United States Patent Application Publication	20250262109
Kind Code	A1
Publication Date	August 21, 2025
Inventor(s)	LEE; In Whan

HOLDING DEVICE FOR DENTAL MEDICAL DEVICES

Abstract

Disclosed is a holding device for dental medical devices, the holding device including a headrest installed on a headrest support of a dental chair, and a medical device holder connected to the headrest and configured to hold dental medical devices used during dental treatment.

Inventors: **LEE; In Whan (Seoul, KR)**

Applicant: **B&L BIOTECH, INC.** (Ansan-si, KR); **In Whan LEE** (Seoul, KR)

Family ID: **1000008451995**

Assignee: **B&L BIOTECH, INC. (Ansan-si, KR); In Whan LEE (Seoul, KR)**

Appl. No.: **19/050525**

Filed: **February 11, 2025**

Foreign Application Priority Data

KR	10-2024-0024135	Feb. 20, 2024

Publication Classification

Int. Cl.: **A61G15/16** (20060101); **A61G15/12** (20060101)

U.S. Cl.:

CPC **A61G15/16** (20130101); **A61G15/125** (20130101);

Background/Summary

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to Korean Patent Application No. 10-2024-0024135, filed on Feb. 20, 2024 in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference.

BACKGROUND OF THE DISCLOSURE

Field of the Disclosure

[0002] The present disclosure relates to a holding device for dental medical devices, and more particularly to a holding device for dental medical devices which enables the additional use of multiple dental medical devices, such as suction devices or retractor devices, without the assistance of a doctor or nurse during dental treatment, and can be easily applied to existing dental chairs.

Description of the Related Art

[0003] Generally, when receiving dental treatment, a patient receives treatment from a dentist or a nurse while sitting in a dental chair. In conventional dental treatment, various types of dental medical devices such as suction devices, mirror devices, retractor devices, and tartar removers are used together. Because of this, it is very difficult for a doctor to perform dental treatment alone, and additional nurses or doctors are needed to assist.

[0004] However, as the number of people involved in dental treatment (e.g., doctors, nurses, nursing assistants, etc.) increases, the labor cost for dental treatment increases dramatically, and there is also the disadvantage that it is difficult to secure a space for the doctor's treatment work because many people are positioned to surround the patient.

SUMMARY OF THE DISCLOSURE

[0005] Therefore, the present disclosure has been made in view of the above problems, and it is an object of the present disclosure to provide a holding device for dental medical devices, wherein the holding device enables additional utilization of a plurality of dental medical devices, such as a suction device or a retractor device, without the assistance of a doctor or a nurse during dental treatment, so dental treatment can be efficiently performed with a minimum number of people by utilizing a plurality of dental medical devices.

[0006] It is another object of the present disclosure to provide a holding device for dental medical devices which can be easily applied to dental chairs from various manufacturers so that existing dental chairs can be used as is, and since replacement of existing dental chairs is unnecessary, it can prevent cost increases in advance.

[0007] In accordance with an aspect of the present disclosure, the above and other objects can be accomplished by the provision of a holding device for dental medical devices, the holding device including: a headrest installed on a headrest support of a dental chair; and a medical device holder connected to the headrest and configured to hold dental medical devices used during dental treatment.

[0008] Preferably, the holding device for dental medical devices according to an embodiment of the present disclosure may further include at least one rod adjuster arranged between the headrest and the medical device holder to connect the headrest and the medical device holder to each other, and bent in various shapes during dental treatment.

[0009] Here, the headrest may have a structure that corresponds to various thicknesses and widths of the headrest support so as to be detachably installed regardless of the kind of a dental chair.

[0010] In addition, the rod adjuster may be configured to include a plurality of joints, and to selectively lock movement of the joints to stably hold the dental medical devices.

[0011] Preferably, the headrest may include a headrest bracket detachably installed on the headrest support so as to be positionally adjusted in upper and lower directions along the headrest support, the rod adjuster being connected to each of opposite sides of the headrest bracket; and a headrest panel coupled to a front surface of the headrest bracket to support the head of a patient sitting on the dental chair.

