

[54] **LAP COVER AND RESTRAINER**

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[51] Int. Cl.A61f 13/00

[58] Field of Search128/132, 133, 134, 135; 119/96; 297/384, 385, 389; 2/69.5

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Attorney—Christie, Parker & Hale

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[57] **ABSTRACT**

A patient is restrained in a chair by a lap cover preferably made of a terrycloth sheet and extending from the waist of the patient downwardly over his knees. A waist strap secured to the top of the lap cover is fastened behind the back of the chair, and a knee strap secured to a portion of the lap cover below the knees of the patient is fastened to a portion of the chair's lower supporting structure. One form of the lap cover includes an enclosure below the knee strap disposed around the patient's lower legs and feet. A harness can be fastened to the top of the lap cover and extended over the shoulders of the patient and secured behind the back of the chair to hold the patient's upper torso against the back of the chair.

10 Claims, 6 Drawing Figures

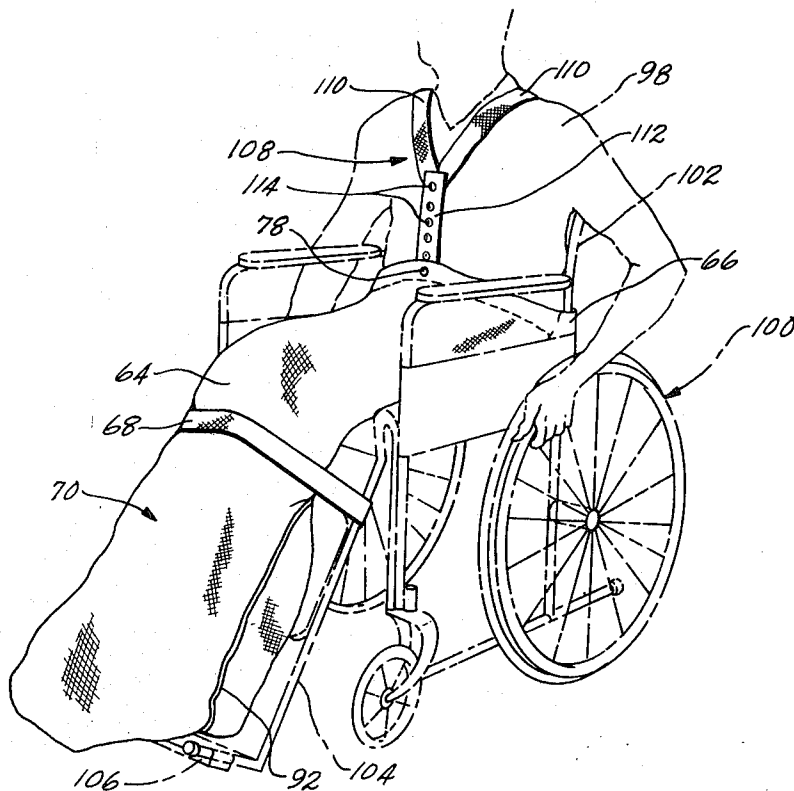


FIG. 1

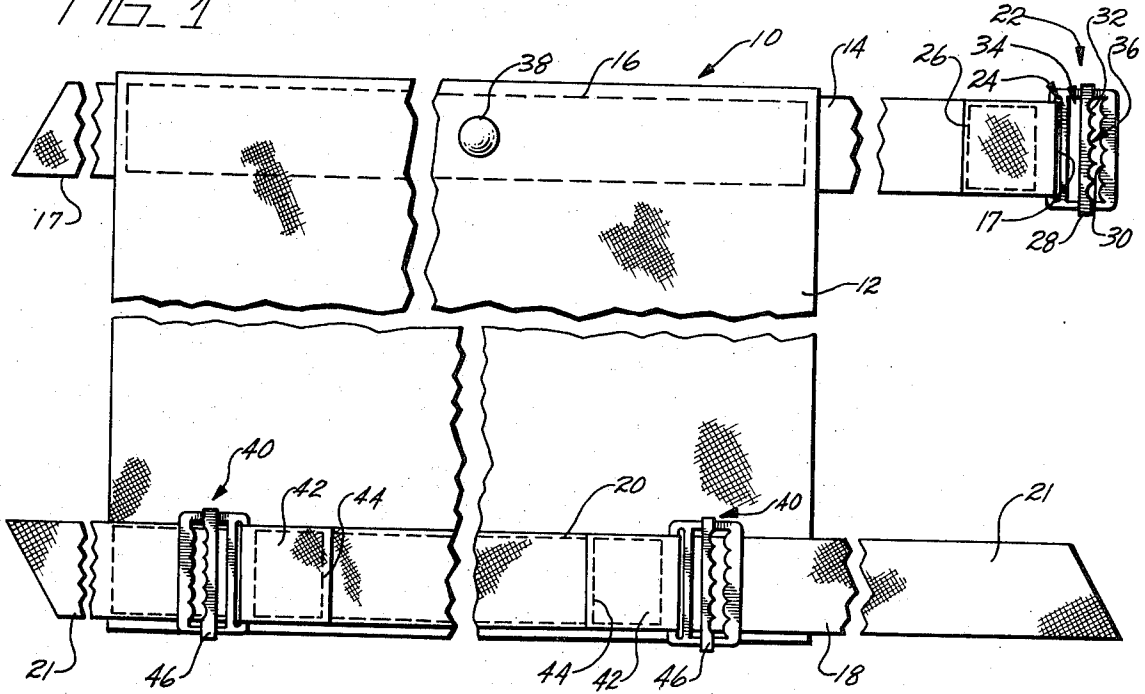
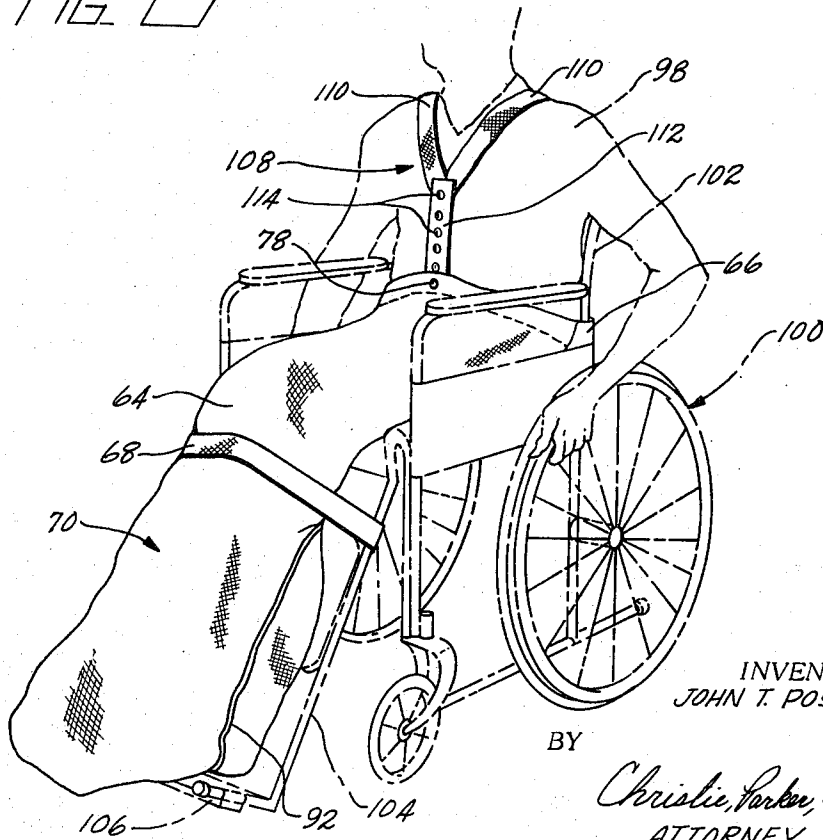


