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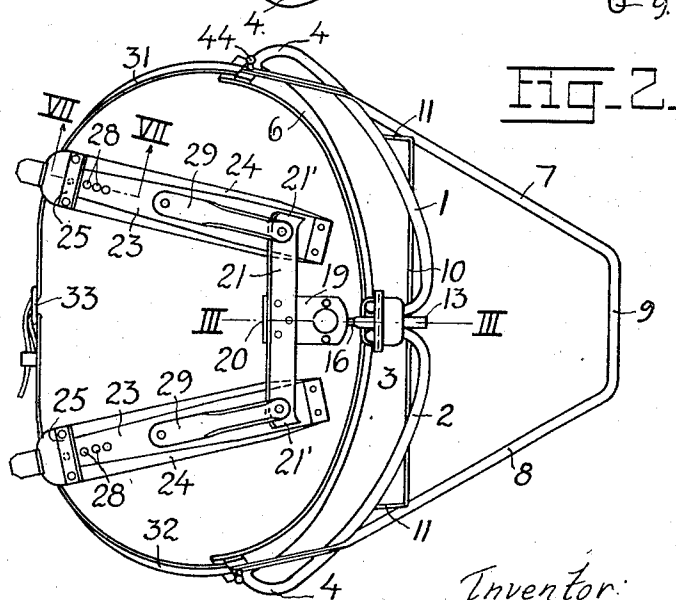
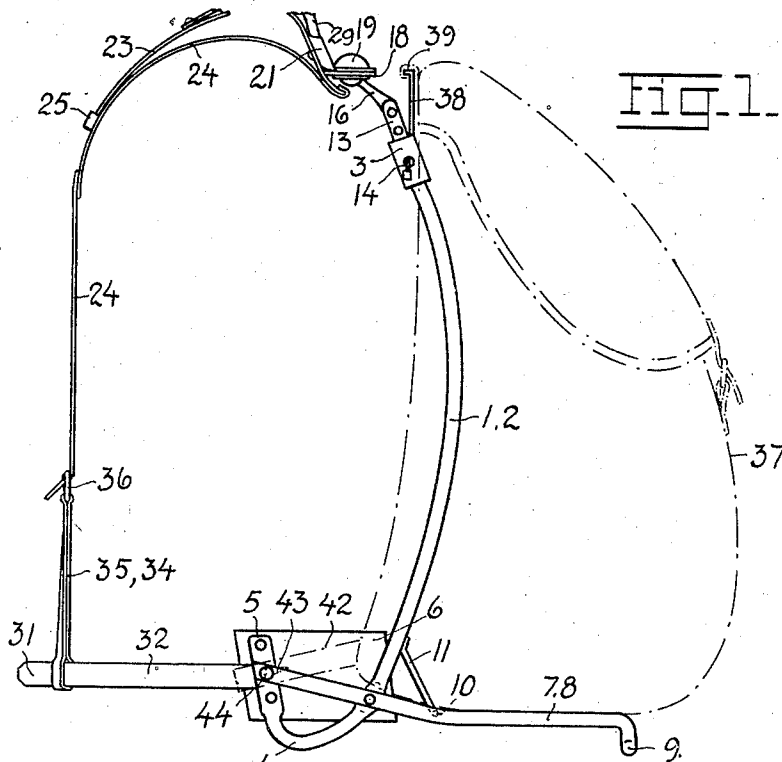
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2,104,486

CARRYING FIXTURE, ESPECIALLY FOR KNAPSACKS

Filed Dec., 16, 1935

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

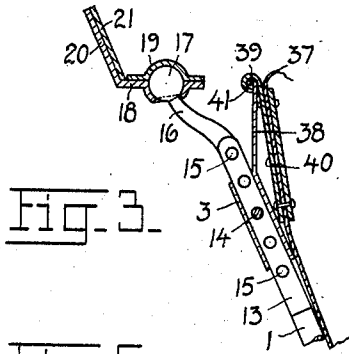


Fig. 3.

Fig. 4.

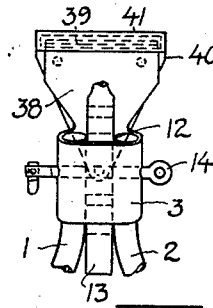


Fig. 6.

