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(54) Title: A STORAGE SYSTEM FOR A PORTABLE IV-STAND

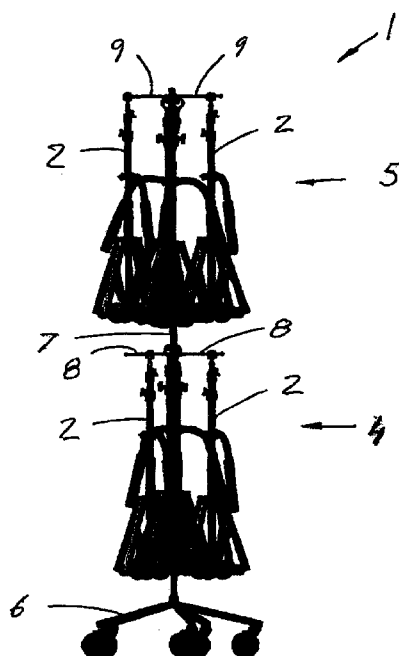


Fig. 1A

(57) Abstract: System (1) for the storage of collapsible Iv stands (2) wherein the systems includes at least one suspension stand (3) for at least one first Iv stand (2) and at least one second Iv stand (2). The Iv stand (2) includes at least one first suspension device (12) and at least one second suspension device (14) that are integrated in one and the same suspension device, with which the stand may be suspended in connection with the storage of the Iv stand (2). The suspension stand (3) is designed to accommodate a plurality of Iv stands which are positioned in at least one first vertical level (4) and at least one second vertical level (5). The Iv stand's combined suspension devices include at least one first hook-like arrangement (17) and at least one second hook-like arrangement (17), pivotally attached around a common axis of rotation.



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A STORAGE SYSTEM FOR A PORTABLE IV-STAND

Field of the Invention

The present invention concerns an Iv stand (stand for intravenous bags) and a system for storing Iv stands in accordance with the claims.

5 Background of the Invention

In medical care a large number of intravenous infusions containing for example drip, blood and the like are administered on a daily basis. Intravenous infusions are usually carried out by transferring fluids from so-called Iv bags (infusion bags) to a patient's bloodstream via an intravenous line (Iv line) or similar. The transference of fluids from Iv bags to the patient
10 occurs normally when the Iv bag is hung on a so called Iv stand at a height above the patient, allowing for the force of gravity to transfer the fluid to the patient. Alternatively, the fluid in the Iv bag may be transferred to the patient by pumping the fluid with an infusion pump or similar.

Iv stands usually include a vertical pole, a suspension device for bags and a base, foot or
15 similar. The vertical pole's length is telescopically adjustable in order to satisfy the need of adjusting the height of the bag relative the patient. Existing designs therefore usually include a first pole section and a second pole section which are telescopically adjustable relative each other. The fact that the pole is usually in two sections allows the stand, only to a limited extent, to be shortened in the stand's longitudinal direction.

20 One problem with existing types of Iv stands is that they usually require considerable space both in usage and storage when not in use. This problem is especially problematic in conjunction with storage of Iv stands when not in use. A problem with existing Iv stands is that they usually are designed to stand on the floor or the like. This means that the storage of multiple Iv stands is usually disordered in nature, with stands easily hooking into each other,
25 and that the storage of Iv stands requires considerable space.

In order to reduce the need for space required to store Iv stands, the base feet of Iv stands have been designed to be collapsible (fold together). This has allowed stands to take up less space but the storage of stands is still disorderly in nature. Therefore there is a need for a substantially improved Iv stand which takes up minimal space and with simplicity may be
30 stored together in large numbers simultaneously. According to the present invention, this

problem may be solved by hanging up the Iv stands when not in use. The problem is that existing types of Iv stands are not designed to be hung up and therefore lack a suspension device with which the stand may be hung up when not in use.

Another problem with existing types of Iv stands is that the locking devices between the stands' telescopic sections may be difficult to adjust quickly. The problem is brought about by the fact that there may exist inertia between the included parts of the Iv stand.

A still further problem with existing types of Iv stands is that they are strenuous to fold together. It may be difficult for a user, especially users with weak muscles to, for example fold out and fold together the base of the Iv stand. A yet further problem with existing designs of Iv stands is that they include a large number of details and therefore are costly to manufacture.

