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(54) Title: MEDICAL PROCEDURE CART AND METHOD OF CUSTOMIZING THE SAME

(57) Abstract: A medical procedure cart includes a housing having a working surface disposed on a top thereof. The working surface forms a tray and includes a transparent top removably disposed above the tray. A height adjustment mechanism adjusts the height of the working surface. The template includes a plurality of figures depicting various different materials, instruments and equipment an operator prefers for a particular procedure. The operator can place the instruments, supplies and equipment on the transparent top of the working surface above a corresponding figure to enable the working surface to be stocked for a particular procedure.

WO 2005/107525 A2

MEDICAL PROCEDURE CART AND METHOD OF CUSTOMIZING THE SAMEBACKGROUND OF THE INVENTION1. Field of the Invention:

[0001] The present invention relates to a medical procedure cart that can be stocked according to a particular operator, and more particularly, to a medical procedure cart and stocking method thereof that incorporates a stocking template to enable the user to quickly and easily prepare for a medical procedure.

2. Description of Related Art:

[0002] A medical procedure cart is used to carry the necessary medical equipment, instruments and other materials that a medical professional needs for a particular procedure. For example, an emergency crash cart includes all the necessary equipment for a medical emergency and can be quickly moved into a treatment room or area upon demand. U.S. Patent No. 4,790,610 discloses such a medical emergency crash cart.

[0003] In addition to emergency or code carts, carts supplied for anesthesia and endoscopic procedures are commonly utilized in hospitals and other medical environments. Blue-Bell Biomedical, Armstrong Medical, and Harloff Medical Products, are a few companies which manufacture and sell medical procedure carts for emergency, as well as, anesthesia and endoscopic procedures.

[0004] Typically, in an anesthesia or endoscopic procedure, a catheter must be inserted into a patient. The current process for inserting catheters, such as intravenous, arterial, epidural, etc., into a patient is inefficient and hazardous. Such processes involve the operator, such as a physician or nurse, first gathering the needed equipment, for example, catheters, tourniquets, gloves, etc., from many sources. Often most supplies can be found within the medical cart. However, each operator's needs and procedure is unique and often the cart is

not equipped completely or properly. If the cart is not stocked properly, the operator has to gather additional equipment in the middle of the procedure.

[0005] Another drawback of these known carts is the inability to store and access a multitude of different instruments and equipment to avoid the gathering of additional equipment. Typically, the instruments are contained within drawers in the cart. During a procedure, the operator would have to search through the cart drawers if not all the instruments had been pre-gathered and placed upon an accessible surface. This creates significant safety issues during a procedure should the operator have to cease the procedure to search for equipment. Contamination is another safety factor.

[0006] Also, by having the instruments stored within drawers of the cart, it is difficult and time consuming for the operator or assistant to visually inspect the cart to see if all the contents are available. Often, the instrument usage among different operators varies significantly, even for the same procedure. Therefore, even though a cart is designated as an anesthesia cart, not all the desired instrumentation or equipment may be available for a particular user. In preparing for the procedure, the assistant must first determine which instrumentation the particular operator prefers and then go about stocking the cart accordingly. This is very time consuming and inefficient.

[0007] Furthermore, even though the known carts are movable to the patient site, the height of the cart is not adjustable and the operator must often create a work surface that defaults to being the patient's bed or stretcher or in the operating room, the surgical table. This results in the operator gathering the instruments and equipment and carrying it to the patient site. Also, the size of the cart itself prohibits close proximity to the patient, once again requiring the operator to carry the instrumentation to the patient site.

[0008] In an attempt to prevent having to gather and carry instruments to a patient site, it is known to provide sterile instruments for use in a procedure pre-packaged in a movable tray, wherein the individual instruments are placed in corresponding shaped recesses within the tray. See U.S. Patent No. 6,426,041. However, as with the above-known procedure carts, these trays do not allow for operator customized stocking of instruments. Moreover, the use of such trays also creates an undesirable work surface as mentioned above. Following

completion of the procedure, all hazardous materials used (especially needles) must be picked up and transferred to a special and separate sharps container, which may not be conveniently located. Any needles inadvertently left on the working surface, i.e., the bed, stretcher or operating table, may cause injury to the operator or others (nurses, housekeepers,, other medical professionals) who get stuck when either attempting to remove these sharp objects or when they are forgotten or lost and then later encountered.

[0009] Thus, there exists the need for a medical procedure cart that can be quickly and easily stocked and prepared for customized use.

SUMMARY OF THE INVENTION

[0010] It is an object of the present invention to provide a small, easily organized cart for medical procedures that contains and has readily available all of the equipment necessary to insert a device, such as a catheter (intravenous, arterial, epidural, etc.), into a patient, and which allows for the disposal of all of the hazardous materials, such as needles, used during the procedure.

[0011] Another object of the present invention is to provide a medical procedure cart that is adjustable in height to enable the operator to easily bring the cart to the patient's side where the insertion is performed.

[0012] Still another object of the present invention is to provide a medical procedure cart that is customized by enabling each operator to designate in advance all equipment preferred for the particular procedure and to provide a customized working surface with the designated equipment without forgetting any necessary materials.

[0013] Yet another object of the present invention is to provide a method that facilitates the teaching of a medical procedure by enabling each operator to custom design his/her working surface with all the preferred equipment. Such a custom design feature makes it easy for an operator to set up the cart each day and facilitates training of an assistant by helping the technician, nurse, trainee, etc., to arrange the specific equipment desired by each operator for each particular procedure.

[0014] According to these and other objects of the present invention there is provided a medical procedure cart including a housing having a working surface disposed on a top thereof. The working surface forms a tray and includes a transparent top removably disposed above the tray. Height adjustment means adjust the height of the working surface. A template is disposed in the tray below the transparent top. The template includes a plurality of figures depicting various different materials, instruments and equipment that an operator prefers for a particular procedure, wherein the operator can place the instruments, supplies and equipment on the transparent top above a corresponding figure to enable the working surface to be stocked for a particular procedure.

