March 5, 1940. T. C. TORINES, BORN TORRISSEN 2,192,821

DEVICE FOR FACILITATING THE LIFTING OF A BODY

Filed April 25, 1939 2 Sheets-Sheet 1

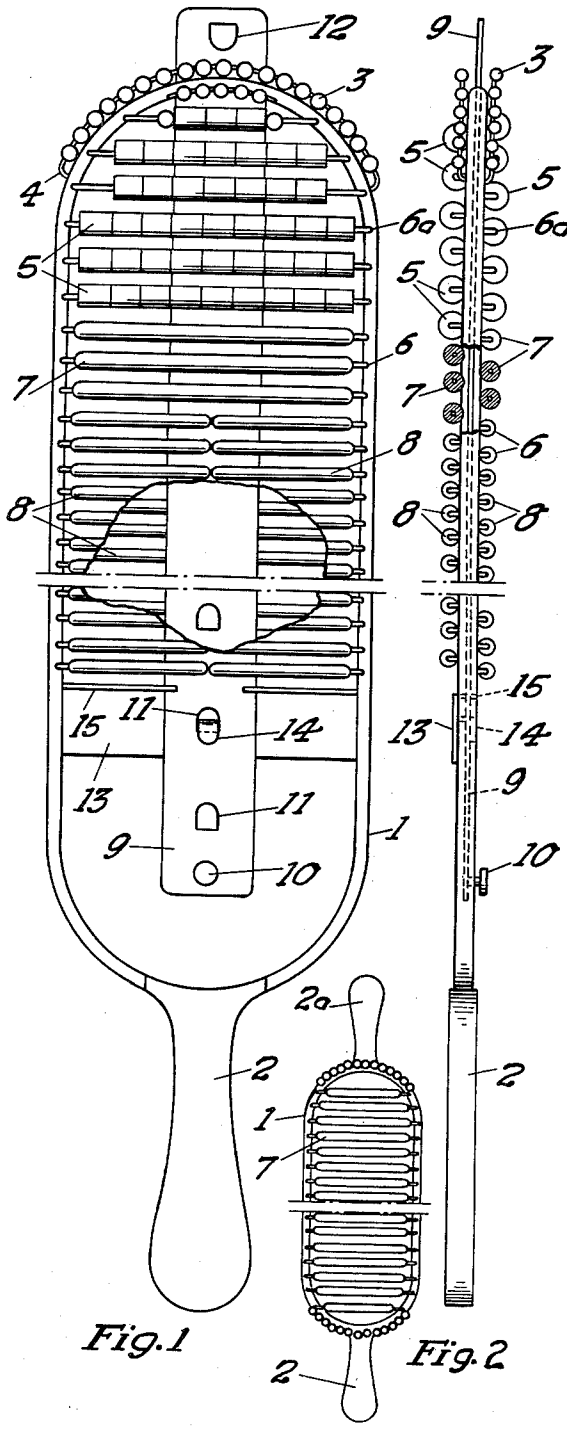


Fig. 1

Fig. 2