FIG. 6



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FIG. 2

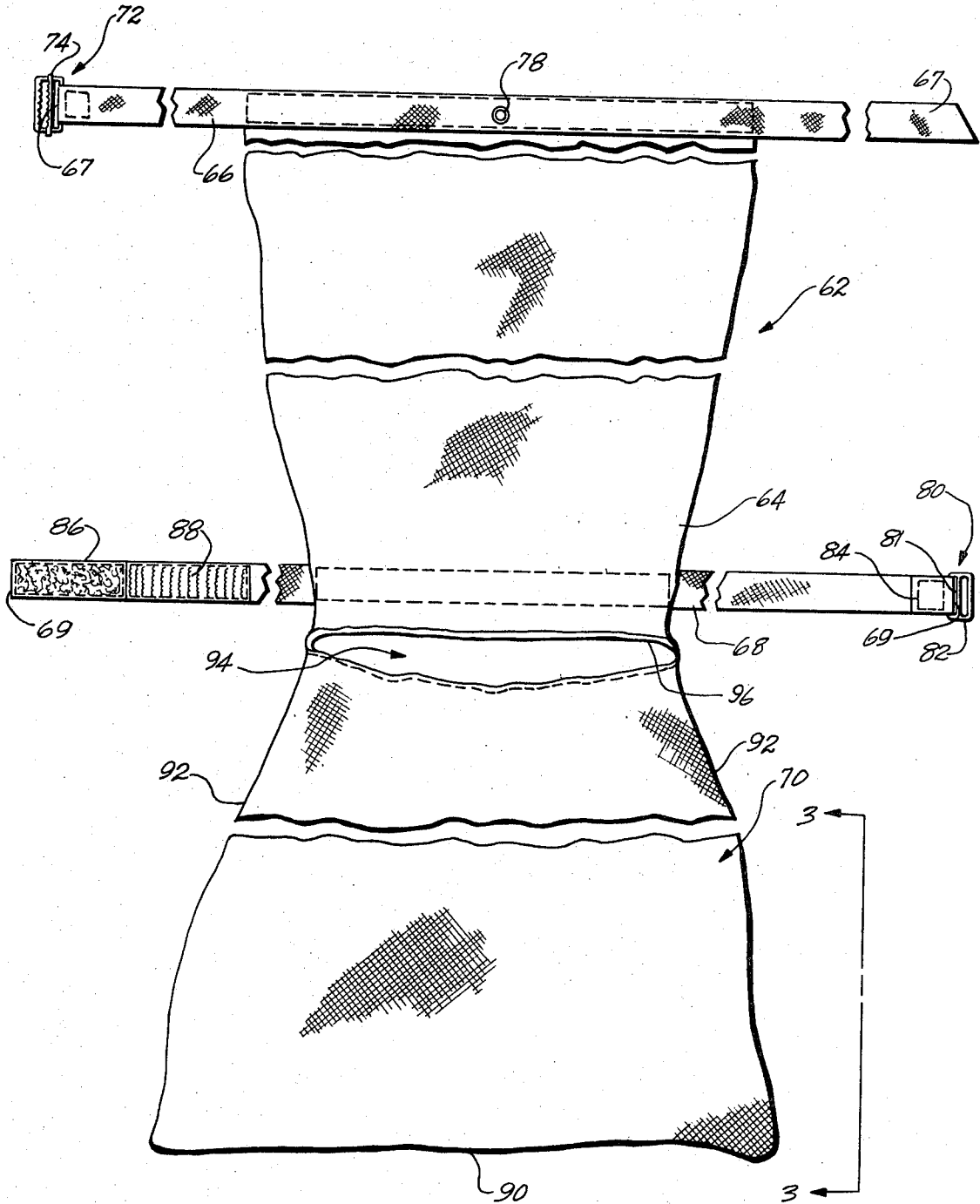


FIG. 4

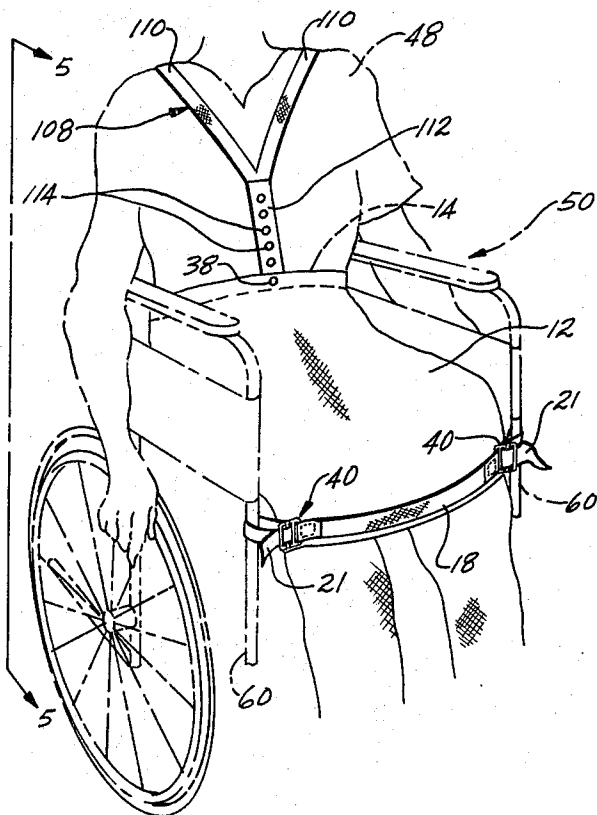


FIG. 3

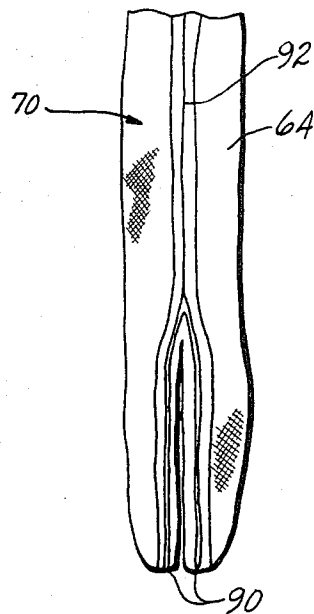
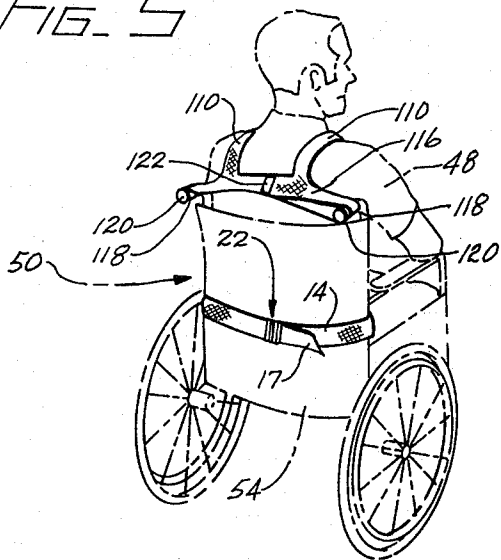


FIG. 5



LAP COVER AND RESTRAINER

This invention relates to devices for restraining hospital patients in chairs, and more particularly to a lap cover placed over a patient and secured to a chair.

Hospital patients sitting in chairs sometimes cannot control their movements. For example, an invlaid, an elderly person, or a patient who is not totally conscious can slide forward out of his chair and sustain injuries. Patients sitting in wheelchairs sometimes stand up in their chairs and turn the chairs over. To remedy these problems various restraining devices such as waist straps have been used to restrain a patient while he is seated in a chair. However, waist straps have not been completely satisfactory because they do not always prevent the patient from sliding down in his chair. If a waist strap is applied relatively tightly to prevent the patient from sliding forward, it can become uncomfortable after a relatively short time since it rubs against a patient's body and can pinch the patient if he bends his upper torso forward.

To prevent a patient from sliding out of a chair, various types of knee straps or leg straps have been used, but these devices have also been relatively unsatisfactory in that they usually must be applied relatively tightly to be effective. Thus, they become uncomfortable after a relatively short time and tend to pinch the patient's legs.

Hospital patients are generally clothed in hospital gowns which do not always provide sufficient warmth for the patient, as well as usually being relatively short in length. When a patient wearing the usual hospital gown is seated in a wheelchair or the like, his lower legs and feet are ordinarily exposed. If the patient in this situation must be restrained in his chair, leg or knee straps generally cannot be used to prevent him from sliding forward, because the straps rub against his skin.

This invention provides a restraining lap cover which is placed over the front of a patient sitting in a chair and secured to the chair at the patient's waist and below the patient's knees. The lap cover comfortably supports the patient while he sits and prevents him from sliding forward or standing up in his chair. It keeps the patient's legs warm and avoids the discomfort ordinarily associated with waist straps and leg or knee straps by providing a comfortable yet positive longitudinal restraint for the patient's body.

