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(54) **HOSE HOLDER FOR DENTAL CARE UNIT**

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PORTE-TUYAU FLEXIBLE POUR APPAREIL DE SOINS DENTAIRES

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(56) References cited:
DE-A1- 2 621 760
FR-A1- 2 555 040
JP-A- 08 289 910
JP-A- 2002 291 818
JP-A- 2005 058 294
US-A- 4 470 811

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a hose holder for use in a dental care unit to receive and support a hose and a tool (an instrument) possibly attached to it until needed by a dental assistant or a dentist. In this application, hose holder refers to any holder supporting a hose, regardless of whether the part held by the holder is the hose itself, a connector possibly arranged on it or a tool attached to the hose. In the following, the invention will be described primarily with reference to suction hoses of a dental care unit, but it is to be noted that the hose holder of the invention can also be utilized in other contexts, and, in addition to an actual dental care unit, e.g. in a movable instrument cart separate from it, or in connection with a suction system separate from the dental care unit.

DESCRIPTION OF THE STATE OF THE ART

[0002] In prior art, a suction hose holder is known which is detachably attachable to an instrument console of a dental care unit, having a holder part which at least partially surrounds the suction hose to be arranged in it to support the hose. The holder part thus forms a partially open ring having a supporting surface that comes into contact with e.g. a connector provided on the suction hose when the suction hose and the tool (such as a suction nozzle and a suction tube) attached to it by means of the connector is hung in its place in the holder.

[0003] To allow manipulation of the suction hose to be controlled as easily as possible with a single hand, a prior-art solution includes closing of the partially open ring of the holder part with a detachable part having a roller fixedly attached to it. This detachable part is fastened to the holder part to surround the suction hose together with the holder part. Thus, the detachable part and the roller together define an opening through which the hose can be moved in its lengthwise direction, supported by the roller.

[0004] However, the above-described prior-art solution involves the drawback of difficult manageability of the hose. Despite the roller, the hose moves poorly through the aforesaid opening.

[0005] US patent specification 4,470,811 discloses a holder in which the opening through which the hose is arranged to be moved is defined by a lower primary roller serving as an actual supporting surface and a second, upper roller and a supporting framework connecting these rollers to each other. In this solution, the fundamental function of said upper roller relates to positioning of the instrument in the holder, not so to how movement of the hose through the holder could be improved.

SUMMARY OF THE INVENTION

[0006] The object of the present invention is to make available a more user-friendly design for hose holders. This object is achieved by a hose holder according to the independent claim 1.

[0007] In the holder according to the invention, in addition to a primary guide roller at least one lower guide roller, arranged in the holder on a lower level than the primary guide roller, is utilized. Preferably at least a first lower guide roller is so arranged in the holder that it assumes a position on a different side of the hose than the primary guide roller.

[0008] The invention and its preferred embodiments facilitate handling of the hose / tool both in a situation where the hose / tool is being removed from the hose holder and moved towards its point of application, i.e. when the hose is being pulled through the holder, and in a situation where the hose / tool is being placed back in its holder, i.e. when the hose is moving in the reverse direction through the holder.

[0009] Some preferred embodiments of the hose holder according to the invention are presented in the independent claims 2-9 below.

BRIEF DESCRIPTION OF THE FIGURES

[0010] In the following, the invention will be described in more detail by referring to the preferred embodiments shown in the attached drawings, wherein

Fig. 1 represents an instrument console of a dental care unit, with various prior art holders attached to it,

Fig. 2 represents one embodiment of the hose holder according to the invention,

Fig. 3 represents parts of the hose holder of Fig. 2 detached from each other, and

Fig. 4 demonstrates a roller utilized in one embodiment of the hose holder according to the invention.

