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Fabrication of Chair Cum Bed Cum Stretcher

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***Abstract:** In present investigation, we tend to see that in hospital, patient transfer from one place to a different place that point need labour intensive work. someday throughout handling, patient and hospital workers suffer from several issues like stresses square measure made within the body, someday probabilities to sleep down the patient. it's needed to eliminate every type of potentialities. this analysis work proposes a style and development of changed mattresses. By victimisation such sort of modification, we will eliminate the matter occur at the time of handling of patients. currently every day common discovered within the medical field that person suffers from more diseases and diseases needed more care wish to paralyze patients. chair may be a devise that's wanted to improve the accessibility of quality challenged persons. This study can illustrate the new absolutely comfy style for physically somebody comparative to offered styles generally use. the target of this study is to style the convertible chair to stretcher simply by means that of design software system and acquire the concept in actual observe.*
***Keywords:** Wheel chair, bed, stretcher, Pneumatic cylinder.*

I. INTRODUCTION

When patient get discharged from hospital, patient want complete rest reception for specific days. Shifting offers most pain to patient that is already in painful condition, and reception there are not any such arrangement for shifting. it's terribly painful for patient, if all transfer activity not wiped out precise manner. principally hospitals use totally atomized beds & stretcher for the patient handling. These square measures pricey and can't be reasonable to any or all the folk's reception. As per the demand needed for higher living quality of immobilized patients, for that ought to be improved home use mattresses for patient handling. Our aim is to produce an improved answer for by changing bed into chair because it could rest to any inclination as per their management. And chair into bed. It consists of gas system by that the Patient will itself operate with none facilitate of the opposite person/caretaker. Patient or caretaker will operate this model as per patient demand whether to require sleep on bed to require rest or convert the model into the chair .by exploitation this the general movement for shifting patient from bed to chair is reduced, that cut back the fatigue and discomfort to the patient. Generally, an individual World Health Organization is affected by deceases and needs continuous observance by doctor and patient is mostly admitted during a hospital. The patient is confined to bed in hospital and is needed to be affected to places for taking X-ray or undergoing imaging or CT scan procedure external aids like chemical element, blood transformation, saline etc. In patient handling, plenty of issues square measure being featured by patient, nursing employees and caretakers. when diagnosing, the matter and convert this concept into model that's Fabrication of Chair Seed Bed Seed Stretcher. measure of chair that used for quality of patient like orthogonal drawback then measure of bed wherever the patient takes rest or sleep. And measure of Stretcher that is employed for lifting the patient from accident spot and transfer to the hospital. Considering all mensuration dimension of chair, bed and stretcher on an individual basis, collaboration of those chair, bed and stretcher with the assistance of correct style and the calculation is completed. So, by exploitation Fabrication of chair seed bed seed stretcher, bed get reborn into chair mechanically with facilitate of gas valve and bed will used as stretcher with the assistance of lockup system or chair get convert into bed and stretcher as per patient demand. The model is automatic due to 2 gas cylinders and 2 gas valve and air reservoir, it refillable by mechanical device. Model will use in home further as in hospital for higher comfort of patient. In gift day, we tend to see in most hospital, transfer of patient from one place to a different place that point need most labor work. throughout patient handling, patient and hospital employees suffers from several issues like stresses square measure created within the body, typically it happens that sleep down the patient. it's needed to eliminate such forms of potentialities. the current analysis work proposes a style and development of changed mattresses for patient handling. By exploitation such modification, we will simply transfer the patient from one place to a different with none drawback. we will eliminate the matter occur at the time of handling of patients.

II. CONTRUCTION

In this type of system three folding sections are provide for back system, sitting and for leg arrangement respectively. These three-folding systems made by square bar section of 1inch size of mild steel. Frame is attached with plywood and it is coated by cushion for comfort of patient. Head section and leg section are easily removable by manually.

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A. Pneumatic Cylinder

Pneumatic cylinder is mechanical device is used the compressed gas to produce a force in a reciprocating linear motion.

B. Double Acting Cylinder

Double acting cylinder use the force of air to move in both extend and retract strokes. They must port to allow air in, one for outstroke and one for in stroke. Both sections are connected by two double acting pneumatic cylinder one is at head section and another is on leg section linked on lower portion on structural frame by ball bearing. This two-double acting pneumatic cylinder are removable.

C. Air Tank Reservoir

The reservoir can be used to compensate pressure fluctuations and act as accumulator in the event of sudden air consumption. They can also be used to provide large quantities of compressed air for supplying fast pulsing drives. It is bolted with structure frame which can be removable. Air tank reservoir consists of one inlet valve, two outlet valves, regulator and one pressure gauge. It is used to store the air for lifting of pneumatic cylinder. This tank is filled by help of compressor.

