

[54] **LITTER DEVICE**

[72] Inventor: **Gerald E. Steelman, R.R. 3, Adel, Iowa 50003**

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[58] Field of Search **5/81, 82, 92, 317, 327**

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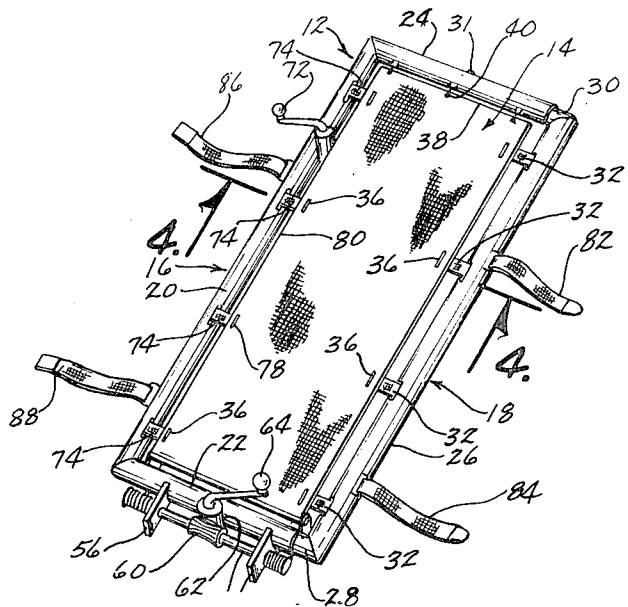
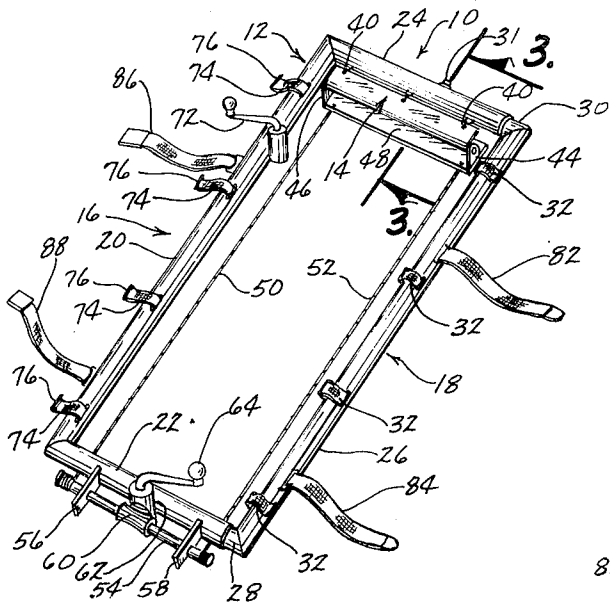