DESCRIPTION OF AT LEAST ONE EMBODIMENT

[0011] Fig. 1 represents an instrument console 1 of a dental care unit. This may be an instrument console 1 used by a dentist or alternatively by a dental assistant. Arranged on the instrument console are various hose holders 2-6 in which a hose, and a tool (an instrument) possibly attached to it, can be placed to be supported by the hose holder. The hose can be supported e.g. by a bulge provided in the hose itself, by a connector provided on the hose or by a tool attached to the hose. In this context, connector refers generally to any part arranged to the hose that may station itself in the holder part of the hose holder so as to support the hose. This part may thus be e.g. a connector by means of which a tool, such as a suction nozzle and a suction tube, is attached to the hose.

[0012] Fig. 1 presents prior art hose holders 2-6, out of which the one marked with reference number 6 com-

prises a holder part 8 and a guide roller 7. The hose supported by the hose holder 6 can be pulled out through an opening 9 delimited by the holder part 8 and the guide roller 7 between the two. The guide roller 7 makes it easier to pull out the hose and insert it back into its place. The process of setting the hose into its place is facilitated by gravity as the weight of the hose portion located below the hose holder 6 practically pulls the upper end of the hose and the tool attached to it back into its place in the holder 6. The guide roller 7 and the holder part 8 have been arranged to lie at substantially the same level in the vertical direction so that the hose guided by them ends up substantially at the desired position in the holder 6.

[0013] In Fig. 1, the hose holder 6, as well as the other holders 2 - 5, may be connected to the instrument console 1 by a hinge, which allows their angle relative to the instrument console 1 to be changed. The instrument console 1 may have in connection with one or more holders a holder-specific detecting element allowing automatic detection of whether the hose and the tool possibly attached to it is placed in the holder. Thus, e.g. in the case of a suction hose, a pump producing suction can be turned off automatically in response to a signal received from the detecting element indicating that the suction hose is not being used but is placed in its holder. Such a detecting element may comprise e.g. a switch, an inductive sensor, a capacitive sensor or an optical sensor.

[0014] Fig. 2 represents one embodiment of the hose holder of the invention and Fig. 3 presents the hose holder of Fig. 2 disassembled into parts.

[0015] In addition to the hose holder 6 itself, Fig. 2 also shows a hose 10 supported by it and comprising a tool connector 19. A tool may consist of e.g. a suction nozzle and a suction tube, which can be used to remove saliva, food remnants etc. from the patient's mouth during treatment. In this embodiment, the hose 10 is supported by the aforesaid connector 19, the connector 19 being arranged to have a larger diameter than that of the hose 10 so that the hose 10 assumes a position as shown in Fig. 2 in the holder part 8 of the holder 6. In this context, the term holder part does not only refer to a separate and/or a detachable part specifically arranged to the holder 6 but generally to such a part or point in the construction of the holder 6 for which this holder-functionality has been arranged. The weight of the hose 10 holds it in its place in the hose holder 6. The other end of the hose 10 may be connected e.g. to a suction line provided in the dental care unit and comprising a suction pump.

[0016] In addition to the primary guide roller 7, the hose holder 6 of the invention comprises at least one lower guide roller 11, 12, which is arranged in the holder 6 at a lower level than the primary guide roller 7. The embodiment of the invention according to Figs. 2 and 3 comprises two lower guide rollers 11, 12 placed on opposite sides of the hose 10, of which the first lower guide roller 11 is located substantially on the opposite side of the hose relative to the primary guide roller 7, whereas the second lower guide roller 12 is located substantially on the opposite side of the hose 10 relative to the first lower guide roller 11, i.e. preferably substantially below the primary guide roller 7. Depending on the case, it is also possible to use only either a first lower guide roller 11 or a second lower guide roller 12. In the solution according to Figs. 2 and 3, all the guide rollers 7, 11, 12 are secured to the holder in fixed positions, but one may also think arranging position of e.g. the second lower guide roller 12 to be adjustable. If both the first 11 and the second 12 lower guide rollers are arranged to be movable in position, the holder 6 is even in this case so implemented that the lower guide rollers 11, 12 are always located at a lower level than the primary guide roller 7.