[0012] Preferably, the headrest bracket may include: a bracket body in the center of which a support-inserted hole is formed, the headrest support being formed to pass through the support-inserted hole; and a fixing handle movably arranged on the bracket body in a screw-fastened manner so as to fasten and fix the headrest support to an inside of the support-inserted hole.
[0013] A thickness and width of the headrest support may be different depending upon a kind of a dental chair. Accordingly, it may be preferable that the support-inserted hole has a cross-sectional shape of a multi-stage structure formed stepwise according to a plurality of thicknesses and widths corresponding to thicknesses and widths of the headrest support.
[0014] Preferably, the bracket body may include: a front bracket arranged at the front of the headrest support, the headrest panel being coupled to the front surface of the front bracket, and a front insertion hole forming a front part of the support-inserted hole being formed stepwise on the front bracket; a rear bracket arranged at the rear of the headrest support so as to face the front bracket, the rod adjuster being respectively connected to opposite sides of the rear bracket, and a rear insertion hole forming a rear part of the support-inserted hole being formed stepwise on the rear bracket; and a plurality of bracket-fastening members fastened and fixed to the front bracket and the rear bracket in a state in which the headrest support is placed between the front insertion hole and the rear insertion hole.
[0015] Preferably, the headrest panel may be fastened and fixed to a front surface of the headrest bracket by frame-fastening members, and a Velcro member may be provided on a front surface of the front surface of the headrest panel to detachably fix a neck support.
[0016] Preferably, the rod adjuster may include: first rod members whose one end is fastened and fixed to each of opposite sides of the headrest bracket; a plurality of second rod members arranged between another end of each of the first rod members and the medical device holder and lengthily connected along a longitudinal direction; and a ball-and-socket joint member provided at each of at least one connector between the first rod members and the second rod members, at least one connector between the second rod members, and at least one connector between the second rod members and the medical device holder, and configured in a ball-socket structure capable of joint movement of a rotational pattern.
[0017] Preferably, the ball-and-socket joint member may include: a ball joint formed in a ball structure; a socket joint formed in a spherical socket structure to which the ball joint is rotatably coupled; and a joint locker operably formed on the socket joint to selectively restrict rotation of the ball joint and the socket joint.
[0018] Here, a screw fastener may be formed at one end of each of the first rod members to be connected in a screw-fastened manner to rod connectors formed on opposite sides of the headrest bracket, and the socket joint may be formed at another end of the first rod member.
[0019] In addition, the ball joint may be formed at one end of the second rod member, and the socket joint may be formed at another end of the second rod member.
[0020] In addition, the ball joint may be formed at one end of the medical device holder.
[0021] Meanwhile, at least one of the first rod member and the second rod members may be formed in a continuous joint structure of a javara structure or centipede type that can be freely bent.
[0022] Preferably, the medical device holder may include: a holder connection rod whose one end is connected to an end of the rod adjuster in a structure capable of joint movement; a holder for holding the dental medical devices; and a freely bendable rod provided to connect the holder and another end of the holder connection rod to each other and formed in a continuous joint structure of a javara structure or centipede type that can be freely bent.
[0023] Differently from above, the medical device holder may include: a holder connection rod whose one end is connected to an end of the rod adjuster in a structure capable of joint movement; a holder for holding the dental medical devices; and a ball-and-socket joint member provided to connect the holder and another end of the holder connection rod and formed in a ball-socket structure capable of joint movement of a rotational pattern.

[0024] Differently from above, the medical device holder may include: a holder connection rod whose one end is connected to an end of the rod adjuster in a structure capable of joint movement; a holder connected to another end of the holder connection rod and configured to hold the dental medical devices; and a fitting groove formed in the holder such that a portion of the dental medical device is fitted and fixed to the fitting groove.
[0025] The holder connection rod may be formed in a continuous joint structure of a javara structure or centipede type that can be freely bent.
[0026] Preferably, the holding device for dental medical devices according to an embodiment of the present disclosure may further include a tray device detachably placed on the rod adjuster to temporarily store the dental medical devices and various auxiliary materials required for dental treatment.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
[0027] The above and other objects, features and other advantages of the present disclosure will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:
[0028] FIG. **1** schematically illustrates a dental chair to which a holding device for dental medical devices according to an embodiment of the present disclosure is to be applied;
[0029] FIG. **2** illustrates a holding device for dental medical devices which is to be applied to the dental chair shown in FIG. **1**;
[0030] FIG. **3** schematically illustrates the holding device for dental medical devices shown in FIG. **2**;
[0031] FIGS. **4** and **5** respectively illustrate the perspective view and plan view of a headrest shown in FIG. **3**;
[0032] FIGS. **6** and **7** illustrate a modified example of the medical device holder shown in FIG. **2**, and particularly illustrate the perspective view and exploded view of a medical device holder for holding the suction device shown in FIG. **3**;
[0033] FIGS. **8** and **9** illustrate another modified example of the medical device holder shown in FIG. **2**, and particularly illustrate the perspective view and exploded view of a medical device holder for holding a retractor device shown in FIG. **3**;
[0034] FIG. **10** illustrates an exploded view of a tray device shown in FIG. **2**; and
[0035] FIG. **11** illustrates a cover bracket of the tray device shown in FIG. **10**.
DETAILED DESCRIPTION OF THE DISCLOSURE
[0036] Embodiments of the present disclosure will now be described more fully with reference to the accompanying drawings. This disclosure may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Like reference numerals in the drawings denote like elements.
[0037] FIG. **1** schematically illustrates a dental chair **10** to which a holding device **1000** for dental medical devices according to an embodiment of the present disclosure is to be applied, FIG. **2** illustrates the holding device **1000** for dental medical devices which is to be applied to the dental chair **10** shown in FIG. **1**. FIG. **3** schematically illustrates the holding device **1000** for dental medical devices shown in FIG. **2**, and FIGS. **4** and **5** respectively illustrate the perspective view and plan view of a headrest **100** shown in FIG. **3**.
[0038] Referring to FIGS. **1** to **3**, the holding device **1000** for dental medical devices according to an embodiment of the present disclosure may include a headrest **100**, rod adjusters **200**, and a medical device holder **300**.
[0039] The holding device **1000** for dental medical devices according to the embodiment may be

