

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT4800325

SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	ASSIGNMENT	
CONVEYING PARTY DATA		
	Name	Execution Date
	HANS-KARSTEN REIMERS	12/08/2017
RECEIVING PARTY DATA		
Name:	DRÄGERWERK AG & CO. KGAA	
Street Address:	MOISLINGER ALLEE 53-55	
City:	LÜBECK	
State/Country:	GERMANY	
Postal Code:	23558	
PROPERTY NUMBERS Total: 1		
	Property Type	Number
	Application Number:	15883435
CORRESPONDENCE DATA		
Fax Number:	(914)941-5855	
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>		
Phone:	914-941-5600	
Email:	mandt@mcglewtuttle.com	
Correspondent Name:	MCGLEW & TUTTLE, PC	
Address Line 1:	P.O. BOX 9227	
Address Line 2:	SCARBOROUGH STATION	
Address Line 4:	SCARBOROUGH, NEW YORK 10510-9227	
ATTORNEY DOCKET NUMBER:	76108	
NAME OF SUBMITTER:	JOHN JAMES MCGLEW	
SIGNATURE:	/john james mcglew/	
DATE SIGNED:	01/30/2018	
	This document serves as an Oath/Declaration (37 CFR 1.63).	
Total Attachments: 20		
source=76108-DEC-ASS#page1.tif		
source=76108-1#page1.tif		
source=76108-1#page2.tif		
source=76108-1#page3.tif		

source=76108-1#page4.tif
source=76108-1#page5.tif
source=76108-1#page6.tif
source=76108-1#page7.tif
source=76108-1#page8.tif
source=76108-1#page9.tif
source=76108-1#page10.tif
source=76108-1#page11.tif
source=76108-1#page12.tif
source=76108-1#page13.tif
source=76108-1#page14.tif
source=76108-1#page15.tif
source=76108-1#page16.tif
source=76108-1#page17.tif
source=76108-1#page18.tif
source=76108-1#page19.tif

Docket No.: 76108

DECLARATION FOR PATENT APPLICATION AND ASSIGNMENT

Title of the Invention: **FLEXIBLE BRACKET SYSTEM FOR MEDICAL APPARATUSES**

As a below named inventor, I hereby declare that:

This declaration is directed to:

- ☒ The attached application, or
☐ United States application or PCT international application number

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

WHEREAS, Drägerwerk AG & Co. KGaA

(hereinafter referred to as Assignee) having a place of business at: Moislinger Allee 53-55, 23558 Lübeck, GERMANY

is desirous of acquiring the entire right, title and interest to said invention and in the Letters Patent to be obtained therefor from the United States;

NOW THEREFORE, be it known by all whom it may concern, that for and in consideration of the sum of One Dollar (\$1.00) (or the equivalent thereof in foreign currency) and other valuable consideration, the receipt of which is hereby acknowledged, I have assigned, sold and set over and by these presents do assign, sell and set over unto the said Assignee for the territory of the United States of America and not elsewhere, the full and exclusive right, title and interest in and to the said invention, said invention, application and Letters Patent to be held and enjoyed by the said Assignee for its own use and behoof and for the use and behoof of its successors and assigns to the full end of the term for which said Letters Patent is granted, as fully and entirely as the same would have been held by me had this Assignment and sale not been made.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than (5) years, or both.

LEGAL NAME OF INVENTOR

INVENTOR: Hans-Karsten REIMERS

Inventor's signature Hans-Karsten Reimers Date 9.12.2017

McGLEW & TUTTLE, P.C., Box 9227 Scarborough Station, Scarborough N.Y. 10510-9227 U.S.A

FLEXIBLE BRACKET SYSTEM FOR MEDICAL APPARATUSES

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of priority under 35 U.S.C. §119 of German Application 10 2017 000 851.5, filed January 31, 2017, the entire contents of which are incorporated herein by reference.

