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Obtaining Patents for Innovative Products Designed by Nursing Faculty Members in Taiwan

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Abstract:

This paper introduces the process of obtaining patents for innovative products. From 2014 to 2015, to enhance the ability of nursing faculty members to investigate products designed through nursing practicum projects, the principal investigator of this study formed a study community with the objectives of sharing innovative product designs developed by nursing teachers and instructing faculty members in how to research products. In addition, to obtain patents for the products, a patent expert was invited to guide the community members in the process of patent application. The following four innovative products were designed by nursing teachers in Taiwan: a medical toolbox, movement device with switching step and step function, multifunctional helmet, and catheter bag skirt.

Keywords: ***innovation, patents.***

Introduction

The Department of Nursing at Fooyin University constructed and evaluated a nursing capstone course involving creative thinking teaching of nursing students in Taiwan (Lee, Tu, Shen, & Ku, 2016; Ku, Lee, Shen, and Kuo, 2014). Subsequently, a study community for training nursing faculty members in how to guide and direct nursing students in producing innovative products was developed based on the capstone course. The purpose of this study community was to encourage nursing teachers to brainstorm potential innovative products for application in daily life or clinical settings. As a result of this process, four innovative products were designed by nursing teachers in Taiwan, including a medical toolbox, movement device with switching step and step function, multifunctional helmet, and catheter bag skirt.

Methods

The process of developing the aforementioned five innovative products involved six steps. First, the principal faculty member led a group of nursing faculty members in discussing the most significant predicament. Second, the faculty members brainstormed various potential innovative products for use in daily life or clinical settings. Third, the faculty members sketched initial figures for their imagined products. Fourth, the principal faculty member contacted a patent company to discuss the possibility of patent application for the sketched figures. Fifth, the nursing teachers and a patent expert discussed the innovative products during a group meeting to prepare for patent application during a school meeting. Finally, the approved figures from the school meeting were subject to application for national patents in Taiwan to obtain patent numbers and formal certifications.

Results

Medical Toolbox

The medical toolbox includes a kit unit with a storage box to accommodate a variety of medical devices. A first partition plate is provided in the case box and connected to opposite sides of the box. A second partition plate cooperates with the first partition plate to define an accommodation space and second recovery space. A cover unit including a hinge is pivotally connected to the housing, and a recovery box accommodates waste needles disposed in one of the storage spaces in the storage unit. A recovery hole and discharge opening are formed in the top surface of the recovery box to communicate with the recovery box, and a cover is detachably plugged into the removal port. The waste disposal unit includes a collection box located in another recovery space in the storage unit to store various medical waste materials.