[0015] The present invention provides a method of stocking a medical procedure cart including the step of providing a housing having a working surface disposed on a top thereof, the working surface forming a tray and including a transparent top removably disposed above the tray. A template is positioned within the tray. The template includes a plurality of figures depicting various different materials, instruments and equipment an operator prefers for a particular procedure. The materials, instruments, and equipment are then placed on the transparent top above a corresponding figure to enable the working surface to be stocked for a particular procedure.

[0016] The present invention also provides a method of training a trainee for a medical procedure by customizing a medical procedure cart including the steps of providing a housing having a working surface disposed on a top thereof. The working surface forms a tray and includes a transparent top removably disposed above the tray. A template is positioned within the tray. The template includes a plurality of figures depicting various different materials, instruments and equipment an operator prefers for a particular procedure. The materials, instruments, and equipment are then placed on the transparent top above a corresponding figure to enable the working surface to be stocked for a particular procedure.

[0017] These and other objects, features, aspects, and advantages of the present invention will become more apparent from the following detailed description of the preferred embodiment relative to the accompanied drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] Fig. 1 is a perspective view of an embodiment of a medical procedure cart in accordance with the present invention.

[0019] Fig. 2. is a top view of the working surface of the cart of Fig. 1.

[0020] Fig. 3 is a top view of another working surface according to the present invention.

[0021] Fig. 4. is an enlarged cross-sectional view of the working surface taken along Line I-I of Fig. 1.

[0022] Fig. 5 is a perspective view of the cart of Fig. 1 with the working surface raised.

[0023] Fig. 6 is a side view of Fig. 5.

[0024] Fig. 7 is a flow diagram of a graphic user interface according to the present invention.

[0025] Fig. 8 is a perspective view of another embodiment of a medical procedure cart in accordance with the present invention.

[0026] Fig. 9 is a cross-section of the working surface of the cart taken along Line II-II of Fig. 8.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0027] Referring to Fig. 1, a medical procedure cart 10 according to one embodiment of the present invention is shown in perspective. Cart 10 includes a housing 12 having a plurality of drawers 14. It should be appreciated that the number of drawers is dependent upon the predetermined use of the cart and may vary for a particular intended procedure. The cart 10 is composed of a plurality of lightweight materials, for example, stainless steel, aluminum and thermoplastics. Cart 10 further includes wheels or coasters 16 to enable the cart to be movable. A sharps container 18 is disposed at one side of the cart.

[0028] As shown in Figs. 1-5, a working surface 20 is located at the top of the cart. The height of working surface 20 above cart 10 can be adjusted by a mechanism 22 (Fig. 6), so as to allow the operator to use the surface while sitting (Fig. 1) or standing (Fig. 5). This enables the operator to bring the working surface to and placed at the best height near of over the patient. Caregivers can therefore conveniently utilize the cart whether they prefer to perform catheter insertions while seated next to the patient, or, alternatively, the top can be

adjusted upward to provide a working surface that is easily accessible for caregivers who prefer to stand during the procedure.

[0029] Referring to Fig. 4, working surface 20 includes a recessed tray 24 in which a removable template 30 can be placed. Working surface 20 has a transparent Plexiglas top 26 through which the template 30 can be viewed. As shown in Fig. 4, transparent top 26 can sit on a ledge 28 formed on the inside of tray 24 so as to be removable. Top 26 is recessed within tray to form a slight lip thereabove. However, top 26 can also be flush with the sides of tray 24. A cut-out 29 (Fig. 2) can be made at one corner of top 26 to enable the top to be grasped and removed. Top 26 can be removably attached to tray 24 by hinges or other means (not shown) to allow access to the interior of tray 24.

[0030] Top 26 can also include a contoured portion or armrest 27 for a positioning a patient's arm directly on the working surface, for example, during placement of an arterial catheter. A tape dispenser 25 can also be located on top 26 or elsewhere on working surface 20, so the operator can easily obtain pieces of adhesive tape needed to secure catheters following their insertion. Currently, operators simply pick up an entire roll of tape and rip off pieces, potentially contaminating the entire roll of tape for future patients. Furthermore, two hands are needed to do this, whereby a secure tape dispenser will enable dispensing to be done cleanly and with a single hand.

[0031] Referring again to Figs. 2 and 3, template 30 includes a plurality of cutouts or figures 32 depicting various different material and equipment the operator prefers for a particular procedure. For example, figures 32 may depict catheters, tourniquets, gloves, alcohol swabs, gauze pads, sterile transparent dressings, tapes, syringes containing heparinized saline attached to a T-connector, arm boards, etc. Prior to the procedure, a customized template 30 can be placed within tray 24 and instruments, equipment and supplies placed on top 26 above the designated figures to stock the working surface/cart according to the preferred equipment. Since operators frequently prefer "setups" that differ slightly from their colleagues, for example, left-handed vs. right-handed operators, and insertion of different catheters (i.e., arterial, venous, epidural, etc.) require somewhat different equipment, this ability to custom design the appearance of the cart's working surface facilitates the setting up of all the needed equipment in advance of any procedure. Template 30 also serves

as a visual reminder of all equipment needed to avoid having the operator get, or ask for, additional equipment during the middle of the procedure. Redundant components remain stocked in drawers 14 for easy access should they be needed.

[0032] Furthermore, the graphic display of the equipment needed for the particular procedure can be a valuable aid for teaching others, such as trainees, technicians, etc., how to properly prepare and stock for the procedure. Multiple copies of different templates can be included in the cart, so the operator can select the desired template(s) to place in preferred locations on the working surface under top 26, which can be easily kept clean. Templates 30 could take the form of individual figures 32 located on the bottom of the tray or a sheet with outlines of the desired equipment disposed thereon. Operators could use the cutouts or figures to custom design their own procedure sheets, which could then be operator and procedure specific. As shown in Figs. 2 and 3, different templates are contemplated by the present invention and the actual placement of the patterns 32 on template 30 is governed by a particular procedure and operator. It should be appreciated that the actual template design varies and although not illustrated the present invention contemplates a myriad of different template designs.