D. Compressor

An air compressor is device that converts power (using an electric motor, diesel or gasoline engine etc.) into potential energy store in pressurized air.

E. Regulator

There is one control valve or regulator mounted on air reservoir tank for controlling the flow of compressed air to the double acting pneumatic cylinder. There are two air outlets for both pneumatic cylinders.

F. Pneumatic Control Valve

The basic function of a pneumatic direction control valve is to provide link between various parts of pneumatic system by means of connecting, disconnecting and / or changing the flow direction. There are two direction control valve which is positioned on frame such that it is convenient for patient to easily operate. One is on left and other is on right side of patient. There are three position of control valve one is neutral, forward and backward respectively. By using this we can adjust the frames to obtain the position of chair or stretcher.

G. Ball Bearing

There are 4 ball bearing, two for large cylinder and other two for small cylinder for easily movement of cylinder for lifting both section on the structure frame.

H. Foot Rest

It is applied for position of leg at chair position.

I. Pressure Gauge

A device for measuring pressure of a gas, which is attached on air tank reservoir.

J. PU Tube

Polyurethane tube is extremely light in weight, flexible like rubber over wide range of temperature and due to its good resistance to shock and abrasion enables the user safe and easy manipulation of the machinery. It is used to transfer the air from air reservoir to the pneumatic cylinder for the movement of section. In this system four wheels are applied for the movement of stretcher from one place to another in anywhere.

K. Locking system

There are three locking system one for chair and one for stretcher position and another for adjustable at every posture of the patient. Both are manually operated by caretaker of the patient**.**

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L. Wheels

The diameter of wheels is 10 cm and have much capability to sustain 400kg of load. It made up of hard plastic.

III. WORKING

Working of this technique is easy. it's work on principal of gas system. we tend to should fill the air into reservoir tank with facilitate of mechanical device up to specific limit. there's pressure Gage is hooked up on air tank to indicate the pressure target tank. gas regulator is fitted on air reservoir to regulate the pressure output to the gas cylinder for the operation. By mistreatment this we can management the flow of air to cylinder. we are able to build system as a chair and bed or stretcher by dominant gas valve. And these valves square measure connected to gas cylinder. These gas valves will move in 3 positions.

A. Forward
B. Neutral
C. Backward

When patient or nurse move the valve in forward or backward position compressed gas from reservoir tank is transferred to gas cylinder through atomic number 94 tube by the gas valve. therefore, giant pressure exerted on cylinder and connecting rod and this connecting rod is connected to move section frame and leg section frame. The gas cylinder is double acting therefore it will move extend and retract position with the assistance of gas valve. The cylinder is coupled to the 2 balls joint therefore the movement of cylinder and frame is liberal to move simply.

D. Working to get Chair Position

If patient wish to convert the system into chair position it's needed head section cylinder is in upward position therefore the head section is obtained nearly vertical position. this can be done by mistreatment gas valve that is at mitt position of the patient. and therefore, the needed position of leg section cylinder is backward or downward. therefore, the leg section frame is obtained nearly downward vertical position. This position is obtained or management by mistreatment gas management valve of hand aspect of patient. So, during this manner we can get chair position of the system simply.

E. Working To Get Bed Position

Now, if patient wish to convert the system into bed position it's needed Head section cylinder is in downward position therefore the head section is obtained horizontal position. this can be done by mistreatment gas valve that is at mitt position of the patient. and therefore, the needed position of leg section cylinder is upward or forward. therefore, the leg section frame is obtained horizontal position. This position is obtained or management by mistreatment gas management valve of hand aspect of patient. So, during this manner we can get bed position of the system simply.

F. Working To Get Stretcher

To convert the system into stretcher foremost we tend to should get bed position and this position is fast by mistreatment lockup system. And for transporting system one place to a different their square measure four wheels by mistreatment this we tend to simply move the system. So, during this manner we can get stretcher position.