Briefly, the lap cover includes an elongated piece of flexible sheet material disposed over the front of a patient sitting in a chair. The piece extends from the waist area of the patient downwardly over the knees of the patient. First strapping means secured to an upper portion of the piece are releasably secured to the back of the chair to hold the lower torso of the patient against the back of the chair. Second strapping means secured to a portion of the piece below the knees of the patient are releasably secured to the lower support structure of the chair to hold the legs of the patient in a fixed position relative to the chair. In use, the lap cover of this invention is particularly effective because it provides a comfortable, yet effective restraint for a substantial area of the patient's body, while reducing surface pressure on the patient's body and accompanying skin irritations ordinarily caused by restraining devices such as straps and the like. The lap cover also provides additional warmth for the patient, and is particularly useful for a patient wearing the usual hospital gown.

In a preferred form of the lap cover, the flexible piece extends downwardly around the feet of the patient and up behind each of the patient's legs to provide enclosure means at the bottom of the lap cover for covering the lower legs and feet of the patient. This form of the invention is particularly useful for elderly patients, patients with poor circulation, or patients whose lower legs and feet are exposed when wearing a relatively short hospital gown, because the lower enclosure portion of the lap cover keeps the patient's feet and lower legs comfortable and warm while providing an additional restraint against sliding forward in the chair.

Preferably, the lap cover of this invention is used in combination with a harness secured to the upper portion of the sheet and extending over each of the patient's shoulders to the rear of the chair. Means are provided for releasably securing

the harness to the back of the chair to hold the upper torso of the patient against the back of the chair. This particular form of the invention prevents the patient from slumping forward or to the sides when seated in a wheelchair or the like.

The above-mentioned and other features of the invention are more fully set forth in the following detailed description of the embodiments of the invention which are presently preferred, such description being present with reference to the accompanying drawings, wherein:

FIG. 1 is a fragmentary plan elevation view of the lap cover; FIG. 2 is a fragmentary plan elevation view of an alternative form of the lap cover;

FIG. 3 is a side elevation view taken on line 3—3 of FIG. 2;

FIG. 4 is a perspective view of the lap cover of FIG. 1 and the shoulder harness on a patient in a wheelchair;

FIG. 5 is a perspective view taken on line 5—5 of FIG. 4; and

FIG. 6 is a perspective view of the lap cover of FIG. 2 and the shoulder harness on a patient in a wheelchair.

Referring to FIG. 1, a lap cover 10 includes an elongated piece 12 of flexible sheet material. The piece is preferably made of terrycloth, but it can be made of other suitable materials, such as wool or cotton cloth, which are warm, relatively strong, light in weight, inexpensive, and capable of being cleaned by ordinary means. An elongated transverse waist strap 14 secured adjacent to the top of piece 12 by stitching 16 extends laterally away from the sides of the piece to define a pair of ends 17 spaced from the piece. An elongated transverse knee strap 18 secured adjacent to the bottom of the piece by stitching 20 extends laterally away from the sides of the piece to define a pair of ends 21 spaced from the piece. Straps 14 and 18 are preferably made of a relatively strong and lightweight material such as nylon webbing.

A buckle 22 is secured to an end 17 of waist strap 14 by drawing the end through an opening 24 at one end of the buckle and then folding the end back on itself and securing it to the remaining portion of the strap by stitching 26. Buckle 22 includes an elongated upright clamping member 28, which is slidable back and forth relative to the buckle, and teeth 30 at the outer end of the buckle adapted to cooperate with teeth 32 bordering the outer upright edge of clamping member 28. The clamping member slides back and forth to define with the buckle an inner slit-like opening 34 and an outer slit-like opening 36. A snap fastener 38 secured to the upper portion of piece 12 centrally of strap 14 provides a female-type fastening element (not shown) facing toward the inside of the piece.

A separate buckle 40 is secured to knee strap 18 inwardly of each side edge of piece 12. Each buckle 40 is secured to the strap by a respective elongated piece 42, each of which is drawn through an opening in the end of its respective buckle 40 and folded back on itself and secured to a respective adjacent portion of strap 18 by stitching 44. Each buckle 40 is preferably identical in construction and function to buckle 22, and includes a respective slidable clamping member 46.