installed on the dental chair **10** shown in FIG. **1**, so that the number of dental medical devices **20** used for dental treatment may be increased without additional involvement of a doctor or a nurse. Here, the holding device **1000** for dental medical devices may be intalled on a headrest support **12** provided on an existing dental chair **10** and used for dental treatment.

[0040] Hereinafter, in this embodiment, it is described that the medical device holder **300** is connected to the headrest **100** via the rod adjusters **200**. However, the present disclosure is not limited to this, and it is also possible to omit the rod adjusters **200** and to directly connect the medical device holder **300** to the headrest **100**.

[0041] Referring to FIGS. **2** to **5**, the headrest **100** of this embodiment may be detachably installed and fixed to the headrest support **12** of the dental chair **10**. Here, it is preferable that the headrest **100** is formed in a structure corresponding to headrest supports **12** with various thicknesses and widths so that it can be installed regardless of the kind of the dental chair **10**.

[0042] For example, the headrest **100** may include a headrest bracket **120** and a headrest panel **140**.

[0043] The headrest bracket **120** may be detachably installed on the headrest support **12**. The headrest bracket **120** may be formed so as to be positionally adjustable in upper and lower directions along the headrest support **12**. In addition, a plurality of rod adjusters **200** may be connected to each of opposite sides of the headrest bracket **120**. For reference, a detailed structure of the headrest bracket **120** of the embodiment is described again below.

[0044] The headrest panel **140** may be coupled with a front surface of the headrest bracket **120** to support a patient sitting on the dental chair **10**. For example, the headrest panel **140** may be fixedly fastened to the front surface of the headrest bracket **120** by a plurality of frame-fastening members **144**.

[0045] Here, positioning grooves may be formed on the front surface of the headrest bracket **120**, and positioning protrusions to be inserted into the positioning grooves of the headrest bracket **120** may be formed to protrude from a rear surface of the headrest panel **140**. By using the positioning grooves and the positioning protrusions, the headrest panel **140** may be stably placed at a correct position of the headrest bracket **120**.

[0046] Meanwhile, a neck support **110** may be detachably placed on the headrest panel **140**. The neck support **110** is intended to support more comfortably and stably the head of a patient sitting on the dental chair **10**, and may be detachably fixed to Velcro members **142** arranged on the front surface of the headrest panel **140**.

[0047] Hereinfter, a detailed configuration of the headrest bracket **120** FIGS. **3** to **5** is examined.

[0048] As shown in FIGS. **3** to **5**, the headrest bracket **120** of the embodiment may include a bracket body **122** and a fixing handle **124**.

[0049] A support-inserted hole **122***a*, through which the headrest support **12** is to be inserted to pass, may be formed in the center of the bracket body **122**, and the headrest panel **140** may be coupled to the front surface of the bracket body **122** in a fastening manner.

[0050] Here, the support-inserted hole **122***a* may have a cross-sectional shape having a multi-stage structure formed stepwise according to a plurality of thicknesses T**1** and T**2** and widths W**1** and W**2** that correspond to thicknesses T**1** and T**2** and widths W**1** and W**2** of the headrest support **12**. In addition, the headrest support **12** may have different thicknesses T**1** and T**2** and widths W**1** and W**2** depending upon the kind of the dental chair **10**. Accordingly, the headrest support **12** may be placed within a specific space in the support-inserted hole **122***a*, and the specific space of the support-inserted hole **122***a* may have thicknesses and widths corresponding to the thicknesses T**1** and T**2** and widths W**1** and W**2** of the headrest support **12**.

[0051] For example, the bracket body **122** may include a front bracket **126**, a rear bracket **127**, and bracket-fastening members **128**.

