

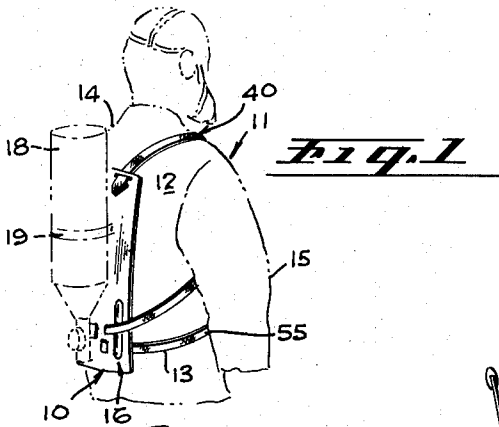
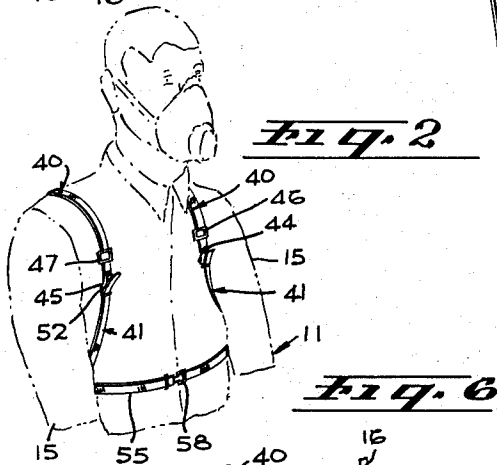
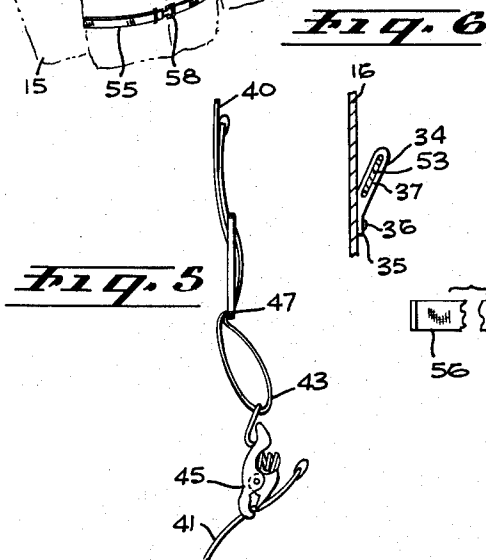
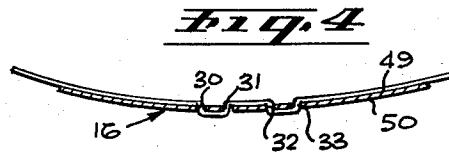
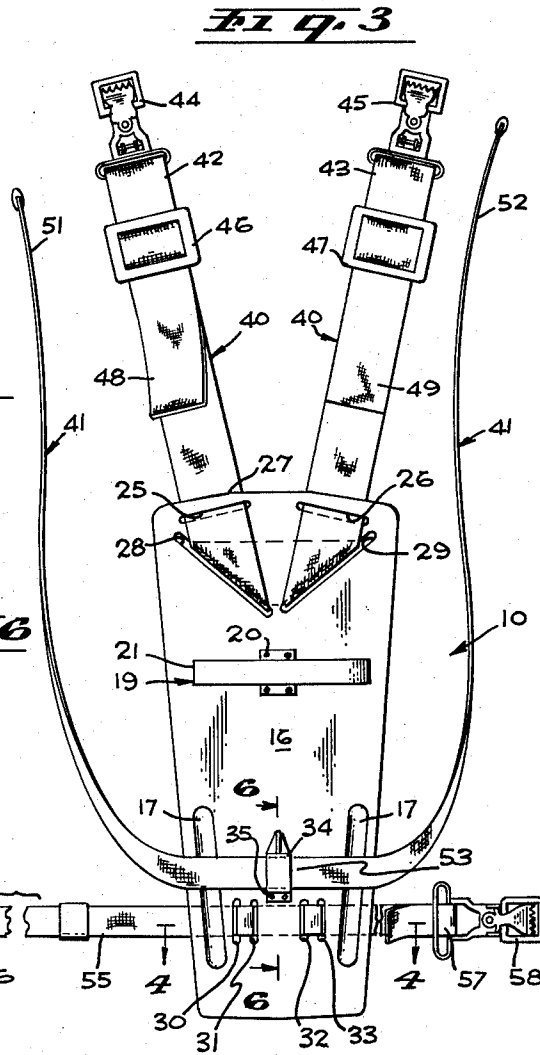
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BACK PACK