During use of lap cover 10, a patient 48 is comfortably yet firmly secured in either a wheelchair 50 or a conventional chair (not shown) by placing the flexible piece 12 over the lower torso and the legs of the patient so that it extends from the patient's waist area downwardly over his knees, as seen best in FIG. 4. Each end 17 of waist strap 14 is then drawn behind the upright back 54 of wheelchair 50 as seen in FIG. 5, and the free end of waist strap 14 is drawn through opening 34 in buckle 22 so that the strap makes a snug yet comfortable fit around the patient's waist area. The free end of the waist strap 14 is then drawn back through opening 36 of buckle 22, and clamping member 28 clamps against the waist strap to prevent further relative movement between the waist strap and buckle 22. The waist strap fits snugly yet comfortably around the patient's waist area to hold the lower torso of the patient against the back of the chair. In use, buckle 22 functions in a manner similar to the conventional automobile seatbelt, in that forward movement of the patient's lower torso does not loosen waist strap 14. An attendant behind the wheelchair can easily tighten the waist strap by pulling the strap lengthwise through

opening 36 of buckle 22, and the attendant can easily and quickly release the buckle from engagement with the waist strap by sliding clamping member 28 away from teeth 30 of buckle 22 and then pulling the strap 14 back through opening 34.

In use, each free end 21 of knee strap 18 is releasably secured to a respective portion of the wheelchair's lower supporting structure, such as an upright leg 60, by wrapping each end 21 around a respective leg 60 and back through its respective buckle 40 to obtain the desired degree of restraint around each of the patient's legs. Knee strap 18 and the lower portion of piece 12 fit snugly yet comfortably around the portion of the patient's legs below his knees to prevent him from sliding forward in his wheelchair. The flexible piece provides a longitudinal restraint for the patient's body, yet it avoids the uncomfortable pressures normally exerted by waist straps and knee or leg straps. The piece provides clothing for the patient, particularly a patient wearing a relatively short hospital gown, and it also provides warmth for the upper portions of the patient's legs.

FIG. 2 shows an alternative lap cover in the form of a lap robe 62 which includes an elongated piece 64 of flexible sheet material, preferably of terrycloth. An elongated transverse waist strap 66 secured adjacent to the top of piece 64 extends laterally away from the sides of the piece to define a pair of ends 67 spaced from the piece. An elongated transverse knee strap 68 secured approximately to the center of the piece extends laterally away from the sides of the piece to define a pair of ends 69 spaced from the piece. A lower bag-like enclosure 70 below knee strap 68 is formed by the lower portion of piece 64.

One end 67 of waist strap 66 has a buckle 72 (constructed the same as buckles 22 and 40 with a slidable clamping member 74. A female-type snap fastener 78 is secured to the top of piece 64 centrally of waist strap 66. A buckle 80 having an upright elongated inner opening 81 and an elongated upright outer opening 82 is secured to one end 69 of knee strap 68 by drawing the end through opening 81 and folding the end back on itself and securing it to the remaining portion of the knee strap by stitching 84. An elongated portion of Velcro pile material 86 is secured adjacent to the other end 69 of knee strap 68, and an elongated portion of Velcro hook material 88 is secured inwardly of the end 69 of strap 68 adjacent to Velcro portion 86. Velcro material is well known and described in U.S. Pat. Nos. 2,717,437 and 3,009,235. As seen best in FIG. 3, enclosure portion 70 of lap robe 62 is formed by extending piece 64 downwardly a desired distance below knee strap 68 to define a horizontally disposed bottom 90 of the lap robe. Piece 64 is then folded upwardly against itself, back down against itself to bottom 90, and then extended upwardly to terminate slightly below knee strap 68. The adjacent right and left side edges of piece 64 are stitched together from bottom 90 upwardly to the end of the piece to form parallel longitudinal seams 92 at the sides of the lap robe. Enclosure portion 70 defines at its top a horizontally disposed opening 94 spaced slightly below knee strap 68. An elongated band 96 of elastic material is secured to the piece 64 so as to encircle opening 94. Preferably, band 96 is secured to the sheet in its stretched condition, so that when it assumes its normal unstretched condition, the portion of the lap robe at opening 64 gathers inwardly, as seen best in FIG. 2.