[0052] The front bracket **126** may be placed at the front of the headrest support **12**. The headrest panel **140** may be coupled to the front surface of the front bracket **126** in a fastening manner. Meanwhile, a front insertion hole **126***a* forming a front part of the support-inserted hole **122***a* may

be formed at the rear of the front bracket **126**. The front insertion hole **126***a* may be formed stepwise in a multi-stage structure corresponding to the thicknesses T**1** and T**2** and widths W**1** and W**2** of the headrest support **12**.

[0053] The rear bracket **127** may be placed at the rear of the headrest support **12** to face the front bracket **126**. A plurality of rod connectors **130** whose inner peripheral surface has a female screw for connecting each of a plurality of rod adjusters **200** may be formed on opposite sides of the rear bracket **127**. Meanwhile, a rear insertion hole **127***a* forming the rear part of the support-inserted hole **122***a* may be formed on the front surface of the rear bracket **127**. The rear insertion hole **127***a* may be formed stepwise a multi-stage structure corresponding to the thicknesses T**1** and T**2** and widths W**1** and W**2** of the headrest support **12**.

[0054] The bracket-fastening members **128** may be fixedly fastened to the front bracket **126** and the rear bracket **127** in a state where the headrest support **12** is placed between the front insertion hole **126***a* and the rear insertion hole **127***a*.

[0055] Referring to FIG. **5**, the multi-stage structure of the support-inserted hole **122***a* formed by the front insertion hole **126***a* and the rear insertion hole **127***a* is described in more detail. That is, the support-inserted hole **122***a* of FIG. **5** may be provided as a two-stage structure for selective insertion of the headrest support **12** indicated by solid lines and dotted lines.

[0056] In the case of the headrest support **12** indicated by solid lines of FIG. **5**, the depth D**1**+D**2** of the support-inserted hole **122***a*, which is the sum of the depth D**1** of the front insertion hole **126***a* and the depth D**2** of the rear insertion hole **127***a*, may be the same as the thickness T**1** of the headrest support **12**, and the height W**1** of the rear insertion hole **127***a* may be the same as the width W**1** of the headrest support **12**. Accordingly, the headrest support **12** indicated by the solid lines may be inserted into both the front insertion hole **126***a* and the rear insertion hole **127***a*, so that movement in the left and right direction may be prevented by the rear insertion hole **127***a*.

[0057] On the other hand, in the case of the headrest support **12** indicated by dotted lines shown in FIG. **5**, the depth D**1** of the front insertion hole **126***a* may be the same as the thickness T**2** of the headrest support **12**, and the height W**2** of the front insertion hole **126***a* may be the same as the width W**2** of the headrest support **12**. Accordingly, the headrest support **12** indicated by dotted lines may be inserted only into the front insertion hole **126***a*, so that movement in the left and right direction may be prevented by the front insertion hole **126***a*.

[0058] The fixing handle **124** may be movably arranged on the rear surface of the bracket body **122** in a screw-fastened manner. That is, the headrest support **12** may be fastened and fixed to the bracket body **122** in a state of being inserted into the support-inserted hole **122***a* by rotating the fixing handle **124** in a forward direction. On the other hand, the fastened state of the headrest support **12** may be released by rotating the fixing handle **124** in a reverse direction.

[0059] Referring to FIGS. **2** to **4**, the rod adjusters **200** of this embodiment may be formed in a structure that is extended in a rod shape from the headrest bracket **120** of the headrest **100**, and may have multiple joints formed so that they can be bent into various shapes during dental treatment. That is, the rod adjusters **200** may have a plurality of joints, and may be formed in a structure that can selectively lock the movement of the joints so as to stably hold the dental medical devices **20**. As shown in FIGS. **3** and **4**, two rod adjusters **200** may be disposed on each of the opposite sides of the headrest bracket **120**, without being limited thereto. Alternatively, one or three or more rod adjusters **200** may be disposed on each of the opposite sides of the headrest bracket **120**.

[0060] For example, the rod adjusters **200** may include first rod members **210**, second rod members **220**, and ball-and-socket joint members **230**.

[0061] One end of each of the first rod members **210** may be fixed to each of the rod connectors **130** formed on the opposite sides of the headrest bracket **120** in a fastening manner, and one end of the second rod member **220** and a socket joint **250**, which is described below, of the ball-and-socket joint members **230** may be formed at the other end of each of the first rod members **210**. For this, a male screw-shaped screw fastener **212** may be formed at the end of the first rod members **210**, and

female screw-shaped rod connectors **130**, which are to be fastened and coupled to the male screw of the screw fastener **212**, may be formed on the opposite sides of the rear bracket **127**.

