Oct. 20, 1953 F. BURKERT 2,655,667

WINDING PATIENT LIFT AND TURNING MECHANISM

Filed Feb. 18, 1948

Fig.1

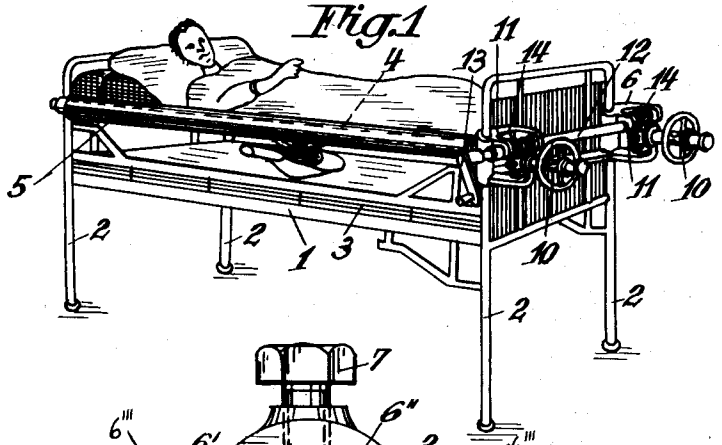


Fig.3

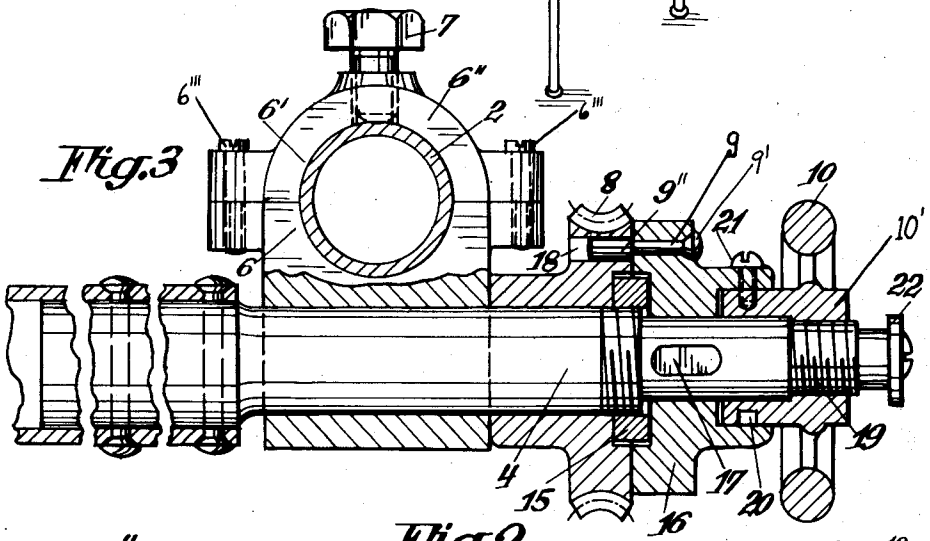
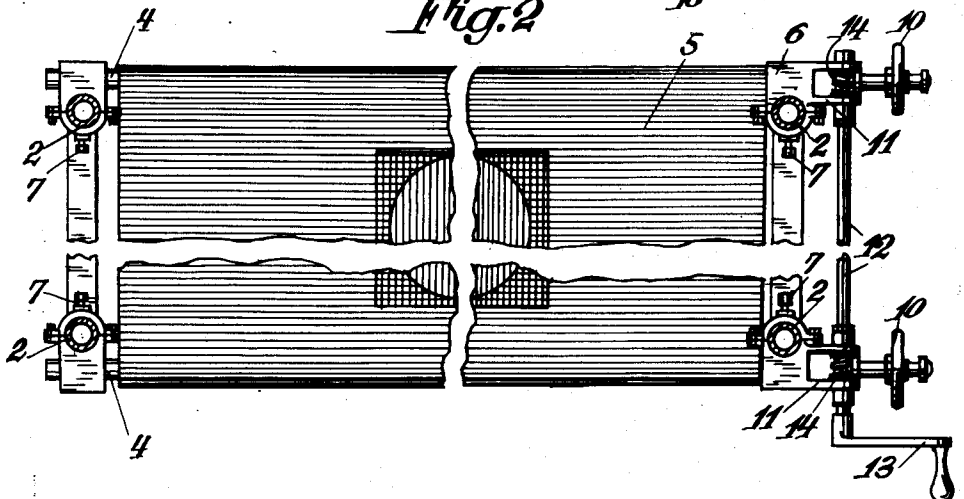


Fig.2



INVENTOR.