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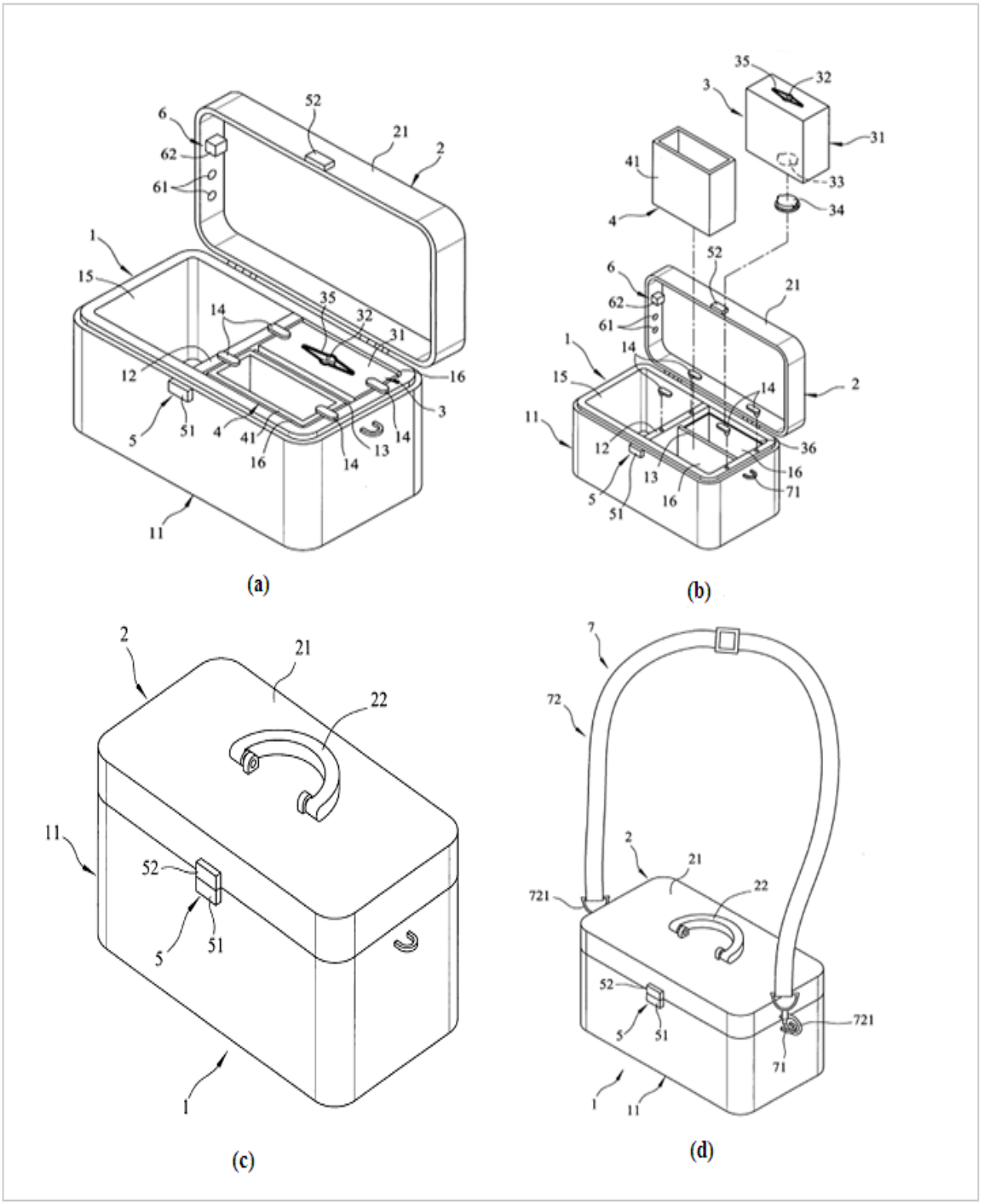

Figure 1: A Medical Toolbox

Movement Device with Switching Step and Step Function

The present invention provides a two-use physical fitness exerciser comprising a 3-minute stair box for fitness detection and a U-shaped track, located in the middle section, connecting the U-shaped bottom to the outer side of the box. When the fixed key is pressed to start the card tenon, the tenon is pushed and the U-shaped track is fixed. At this time, the purpose of the order box is to train and shape the lower limbs to focus on the target movement. The purpose of the boarding box before the dashboard is to monitor the movement of the body and fitness. The second board-side box operates a speaker controlled to run for 3 minutes by a metronome. The on and off switch for the speaker is located behind the box.

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When an athlete has completed the order of activities, after the physical fitness test, the start button and card tenon can be pulled out. Subsequently, the U-shaped track starts sliding because it is connected to the two foot-like shapes. Upper and lower left and right swing movements prevent fall movement; therefore, in the top box around the upper set of light-emitting diode lights, the instrument panel is set up next to two stent armrests to be grasped any time to facilitate upper and lower left and right swing movements.

This creation combines the concepts of a stair box and swinging machine for a diverse range of general fitness sports, rather than only having one function. For example, the step pedal provides two types of fitness exercise with a variety of functions such as stepping and swinging up and down; moreover, the invention monitors fitness and offers music to enhance the effect of physical and mental relaxation. In addition, the step pedal can be used at home for daily exercise, thereby gradually improving the user's cardiopulmonary function, physical fitness, and general health.

