

The Utility Model Relates to a Training Platform for Neurosurgery Multi-Purpose Medical Nursing Worker

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How to cite this paper: Wu, T.Y., Chen, S.Q., Du, G.S. and Wu, Y. (2023) The Utility Model Relates to a Training Platform for Neurosurgery Multi-Purpose Medical Nursing Worker. *International Journal of Clinical Medicine*, 14, 377-382.
<https://doi.org/10.4236/ijcm.2023.148033>

Received: Mar. 4, 2023

Accepted: August 15, 2023

Published: August 18, 2023

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Abstract

With the development of medical level, specialized, refined and multidisciplinary collaborative therapy is the requirement and main development direction of neurosurgery. With the improvement of people's medical awareness, people cannot meet the simple surgical treatment, and there is a great demand for nursing treatment. At the same time, the demand for efficiency and convenience of medical nursing practice teaching continues to improve, and the multi-functional medical nursing training innovation platform has been paid more and more attention. The rapid development of material technology as well as digitalization has brought about a huge change, and we have created a multifunctional, spatially efficient and easy-to-transfer information platform for medical care training. A base box, placement drawer, platform board and display are used as the base module and the base module is filled with specific functional components. Lifting and lowering using motors and spiral base, moving using universal wheels. These devices together constitute the training platform. A survey of students and teachers was conducted through a questionnaire, and they all gave very good feedback that the multi-functional platform was very practical and useful. This platform effectively solves the drawbacks of the original training platform which is time-consuming, laborious and inconvenient, and is worthy of further promotion and research.

Keywords

Medical and Nursing Training Platform, Multi-Function, Training Efficiency

*The authors have the same contribution.

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1. Introduction

1.1. Technical Background

In the existing medical nursing education, practice teaching demonstration and assessment occupy an important position. Over the past few decades, assistive teaching tools have become more widely used in education and training. The reduction in the cost of the necessary hardware makes the widespread and intensive use of engineering in teaching a feasible and appropriate approach. ICT and innovative technologies have gradually become a fundamental part of education and are receiving special attention in the field of health care education. Therefore, it is of great importance to explore related technologies and integrate resources [1] [2] [3]. In fact, the nursing of neurosurgery is more complex and the hospital stay is longer than that of general departments. In order to ensure the timeliness, effectiveness and pertinence of treatment, active and comprehensive nursing intervention is crucial for the prognosis of patients [4] [5] [6]. As a result, health care in neurosurgery requires more skilled practical skills and is tested more frequently than in other departments [7] [8] [9]. In mainland China, the large population inevitably makes large classes more common, and the large number of students places higher demands on teaching and learning, as well as the challenge of caring for each and every student in training. Similarly, in the frequent and highly valued practical examinations, examiners need to pay special attention to observing candidates' skills and details in order to give fair and reasonable marks. These current conditions and high demands pose a serious test for nursing practitioners and teaching staff, and having a training and assessment platform that is multi-functional, simple in process, and informative is what most people want [10] [11].

1.2. Problems to Be Solved

With the development of modern technology, the needs of the industry have forced the relevant supporting industries to keep up with the times. A variety of neurosurgical nursing training and teaching platforms have emerged, and great strides have been made in information technology and efficiency improvements, but some key issues remain unaddressed [12] [13]. For example, the platform cannot adjust the height. It is difficult to adapt to different heights of training and examiners; slow progress of information support, video display and explanation function is missing; Internet or LAN connection function is not perfect; it cannot record and real-time live broadcast; parts are too complicated, assembly and maintenance complex, handling difficulties. For most developing countries around the world, the expensive price and post-maintenance costs of most training platforms are very unfriendly, and procurement policy makers are often more concerned with reducing the associated costs. Currently, the price of a new medical care training platform procured from the market ranges from a few hundred to several thousand dollars, a cost that is sufficient to make these governments in developing countries with huge populations relatively cautious [14] [15].

