MEDICAL SERVICES CART

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ABSTRACT
A cart, useful in transporting medical equipment within a medical facility, is constructed of lightweight materials, such as foam filled panels. It features a drawer module that may be adapted to receive a number of drawers for different sizes for adaptable use. The foam-filled panels may be constructed for instance by creating foam core by machining or molding, and attaching both inner and outer plastic panels made using thermoforming or other similar process.
MEDICAL SERVICES CART
CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a non-provisional of, and claims benefit of priority under 35 USC 120 to, U.S. provisional application 61/010,879, filed 10 Jan. 2008. Priority is also claimed under 35 USC 120 to U.S. design patent application Ser. No. 29/320,702, filed 1 Jul. 2008, presently pending. Both applications are incorporated by reference as if fully recited herein.

TECHNICAL FIELD

[0002] The present invention relates, generally, to safety equipment, and, more particularly to a portable medical services apparatus having compartments for storage, waste disposal, and a compressed gas system. The apparatus permits an individual or company to easily provide medical services, such as emergency medical services in a hospital, clinic or similar medical treatment facility.

BACKGROUND OF THE ART

[0003] Medical emergency treatment carts or “crash carts” are widely used in hospitals and like environments for responding to medical emergencies. As such, the crash carts commonly contain a supply of medical equipment including instruments and supplies for various types of medical procedures. One of the most common uses of such crash carts is in response to cardiac arrest.

[0004] Typically, these crash carts remain stocked in a central location and when an emergency occurs, they must be moved from the storage location to the place of emergency. As such, the crash carts are usually wheeled so that they may be moved rapidly.

[0005] As stated, the carts are stocked with the suitable instruments and medication required for responding to a variety of situations. The medications stored in the medical emergency treatment carts will normally include potent, narcotic drugs, and thus security is a factor with respect to their storage. It is also important that the required supplies are in the cart at the time of the emergency. For this reason the user of the cart must be sure that the supplies are in fact in the cart as they were packed per the facilities’ procedures. A common practice is to close up the contents and fasten a security seal. While this seal is not used as a lock it is used as an indicator that the contents are intact. This seal is also easily removed by user by quickly breaking it off of the container without the use of additional tools. In addition, applications for these carts vary and may depend upon the nature of the hospital, clinic or similar medical treatment facility, or operating departments therein.

[0006] A problem which has occurred with many carts of the prior art is their lack of adaptability for a number of different situations. The cart must be constructed such that it may be moved quickly at high speed to the location of the emergency while providing maximum maneuverability.

[0007] Also, the carts must provide ergonomic access for all members of the treatment team. As such, the treatment team will usually include a number of medical professionals. Accordingly, it is desirable to provide a crash cart that is lightweight and is adaptable for variations in use environments, such as by being able to be stocked with a wide variety of various supplies.

SUMMARY

[0008] In general terms, the present invention includes a medical cart, comprising: (a) an outer frame constructed of foam-filled panels, the housing adapted to receive a drawer module, the inner housing adapted to accept drawers of different sizes; (b) a removable drawer module, preferably constructed of foam-filled panels, the drawer module adapted to accept drawers of different sizes; (c) a plurality of drawers; (d) a frame bearing wheels; and (e) a carriage base sized so as to extend over the frame bearing wheels. It is preferred that the medical cart additionally comprises an interchangeable module attached to one side of the outer frame for holding supplies.

[0009] The cart of the present invention is constructed of lightweight materials, such as foam filled panels. The foam-filled panels may be constructed, for instance, by creating a foam core material by machining or molding, and attaching both upper and lower plastic panels using thermoforming or other similar process, to create a finished lightweight panel.

[0010] This construction method allows numerous opportunities to vary the appearance of the cart. The plastic panels may be composed of common forming materials such as acrylonitrile-butadiene-styrene (“ABS”), high-impact polystyrene (“HIRS”), polycarbonate and other materials suitable for the thermoforming or other similar processes.

[0011] The panels may also be laminated with a vinyl skin prior to thermoforming to create wood grain, metallic look, carbon fiber look and many other variations.

[0012] Preferably, each constituent panel in the entire cabinet is assembled from several lightweight components that are constructed to yield a structurally sound, strong assembly. The panels are built using a molded, dense foam core with a plastic cover formed and laminated on each side. The end result is a very strong component that is lighter than similar wood or steel panels. The walls and top of the cabinet are positioned and mechanically joined together via finger joints and adhesive bonded to form a rigid box.

[0013] This cabinet is then bonded to the lower carriage to complete the assembly.

[0014] The cart may be mounted on casters or may be used as a stationary unit without casters. To further reduce vibration and noise the casters may be pneumatic casters. The casters may be able to be fully swiveled, they may be selectively locked into a certain direction, or they may be permanently locked into a certain direction. The cart may contain a combination of the different types of casters.