[0062] The plural second rod members **220** may be lengthily connected between the other end of the first rod members **210** and the medical device holder **300** in a longitudinal direction. For this, a ball joint **240**, which is described below, of the ball-and-socket joint members **230** may be formed at one end of each of the second rod members, and the socket joint **250** may be formed at the other end of the second rod member **220**. In this embodiment, two second rod members **220** are arranged between the first rod members **210** and the medical device holder **300** as shown in FIG. **2**, but the present disclosure is not limited thereto. One or three or more second rod members **220** may be arranged between the first rod members **210** and the medical device holder **300**.

[0063] Meanwhile, in the embodiment, the first rod members **210** and the second rod members **220** are provided as rod members made of a metal material that is not easily deformed, but the present disclosure is not limited thereto. For example, at least one of the first rod members **210** and the second rod members **220** may be manufactured in a continuous joint structure of a javara structure or centipede type that can be freely bent by an external force equal to or greater than a set magnitude, or may be made of a material that can be plastically deformed by an external force equal to or greater than a set size. Here, it is preferable that the external force greater than the set size is set to be greater than the weight of the dental medical devices **20** and the rod adjusters **200**.

[0064] The ball-and-socket joint members **230** are components that perform the joint function of the rod adjusters **200**, and may be respectively provided at connectors between the first rod members **210** and the second rod members **220**, connectors between the second rod members **220**, and connectors between the second rod members **220** and the medical device holder **300**. The ball-and-socket joint members **230** may be manufactured in a ball-socket structure so as to provide a joint movement of a rotational pattern.

[0065] For example, the ball-and-socket joint members **230** may include the ball joint **240** formed in a ball structure, the socket joint **250** formed in a spherical socket structure to which the ball joint **240** is rotatably coupled, and a joint locker **260** operably formed at the socket joint **250** to selectively restrict rotation of the ball joint **240** and the socket joint **250**.

[0066] Referring to FIGS. **2** and **3**, the medical device holder **300** of the embodiment may be provided to hold the dental medical devices **20** used during dental treatment. The medical device holder **300** may be connected to an end of the rod adjusters **200**. Accordingly, the medical device holder **300** may be placed at various positions by bending the shape of the rod adjusters **200**.

[0067] The ball joint **240**, which is to be rotatably coupled to the socket joint **250** formed at the other end of the second rod members **220** of the rod adjusters **200**, may be formed at one end of the medical device holder **300**. A holder structure, where the dental medical device **20** is to be detachably held, may be formed at the other end of the medical device holder **300**.

[0068] As shown in FIG. **2**, the medical device holder **300** of the embodiment may include a left medical device holder **310** connected to a left rod adjuster **200** that is placed on the left side of the headrest **100**, and a right medical device holder **320** connected to the right rod adjuster **200** that is placed on the right side of the headrest **100**.

[0069] Here, the left medical device holder **310** may include a left holder connection rod **312** whose one end is connected to the end of the rod adjuster **200**, a left holder **316** for holding the dental medical device **20**, and a freely bendable rod **314** provided to connect the left holder **316** and the other end of the left holder connection rod **312** to each other and formed in a continuous joint structure of a javara structure or centipede type that can be freely bent.

[0070] In addition, the right medical device holder **320** may include a right holder connection rod **322** whose one end is connected to the end of the rod adjusters **200** in a structure capable of joint movement, a right holder **326** for holding the dental medical devices **20**, and a ball-and-socket joint member **324** provided to connect the right holder **326** and the other end of the right holder connection rod **322** to each other and formed in a ball-socket structure providing a joint movement