[0033] The present invention also contemplates a graphic-user interface, which can include a preference list for a particular procedure or interface. It is common practice for operating and treatment institutions to use preference lists for individual operators and/or procedures, which list the specific instrumentation, supplies, etc., needed for a particular procedure. These preference lists also include idiosyncrasies unique to individual surgeons/operators, such as glove size, etc. Referring to Fig. 5, the present invention contemplates the use of a graphic-user interface 50, such as a computer, which can be located on cart 10 or at a remote location. Interface 50 could use a CD-Rom or DVD that includes a plurality of templates and or figures. Moreover, interface 50 could communicate with an internal network or via the internet to a source to retrieve the needed information from a remote location.

[0034] Referring to Fig. 7, upon accessing the database the user could pull up a recorded preference list 52 for an operator and/or procedure. A template database 54 which include the numerous figures of various equipment, supplies, etc., can also be accessed by the user.

The user can then create a customized template 56 by for example, dragging and dropping the designated cutouts or figures. Next, the customized template can be displayed 58. It should be appreciated that the displayed customized template could be projected directly on template 30 via an LCD or equivalent device (not shown). and print out the predetermined template. The template can also be printed out in step 60. As discussed previously herein, the template can be printed out as individual cut-outs or a sheet with the figures depicted thereon. Moreover, the template can be printed out at a remote location and brought to the cart or printed directly at the cart by a local printer (not shown). For example, if an operator has privileges at numerous health care facilities, he/she could bring the pre-printed customized template(s) with him/her. Once the template is printed, the operator or assistant can position the template on the working surface 62 and proceed to stock the cart at 64 as discussed herein.

[0035] Cart 10 is small and mobile so as to allow it to be easily positioned at the side of the patient wherever the patient is, including the preoperative holding area, operating room, emergency room or hospital ward. Referring again to Figs. 1 and 5, a bar 34 on the cart can facilitate the operator grabbing the cart and bringing it to the patient's side while the operator's hands are uncontaminated. After successful catheter insertion, the cart can then be conveniently pushed out of the way for surgery and yet be easily retrieved for use with the next patient. A locking drawer mechanism 36 enables the operator to push the cart away from the patient, even with a foot, thereby avoiding contamination of the cart surface by dirty (and potentially contaminated, blood covered) hands/gloves, yet prevents the drawers from opening.

[0036] A sharps container 18 is attached to the side of the cart to facilitate the placement of all hazardous material (especially needles) directly and immediately in a protective disposal system, rather than leaving hazardous material elsewhere for later disposal. Container 18 can be of any type and style because the cart includes a universal bracket 19 for attaching the container. This allows for the attachment of any type of needle disposal unit or bucket, since every institute employs its own system of sharps containers that are routinely replaced. Furthermore, by enabling the caregiver to directly dispose of all sharp, hazardous materials at the moment of insertion, the need for others to be involved in this process and/or the caregiver from performing a separate transfer later is eliminated.

[0037] The back of cart 10 can also include an adjustable height pole (not shown) for holding a plurality of intravenous fluid bags and administration sets. This enables the operator or assistant to set up the bags/sets in advance and have them conveniently located adjacent to the patient for easy attachment to intravenous catheters once inserted. Other medical equipment can be attached to cart 10 depending on the particular medical procedure.

[0038] As shown in Fig. 6, the height of the working surface 20 can be adjusted by height mechanism 22. Mechanism 22 is operated via release lever 23 to retract a pin (not shown) enabling the rod 21 to be raised or lowered. Thus, the operator can bring working surface 20 to the patient site, whether the operator is standing or sitting during the procedure. It should be appreciated that a plurality of height adjustment mechanisms are contemplated by the present invention.

[0039] Figs. 8 and 9 illustrate another embodiment of the invention whereby the working surface 20 is located in a top 40 of the cart. Top 40 includes a recess 42 in which template 30 is located. As with the previous embodiment, the equipment can be positioned on top of transparent top 26.

[0040] As discussed above, the present invention provides a means of organizing simple or complex instrumentation to allow practitioners to perform routine or non-routine procedures better. Advantages to clinicians include serving as a "memory reminder" that will enable clinicians to set up all the necessary equipment for a procedure thereby improving procedural efficiency by decreasing the operator's need to leave the patient to obtain necessary materials, and improving safety by eliminating potential contamination.

[0041] The present invention also provides trainees a visual and textual training method of teaching about equipment needs for procedures that require complex or multiple pieces of equipment. Therefore, the cart can also be used for procedures other than those involving needle insertions, such as endotracheal intubations, etc.

[0042] Although the present invention has been described in relation to particular embodiments thereof, many other variations and modifications and other uses will become apparent to those skilled in the art. It is preferred therefore, that the present invention be limited not by the specific disclosure herein, but only by the appended claims.

WHAT IS CLAIMED IS:

1. A medical procedure cart, comprising:
a housing having a working surface disposed on a top thereof, said working surface forming a tray, said working surface including a transparent top removably disposed above the tray;
height adjustment means for adjusting the height of the working surface; and
a template disposed in said tray below said top, said template including a plurality of figures depicting various different materials, instruments and equipment that an operator prefers for a particular procedure, wherein the operator can place the instruments, supplies and equipment on said transparent top above a corresponding figure to enable the working surface to be stocked for a particular procedure.
2. The medical procedure cart of claim 1, wherein the tray is movably disposed on the housing and the height adjustment means raises and lowers the tray with respect to the cart housing.
3. The medical procedure cart of claim 1, wherein the height adjustment means comprises an adjustment mechanism for raising and lowering the height of the cart housing.
4. The medical procedure cart of claim 1, wherein the template comprises a sheet including a plurality of figures thereon depicting the various different material, instruments and equipment.
5. The medical procedure cart of claim 1, wherein the template comprises a plurality of cut-outs figures depicting the various different material, instruments and equipment located in said tray.
6. The medical procedure cart of claim 1, further comprising a refuse container removably located on said housing for receiving needles and other contaminated objects.
7. The medical procedure cart of claim 1, wherein said housing includes a plurality of drawers containing various different material, instruments and equipment.

