Dec. 6, 1932.

L. LEININGER

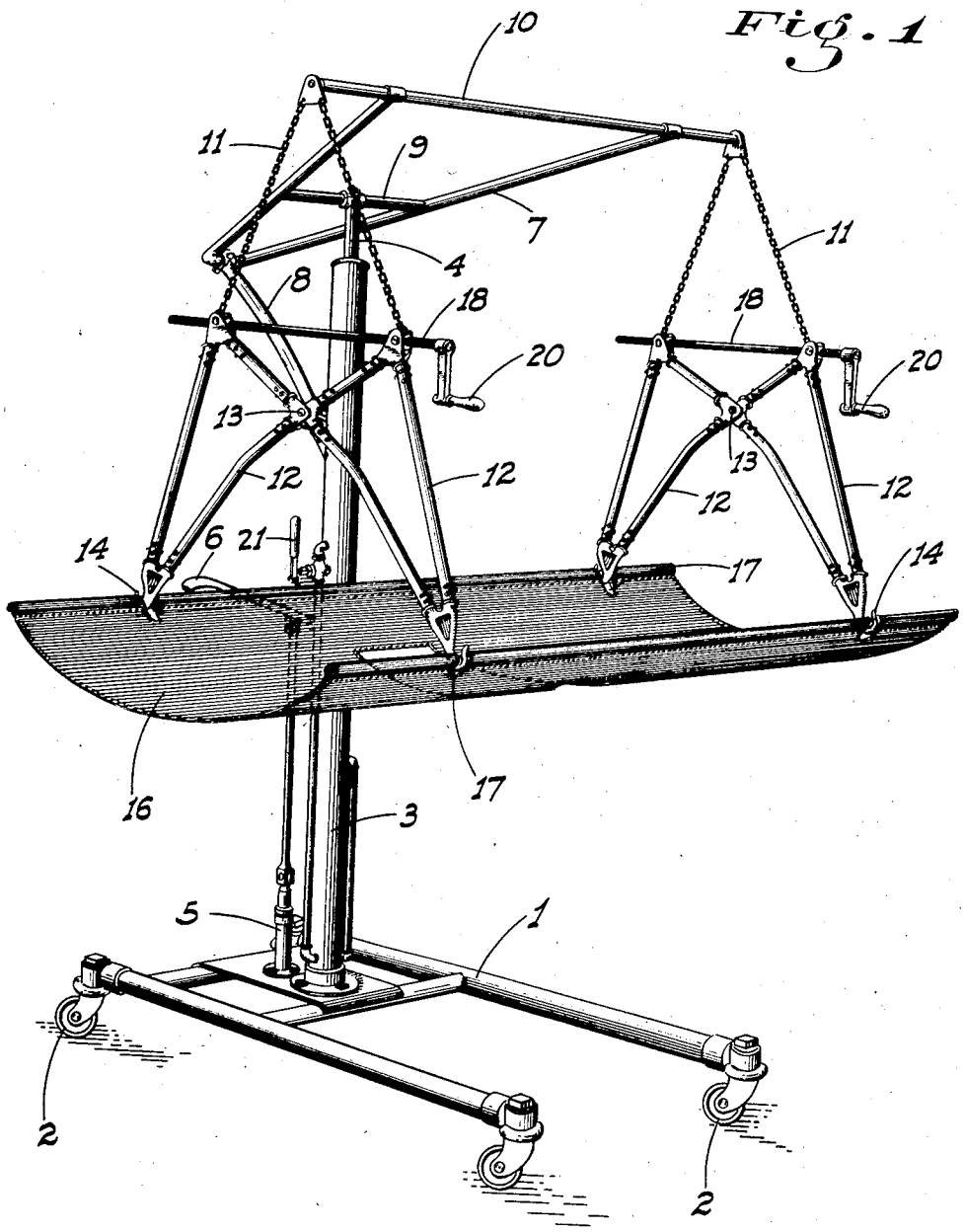
1,889,925

INVALID CONVEYER

Filed Jan. 8, 1932

2 Sheets-Sheet 1

Fig. 1



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2 Sheets-Sheet 2

Fig. 2

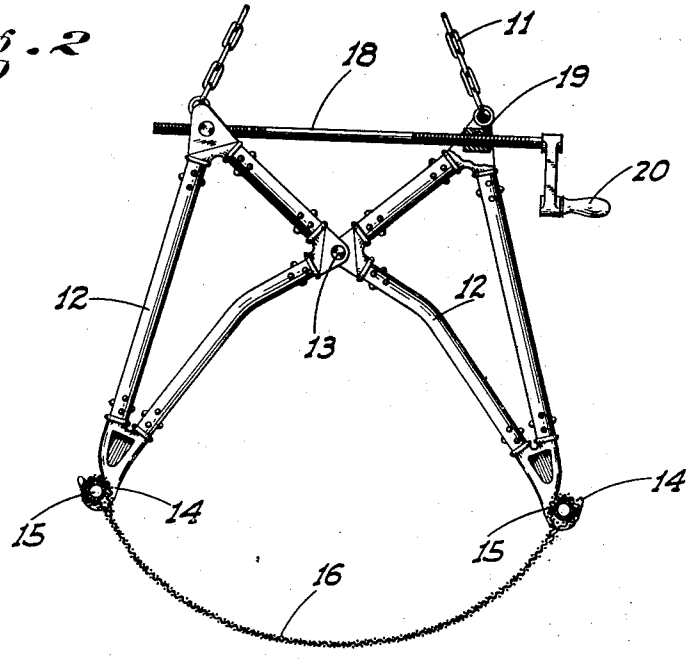
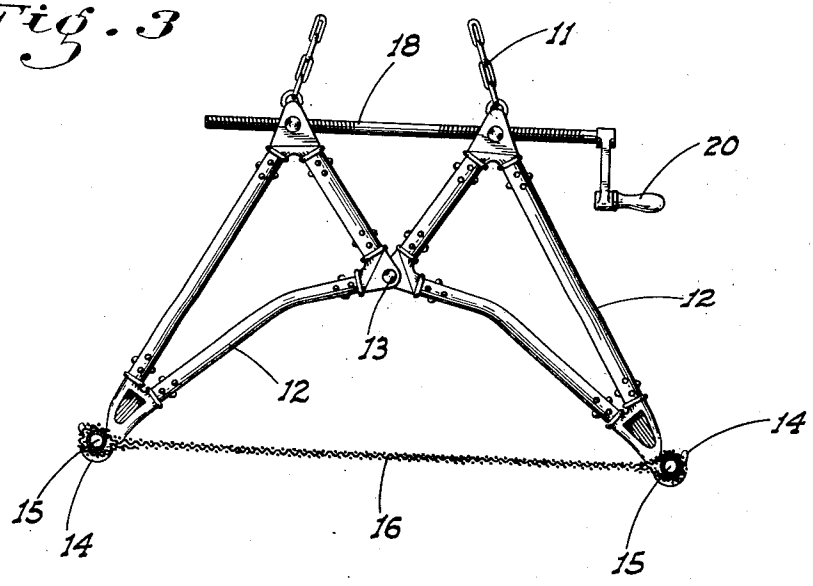


Fig. 3



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Patented Dec. 6, 1932 1,889,925

UNITED STATES PATENT OFFICE

LILLIE LEININGER, OF MODESTO, CALIFORNIA

INVALID CONVEYER

Application filed January 8, 1932. Serial No. 585,522.

This invention relates to invalid conveying devices either for hospital or home use for the purpose of temporarily supporting an invalid while his bed is being made or for conveying him from one point to another when he is incapable of aiding himself.

The principal object of my invention is to provide a portable device of this character having a flexible supporting sheet or stretcher for the patient, and a means of supporting said sheet so arranged that the latter may be left slack or drawn and held taut and perfectly flat as the physical condition of the patient may require. This latter feature is extremely important in cases of fracture when it is necessary that the patient shall lie perfectly flat at all times.

A further object is to arrange the operating parts of the apparatus so that all adjustments and operations incident to the use and manipulation of the same may easily be performed by a single attendant if necessary.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a perspective view of the complete apparatus.

Fig. 2 is an end view of one of the sheet supporting units showing the sheet in a slack or bowed position.

Fig. 3 is a similar view showing the sheet as drawn taut.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes a suitable base supported by a plurality of caster wheels 2 so that it may be easily moved from one place to another. Upstanding from the base toward its rear end is a tubular standard 3 from the upper end of which a shaft 4 projects. The standard and shaft form the cylinder and piston respectively of a hydraulic lift.

The power to operate the shaft is obtained by means of any suitable liquid whose flow is controlled by a pump 5 upstanding from the base back of the standard, and operated by a hand lever 6 above the pump and projecting lengthwise of the base in the direction of its rear end.

Disposed above the shaft and extending forwardly relative to the base is a substantially horizontal A frame 7. At its rear end said frame is flexibly connected to the standard by a depending arm 8. Intermediate its ends the frame is swivelly connected to the shaft 4 by a cross bar 9 rigid with said frame. At its forward relatively wide end said frame supports a horizontal and relatively long bar 10 which extends transversely of the base and from the ends of which downwardly diverging pairs of chains 11 or the like depend.