[0017] Considering the first lower guide roller 11, it improves the manipulability of the hose especially when the hose 10 is being pulled out from the holder 6. If we imagine that Fig. 2 would only show a first lower guide roller 11 and the hose 10 would be connected to a dental care unit located to the left of the holder 6 so that it would form a substantially U-shaped loop bending to the left of the holder 6, and if we further consider a situation where the tool attached to the hose 10 is being moved upwards and to the right towards the patient, then the hose 10 will run easily through the holder 6 thanks to the primary guide roller 7 and the first lower guide roller 11.

[0018] After the treatment operation, the hose 10 can be brought to an appropriate position relative to the holder 6 and the grip on it be released, whereupon it will automatically be guided into the holder 6 thanks to gravitation and the guide rollers without a need to expressly position the hose 10 into its place.

[0019] The hose holder 6 may also be placed in a different position relative to the patient than in the case considered above and, on the other hand, the tool attached to the hose 10 may also have to be moved in other directions than towards the patient. When considering e.g. a situation with reference to Fig. 2, in which the lower end of the typically fairly stiff hose 10 would now tend to bend to the right, the second lower guide roller 12 shown in Fig. 2 will facilitate returning of the hose 10 into its holder 6.

[0020] In the embodiment presented of Fig. 2, the primary guide roller 7 is mounted on the holder part 8 by means of elongated flexible roller holders 13 with snap-on connection 14. In this embodiment, the snap-on connection 14 is implemented by means of pegs provided in the holder part 8 and apertures arranged in the roller holders 13. The snap-on connection can thus be opened manually without using any tools, by bending the flexible roller holders 13 so that the aforesaid apertures rise clear off their complementary pegs. This bending can be realized e.g. by pressing the outer ends 15 of the roller holders 13 towards each other. The snap-on connection allows the hose holder 6 to be easily taken into two parts so that the hose 10 can be removed from the hose holder 6.

[0021] The embodiment of the invention according to Figs. 2 and 3, comprising a snap-on connection of the

holder part 8 mentioned above, allows, among other things, removal of the primary guide roller 7 and the second lower guide roller 12, which are located substantially on the same side of the hose 10, together with the roller holder 13 from the hose holder 6. Thus, such a holder 6 of the invention can also be used as an open holder, i.e. as a holder that is partially open on one side and therefore allows the hose 10 to be removed from its holder 6 in a lateral direction as well. The possibility for simple demounting also facilitates cleaning of the hose holder 6 as well as the suction hose 10.

[0022] In the embodiment according to Figs. 2 and 3, all the guide rollers 7, 11 and 12 are attached to the hose holder 6 by means of flexible projection pairs 16 provided on it. Formed between these projection pairs 16 are slots into which axis 17 protruding from the ends of the guide rollers 7, 11 12 are inserted and locked by means of snap-on connections. At least one, preferably all guide rollers 7, 11, 12 provided in the holder 6 are arranged to be rotatable.

[0023] The above-described snap-on connections allow the hose holder 6 according to Figs. 2 and 3 to be completely dismantled without using any tools, which makes possible easy detaching of the various parts from each other for cleaning. The parts can be manufactured e.g. from plastic which endures autoclave treatment.

[0024] In the example illustrated in Figs. 2 and 3, the holder part 8 is provided with mounting means 18, which may consist of e.g. shaped metal pins, which will be inserted into mounting apertures provided in the instrument console of a dental care unit. By providing in connection with these apertures a connector arrangement based on e.g. balls and springs and mateable with notches provided in the aforesaid metal pins, the holder part 8 can be arranged to be detachably mounted on the instrument console.

[0025] The hose holder 6 of the invention can also be arranged to be integrated with an instrument console. In this case, certain parts of the hose holder presented in Figs. 2 and 3, such as e.g. the first lower guide roller 11 and/or the holder part 8, may be secured directly to the instrument console.

[0026] The instrument console may be provided with an optically operated detecting element which will make it possible to monitor when the hose 10 is put in its place in the hose holder 6. In view of this, in the embodiment of Figs. 2 and 3, an opening 20 extending through the entire holder part 8 is arranged to provide an unobstructed visibility to the hose 10. The optical identification may also be directed to a connector 19 on the hose or to a tool attached to the hose.