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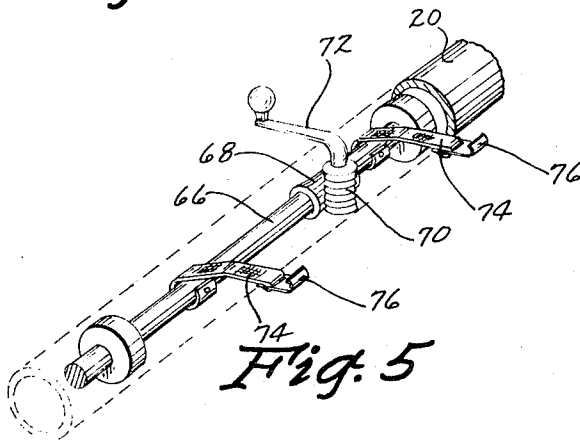
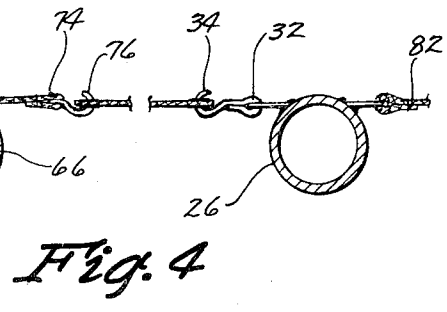
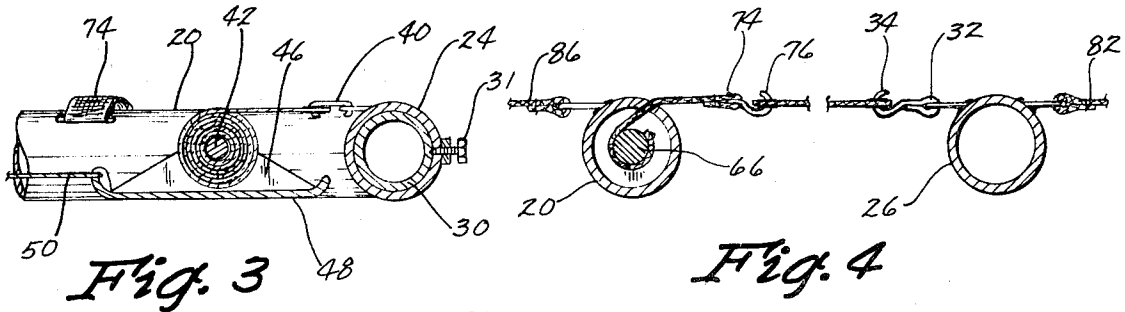
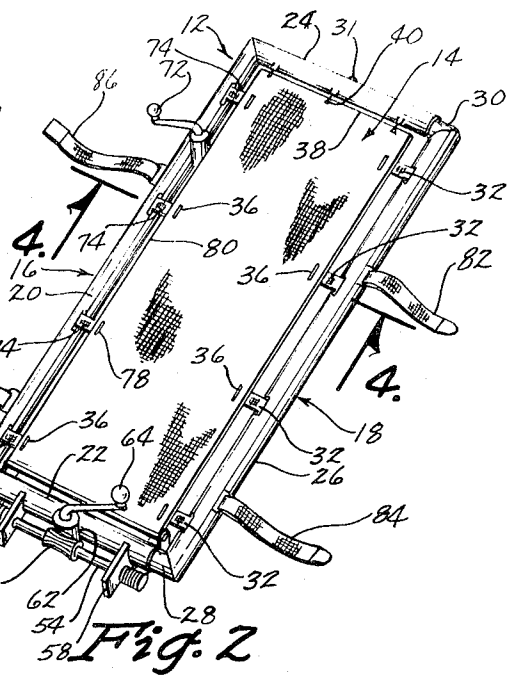
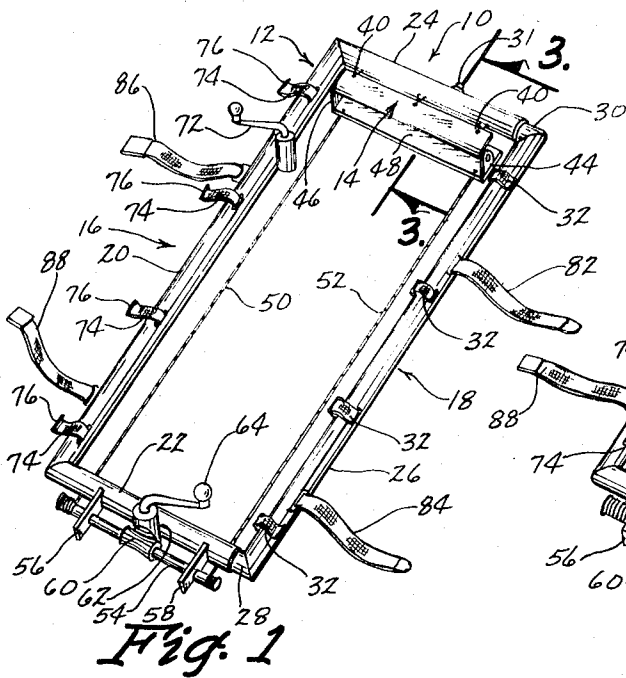
Primary Examiner—Casmir A. Nunberg
Attorney—Zarley, McKee & Thomte

