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**Stout**

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(54) **GURNEY CLAMP, DETACHABLE  
EQUIPMENT STAND AND ASSOCIATED  
TRANSPORT CART**

5,355,539	A *	10/1994	Boettger	5/503.1
5,409,329	A *	4/1995	Juang	408/115 R
6,260,865	B1 *	7/2001	Yacobi et al.	280/47.34
7,065,812	B2 *	6/2006	Newkirk et al.	5/600
7,147,412	B2 *	12/2006	Davis	408/115 R
2004/0182977	A1	9/2004	Weiss	
2006/0242763	A1 *	11/2006	Graham et al.	5/503.1
2008/0217910	A1 *	9/2008	Walke et al.	285/121.7

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\* cited by examiner

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(65) **Prior Publication Data**

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(57) **ABSTRACT**

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**B62B 1/00** (2006.01)

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280/47.17, 1.188, 47.28, 638, 47.131, 47.34,  
280/63, 47.19, 47.24, 47.35, 641, 79.11;  
408/115 R, 103, 97; 5/600, 503.1

See application file for complete search history.

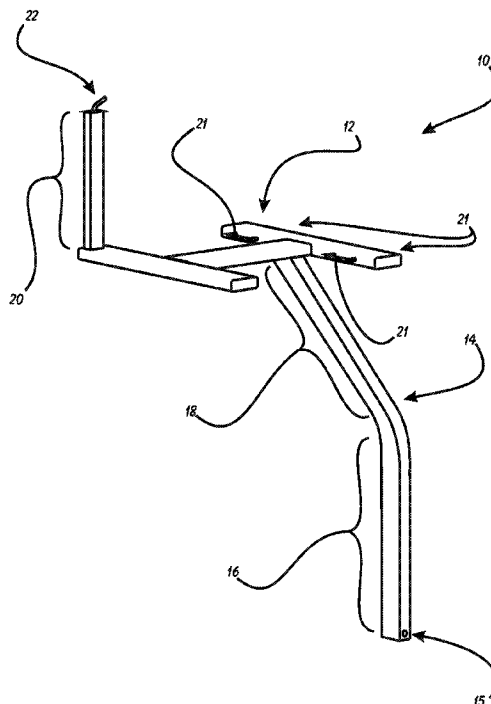
A Gurney Clamp, Detachable Equipment Stand and Associated Transport Cart is disclosed. The combination of these devices makes the transportation of patients and health status monitoring equipment more controlled, reliable and safe. The clamp is specifically configured to be attachable to the safety rails on a conventional gurney. Once installed, the clamp will provide a secure mounting point to attach the detachable equipment stand to the gurney. The stand is configured to be capable of holding a wide variety of patient monitoring equipment in an upright manner so that the equipment data can be easily viewed. The stand can be quickly and easily shifted back and forth between its mounting location at the gurney clamp, and its mounting location on the associated transport cart. When the stand is attached to the equipment cart, it provides the equipment with a secure, portable storage location.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

2,533,541	A *	12/1950	Warring	280/47.19
3,116,936	A *	1/1964	Magarian	280/47.19
3,894,748	A *	7/1975	Ratcliff	280/641
5,135,191	A *	8/1992	Schmuhl	248/125.1
5,319,816	A	6/1994	Ruehl	5/600