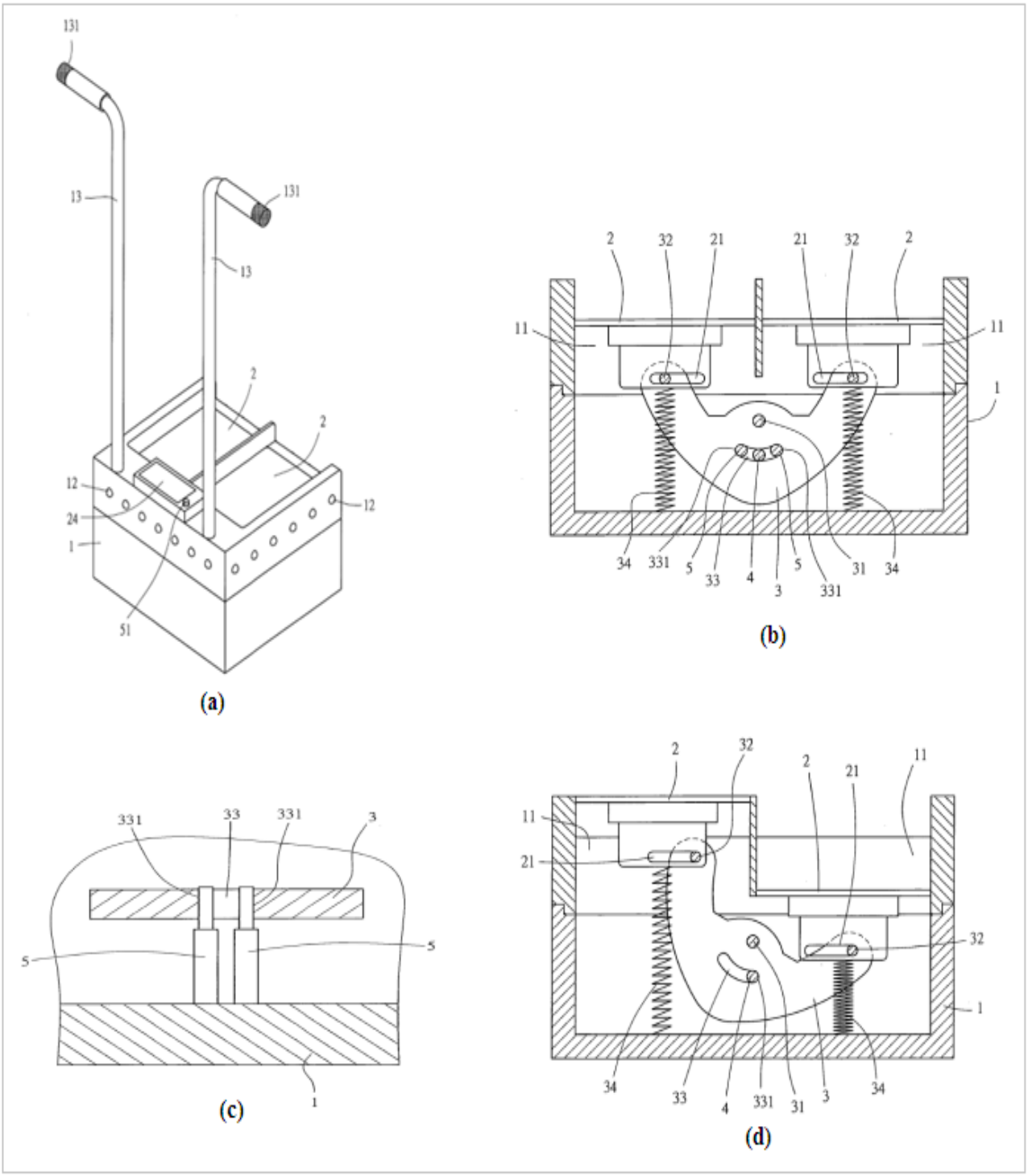

Figure 2: Movement Device with Switching Step and Step Function

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Multifunctional Helmet

The multifunctional helmet includes a full-cap helmet and hat in the lower left section with a detachable lightweight folding raincoat bag. The raincoat offers coverage to the front edge of the helmet, and it can be attached to the brim. In addition, an internal battery is positioned in front of the helmet to power electric wipers. In previous helmet designs involving the combination of helmets and rain gear, the inner layers of the helmets would easily become wet from mustiness, thus shortening the usable of the helmets. By contrast, the developed triple helmet design not only protects the helmet from rain, but also facilitates the task of motorcycle riders in the rain because a raincoat can cover the front edge of the helmet, thereby reducing the amount of rain hitting the helmet. In addition, the combination of coverage to the front cover and wipers helps to remove raindrops from the front cover. This technology combines storage, security, waterproof capability, and time efficiency.

