This is a continuation-in-part of the applicant's parent case entitled "Multi-Purpose Pack Carrier," Serial No. 213,733, filed July 31, 1962, now abandoned.

The present invention relates to portable pack carriers and, more particularly, to a new and improved pack carrier, and structures containing the same, which will be highly versatile, accommodate almost any conceivable pattern of desired, lashing securement, and which may be employed to assemble in the field such useful items as litter carriers, ladders, bridges, toboggans, and so forth.

Accordingly, a principal object of the present invention is to provide a new and improved pack carrier or other framework, ideally made of tubular construction, which provides suitable protuberance means at the extremities of the side members and transverse members thereof so as to facilitate many types of lashing patterns for securing loads to the pack frame.

A further object of the invention is to provide a unique pack carrier which may be assembled with similar pack carriers to constitute litter carriers, toboggans, ladders, trussed bridge constructions, and so forth.

A further object of the invention is to provide a new and useful pack carrier wherein the upper and lower extremities of the side members thereof are so configured as to provide for a telescoping engagement between adjacent pack carriers, disposed end to end, so as to form elongate frame constructions of a type desired.

A further object of the invention is to make provision for suitable end pieces for pack carriers and other frameworks which may accomplish a variety of functions.

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages thereof, may best be understood by reference to the following description, taken in connection with the accompanying drawings in which:

FIGURE 1 is a perspective of a preferred embodiment of the invention, illustrating its normal position relative to the pack frame.

FIGURE 2 is a view taken along the line 2—2 in FIGURE 1 and constitutes a side view of a plastic insert protrusion member useful in practicing the invention.

FIGURE 3 is a relatively enlarged transverse cross-section of either one of the side members of FIGURE 1 near the bottom extremity thereof, certain parts being shown in elevation.

FIGURE 4 is a relatively enlarged cross-section of a typical interconnection of side and transverse members, respectively, of FIGURE 1, the fastening pin being shown in elevation.

FIGURE 5 is a relatively enlarged longitudinal cross-section of the mid-portion of the top transverse member of FIGURE 1, the strap guide being shown in elevation.

FIGURE 6 is a cross-section illustrating another embodiment of the invention at a typical interconnection of side and transverse members, respectively, the fastening pin being shown in elevation.

FIGURE 7 is a cross-section illustrating still another embodiment of the invention at a typical interconnection of side and transverse members, respectively, the fastening pin being shown in elevation.

FIGURE 8 is a cross-section illustrating an additional embodiment of the invention at a typical interconnection of side and transverse members, respectively, the fastening pin being shown in elevation.

FIGURE 9 is a horizontal section, looking downward and taken along the line 9—9 in FIGURE 1.

FIGURE 10 is an enlarged, fragmentary elevation, shown partially in section, of a representative upper extremity of the side members of the pack frame of FIGURE 1 wherein an alternate construction is used in lieu of that specifically shown in FIGURE 1.

FIGURE 11 is an enlarged, fragmentary elevation of a representative lower extremity of a representative one of the side members of the pack frame shown in FIGURE 1.

FIGURE 12 is a perspective view of the rotatable member shown in section in FIGURE 10.

FIGURE 13 is an inverted perspective view of the insert shown in the construction of FIGURES 1 and 11.

FIGURE 14 is a side elevation of a plurality of pack frames, made according to the present invention, secured together to form, in fact, a bridge construction having a king-post truss configuration; environment usage is indicated.

FIGURE 15 is a side elevation of a bridge construction similar to that indicated in FIGURE 14, but showing that a further vertical elongation of the construction may be made so that the over-all bridge construction can be supported at its bottom.

FIGURE 16 is a side elevation of an elongate construction, made up of a series of pack frames of the present invention, wherein the construction takes the form of a ladder.

FIGURE 17 is a perspective view of a frame construction, made through employment of multiple pack frame units, wherein a ski-supported litter carrier is formed; it will, of course, be understood that the ski might be removed from the framework shown herein and the elongate construction simply serves as a conventional, manually portable, litter carrier.

FIGURE 18 is a detail of a representative lashed portion of FIGURE 17.