Fig. 7.

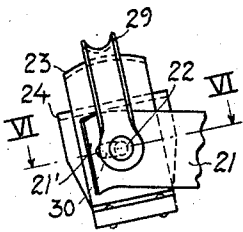


Fig. 8.

Fig. 10.

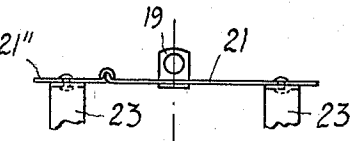
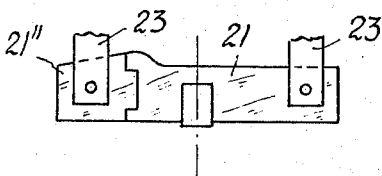
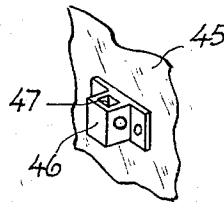


Fig. 9.



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UNITED STATES PATENT OFFICE

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CARRYING-FIXTURE, ESPECIALLY FOR
KNAPSACKS

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10 Claims. (Cl. 224—8)

The carrying-fixtures for knapsacks and the like hitherto in use have the drawback that the weight of the knapsack and of its content is not transferred with equal amounts to each of the shoulders of the carrier during all movements of his body. Also knapsacks of the type having a rigid back have the same drawbacks. This drawback makes itself especially pregnant when the carrier is running on skis, since the arm and body movements necessary for using the ski rods, cause that at intervals practically the entire weight of the knapsack and its content is taken up by one shoulder only, viz. that shoulder the corresponding arm of which is in the moment moved in forward direction. This is due to the fact that the carrying straps of the knapsack are so directly secured to the carrying-fixture or to the knapsack proper that they cannot move in relation thereto, and accordingly the movements of the body and arms cause a tightening or raising of the straps, one at a time.

The object of my invention is to remove said drawback and to that end I provide means by which the straps are so secured to the carrying-fixture that the straps may move in relation thereto and follow the movements of the shoulders in such a manner that the weight of the knapsack at all times is equally distributed on the shoulders.

An embodiment of my invention is by way of example illustrated on the annexed drawings:

Figure 1 is a side view of the carrying-fixture for a knapsack;

Figure 2 is a top view thereof;

Figure 3 is a section on the line III—III in Figure 2;

Figure 4 discloses the same members as Figure 3 in side view, some parts being cut away;

Figure 5 is a rear view illustrating how the shoulder bail member is secured to the cross member;

Figure 6 is a section on the line VI—VI in Figure 5;

Figure 7 is a section on the line VII—VII in Figure 2;

Figure 8 is a top view of a modified embodiment of the cross member;

Figure 9 is a front view thereof, and

Figure 10 is a perspective view illustrating a detail.

In the embodiment here illustrated by way of example the carrying-fixture proper comprises two tubes or rods 1 and 2, interconnected at their top ends by means of a sleeve 3, clamped around said ends and eventually also welded or soldered

thereto. Said tubes 1 and 2 are in the longitudinal direction thereof, somewhat arcuated towards the rear, so that they shall not touch the back of the carrier when the knapsack is carried.

At the lower end each tube 1 and 2 is arcuated at 4, as shown, and between the upwardly extending free end portions 5 thereof is secured a strap 6 adapted to rest against the back of the carrier. The tubes 1 and 2 diverge downwardly to such an extent that the distance between said end portions 5 corresponds to the hip width of the carrier.

From the end portions 5 arms or tubes 7 and 8 extend to the rear, the rear ends of which arms are interconnected by a cross portion 9 the lower side of which is situated on the same horizontal level as the lowest part of the arcuate portions 4 of the tubes 1 and 2. Said arms are secured both to the end portions 5 and to the tubes 1 and 2 respectively, thus forming a rigid ensemble. If desired, for further strength and rigidity, a stay rod 10 may be arranged between the arms 7 and 8, and the end portions 11 of said rod may, after the rod 10 having been welded to said arms 7 and 8, be bent upwards and secured in a similar way to the tubes 1 and 2 respectively, as illustrated in Figs. 1 and 2.