[0027] Fig. 4 is a top-view visualization of a roller utilized in one embodiment of the hose holder of the invention. Fig. 4 shows only part of the hose holder 6. From the figure it can be seen how the primary guide roller 7 together with the holder part 8 of the hose holder 6 delimit the opening 9 through which the hose 10 may be moved. For the sake of clarity, in Fig. 4 the hose 10 is shown without the connector 19.

[0028] For the guide roller to provide also lateral support for the hose, i.e. support in the axial direction of the guide roller, it is preferably so designed that the diameter D1 of the guide roller at its ends is larger than the diameter D2 at the middle portion of the roller. The dimensioning can be implemented so that the difference between the diameter D1 of the ends of the guide roller and the diameter D2 of the middle portion is about [0,5 *R ...1,0 * R], where R is the radius of the hose. All the guide rollers of the holder can be dimensioned in this way.

[0029] In the holder according to the invention, the hose moves relatively easily even when it is being pulled out from the holder in a somewhat oblique direction instead a straight direction.

[0030] It is to be understood that the above description and the related figures are only intended to visualize the present invention. Different variations and modifications of the invention will be obvious to a person skilled in the art without deviating from the scope of protection of the invention.

Claims

1. A hose holder for a dental care unit, said holder comprising at least a functional holder part (8) and a primary guide roller (7), which primary guide roller (7) together with the holder part (8) have been arranged to define such an opening (9) that a hose (10) used in connection with the dental care unit can be placed in connection with said opening and moved through it, **characterized in that** the hose holder (6) additionally comprises at least one lower guide roller (11, 12), which has been arranged in the hose holder (6) at a lower level than the aforesaid primary guide roller (7).

2. The hose holder according to claim 1, **characterized in that** the aforesaid at least one lower guide roller is a first lower guide roller (11), which has been arranged to locate substantially on a different side of the hose (10) than the aforesaid primary guide roller (7).

3. The hose holder according to claim 1 or 2, **characterized in that** the aforesaid holder part (8) is so designed that it at least partially surrounds the hose (10) placed in the holder.

4. The hose holder according to any one of claims 1-3, **characterized in that** the hose holder (6) includes a first and a second lower guide roller (11, 12), which are so arranged in the holder that the first and the second lower guide rollers (11, 12) are located substantially on opposite sides of the hose (10).

5. The hose holder according to any one of claims 1-4,

characterized in that at least the aforesaid primary guide roller (7) and the first lower guide roller (11, 12) have been arranged to be immovable in position in the hose holder.

6. The hose holder according to any one of claims 1-5, **characterized in that** the holder (6) comprises at least one roller holder (13), by means of which at least the primary guide roller (7) can be attached to the holder (6) via a manually releasable snap-on connection (14).

7. The hose holder according to any one of claims 1-6, **characterized in that** the holder (6) is provided with mounting means (18) for detachably fastening the holder (6) to the instrument console (1) of the dental care unit.

8. The hose holder according to any one of claims 1-7, **characterized in that** the diameter (D1) of the ends of at least one of the guide rollers is larger than the diameter (D2) of its middle portion so that the difference between the said diameters is in the range of about (0,5 * R ... 1,0 * R), where R is the radius of the hose (10).

9. The hose holder according to any one of claims 1-8, **characterized in that** the aforesaid holder part (8) comprises at least one slot formed by a flexible projection pair (16) and adapted to receive axis (17) protruding from the ends of the guide roller (7, 11, 12) and to lock them in the slot by a snap-on connection.

10. The hose holder according to any one of claims 1-9, **characterized in that** at least one or all of the guide rollers provided in the holder are arranged rotatable.