Referring to the drawings in detail, FIGURE 1 illustrates a preferred embodiment of the invention as it would be carried on the user's back. The protection is omitted for clarity. A pair of mutually similar side members 20 are interconnected by four mutually similar transverse members 21, the members 20 and 21 being of relatively light weight but substantially rigid tubular construction. It is here noted that aluminum is a preferred material of construction for the side members 20 and the transverse members 21.

The means by which the side members 20 and the transverse members 21 are interconnected are best understood by examination of FIGURE 4, wherein a retainer 22 is shown snugly mounted in the associated extremity 23 of its respective transverse member 21, the outlying portion 24 of transverse member 21 being snugly mounted in a transverse hole 25 through side member 20. The side members 20 and the transverse members 21 and the retainers 22 have holes 26, 27, and 28, respectively, transversely therethrough, which are coaxially aligned as shown in FIGURE 4 and which conjointly carry a snugly fitting fastening pin 29 whereby the side members 20 and the transverse members 21 cooperatively form junction 2, a substantially rigid frame with the retainers 22 being firmly attached thereto.

A preferred type of fastening pin 29 is sold under the trademark "Rollpin" and consists of sheet metal which has been formed into a generally cylindrical form having a spring quality by means of which it is self-retained in a slightly undersized mounting hole.

The projection inserts or retainers 22 are mutually similar, each being interiorly hollow at its shank 27 in the interest of minimizing the weight thereof. The exposed
3

end 31 of each retainer 22 has an enlarged head portion H for the purpose of retaining the pack's lashing cord (not shown) on the associated extremity 23 of its respective transverse member 21. Each extremity 23 and the headed end 31 of its associated retainer 22 cooperatively form a projection which greatly facilitates the lashing of a pack to said frame, said projections requiring considerably less time and effort to lash than the usual rings of other pack carriers which are familiar. An additional advantage derived from each retainer is that its knobular or headed end 31 protects the user from possible injury due to contact with the extremity(ies) 23 of the transverse member(s) 21 in the event of a fall. Although this invention is in no way restricted as to materials of fabrication, it is here noted that the retainers 22 lend themselves to fabrication as injection moldings from a wide variety of thermoplastics such as “Nylon.” “Nylon” retainers have additional advantages over retainers of many other materials in that they have no tendency to fray or otherwise wear on lashing cord adjacent thereto, they are substantially weatherproof and they possess high impact resistance.

The upper portion 32 of each of the side members 20 is of nominal tubular diameter while the lower portion 33 of each of the side members 20 is enlarged at 33 and of open tubular construction so that a plurality of embodiments of the type illustrated at the extremities of their respective side members 20 by having the respective upper portions 32 of one pack carrier snugly inserted into the respective lower portions 33 of an adjacent pack carrier (see FIGURES 14–17). The resulting structure may be enforced, if necessary, with sundry available means such as poles, rope, etc. As shall be pointed out hereinafter, such structure may be advantageously used as an emergency litter, ladder, or bridge, in addition to a variety of other uses such as forming a sled when suitably attached to a pair of skis, for example.

As shown by FIGURES 1 and 2, the respective top ends 34 of side members 20 are smoothly rounded and have respective slot apertures 35 therethrough which are shaped to receive and anchor a knot in a pack's lashing cord. In addition to facilitating the anchoring function, the rounded end 34 reduces the danger of personal injury from contact therewith in the event of a fall.

When the pack carrier of this invention is used singly, as primarily intended, for the carrying of cargo on the user's back, the respective bottom ends 36 of side members 20 are be protected from damage and other damage by utilization of any one of a variety of commercially available plastic protective caps or, and preferably, by employment of contoured cap 37 as illustrated by FIGURE 11, and which will be described hereinafter. The caps 37 do protect the user against injury from contact with the bottom end(s) 36 of side member(s) 20 in the event of a fall.

This invention includes diverse harness means whereby the aforesaid frame with diverse cargo lashed thereon is rendered relatively comfortably transportable on the user's back. Such harness means include, but are not restricted to, a preferred harness means illustrated by FIGURE 1.

Said preferred harness means includes three mutually similar canvas webbing straps 38 which individually encircle the side members 20, each of said straps 38 being drawn taut by means of leather laces 39 threaded through eyelets 40 in the ends thereof. The webbing straps 38 provide pliable bearing support for the pack carrier against the user's back, thereby affording considerable comfort to the user. Due to the outwardly bent form of the transverse members 20, as illustrated by FIGURE 1, the webbing straps 38 easily prevent the pack carrier's cargo from contacting the user's back.