[57] **ABSTRACT**

A litter device comprising a frame means having opposite side members and opposite end members and having a rectangular flexible sheet member supported thereon. The sheet member is initially secured at one end thereof to one end of the frame means and is pulled beneath the person by means of a winch means or the like operatively connected to the other end of the frame means and having a cable means extending to the sheet member. After the sheet member has been pulled beneath the person, one side of the sheet member is secured to one side of the frame means. The other side of the sheet member is then connected to a tensioning means mounted on the other side member to enable the sheet member to be drawn to a taut condition between the side members of the frame. A strap means is provided on the frame means for maintaining the person on the sheet member for transportation purposes.

10 Claims, 5 Drawing Figures





INVENTOR
GERALD E. STEELMAN
BY
Zarley, McKee & Thomsen
ATTORNEYS

LITTER DEVICE

Conventional litter or stretcher devices require that the person be lifted from the ground and placed on the device. The lifting of the person onto the device can further injure the person.

Therefore, it is a principal object of this invention to provide a litter device.

A further object of this invention is to provide a litter device having a frame means which may be adjusted for various sizes of persons.

A further object of this invention is to provide a litter device which includes a means for pulling a flexible sheet member beneath the person to be lifted.

A further object of this invention is to provide a litter device which supports the person above the supporting surface.

A further object of this invention is to provide a litter device having means thereon to maintain the person thereon.

A further object of this invention is to provide a litter device which is convenient to use.

A further object of this invention is to provide a litter device which is economical of manufacture, durable in use and refined in appearance.

These and other objects will be apparent to those skilled in the art.

This invention consists in the construction, arrangements, and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, specifically pointed out in the claims, and illustrated in the accompanying drawings in which:

FIG. 1 is a top perspective view of the device as it appears prior to the flexible sheet member being positioned below the person to be carried.

FIG. 2 is a view similar to FIG. 1 except that the flexible sheet member has been drawn to a taut condition.

FIG. 3 is an enlarged sectional view as seen along lines 3—3 of FIG. 1.

FIG. 4 is an enlarged fragmentary sectional view as seen along lines 4—4 of FIG. 2.

FIG. 5 is a partial perspective view illustrating the means by which the flexible sheet member is tightened laterally.

The litter device of this invention is generally designated by the reference numeral 10 and comprises generally a frame means 12 having a flexible sheet member 14 supported thereby. Frame means 12 comprises generally frame sections 16 and 18 adapted to be detachably secured together. Frame section 16 includes a side member 20 and end members 22 and 24. Frame section 18 generally includes a side member 26 and end members 28 and 30. As seen in FIG. 1, end members 28 and 30 are slidably received by the end members 22 and 24 respectively. End members 22, 24, 28 and 30 are provided with registering openings formed therein adapted to receive a pin means 31 extending therethrough to maintain the side members 20 and 26 in a predetermined spaced-apart relationship to accommodate various sizes of persons.

Side member 26 has a plurality of spaced-apart straps 32 secured thereto having hook elements 34 at the free end thereof which are adapted to be received by grommets 36 in the sheet member 14 as will be described hereinafter. End member 38 of sheet member 14 is detachably secured to end member 24 by means of hooks 40 as seen in FIG. 3. Sheet member 14 is initially wrapped upon a rod 42 which is rotatably mounted on and extends between supports 44 and 46 extending upwardly from a slide member 48. Slide member 48 has a pair of cables or ropes 50 and 52 secured thereto and extending therefrom as seen in FIG. 1. A shaft 54 is rotatably mounted on supports 56 and 58 extending outwardly from end member 22 and have the cables 50 and 52 secured thereto. Gear means 60 is mounted on shaft 54 and is in mesh with a gear means 62 suitably supported on the end member 22. Crank handle 64 is operatively secured to the gear means 62 for rotating the same. Rotation of crank handle 64 causes the rotation of shaft 54 to pull the slide member 48 from end 24 towards end 22.

Shaft 66 is suitably rotatably mounted in side member 20 and has a gear means 68 mounted thereon as seen in FIG. 5. Gear means 68 is in mesh with a gear means 70 suitably rotatably mounted on the side member 20. Crank handle 72 is secured to the gear means 70 for rotating the same. As seen in FIG. 5, a plurality of straps 74 are secured to the shaft 66 and have hook elements 76 on the outer ends thereof adapted to be connected to the grommets 78 at side 80 of sheet member 14. The rotation of crank handle 72 causes shaft 66 to be rotated which causes the strap 74 to be wrapped around the shaft 66 as will be described more fully hereinafter. Retaining straps 82, 84, 86 and 88 are provided on the device for securing a person thereon.