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3,106,323

BACK PACK

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1 Claim. (Cl. 224-25)

The invention relates to carrying equipment and has particular reference to a back pack design for personal use so that the user may be enabled to carry any one of a great variety of loads which can be mounted upon the pack. In more or less recent times, back packs have made use of frames of various types in such fashion that the frames mount sundry shoulder straps in order to be fastened to the back of a user, the frames being of such type that packs of different kinds can then be attached to the frames. Some of these frames have been of basket-like construction; others have been of lightweight tubing with canvas areas laced to the tubing and still others have been constructed of a variety of lightweight metal frames, wooden frames, and lacing, the important aspect of the prior devices being a stiff contour fitting frame.

Although such pack frames have been used to a substantial degree for loads, many times constituting heavy loads for packers including mountain climbers, campers, and also foot soldiers, the devices heretofore employed have emphasized load carrying ability at the sacrifice of flexibility and freedom of movement for the user while in use.

In some instances, free use of the arms and shoulders of the user is of substantially greater importance than the load carrying ability. Some loads are relatively light but at the same time need to be carried conveniently, with a minimum expenditure of energy, and often over places where the ability of the user is put to considerable test, even to the extent of it sometimes being advisable for the user to be able to quickly shed the pack.

It is therefore among the objects of the invention to provide a new and improved back pack assembly which is very free and easy to carry irrespective of the load which may be attached and which provides virtually a minimum of restriction of movement of the body of the user for various purposes such for example as climbing ladders, climbing over, through, and around obstructions of various kinds, and otherwise transporting the pack into difficult places.

Another object of the invention is to provide a new and improved back pack assembly to which any one of a variety of loads can be attached and which incorporates supporting straps of such nature and location as to avoid to the greatest degree possible binding around the shoulders and across the chest but which at the same time is of such character that the pack will remain in virtually a fixed selected position upon the back of the user during transportation.

Still another object of the invention is to provide a new and improved back pack assembly which is extremely simple in its construction and design such that virtually any commercially available straps can be employed with the plate and mounted in proper position either immovably or freely movable as the case may be in such manner that they can be readily removed and replaced when broken, frayed, or worn, the construction further being such that the straps can be quickly buckled on when needed, adjusted as desired when in place, and released quickly and easily so as to discard the pack whenever needed.

Also included in the objects of the invention is to provide a new and improved back pack assembly featuring a plate and supporting straps, the plate being arranged in such fashion that at least one of the straps can slide

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freely with respect to the plate as the shoulders of the user are moved, thereby to permit the plate to stay in one position upon the back despite movement of the body of the user during transportation.

With these and other objects in view, the invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter set forth, pointed out in the appended claim and illustrated in the accompanying drawings.

In the drawings:

FIGURE 1 is a rear-side perspective view of a user showing the back pack assembly in place for transportation.

FIGURE 2 is a front perspective view of the user with the back pack assembly adjusted thereon.

FIGURE 3 is an elevational view of the back pack assembly with straps shown in place on the plate but with ends extending freely outwardly to show details of the strap arrangement.

FIGURE 4 is a fragmentary, cross-sectional view taken on the line 4-4 of FIGURE 3.

FIGURE 5 is a side-elevational view of the attachment of opposite ends of one of the shoulder straps.

FIGURE 6 is a fragmentary, longitudinal sectional view taken on the line 6-6 of FIGURE 3.

In an embodiment of the invention chosen for the purpose of illustration, the back pack assembly indicated generally by the reference character 10 is shown mounted for transportation upon a user 11. The back pack assembly is arranged primarily to fit upon the user's back 12 between the waist 13 and the shoulders 14 leaving arms 15 entirely free.

