missing parts especially the teeth are replaced by dental restorations or prosthesis. Fabricating all restorations/prosthesis directly in the oral cavity is not possible as the procedure will take a longer time. To reduce the chair side time all these restorations and prosthesis can be fabricated on a mechanical device known as an articulator. For this, clinical conditions present in the patients' mouth should be replicated on the dental articulator in the same way as they are in the oral cavity.

In constructing a dental prosthesis a clinician encounters many challenges. Every tooth being replaced needs to align perfectly with its opposing and adjacent (natural and/or artificial) counterparts in three dimensions to provide maximum comfort, function and aesthetics to the patients. Any discrepancy results in discomfort to the patient, disfigurement of the facial muscles (leading to compromised aesthetics), speech and masticatory difficulties.

An articulator assists in the fabrication of removable prosthodontic appliances (dentures), fixed prosthodontic appliances (crown, bridges, onlays), any other type of prosthesis and orthodontic appliances in the patients' absence. The conventional articulators consist of upper and lower holding members and vertical arms between the two. The dental casts are attached to the articulator with the help of gypsum products (plaster of paris, dental plaster, dental stone etc.) manually. Conventional mounting procedure using gypsum products involves the following steps:

1. After preparing dental casts of the maxillary and mandibular arches, indexing grooves are made on the upper and lower casts.
2. Maxillary and mandibular casts in occlusion (either with help of dentition impression or occlusal rims) will be mounted onto the articulator with the help of gypsum product after adjusting their accurate 3 dimensional position

This conventional method of mounting requires lot of time skill and extra material for three dimensional positioning of the cast on the articulator. To overcome these problems we propose a method and system which will help a person (clinician, dental technician or dental student) to mount maxillary and mandibular casts without gypsum products on the dental articulator.

Describe the final product:

The current invention is a device which can be attached onto any articulator for the purpose of mounting and orienting maxillary and mandibular casts without having to irreversibly alter the

articulators, and without the use of gypsum products. The device includes a base coupled to a support member of the dental articulator; and a mounting plate mounted on the base to hold the dental cast to enable mounting of the dental cast on the dental articulator. An adjustment means configured below the mounting plate includes an orientation adjustment assembly and a height adjustment assembly coupled to the orientation adjustment assembly. The orientation adjustment assembly adjusts orientation of the mounting plate to change orientation of an occlusal plane of the dental cast multi-dimensionally at a preferred orientation and the height adjustment assembly adjusts height of the mounting plate to change height of the dental cast at a preferred height.

Technological Domain (Keywords):

Articulator, Plasterless mounting, Magnetic mounting platform, Adjustable mounting, Ball and socket platform, Orientation

Proof of Concept:

A preliminary prototype has been fabricated. Few patients Casts have been mounted using the device and prosthesis have been successfully fabricated. Functionality of the prototype found to be satisfactory.

Stage of Development:

Prototype

Provide Information on Competitors who manufacture and/or sell similar products: NA

What are the unique advantages your innovation has compared to the competition:

1. Positioning and securing the casts to the mounting plates is easier and more time efficient.
2. There is no restriction on the size of the casts that can be used.
3. Maxillary and mandibular casts can be oriented and reoriented in three planes.
4. The mounting assembly can be attached to different articulators without any irreversible alteration to the articulators.
5. The same mounting assembly can be used for both upper and lower members of the articulators.
6. The attachment is ergonomic and can be used easily by both right and left handed persons.
7. The invention permits use of multiple patients casts on a single articulator.
8. Reduces the waste generated during fabrication of prosthesis.
9. Elimination of plaster of paris from the mounting process, thereby eliminating a recurring expense.

A few potential companies who might be interested in this technology:

Agsons, , Jabbar &Co, Hanau, Whipmix and Dentatus

Intellectual Property Status: Indian Patent application with number 201941023756 filed in 2019