**10 Claims, 6 Drawing Sheets**



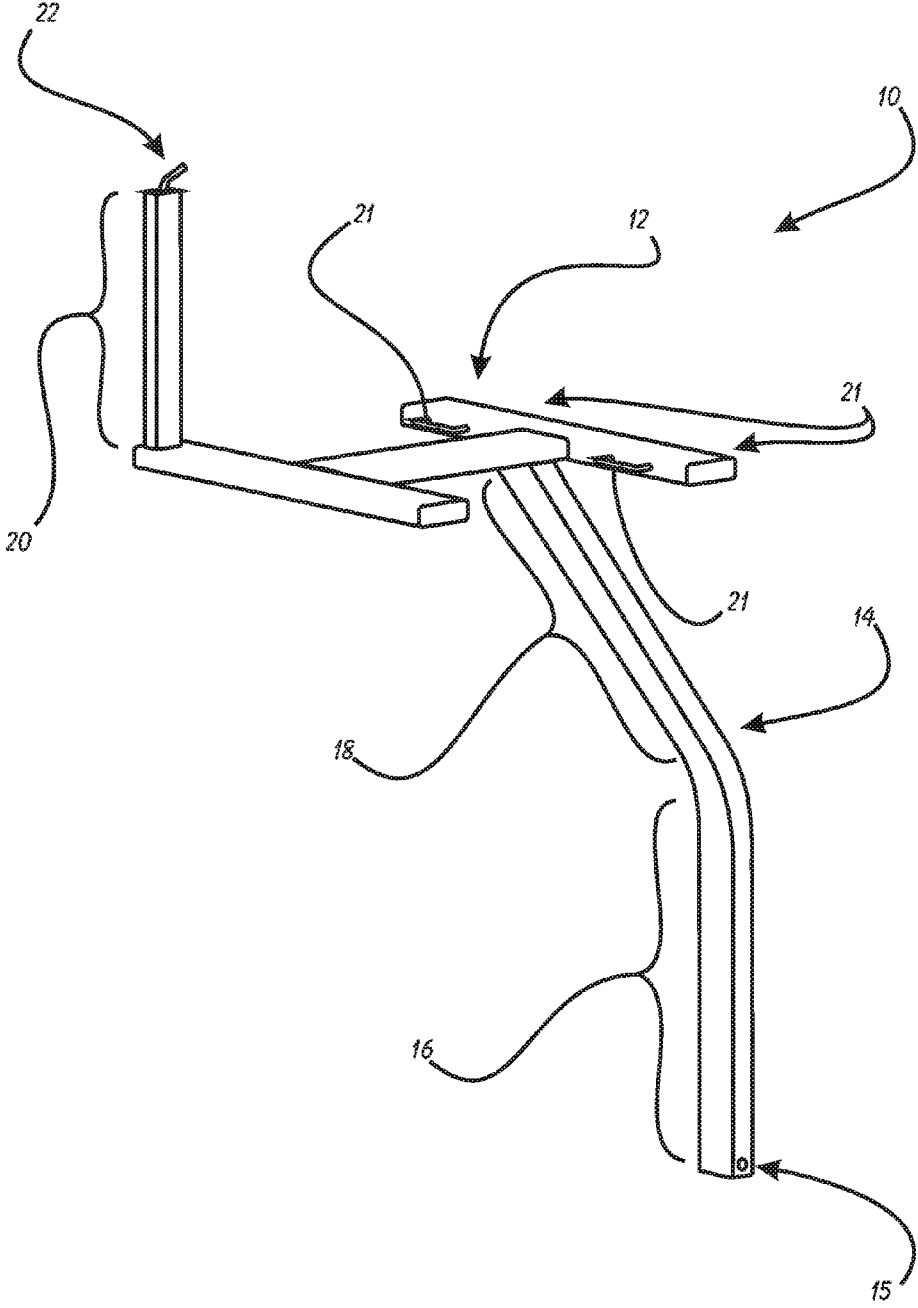


FIGURE 1

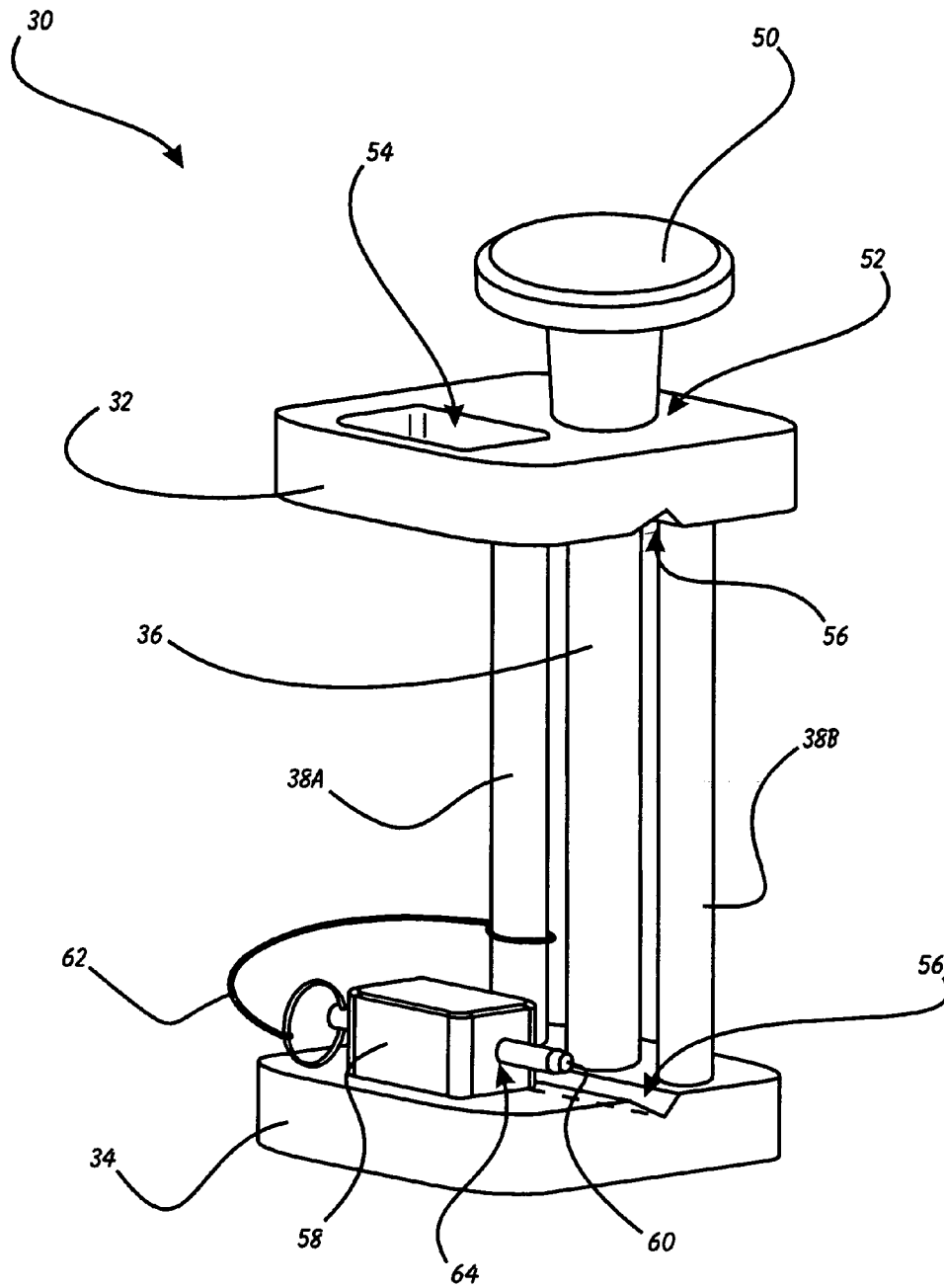


FIGURE 2

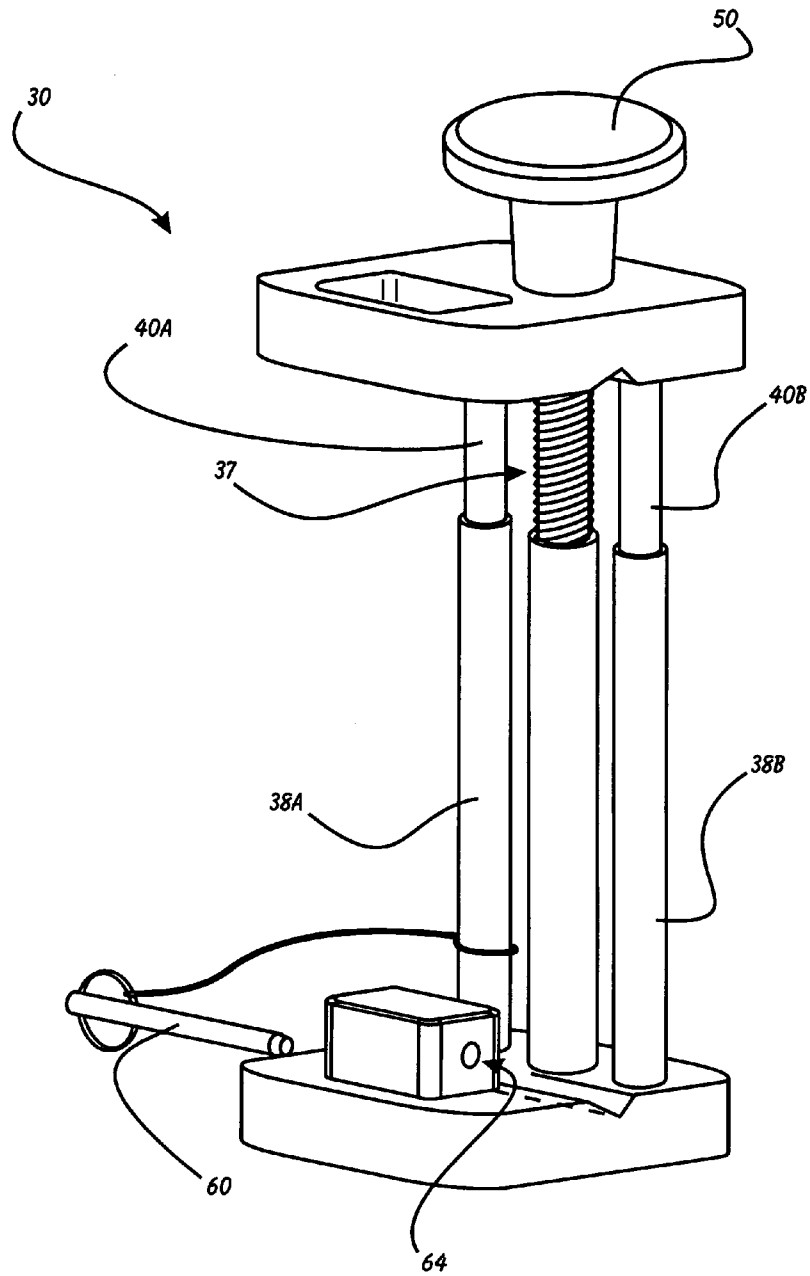


FIGURE 3

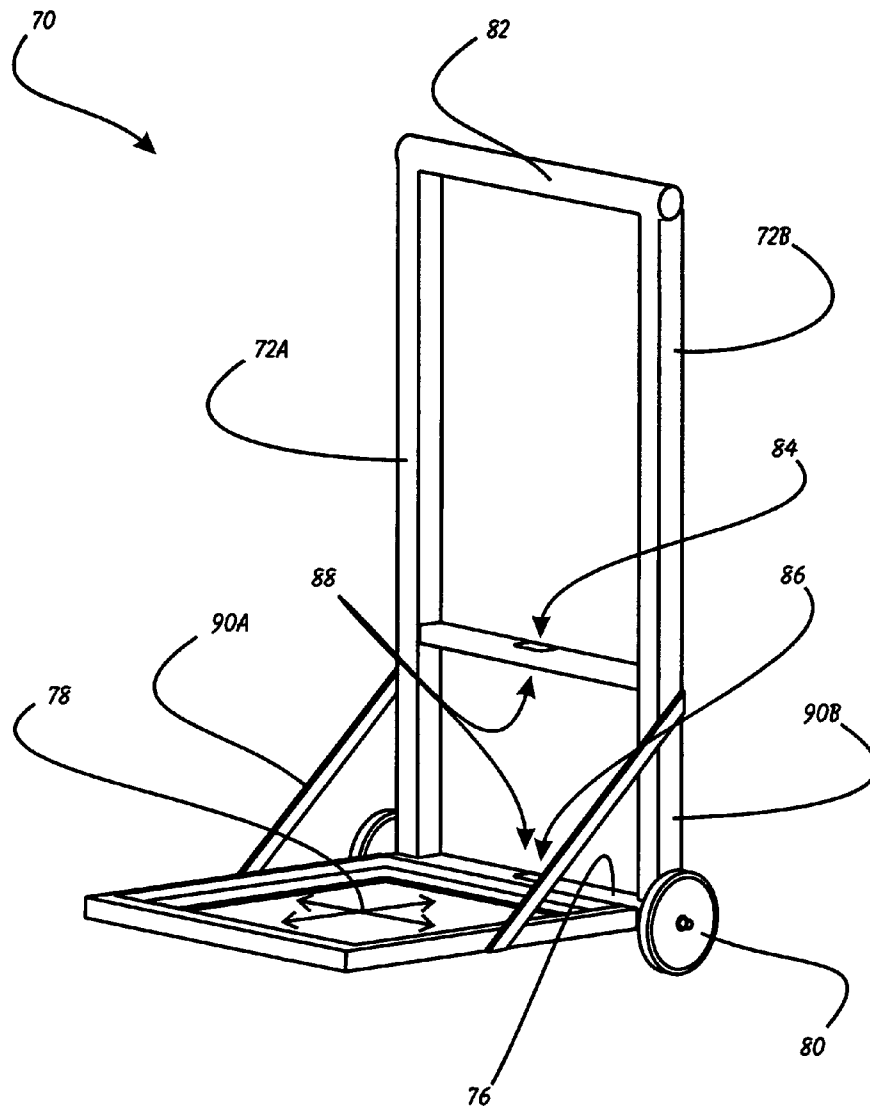


FIGURE 4

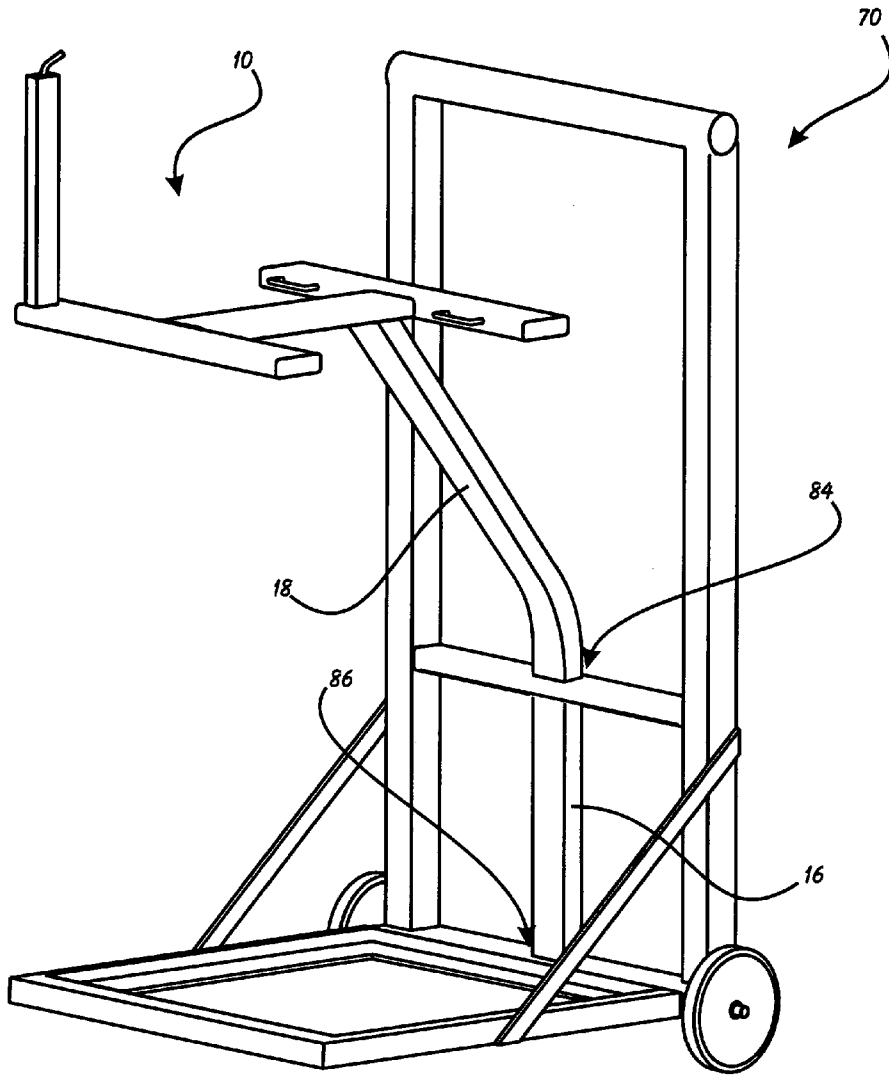


FIGURE 5

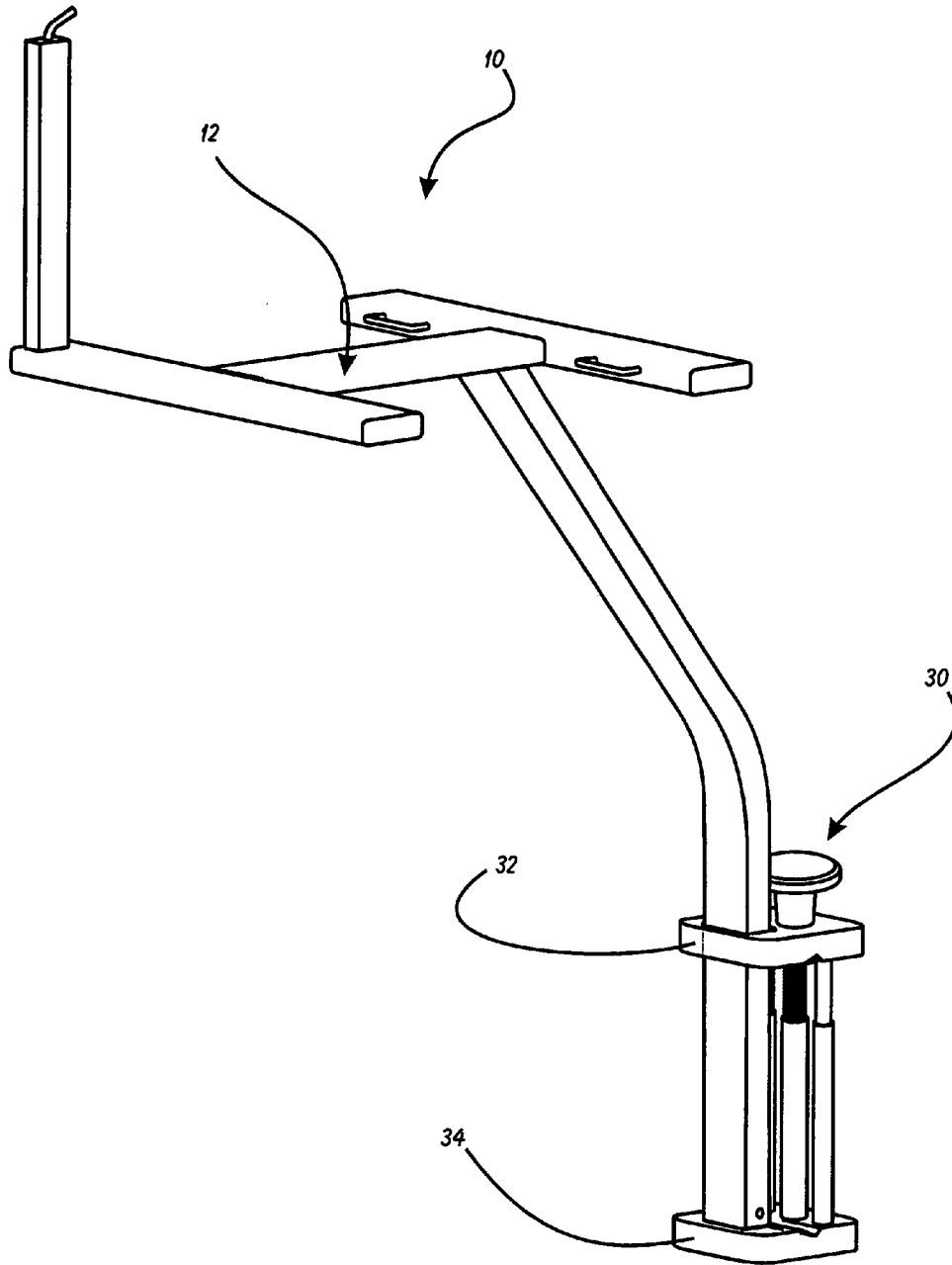


FIGURE 6

## GURNEY CLAMP, DETACHABLE EQUIPMENT STAND AND ASSOCIATED TRANSPORT CART

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

This invention relates generally to medical equipment and, more specifically, to a Gurney Clamp, Detachable Equipment Stand and Associated Transport Cart.

#### 2. Description of Related Art

Portable medical equipment for monitoring and/or treating a patient is used daily by emergency medical personnel in ambulances, but also in the hospital environment. It is not uncommon for a patient to be transferred from an ambulance to a hospital emergency room, all the while having electronic monitors and related equipment connected to the patient. As the equipment manufacturers have added more and more capabilities to these portable units, the units not only have become more necessary, but also have become more unwieldy as well as more expensive. As a result, the cost of damaged equipment has escalated, while at the same time the risk of doing damage to the equipment has increased.