Prior Art

A large number of variants of stands for Iv bags are already known. For example, US4892279 describes a variant of a stand for Iv bags. The design includes a base whose legs may be folded in (retracted). The design also includes a three-piece telescoping pole. The design differs substantially from the present invention's design. For example, the design according to its description lacks a suspension device in accordance with the present invention's design.

In US5458305 is described a further variant of a stand for Iv bags with a folding (collapsible) base. The design further includes a telescopically arranged three-piece pole. The stand according to its description lacks a suspension device, with which the stand may be hung up, in a similar manner as with the present invention's design. Therefore, this design differs substantially from the design according to the present invention.

In US4744536 is described a variant of an Iv stand including a collapsible base, a telescopically adjustable pole and two pivotally attached hooks. The design of US4744536, according to its description, may only however be hung upon an object with an open (freed) end which limits the possibilities of hanging up the Iv stand. The suspension device in accordance with the present patent application may be hung upon a rod (bar) or similar without any of the rod's ends or similar being open (free) at one of its ends. This is achieved by the suspension device being made of hooks that are pivotal around a common center of rotation and that they may be rotated around (and away from) a rod or similar in conjunction with the Iv stand being hung up.

In DE8810990U is described a variant of an Iv stand including a base, a pole and two attached suspension devices for suspending two Iv stands. The design of DE8810990U, according to its description, may only however have one stand hung on one level which limits the possibilities of hanging up multiple Iv stands on the same level. Therefore, this design differs substantially from the design according to the present invention. For example, the suspension device in accordance with the present patent application allows for several stands to be suspended on the same level. Further, the design of DE8810990U, according to its description, does not allow for the storage of collapsible Iv stands.

Brief Description of the Invention Concept

The main purpose of the present invention is to create a substantially improved Iv stand and a system for storing several Iv stands. Another purpose is to create a system that includes a suspension stand in which the Iv stand may be hung upon in at least two vertical levels. A further purpose of the present invention is to create an Iv stand that can be folded together and stored in a more space efficient manner than previously known designs. A yet further purpose of the present invention is to create an Iv stand that may be hung up individually or together with several other stands.

Detailed Description of the Invention

The present invention will be described in greater detail below with reference to the accompanying schematic drawings that in an exemplifying purpose show the current preferred embodiments of the invention.

Fig. 1A shows a system for storage of Iv stands seen in perspective from the side.

Fig. 1B shows an exemplifying embodiment of a suspension stand for an Iv stand.

Fig. 2 shows an extended (folded out) Iv stand in accordance with the present invention.

Fig. 3 shows a collapsed (folded together) Iv stand in accordance with a first embodiment.

With reference to the figures and more specifically to Fig. 1A is shown a system 1 for storage of Iv stands 2 in accordance with a first embodiment. The meaning of term system 1 is a system for storing at least one first Iv stand 2 and at least one second Iv stand 2 and the Iv stand's design that allows for storage of the Iv stand. In the exemplifying embodiment of the system for storage of Iv stands, the Iv stands 2 are intended, when not used, to be stored

hanging in a storage unit or the like. In the exemplifying embodiment, the Iv stands are stored hanging on a suspension stand 3. Upon the suspension stand 3, the Iv stands are hung up on one first vertical level 4 and one second vertical level 5, wherein at least one first Iv stand 2 is suspended on at least one first vertical level 4 and at least one second Iv stand 2 is suspended on one second vertical level 5.

In the exemplifying embodiment of the suspension stand 3, it includes a base supporting device 6 to which at least one vertical pole 7 is connected. The base supporting device 6 may be comprised of a foot which is comprised of three or more legs. Each leg may be provided with at least one wheel.

The pole 7 includes at least one suspension member 8 on one first vertical level 4 and at least one suspension member 9 on one second vertical level 5. On each respective first level 4 and second level 5, multiple suspension members 8 and 9 may be connected to the pole 7. Each suspension member 8 and 9 may each be adapted to support one or more Iv stands. For example, each suspension member 8 and 9 may be adapted to suspend one Iv stand, two Iv stands, three Iv stands, four Iv stands and so on. This is preferably accomplished by the suspension members projecting length from the pole being varied according to the number of Iv stands to be suspended on the suspension member. In the exemplifying embodiment, the suspension member consists of a rod (bar) 10, pin or other projecting member extending out a ways from the pole. Each respective suspension member 8 and 9, in an alternative embodiment, may include one first part and one second part which are telescopically arranged.