Patentansprüche

1. Schlauchhalter für eine Zahnpflegeeinheit, wobei dieser Halter wenigstens ein funktionelles Halteteil (8) und eine primäre Führungsrolle (7) hat, wobei die primäre Führungsrolle (7) zusammen mit dem Halteteil (8) derart angeordnet sind, dass sie eine solche Öffnung (9) definieren, dass ein in Verbindung mit der Zahnpflegeeinheit genutzter Schlauch (10) in Verbindung mit dieser Öffnung gesetzt und durch diese bewegt werden kann,
dadurch gekennzeichnet, dass der Schlauchhalter (6) zusätzlich wenigstens eine untere Führungsrolle (11, 12) hat, welche in dem Schlauchhalter (6) auf einer niedrigeren Höhe als der der vorstehend genannten primären Führungsrolle (7) angeordnet ist.

2. Schlauchhalter nach Anspruch 1, **dadurch gekennzeichnet, dass** die vorstehend genannte wenigstens eine untere Führungsrolle eine erste untere Führungsrolle (11) ist, welche derart angeordnet ist, dass sie sich im Wesentlichen an einer anderen Seite des Schlauchs (10) als die vorstehend genannte primäre Führungsrolle (7) befindet.

3. Schlauchhalter nach einem der Ansprüche 1 oder 2, **dadurch gekennzeichnet, dass** das vorstehend genannte Halteteil (8) derart ausgebildet ist, dass es den in den Halter eingesetzten Schlauch (10) wenigstens teilweise umgibt.

4. Schlauchhalter nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** der Schlauchhalter (6) eine erste und eine zweite untere Führungsrolle (11, 12) aufweist, welche derart in dem Halter angeordnet sind, dass die erste und die zweite untere Führungsrolle (11, 12) sich im Wesentlichen auf gegenüberliegenden Seiten des Schlauchs (10) befinden.

5. Schlauchhalter nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** wenigstens die vorstehend genannte primäre Führungsrolle (7) und die erste untere Führungsrolle (11, 12) derart angeordnet sind, dass deren Position in dem Schlauchhalter unbeweglich ist.

6. Schlauchhalter nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** der Halter (6) wenigstens einen Rollenhalter (13) hat, durch welchen wenigstens die primäre Führungsrolle (7) über eine manuell lösbare Aufschnappverbindung (14) an dem Halter (6) angebracht werden kann.

7. Schlauchhalter nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** der Halter (6) mit Montageeinrichtungen (18) zum lösbaren Befestigen des Halters (6) an der Instrumentenkonsole (1) der Zahnpflegeeinheit ausgestattet ist.

8. Schlauchhalter nach einem der Ansprüche 1 bis 7, **dadurch gekennzeichnet, dass** der Durchmesser (D1) der Enden wenigstens einer der Führungsrollen größer als der Durchmesser (D2) deren Mittelabschnitts ist, sodass die Differenz zwischen diesen Durchmessern in dem Bereich von ungefähr (0,5 * R ... 1,0 * R) liegt, wobei R der Radius des Schlauchs (10) ist.

9. Schlauchhalter nach einem der Ansprüche 1 bis 8, **dadurch gekennzeichnet, dass** das vorstehend genannte Halteteil (8) wenigstens einen durch ein Paar flexible Vorsprünge (16) geformten Schlitz hat und dazu angepasst ist, die von den Enden der Führungsrolle (7, 11, 12) hervor ragende Achse (17) aufzunehmen und die Führungsrollen (7, 11, 12) durch

eine Aufschnappverbindung in dem Schlitz zu sichern.

10. Schlauchhalter nach einem der Ansprüche 1 bis 9, **dadurch gekennzeichnet, dass** wenigstens eine oder alle der in dem Halter vorgesehenen Führungsrollen drehbar angeordnet sind.

Revendications

1. Support de tuyau flexible pour une unité de soins dentaires, ledit support comprenant au moins une partie de support fonctionnel (8) et un rouleau de guidage primaire (7), lequel rouleau de guidage primaire (7) conjointement à la partie de support (8) ont été agencé pour définir une ouverture (9) de sorte qu'un tuyau flexible (10) utilisé en liaison avec l'unité de soins dentaires puisse être placé en liaison avec ladite ouverture et déplacé à travers celle-ci, **caractérisé en ce que** le support de tuyau flexible (6) comprend en outre au moins un rouleau de guidage inférieur (11, 12), qui a été agencé dans le support de tuyau flexible (6) à un niveau inférieur à celui du rouleau de guidage primaire (7) précité.