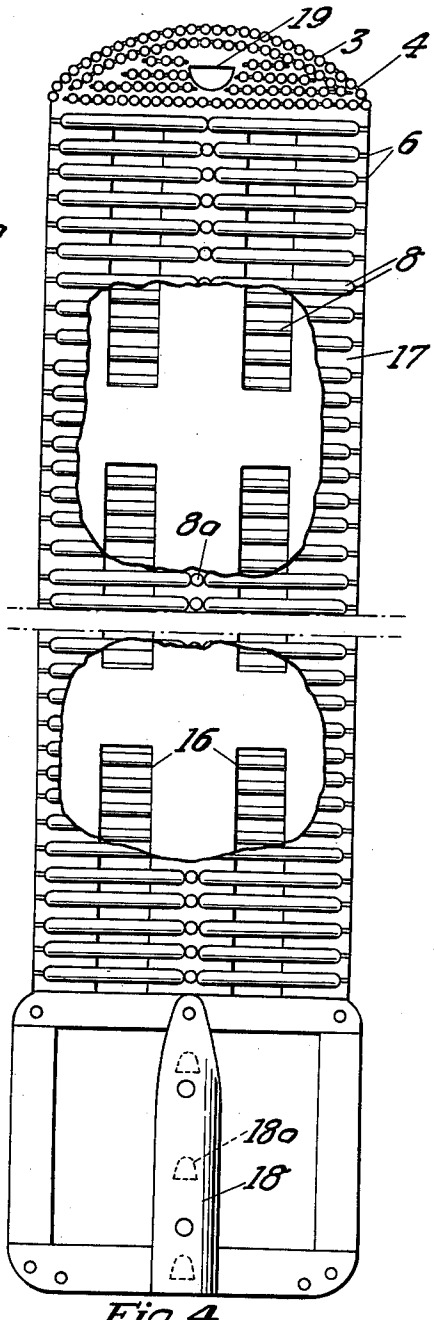


Fig. 4

Fig. 3

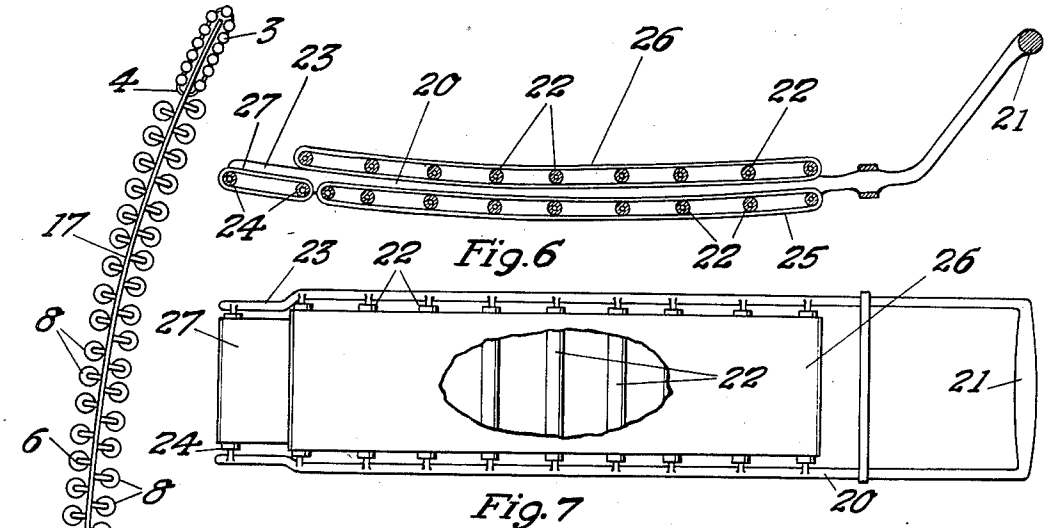
Inventor
T. C. Torines, born Torrissen

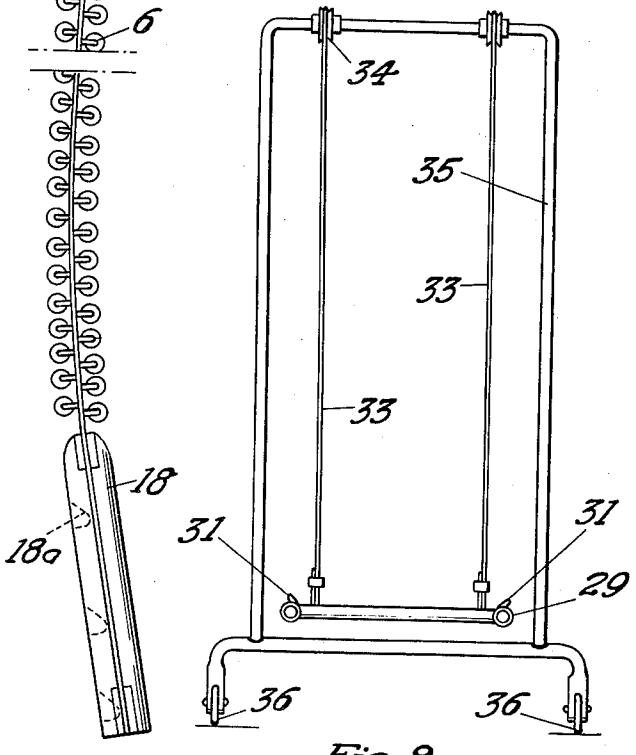
By: Glascock Downing & Seebold
Attys.