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IV. CONCLUSION

As per the on top of describe data we tend to terminate that currently day additional hospitals are use atomized hospital beds & stretcher for the patient handling and such kind of machine-driven instrument are terribly pricey and can't be cheap to all or any the hospital owner. throughout the handling, stresses developed in patient & staffs are same for all the hospital. Our aim to eliminate all such kind of chance that happens throughout patient handling and for that needed to supply a much better answer for the handling of patient to those hospitals whose are having limitations for the employment machine-driven beds & stretcher. As per the on top of drawback generated at the time of patient handling we offer changed mattresses for patient handling and price of such kind of mattresses is cheap for all kind of hospital and it's helpful for patient handling. A model of the pneumatically hopped-up stretcher-chair device for a patient weight of 100kg was designed and invented. The chair to bed conversion feature of this device makes patient transfer easier. the employment of straightforward shifting aids like patient shifters will more optimize the patient transfer by avoiding work things and potential back injury to the caregivers. This device combines the idea of patient quality, patient transfer also as patient comfort. The payment of your time for the patient to shift from a traditional chair to a separate stretcher or from a separate stretcher to chair the other way around is reduced. The gas parts used herein have easy operation principles. Therefore, fault detections are easy. Also, gas system proves to be non-hazardous. the most objective of this product is to form the helper life straightforward and to form positive the patient isn't hurt throughout the method of treatment. This product eliminates the step of shifting patient from bed or stretcher to chair and the other way around as handling of adulthood folks is incredibly tough.

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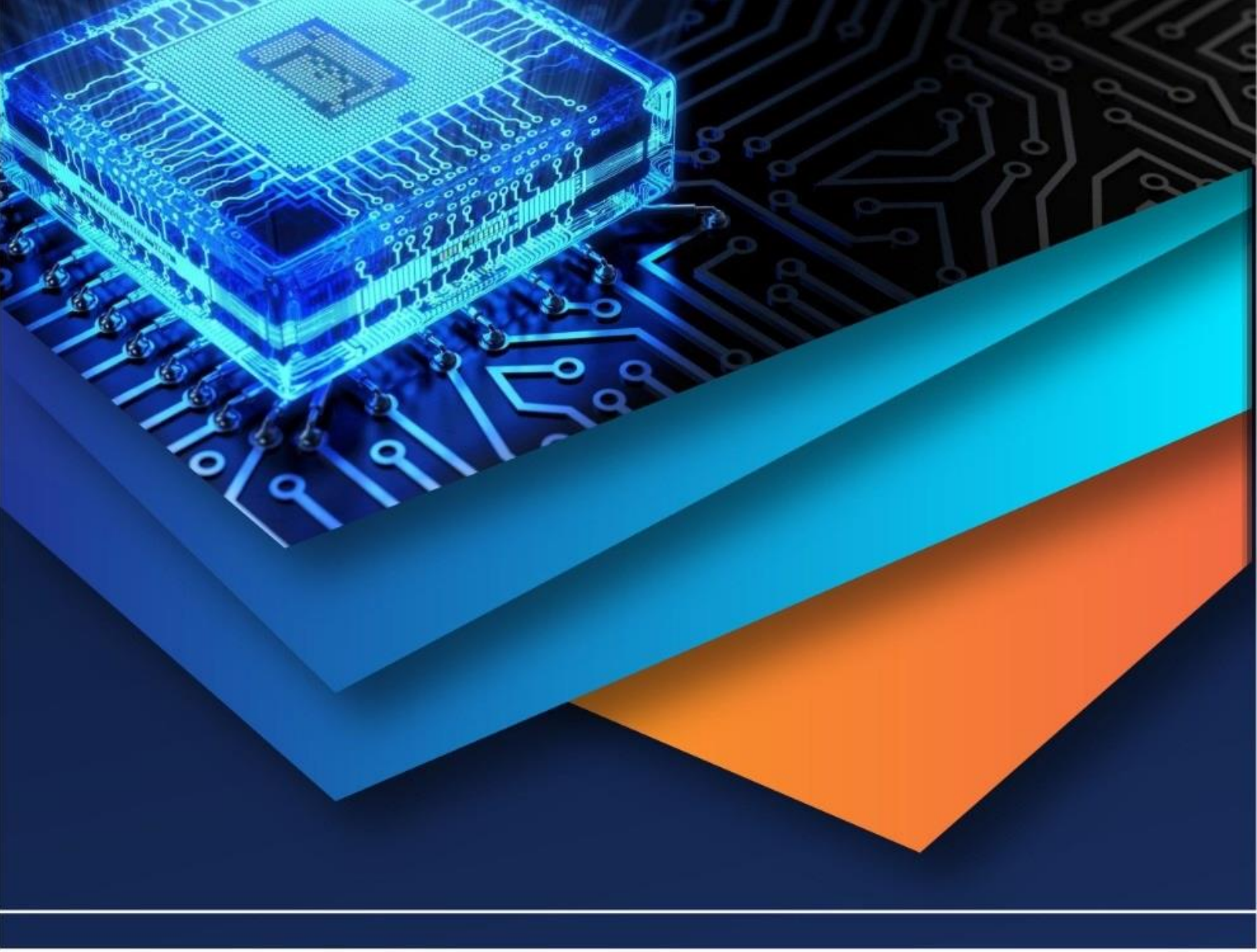

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