The term Iv stands 2 also concerns designs which are called infusion stands (racks), drip stands and the like. The Iv stand 2 is intended to be used to suspend at least one infusion bag. The Iv stand 2 includes at least one pole 11, at least one first suspension device 12 for at least one infusion bag and at least one base supporting device 13.

A unique feature of the Iv stand 2 is that the suspension device 12 for suspending Iv bags may also be used as a suspension device 14 for the Iv stand 2 in for example the suspension stand 3 when the Iv stand 2 is not used. Unique to the preferred embodiment of the Iv stand shown in the figures is that the first suspension device 12 and the second suspension device 14 are integrated in one and the same suspension device.

Referring to Fig. 2 and 3, the combined suspension device 12 for the Iv bags and the suspension device 14 for the stand in its entirety is shown in more detail. The suspension device 12 includes at least one first suspension member 15 and preferably at least one second suspension member 16. The first suspension member 15 and the second suspension member 16 in the exemplifying embodiment consist of a hook-like arrangement (claw-like arrangement) 17. The hook-like arrangement 17 includes at its one end 18 a fastening eyelet 19 or the like. The second end 20 of the hook-like arrangement 17 is comprised of a curved part 21. The curved part 21 is preferably radius shaped. In alternative embodiments, the curved part 21 may be of another shape suitable for the purpose. Suspension member 15 and suspension member 16 are pivotally connected to a bracket 22 on the pole 11 via a shaft in the pole's horizontal direction. The bracket 22 includes at least one through hole. The first suspension member 15 and the second suspension member 16 are connected to the bracket 22 by a screw joint, shaft or similar.

A unique feature of suspension members 15 and 16, is that they are positioned on a common axis and that the suspension members are operable between at least one first position where the suspension members are intended to support at least one Iv bag and one second position where the suspension members are rotated in the vertical upward direction towards one another, to one in the vertical direction top position which allows the suspension of the stand 2 in a vertical position which corresponds, or substantially corresponds, to the vertical gravitationally influenced direction. The design entails that the suspended Iv stands do not get entangled with each other, and may be suspended together without significantly hooking or catching on other suspended Iv stands.

The pole 11 is preferably made of a pipe, rod, or the like. Preferably, the length of the pole is adjustable. The length of the pole 11 may be adjusted by the pole being telescopically adjustable. The pole 11 includes at least one first section 23 and at least one second section 24 and preferably at least one third section 25 which are telescopically arranged in relation to each other. The first section 23 is insertable into the second section 24. Alternatively, the second section 24 may be insertable into the first section 23. The second section 24 is insertable into the third section 25. Alternatively, the third section 25 may be insertable into the second section 24. The first section 23 may be locked to the second section 24 with at least one first locking device 26 or the like. The second section 24 may be locked relative to the third section 25 with at least one second locking device 27. At its upper end 28 the telescopic pole 11 is provided with, or connected to, at least one bracket 22 for the first

suspension device 12. The bracket's 22 design may vary greatly within the scope of the present invention. For example, it is conceivable that the first suspension device 12 is detachably connected to the pole with a quick coupling. It is further conceivable that bracket 22 is permanently connected to the upper end of the pole.

- 5 Suspension member 15 and suspension member 16 are pivotally arranged around an axis of rotation 29 between a first position and a second position. The first position is the position where the Iv bag is intended to be hung. The hook or hooks, are in this position rotated downward with the hook's opening upward in accordance with the position shown in Fig. 2. The second position is the position where the Iv stand is intended to be hung up. The hook,
10 hooks, are in this position rotated up towards each other according to the position shown in Fig. 3.