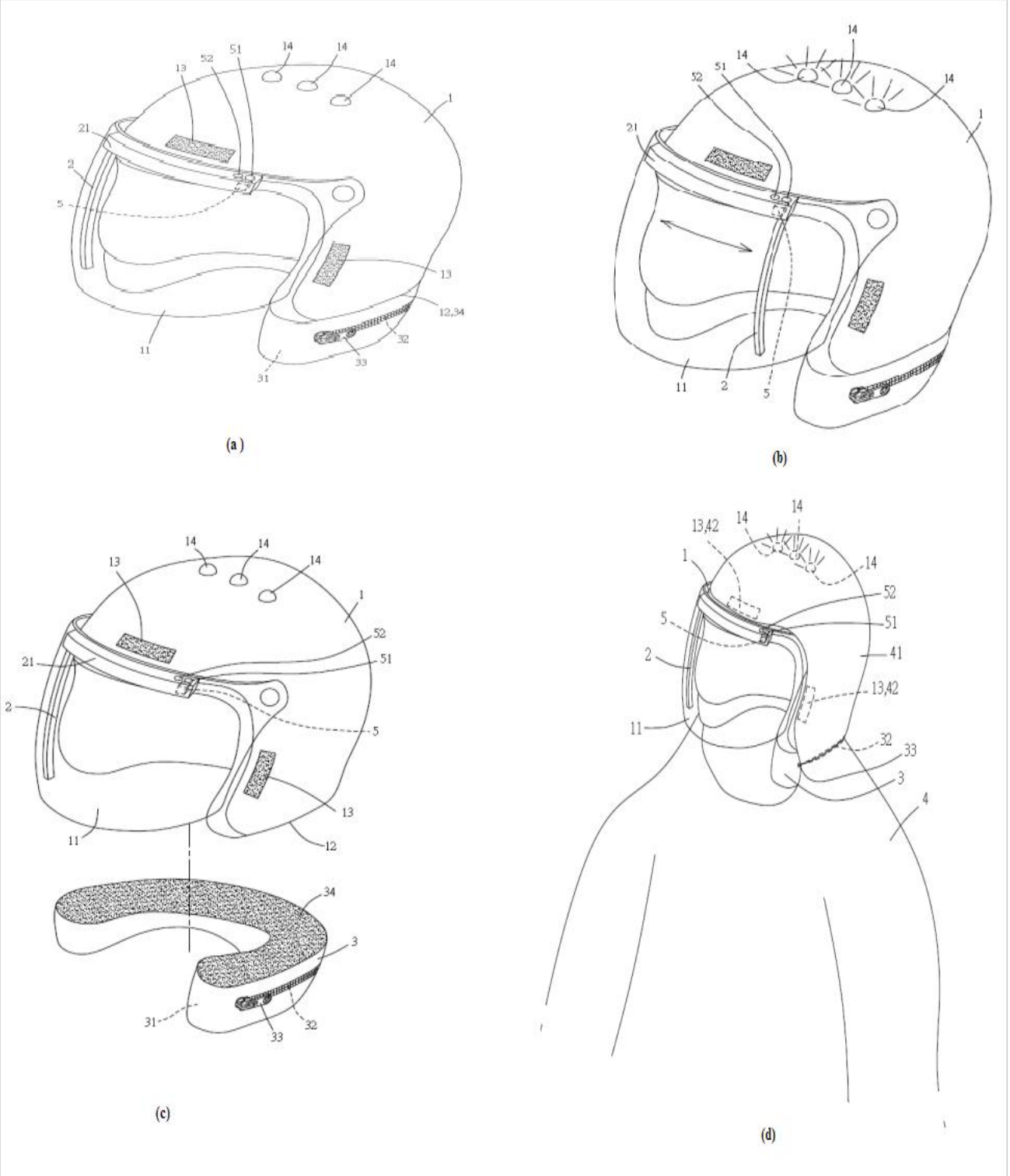

Figure 3: Multifunctional Helmet

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Catheter Bag Skirt

Most patients who have undergone surgery often wear a catheter bag to reduce the difficulty in going to the toilet caused by surgery. In general, patients must wait for wounds to heal before being able to go to the toilet; therefore, they must wear catheter bags to prevent slowing the healing process and being troubled by toilet-related problems. However, because wearing an indwelling catheter bag is inconvenient, patients required to wear them are often unwilling to get out of bed, hold the bag, or place the bag on the floor. In addition, patients with indwelling catheter bags often involuntarily position the bag above the level of the bladder, and in some cases, the urine tube cannot be fixed, thus resulting in the distortion or compression of the bag and consequently affecting urine drainage; in some situations, this could lead to urinary reflux, which increases the chance of urine infections. Patients who wear indwelling catheter bags over long periods might experience various problems such as inconvenience in daily life and embarrassment combined with low self-confidence, social withdrawal, and isolation.

