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(71) Applicant and

(72) Inventor: **PATWARDHAN, Bhaskar, Vitthal** [IN/IN];
Sanjivani Sankul, 3rd Floor, Gole Colony, Nashik 422 002,
Maharashtra (IN).

(74) Agent: **JOSHI, Hiral, Chandrakant**; Chandrakant M.
Joshi, Patent & Trade Mark Attorneys, 501, Vishwanank,
Chakala Road, Andheri (East), Mumbai 400 099, Maha-
rashtra (IN).

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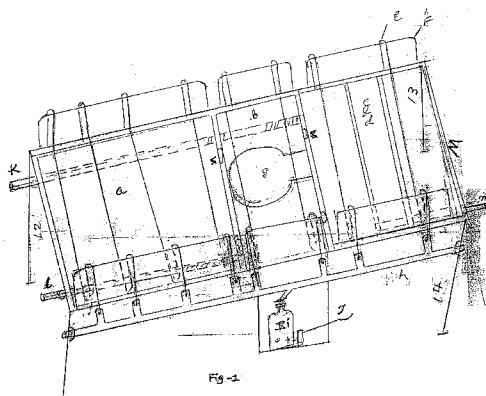
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(54) Title: A BED CUM CHAIR WITH COMMODE FOR A PATIENT



(57) Abstract: A bed cum chair with commode for a patient comprises: a rectangular main frame which stands on at least four legs; - four frames being fitted on said main frame, out of said four frames uppermost and two lower frames are movably fitted on main frame and middle frame is permanently fixed to the main frame, upper movable frame supports upper body and head portion of the patient, two lower movable frames supports leg portion of the patient and middle fixed frame supports the hip portion of the patient, another frame is fitted on top of the lowermost frame; - at least seven straps or nets across the bed width for accommodating the patients body over it when patient is lifted up off the bed, said straps or nets at one end fixed to the main frame and at other end connected to the arms of a turnable bar, said bar is connected between two legs supporting the longer side of the main frame, said bar with arms is capable of turning around; - side guards being fixed on both sides of main frame for supporting the straps or nets over it and for avoiding the patient from falling down; - lifting means for lifting the body of patient over the straps or nets, when patient is to be lifted up off the bed said lifting means lifts central arm of the turnable bar so that said bar with its arm turned downwards which finally pulls the straps or nets over side guards and lift up the patient off the bed; and commode pan or pot being fitted under the middle frame with the help of hinge and linkage arrangement, the position of commode is controlled by said linkage, said commode is provided with cushion which is placed between commode and middle frame.



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A bed cum chair with commode for a patient

Field of the Invention:

This invention relates to a multipurpose bed for patients. More particularly it relates to a bed cum chair with commode for a patient that enables to lift the patient off the bed.

Prior Art:

Lifting and shifting of a disabled/bedridden person has always been difficult, risky and problematic. This lifting and shifting is dangerous and painful for the disabled person if done by the untrained person. The patients are scared of this procedure, as there is a danger of slipping and falling and getting injured.

This lifting and shifting is strenuous for the nurse. When he/she is trying to lift the patient, he/she has to bend over the patient to lift him. This posture in the long run gives the nurses a back pain and can turn into permanent back problems. A lot of medical literature is available on back problems of nurses as it is very common in nurses.

A disabled person mainly needs to be shifted from bed for changed of bed or bed sheet. The person also needs to be lifted for putting a bed pan under him. This lifting and shifting is painful and dangerous for the disabled/ bedridden person. A patient gets bed sore and skin trouble due to contact with bed as some portions of skin do not get any airing which causes infections and proves fatal on most occasions.

Many lifting and shifting apparatus are available in the market. All these apparatuses are expensive and unpractical at home as it takes a lot of space and a lot of training for the user. In hospitals some help is available but at home one is helpless and finds lifting and shifting very difficult.

It has been observed that it is very difficult to nurse bedridden persons, the main difficulties are

- i. lifting the person up for airing for long time
- ii. lifting the person up and off the bed for change of bed or bed sheet
- iii. lifting the person for putting bed pan under him
- iv. making the person sit upright in a chair position.

In beds available in the market, only the back frame goes in the upright position. The leg support frames does not go down. Also they do not have commode facility.

Hence there is a need of an improved bed or lifting apparatus for a patient which will address and overcome all the problems of the bed or lifting & shifting apparatus of the prior art.

Object of the Invention:

The primary object of the present invention is to provide a bed or lifting apparatus for a patient which will address and overcome all the problems of the bed or lifting & shifting apparatus of the prior art.

Another object of the present invention is to provide a bed or lifting apparatus for a patient which enables the patient to be lifted off the bed for airing the patient and for change of bed.

Yet another object of the present invention is to provide a bed or lifting apparatus for a patient which can be converted into chair.