The current approach for transporting the portable equipment used by health care providers is to place the monitor on the patient's gurney during transport, and then onto the floor or other surface that is in close proximity to the patient's bed. The problem with this is that the equipment can tend to be heavy and difficult to manage. There usually are cables, wires and/or tubes running between the equipment and the patient. Furthermore, the equipment is design to rest on a flat surface, and is usually not equipped with any sort of straps or clips to aid in securing the equipment in place.

One particular drawback of the prior approach is that it does not allow a patient to be transferred from a bed to a gurney without disconnecting and then reconnecting the monitoring equipment.

What is needed, then, is a system and assembly that provides a convenient, stable location for portable medical equipment to be transferred from a vehicle to a gurney and back again securely and without risk to the patient or the equipment. Furthermore, the system and assembly should permit the patient to be transferred while the equipment remains mounted and safely secured.

### SUMMARY OF THE INVENTION

In light of the aforementioned problems associated with the prior devices assemblies, it is an object of the present invention to provide a Gurney Clamp, Detachable Equipment Stand and Associated Transport Cart. The combination of all of these devices should make the transportation of patients and health status monitoring equipment more controlled, reliable and safe. The clamp should be configured to be attachable to the safety rails on a conventional gurney. Once installed, the clamp should provide a secure mounting point to attach the detachable equipment stand to the gurney. The stand should be configured to be capable of holding a wide variety of patient monitoring equipment in an upright manner so that the equipment data can be easily viewed. The stand should be designed such that it can be quickly and easily shifted back and forth between its mounting location at the gurney clamp, and its mounting location on the associated transport cart. When the stand is attached to the equipment cart, it should provide the equipment with a secure, portable storage location.

### BRIEF DESCRIPTION OF THE DRAWINGS

The objects and features of the present invention, which are believed to be novel, are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages, may best be understood by reference to the following description, taken in connection with the accompanying drawings, of which:

FIG. 1 is a perspective view of a preferred embodiment of the detachable equipment stand of the present invention;

FIG. 2 is a perspective view of a preferred embodiment of the gurney clamp of the present invention;

FIG. 3 is another perspective view of the gurney clamp of FIG. 2;

FIG. 4 is a perspective view of a preferred embodiment of the transport cart of the present invention;

FIG. 5 is a perspective view of the stand of FIG. 1 mounted to the cart of FIG. 4; and

FIG. 6 is a perspective view of the stand of FIG. 1 mounted to the clamp of FIGS. 2 and 3.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following description is provided to enable any person skilled in the art to make and use the invention and sets forth the best modes contemplated by the inventor of carrying out his invention. Various modifications, however, will remain readily apparent to those skilled in the art, since the generic principles of the present invention have been defined herein specifically to provide a Gurney Clamp, Detachable Equipment Stand and Associated Transport Cart.

The present invention can best be understood by initial consideration of FIG. 1. FIG. 1 is a perspective view of a preferred embodiment of the detachable equipment stand 10 of the present invention. The stand 10 is preferably made from rectangular aluminum tube in order to ensure maximum strength and durability, but also being lightweight.

The stand 10 has an H-frame flat base 12 for convenient placement of a piece of portable equipment. An upright arm 14 extends downwardly from the base 12, and is formed from two interconnected sections: a vertical section 16 at the bottom end of the arm 14, and an angled section 18, into which the vertical section 16 transitions at a point somewhere between the bottom end of the arm 14 and the attachment point to the base 12. The arm 14 further has a pair of retaining apertures 15 formed through the distal end of the vertical section 16 proximate to the end of the section 16. These apertures 15 will be described more fully below in connection with the discussion related to the gurney clamp.

A cord strut 20 extends upwardly from the base 12, and terminates in a finger hook 22. The cord strut 20 provides a convenient location to mount additional auxiliary equipment associated with the piece of equipment that is being carried by the base 12. The strut 20 and finger hook 22 design depicted here is for holding an IV pump and bag of fluid.

The H-frame shape of the base 12 is specifically configured as such to provide ample support for the piece of portable equipment, while also giving plenty of structural locations for strapping the equipment to the base 12. It is believed that the structure shown is superior to a solid flat platform or a perimeter frame configuration.

A further aspect of the stand 10 is the provision of a plurality of tie-down loops 21 protruding from a variety of locations on the stand 10. Here, there are four loops 21 extending from the H-frame base 12. Other loops 21 may further be



provided at alternate locations on the stand **10** in order to strap the monitoring equipment (and other items) securely to the stand **10**. If we now turn to FIG. **2**, we can examine the second component of the assembly of the present invention.

FIG. **2** is a perspective view of a preferred embodiment of the gurney clamp **30** of the present invention. The clamp **30** is specifically designed to securely clamp onto the rails of a conventional portable gurney. With minor adaptation, the clamp **30** could also attach to a typical hospital bed. Its purpose is to provide a location for the stand **10** to be attached to the gurney or bed.

The clamp **30** by an upper jaw member **32** and a lower jaw member **34**. The two jaw members **32** and **34** are interconnected by structural members that provide the motion and clamping action exhibited by the clamp **30**. The central of these members are the female threaded post **36** and the male threaded post (see FIG. **3**) which threaded engages the internal threaded bore formed in the female threaded post. The male threaded post (see FIG. **3**) is interconnected to the knob **50** where the male threaded post (see FIG. **3**) extends through an aperture **52** formed in the upper jaw **32**. Since they are interconnected, turning the knob **50** will cause the male threaded post (see FIG. **3**) to also turn, thereby causing the threads of the male post (see FIG. **3**) to engage the threads of the female threaded post **36** to create longitudinal force and motion along the axis of the male and female threaded posts.