8. A method of customizing a medical procedure cart, comprising the steps of:
providing a housing having a working surface disposed on a top thereof, said working surface forming a tray, said working surface including a transparent top removably disposed above the tray;

positioning a template in said tray, said template including a plurality of figures depicting various different materials, instruments and equipment an operator prefers for a particular procedure; and

placing the materials, instruments, and equipment on said transparent top above a corresponding figure to enable the working surface to be stocked for a particular procedure.

9. The method of customizing a medical procedure according to claim 8, further comprising the step of first determining the materials, instruments and equipment used for a particular procedure or operator.

10. The method of customizing a medical procedure according to claim 9, further comprising the step of creating a customized template.

11. A method of training a trainee for a medical procedure by customizing a medical procedure cart, comprising the steps of:

providing a housing having a working surface disposed on a top thereof, said working surface forming a tray, said working surface including a transparent top removably disposed above the tray;

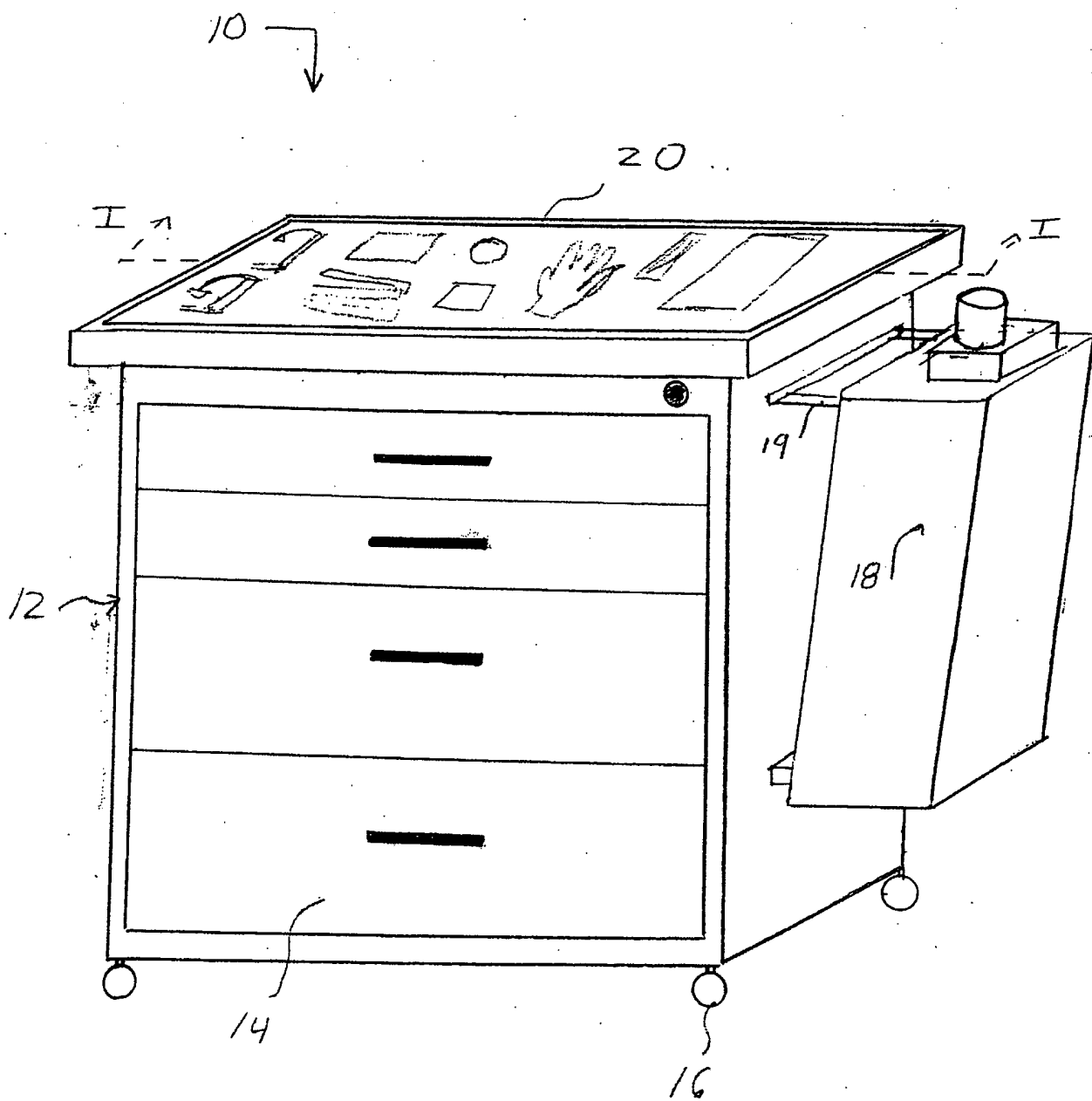
positioning a template in said tray, said template including a plurality of figures depicting various different materials, instruments and equipment an operator prefers for a particular procedure; and

placing the materials, instruments, and equipment on said transparent top above a corresponding figure to enable the working surface to be stocked for a particular procedure.

12. The method of customizing a medical procedure according to claim 11, further comprising the step of first determining the materials, instruments and equipment used for a particular procedure or operator.

13. The method of customizing a medical procedure according to claim 11, further comprising the step of creating a customized template.