Yet another object of the present invention is to provide a bed or lifting apparatus for a patient which has the built in commode.

Yet another object of the present invention is to eliminate shifting the patient from chair to bed and visa versa as the bed itself turns into chair.

Accordingly there is provided bed cum chair with commode for a patient comprises:

- a rectangular main frame which stands on at least four legs;
- four frames being fitted on said main frame, out of said four frames uppermost and two lower frames are movably fitted on main frame and middle frame is permanently fixed to the main frame, upper movable frame supports upper body and head portion of the patient, two lower movable frames supports leg portion of the patient and middle fixed frame supports the hip portion of the patient, the lowermost frame is fitted on other lower frame;
- at least seven straps or nets across the bed width for accommodating the patients body over it when patient is lifted up off the bed, said straps or nets at one end fixed to the main frame and at other end connected to the arms of an turnable bar, said bar is connected between two legs supporting the longer side of the main frame, said bar with arms is capable of turned around;
- side guards being fixed on both sides of main frame for supporting the straps or nets over it and for avoiding the patient from falling down;
- lifting means for lifting the body of patient over the straps or nets, when patient is to be lifted up off the bed, said lifting means lifts central arm of the turnable bar so that said bar with its arm turned downwards which finally pulls the straps or nets over side guards and lift up the patient off the bed; and
- commode pan or pot being fitted under the middle frame with the help of hinge and linkage arrangement, the position of commode is controlled by said linkage, said commode is provided with cushion which is placed between commode and middle frame.

According to one embodiment of the invention upper, middle and lower frames are associated with turning jacks\threaded rods for controlling the movement of said frames. The upper frame can be tilted at different angles ranging from sleeping position to a sitting upright position with the use of turning jack\threaded rods. The lower frame can be tilted at different angles ranging from sleeping position with legs straight to a sitting position in which the legs are at right angles with the use of turning jack\threaded rods. The lowermost frame folds into two pieces. The frame (d) which is on top of the lowermost frame folds into three pieces.

According to another embodiment of the invention the number of arms on turnable bar are equal to number of straps or net.

According to yet another embodiment of the invention lifting means may be hydro mechanically operated. The hydro mechanical arrangement consists of hydraulic telescope with handle.

According to another embodiment of the invention lifting means may be electrically operated with electric motor or hydraulically operated with hydraulic pump.

According to another embodiment of the invention lifting means may be pneumatically operated with pneumatic pressure.

Brief description of the Drawings:

Figure 1	:	Shows the bed cum chair with commode for a patient according to present invention.
Figure 2(a)	:	Shows the bed cum chair with commode with upper most frame in upright position.
Figure 2(b)	:	Shows the bed cum chair with commode with uppermost frame in

		upright position and lower frames in downward positions.
Figure 2(c)	:	Shows the bed cum chair with commode with uppermost and lowermost frame in horizontal position and frame (d) which is on top of the lowermost frame in folded position for knee support.
Figure 3(a)	:	Shows the bed cum chair with commode with arms of the turnable bar in up right position.
Figure 3(b)	:	Shows the bed cum chair with commode with arms of the turnable bar in turned around position and straps/nets pulled over side guards for lifting patient up.
Figure 4(a)	:	Shows the bed cum chair with commode where person is in rest position, the arms are pointing up and the hydraulic telescope is free.
Figure 4(b)	:	Shows the bed cum chair with commode where the straps/nets pulled over the side guards and person is lifted up off the bed.
Figures 5(a), 5(b) & 5(c)	:	Shows the bed cum chair with commode with different operating conditions of the commode.

Detailed description of the invention:

The above, and the other objects, features & advantages of invention will become apparent from following description read in conjunction with the accompanying drawings.

Meaning of the reference numerals used in the figures is as follow:

BC	-	Bed cum chair with commode for a patient
M	-	Main frame
a	-	Uppermost frame

b	-	Central frame
c	-	Lower frame
d	-	Lowermost frame
e	-	Straps/nets
f	-	Side guards
g	-	Commode
h	-	Turnable bar with arms
i	-	Hydraulic telescope
j	-	Handle
k	-	Threaded rods/jacks
l	-	Threaded rods/jacks
m	-	Threaded rods/jacks
n	-	Hinge
o	-	linkage
P	-	Cushion
L1	-	Leg
L2	-	Leg
L3	-	Leg
L4	-	Leg

Refereeing to figure 1 a bed cum chair with commode (BC) according to present invention comprises a rectangular main frame (M), four frames (a, b, c, d) being fitted on main frame, at least seven straps or nets (e) across the bed width for accommodating the patients body over it when patient is lifted up off the bed, side guards (f) being fixed on both sides of main frame (M) for supporting the straps or nets (e) over it and for avoiding the patient from falling down; lifting means (i, j) for lifting the body of patient over the straps or nets (e), and commode pan or pot (g).