2. Support de tuyau flexible selon la revendication 1, **caractérisé en ce que** l'au moins un rouleau de guidage inférieur précité est un premier rouleau de guidage inférieur (11), qui a été agencé pour être situé sensiblement sur un côté du tuyau flexible (10) différent du rouleau de guidage primaire (7) précité.

3. Support de tuyau flexible selon la revendication 1 ou 2, **caractérisé en ce que** la partie de support (8) précitée est conçue de sorte qu'elle entoure au moins partiellement le tuyau flexible (10) placé dans le support.

4. Support de tuyau flexible selon l'une quelconque des revendications 1 à 3, **caractérisé en ce que** le support de tuyau flexible (6) comporte un premier et un second rouleau de guidage inférieur (11, 12), qui sont agencés dans le support de sorte que le premier et le second rouleau de guidage inférieur (11, 12) soient situés sensiblement sur des côtés opposés du tuyau flexible (10).

5. Support de tuyau flexible selon l'une quelconque des revendications 1 à 4, **caractérisé en ce qu'**au moins le rouleau de guidage primaire (7) précité et le premier rouleau de guidage inférieur (11, 12) ont été agencés pour être fixes en position dans le support de tuyau flexible.

6. Support de tuyau flexible selon l'une quelconque des revendications 1 à 5, **caractérisé en ce que** le support (6) comprend au moins un support de rouleau (13), au moyen duquel au moins le rouleau de guidage primaire (7) peut être fixé au support (6) par l'intermédiaire d'une liaison encliquetable manuellement libérable (14).

7. Support de tuyau flexible selon l'une quelconque des revendications 1 à 6, **caractérisé en ce que** le support (6) est doté de moyens de montage (18) pour arrimer de façon détachable le support (6) à la console d'instrument (1) de l'unité de soins dentaires.

8. Support de tuyau flexible selon l'une quelconque des revendications 1 à 7, **caractérisé en ce que** le diamètre (D1) des extrémités d'au moins l'un des rouleaux de guidage est plus grand que le diamètre (D2) de sa portion milieu, de sorte que la différence entre lesdits diamètres soit dans la plage d'environ (0,5 * R ... 1, 0 * R), où R est le rayon du tuyau flexible (10).

9. Support de tuyau flexible selon l'une quelconque des revendications 1 à 8, **caractérisé en ce que** la partie de support (8) précitée comprend au moins une encoche formée par une paire de protubérances souples (16) et adaptée pour recevoir l'axe (17) dépassant des extrémités du rouleau de guidage (7, 11, 12) et pour les verrouiller dans l'encoche par une liaison encliquetable.

10. Support de tuyau flexible selon l'une quelconque des revendications 1 à 9, **caractérisé en ce qu'**au moins l'un ou tous les rouleaux de guidage prévus dans le support sont agencés rotatifs.