5

FIELD OF THE INVENTION

[0002] The present invention pertains to a flexible bracket system for medical apparatuses, for example, for medical apparatuses in the form of medical supply units.

BACKGROUND OF THE INVENTION

[0003] Such bracket systems are known per se and shelf spaces arranged above one
10 another in a shelf-like manner are available for medical apparatuses or the like.

[0004] One drawback of the prior-art bracket systems is that their shelf spaces are often

broader than required, so that an unfavorably increased space requirement results for the bracket system overall. The fact that a shelf space of a bracket system is too small for a medical apparatus to be placed on it likewise comes into consideration, so that this medical apparatus either cannot be placed into the bracket system at all or does not stand securely there. In addition, at least the surfaces of the shelf spaces require regular cleaning, so that large shelf spaces lead to an increased cleaning effort and too large shelf spaces lead to an unnecessarily high cleaning effort.

SUMMARY OF THE INVENTION

[0005] An object of the present invention is to provide a bracket system that avoids at least some of the drawbacks outlined above.

[0006] According to the present invention, this object is accomplished by means of a support device functioning as a bracket system for medical apparatuses. To this end, the support device comprises at least one tine and at least one crossbeam intended for mounting the tine on the column. The tine is oriented obliquely to the crossbeam mounted on the column. The support device comprises a central vertical or at least essentially vertical column.

[0007] One advantage of the present invention is that a tine is narrow in relation to its protruding length and accordingly only forms a small surface to be cleaned. A medical apparatus, for example, can be suspended on such a tine. In case of a tine having a profile corresponding to a standard profile for mounting medical apparatuses or medical devices, a

medical apparatus, for example, one for administering an infusion (drip), may be mounted on the
tine and the standard profile thereof. In case of mounting a plurality of tines on the same
crossbeam, especially in case of mounting tines in pairs on one crossbeam, these tines define a
shelf space for a medical apparatus and this medical apparatus can be placed securely in the
5 support device functioning as a bracket system, when this bracket system is positioned, for
example, with its support feet or the like over the tines. In case of tines mounted in pairs, the
resulting shelf space can be adapted accurately to the needed space requirement for a respective
medical apparatus by means of tines spaced apart in a corresponding manner.

[0008] Advantageous embodiments of the support device are described. These
10 exemplary embodiments of the present invention is explained in more detail below on the basis
of the drawing. Objects or components corresponding to one another are provided with the same
reference numbers in all figures.

[0009] The exemplary embodiment or each exemplary embodiment is not to be
understood as a limitation of the present invention. Rather, variations and modifications of the
15 concrete support device are possible within the framework of the present disclosure, especially
such variants and combinations, which, for example, can be inferred by the person skilled in the
art with respect to accomplishing the object by a combination or modification of some of the
features described in connection with the general or specific part of the specification as well as
contained in the claims and/or in the drawings and lead to a novel support device by means of
20 combinable features.

[0010] The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its uses, reference is made to the accompanying drawings and descriptive matter in which preferred
5 embodiments of the invention are illustrated.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] In the drawings:

[0012] Figure 1 is a schematic perspective view showing a support device for accommodating medical apparatuses, which is known per se, in principle;

10 **[0013]** Figure 2 is a schematic top view showing a support device with a shelf space formed by means of two parallel tines for a medical apparatus or the like;

[0014] Figure 3 is a lateral schematic view showing the support device according to Figure 2;

[0015] Figure 4 is a top view showing a plane of the support device according to Figure 2
15 with tines spaced apart at different distances in comparison to Figure 2;

[0016] Figure 5 is a top view showing a plane of the support device according to Figure 2 with a greater number of tines;

[0017] Figure 6 is a schematic view showing tines of different lengths as well as crossbeams of different lengths;

5 **[0018]** Figure 7 is an end view showing a special embodiment of a tine with lateral limitations in an area of the support section thereof; and

[0019] Figure 8 is an end view showing another special embodiment of a tine with lateral limitations in an area of the support section thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