The bed (BC) of the present invention comprises main frame (M) of the rectangular shape. This frame stands on four legs (L1, L2, L3, L4). There may be more number of legs than four.

Out of four frames (a, b, c, d) upper frame (a) and lower frames (c, d) are movably fitted on the main frame (M) and middle frame (b) is stationary and is attached to the main frame (M). The frames (a, c, d) are moved by using turning jacks \ threaded rods (l, k, m) respectively. Frame (a) supports the upper body and head portion of the patient. Frame (a) can be adjusted to a position at different angles ranging from sleeping position to a sitting upright position. This can be done by turning threaded rod (L). This can also be adjusted to a head low position using the same threaded rod. Figure 2(a) shows the frame (a) in upright sitting position. The lower frame (c) can be adjusted to a position at different angles - ranging from sleeping position with legs straight to a sitting position in which the legs are at right angles. This can be done with use of threaded rod (k). This is shown in figure 2(b). Frame (d) which is fitted on frame (c) but is independent for its own function. This frame (d) folds into 3 pieces, lifting the central portion by folding. This helps to support the knee joint of the patient. This frame can be folded by using threaded rod (m). This is shown in figure 2(c). All these frames (a, b, c, d) can be adjusted to different positions, independently. This means the change of position of any frame does not affect or change the position of other frame.

As mentioned earlier the bed (BC) of the present invention also comprises at least seven straps/nets (e). These straps/nets (e) are provided across the bed width for accommodating the patient's body over it when patient is lifted up off the bed. These straps/nets (e) are on the bed below the patient i.e. under the patient's body. These straps or nets (e) at one end fixed to the main frame (M) and at other end connected to the arms of a turnable bar (h). This bar is connected between any of the two legs supporting the longer side of the main frame i.e. between L1 and L4 or between L2 and L3 depending on which side the straps/nets (e) connected to the main frame (M). This

bar with arms (h) is capable of turned around. The number of arms on turnable bar (h) is equal to number of straps or net (e). The movement of the bar (h) is done by the lifting means (i, j). The lifting means as shown in figure 1 consists of hydraulic telescope (i) and handle (j).

Now as shown in figure 3(a) and 4(a), at rest position of the person, the arms are pointing up and the hydraulic telescope (i) is free. When one wants to lift up the patient off the bed, he/she has to pump the hydraulic telescope (i). The telescope (i) extends in height, lifting central arm of the bar (h) upwards. This is shown in figure 3(b). The bar turns around and the arms of the bar are turned downwards. This in effect pulls the straps/nets (e) over the side guards (f) and the straps/nets (e) in effect lift the person off the bed for the purpose of airing and changing bed. This particular situation is shown in figures 3(b) and 4(b).

Also commode pan or pot (g) is provided under the middle frame (b) with the help of hinge (n) and linkage (o). The position of commode (g) is controlled by linkage (o). The commode is provided with cushion (p) which is placed between commode (g), and middle frame (b). When linkage (o) is pulled back, the pan or pot is lowered from the bed from linkage side. The pot (g) is lowered along with cushion padding (p). The cushion padding can be separated from the pan/pot, when the pan/pot is to be used. By pushing the control linkage (o), the pan/pot (g) gets shifted back to its position and is now ready for use. Different operating conditions and positions of the commode are shown in figures 5(a) to 5(c).

In accordance to one embodiment of the invention lifting means may be operated mechanically, electrically, hydraulically or pneumatically. It may be operated electrically with the help of electric motor or hydraulically with the help of hydraulic pump or pneumatically with pneumatic pressure and so may be the operations of commode.

The frames and other components of the bed can be manufactured by using metals like aluminum, stainless steel, copper, brass or its alloys. All the parts may be made from materials like rubber, plastic, nylon, Teflon, fiber or other synthetic material to reduce the weight of the bed. The bed of the present invention can be manufactured in various sizes suitable for different sizes of persons/patients.

Different application modes of the bed of present invention:

1. Simple bed
2. Chair
3. Bed or chair with commode
4. Lifting up of patient off the bed approximately 4-6 inches for the purpose of airing and changing bed and bed sheet

Now we will see each application in details:

1. Simple bed:

In normal condition where all frames (a, b, c, d) are horizontally laid, the bed works as a simple bed. This is shown in figure 1.

2. Chair:

When the frame (a) is held in upright position with the help of turning threaded rod (l) and frames (c, d) goes down, the bed works as a complete chair. This position is shown in figure 2(b).

3. Bed or chair with commode:

We have already seen how the bed works as bed or chair. Now we will see its working as commode. The commode is provided with cushion (p) which is placed between commode (g) and middle frame (b). When linkage (o) is pulled

back, the pan or pot is lowered from the bed from linkage side. The pot (g) is lowered along with cushion padding (p). The cushion padding can be separated from the pan/pot, when the pan/pot is to be used. By pushing the control linkage (o), the pan/pot (g) gets shifted back to its position and is now ready for use. Different operating conditions and positions of the commode are shown in figures 5(a) to 5(c).