Fig. 1



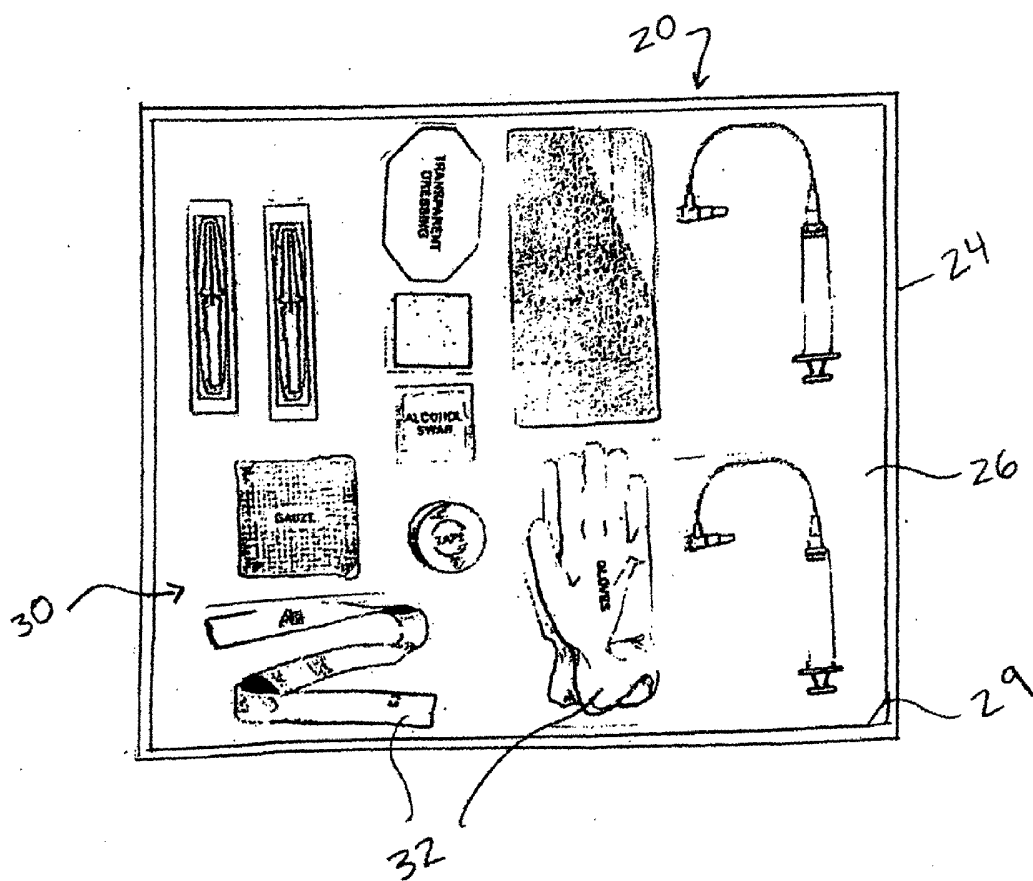


Fig. 2

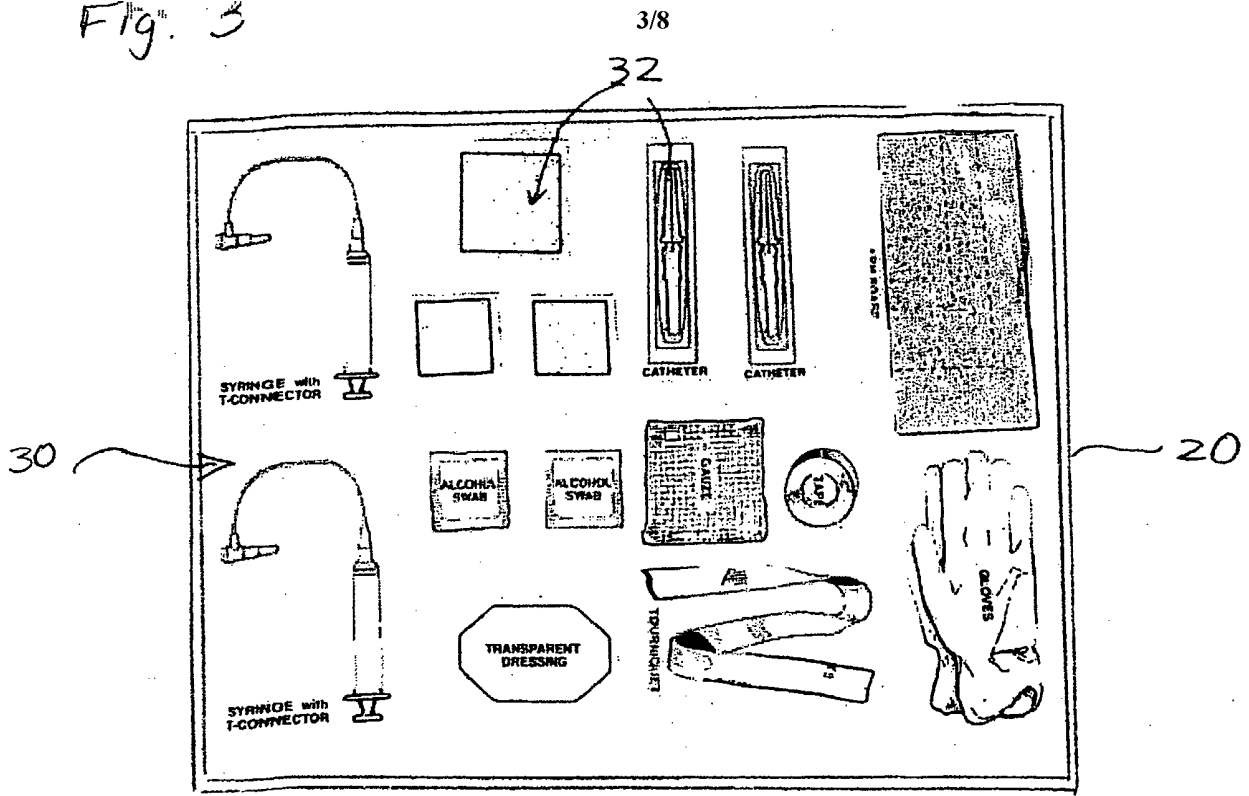