10 **[0020]** Referring to the drawings, the view in Figure 1 shows in a schematically simplified manner a support device 1, which is known per se, in principle, for example, for medical apparatuses 12 or the like. The support device 1 comprises a central vertical or at least essentially vertical column 14, forming, so to speak, the backbone of the support device 1, on which column 14 at least one shelf space 16, usually a plurality of shelf spaces 16 for medical
15 apparatuses 12 or the like is or are mounted. The term "medical apparatus" 12 is used below as a generic term for apparatuses or equipment, which can be placed onto such a shelf space 16, without doing away with a more extensive generality. In this connection, the apparatus may be, for example, a monitor, a ventilator, an anesthesia apparatus, etc., and generally apparatuses as

they are used in a hospital, especially in an operating room.

[0021] The column 14 of the support device 1 may be mounted (not shown), in principle, directly or indirectly on the ceiling, on the floor or on a side wall of a room, especially of an operating room or of a hospital room, in a building, usually in a hospital, in a manner known per se. The size of the shelf spaces 16 may vary and shelf spaces 16 with a corresponding area are mounted on the column 14 as needed.

[0022] As outlined in the introduction, such a support device 1 is not optimal because of the fixed size of each individual shelf space 16. A too large (too broad and/or too deep) shelf space 16 may lead to space problems in the area surrounding the support device 1. In case of a shelf space 16 that is too small for a medical apparatus 12 to be placed onto the support device 1, this shelf space 16 must be removed with corresponding expenditure of time and be replaced with a larger shelf space 16 before the apparatus 12 can be used. For complying with hygiene regulations, the entire surface of all shelf spaces 16 has to be cleaned, with corresponding expenditure of time and corresponding consumption of cleaning agents, regardless of the actual space requirement for medical apparatuses 12.

[0023] Figures 2 through 8 show, likewise in a schematically highly simplified manner, embodiments of a support device 10 provided in different configurations and shown in different views.

[0024] Figure 2 shows a view of the support device 10 from above (with a view axis along the longitudinal axis of the column 14). It can be seen here that according to the central aspect of the innovation according to the invention one or more tines 20 come up to the location of a shelf space 16 mounted on the column. A medical apparatus 12, which is shown in phantom line in the view in Figure 2 (as well as in Figures 4 and 5 described below), indicating a
5 borderline thereof as well as support foot positions thereof. Each support foot is placed onto one of the tines 20, with the medical apparatus 12 put down onto these tines 20. The tines 20 function as support arms or cantilevers. The designation as tine 20 is borrowed from the corresponding designation of the fingers/tines of a forklift fork and is used below as a brief and
10 handy designation for the support arms or cantilevers of the support device 10 according to the invention and as disclosed herein. As an alternative, the designation as support arm 20 or cantilever 20 may be used instead of the designation "tine" 20.

[0025] The tine or each tine 20 is connected to the column 14 via a crossbeam 22 mounted on the column 14. The crossbeam 22 is usually oriented horizontally. The tine or each
15 tine 20 is oriented obliquely to the crossbeam 22 and two or more tines 20 mounted on a crossbeam 22 are usually aligned parallel to one another with their free ends.

[0026] The view in Figure 3 shows the support device 10 in a lateral view. A possibility for mounting a tine 20 on the crossbeam 22 is shown here. Each tine 20 comprises a support section 24, which is usually oriented horizontally, and a connecting section intended for
20 mounting on the crossbeam 22, which connecting section is configured in the embodiment

described below as a suspended section 26, because the tine 20 with the suspended section 26 is placed onto the crossbeam 22 and the tine 20 is overall suspended with it on the crossbeam 22 in the embodiment shown in Figure 3. The suspended section 26 comprises the top side of the crossbeam 22 in a hook-shaped manner and is supported indirectly or directly on the crossbeam
5 22 in connection with the hook-shaped section. In the embodiment being shown, the suspended section 26 is indirectly supported on the crossbeam 22, namely by means of an adjusting screw 28. The adjusting screw is an example of means for adjusting an inclination of the support section 24 of the tine 20 to the horizontal plane.