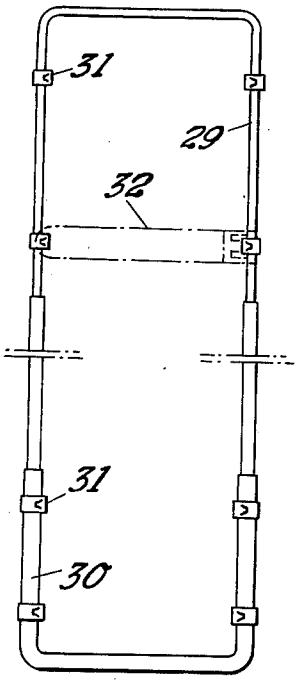
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DEVICE FOR FACILITATING THE LIFTING OF A BODY

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UNITED STATES PATENT OFFICE

2,192,821

DEVICE FOR FACILITATING THE LIFTING OF A BODY

Torine Charlotta Torines, born Torrissen, Stockholm, Sweden

Application April 25, 1939, Serial No. 270,010
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10 Claims. (Cl. 5—83)

This invention relates to a device adapted to facilitate lifting of a body from a support and more particularly to facilitate the lifting and transport of a person lying on a bed or on the ground.

It is well known that the transport of a person to a stretcher or to another bed presents great difficulties, particularly if the person is heavy and badly hurt. Usually this work is performed by two attendants, who put their hands under the body of the patient at suitable places in order to be able to lift him. However, in this manner it is often impossible to obtain any firm grip, and, moreover, due to the small supporting surfaces the actual lifting operation may cause considerable inconvenience to the patient. It has been proposed to overcome these difficulties by first putting the stretcher or parts of the latter, such as straps, under the patient; this method, however, is also very disturbing to the patient as the placing of the straps or the like is accompanied by a considerable friction both against the body of the patient and against the support.

The object of the present invention is to provide simple and reliable means for avoiding these difficulties and according to the invention the device comprises a carrier member, preferably of extended length, adapted to be placed under the body, and having at its upper and lower side rollers and/or balls or the like mounted to rotate about substantially parallel axes and adapted to raise the body by rolling engagement.

One or more devices of this kind may easily be placed below a heavy body, whereupon the latter easily may be lifted, either directly or by means of a stretcher or the like to which the device or devices is or are attached.

The invention is not restricted to the purpose now described but may also be used to facilitate lifting of hurt animals or other heavy bodies of any kind and shape.

In order that the invention may be more clearly understood various embodiments thereof will now be described, by way of example, with reference to the accompanying drawings, in which

Figure 1 is a plan view of a device according to the invention with some parts broken away,

Figure 2 is a side view of the same device, partly in section,

Figure 3 is a plan view on a smaller scale, of a modified embodiment,

Figures 4 and 5 are views similar to Figures 1 and 2 of another embodiment,

Figures 6 and 7 are a side view and a plan view respectively of still another embodiment, some parts of Figure 6 being shown in section, and some parts of Figure 7 being broken away,

Figure 8 is a plan view of a part of a stretcher provided with attaching means for a device according to the invention, and

Figure 9 is a side view of the stretcher suspended in a stand.