Fig. 4

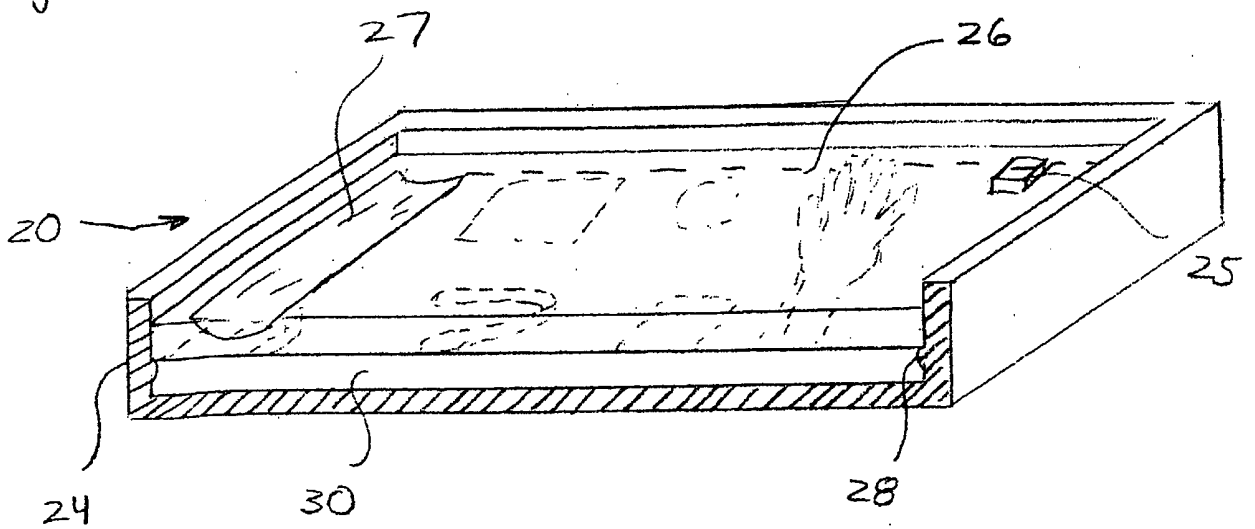


Fig. 5

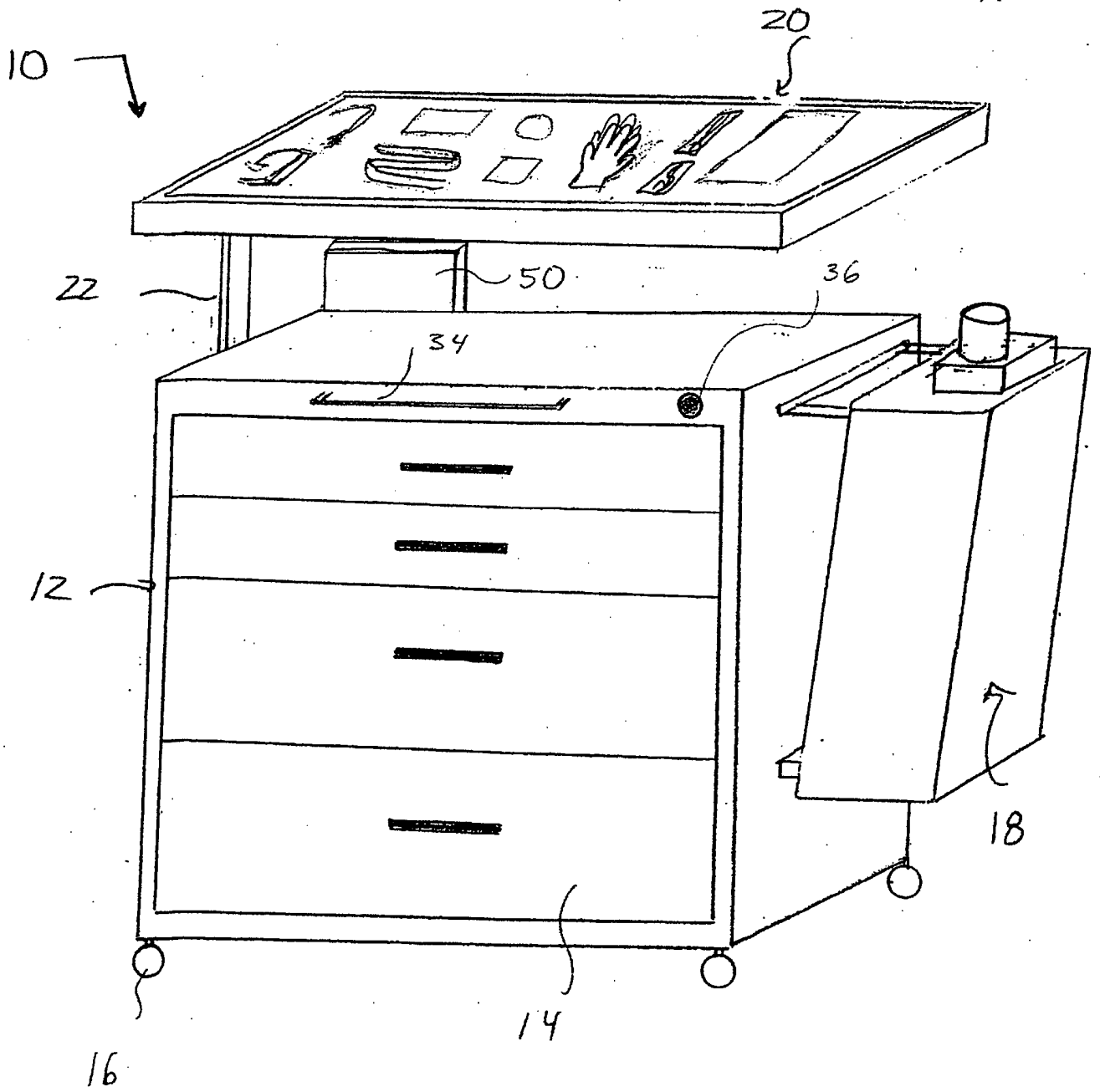