1.3. Summary of the Invention

In response to the defects and problems existing in the existing platform, our team is committed to creating a low-cost, efficient, multifunctional, foldable, easy to assemble, space saving nursing training platform capable of mission training and evaluation, field recording and medical live broadcast.

1.4. The Purpose of This Paper

Describe the materials and orientation of the assembly, as well as to discuss the results of the participant acceptability survey.

2. Materials and Methods

Design Overview

The utility model is further described below in combination with the attached drawings

It mainly includes a bottom box (1), a placement drawer (2), a platform board (3) and a monitor for building the base assembly, and the base assembly is interconnected with each other by a plurality of connectors. The front of the bottom box has a number of placement slots (5), placement drawer (2) installed in the placement slots (5), which could slide and pull. Inside the drawer is placed a buffer frame (6), the central part of the buffer frame (6) has a number of grid slots (7), under which a drying layer (8) is laid. The bottom box (1) is evenly distributed above the support telescopic pillars, the platform board (3) is fixed in the support telescopic pillars, and can be moved up and down by the lifting assembly, the lower surface is set up in the center of the protection assembly, the upper surface paste sterilization cloth (10). The bottom box (1) has a mounting slot, the display (4) can be moved up and down in the mounting slot through the lifting assembly, and the upper part of the lifting assembly is fixed with a dust cover (12). The design schematic is shown in **Figure 1** and **Figure 2**.

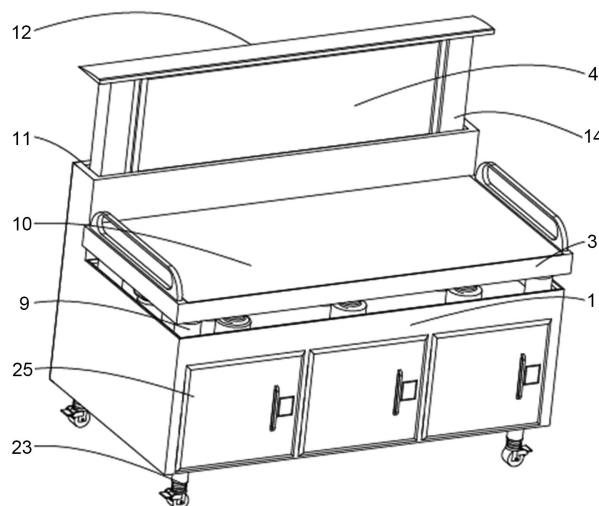


Figure 1. Schematic diagram of the structure.

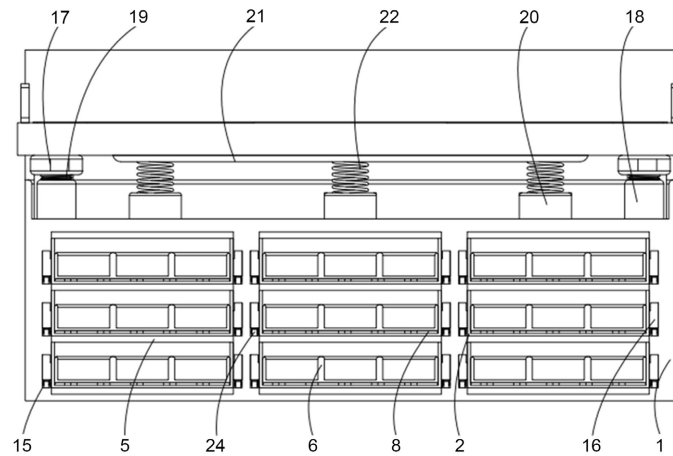


Figure 2. Schematic diagram of the cross section of the placement slot.

(1) for the bottom box, (3) for the platform board, (4) for the display, (9) for the support telescopic column, (10) for the sterilization cloth, (11) for the installation slot, (12) for the dust cover, (14) for the connection block, (23) for the universal wheel, (25) for the slot door.