Straddling the threaded male and female posts are first and second guide tubes and posts. To the left side in this depiction, a first guide post (see FIG. **3**) is housed within a first guide tube **38A**. The first guide post (see FIG. **3**) is attached to the upper jaw member **32**, and the first guide tube **38A** is attached to the lower jaw member **34**. The inner bore formed in the tube **38A** is configured to cooperate with the outer diameter of the first guide post (see FIG. **3**) so that the post will slide within the tube **38A**, while still providing enough structural integrity to keep the upper jaw member **32** aligned with the lower jaw member **34** as the clamp **30** is operated.

Similarly, there is a second guide post (see FIG. **3**) attached to the upper jaw member **32** and housed within the second guide tube **38B**, which is attached to the lower jaw member **34**. The second guide post and tube **38B** operate the same as the first guide post and tube.

The upper jaw member **32** has a slot **54** cut through it. The slot **54** has a shape that cooperates with the outer form of the vertical section of the upright arm of the stand (see FIG. **1**) such that the bottom end of the vertical section can slide through the slot **54** formed in the upper jaw member **32**. There is also a V-groove **56** cut transversely in the bottom surface of the upper jaw member **32**. The V-groove **56** on the upper jaw member **32** is aligned with a substantially identical V-groove **56** formed in the lower jaw member **34**.

It should be casually obvious that the V-grooves **56** are designed to clamp to the rails of a gurney rail to securely hold the clamp **30** to the gurney. Of course, the V-grooves **56** would be positioned over a pair of vertically-aligned gurney rails, with the user turning the knob **50** until the upper jaw **32** presses down onto the top of an upper gurney rail and the lower jaw **34** presses upwardly on the bottom of a lower gurney rail.

The lower jaw member **34** has an upwardly-extending peg **58** formed on (or attached to) its top surface. The peg **58** is in alignment with the slot **54** formed in the upper jaw member **32**. The peg **58** is configured to cooperate with the inner profile of the lowest end of the vertical section of the upright arm of the stand (see FIG. **1**) so that the lowest end of the upright arm can be placed over the peg **58**. There is a retaining bore **64** cut through the peg **58** for receiving a retaining pin **60**

therethrough. The retaining pin **60** and retaining bore **64** are located so that when the lowest end of the upright arm of the stand (see FIG. **1**) is placed over the peg **58**, the bore **64** will align with the pair of apertures formed in the arm so that the pin **60** can be inserted through the apertures in the arm and the bore **64**, thereby holding the arm securely to the peg **64**.

It should be apparent that the stand will be held securely in the upright position by inserting the vertical section **16** of the upright arm **14** through the slot **54** and then pinning it to the peg **58** with a pin **60** passing through the retaining bore **64** and retaining aperture **25**. The clamp **30** can be attached and detached from an external structure (e.g. the gurney rail) whether the stand is attached to the clamp **30** or whether the stand is separate from the clamp **30**. If we now turn to FIG. **3**, we can see the clamp **30** in its open position.

FIG. **3** is another perspective view of the gurney clamp of FIG. **2**. Here, in its extended position, the male threaded post **37** can be seen because it is extended beyond the end of the female threaded tube **36**. Similarly, the first and second guide posts **40A** and **40B** can be seen here extending beyond the tops of the first and second guide posts **38A** and **38B**, respectively.

Many of the parts of the clamp **30** are formed from solid aluminum for lightweight strength. The threaded and guide posts and tubes are most likely formed from steel (likely stainless steel) in order to provide even more durability. Now turning to FIG. **4**, we can examine the details of the third and final component of the assembly of the present invention.

FIG. **4** is a perspective view of a preferred embodiment of the transport cart **70** of the present invention. The cart **70** is specifically designed to cooperatively hold the stand of FIG. **1** when the stand is not attached to a bed or gurney. The cart **70** is defined by first and second opposing upright frame members **72A** and **72B**, respectively. The upright frame members **72A** and **72B** extend upwardly from a lower platform frame **78**, and terminate in the handle **82**.

The upright frame members **72A** and **72B** are interconnected by an upper transverse frame member **74** and a lower transverse frame member **76**. The upper transverse frame member **74** has an upper stand slot **84** formed through it. The upper stand slot **84** is essentially identical in dimensions to the slot formed in the upper jaw of the gurney clamp.

There is also a lower stand slot **86** formed in the lower transverse frame member **76**. The lower stand slot **86** has the same dimensions as the upper stand slot **84** and is aligned to be in line with it as well. The lower stand slot **84**, however, has a closed bottom surface to prevent the stand's lowest end of the upright arm's vertical section from sliding therethrough once inserted into the slots **84** and **86**.