Referring to Figures 1 and 2 of these drawings the device comprises a frame-like member 1 having a handle 2. Between the sides of the frame rollers and/or balls are rotatably mounted. In the example shown in the drawings the rounded or tapered end of the frame 1 is provided with a number of balls 3 rotatably threaded on wires or rods 4 both at the upper and lower sides of the frame (see Figure 2). More rows or series of such balls may be provided if desired. In the embodiment shown a number of relatively short rollers 5 are rotatably mounted on substantially parallel shafts or wires 6a, and longer rollers 7 are mounted on similar shafts 6, and finally, relatively narrow divided rollers 8 are similarly arranged. The shapes of the balls and rollers shown are purely chosen for illustration, and the invention is not limited to any particular shape. Only balls or only rollers or both balls and rollers may be provided. It is not necessary, as shown in the drawings to arrange rollers of different types, but of course also a uniform shape may be used along a desired length of the frame. If desired rotatable balls may be provided at the sides of the frame.

The rollers and balls may be provided with bores for the shafts or wires, but the ends of the rollers may also be mounted in journals at the sides of the frame. Preferably, the material in the rollers and balls is steel or metal but may also be china, rubber, wood or any suitable material, if desired with a layer of another material.

The frame 1 may be provided with suitable means for its attachment to a stretcher or the like. For this purpose a steel strip 9 or the like, which is adapted to be secured to the stretcher or the like, may be provided with one or more apertures 12 or any other attaching means adapted to engage projections or similar holding means at the sides of the stretcher. The other end of the frame 1 may be adapted to rest on the stretcher through the intermediary of the handle 2 or may be provided with similar attaching means.

In order that the frame 1 may be applied to stretchers of different width it is suitable to arrange the steel strip 9 to be displaceable in the

longitudinal direction. The strip may be guided between rails 15 on the frame 1 and may be fixed in any desired position by engagement between any of a number of recesses 11 and a hook-like projection 14 on a cross bar 13 on the frame. The operation of the strip 9 is facilitated by means of a knob 10.

The device above described forms a spade-shaped member which, due to the rotatable rollers and/or balls at the upper and lower side may be placed easily under a human or other body resting on the ground or another support. The device may then be attached to a stretcher or a lifting frame of any kind, by means of which the desired transport may be effected. Preferably a number of devices of the kind described are arranged at different places under the body. However, it is also possible to lift the device or frame 1 directly, particularly if it be provided with two handles 2 and 2a, viz., one at each end as shown in Figure 3.

A somewhat modified embodiment of the device is shown in Figures 4 and 5. In similarity with Figures 1 and 2 rotatable balls 3 and/or rollers 8 are provided along the upper and lower sides of the device, but the frame is substituted by a strip-like or other shaped carrier member 17, at the edges of which the shafts for the rollers and balls are mounted. The member 17 consists of flexible or resilient material, say steel, so that it may assume a curved shape (Figure 5) and thus fit to the shape of the body to be lifted.

By way of example Figure 4 shows an arrangement in which balls 8a are provided between the divided rollers 8.

A handle 18 may be provided at one or both ends of the device, and if desired said handle may have recesses 18a or other attaching means adapted to secure the device to a stretcher or the like. One or more apertures 19 also may be provided at the other end of the device for the same purpose.

According to Figures 6 and 7 the frame 20 has a handle 21 and rotatable rollers 22 and an endless belt 25 of flexible material, such as fabric or rubber, at the lower side and a similar belt 26 at the upper side. Due to these belts, which are driven when the rollers rotate, the rollers need not be arranged so closely, for the belts form sufficient continuous surfaces at the upper and lower side of the device.

The front part 23 of the device remote from the handle, may be smaller in width and thickness and be provided with a separate belt 27 carried by two rollers 24, whereby the placing of the device under the body is facilitated. The belts may be substituted by a wire-net or the like.