The sleeve 3 is so shaped and secured to the top ends of the tubes 1 and 2 that between the latter a channel 12 is formed (Figures 3 and 4) which receives a bolt or stud 13, preferably of rectangular cross section, adapted to be secured to the sleeve by means of a pin 14 inserted in holes in said members. The bolt or stud 14 is provided with a number of such holes 15, whereby the relative height position of the sleeve 3 and the bolt 14 may be adjusted.

The top of the bolt 14 is formed as a neck 16 carrying a spherical head 17, which is received in a spherical depression in a plate member 18, the head being retained in position in said depression by means of a cup-shaped member 19 secured to the plate member 18. Said parts form together a ball bearing, enabling the member 18 to perform universal movement relatively to the stationary bolt 13. To the member 18 is secured an angular member 20 to which is again secured a cross member 21, which cross member thus also may perform universal movement relatively to the bolt 13 and thereby also relatively to the carrying-fixture proper. Said cross member 21 is rigid in the direction of its plane.

At each end of the cross member 21 a bail 23, preferably a resilient one, is secured by means of a stud 22, which bail, when the carrying-fixture is

in use extends in forward direction over the carrier's shoulder. To the rear end of each of said bails, which ends extend somewhat below the cross member, are secured the rear end of each of the fixtures carrying straps 24, and the front end of each bail 23 is also secured to the strap 24 in question at such a distance from the rear strap end, that the portion of each strap between the points where it is so secured becomes shorter than the length of the bail. Accordingly only that strap portion will rest upon the shoulders of a carrying person.

The free or front end of each bail 23 is secured to its strap 24 by means of a cross member 25 (Figs. 2 and 7) extending over said strap, the end of the bail being inserted between said cross member 24 and the strap and being secured by means of a stud 27 on the member 25, which stud projects into a recess 28 in the end of the bail. A number of such recesses being provided in the bail, the point of connection between the front end of the bail and the strap may be adjusted for adjustment of the effective bail length in relation to the strap length situated below the bail. When the stud 27 is to be shifted from one depression 28 to another one, the bail is pressed towards the strap and the latter will, due to the elasticity thereof, yield so much that the stud 27 may be moved out of the depression 28 in question.

To the bails 23 are also secured arms 29, extending over the cross member 21 and being secured to the stud 22.

Near the ends thereof the cross member 21 is arcuated to the rear, as shown at 21', and as the studs 22 are passed through longitudinal slots 30, the bails and accordingly also the straps 24, may be swung somewhat outwardly about said arcuation, which makes it more easy to put the knapsack on or take it off. This mode of securing also makes it possible to the bails 23 to tilt somewhat on the studs 22 so that they, and accordingly also the straps, may adjust themselves in accordance to the slop of the carrier's shoulders.

The slots 30 in the cross member 21 are somewhat inclined towards the ends of the cross member and accordingly the bail 23 and also the straps 24 will, when the carrying-fixture is placed upon the carrier, due to the weight of the fixture and of the knapsack with its content, automatically obtain the positions fit for the use.

To the end portions 5 of the carrying-fixtures or to the ends of the strap 6 are secured waist straps 31 and 32 respectively, adapted to be interconnected by a clasp or buckle device 33. To these waist straps are secured, preferably so as to be adapted to be displaced, strap pieces 34, 35, each provided with a clasp 36, to which the shoulder straps may be adjustably connected.

For securing of the knapsack proper 37, shown in dotted lines in Figure 1, to the carrying-fixture, the sleeve 3 is provided with an upwardly extending plate member 38 the top of which is folded forwards to form a flange 39 (Figs. 3 and 4). To the top of the knapsack proper is secured a plate 40 provided at its top with a channel shaped portion 41, the latter being closed at both ends. Into said channel portion 41 the flange 39 of the plate 38 may be inserted when the plate 40 is placed approximately at right angles to the plate 38 and the plate 40 then is turned until the knapsack assumes correct position in relation to the carrying-fixture, when the flange 39 is so embraced by the channel por-

tion 41 that the plates 38 and 40 cannot be moved relatively to each other in parallel to their plane.