There are first and second stiffening struts **90A** and **90B** interconnecting the lower platform frame **80** with the first and second frame members **72A** and **72B**. These struts **90A** and **90B** simply provide additional rigidity and stiffness to the cart's structure. The wheels **80** permit the cart **70** to be tilted and wheeled around when the user wishes to move the cart **70** (and stand/equipment). FIG. **5** shows how the cart and stand work together.

FIG. **5** is a perspective view of the stand **10** of FIG. **1** mounted to the cart **70** of FIG. **4**. As shown here, the stand **10** extends conveniently upward and outward from the cart **70**. This condensed package can fit easily within an ambulance during transit. The stand **10** can be easily removed from the cart **70** once arriving on-scene. Furthermore, the cart/stand combination can be used as a portable stand for the monitoring equipment.

A securing device may be required in order to secure the cart **70** to the ambulance while the vehicle is in motion. In a

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typical scenario, the stand **10** having the monitoring equipment attached to it will be clamped to the gurney. The cart **70**, however will most likely have additional items on it that the technicians will desire to have on hand while in transit.

The lower platform **78** is designed to allow one or more piece of mobile equipment to be placed there when not in use. This allows the user to remove the stand **10** from the cart **70** without the weight of the piece of equipment on it. FIG. **6** shows how the clamp and stand work together.

FIG. **6** is a perspective view of the stand **10** of FIG. **1** mounted to the clamp **30** of FIGS. **2** and **3**. The stand **10**, when inserted into the clamp **30** that is attached to a gurney or hospital bed, will be securely held to that gurney or bed. The base **12** will provide a level and secure platform for a piece of portable medical equipment. The gurney can be rolled around without a fear of the equipment being damaged, and without the need for the medical personnel to even worry about moving the equipment to another location.

Although the above-disclosed embodiment was configured to support, transport and store a specific model of monitoring equipment, and to mount to a specific gurney model, the sizes and locations of the necessary coordinating elements of the device can be adjusted in other embodiments in order to accommodate any of the various manufacturers' equipment models.

Those skilled in the art will appreciate that various adaptations and modifications of the just-described preferred embodiment can be configured without departing from the scope and spirit of the invention. Therefore, it is to be understood that, within the scope of the appended claims, the invention may be practiced other than as specifically described herein.

What is claimed is:

1. A gurney clamp, comprising:
  - a lower jaw member;
  - an upper jaw member juxtaposed in spaced relation over said lower jaw member, and further defined by a slot formed therethrough, and said lower jaw member is further defined by a peg extending upwardly therefrom, slot juxtaposed over said peg;
  - a male threaded post engaging an internally threaded female threaded post interconnecting said lower jaw member and said upper jaw member;
  - a first guide post slidingly engaging a central bore in a first guide tube, said first guide post and first guide tube interconnecting said lower jaw member and said upper jaw member; and
  - a second guide post slidingly engaging a central bore in a second guide tube, said second guide post and second guide tube interconnecting said lower jaw member and said upper jaw member.
2. The clamp of claim 1, wherein said lower jaw member is defined by a top surface, said top surface defined by a V-groove cut transversely therein.
3. The claim of claim 2, wherein said upper jaw member is defined by a bottom surface, said bottom surface defined by a

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V-groove cut transversely therein vertically aligned with said V-groove cut in said top surface of said lower jaw.

4. The clamp of claim 3, wherein:
  - said peg is further defined by a retaining bore formed therein; and
  - said clamp is further defined by a pin associated with said clamp, said pin configured to be insertible into said retaining bore.
5. The clamp of claim 4, wherein said male threaded post is rotatably attached to said upper jaw member and further extends upwardly through an aperture formed in said upper jaw member to terminate in a knob on a top side of said upper jaw member, whereby rotating said knob causes said male threaded post to rotate.
6. The claim of claim 5, wherein said first guide tube and first guide post and said second guide tube and second guide post are in spaced relation and said male threaded post and said female threaded tube bisect said space between said first guide tube and first guide post and said second guide tube and said second guide post.

7. A combination, comprising:
  - a gurney clamp, comprising:
    - a lower jaw member;
    - an upper jaw member juxtaposed in spaced relation over said lower jaw member, and further defined by a slot formed therethrough, and said lower jaw member is further defined by a peg extending upwardly therefrom, slot juxtaposed over said peg;
    - a male threaded post engaging an internally threaded female threaded post interconnecting said lower jaw member and said upper jaw member;
    - a first guide post slidingly engaging a central bore in a first guide tube, said first guide post and first guide tube interconnecting said lower jaw member and said upper jaw member; and
    - a second guide post slidingly engaging a central bore in a second guide tube, said second guide post and second guide tube interconnecting said lower jaw member and said upper jaw member; and
    - a stand detachably attachable to said gurney clamp, said stand defined by an upright arm that is insertible into a slot formed in said clamp.
  8. The combination of claim 7, wherein:
    - said upright arm is defined by a hollow distal end that is insertible through said slot and into which said peg is insertible.
  9. The combination of claim 8, wherein:
    - said upright arm is defined by a vertical section commencing at said distal end and transitioning into an angled section opposite said distal end and terminating in a base end; and
    - said stand is further defined by a base extending from said base end of said upright arm.
  10. The combination of claim 9, wherein said stand is further defined by a cord strut extending upwardly from said base.

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