- The base supporting device 13 in the exemplifying figures consists of a foot 30. The foot includes at least three legs 31, and preferably five legs 31. The foot 30 further includes at least one in relation to the pole fixed part (hub) 32 and in relation to the pole one movable part
15 (hub) 33. The fixed part 32 is comprised of a bracket for the pole 11 to the foot 30. The attachment between the pole 11 and the fixed part 32 may be done in a manner suitable for the purpose. The vertical pole 11 is intended to connect permanently or arranged to be removable relative the Iv stand 2. For example, the pole and the fixed part 32 may be connected to each other by means of screw joints or other for the purpose suitable fastening elements. Unique to
20 the base supporting device is that it, unlike previous versions of the stand, includes at least one first mounting plate, at least one second mounting plate and at least one spacer plate between the first plate and the second plate.

- Each leg 31 in its first end 34 is journaled (bearing) and pivotally mounted to the movable part 33. Each leg further includes at least one strut 35 which in its one end is connected to the
25 leg 31. In its other end the strut 35 is connected to the fixed part 32 relative the pole.

- Each leg 31 includes at its other end 36, or end's proximity, at least one wheel 37. The wheel's 37 design may vary greatly within the scope of the present invention. The wheel consists preferably of a wheel of a so-called castor wheel type which is pivotal around a vertical axis 38. The wheels should also be easily rolled. In alternative embodiments, one or
30 more wheels may include a locking function to prevent the wheel (the wheels) from rolling.

The movable part 33 includes a hole in which the pole is placed. The movable part may be moved along the pole's length between one first (lower) position and one second (upper) position. The movable part is preferably journalled in relative to the pole. This journalled mounting may consist of any for the purpose suitable journalled mounting. In its simplest form the journalled mounting consists of a sliding bearing in the form of shrinking tubing attached to the pole.

The Iv stand's 2 base supporting device includes a movable hub 33 and a fixed hub 32 which are connected with each other via the leg 31 and the strut. The strut is via one first shaft arranged to rotate in relation to the fixed hub 32 and via one second shaft arranged to rotate relative to the leg 31. In a preferred embodiment, the fixed hub 32 includes at least one first lower part, at least one upper part and at least one intermediate part which are provided with a corresponding number of recesses as the number of legs 31. In the preferred embodiment of the present invention, the lower part and the upper part and the intermediate part are disc-shaped. Unique to the present invention is that the shaft is connected to a recess in the intermediate part. The recess for the shaft is positioned substantially transversely in relation to the recess for the legs. The lower part and the upper part lack the recess for the shaft, which means that the shaft is held in the recess when the upper part, the intermediate part and the lower part are assembled together.

In an alternative embodiment of the present invention, it may include at least one handle by which the Iv stand may be carried and guided. The handle may be attached permanently or temporarily to the Iv stand. Preferably, the handle is connected temporarily to the Iv stand's pole 11. The handle may include padding or similar. For example, the handle may include foam or similar material that has been covered with at least one hygienic material layer. The handle allows the Iv stand to quickly and easily be carried along, for example in connection with home care and mobile care.

In the detailed description of the present invention, design details may have been omitted which are apparent to persons skilled in the art. Such obvious design details are included to the extent necessary so that the proper and full performance of the present invention is achieved. For example, components such as screw joints, bearings (bushings) and so on are included to the extent necessary so that an adequate function of the design is obtained in accordance with the present patent application.

Even if certain preferred embodiments have been described in detail, variations and modifications within the scope of the invention may become apparent for specialists in the field of the invention and all such are regarded as falling within the scope of the following claims.

5 Advantages of the Invention

The present invention has several advantages. The most obvious is that the system's and Iv stand's design allows for more efficient storage of Iv stands when they are not in use than previously known devices for storing Iv stands. Another advantage is that the stand for Iv bags in accordance with the present invention is easy to use. Yet another advantage of the Iv stand is that it can be folded together (collapsed) so that the stand takes very little space to store. A further advantage of the present Iv stand is that it includes a suspension device with which the stand may be effectively hung up (suspended) with along with several other stands when not in use.

