

A Review of Design and Fabrication of Wheelchair cum Bed

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Abstract— The need for automatic Wheelchair is especially present in care of immovable people (people with persistent vegetative state, paraplegia, stroke and spinal cord injuries), where the care requires a lot of time and manpower. This report is the result of a design and development of an automated multifunctional Wheelchair that would perform all functions present in today's Wheelchair (Wheelchair with adjustable portion of back rest and leg rest and also convert to bed to wheelchair and vice versa and also remote control with which we can provide all necessary movement) as well as new functions of appropriate Wheelchair sections (leg positions adjusting). It is expected that this new automatic Wheelchair would enable people's better medical care, and would greatly reduce time and manpower to the old-age home staff.

Keywords: wheelchair cum bed

I. INTRODUCTION

The need of wheelchair cum bed is especially present in care of immovable people where the care requires a lot of time and man power. This synopsis aims at design and development of a multifunctional wheelchair that would perform all functions present in today wheelchair. It is expected that this new wheelchair would enable people better medical care, and would greatly reduce time and manpower to the old age home staff.

As time changed so did the requirement of the needs of different classes of patient .Lots of research has been going on the field and which are aimed at fulfilling these requirements. So many problems are faced by the bed ridden patients sometimes they feel lonely and they are craving for a change in their ambience. In order to overcome the problem and wheelchair come bed having adequate features need to be designed. The wheel chair cum bed comprises of a wheel chair which can be converted into a complete bed. Wheelchair cum bed can be controlled by handle, etc.

A. Why need of wheelchair cum bed

- People suffering from certain paralysis can use either head movement or Bluetooth module as per requirement.
- Patients in the Hospitals
- People at old age homes can use this chair as per their requirement

B. Advantages

- Increase in comfort level of the patient.
- Prevents further damage to patients and the helper while transferring him/her from chair to bed or vice-versa.
- Patients with serious injuries need not be moved to aggravate their injuries even more.
- No special training required to operate them.
- Is more efficient than other chairs.
- Less costly than electrical version of the same chair. □

C. Limitations

- Increases weight of the chair.
- Increases the cost of the chair.

D. Applications

- It is used in hospitals.
- It can also be used in houses.

E. Future scope

- We can attach a mini compressor in the wheel chair itself that leads to easy movement and comfort ness of the height and bed adjustment of the wheel chair.
- Solar panel roof can be used as alternative power source and also it can be a protective layer from rain and sun.

II. LITERATURE SURVEY

A. Mr.Sourabha Jambhulkar, Nageshan Ramteke et. al.2019

Presented a paper on design on fabrication come stretcher with suspension where they have used helical compression spring in this paper authors have tried reduce the human effort required lifting of the frame.[1]

B. Dr. Ramchandra C., Shashank S. et al.2017

Found design of the wheelchair bed. In this paper by considering the wheelchair on the research of the front foot and back structure, finally decided to use in forefoot plate rack mechanism, backplane using slider-crank mechanism, so as to achieve transformation between the wheelchair and the bed and using computer application software for 3d drawings of drawing and carry on for test. [2]

C. Dr. Sukanta Roga, Abhijeet Kumar et al. June 2017

The screw mechanism is used to convert a wheelchair into stretcher at is it. When lead screw mechanism operated, the foot rest which is downward goes till the level of seat of wheelchair and simultaneously the back support goes down to the same level making, it stretcher, when it is converted into wheelchair from stretcher. Below the seat, a defecation system has been provided which is detachable and is operated by sliding mechanism. It is designed and fabricated in such a way that it can be used in hospitals as well as for personal use at home.[3]

III. PROBLEM DEFINITION

Through extensive surveys at hospitals, we found that the patients with disabilities like that of being affected by paralysis stroke and organ failures find it difficult to carry themselves on their own or by the hospital nursing staff from Wheelchair to bed. .

To make such a moment comfortable for the hospital nursing staff and to the patient at greater extent, the combination of Wheelchair and bed is advisable.

We also found patients find it uncomfortable while sitting on a wheelchair for a longer time. So to overcome such situation, the solution to counter the problem in form of wheelchair cum bed is proposed.

IV. CONCLUSION

From the literature survey, this product is to make the helper life easy and to make sure the patient is not during the process of treatment. This product eliminates the step of shifting from bed or stretcher to wheelchair and vice versa as handling of old age people is very difficult.

We can conclude from this project that very less human effort is required to operate wheelchair cum bed. Cost of such type of wheelchair cum bed will be affordable for all type hospitals and families. It will be beneficial for all patients.

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