of a rotational pattern.
[0071] Meanwhile, the left medical device holder **310** and the right medical device holder **320** are described as having different structures in the embodiment, but the present disclosure is not limited thereto. The left medical device holder **310** and the right medical device holder **320** may be formed in the same structure. In particular, the left holder **316** and the right holder **326** are provided as holder frames with a U-shaped cross-section to which bolt-shaped fastening members are fastened, but may be modified into various structures such as structures where a suction device **22**, a retractor device **24**, etc. can be attached and detached.
[0072] In addition, the left holder connection rod **312** and the right holder connection rod **322** are provided as rod members made of metal or plastic that is not easily deformed in the embodiment, but the present disclosure is not limited thereto. For example, at least one of the left holder connection rod **312** and the right holder connection rod **322** may be formed in a continuous joint structure of a javara structure or centipede type that can be freely bent by an external force equal to or greater than a set magintude, or may be made of a material that is plastically deformed by an external force equal to or greater than a set size. Here, it is preferable that the external force equal to or greater than the set size is set to be greater than the weight of the dental medical devices **20** and the medical device holder **310**, **320**.
[0073] FIGS. **6** and **7** illustrate a modified example of the medical device holder **300** shown in FIG. **2**, and particularly illustrate the perspective view and exploded view of a medical device holder **330** for holding the suction device **22** shown in FIG. **3**.
[0074] That is, FIGS. **6** and **7** illustrate a modified example of the medical device holder **330** according to the embodiment, and the modified example may be formed to detachably hold the suction device **22**.
[0075] Referring to FIGS. **6** and **7**, the medical device holder **330** of the modified example may include a holder connection rod **331** whose one end is connected to an end of the rod adjusters **200**, a suction holder **332** for holding the suction device **22**, and ball-and-socket joint members **333** and **334** provided to connect the suction holder **332** and the other end of the holder connection rod **331** and formed in a ball-socket structure capable of a joint movement of a rotational pattern.
[0076] Here, the suction holder **332** may be formed in a C-shaped cross-sectional structure that holds to wrap around the outer circumference of the suction device **22**. A socket joint **333** for the ball-and-socket joint members **333** and **334** may be formed at a lower part of the suction holder **332**.
[0077] In addition, a ball joint **334**, which is to be rotatably inserted into the socket joint **333**, may be connected to the other end of the holder connection rod **331**. A connector-fastening hole **335**, which is to be fastened to a connector member **336** coupled to the other end of the holder connection rod **331** by a fastening bolt, may be formed at the ball joint **334**.
[0078] In addition, a hemispherical member **337** may be inserted into the ball joint **334**, and the hemispherical member **337** may be connected to the socket joint **333** by the fastening member **338** to be integrally rotated along the outer peripheral surface and inner peripheral surface of the ball joint **334**.
[0079] Meanwhile, the holder connection rod **331** of the embodiment is provided as a rod member made of metal or plastic that is not easily deformed, but the present disclosure is not limited thereto. For example, the holder connection rod **331** may be formed in a continuous joint structure of a javara structure or centipede type that can be freely bent by an external force equal to or greater than a set magintude, or may be made of a material that is plastically deformed by an external force equal to or greater than a set size. Here, it is preferred that the external force equal to or greater than the set size is set to be greater than the weight of the suction device **22** and the medical device holder **330**.
[0080] FIGS. **8** and **9** illustrate another modified example of the medical device holder **300** shown in FIG. **2**, and particularly illustrate the perspective view and exploded view of a medical device

holder **340** for holding the retractor device **24** shown in FIG. **3**.
[0081] That is, FIGS. **8** and **9** illustrate another modified example of the medical device holder **340** according to the embodiment. This medical device holder **340** may be formed to detachably hold the retractor device **24**.
[0082] Referring to FIGS. **8** and **9**, the medical device holder **340** of the modified example may include a holder connection rod **341** whose one end is connected to the end of the rod adjusters **200**, a retractor holder **342** connected to the other end of the holder connection rod **341** and configured to hold the retractor device **24**, and a fitting groove **344**, where a portion of the retractor device **24** is to be fitted and fixed, formed at the retractor holder **342**.
[0083] Here, the fitting groove **344** may be formed in a structure that becomes narrower from the entrance side thereof toward the inside thereof such that a portion of the retractor device **24** is inserted into the fitting groove **344** in a press-fit manner. Here, it is preferred that a portion of each of the fitting groove **344** and the retractor device **24** is bent stepwise such that the retractor device **24** does not fall out in the longitudinal direction of the medical device holder **340**.
[0084] Meanwhile, the holder connection rod **341** of the embodiment is provided as a rod member made of metal or plastic that is not easily deformed, but the present disclosure is not limited thereto. For example, the holder connection rod **341** may be formed in a continuous joint structure of a javara structure or centipede type that can be freely bent by an external force equal to or greater than a set magintude, or may be made of a material that is plastically deformed by an external force equal to or greater than a set size. Here, it is preferred that the external force equal to or greater than the set size is set to be greater than the weight of the suction device **22** and the medical device holder **340**.
[0085] FIG. **10** illustrates an exploded view of a tray device **30** shown in FIG. **2**, and FIG. **11** illustrates a cover bracket **37** of the tray device **30** shown in FIG. **10**.
[0086] Referring to FIGS. **10** and **11**, the holding device **1000** for dental medical devices according to an embodiment of the present disclosure may further include the tray device **30** detachably arranged at the rod adjusters **200**.
[0087] The tray device **30** of the embodiment may perform the function of temporarily storing the dental medical devices **20** and various auxiliary materials required during dental treatment. A single or multiple tray devices **30**, which are the same as the tray device **30**, may be installed at the rod adjusters **200**. As needed, the installation positions of the tray devices **30** may be changed.
[0088] For example, the tray device **30** of the embodiment may include a tray **32**, a tray holder **34**, a cover bracket **37** and a cover bracket-fastening member **38**.
[0089] The tray **32** may be provided in a plate shape.
[0090] The tray holder **34** may include a tray supporter **35** for detachably supporting the tray **32**, and a support bracket **36** formed at a lower part of the tray supporter **35** and seated on an upper part of the rod adjuster **200**. The tray supporter **35** and the support bracket **36** may be injection-molded as an integral structure.
[0091] The cover bracket **37** may be formed to surround a lower part of the rod adjuster **200**, and may be fixedly fastened to the support bracket **36** by a plurality of cover bracket-fastening members **128**. The cover bracket **37** may include a semicircular pipe that wraps the lower part of the rod adjuster **200**, and fixing ribs **37***a* may be formed on the surface of the semicircular pipe to be pressed tightly against the lower part of the rod adjusters **200**.
[0092] As apparent above, a holding device for dental medical devices according to an embodiment of the present disclosure enables additional utilization of a plurality of dental medical devices, such as a suction device or a retractor device, without the assistance of a doctor or a nurse during dental treatment, so dental treatment can be efficiently performed with a minimum number of people by utilizing a plurality of dental medical devices.
[0093] In addition, the holding device for dental medical devices according to an embodiment of the present disclosure is structured to be applicable to any headrest supports of dental chairs from