[0015] The drawer module may be configured such that various combinations of drawers may be assembled and the entire module easily loaded into the balance of the rolling cart.
The main modular portion may be provided with empty drawers, or may be loaded with crash cart drawers or boxes that may be preloaded with supplies. The user optionally may load drawers without having a crash cart box. The contents of cart drawers or shelves may be protected by loading a cardboard board or similar device to front of cart and applying a removable security seal. The drawers may contain a locking device that allows user to lock individual drawers or the entire set of drawers. This lock may be mechanical in nature such as requiring key or padlock or it may be electronic in nature such as using a proximity card sensor, numeric keypad or magnetic swipe card reader. The locking device may also be coupled with a security seal arrangement as well.

Accessories may be added to exterior of cart in various locations. One method is to have numerous conical or hemisphere shaped pockets on an outside wall of the cart and accessory pieces having mating male posts. The accessory may be fixed in place using adhesives, sonic welding, double sided industrial tape or other fastening methods. This method allows various locations to mount the accessory or accessories along with providing a strong final assembly. Accessories may include glove box holder, sharps container holder, defibrillator unit holder, ambulance bag.

The base or carriage of the cart serves multiple purposes, and may be molded in ABS or other durable material that is suitable for thermoforming or other similar forming techniques including compression molding, injection molding to name a few. The flexibility of the base allows it to withstand abuse during the transport of cart and it protects the surroundings during collisions with walls, corners and furniture. It also serves as an aesthetic cover over the casters. It may also be provided with a pocketed well to receive and hold an oxygen tank or similar cylindrical device.

The skirt may be designed in such a way that, in the event of breakage, a new portion may be fastened for repair. This may be accomplished by having relieved formed on the base, the relief matching up with sections on the replacement portion to allow user to easily orient and attach. The geometry of the skirt serves as an anti-tip feature. The base of the skirt preferably extends several inches out from the footprint of the cart. If the cart would begin to tip over, the bottom of the skirt touches the ground and stops the tipping motion. This feature prevents the cart from rolling on the wheels.

One downward push on the floor lock mounted to the carriage base instantly immobilizes the cart. A toggle action mechanism pushes a large, non-skid, molded rubber brake shoe to the ground while ever so slightly lifting the nearest two wheels off the floor. Releasing the brake can be accomplished by touching one of the dual retractable plates with light toe pressure that lifts the brake shoe and returns the wheels to the ground, ready to roll. Another version of this brake allows user to push a second pedal to release the brake.

The cart cabinet also has features formed into the unit that serve as handles to allow user to easily steer the cart during transport.

The cart may also be provided with an IV pole mounted to base and cabinet wall.

In a typical cart, the preferred overall dimensions for the cart are 36½" wide by 36½" high and 25½" deep. The preferred inside dimensions for a 4 inch nominal drawer (a "shallow" drawer) are 24½" wide by 4½" high and 15½" deep. For an 8 inch nominal drawer (a "deep" drawer), the width and depth are unchanged, but the height would be 8½". A typical cart may accommodate, for example, 0 deep and 6 shallow drawers, 3 deep and 0 shallow drawers, 1 deep and 4 shallow drawers, or 2 deep and 2 shallow drawers.

The typical cart will preferably have 4 full swivel, 6° diameter pneumatic casters.

BRIEF DESCRIPTION OF THE DRAWINGS

A better understanding of the embodiments presented here will be had when reference is made to the accompanying drawings, where identical parts are identified with identical part numbers and wherein:

FIG. 1 is a perspective view of a first embodiment of a medical crash cart;

FIG. 2 is a top plan view of the FIG. 1 crash cart;

FIG. 3 is a right side elevation view of the FIG. 1 crash cart;

FIG. 4 is a front elevation view of the FIG. 1 crash cart;

FIG. 5 is a left side elevation view of the FIG. 1 crash cart;

FIG. 6 is a rear elevation view of the FIG. 1 crash cart.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

FIG. 1 shows an assembled view of a first embodiment 10 of a medical cart. The cart 10 has a drawer assembly 20 that is mounted atop a carriage base 40. The cart 10 further comprises a wheel/brake frame, upon which the carriage base 40 is mounted, but no aspects of the wheel/brake frame are visible in FIG. 1. An IV mounting pole 50 is also seen in FIG. 1. The drawer assembly 20 is formed from a pair of side panels 22, a top panel 24 and a rear panel 26, which, when mounted on the carriage base, provide a foundation for drawers to be inserted through a front face of the drawer assembly. In the configuration shown in FIG. 1, the cart 10 is provided with six drawers 28 of identical height, although the exact arrangement of drawers 28 used is clearly a matter of design choice. In a typical variation, the drawer assembly 20 would accommodate a combination of drawers 28, 29 (not shown in FIG. 1) with each drawer 29 having a height that is nominally twice the height of drawer 28. However, and to accommodate the receiving structure for the drawers, drawers 28, 29 would all have identical width and depth. In the embodiment shown, a brace 52 on IV mounting pole 50 assists in securing it to the cart 10.