4. Lifting up of patient off the bed approximately 4-6 inches for the purpose of airing and changing bed and bed sheet:

When one wants to lift up the patient off the bed, he/she has to pump the hydraulic telescope (i). The telescope (i) extends in height, lifting central arm of the bar (h) upwards. This is shown in figure 3(b). The bar turns around and the arms of the bar are turned downwards. This in effect pulls the straps/nets (e) over the side guards (f) and the straps/nets (e) in effect lift the person off the bed for the purpose of airing and changing bed. This particular situation is shown in figures 3(b) and 4(b).

Advantages of the bed of the present invention:

1. A bedridden person can be lifted off the bed about 4-6 inches on straps or nets and can be kept in that position for long time so as to avoid constant bed contact and airing can be done around his body.
2. Also this uplifted position allows a very easy change of bed or bed sheet.
3. The lifting and lowering arrangement makes it very easy to put bedpan under the person.

4. The bed of the present invention has number of frames which can change angles to form a complete chair position. These frames can also change angles to form an easy chair position for comfort.
5. The bed of the present invention has a built in commode.
6. This eliminates manual labor or lifting of a patient.
7. This eliminates the risk of the patient slipping and falling down.

Industrial Application:

The bed of the present invention enables the patient to be lifted off the bed approximately 4-6 inches for the purpose of airing, change of bed and sponging the patient. This bed is useful for the aged, permanently or temporary disabled, spastic, paralyzed or patients whose movements are restricted for some other reason. This bed is useful in hospitals, to private nurses and the family members who nurse a bed-ridden patient. It makes their job easy, safe and stress less.

The present invention is not limited to the above described embodiments, and various changes may be made, if desired, without departing from the essence or spirit of the invention which can be read from the claims and the entire specification. All these changes are also intended to be within technical scope of the present invention.