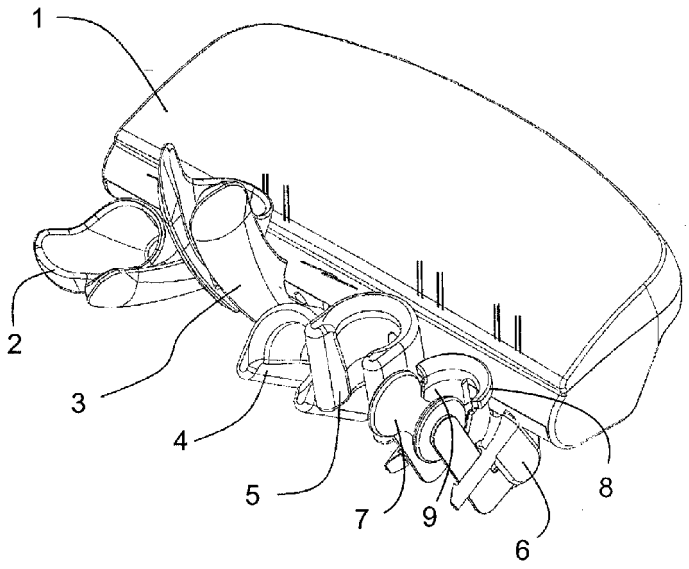


FIG. 1

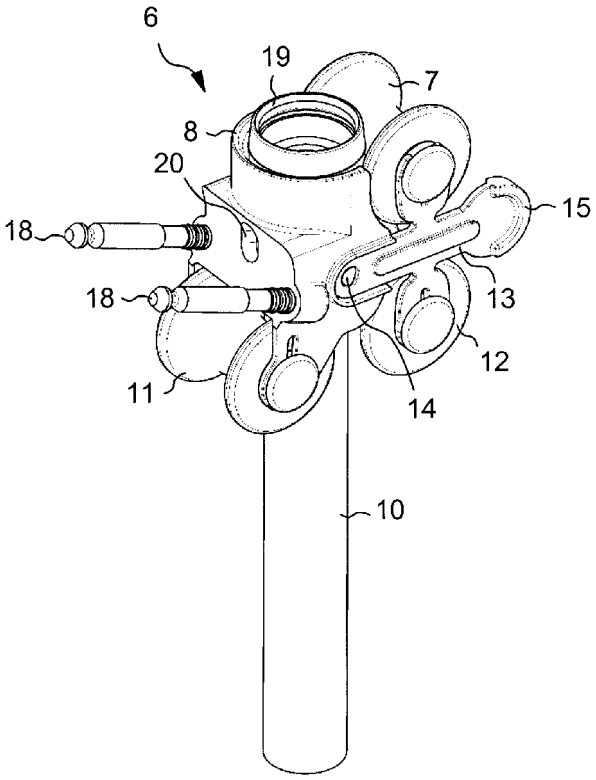


FIG. 2

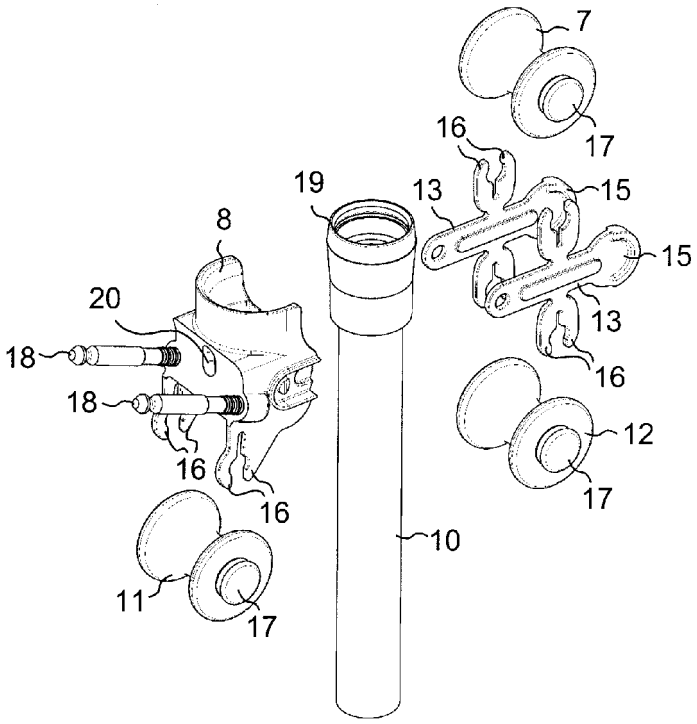

7
17
16
19
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12
16
17
16
10
11
17

FIG. 3

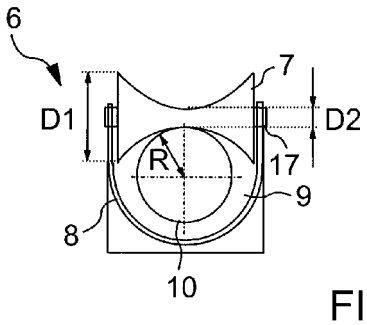

6
7
D1
D2
R
17
9
8
10

FIG. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 4470811 A **[0005]**