various manufacturers, so that existing dental chairs can be used as is, and since replacement of the dental chair is unnecessary, the problem of unnecessary cost increases can be prevented in advance, and it can be used quickly and easily in existing dental clinics.
[0094] In addition, the holding device for dental medical devices according to an embodiment of the present disclosure can easily place a medical device holder connected to the end of a plurality of rod adjusters at a desired location by bending the rod adjusters connected to a headrest in various shapes, and can increase the number of dental medical devices used by utilizing dental medical devices held in the medical device holder for dental treatment of a patient, thereby improving the efficiency of dental treatment.
[0095] In addition, the holding device for dental medical devices according to an embodiment of the present disclosure includes a headrest support capable of having various sizes depending upon the kind of dental chair, and support-inserted holes of a headrest bracket are provided in a cross-sectional shape of a multi-stage structure with a plurality of thicknesses and widths stepwise in response to the thickness and width of the headrest support, so that a fixing bracket can be stably installed and fixed to the headrest support having different sizes depending upon the kind of a dental chair. Accordingly, the usability and product commonality of the holding device for dental medical devices can be further increased.
[0096] As described above, the embodiments of the present disclosure have been explained with reference to specific details, such as specific components, and limited embodiments and drawings, but these are only provided to help a more general understanding of the present disclosure, and the present disclosure is not limited to the embodiments. Various modifications and variations can be made from these descriptions by those with ordinary knowledge in the field to which the present disclosure belongs. Therefore, it should be understood that the idea of the present disclosure is not limited to the described embodiments, and not only the accompanying claims, but also all particulars that are equivalent or alternative to the scope of the claims fall into the category of the idea of the present disclosure.
DESCRIPTION OF SYMBOLS
[0097] **1000**: holding device for dental medical devices [0098] **100**: headrest [0099] **110**: neck support [0100] **120**: headrest bracket [0101] **122**: bracket body [0102] **122***a:* support-inserted hole [0103] **124**: fixing handle [0104] **126**: front bracket [0105] **127**: rear bracket [0106] **128**: bracket-fastening member [0107] **130**: rod connecter [0108] **140**: headrest panel [0109] **200**: rod adjuster [0110] **210**: first rod member [0111] **220**: second rod member [0112] **230**: ball-and-socket joint member [0113] **240**: ball joint [0114] **250**: socket joint [0115] **260**: joint locker [0116] **300**: medical device holder [0117] **310**: left medical device holder [0118] **320**: right medical device holder [0119] **330**, **340**: another modified example of medical device holder [0120] **10**: dental chair [0121] **12**: headrest support [0122] **20**: dental medical device [0123] **30**: tray device

Claims

1. A holding device for dental medical devices, the holding device comprising: a headrest installed on a headrest support of a dental chair; and a medical device holder connected to the headrest and configured to hold dental medical devices used during dental treatment.
2. The holding device according to claim 1, further comprising at least one rod adjuster arranged between the headrest and the medical device holder to connect the headrest and the medical device holder to each other, and bent in various shapes during dental treatment.
3. The holding device according to claim 2, wherein the headrest has a structure that corresponds to various thicknesses and widths of the headrest support so as to be detachably installed regardless of a kind of a dental chair, and the rod adjuster is configured to comprise a plurality of joints, and to selectively lock movement of the joints to stably hold the dental medical devices.
4. The holding device according to claim 3, wherein the headrest comprises: a headrest bracket

detachably installed on the headrest support so as to be positionally adjusted in upper and lower directions along the headrest support, the rod adjuster being connected to each of opposite sides of the headrest bracket; and a headrest panel coupled to a front surface of the headrest bracket to support the head of a patient sitting on the dental chair.