At the lower front edges of the knapsack 37 are provided straps 42 with holes 43 therein, adapted to be placed on headed studs 44 secured to the portions 5 of the fixture.

When in position the bottom of the knapsack 37 rests upon the arms 7 and 8, and due to the downwardly extending portions 4 and 9 of the carrying-fixture the knapsack proper will, if deposited, not touch the ground and become soiled thereby. The knapsack and carrying-fixture also will always maintain an erected position when deposited on the ground.

When the knapsack is carried the straps 24 will, due to their connection with the cross member 21 and the possibility of universal movement between the same and the fixture, adjust themselves in accordance with the movements of the carrier's shoulders, and the drawbacks mentioned in the opening of this specification are eliminated.

As will be understood the details of the construction described may be widely varied within the scope of the invention. Thus the cross member 21 may be provided with end portions 21' hinged to the middle portion of said cross member, in order that the bails can be moved away from each other, which embodiment is illustrated at the left of Figs. 8 and 9. Or the cross member may take the shape of a resilient plate, as illustrated at the right of Figs. 8 and 9.

In knapsacks which instead of a carrying-fixture are provided with a rigid back portion, the present carrying arrangement may be utilized in much the same manner as with what has here been called a carrying-fixture. In such case there will be secured to the rigid back 45 (Fig. 10) of the knapsack, and at suitable distance from the top end thereof, a bracket 46 having a vertical opening 47 therethrough, into which the bolt 13 of the ball bearing is inserted and secured by a pin as described above.

Obviously the carrying-fixture may, when the knapsack is detached therefrom, be used for carrying of other objects than a knapsack.

I claim:

1. A carrying-fixture comprising a frame of rods, a cross member, means connecting said frame and said cross member for universal angular relative movement and carrying straps which are connected to said cross member at each side of the axis of movement thereof.

2. A carrying-fixture comprising a tube frame, a cross member, means connecting said frame and said cross member for universal angular relative movement, a shoulder bail connected to each end of said cross member and a carrying strap for each of said bails, the top portions of said strap being placed across the bail and connected to the front and rear end thereof.

3. A carrying-fixture according to claim 2, in which the front end of the bails are adjustably connected to the carrying straps.

4. A carrying-fixture according to claim 2, having a cross member provided with rearwardly arcuated portions and with slots, studs in said slots connecting the cross members and the bails, so that the bails can be swung in outward direction of the cross member and their front ends displaced away from each other.

5. A carrying-fixture especially for knapsacks, comprising a frame, a rigid cross member, a ball-and-socket joint the members of which are connected to the frame and to the cross member respectively, and carrying straps the top ends of

which are connected to said cross member at each side of the axis of movement thereof.

5 6. A carrying-fixture according to claim 5, in which the part of the ball-and-socket joint secured to the frame is adjustable in the height direction of said frame.

10 7. A carrying-fixture for knapsacks comprising two tubes connected at their top ends, the lower ends of said tubes, which are diverging downwardly, being bent upwardly and forwardly, horizontally and backwardly extending arms the front portions of which are secured transversely over the tubes and said upwardly and forwardly bent lower ends, a downwardly bent portion connecting the rear ends of said arms, a strap connecting said upwardly bent portions of the tubes, 15 a waist strap provided with a clasp extending from said first mentioned strap, carrying straps the lower ends of which are adjustably connected to said waist strap, a cross member inter-

connecting the top end of said carrying strap and means for connecting said cross member swingably to said tubes at the top ends thereof.

8. A carrying-fixture according to claim 7, having at the top ends of the tubes and at the 5 lower upwardly bent ends thereof means for detachable connection to a knapsack.

9. A carrying-fixture for knapsacks comprising a frame of rods, a cross member, means for connecting said cross member pivotally to the 10 frame, resilient shoulder bails swingably secured to end members which are hingedly connected to the ends of said cross member and a carrying strap for each bail, the top portion of said strap extending from end to end of the arc formed by 15 the ball.

10. A carrying-fixture according to claim 2, in which the cross member rigid in its plane is resilient at right angles to said plane.

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