FRANZ BURKERT

BY

Patented Oct. 20, 1953

2,655,667

UNITED STATES PATENT OFFICE

2,655,667

WINDING PATIENT LIFT AND TURNING MECHANISM

Franz Burkert, Vienna, Austria, assignor of one-half to Hilde Saliger, Vienna, Austria

Application February 18, 1948, Serial No. 9,042
In Austria July 1, 1946

Section 1, Public Law 690, August 8, 1946
Patent expires July 1, 1966

2 Claims. (Cl. 5—61)

1

The present invention relates to a device for stretching the supporting sheet in a hospital bed.

It is an object of the present invention to provide a device of the kind described which allows an easy incorporation of the same into any existing kind of bed.

It is another object of the present invention to provide a device which allows to raise and lower the patient above the mattress by means of the stretching device and also to roll the patient over to a side position or to a position in which he is lying on his abdomen without touching the body of the patient and with as little pain as possible to him.

In the drawing the object of the invention is illustrated by an embodiment with reference to a usual hospital bed made from steel tubes,

Fig. 1 being a perspective view, and

Fig. 2 a view from above, whilst

Fig. 3 shows a detail on an enlarged scale.

Parallel to the rails 1 of the bed, rollers 4 are arranged which may be designed as steel tubes. The rollers 4 are connected to the standards 2 of the head portion or foot portion of the bed in a position above the mattress. The rollers are rotatably held by bearings 6 provided with eyelets 6' having a detachable part 6'' held on the eyelets 6' by screws 6'''. It will be understood that, if desired, the bearings 6 may be detachably connected to the standards 2 at any desired level by means of clamping screws 7. In consequence thereof the rollers 4 may be attached if desired to any bed and can be detached from it. On one end of the bed, preferably that taking the feet of the patient, the ends of the rollers 4 projecting beyond the bearings 6 carry rotatable worm gears 8 (Fig. 3) which are secured against axial displacement by adjustable collars 15. Each of the worm gears 8 is coupled to its roller 4 by means of a coupling pin 9 arranged at a certain radial distance from the axis of the roller 4 and parallel to the latter. Each pin 9 is held by a member 16 arranged for axial displacement on the roller 4 and being coupled to the latter by a key 17 so that it rotates together with the roller 4. The pins 9 have a head 9' and an enlarged part 9'' engaging a corresponding recess 18 of the worm gear 8. Thus it will be understood that the pin 9 is held by the member 16 and connects positively the roller 4 with the worm gear 8 for rotation when the portion 9'' engages the recess 18. In order to disengage this coupling a hand wheel 10 is provided, a threaded portion of the hub 10' of which is arranged on a threaded projection 19 of the roller 4. The

2

member 16 is provided with a central recess which is engaged by the hub 10' provided with a circumferential groove 20 engaged by a screw 21 arranged in the member 16. It will be understood that the hand wheel 10 is connected with the member 16 against relative axial displacement, the hand wheel 10 being capable of rotation with respect to the member 16. The axial displacement of the pin 9 required for coupling the gear wheel 8 with the roller 4 is determined by the depth of engagement of the portion 9'' in the recess 18. The member 16 is correspondingly displaced by means of the hand wheel 10 and its motion is limited in axial direction by a stopping screw 22 arranged at the end of the roller 4. When the coupling pin 9 is disengaged from the recess 18 the worm gear 8 rotates idly on the shaft 4 which is no longer coupled to the worm gear 8. Transversely to the rolls a shaft 12 is journaled in angular projections 11 of the bearings 6, said shaft being rotatable by means of a crank 13 and engaging the worm wheels 8 by means of the worms or endless screws 14 having a self-locking action so that either both rolls are rotated together, or but the one of the two, according to which roll is disengaged.