The lower ends of each pair of chains are connected to the upper ends of substantially triangular frames 12 disposed in vertical planes extending lengthwise of the base and which are pivoted together at their apices as at 13. Said apices are nearer the top of the frames than the bottom so that an open or unobstructed area of sufficient size to receive the body of a patient is formed between said frames below their pivotal connection.

At their lower ends the frames 12 are provided with rigidly attached oppositely facing hooks 14. These hooks are adapted to detachably engage and support rigid bars 15 which are secured along and enclosed by the side edges of a rectangular sheet 16 of canvas or the like. This sheet is somewhat longer than the distance between the supporting frames 12 and it is therefore notched or cut out along the sides at correspondingly spaced points, as shown at 17, to expose the adjacent portion of the bars 15 for proper engagement with the hooks.

The longitudinal straightness of the sheet is controlled by the side bars which are rigid. The transverse contour is controlled by screw rods 18 which are threaded right and left hand toward their opposite ends. These oppositely threaded portions engage blocks 19

swivelly mounted on the corresponding pairs of frames 12 at their upper ends as plainly shown. Each rod is provided with a suitable crank handle 20 or other device whereby it may be easily turned, and it will be seen that by turning the screw rods one way or the other the upper ends of the frames 12 may be brought closer together or forced further apart, imparting a reverse movement to the lower ends of the frames. The sheet 16 which extends between the supporting hooks at the lower ends of the frames may therefore be drawn as taut as necessary, at either or both ends, to support any weight without giving, as shown in Fig. 3; or it may be left slack and concave as shown in Figs. 1 and 2.

In operation the sheet is first placed on the bed under the patient and the apparatus is wheeled into position relative to the bed so that the sheet supporting frames are disposed in proper positions relative to the sheet. The frames are then lowered if necessary by manipulating the liquid release valve 21 (preferably mounted on one side of the standard) so as to bring the hooks 14 to the level of the sheet bars 15. The hooks are then engaged with the bars and if necessary the screws 18 are turned so that the sheet is drawn taut before any attempt is made to raise the patient. Such raising is then effected by operating the pump, whereupon the apparatus with the patient supported thereon may be wheeled to one side or taken to whatever location may be desired.

In the manufacture of this apparatus the base, the various frames and bars are all preferably made of the very strong yet light tubular alloy, extensively used in the airplane industry. In this manner the device has sufficient strength to support the load of any human being without danger of collapse and without the use of excessive bracing, while at the same time it is sufficiently light to enable the apparatus to be easily manipulated by one attendant.

As will be seen in Fig. 1, the sheet is provided with a centrally disposed opening, so that apart from moving a patient about, the apparatus is a valuable aid in bed pan service. It is also to be noted that the bars 15 are removably mounted in the hems of the sheet, so that the sheet may lie limp on the bed when it is not actually supporting the patient, but is being retained in place for such use.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:

1. An invalid conveyer comprising a flexible patient supporting sheet, means to suspendingly support said sheet from the sides at spaced points in the length thereof, said means including pairs of vertical frames extending transversely of the sheet, the frames of each pair being pivoted together, means on the lower ends of the frames engaging the sheet, and means applied to cooperating frames to alter the distance between the sheet engaging ends of the same.

2. An invalid conveyer comprising a flexible patient supporting sheet, means to suspendingly support said sheet from the sides at spaced points in the length thereof, said means including pairs of vertical frames extending transversely of the sheet, the frames of each pair being pivoted together intermediate their top and bottom ends, means on the lower ends of the frames engaging the sheet, and means applied to the upper ends of cooperating frames to alter the distance between such ends at will.

3. A structure as in claim 2, in which said last named means comprises a horizontal hand actuated screw-rod having right and left threaded portions, and blocks mounted on the frames and engaged by said threaded portions.

4. A structure as in claim 1, with elements depending and connected to the frames at the upper corners and disposed in downwardly diverging relation to each other whereby to exert a normal tendency to spread the lower ends of the frames.

5. An invalid conveyer comprising in combination a portable flexible patient-supporting sheet, supporting units for the sheet above the same depending and detachably connected to the sheet at spaced points along the sides thereof, means provided with each unit to adjust the same in a manner to place the adjacent portion of the sheet under transverse tension and lifting means for the units supporting the same from above.

6. An invalid conveyer comprising in combination a portable flexible patient-supporting sheet, supporting units for the sheet above the same depending and detachably connected to the sheet at spaced points along the sides thereof, means provided with units to adjust the same so as to place the sheet under transverse tension and lifting means for the units supporting the same from above.

In testimony whereof I affix my signature.

LILLIE LEININGER.