Claims

1. System (1) for the storage of collapsible Iv stands (2), said Iv stand (2) including at least one telescopic pole (11) which in its one end, or the end's proximity, includes at least one suspension device (12) for Iv bags and at its other end is connected to at least one base supporting device (13) wherein the system includes at least one suspension stand (3) to be used as a storage device for at least one first Iv stand (2) and at least one second Iv stand (2), said Iv stand including at least one second suspension device (14), with which the stand may be suspended in connection with the storage of the Iv stand (2), and that the first suspension device (12) and the second suspension device (14) are integrated in one and the same suspension device, and that the Iv stand is arranged to be stored suspended in a collapsed position in the suspension stand (3), said Iv stand's axial direction in a suspended position coincides, or substantially coincides, with the vertical gravity pulled direction, and that the suspension stand (3) is designed to accommodate a plurality of Iv stands which are positioned in at least one first vertical level (4) and at least one second vertical level (5), and that the Iv stand's combined suspension devices include at least one first hook-like arrangement (17) and at least one second hook-like arrangement (17) which are pivotally attached around a common axis of rotation in the pole (11), and that they are operable between at least one first position where the hook-like arrangement (17) is arranged to support at least one Iv bag and a second position where the hook-like arrangements (17) are rotated in the vertical upward direction towards each other to one in the vertical direction upper position which allows the suspension of the Iv stand (2) in a vertical position which corresponds, or substantially corresponds, to the vertical gravity pulled direction.
2. System (1) for the storage of collapsible Iv stands (2) in accordance with claim 1 wherein the suspension stand (3) includes at least one pole (7) which at its lower end is connected to at least one base supporting device (6), said pole on at least one first vertical level (4) including at least one suspension member (8) and that the pole of at least one second vertical (5) level includes at least one suspension member (9) where at least one Iv stand is hung upon the first vertical level and at least one second Iv stand is hung upon the second vertical level.

3. System (1) for the storage of collapsible Iv stands (2) in accordance with claim 1 wherein the first vertical level and the second vertical level each include four suspension members (8, 9).
4. System (1) for the storage of collapsible Iv stands (2) in accordance with claim 2 wherein the suspension members (8, 9) consist of extending members such as a rod, pin or the like.
5. System (1) for the storage of collapsible Iv stands (2) in accordance with claim 3 wherein the extending member's length is adjustable.
6. System (1) for the storage of Iv stands (2) in accordance with at least one of the previous claims wherein the Iv stand's vertical pole (11) includes at least one first section (23), at least one second section (24) and at least one third section (25) which are mutually telescopically arranged.
7. System for the storage of Iv stands (2) in accordance with at least one of the previous claims wherein the Iv stand's (2) base supporting device includes a movable hub (33) and a fixed hub (32) whose fixed hub (32) includes at least one first lower part, at least one upper part and at least one intermediate part which has a corresponding number of recesses as the number of legs (31).
8. System for the storage of Iv stands (2) in accordance with claim 7 wherein the lower part and the upper part and the intermediate part are disc-shaped.
9. System for the storage of Iv stands (2) in accordance with at least one of claims 7 and 8 wherein the base supporting device includes at least one strut (35) from the leg to the fixed hub (32) which is arranged to pivot in relation to the leg (31) and the movable hub (33).