Further details of the cart 10 are seen in FIG. 2, which provides a top plan view. In this view, the drawer assembly 20 is seen mounted atop the carriage base 40. A feature of the carriage base 40 is that is has generally rounded corners 42 that extend beyond either the drawer assembly 20 or the wheels (not visible in FIG. 2), thereby providing protecting these elements as the cart 10 is wheeled into action. A further rounded bumper 44 on one edge provides protection to a recess 46 that is sized and adapted to receive a compressed gas cylinder (not shown in FIG. 2). A further feature in the carriage base 40 is an elongate ridge 48, which is sized and adapted to receive a compression board between the ridge and the drawer assembly 20. Such a board is preferably placed under a patient requiring chest compressions. When located on the carriage base 40 as shown in FIG. 2, the compression board ridge 48 allows a compression board seated therebe-
hind to effectively cover the front face of the drawer assembly 20, preventing the drawers from opening while the cart 10 is being moved to where it is needed, even if the drawers are not locked.

[0038] As cart 10 is intended to be rapidly moved through corridors by medical personnel, it is essential that the cart be readily navigable by a single person, yet be able to be navigated by more than one. Several features visible in FIG. 2 provide this capability. One example is a pair of hand grip recesses 29 that are formed in the top panel 24. These recesses 29 are shaped as arcuate slots, so that they most readily accept the hands of a person positioned on the side of the cart 10 that is opposite the gas cylinder recess 46. In such a position, the person will have immediate access to a brake/lock means 60 that appears to extend outwardly from the carriage base 40, but which is actually a part of the wheel-brake frame upon which the carriage base is seated. An optional feature that is seen on both FIGS. 1 and 2 is a pair of handles 32 that are located on side edges of the top panel 24. Beyond their use for navigation, these handles 32 may be useful for placing the drawer assembly 20 onto the carriage base 40 or removing it therefrom.

[0039] It is notable that these placements of navigational features orients the cart 10 so that the apparent “front” surface, that is, the surface from which the drawers 28 are accessible, is actually a side surface during transport. In doing this, the cart 10 presents a smaller area as it is moved through crowded corridors.

[0040] As viewed in a side elevation view, FIG. 3 shows an embodiment in which six identical drawers 28 are arranged in the open face of the drawer assembly 20, which is adapted on an internal drawer-receiving means to be able to accept a number of drawers of various sizes depending upon the use of the cart 10. Also, the cart should be designed to allow rapid interchange of drawers, so that the cart can be configured for multiple uses. Visible now in FIG. 3 are components of the wheel/brake frame, namely, the brake/lock means 60 and two of the four wheels 62 that are preferably arranged in a rectangular configuration on the wheel brake frame.

[0041] FIG. 4 shows the front elevation view of the cart 10, that is, a view looking directly at panel 22 in FIG. 1. Of particular note in FIG. 4 is a plurality of apertures or recesses 23 that provide loci for attaching additional items, including, by way of example, a strap for securing a gas cylinder seated in the gas cylinder recess, which is located in front of the panel 22 in the carriage base 40, though not visible in this view. Also notable in this view are the compression board ridge 48, two of the four wheels 62 and the brake/lock means 60.

[0042] FIG. 5 is an elevation view of the medical cart 10 from the side opposite that shown in FIG. 3, that is, looking directly at panel 26. The primary feature presented in this figure is the depiction of two of the four wheels 62, so that all four have been seen in viewing FIGS. 3-5.

[0043] FIG. 6 is the rear elevation view of the cart 10, showing more detail of the brake/lock means 60 as accessed though a foot pedal, and the second of two side panels 22, this one also being provided with a plurality of recesses or apertures 23.

[0044] It will be evident that there are additional embodiments and applications which are not disclosed in the detailed description but which clearly fall within the scope of the present invention. The specification is, therefore, intended not to be limiting, and the scope of the invention is to be limited only by the following claims. The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiment is to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by the foregoing description. All variations that come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed is:
1. A medical cart, comprising:
an outer frame constructed of foam-filled panels, the housing adapted to receive a drawer module; the inner housing adapted to accept drawers of different sizes;
a removable drawer module, the drawer module adapted to accept drawers of different sizes;
a plurality of drawers;
a frame bearing wheels; and
a carriage base sized so as to extend over the frame bearing wheels.
2. The medical cart of claim 1, further comprising:
an interchangeable module attached to one side of the outer frame for holding supplies.

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