Said preferred harness means also includes a canvas shoulder strap 41, a strap guide 42, a pair of mutually similar D-rings 43, and a pair of mutually similar slide buckles 44. In the interest of user comfort, the shoulder strap 41 is somewhat wider at its mid-portion 45 which passes around the mid-portion of the top transverse member 21' and bears on the user's shoulders than its end-portion 46 which individually engage the D-rings 43 and the slide buckles 44. The shoulder strap 41 comfortably transfers to the user's shoulders the weight of the pack carrier and its associated cargo.

The strap guide 42 is a simple means by which the shoulder strap 41 is assured of always being centered on the top transverse member 21', thereby providing balanced support for the pack carrier and its associated cargo. The strap guide 42 consists of a U-shaped piece of wire whose ends 47 are individually inserted through a pair of holes 48 in the top transverse member 21' and bent over (prior to binding transverse member 21') for permanent retention, as indicated in FIGURE 5.

The D-rings 43 connect the endward portions 46 of the shoulder strap 41 to the side members 20 near the bottoms 36 thereof. The slide buckles 44 provide conveniently adjustable means for connecting the shoulder strap 41 to the D-rings 43. The D-rings 43 and the slide buckles 44 (or diverse respective equivalents) are readily obtainable from diverse commercial sources.

The carrying of certain types of cargo is facilitated by use of any FIGURE 1 member 21 which may be bent outwardly an additional amount, as illustrated by the dotted line 49 of FIGURE 9, thereby providing bottom support for the pack carrier's cargo.

Certain embodiments of the invention accomplish the aforesaid anchor function by use of plastic anchor means 50, one of which is permanently attached at the factory to each of the top ends 51 of side members 52. Each anchor means 50, rotatable about representative side member axes AX, externally carries an annular groove 53, thereby enabling the associated top end 51 to be crimped therein, as illustrated by FIGURE 10, resulting in permanent retention of anchor means 50 in the associated top end 51 of its respective side member 52. The rotatability of anchor means 50 provides somewhat of an advantage in the handling of certain types of cargo in that it permits the anchor means 50 to be rotated by its associated lashing cord as required for optimum support of the cargo. As was previously noted regarding the retainer 22, the anchor means 50 also lend themselves to fabrication as injection moldings from a wide variety of thermoplastics such as “Nylon.” “Nylon” anchor means 50 has the same advantages as to wear, weatherproofness, and impact strength as hereinbefore recited for “Nylon” retainers.

FIGURES 6, 7, and 8 respectively illustrate three different embodiments of the invention as to the manner of achieving projections to which the cargo might be lashed. FIGURE 6 illustrates the simplest form of projection 54, said projection consisting solely of the extremity of transverse member 55. FIGURE 7 illustrates a slightly more complex type of projection consisting of the expanded end 56 of transverse member 57. FIGURE 8 illustrates a still more complex type of projection which comprises the endward 58 and end portions 59, respectively, of a plastic retainer 60 which is snugly retained in the associated extremity 61 of its respective transverse member 62 by means of the fastening pin 29. Note that one difference between FIGURES 4 and 8 lies in the fact that the extremity 61 of transverse member 62 is disposed inside of its associated side member 20 instead of being exposed as is its counterpart 23 in FIGURE 4. Although the type of projection illustrated by FIGURE 8 is plastic and therefore provides all of the advantages of plastic hereinbefore recited as to wear, etc., it is somewhat less strong and more prone to fabrication, labor and material than is the type of projection illustrated by FIGURE 4.

FIGURES 2 and 4 illustrate, in conjunction with FIG-
URE 1, the transverse slot means 61 which is disposed in the headed portions H of elements 22. These slots are for the purpose of receiving lashing cord. They preferably included central aperture 62, as shown, is of greater dimension than slot 61 but less in dimension than the cross-sectional area of the hollow interior 25° of the protrusion elements. This is for the purpose of providing a retractive lip L for the knotted ends of cords which may be inserted through aperture 22.

Representative contour accommodating element, or pocket means 37 in FIGURE 11 is shown in its many particulars in FIGURE 13 wherein insertion slots 67 may be provided in insertion portion 68 and wherein an arcuate area 69, circularly concave to seat the contour of side members 20, is provided and includes keyhole slot 70 having central aperture 71 for receiving the knotted ends of a cord (not shown) designed to retrieve the member 37 from portions 33 in FIGURE 1 when a multiple pack carrier construction is desired.

