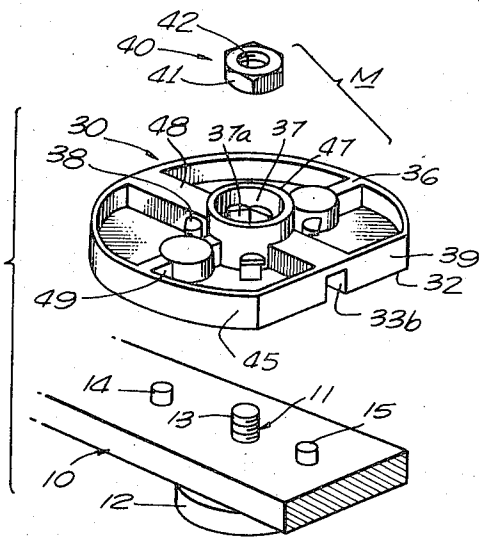


[54]	UNIVERSAL MOUNTING PLATE FOR DENTAL ARTICULATORS	3,123,914	3/1964	De Pietro.....	32/32
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[76]	Inventor: Howard M. Willis, 1360 W. Sixth St., San Pedro, Calif. 90731	3,722,099	3/1973	Jankelson	32/32
[22]	Filed: May 22, 1973	Primary Examiner—Louis G. Mancene			
[21]	Appl. No.: 362,744	Assistant Examiner—J. Q. Lever			
[52]	U.S. Cl.	32/32	[57] ABSTRACT		
[51]	Int. Cl.	A61c 11/00	A mounting plate which is adapted to be fastened to the frame of any one of a number of different dental articulators, and when so fastened to securely retain a plaster cast above the articulator frame.		
[58]	Field of Search.....	32/32			
[56]	References Cited				
	UNITED STATES PATENTS				
	1,670,311	5/1928	Musante	32/32	7 Claims, 8 Drawing Figures



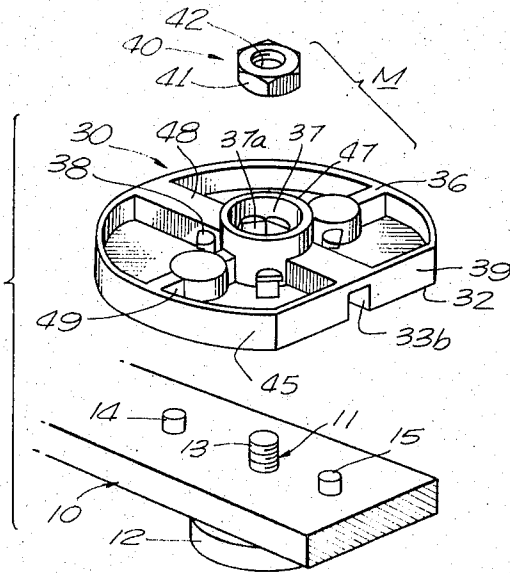


FIG. 1.

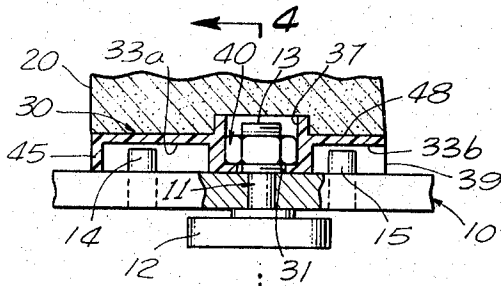


FIG. 3.

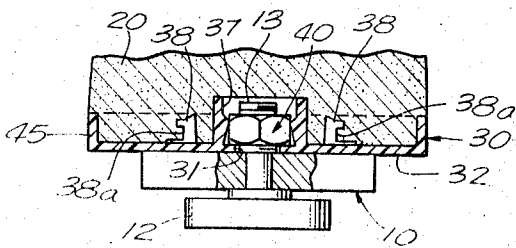


FIG. 5.