The back pack assembly comprises mainly a plate 16 which has a length substantially greater than the width. In use, the plate is mounted with the longitudinal axis in a vertical direction and the short axis in a transverse direction. Preferably, the plate is very slightly flexible to permit it to conform to a degree to the contour of the user's back but if the plate is of relatively thin material, it may be preferable to employ ribs like the longitudinally extending spaced ribs 17 in order to give the plate an additional degree of rigidity. Although there is no limitation with respect to what may be fastened to the plate as a pack or load, by way of example, there is suggested in broken lines an air or oxygen container 18 in place on the plate and fastened thereto by a securing or anchoring device 19 consisting of a bracket 20 welded, riveted, or secured by other means to the plate and a band 21 to encircle the container.

At the upper end of the plate 16 is a set of slots comprising endmost slots 25 and 26 which are near an upper edge 27 of the plate. The long axis of each slot is tilted slightly with respect to the transverse axis of the plate, the angular relationship between the longitudinal axis of the slot in each case and the longitudinal axis of the plate being at an obtuse angle. Adjacent the endmost slots are inner slots 28 and 29 respectively. The longitudinal axis of each of the inner slots is roughly at about 45 degrees with respect both to the longitudinal axis of the plate and the transverse axis of the plate. The precise angular relationship in this instance is not extremely critical.

At the opposite or lower end of the plate is a second set of slots consisting of a left-hand pair of slots 30 and 31 and a right-hand pair of slots 32 and 33. The left-hand pair of slots 30 and 31 are relatively close together and in parallel relationship to each other and to the longitudinal axis of the plate. The right-hand pair of slots 32 and 33 are similar and merely located to the right of the longitudinal axis as viewed in FIGURE 3.

A bracket 34 is mounted along the mid-line of the plate near the lower end and in the embodiment chosen at a

location slightly above the top edges of the pairs of slots at the lower end of the plate. The bracket is secured at its lower edge 35 to the plate by some permanent means of attachment as for example, rivets 36. The bracket provides a loop 37 which is tilted slightly rearwardly and at an oblique angle relative to the rear face of the plate, as shown to good advantage in FIGURE 6.

Sundry straps which are no more than conventional web straps or other types of straps are employed with the plate. Composite shoulder straps are shown in an arrangement such that there is a strap for each shoulder. The composite shoulder strap arrangement consists of a first section 40 and a second section 41. At ends 42 and 43 of the first section are buckles 44 and 45 respectively, there being provided also adjacent the respective ends adjusting rings 46 and 47 with free ends 48 and 49 extending through them. The first section 40 at a point approximately mid-way between opposite ends is threaded through the slots 25, 26, 27, and 28. To accomplish this, one of the buckles is removed together with the appropriate adjusting ring and if it be the end 42 and free end 48, this is threaded from an inside face 49 of the plate outwardly through the slot 26 to an outside face 50 then through the slot 29, crossing over across the inside face to the slot 28 and then outwardly through the slot 28 after which it is threaded inwardly through the slot 25. This arrangement is shown clearly in the upper portion of FIGURE 3. The second section 41 has two free ends 51 and 52. The second section is slid freely through the loop 37 so that an intermediate portion 53 of the second section is slidably retained in the loop.

A waist strap 55 is provided with a free end 56 and an end 57 provided with a buckle 58. The waist strap is threaded through the slots 30, 31, 32, and 33 in the manner shown in FIGURES 3 and 4. It is found advantageous to have the waist strap 55 threaded in such fashion that the strap extends from the inside face 49 of the plate outwardly through the slot 33, then across the outer face 50 to the slot 32, then outwardly again through the slot 31 to the outer face and back through the slot 30 to the inner face. By the last defined threading, the intermediate portion of the waist strap 55 is firmly attached to the plate so that in normal use it will not slip but the attachment is such that it can be adjusted when necessary. This same attachment also applies with respect to the intermediate portion of the first section 40 of the shoulder strap to the upper part of the plate. Here again, there is in normal use no slipping between the strap and the plate. Conversely, the bracket 34 is stiff and in fixed position but provides for free movement of the second section 41 through the loop 37. Although the term second section has been employed to denote this strap as a portion of the composite shoulder strap, it may also be referred to as an underarm strap.