During use of lap robe 62, the legs of a patient 98 seated in a wheelchair 100 are inserted through opening 94 of enclosure portion 70 of the lap robe, as seen in FIG. 6. The upper portion of the piece 64 is placed over the patient's lap, and waist strap 66 is wrapped around the waist of the patient with its ends 67 terminating behind the upright back 102 of wheelchair 100. The ends of the waist strap are releasably secured together behind the back of the chair in a manner previously described in connection with waist strap 14 of lap cover 10. Knee strap 68 is positioned slightly below the knees of the patient, and each end 69 of the strap is drawn around a respective leg 104 of the wheelchair leg support structure, or

another rigid portion of the wheelchair lower support structure. The free end 69 of knee strap 68 is drawn a sufficient distance through opening 82 in buckle 80 to achieve the desired degree of restraint around the patient's legs, and Velcro fastener 86 is then folded back on Velcro fastener 88 to releasably secure the ends 69 of the knee strap 68 together behind the wheelchair leg support structure.

FIG. 2 shows knee strap 68 of lap robe 62 used in combination with Velcro fasteners 86 and 88 and buckle 80. Alternatively, knee strap 18 and buckles 40 of lap cover 10 can be used in combination with lap robe 62. Conversely, knee strap 68 of the lap robe can be used in combination with the lap cover 10.

To provide further means for restraining a patient in a chair, both lap cover 10 and lap robe 62 can be used in combination with a safety harness disposed over the patient's shoulders and releasably secured to the back of the patient's chair. A preferred harness 108 constructed in accordance with my patent applications Ser. No. 688,572, filed Dec. 6, 1967, now U.S. Pat. No. 3,466,090, issued Sept. 9, 1969 and Ser. No. 784,748, filed Dec. 18, 1968, now U.S. Pat. No. 3,565,483, issued Feb. 23, 1971 includes a V-shaped shoulder piece comprising a pair of shoulder straps 110 secured together at an apex and extending upwardly away from each other over the shoulders of the patient, as seen best in FIGS. 4, 5, and 6. An elongated upright center strap 112 having a plurality of vertically aligned, spaced apart male-type snap fasteners 114 is secured at one end to the apex of the shoulder piece and extends downwardly toward the top of lap cover 10 or lap robe 62. The portions of shoulder straps 110 remote from each other are secured to an elongated horizontally disposed rear strap 116 located behind the patient adjacent to the upright back of the wheel chair. In use, the ends of rear strap 116 are releasably secured to the back of the chair. Preferably, rear strap 116 is secured to the wheelchair by a separate loop 118 on each end of the strap which fits over a respective one of the rearwardly projecting handles 120 of the wheelchair, as seen in FIG. 5. Alternatively, the ends of rear strap 116 can be releasably fastened to handles 120 by cooperating Velcro fasteners, as described in my patent application, Ser. No. 784,748, filed Dec. 18, 1968. Preferably, the length of rear strap 116 is adjustable so that harness 108 can fit various types of wheelchairs. Although various means for adjusting the length of rear strap 116 can be used, the preferred means includes a conventional slidable buckle 122 to which each end of the rear strap is secured. The length of the rear strap is adjusted by moving buckle 122 axially to either loosen or tighten an adjustable one of the loops 118. In use, after harness 108 is placed over the patient's shoulders and secured to the rear of the wheelchair, the center strap is secured to the top of lap cover 10 or lap robe 62 by respectively engaging either snap fastener 38 or 78 with the snap fastener 114 which most comfortably restrains the patient in his chair.