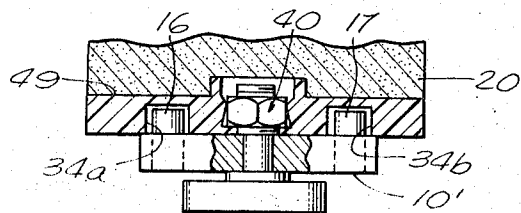


FIG. 7.

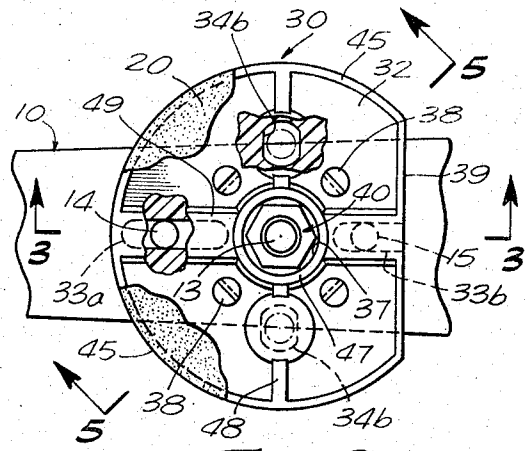


FIG. 2.

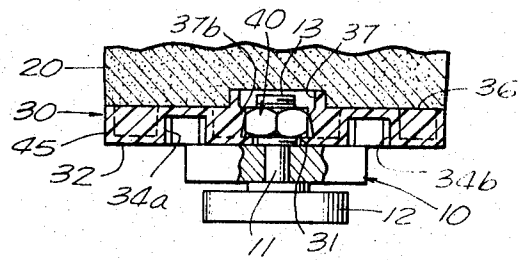


FIG. 4.

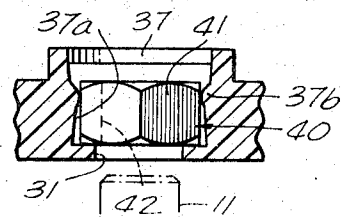


FIG. 6.

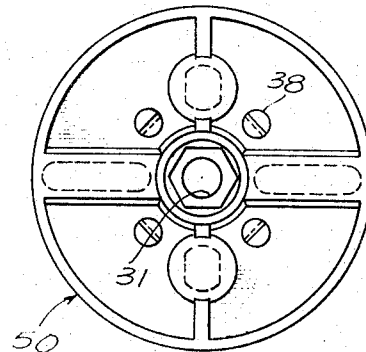


FIG. 8.

UNIVERSAL MOUNTING PLATE FOR DENTAL ARTICULATORS

BACKGROUND OF THE INVENTION

In order to utilize the dental articulator it is necessary to provide casts or models of the tooth structures, the articulator having a lower frame which supports the model of the lower teeth and an upper frame which supports the model of the upper teeth. It has long been a standard practice to utilize a pair of removeable mounting plates which are attached to the upper and lower frames, respectively, of the articulator. The dental casts or models are fastened directly to the mounting plates, and the mounting plates in turn are secured upon the articulator frames. When it is desired to utilize the articulator for work on the case of another dental patient, the mounting plates and casts for the first patient are removed from the articulator, and a new pair of mounting plates are utilized for mounting the casts for the new case.

In this fashion it is possible to utilize one instrument for working on a number of cases alternately, and a case which had been taken off the articulator may be returned for further work simply by attaching the mounting plates to the articulator frames in their predetermined standard positions.

There have been many different styles of articulators manufactured, however, and it has generally been true that a mounting plate which will fit one articulator will not fit another.

The primary object and purpose of the present invention is to provide a mounting plate for supporting a dental cast or model, and which may be removeably attached to any one of a number of different articulator frames.

According to the present invention the same mounting plate may be used with a large number of different styles of articulators, thereby avoiding the necessity of obtaining special mounting plates for each particular articulator.

DRAWING SUMMARY

FIG. 1 is an exploded perspective view of one presently preferred form of the invention;

FIG. 2 is a top plan view of the plate of FIG. 3;

FIG. 3 is a cross-sectional view taken on the line 3—3 of FIG. 2;

FIG. 4 is a cross-sectional view taken on the line 4—4 of FIG. 3;

FIG. 5 is a cross-sectional view taken on the line 5—5 of FIG. 2;

FIG. 6 is an enlarged fragmentary view showing the fitting of the insert into the plate;

FIG. 7 is a cross-sectional elevational view of the mounting plate assembly of FIGS. 1 through 6 showing its attachment to a different style of dental articulator; and

FIG. 8 is a top plan view of another form of plate in accordance with the invention.

PREFERRED EMBODIMENT

The mounting plate assembly M of the present invention as shown in FIG. 1 includes a plate 30 and an insert member 40. The plate 30 is a generally flat circular plate having a central opening 31 which is adapted to

receive the upper end of a bolt for securing the plate in place on an articulator frame.

Also shown in FIG. 1 is an articulator frame 10 having a threaded bolt 11 protruding from its upper surface. A thumb screw 12 positioned below the frame 10 is used to control the tightening or loosening action of bolt 11. The upper end 13 of bolt 11 protrudes a significant distance above the frame 10. A pair of dowel pins 14, 15, are fixedly attached to the upper surface of frame 10 in positions on opposite sides of bolt 11. More specifically, dowel pins 14 and 15 and bolt 11 lie on a common axis which extends longitudinally of the frame member 10.

The plate 30 has a lower side or lower surface designated as 32 and an upper side or upper surface designated as 36. The central opening 31 is surrounded by a circumferential recess 37, on the upper side of plate 30. Also on the upper side of plate 30 a raised hub or cylinder 47 surrounds both the central opening 31 and circumferential recess 37. The wall 37a of recess 37 defines a polygonal configuration.

Also on the upper surface of plate 30 are a perpendicular pair of ribs 48, 49 which extend outwardly from the central hub 47 and terminate in an upstanding circumferential wall 45. These ribs divide the upper surface of the plate into four quadrants, and a retention post 38 is supported from each one of these quadrants.

On the under side of plate 30 there are recesses 33a, 33b which correspond to the raised spoke of 48 (see FIG. 3). Each of the recesses 33a, 33b extends a considerable distance radially from 47.

The spoke 49 has enlargements on either side of the hub 47, and on the lower surface of plate 30 these enlargements provide recesses 34a, 34b (see FIG. 4).

For the articulator frame 10 as shown in FIG. 1 the dowel pins 14, 15 fit rather tightly into the recesses 33a, 33b, while at the same time the upper end 13 of bolt 11 protrudes upwardly through the central opening 31. With the articulator frame 10 the recesses 34a, 34b serve no useful function. However, with a different articulator frame and by rotating the mounting plate, 34a, 34b will then engage the dowel pins for that particular articulator, which are of a different size of diameter and length.

Insert member 40 as illustrated in FIG. 1 is a hexagonal nut. Its outer wall surface 41 has a regular polygonal configuration, and more specifically, that of a hexagon. In its lateral center there is the usual threaded opening 42. The insert member 40 is received within the circumferential recess 37 in engagement with wall 37a thereof, as shown in FIGS. 2 through 6, inclusive. It will be noted that insert member 40 fits rather tightly into the recess 37. Furthermore, at certain points on its upper wall surface the recess 37 is provided with a wall protuberance 37b, and these protuberances have the effect of narrowing the circumferential recess at the top so that the insert member 40 may be press-fitted into place and is then securely retained.

As best seen in FIG. 5 each of the retention posts 38 has an undercut portion 38a, and the result is that the plaster cast 20 which is supported on the upper surface of plate 30 is securely retained in place by the four retention posts. As shown in FIG. 5 the plaster material fills around the post 38 and also fills the undercut portion 38a.

FIG. 7 illustrates an alternate form of articulator frame 10 prime having laterally positioned dowl pins 16, 17. These dowl pins are received in the recesses 34a, 34b, respectively, which lie beneath the rib 49.