(1) for the bottom box, (2) for the placement drawer, (5) for the placement slot, (8) for the drying layer, (15) for the sliding slot, (16) for the slider, (17) for the motor, (18) for the screw seat, (19) for the screw, (20) for the buffer seat, (21) for the top plate, (22) for the top spring, (24) for the pulley.

A number of pairs of slots in the inner wall of the placement slot (5) fit into the sliders (16) fixed to the sides of the placement drawer (2), which are the main components used to slide the placement drawer (2) in the slot. The said lifting assembly includes a motor (17) and a screw holder, the output end of the motor (17) is connected with a screw (19), and the screw (19) is screwed into the screw (19) holder, and the protection assembly includes a plurality of cushion holders and a top plate (21), and the upper part of the cushion holders is provided with a top tightening spring, and the top plate (21) is fixed on the top tightening spring. The vertical slider (13) is fixed on the inner wall of the mounting slot, and the connection block (14) is fixed on the side of the monitor, and the vertical slider (13) is adapted to the connection block (14). The schematic diagram of the structure of the placement drawer (2) is shown in **Figure 3**.

(1) for the bottom box, 4 for the display, (11) for the installation slot, (13) for the vertical slider, (14) for the connection block, (17) for the motor, (18) for the screw seat, (19) for the screw.

The lower part of the bottom box (1) is evenly distributed with universal wheels (23), and the legs of the universal wheels (23) are set with cushion springs and their sides are set with locking pieces. The lower part of all sliders (16) is fixed with pulleys (24) and the side where the drawer is put is fixed with a handle. A slot door (25) is installed on the front of the placement slot (5), and the slot door (25) is equipped with a combination lock. The schematic diagram of the placement drawer (2) is shown in **Figure 4**.

(2) for the placement drawer, (6) for the buffer frame, (7) for the grid slot.

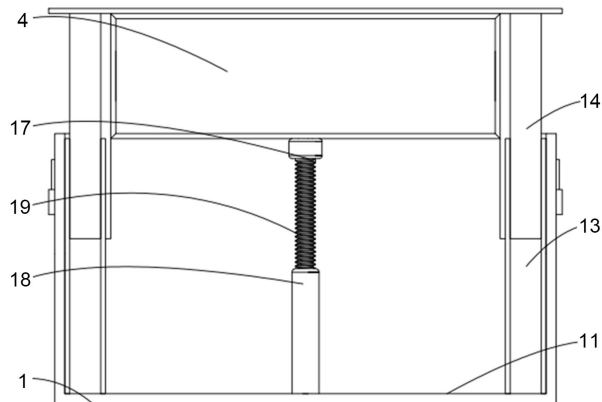


Figure 3. Schematic diagram of the structure of the placement drawer.

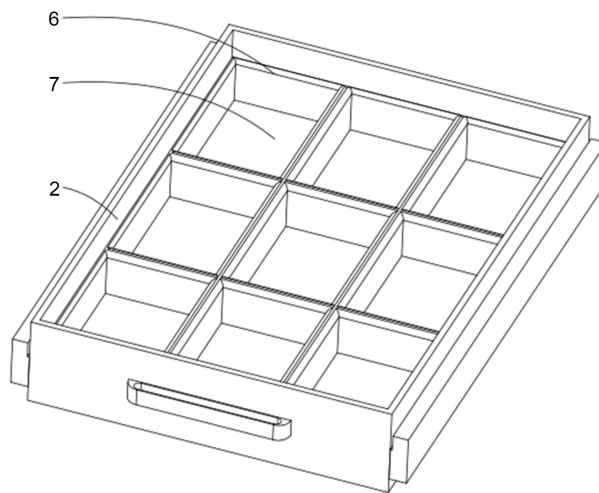


Figure 4. Schematic diagram of the placement drawer.

Fund Project

- 1) 2021 Zhejiang Medical Association Clinical Research Fund Project (No: 2021ZYC-A190).
- 2) Yangtze River Research Project on Sustainable Development of Hospitals in Zhejiang Province (No: 2021ZHA-YZJ214).

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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