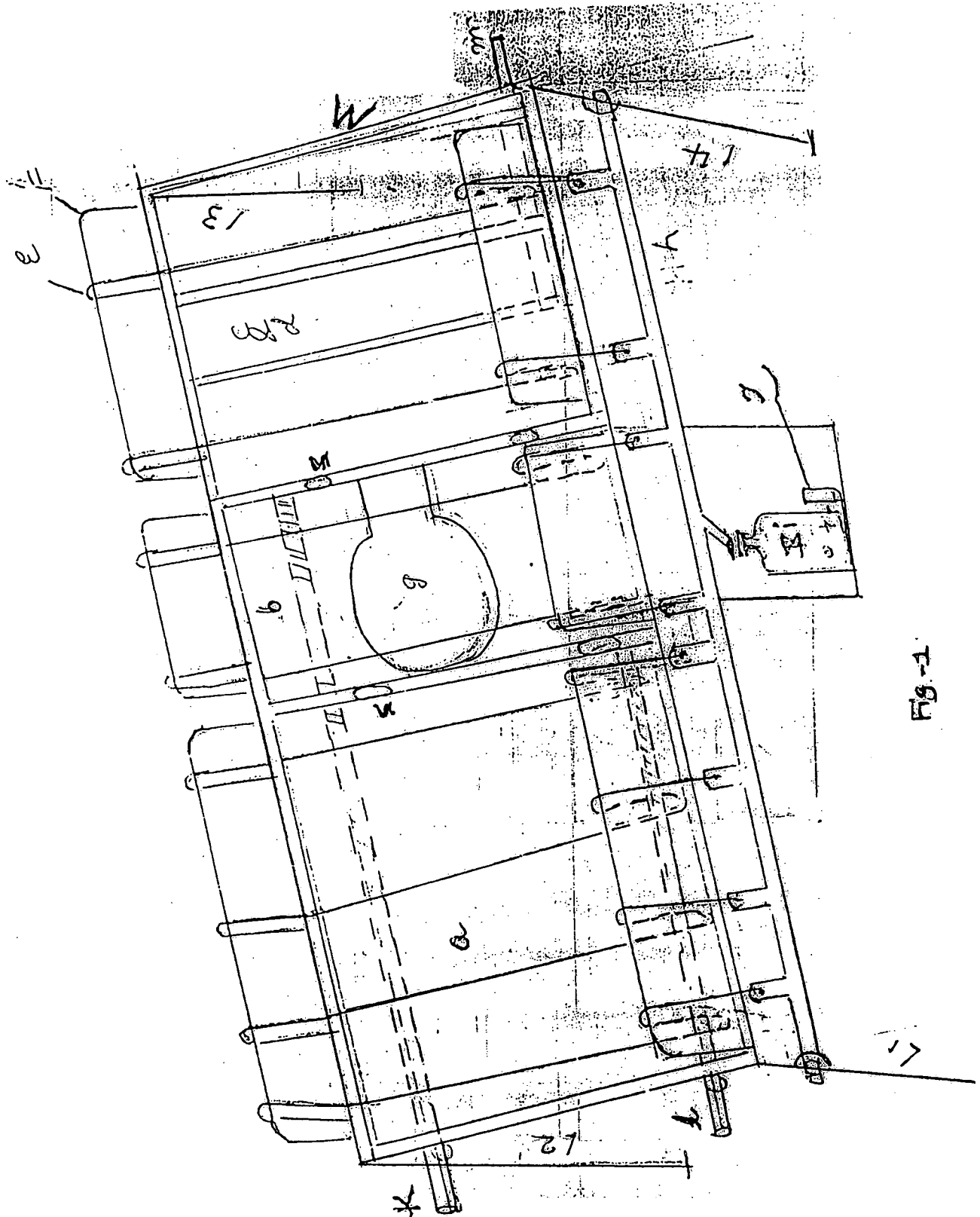
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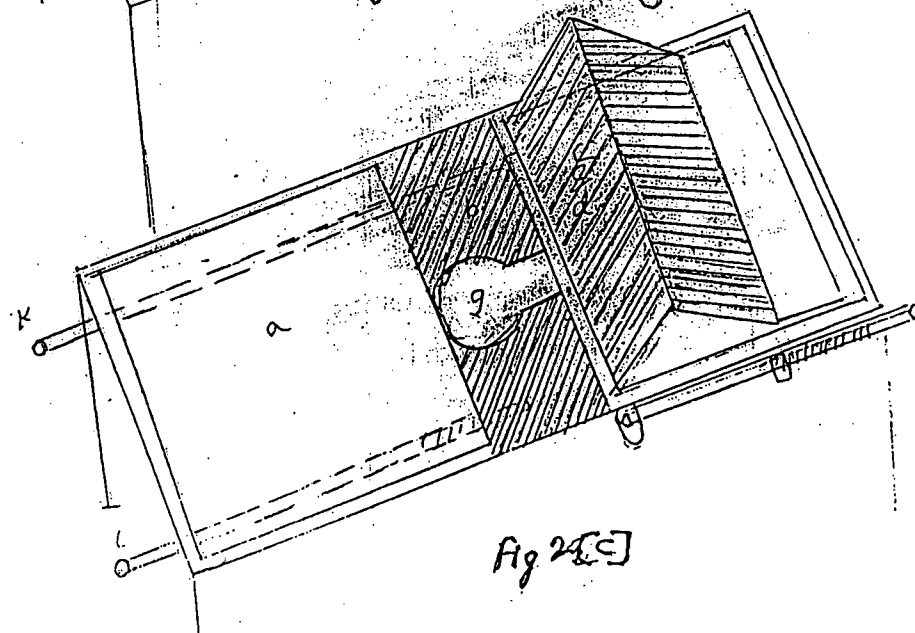
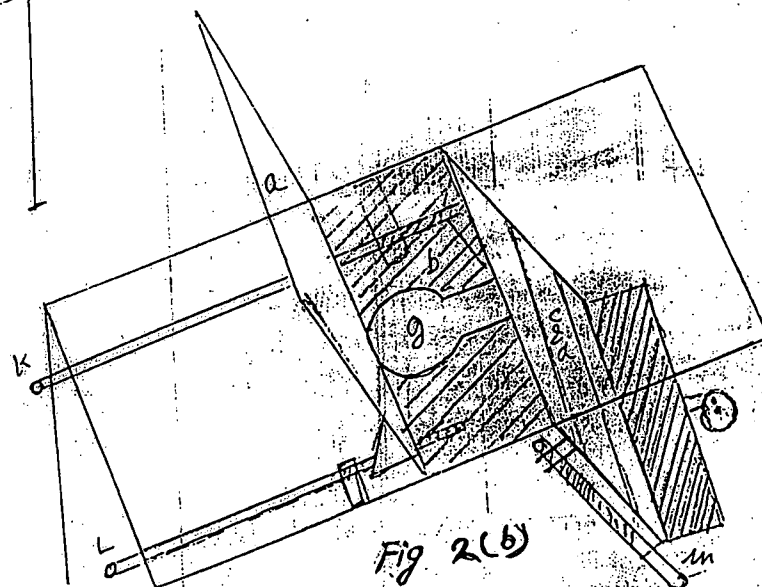
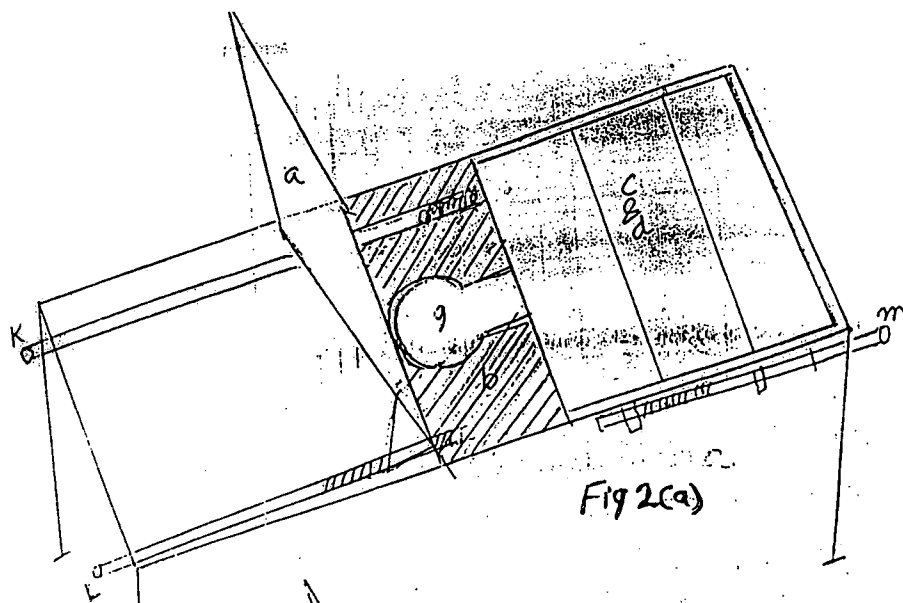
1. A bed cum chair with commode for a patient comprises:

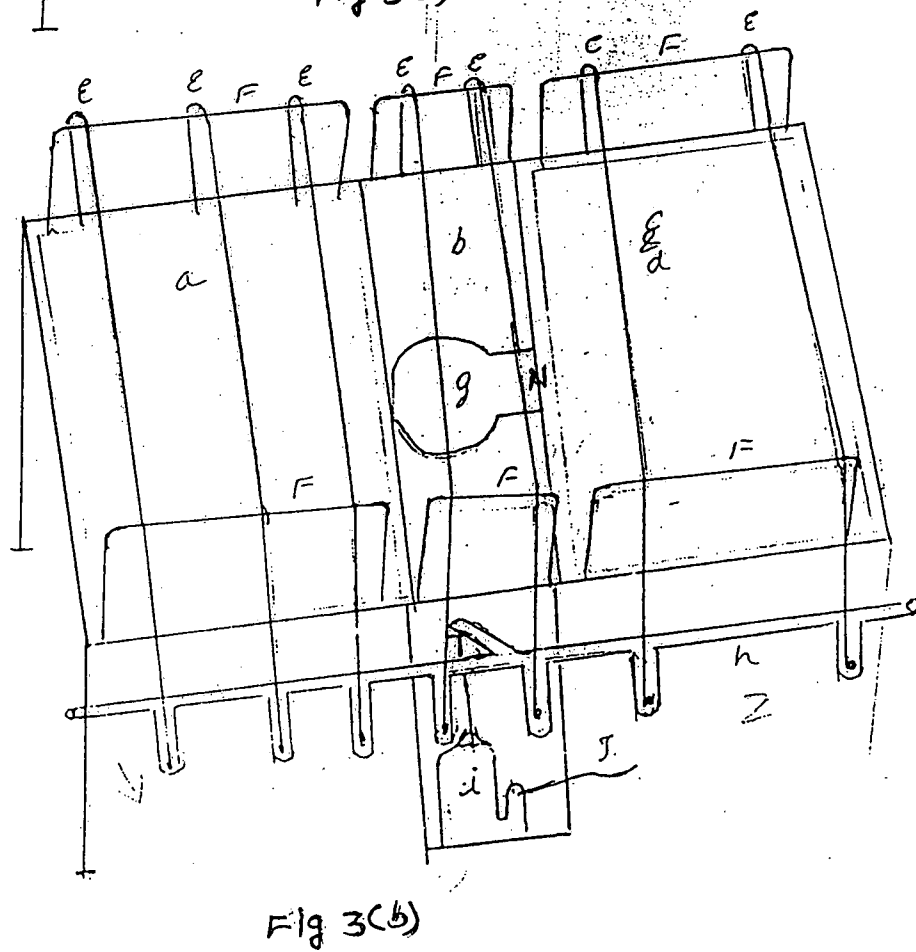
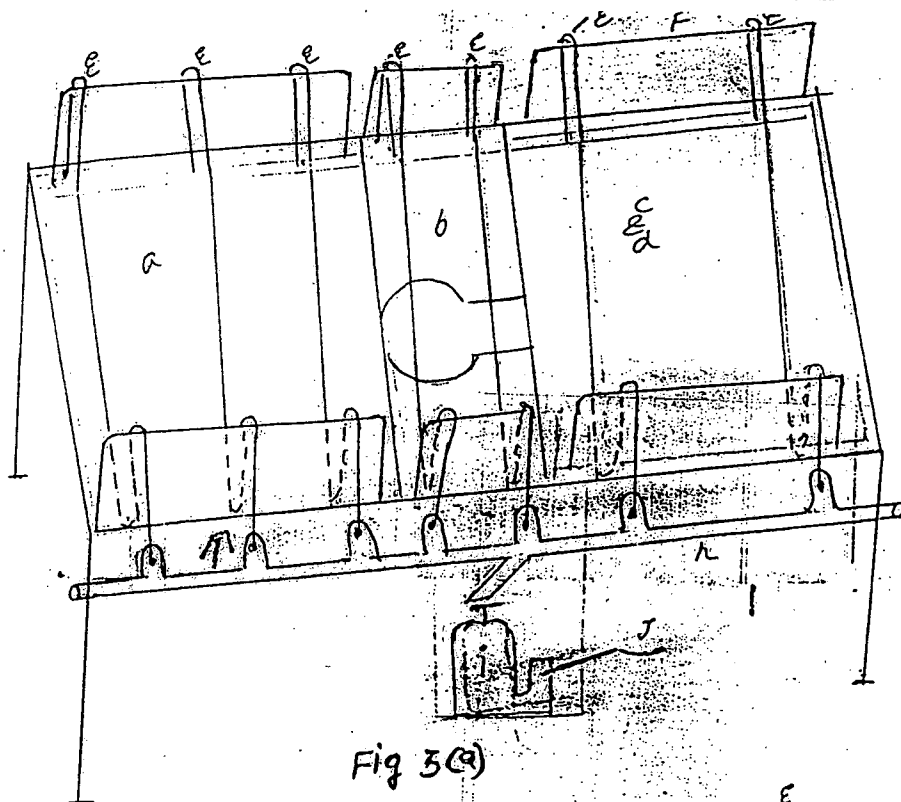
- a rectangular main frame which stands on at least four legs;
- four frames being fitted on said main frame, out of said four frames uppermost and two lower frames are movably fitted on main frame and middle frame is permanently fixed to the main frame, upper movable frame supports upper body and head portion of the patient, two lower movable frames supports leg portion of the patient and middle fixed frame supports the hip portion of the patient, another frame is fitted on top of the lowermost frame;
- at least seven straps or nets across the bed width for accommodating the patients body over it when patient is lifted up off the bed, said straps or nets at one end fixed to the main frame and at other end connected to the arms of a turnable bar, said bar is connected between two legs supporting the longer side of the main frame, said bar with arms is capable of turning around;
- side guards being fixed on both sides of main frame for supporting the straps or nets over it and for avoiding the patient from falling down;
- lifting means for lifting the body of patient over the straps or nets, when patient is to be lifted up off the bed said lifting means lifts central arm of the turnable bar so that said bar with its arm turned downwards which finally pulls the straps or nets over side guards and lift up the patient off the bed; and
- commode pan or pot being fitted under the middle frame with the help of hinge and linkage arrangement, the position of commode is controlled by said linkage, said commode is provided with cushion which is placed between commode and middle frame.