The method of operation is as follows. Assuming that an injured person is lying on the ground, the frame sections 16 and 18 are placed on opposite sides of the person and are connected by means of the pin means 31 so that the frame means 12 will correspond to the size of the person. FIG. 1 illustrates the device after the frame sections have been secured thereto but prior to the sheet member being pulled beneath the person. The slide member 48 is positioned on the frame means as illustrated in FIG. 1 with the hooks 40 being extended between the end of the sheet member 14 and the end member 24 as illustrated in FIG. 3. Cables 50 and 52 are unwound from the shaft 54 and are connected to the slide member 48 as illustrated in FIG. 1. The rotation of crank handle 64 causes shaft 54 to be rotated which causes the cables 50 and 52 to be wrapped upon the shaft 54 thereby drawing the slide member 48 towards the end member 22. As slide member 48 is drawn towards end member 22, the sheet member 14 is unrolled from the rod 42 and is pulled beneath the person.

When slide member 48 has been pulled to a position adjacent end member 22, the hook elements 34 are connected to the grommets 36 at one side of the sheet member. The hook elements 76 on straps 74 are connected to the grommets 78 at side 80 of sheet member 14. The crank handle 72 is then rotated to cause the strap 74 to be wound upon the shaft 66 to draw the sheet member 14 toward side member 20 so that the sheet member 14 is in a taut condition. The tightening of the sheet member 14 to the position of FIG. 2 causes the person to be raised above the supporting surface to provide a more comfortable support for the person. The retaining straps 82, 84, 86 and 88 are then connected together over the person to prevent the person from falling from the litter as it is being carried.

Thus it can be seen that a unique litter device has been provided which permits an injured person to be placed thereon without requiring that the person be manually lifted. Further the device of this invention prevents the person from being further injured during the placement of the person onto the litter. The litter device can be adjusted for various sizes of persons and permits the means for raising the person above the supporting surface to provide a more comfortable support for the person. Thus it can be seen that the litter device accomplishes at least all of its stated objectives.

I claim:

1. In a litter device,
 - a substantially rectangular frame means comprising first and second pairs of parallel support members defining a substantially rectangular open space,
 - a rectangular flexible sheet member wound on a supporting shaft, said sheet member having a free end secured to one of said supporting members from said first pair of supporting members,
 - and power means secured to said support shaft to progressively unwind said flexible sheet member from said shaft by moving said shaft member in a direction away from the support member to which said free end of said sheet member is secured whereby said sheet member can be progressively deposited under a patient lying on a supporting surface within said open space defined by said frame means, said flexible sheet member having a length and width sufficient so as to permit said sheet member to extend substantially across said open space.

2. The device of claim 1 wherein a second power means is provided to support said sheet member laterally to said second pair of support members after said sheet member is unwound.

3. The device of claim 2 wherein said second power means comprises a shaft rotatably mounted on one of said second pair of support members, a plurality of straps secured at one end to said shaft and extending therefrom adapted to be wrapped around said shaft upon the rotation thereof in one direction, said straps being secured at their other ends to one side of said sheet member, and means for rotating said shaft.

4. The device of claim 3 wherein said means for rotating said shaft comprises a first gear means rigidly mounted on said shaft, a second gear means rotatably supported on said second side member in mesh with said first gear means, and a handle means connected to said second gear means for rotation thereof whereby said first gear means will be rotated to cause the rotation of said shaft.

5. The device of claim 1 wherein said first pair of support members are comprised of telescoping frame elements which can be telescopically moved to laterally adjust the width of said frame means.

6. The device of claim 1 wherein said frame means has a bottom adapted to engage a supporting surface, the free end of said sheet member being secured to said support members above said bottom so that said sheet member will be spaced above the supporting surface when said second power means has drawn said sheet member into a taut condition between said first pair of support members.

7. The device of claim 1 wherein said shaft is supported at its ends by guide means.

8. The device of claim 1 wherein said power means includes a winch means operatively secured to said shaft.

9. The device of claim 1 wherein the free end of said sheet member dwells above said shaft to cause said flexible sheet member to normally dwell above said shaft as it unwinds therefrom.

10. In a litter device, a substantially rectangular frame means comprising first and second pairs of parallel supporting members defining a substantially rectangular open space,

a rectangular flexible sheet member wound into a roll, said sheet member having a free end secured to one of said supporting members from said first pair of supporting members,

and power means secured to said roll to progressively unwind said flexible sheet member by moving said roll in a direction away from the support member to which said free end of said sheet member is secured whereby said sheet member can be progressively deposited under a patient lying on a supporting surface within said open space defined by said frame means,

said flexible sheet member having a length and width sufficient so as to permit said sheet member to extend substantially across said open space.

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