The catheter bag skirt consists of the skirt body, fixed parts of the bag, and urine collection and holding structures to house the bag. Urine transfer is accommodated, and catheter bags of various sizes can be placed inside the catheter bag skirt. The size of the catheter bag is determined using the bag holder to fix the catheter bag. The present invention of a catheter bag skirt conceals the bag from being seen while maintaining the bag's normal function, resulting in easy control of urine infections, less inconvenience of daily life, and reductions in feelings of embarrassment, low self-confidence, social withdrawal, and isolation.

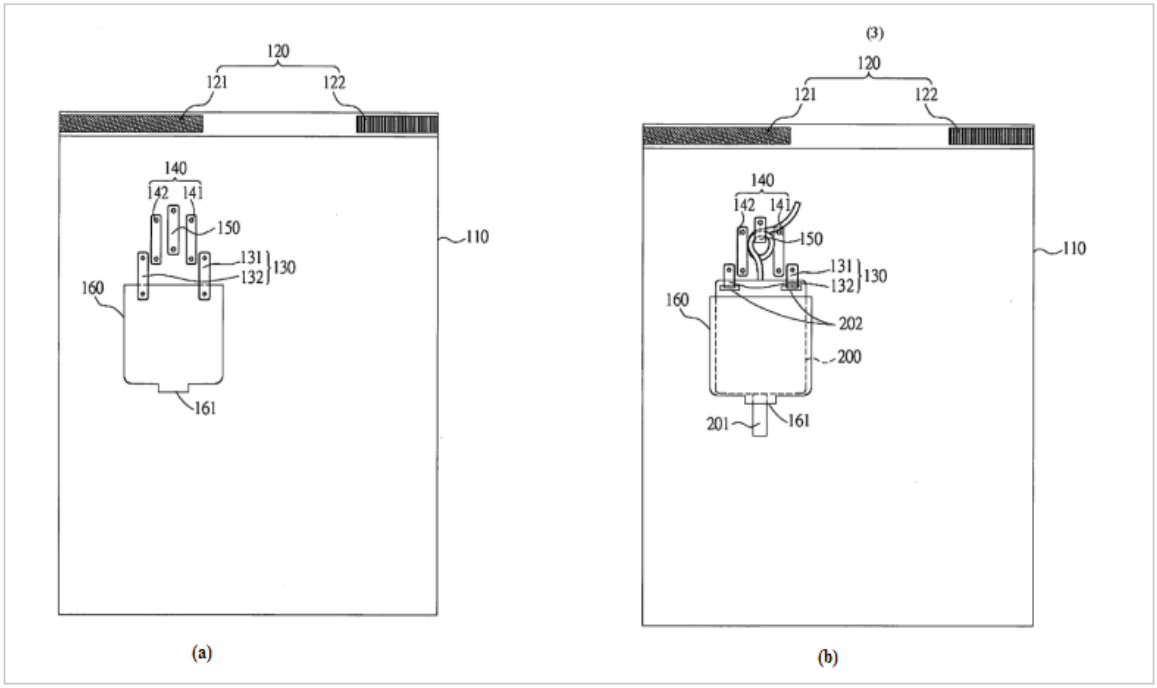

Figure 4: Catheter Bag Skirt

Conclusion

Although four innovative products were designed by nursing teachers in Taiwan, including a medical toolbox, movement device with switching step and step function, multifunctional helmet, and catheter bag skirt; however, only the catheter bag skirt has made as the real product. Additionally, due to the gender issue, the catheter bag pant was also innovated following the skirt. Through creative thinking process, our team designed the pant and skirt for hiding urine bag by following the principles of storage and fixation that men and women both could use for going out. This product included camera bag for hiding urine bag, fixing of the urine bag in the pace where it is uneasy for urine returned and turning the line of urine bag. Additionally, headers buckle could storage the long lines of urine bag neatly. The lower place of camera bag we designed an opening to have urine released without removing the pant or skirt with the benefits of beautiful appearance and convenience, which could promote the convenience and quality of life for the patients. The following is the poster of 『Pant and Skirt for Urine Bag』, which has won the honorable awards of 2014 number one in the group of nursing and nursery during the National Technical College Students' Practice and Competition, 2015 Gold Medal during Taipei International Invention & Technology Trade Show and Contest, and 2015 Bronze Medal of International Warsaw Invention Show (IWIS).

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