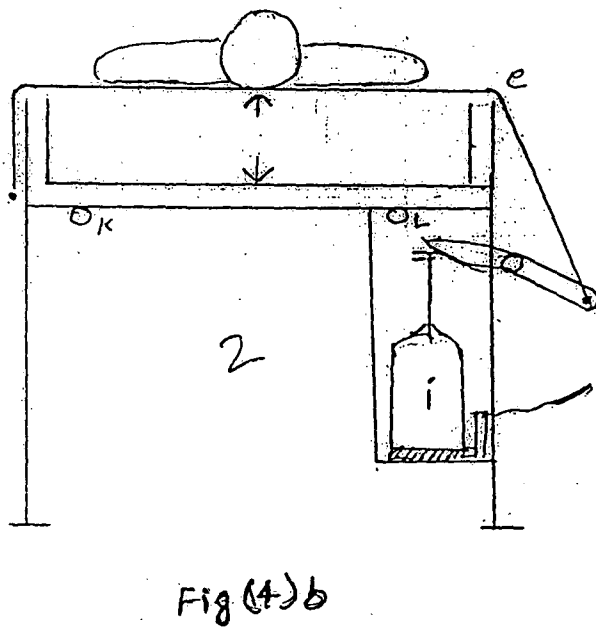
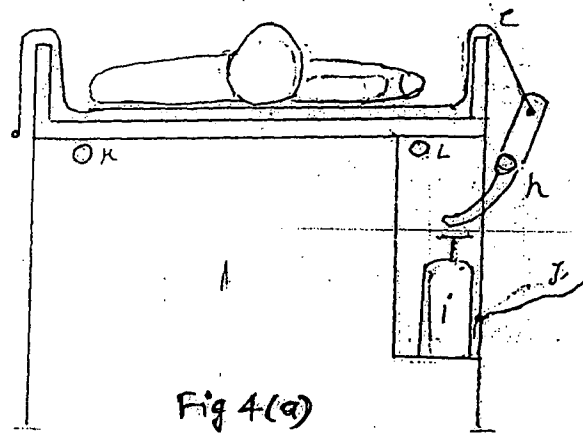
2. A bed cum chair with commode for a patient as claimed in claim 1 wherein said upper, middle and lower frames are associated with turning threaded rods for controlling the movement of said frames.
3. A bed cum chair with commode for a patient as claimed in claim 1 wherein upper frame can be tilted at different angles ranging from head low, sleeping position, to a sitting upright position with the use of turning threaded rod.
4. A bed cum chair with commode for a patient as claimed in claim 1 wherein lower frames can be tilted at different angles ranging from sleeping position with legs straight to a sitting position in which the legs are at right angles with the use of turning threaded rod.
5. A bed cum chair with commode for a patient as claimed in claim 1 wherein a frame on top of the lowermost frame folds into three pieces.
6. A bed cum chair with commode for a patient as claimed in claim 1 wherein number of arms on turnable bar are equal to number of straps or net.
7. A bed cum chair with commode for a patient as claimed in claim 1 wherein lifting means is hydro mechanically operated.
8. A bed cum chair with commode for a patient as claimed in claim 7 wherein said hydro mechanical arrangement consists of hydraulic telescope with handle.
9. A bed cum chair with commode for a patient as claimed in claim 1 wherein lifting means is electrically operated with electric motor.