The first section of the shoulder strap assembly, namely the section 40, when threaded through the slots as shown at the upper end of the plate makes a diverging pattern outwardly. The direction of the slots 25 and 26 determine this divergence and to a degree fix the relative position of the straps causing them to spread apart as shown. When the back pack assembly is to be mounted, the opposite sides of the first section of the shoulder straps are employed to hang the plate upon the shoulders with the plate at the middle of the back as shown in FIGURE 1. The user, by holding one of the buckles 44 or 45, can hold the plate in position until the appropriate free end 51 or 52 as the case may be is passed through the buckle after which the other buckle can be similarly attached. These are free sliding buckles and the lengths of the shoulder straps can be quickly and easily adjusted by pulling on the free ends. Following this, the waist strap 55 is passed around the waist and buckled into position with the right degree of adjustment. Such readjusting can then be made so that the plate and its load rest firmly in the middle of the back. The lower end of the plate is positioned by the

waist strap 55. The tension of the shoulder straps once adjusted will help retain the upper end of the plate in proper position. Since no strap is provided across the chest, the used remains free and unrestricted with respect to movement of the upper portion of his body. Because of the fact that the second section 41 or underarm strap portion slides freely through the loop 37 as the user raises one arm or the other as would be the case if the user was climbing a ladder, the underarm strap slides freely and does not bind the arm or shoulder of the user to restrict its use. The weight, however, of the upper end of the plate still remains adequately supported by those portions of the composite shoulder straps which overlie the shoulders.

Whenever it might become desirable to remove the plate and its load from position on the back, the user after first unbuckling the buckle 58 of the waist strap to free the lower end of the plate can then using each hand merely release the buckles 44 and 45 while holding fast to the buckles or to the ends 42 and 43. Because of the weight of the underarm strap hanging below the buckles in each instance, the underarm straps will then slide freely through the buckles and the user can then readily lower the plate and its pack from his shoulders by holding fast to the shoulder straps. Should any emergency arise, therefore, the user can be immediately relieved of his burden in the manner described.

There has accordingly been herein set forth a very simple back pack assembly which is easy to position upon the back and which in operation restricts free movement of the body of the user the smallest degree possible. Moreover, the plate is of such relatively simple and adequate construction that no special straps are needed to replace those initially provided. Virtually any straps can be applied so long as they are narrow enough to pass through the slots and thin enough so that they pass through with relative ease. Despite this ease of threading because of the relationship and angular disposition of the slots, the straps are firmly fastened once in position and when in use, except for the free sliding second section 41. Further, because the plate is held in the initial position of alignment, should the pack be such that it should be carried always in upright position, this position is assured because the plate remains in the same position irrespective of how the user may move about.

While the invention has herein been shown and described in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claim so as to embrace and all equivalent devices.

Having described the invention, what is claimed as new in support of Letters Patent is:

A back pack assembly for carrying upon the back of the user between the waist and the shoulders, said assembly comprising: a relatively stiff vertically elongated plate having a contour approximately conforming to the contour of the back, said plate at the top thereof having a set of four shoulder strap suspension slots, comprising upper right and left slots diverging downwardly and outwardly, and lower right and left slots converging downwardly and inwardly, on each side of the longitudinal axis of said plate, and said plate at the lower end thereof having a second set of slots comprising pairs of laterally spaced parallel slots on opposite sides of the longitudinal axis and substantially parallel thereto; a waist strap having an immediate portion threaded through said second set of said slots and attached thereby to the plate; a shoulder strap assembly having a first section with the intermediate portion thereof threaded through said first set of slots and attached thereby to the plate, with portions adjacent the plate diverging obliquely upwardly and outwardly from the upper pair of slots, and buckles on the ends of said portions; a looped fixture of relatively rigid material at

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the lower end of said plate, adjacent said second set of slots, said looped fixture having a loop opening for slidably supporting a strap with the plane of strap tilted slightly outwardly and upwardly from the plane of said plate; and a second section of said shoulder strap assembly having an intermediate portion in sliding engagement with said loop opening, said second section having two end portions adapted respectively to extend under the arms of the user and respectively into releasable engagement with the buckles of said first section of the shoulder strap assembly.

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