5. The holding device according to claim 4, wherein the headrest bracket comprises: a bracket body in the center of which a support-inserted hole is formed, the headrest support being formed to pass through the support-inserted hole; and a fixing handle movably arranged on the bracket body in a screw-fastened manner so as to fasten and fix the headrest support to an inside of the support-inserted hole.

6. The holding device according to claim 5, wherein a thickness and width of the headrest support are different depending upon a kind of dental chair, and the support-inserted hole has a cross-sectional shape of a multi-stage structure formed stepwise according to a plurality of thicknesses and widths corresponding to thicknesses and widths of the headrest support.

7. The holding device according to claim 6, wherein the bracket body comprises: a front bracket arranged at the front of the headrest support, the headrest panel being coupled to the front surface of the front bracket, and a front insertion hole forming a front part of the support-inserted hole being formed stepwise on the front bracket; a rear bracket arranged at the rear of the headrest support so as to face the front bracket, the rod adjuster being respectively connected to opposite sides of the rear bracket, and a rear insertion hole forming a rear part of the support-inserted hole being formed stepwise on the rear bracket; and a plurality of bracket-fastening members fastened and fixed to the front bracket and the rear bracket in a state in which the headrest support is placed between the front insertion hole and the rear insertion hole.

8. The holding device according to claim 4, wherein the headrest panel is fastened and fixed to a front surface of the headrest bracket by frame-fastening members, and a Velcro member is provided on a front surface of the front surface of the headrest panel to detachably fix a neck support.

9. The holding device according to claims 4, wherein the rod adjuster comprises: first rod members whose one end is fastened and fixed to each of opposite sides of the headrest bracket; a plurality of second rod members arranged between another end of each of the first rod members and the medical device holder and lengthily connected along a longitudinal direction; and a ball-and-socket joint member provided at each of at least one connector between the first rod members and the second rod members, at least one connector between the second rod members, and at least one connector between the second rod members and the medical device holder, and configured in a ball-socket structure capable of joint movement of a rotational pattern.

10. The holding device according to claim 9, wherein the ball-and-socket joint member comprises: a ball joint formed in a ball structure; a socket joint formed in a spherical socket structure to which the ball joint is rotatably coupled; and a joint locker operably formed on the socket joint to selectively restrict rotation of the ball joint and the socket joint.

11. The holding device according to claim 10, wherein a screw fastener is formed at one end of each of the first rod members to be connected in a screw-fastened manner to rod connectors formed on opposite sides of the headrest bracket, and the socket joint is formed at another end of the first rod member, the ball joint is formed at one end of the second rod member, and the socket joint is formed at another end of the second rod member, and the ball joint is formed at one end of the medical device holder.

12. The holding device according to claim 9, wherein at least one of the first rod member and the second rod members is formed in a continuous joint structure of a javara structure or centipede type that can be freely bent.

13. The holding device according to claim 4, wherein the medical device holder comprises: a holder connection rod whose one end is connected to an end of the rod adjuster in a structure capable of joint movement; a holder for holding the dental medical devices; and a freely bendable rod provided to connect the holder and another end of the holder connection rod to each other and

formed in a continuous joint structure of a javara structure or centipede type that can be freely bent.

14. The holding device according to claim 4, wherein the medical device holder comprises: a holder connection rod whose one end is connected to an end of the rod adjuster in a structure capable of joint movement; a holder for holding the dental medical devices; and a ball-and-socket joint member provided to connect the holder and another end of the holder connection rod and formed in a ball-socket structure capable of joint movement of a rotational pattern.

15. The holding device according to claim 4, wherein the medical device holder comprises: a holder connection rod whose one end is connected to an end of the rod adjuster in a structure capable of joint movement; a holder connected to another end of the holder connection rod and configured to hold the dental medical devices; and a fitting groove formed in the holder such that a portion of the dental medical device is fitted and fixed to the fitting groove.

16. The holding device according to claim 13, wherein the holder connection rod is formed in a continuous joint structure of a javara structure or centipede type that can be freely bent.

17. The holding device according to claim 2, further comprising a tray device detachably placed on the rod adjuster to temporarily store the dental medical devices and various auxiliary materials required for dental treatment.