10. A bed cum chair with commode for a patient as claimed in claim 1 wherein lifting means is hydraulically operated with hydraulic pump.
11. A bed cum chair with commode for a patient as claimed in claim 1 wherein lifting means is pneumatically operated with pneumatic pressure
12. A bed cum chair with commode for a patient such as hereinbefore described and illustrated with reference to accompanying drawings.









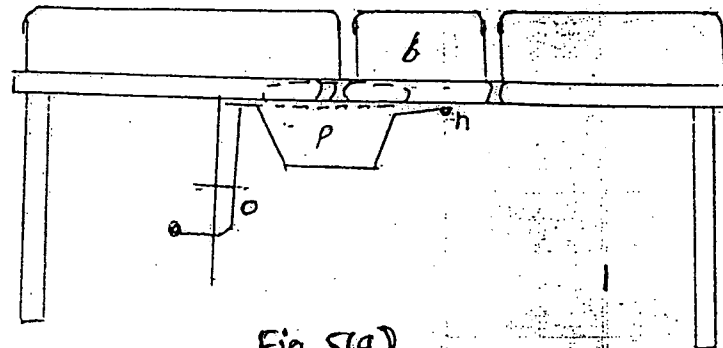


Fig 5(a)

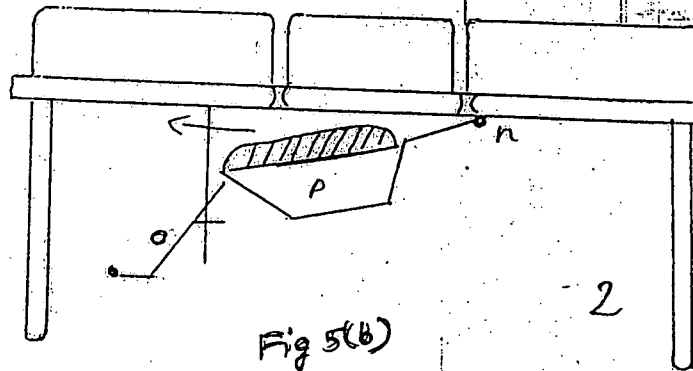


Fig 5(b)

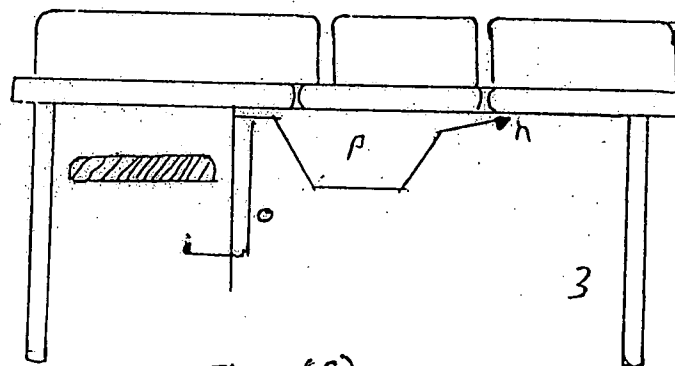


Fig 5(c)