In FIGURE 14 a plurality of the pack frames F in FIGURE 1 are telescoped end to end to form a unitary elongate frame construction 72. This frame construction includes a depending pack frame F the innermost extremity of which is lashed at 23° to the horizontal extremity of the frames, member 37 in FIGURES 1, 13, and 14 facilitating a pocket-bearing engagement between the horizontal and vertical portions of the construction. Lashing 73 is secured to opposite extremities of the horizontal frame construction and, medially, to the remaining extremity of vertical pack frame F. In such a formation the construction forms a king-post truss.

FIGURE 15 is a construction similar to FIGURE 14 but indicates that an addition frame F′ (similar to frame F in FIGURE 1) may be incorporated in the construction so that conceivably it can be supported by the bottom of a crevasse, for example. The lashing and the king-post truss construction remain as before.

FIGURE 16 illustrates multiple pack frames F as being formed in a ladder construction. This is highly useful where persons traveling together wish to put their pack frames together in order to climb up a steep embankment. The ladders may simply be telescoped together and, if desired, adjacent runs, i.e. transverse members 21 in FIGURE 1, lashed together by cordage 86.

In FIGURE 17 an identical construction is given, when compared with FIGURE 16. However, it is seen that the plural telescopically mounted pack frames may be secured to skis SK, or be provided with a canvas covering CA having suitable grommets G and lashing L′ as shown, and thereby serve as a toboggan litter for injured skiers or other persons. The transverse members 21, may simply by clipped by clips CL to the skis. Obviously, the construction will serve as an excellent litter carrier with the skis and even canvas removed.

As to elongate frame constructions, other types of telescoping side-member structures may be used, such as swaged upper extremities of side members 20 fitting into nominal-diameter, lower end portions thereof of adjacent frames, or other types of rigid, inter-pack frame securement may be employed. Optionally provided may be relief indentations I in the lower extremities of side members 20 for providing keyed, supported seating between the same and the adjacent outermost transverse member 21 of a pack carrier F affixed thereto.

While particular embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from this invention in its broader aspects, and, therefore, the aim in the appended claims is to cover all such changes and modifications as well within the true spirit and scope of this invention.

I claim:
1. A pack frame including, in combination, a pair of mutually spaced, upstanding, tubular side members, each of said side members having plural, mutually and longitudinally-spaced, transverse, through apertures; plural transverse members, of less cross-sectional dimension than that of said side members, disposed through corresponding ones of said apertures of said upstanding side members in mutually spaced relationship, at corresponding junctures therewith, the opposite extremities of said transverse members protruding outwardly beyond said side members; and means for determining the positions of said transverse members with respect to said side members, and wherein aligned pin apertures are disposed through said junctures of said side members and said transverse members, and wherein said positions determining means comprise pin means for fixing said transverse members to said side members, and wherein said transverse members are also tubular, said pack frame being provided with projection inserts secured to and within said transverse members by said pin means at their said extremities and having respective head portions of greater dimension than the outside dimension of said transverse members within which they are disposed, protruding outwardly therebey.
2. Structure including, in combination, a plural number of pack frames each including a pair of mutually spaced, upstanding side members and plural transverse members fixedly secured in mutually spaced relationship to said side members, said side members being disposed in a common horizontal plane and including means for releasably engaging adjacent ones of said pack frames thereto in multiple, end-to-end, pack frame, rigid, elongate frame construction, said transverse members being accurately downwardly beneath said plane of said side members, and rope means tautly secured to transverse members of extremity pack frames of said structure and disposed beneath said plane for tension pre-loading said structure beneath said plane across all pack frame junctures.

References Cited by the Examiner

UNITED STATES PATENTS

475,245 5/1892 Mooney 24—115.9
533,603 2/1895 McEvoy 24—115.9
1,714,819 5/1929 Rhodes 224—25.1
2,050,822 8/1936 Weber 224—25.1
2,394,300 2/1946 Gorg 224—25.1
2,924,831 2/1960 Hankins 5—82
3,088,128 5/1963 Waddington 5—82

FOREIGN PATENTS


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