[0027] In the embodiment shown, the crossbeam 22 has a cuboid cross section and the
10 largest longitudinal axis of the cross-sectional area is oriented vertically or at least essentially vertically in the state mounted on the column 14. The suspended section 26 is supported on the surface of the crossbeam 22 parallel with this longitudinal axis and facing away from the column 14. With the hook-shaped section, the suspended section 26 is supported on the surface parallel with the short longitudinal axis of the cross-sectional area. Here, the hook-shaped section also
15 extends behind the crossbeam 22, i.e., in an area between the crossbeam 22 and the column 14, and hereby is in contact in at least some sections with the surface of the crossbeam 22 facing the column 14.

[0028] As an option, a position of the tine 20 or of each tine 20 on the crossbeam 22 in the axial direction of the crossbeam 22 can be adjusted. In this connection, the tine 20 or each
20 tine 20 can preferably be freely positioned in the axial direction of the crossbeam 22, for

example, by the tine 20 being moved with its suspended section 26 along the crossbeam 22. In this way, the position of the tine 20 on the support device 10 can be adjusted corresponding to the particular need. For example, a distance between two adjacent tines 20 mounted on a crossbeam 22 can be adjusted corresponding to an area of a medical apparatus 12 to be placed thereon and/or corresponding to a position of the support feet of this apparatus 12. Shelf spaces of a wide variety of medical apparatuses 12 can be created in this manner with the same tines 20 in each case. In addition, the position of medical apparatuses 12 placed on, for example, two tines 20 may also be adapted in relation to a central longitudinal axis of the column 14. It is thus possible, for example, to place a medical apparatus 12 centrally in front of the column 14 or laterally offset to the column 14. For example, an alternating arrangement of the medical apparatuses 12 along the height of the column 14 thus also come into consideration (each offset in relation to the column on the left side and on the right side) in case of a plurality of medical apparatuses 12 placed in the same support device 10.

[0029] In the case of a tine 20 with a suspended section 26 of the above-described kind, the tine 20 can be detachably connected to the crossbeam 22 and hence may, for example, be mounted on different crossbeams 22 when the support device 10 has a plurality of crossbeams 22 along the column 14. For example, a vertical position of a medical apparatus 12 to be placed in the support device 10 can be determined in this way. The possibility of detachably connecting a tine 20 to a crossbeam 22 is not limited to the above-described suspended section 26. In the same way, for example, provisions may be made for the tine 20 to be screwed to the crossbeam 22 for the detachable connection to this crossbeam 22 and/or be inserted into a recess in the

crossbeam 22 and the like.

[0030] The detachable connectability of a tine 20 to a crossbeam 22 also allows the use of different tines 20, for example, tines 20 of different lengths and/or tines 20 with different load capacity, wherein for the latter the tines 20 are, for example, manufactured from different materials (plastic, metal, etc.) and/or have reinforcing structures.

[0031] As an option, at least one crossbeam 22 may also be detachably connected to the central column 14, for example, by means of screwing to the column 14, insertion into a recess in the column 14, etc. This allows the use of different crossbeams 22, for example, crossbeams 22 of different lengths and/or crossbeams 22 with different load capacity.

[0032] In this respect, the views in Figure 4 and Figure 5 show different configurations of a plane of the support device 10 formed with at least two tines 20 in each case in a top view of the support device 10. In the situation shown in Figure 4, compared to the view in Figure 2, a longer crossbeam 22 is mounted on the column 14. A distance needed for a comparatively wide medical apparatus 12 can therefore be set between the tines 20, which are adjustable, especially movable, in their position along the crossbeam 22. In the situation shown in Figure 5, two pairs of tines 20 are mounted on a crossbeam 22, so that two medical apparatuses 12 can be placed in the same plane of the support device 10. With additional tines 20, more than two medical apparatuses 12 can also be placed in one plane.