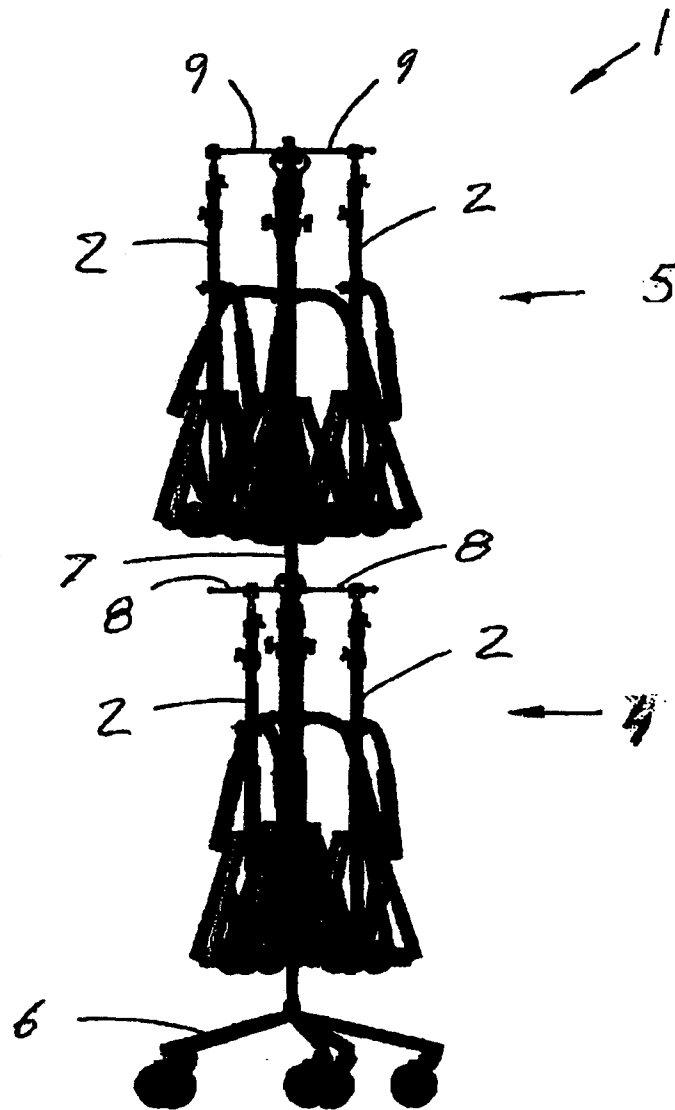


FIG 1A

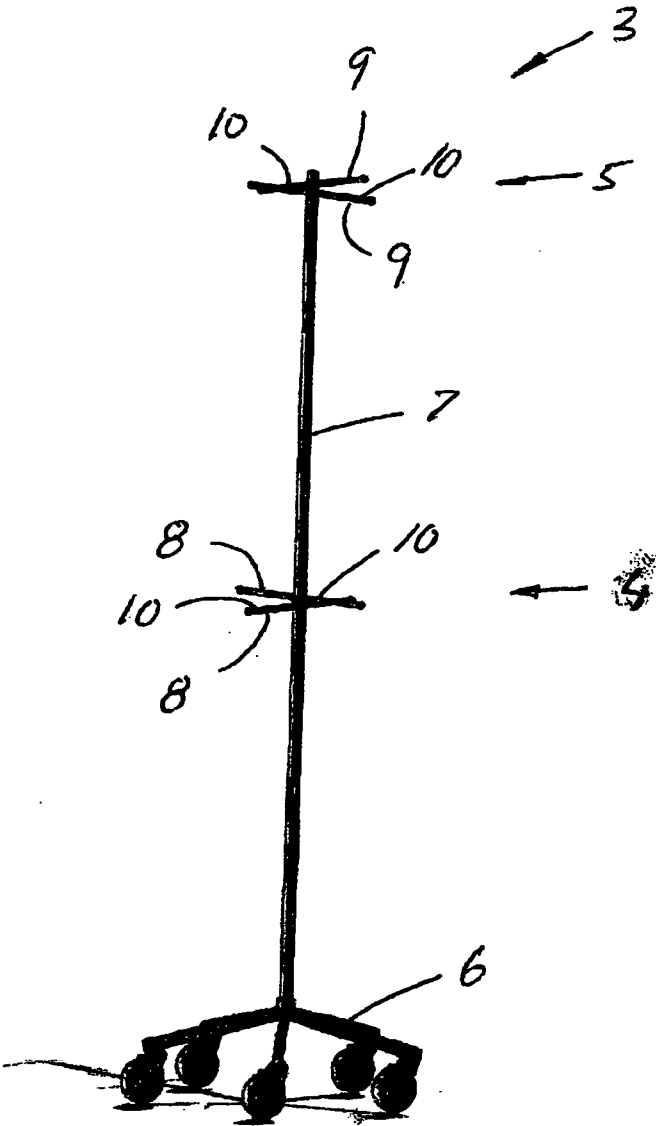


FIG 1B

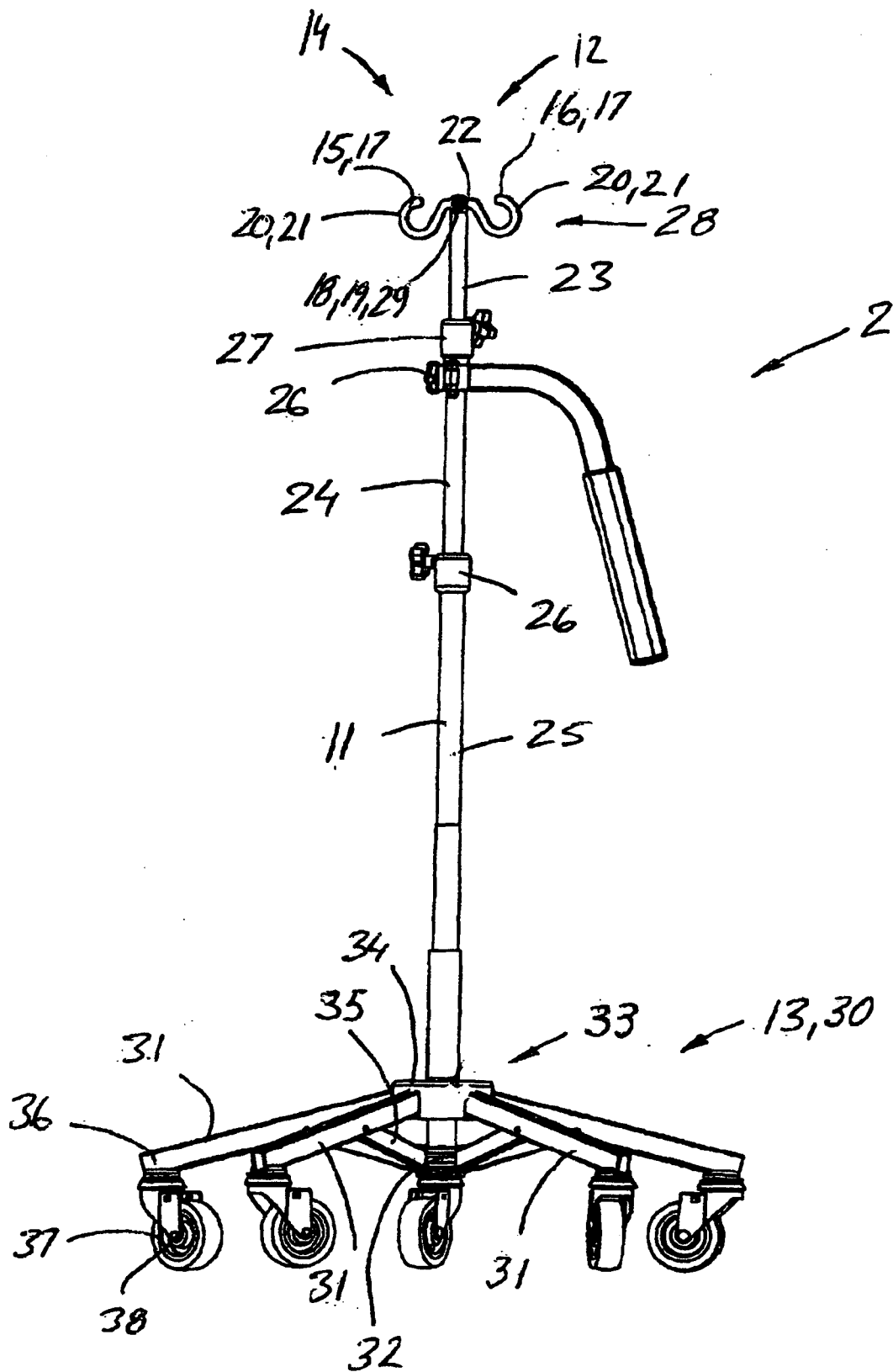


FIG. 2

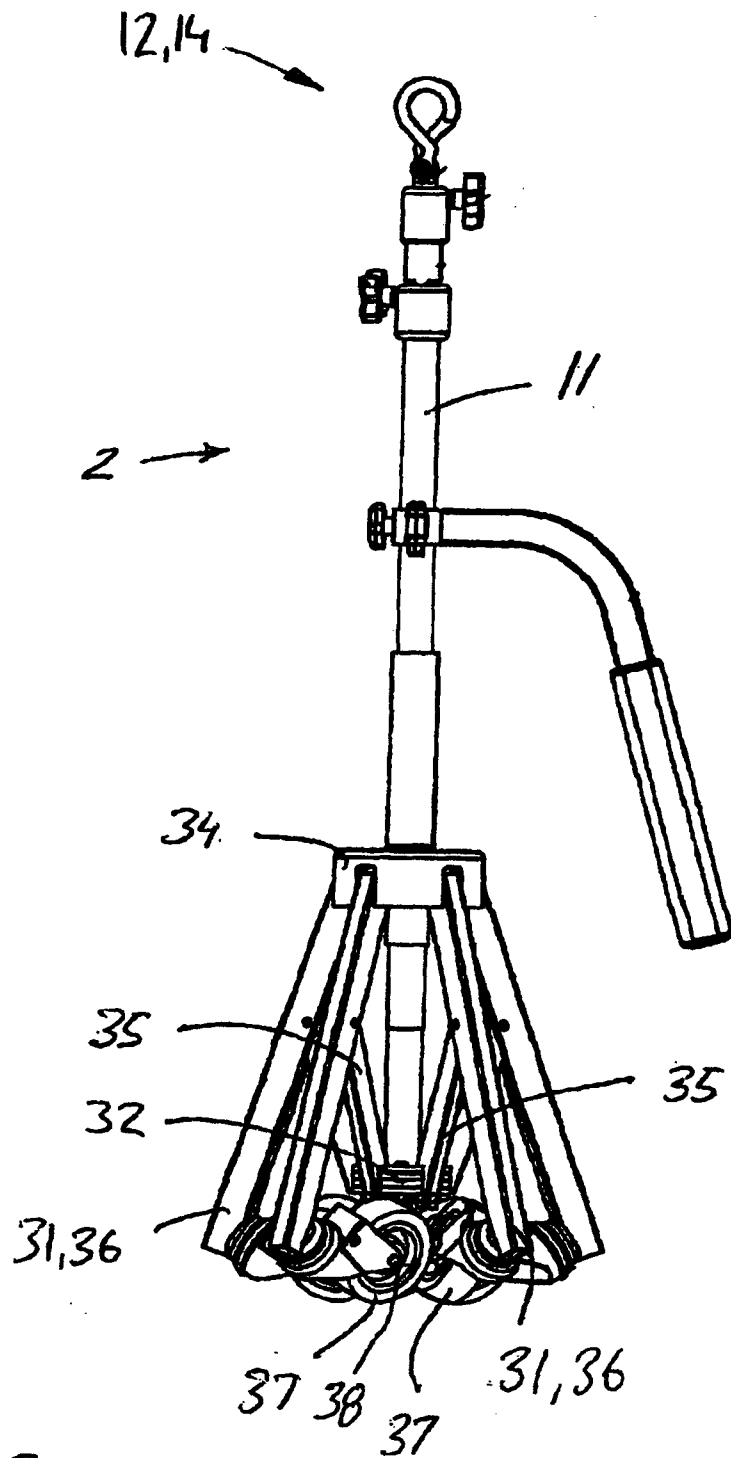


FIG. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2013/000003

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A61M, F16M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE, DK, FI, NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, PAJ, WPI data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 8810990 U (KRAFT, GOTTFRIED), 17 November 1988 (1988-11-17); whole document --	1-9
Y	SE 1000548 A1 (TARSUS PRODUCTS AB), 23 November 2011 (2011-11-23); whole document --	1-9
A	US 20050269464 A1 (ADELMAN GREGG Z), 8 December 2005 (2005-12-08); whole document --	1-9
A	US 4892279 A1 (LAFFERTY WILLIAM G ET AL), 9 January 1990 (1990-01-09); whole document -- -----	1-9



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“E” earlier application or patent but published on or after the international filing date

“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

“O” document referring to an oral disclosure, use, exhibition or other means

“P” document published prior to the international filing date but later than the priority date claimed

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

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Continuation of: second sheet

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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DE	8810990 U	17/11/1988	NONE		
SE	1000548 A1	23/11/2011	NONE		
US	20050269464 A1	08/12/2005	US	7281691 B2	16/10/2007
US	4892279 A1	09/01/1990	NONE		