Both forms of the lap cover and restraining device of this invention provide a number of advantages for hospital patients confined to chairs. The respective upper portions of the lap cover and lap robe keep the patient's upper legs warm and keep the patient dressed while protecting his clothing. The enclosure portion 70 of the lap robe is particularly useful for elderly patients, patients with poor circulation, or patients wearing the usual relatively short hospital gown because it wraps securely around the patient's lower legs and feet to keep these portions of his body warm and comfortable while the patient is confined to a wheelchair or the like. The particular configuration of the bottom of enclosure portion 70 allows the lap robe to be adjustable in length to fit patients of various sizes. The waist straps keep the lap cover and lap robe in place and hold the patient against the back of the chair to prevent him from standing up in his chair. The knee straps in combination with the lap cover and lap robe prevent the patient from sliding forward in the chair. The enclosure portion 70 of the lap robe provides additional restraint against sliding forward, and holds the patient's feet on the wheelchair footrest 106. The harness

restrains the patient's shoulders and maintains his upper torso against the back of the chair to prevent him from slumping forward or to the sides.

I claim:

1. A device for restraining a patient in a chair having an upright back and a lower support structure, the device including an elongated piece of flexible sheet material disposed over the front of the patient and extending from the waist area of the patient downwardly around the feet of the patient, the piece being folded back to extend up behind the patient's legs, terminating in the area behind the patient's knees; means securing the sides of the folded back portion of the piece together to form a bag having an opening for receiving the patient's lower legs; first strapping means secured to the piece in the waist area of the patient and extending behind the back of the chair for releasably securing piece around the waist area of the patient to hold the lower torso of the patient against the back of the chair; and second strapping means secured to the piece in the area of the patient's knees and extending behind a portion of the lower support structure of the chair for releasably securing the piece around the knee area of the patient to hold the legs of the patient in a fixed position relative to the chair.

2. Apparatus according to claim 1 wherein the first strapping means comprises an elongated waist strap extending laterally away from each side of the piece, the waist strap being of sufficient length to wrap around the patient and the back of the chair with its ends terminating behind the back of the chair, and for releasably securing the ends of the waist strap together behind the back of the chair.

3. Apparatus according to claim 1 wherein the second strapping means comprises an elongated knee strap extending laterally away from each side of the piece to define a pair of ends, each end being adapted to wrap around a respective portion of the chair lower support structure, and means for releasably securing each end of the knee strap to its respective portion of the chair lower support structure.

4. Apparatus according to claim 1 including an elongated band of elastic material disposed around the opening of the bag.

5. Apparatus according to claim 1 wherein the second strapping means comprises an elongated knee strap of sufficient length to wrap around the patient's legs and the chair lower support structure.

6. Apparatus according to claim 1 including a harness releasably secured to an upper portion of the piece and extending upwardly over each of the patient's shoulders and behind the back of the chair; and means for releasably securing the harness to the chair to hold the upper torso of the patient against the back of the chair.

7. Apparatus according to claim 6 wherein the harness includes a shoulder strap extending over each shoulder of the patient and behind the back of the chair; and wherein the harness securing means comprises a separate loop behind the back of the chair adjacent to each shoulder strap secured to a respective portion of the chair back.

8. Apparatus according to claim 7 wherein the chair has a pair of rearwardly projecting handles, and wherein each loop is adapted to be fastened to a respective handle.

9. Apparatus according to claim 6 wherein the chair back has a pair of rearwardly projecting and horizontally spaced handles, and wherein the harness comprises:

- a. an elongated transverse rear strap having means at each end releasably fastened to a respective one of the handles;
- b. a V-shaped shoulder piece including first and second shoulder straps joined together at an apex and extending away from each other, a portion of each of the shoulder straps remote from the apex being secured at longitudinally spaced locations to the rear strap;
- c. an elongated upright center strap connected to the apex of the shoulder piece and extending downwardly away from the apex; and
- d. means for releasably securing the end of the center strap to an upper portion of the piece.

10. Apparatus according to claim 9 wherein the means for fastening each end of the rear strap to the handles comprises a loop on each end of the rear strap adapted to fit over a respective one of the handles, and means for adjusting the length of the rear strap between the two loops.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,669,107 Dated June 13, 1972

Inventor(s) John T. Posey

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 1, line 6, "invlaid" should read --invalid--.

Col. 2, line 8, "present" should read --presented--.

Col. 3, line 9, "it" should read --its--;
line 34, after "40" insert --)--.

Col. 4, line 1, "portion o" should read --portion of--.

Col. 5, line 16, "securing piece" should read --securing the piece--
Claim 1

Col. 5, line 29, "and for" should read --and means for--
Claim 2

Signed and sealed this 24th day of October 1972.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents