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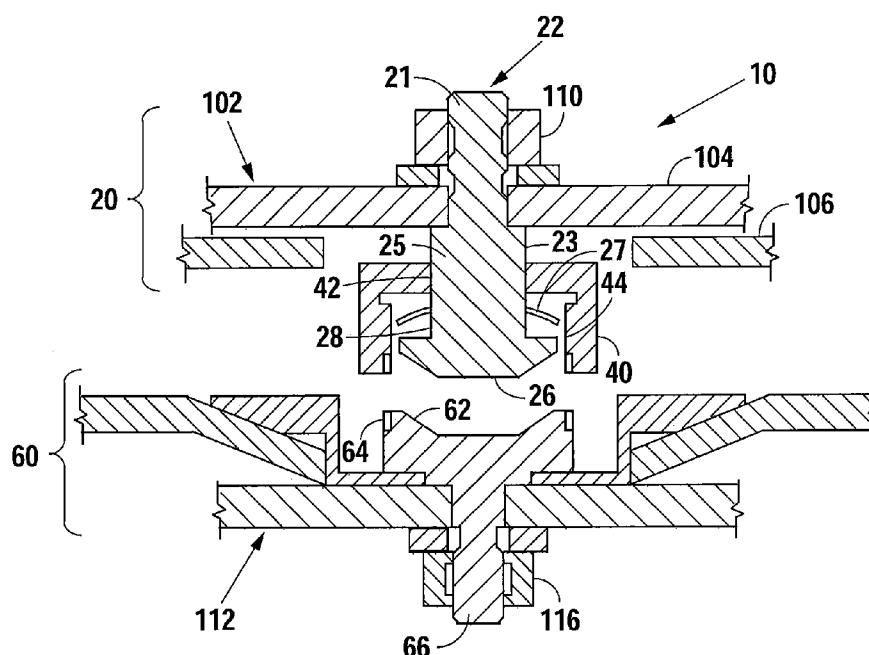
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(54) Title: TABLETOP UNIT TO BASE ATTACHMENT SYSTEM



(57) Abstract: A tabletop unit to base attachment system of a medical/surgical system includes a top half and a bottom half. The top half includes a non-rotating post assembly surrounded by a captive internally threaded nut. The bottom half includes a receiver socket surrounded by external threads. Engagement of the internally threaded portion of the nut with the external threads on the receiver socket secures the top half and bottom half together, thereby mounting the tabletop unit to the base.

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TABLETOP UNIT TO BASE ATTACHMENT SYSTEM

FIELD

The present invention pertains to a mounting system for a tabletop unit of a medical/surgical system to a base of a medical/surgical system; more particularly, the present invention pertains to a tabletop unit to base attachment of an ophthalmic surgical system.

BACKGROUND

Medical/surgical systems, and particularly ophthalmic surgical systems, are often designed as tabletop units designed to rest on or be attached to a table, cart, or other base positioned in the surgical field. Sometimes the base is actually a base unit having its own medical/surgical equipment disposed therein. Such table, cart, base, or base unit often has wheels or casters for easy positioning of the surgical system within the surgical field. Accordingly, there is a need for a tabletop unit to base attachment system for a medical/surgical system that takes up very little space and is easily accessible. In addition, the procedure for coupling and decoupling the attachment system should be made as simple as possible. Further, the attachment system should use a minimum of parts.

SUMMARY

The disclosed tabletop unit to base attachment system is easily accessible from outside of the medical/surgical system with which it is used, is constructed from a minimum of parts and enables easy decoupling of the tabletop unit from the base.

The attachment system is described in terms of its use with an ophthalmic surgical system; however, those of ordinary skill in the art will understand that the disclosed invention provides an alternative design to attach and remove a tabletop unit from a base for a variety of different medical/surgical systems.

The attachment system includes a top half and a bottom half. The top half is mounted to the tabletop unit and the bottom half is mounted to the base of the medical/surgical system.

The top half of the attachment system includes a non-rotating post assembly with a foot on its bottom portion. A captive nut surrounds the middle portion of the non-rotating post assembly. The top of the non-rotating post assembly is affixed to the tabletop unit.

The bottom half of the attachment system includes a non-rotating receiver socket surrounded by an external thread. The non-rotating receiver socket has substantially the same shape as the foot on the bottom of the non-rotating post assembly. When the foot on the bottom of the non-rotating post assembly is placed in the non-rotating receiver socket, the captive nut becomes aligned with the external threads surrounding the non-rotating receiver socket. Threadable engagement of the captive nut with the threads surrounding the non-rotating receiver socket completes the mounting of the tabletop unit to the base.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

A better understanding of the tabletop unit to base attachment system of the present invention may be had by reference to the drawing figures wherein:

Figure 1 is an elevational view in partial section showing the top half and bottom half of the disclosed tabletop unit to base attachment system separated one from another;

Figure 2 is an elevational view in partial section showing the top half and bottom half, as shown in Figure 1, joined together;

Figure 3 is an elevational view in partial section similar to Figure 2 but showing an alternate method of securing the non-rotating post assembly to the tabletop unit and securing the non-rotating receiver socket to the base; and

Figure 4 is an elevational view in partial section showing yet another alternate method of securing the non-rotating post assembly to the tabletop unit and securing the non-rotating receiver socket to the base.

DESCRIPTION OF THE EMBODIMENTS

The disclosed attachment system 10 of the present invention allows the bottom portion 102 of a tabletop unit of a medical/surgical system to be located and secured to the base 112 of the medical/surgical system from the exterior of the medical/surgical system. The base 112 may be a table, cart, or base with or without wheels or casters. The base 112 may also be a base unit having its own medical/surgical equipment disposed therein. Bottom portion 102 preferably includes a frame 104 and a skin 106.

The interface between the top half 20 and bottom half 60 of the attachment system 10 includes a tapered alignment guide feature that accurately locates the mounting hardware which come together to form the disclosed attachment system 10. Once the top half or top attachment fitting 20 and the bottom half or bottom attachment fitting 60 are joined together, a captive nut 40 on the top half 20 is threadably secured to the bottom half 60.

The top half 20 consists of a non-rotating post assembly 22 with a captive nut 40 surrounding its central portion 25. The non-rotating post assembly 22 can be secured to the frame 104 with a threaded interface and a nut 110, as shown in Figures 1 and 2, or using a bolt or a pin 108, as shown in Figure 3. If needed, an optional hex socket 30 as shown in Figure 3 may be included for mounting the non-rotating post assembly 22. The non-rotating post assembly 22 in the top half 20 can employ several methods, in its top portion 21, to prevent its rotation, such as a machined key feature or a set of pins, a set of fasteners and/or a flat side mated with a hole having a flat side in the frame 104. The non-rotating post assembly 22 in the top half 20 also includes a foot or bottom portion 26. The captive nut 40 is trapped between the foot portion 26 of the non-rotating post

assembly 22 and the frame 104. The inside diameter 42 of the captive nut 40 is larger than the outside diameter 28 of the non-rotating post assembly 22. This difference in size allows the captive nut 40 to float and accommodate any misalignments which may occur when mounting the top half 20 to the bottom half 60. If desired, a flat spring 27 may surround the central portion 25 of the non-rotating post assembly 22 to better position the captive nut 40 with respect to the non-rotating receiver socket 62.

The bottom half 60 consists of a non-rotating receiver socket 62 with an external thread 64 to interface with the internal thread 44 of the captive nut 40. The tapered receiver 62 socket can be secured to the base 112 with a threaded interface and nut 116, as shown in Figures 1 and 2, or using a bolt or pin 114, as shown in Figure 3. The post 66 in the bottom half 60 can use several methods for anti-rotation, such as a machined key feature, a set of pins, a set of fasteners and/or a flat side mated with a hole having a flat side in the base 112. If needed, a hex socket 67 may be included in the top of the post 66, as shown in Figure 3.

As shown in Figure 3, disclosed attachment system 10 uses the same wrench 90 that is typically used for casters to turn captive nut 40. Therefore, no new tooling is needed for servicing the disclosed attachment system 10. The upper half 20 and lower half 60 are thereby joined using a nut and bolt interface which joining requires no special training to operate.

The method of assembling the attachment system 10 of the present invention begins by placing the internally threaded captive nut 40 on the post assembly 22 so that it surrounds the central shaft portion 25 of the non-rotating post assembly 22 and rests on the foot portion 26. The top portion 21 of the post assembly 22 with the internally threaded captive nut 40 thereon is then mounted in a non-rotating manner to the frame 104.

The receiver socket 62 is then secured to the base 112 so that it does rotate with respect to the base 112.

The foot portion 26 of the non-rotating post assembly 22 is placed into the non-rotating receiver socket 62 when the tabletop unit is to be joined to the base 112. The internal threads 44 of the captive nut 40 are then engaged with the external threads 64 surrounding the receiver socket 62, as shown in Figure 2. A wrench 90 is used to tighten the threadable connection.

Figure 4 discloses yet another embodiment 200 of the disclosed tabletop unit to base attachment system. Similar parts have been assigned the same reference numbers but for the numeral 1 in the hundreds place. In the top half 120, the non-rotating post assembly 122 is secured to frame 104 with a flathead fastener 123. At the bottom of the non-rotating post assembly 122 is located an anti-scuff button 131. The anti-scuff button 131 is held in place at the bottom of the non-rotating post assembly 122 with a socket head fastener 132. As in the other embodiments, a captive nut 140 rests on the top of the bottom or foot portion of the non-rotating post assembly 122.

In the lower half 160, a socket fastener 171 is used to attach the externally threaded lower leg portion 166 to the base 112. A pin 181 is used to keep the lower leg portion 166 from rotating.

The disclosed tabletop unit to base attachment system has been described by reference to its preferred embodiment. Those of ordinary skill in the art will understand that numerous other embodiments have been enabled by the foregoing disclosure. Such other embodiments shall be included within the scope and meaning of the appended claims.

What is claimed is:

1. A tabletop unit to base attachment system of a medical/surgical system, said tabletop unit to base attachment system comprising:

a pair of attachment fittings including a top half and a bottom half, said bottom half being mounted to the base and said top half being mounted to the tabletop unit;

said top half including a non-rotating post assembly with a captive floating internally threaded nut, said captive floating internally threaded nut being trapped between a foot portion of said post assembly and a frame of the tabletop unit; and

said bottom half including a non-rotating receiver socket having external threads to engage said captive floating internally threaded nut;

whereby the tabletop unit may be secured to the base from a position exterior to the medical/surgical system.

2. The tabletop unit to base attachment system as defined in claim 1 wherein said non-rotating post assembly is mounted to the tabletop unit by threadable engagement with a nut.

3. The tabletop unit to base attachment system as defined in claim 1 wherein said non-rotating receiver socket is mounted to the base by threadable engagement with a nut.

4. The tabletop unit to base attachment system as defined in claim 1 wherein the inside diameter of said captive nut is larger than the outside diameter of said non-rotating post assembly.

5. The tabletop unit to base attachment system as defined in claim 1 wherein said foot portion of said non-rotating post assembly is constructed and arranged to fit within said non-rotating receiver socket.

6. The tabletop unit to base attachment system as defined in claim 5 further including an anti-scuff button within said foot portion.

7. A medical/surgical system including a tabletop unit and a base to which the tabletop unit is connected, said medical/surgical system comprising:

a top attachment fitting constructed and arranged to mount to the tabletop unit;

a bottom attachment fitting constructed and arranged to mount to the base;

said top attachment fitting further including a non-rotating post assembly having a captive internally threaded nut positioned therearound; and

said bottom attachment fitting including a non-rotating receiver socket having external threads;

whereby said top attachment fitting may be secured to said bottom attachment fitting by the threadable engagement of said internal threads of said captive nut with the external threads of said non-rotating receiver socket.

8. The medical/surgical system as defined in claim 7 wherein said non-rotating post assembly is mounted to the tabletop unit by threadable engagement with a nut.

9. The medical/surgical system as defined in claim 7 wherein said non-rotating receiver socket is mounted to the base by threadable engagement with a nut.

10. The medical/surgical system as defined in claim 7 wherein the inside diameter of said captive internally threaded nut is larger than the outside diameter of said non-rotating post assembly.

11. The medical/surgical system as defined in claim 7 wherein the bottom portion of said non-rotating post assembly includes a foot portion constructed and arranged to fit within said non-rotating receiver socket.

12. The medical/surgical system as defined in claim 11 further including an anti-scuff button within said foot portion.

13. A method for attaching a tabletop unit to a base of a medical/surgical system, said method comprising the steps of:
- placing a floating nut around a post assembly having a lower foot portion;
 - securing said post assembly to the tabletop unit so that said post assembly does not rotate with respect to said tabletop unit;
 - securing a receiver socket having external threads to the base of the medical/surgical system so that said receiver socket does not rotate with respect to the base of the medical/surgical system; and
 - placing said foot portion of said post assembly into said receiver socket and threadably engaging said floating nut with said external threads on said receiver socket.

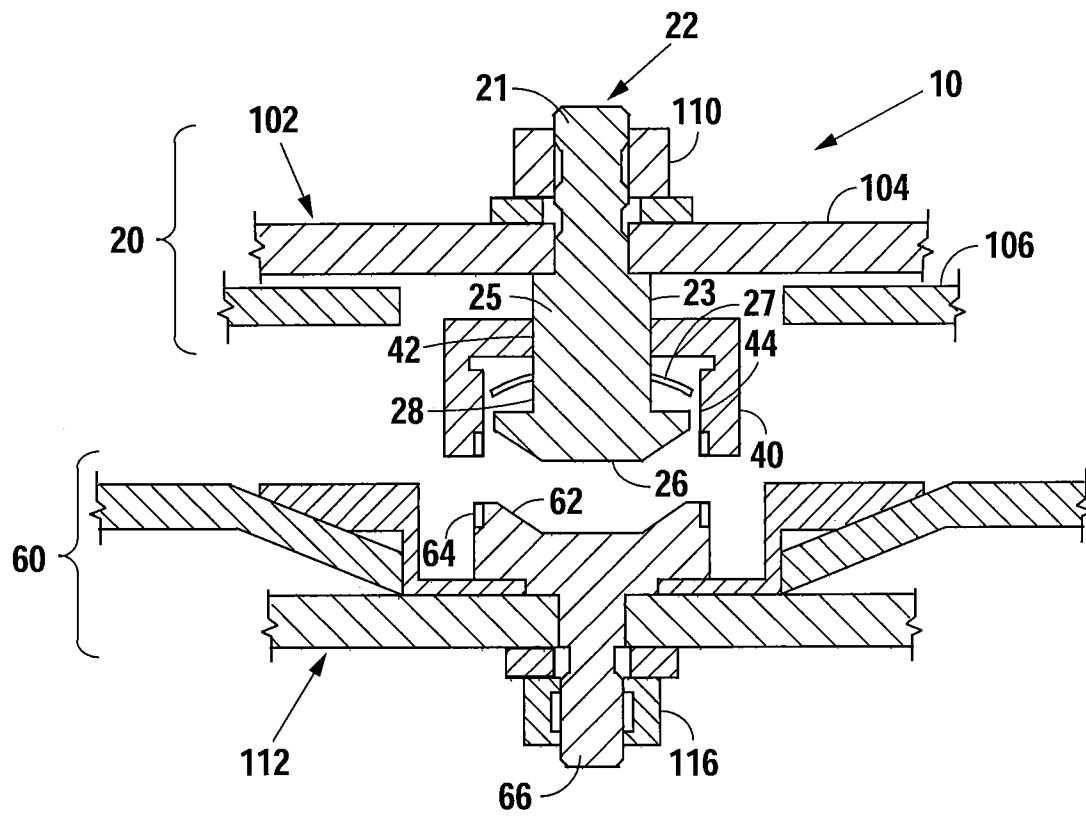


Fig. 1

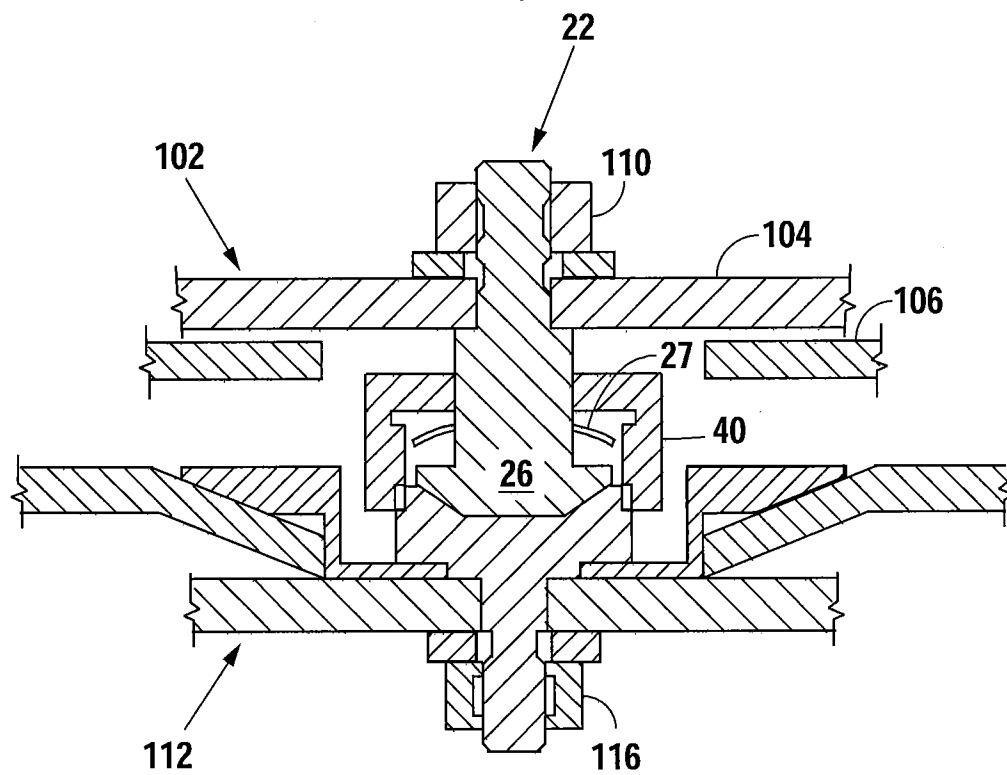


Fig. 2

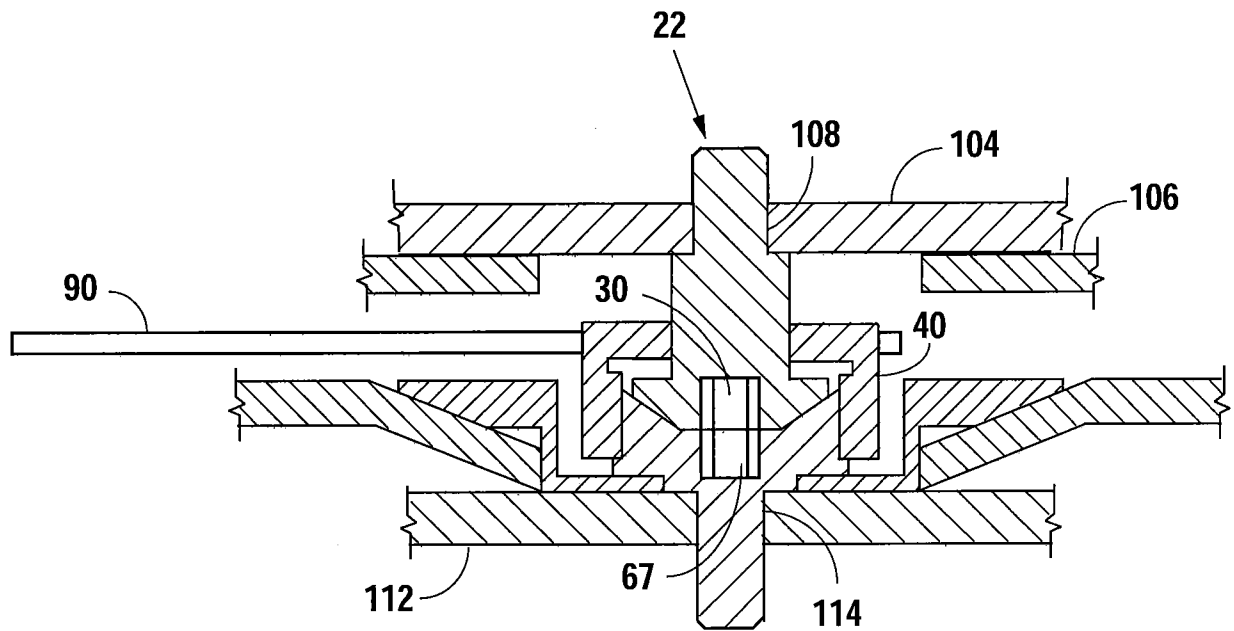


Fig. 3

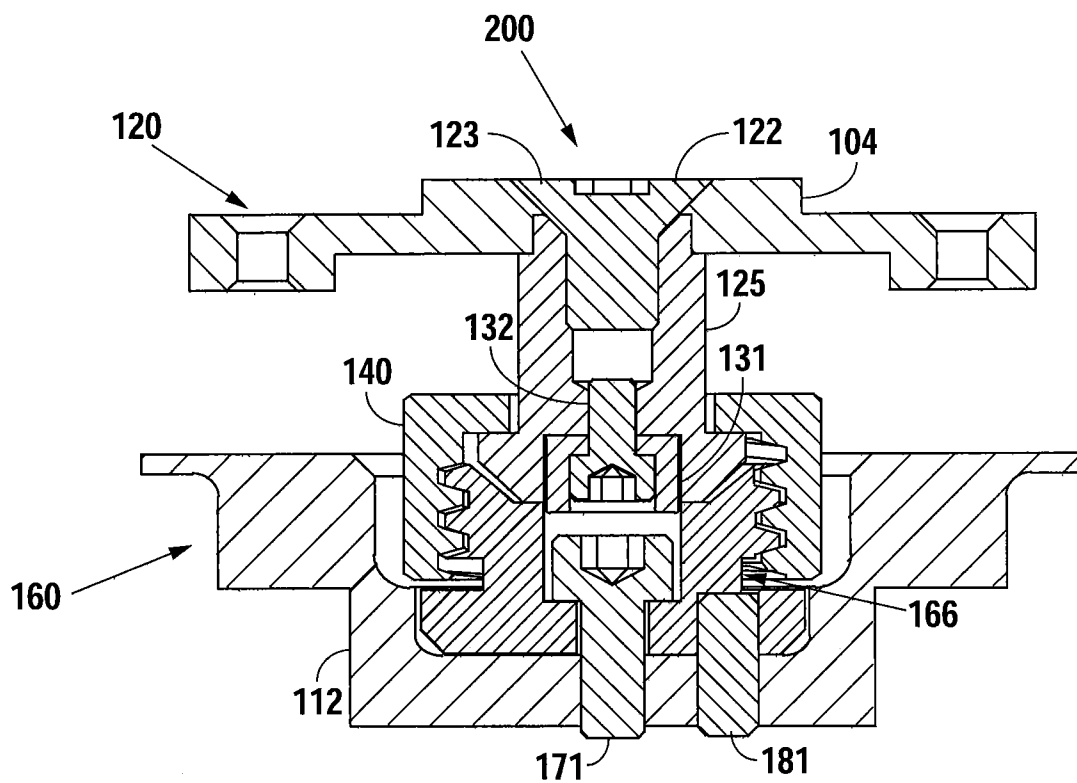


Fig. 4