Plate 30 as shown in FIG. 1 has a truncated side 39. FIG. 8 illustrates an alternate form of plate construction 50 which has an entirely circular configuration with each one of the quadrants of the plate being a quarter circle in shape. The truncated side 39 of plate 30 does not affect the operation of the device, except for providing clearance for other working purposes.

My universal mounting plate system includes the plate 30 and a least two different ones of the insert members 40. All of the insert members have the same external hexagonal configuration but the size of opening and thread type for the threaded opening 42 differ from one insert member to the next. Thus the insert member is selected to have a threaded opening which will properly engage the upper end 13 of the bolt 11 associated with the articulator frame. In this manner my universal mounting plate may be used on any one of a great number of different articulator styles.

It is preferred to fabricate the insert member 40 of metal, while plate 30 is preferably made of a rigid plastic material. A significant amount of silicone is included in the plastic composition in order to make it easy to clean off the mounting plate when a particular plaster cast is removed therefrom.

While the invention has been described in detail in at least one of its forms, in order to comply with the patent laws, it is nevertheless understood that its concept and scope are to be limited only by the following claims.

I claim:

1. A universal mounting plate assembly for dental articulators, comprising:

a generally flat plate having a central opening there-through adapted to receive one end of a bolt for securing said plate in place on an articulator frame,

one side of said plate having a plurality of recesses adapted to receive corresponding dowel pins for securing said plate upon the frame in non-rotating relationship to said bolt, said bolt projecting into said opening from said one side of said plate,

the other side of said plate having a circumferential recess surrounding said central opening, the wall of said recess having a polygonal configuration; and an insert member having an external polygonal configuration conforming substantially to the polygonal configuration of said recess, said insert member being tightly but removably secured within said recess of said plate, said insert member having a threaded opening which is of smaller diameter than said central opening of said plate whereby said insert member is held in non-rotatable engagement with said recess so that said bolt may be threaded into said insert member.

2. The mounting plate of claim 1 wherein said insert member is a hexagonal nut.

3. The mounting plate of claim 1 wherein said plate is integrally formed of rigid plastic material and said insert is made of metal.

4. The mounting plate of claim 3 wherein said plastic plate includes silicone as an ingredient thereof.

5. The mounting plate of claim 1 wherein said flat plate is truncated on one side thereof.

6. A universal mounting plate assembly for dental articulators, comprising:

a generally flat circular plate having a central opening adapted to receive the upper end of a bolt for securing said plate in place on an articulator frame,

the lower side of said plate having a plurality of recesses adapted to receive corresponding dowel pins for securing said plate upon the frame in non-rotating relationship to said bolt,

the upper side of said plate having a circumferential recess surrounding said central opening, the wall of said recess having a polygonal configuration; and an insert member having an external polygonal configuration adapted to be tightly secured within said recess of said plate, said insert member having a threaded opening which is of smaller diameter than said central opening of said plate for receiving the upper end of said bolt;

wherein said circumferential recess is slightly narrowed at the top so that said insert may be press-fitted into place and is then securely retained to enable said bolt to be threaded therein.

7. A universal mounting plate assembly for dental articulators, comprising:

a generally flat circular plate having a central opening adapted to receive the upper end of a bolt for securing said plate in place on an articulator frame,

the lower side of said plate having a plurality of recesses adapted to receive corresponding dowel pins for securing said plate upon the frame in non-rotating relationship to said bolt,

the upper side of said plate having a circumferential recess surrounding said central opening, the wall of said recess having a polygonal configuration; and an insert member having an external polygonal configuration adapted to be tightly secured within said recess of said plate, said insert member having a threaded opening which is of smaller diameter than said central opening of said plate for receiving the upper end of said bolt;

wherein a plurality of upwardly extending retention posts are formed on the upper side of said plate, each retention post having an undercut portion so as to securely retain a plaster cast that may be attached to the upper side of said plate.

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