[0033] Of course, the configurations shown in the views in Figure 2, Figure 4 and Figure 5 are only to be understood as examples and a variety of other configurations are possible with the support device 10 proposed here and functioning as a bracket system for medical apparatuses 12, wherein the ability of very extensively influencing the configuration of the support device 10 precisely represents an essential advantage of the innovation proposed here and is the basis of the flexibility of the bracket system. In this respect, the view in Figure 6 shows - only as an example - tines 20 of different lengths and crossbeams 22 of different lengths. A modular support device 10, which can be adapted to nearly any application situation by mounting the particularly needed crossbeam 22 on the column 14 and by mounting the particularly needed tine 20 on the crossbeam or a crossbeam 22, is obtained with a number of different tines 20 and different crossbeams 22.

[0034] Finally, the views in Figure 7 and Figure 8 show special embodiments of a tine 20 in the area of the support section 24 thereof. In each case, a cross section through the support section 24 of the tine 20 is shown. As can be seen, the surface of the support section 24 is limited on both sides.

[0035] In the embodiment according to Figure 7, lateral limitations 30, especially connected in one piece with the rest of the material of the tine 20, in case of an impact on a medical apparatus 12 placed in the support device 10, prevent the support feet thereof from sliding down from the comparatively small shelf space of a tine 20 because of the impact.

[0036] In the embodiment of Figure 8, standard rails 32 function as lateral limitations 32 for the mounting (attaching, clipping on, screwing on, etc.) of medical apparatuses 12. Insofar as a medical apparatus 12 likewise stands on such a tine 20, the standard rails 32 likewise function as protection against a slipping out or even falling out of the medical apparatus 12 from the support device 10.

[0037] Some of the prominent aspects of the specification submitted here can thus be briefly summarized as follows: A support device 10 functioning as a bracket system for medical apparatuses 12 is indicated, which support device 10 comprises a central vertical or at least essentially vertical column 14 in a manner known, in principal, and is characterized by at least one tine 20, optionally two or more tines 20, which is/are oriented obliquely to a crossbeam 22 mounted on the on the column 14.

[0038] While specific embodiments of the invention have been shown and described in detail to illustrate the application of the principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

WHAT IS CLAIMED IS:

1. A medical apparatus support device for at least one medical apparatus, the medical apparatus support device comprising:

a central vertical or at least essentially vertical column;

a crossbeam mounted on the column; and

at least one tine connected to the crossbeam and oriented obliquely to the crossbeam.

2. A medical apparatus support device in accordance with claim 1, wherein the at least one tine comprises at least two tines oriented obliquely to the crossbeam and aligned parallel to one another.

3. A medical apparatus support device in accordance with claim 1, wherein the connection of the at least one tine to the crossbeam comprises an adjustable connection whereby a position of the tine on the crossbeam is adjustable in an axial direction of the crossbeam.

4. A medical apparatus support device in accordance with claim 2, wherein the connection of each of the at least two tines to the crossbeam comprises an adjustable connection to adjust a position of each tine on the crossbeam in an axial direction of the crossbeam whereby a distance between two adjacent tines mounted on the crossbeam is adjustable.

5. A medical apparatus support device in accordance with claim 1, wherein the connection of the at least one tine to the crossbeam comprises a detachable connection whereby

the at least one tine is detachably connected to the crossbeam.

6. A medical apparatus support device in accordance with claim 1, wherein the mount of the crossbeam on the column comprises a detachable mount, whereby the crossbeam can be detachably connected to the central column.

7. A medical apparatus support device in accordance with claim 5, further comprising at least another crossbeam to provide a plurality of crossbeams, and at least another tine to provide a plurality of tines, wherein:

the plurality of crossbeams are of different lengths; or

the plurality of tines are of different lengths; or

the plurality of crossbeams are of different lengths and the plurality of tines are of different lengths.