Fig. 6

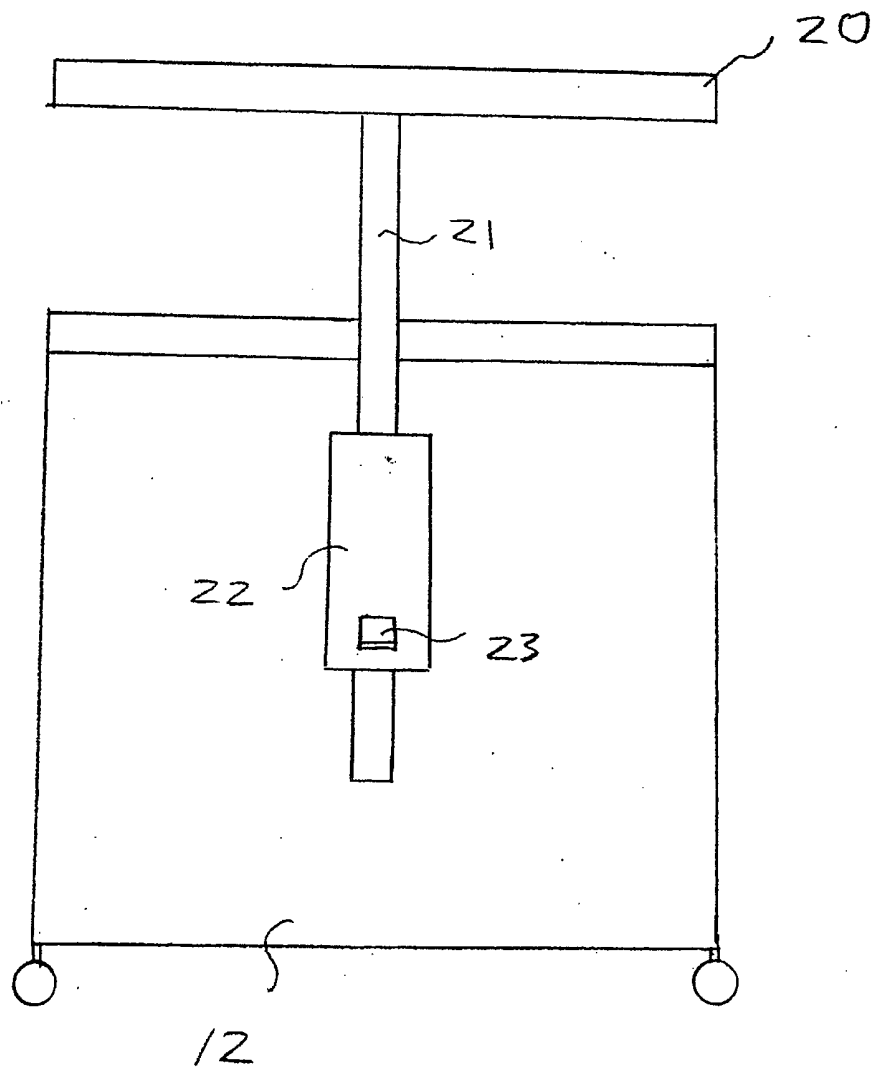


Fig. 7