A bed sheet 5 made of strong linen is lengthwise fastened to the rolls, joining the latter and coilable on same so that the patient is lifted when the sheet is tensioned. At the area corresponding to the posterior part of the body there is an opening closable by a flap fitted with clasps or buckles (not shown). If the patient is to relieve his bowels, he is lifted by operating the mechanism described, the flap is opened and the vessel is placed below (Fig. 1). The patient may also continue to lie some time on the tensioned sheet in its upper position if, for medical purposes, it is desired to cool the body from below, for medical examination, or the like. If the patient is to be turned sideways, or so as to lie on his stomach, the rolls are alternately engaged so that the bed sheet is coiled and wound up on one side and uncoiled on the other.

The essential advantage of the device resides, as appears from the description, in same being applicable without alteration to any standard hospital bed.

What I claim is:

1. In a device for stretching the supporting sheet in a hospital bed, in combination, two parallel rollers to which the sheet is adapted to be secured with the longitudinal edges thereof for being coiled upon, and uncoiled from said rollers; a bearing for each of said rollers; clamping

means connected to each of said bearings and having each a part adapted to be detachably clamped to a standard of the bed; forked extensions connected to said bearings, respectively; a driving shaft supported rotatably and axially undisplaceably by said extensions; hand operated means for turning said shaft; two worms rigidly connected to said shaft; each of one of said worms being arranged between the legs of said fork-like extensions, respectively, and each being axially undisplaceable and having a pitch so as to act as a self-locking means, said worms being simultaneously rotatable by said hand operated means for driving said shaft; gears arranged for free rotation on said rollers, respectively; a member loosely arranged on each one of said rollers so as to be associated therewith; a key connecting said member to said associated roller so as to rotate said member together with said associated roller and to allow an axial displacement of said member with respect to said associated roller; and a coupling pin eccentrically attached to said member and adapted to engage a recess provided in the associated gear, whereby any of said gears in coupled for rotation with said associated roller thereof independently from the other of said gears.

2. In a device for stretching the supporting sheet in a hospital bed, in combination, two parallel rollers to which the sheet is adapted to be secured with the longitudinal edges thereof for being coiled upon, and uncoiled from said rollers; a bearing for each of said rollers; clamping means connected to each of said bearings and having each a part adapted to be detachably clamped to a standard of the bed; forked extensions connected to said bearings, respectively; a driving shaft supported rotatably and axially undisplaceably by said extension; hand operated means for turning said shaft; two worms rigidly connected to said shaft; each of one of said worms being arranged between the legs of said fork-like

extensions, respectively, and each being axially undisplaceable and having a pitch so as to act as a self-locking means, said worms being simultaneously rotatable by said hand operated means for driving said shaft; gears arranged for free rotation on said rollers, respectively, and being in permanent mesh with said worms, respectively; a member loosely arranged on each one of said rollers, respectively, so as to be associated therewith; a key connecting said member to said associated roller so as to rotate said member together with said associated roller and to allow an axial displacement of said member with respect to said associated roller; a coupling pin eccentrically attached to said member and adapted to engage a recess provided in said gear associated therewith; threads arranged on one end of said rollers, respectively; hand wheels screwed to said threads, respectively; an annular groove provided in each of said hand wheels; and a screw arranged in each of said members and engaging one of said annular grooves, whereby said hand wheels by their rotation axially displace said screws, thereby axially displacing said members so that said gears are coupled for rotation with the associated rollers, respectively, independently from each other.

FRANZ BURKERT.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
36,578	Selbo	Sept. 30, 1862
904,587	Wible	Nov. 24, 1908
936,107	Floyd	Oct. 5, 1909
1,263,611	Scroggin	Apr. 23, 1918
1,459,112	Mehl	June 19, 1923

FOREIGN PATENTS

Number	Country	Date
162,634	Austria	Mar. 26, 1949