8. A medical apparatus support device in accordance with claim 6, further comprising at least another crossbeam to provide a plurality of crossbeams, and at least another tine to provide a plurality of tines, wherein:

the plurality of crossbeams are of different lengths; or

the plurality of tines are of different lengths; or

the plurality of crossbeams are of different lengths and the plurality of tines are of different lengths.

9. A medical apparatus support device in accordance with claim 1, wherein the at least one tine further comprises a suspended section providing the connection of the at least one tine to the crossbeam for mounting the at least one tine on the crossbeam by the suspended section wherein the at least one tine is in contact in some sections with a top side of the crossbeam and is indirectly or directly supported on a lateral surface of the crossbeam.

10. A medical apparatus support device in accordance with claim 9, wherein the tine comprises the support section and an adjustment means for adjusting an inclination of the support section of the tine relative to a horizontal plane.

11. A medical apparatus support device in accordance with claim 8, wherein the crossbeam has a cuboid cross section and a largest longitudinal axis of a cross-sectional area of the crossbeam, in a state of the crossbeam mounted on the column, is oriented vertically or at least essentially vertically.

12. A medical apparatus support device in accordance with claim 9, wherein the crossbeam has a cuboid cross section and a largest longitudinal axis of a cross-sectional area of the crossbeam, in a state of the crossbeam mounted on the column, is oriented vertically or at least essentially vertically.

13. A medical apparatus support device in accordance with claim 1, wherein the at least one tine has lateral limitations.

14. A medical apparatus support device in accordance with claim 13, wherein the lateral limitations each comprise a rail.

15. A medical apparatus flexible bracket system comprising:

a central vertically extending column;

a crossbeam mounted on the column, the crossbeam defining opposed clamping surfaces;

a plurality of tines oriented essentially obliquely to the crossbeam and aligned essentially

5 parallel to one another, wherein each of the plurality of tines is connected to the crossbeam clamping surfaces by an adjustable and detachable connection whereby a position of each tine on the crossbeam is adjustable in an axial direction of the crossbeam and whereby each tine is detachably connected to the crossbeam.

16. A medical apparatus flexible bracket system in accordance with claim 15, wherein the mount of the crossbeam on the column comprises a detachable mount, whereby the crossbeam can be detachably connected to the central column.

17. A medical apparatus flexible bracket system in accordance with claim 16, further comprising at least another crossbeam to provide a plurality of crossbeams, wherein:

the plurality of crossbeams are of different lengths; or

the plurality of tines are of different lengths; or

the plurality of crossbeams are of different lengths and the plurality of tines are of different lengths.

18. A medical apparatus flexible bracket system in accordance with claim 16, wherein each tine further comprises a suspended section providing the adjustable and detachable connection of each tine to the crossbeam clamping surfaces for mounting each tine on the crossbeam by the suspended section wherein each tine is in contact in some sections with a top side clamping surface of the crossbeam and is indirectly or directly supported on a lateral clamping surface of the crossbeam.

19. A medical apparatus flexible bracket system in accordance with claim 18, wherein the tine comprises the support section and an adjustment means for adjusting an inclination of the support section of the tine relative to a horizontal plane.

20. A medical apparatus flexible bracket system in accordance with claim 16, wherein each tine has lateral limitations.

ABSTRACT OF THE DISCLOSURE

A support device (10) forms a medical apparatuses bracket system and functions as a bracket system for medical apparatuses (12). The support device (10) includes a central vertical, or at least essentially vertical, column (14) and at least one tine (20) and optionally two or more tines (20). The tine (20) or tines (20) is/are oriented obliquely to a crossbeam (22) mounted on the column (14).

APPENDIX:

List of reference designations

- 1 Support device
- 10 Support device
- 12 Medical apparatus
- 14 Column
- 16 Shelf space
- 18 (blank)
- 20 Tine
- 22 Crossbeam
- 24 Support section (of a tine)
- 26 Suspended section (of a tine)
- 28 Adjusting screw
- 30 Lateral limitation
- 32 Standard rail (as lateral limitation)