In Figure 8 is shown, diagrammatically, an embodiment of a stretcher or a lifting frame adapted to be used with a device according to the invention. This stretcher may consist of a frame 29, 30 adjustable in length and having projections 31 or the like, at the longitudinal sides, adapted to engage the apertures or recesses 12, 19 and 18a respectively of the device so that the latter may be secured between the sides of the frame 29, 30 in the manner shown at 32 in Figure 8. The projections 31 or equivalent attaching means may be provided at different places of the frame 29, 30. The frame or stretcher 29, 30 may be suspended in a stand 35 by means of ropes 33 passing over pulleys 34 to a winding mechanism (not shown) so that the frame may be raised or lowered to an appropriate height to receive or deliver the body to be lifted and transported. The stand 35 may have wheels 36 to facilitate the transport.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention made without departing from the scope thereof, as defined by the following claims, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not limitative.

What I claim is:

1. A portable device for lifting and transporting a body comprising in combination a substantially flat carrier member, adapted to be placed under the body, and having both at its upper and at its lower flat broadside a plurality of rolling members mounted to rotate about substantially parallel axes and adapted to raise the body by rolling engagement.

2. A portable device for lifting and transporting a body according to claim 1, in which the carrier member is provided with at least one means for securing the device at a stretcher.

3. A portable device for lifting and transporting a body according to claim 1, wherein the carrier member is combined with a strip-shaped member displaceable longitudinally and having at least one means for securing the device at a stretcher.

4. A portable device for lifting and transporting a body comprising in combination a spade-like frame, having two supporting broadsides, a series of rollers mounted rotatably about transverse axes between the longitudinal sides of the frame to form one of the said supporting broadsides, and a second series of rollers each mounted rotatably about similar transverse axes to form the other of the supporting broadsides of the spade-like frame.

5. A portable device for lifting and transporting a body comprising in combination a spade-like frame, having two supporting broadsides, a series of rollers mounted rotatably about transverse axes between the longitudinal sides of the frame to form one of the said supporting broadsides, a second series of rollers each mounted rotatably about similar transverse axes to form the other of the supporting broadsides of the spade-like frame, and a handle at least at one of the transverse sides of the frame.

6. A portable device for lifting and transporting a body comprising in combination a spade-like frame, having two supporting broadsides, a series of rollers mounted rotatably about transverse axes between the longitudinal sides of the frame to form one of the said supporting broadsides, a second series of rollers each mounted rotatably about similar transverse axes to form the other of the supporting broadsides of the spade-like frame, and a handle at each of the opposite transverse sides of the frame.

7. A portable device for lifting and transporting a body comprising in combination a spade-like frame, having two supporting broadsides, a series of balls mounted rotatably about transverse axes between the longitudinal sides of the frame to form one of the said supporting broadsides, and a second series of balls mounted rotatably about similar transverse axes to form the other of the supporting broadsides of the spade-like frame.

8. A portable device for lifting and transporting a body comprising in combination a spade-like frame, having two supporting broadsides, a

series of rollers mounted rotatably about transverse axes between the longitudinal sides of the frame to form one of the said supporting broadsides, a second series of rollers each mounted rotatably about similar transverse axes to form the other of the supporting broadsides of the spade-like frame, and rotatable balls arranged at both broadsides of the frame.

9. A portable device for lifting and transporting a body comprising in combination a substantially flat carrier member, adapted to be placed under the body, and having both at its upper and at its lower flat broadside a plurality of rolling members mounted to rotate about substantially parallel axes and adapted to raise the body by rolling engagement, at least one end of the carrier member being rounded and tapered.

10. A portable device for lifting and transporting a body comprising in combination a spade-like frame, having two supporting broadsides, a series of rollers mounted rotatably about transverse axes between the longitudinal sides of the frame to form one of the said supporting broadsides, a second series of rollers each mounted rotatably about similar transverse axes to form the other of the supporting broadsides of the spade-like frame and flexible endless belts mounted on the rollers and adapted to be driven when the rollers rotate.

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