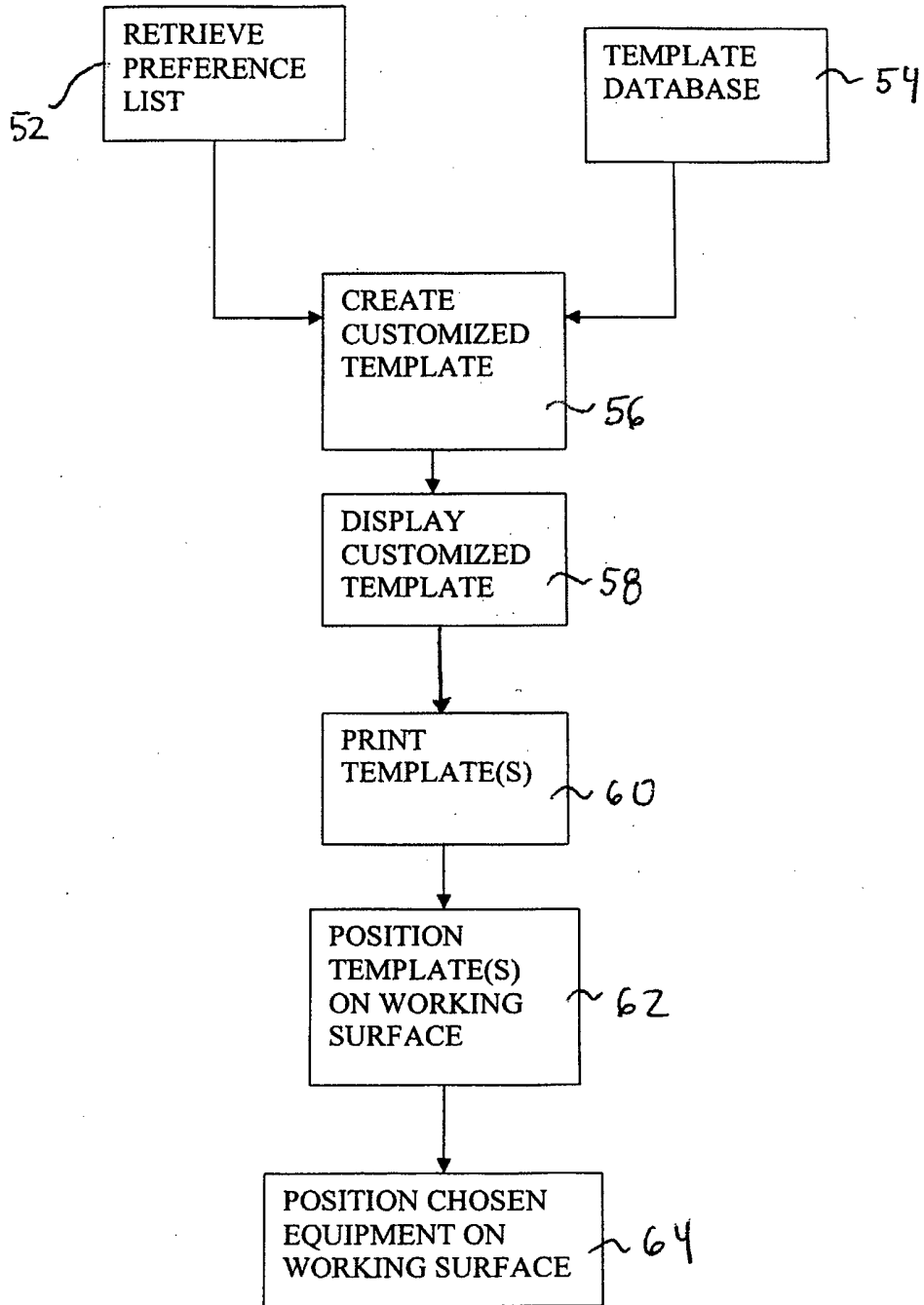


Fig. 8

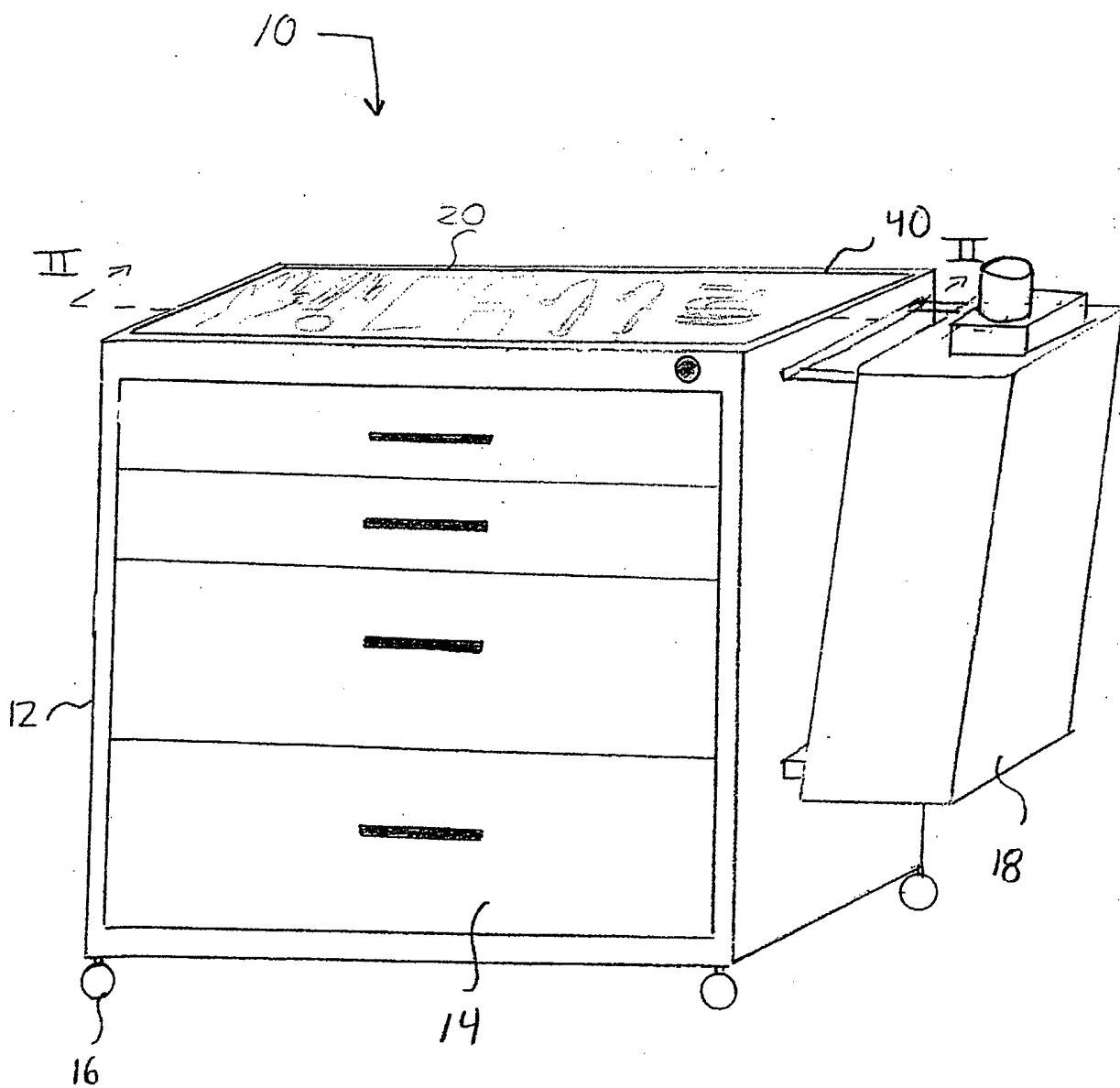


Fig. 9

