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[54] **BACKPACK ASSEMBLIES**
5 Claims, 5 Drawing Figs.

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 [51] Int. Cl. **A45f 3/10**
 [50] Field of Search **224/25,**
25.1, 8, 8.1, 9, 10, 11, 12, 6, 5.15, 5.23, 5.22

[56] **References Cited**
UNITED STATES PATENTS

909,217	1/1909	Presba et al.	224/25
2,864,361	12/1958	Johnson	224/25.1
3,355,075	11/1967	Dean	224/25.1
3,367,547	2/1968	Abert et al.	224/25.1

ABSTRACT: A backpack assembly to be used by hikers, campers, and the like, for carrying loads. The assembly includes a pack frame having a lower end region. A waist-encircling means, which is adapted to encircle the waist of the user, is operatively connected to this lower region of the pack frame for supporting the latter and a load carried thereby on the hips of the user of the assembly. A shoulder-engaging means, which is adapted to engage the shoulders of the user, is operatively connected to the pack frame at least in part at a region thereof which is higher than the above-mentioned lower region, and this shoulder-engaging means functions to balance the pack frame and a load carried thereby on the waist-encircling means. As a result balancing of the frame and load will take place at the shoulders, while supporting of the frame and load will take place at the hips of the user of the assembly.

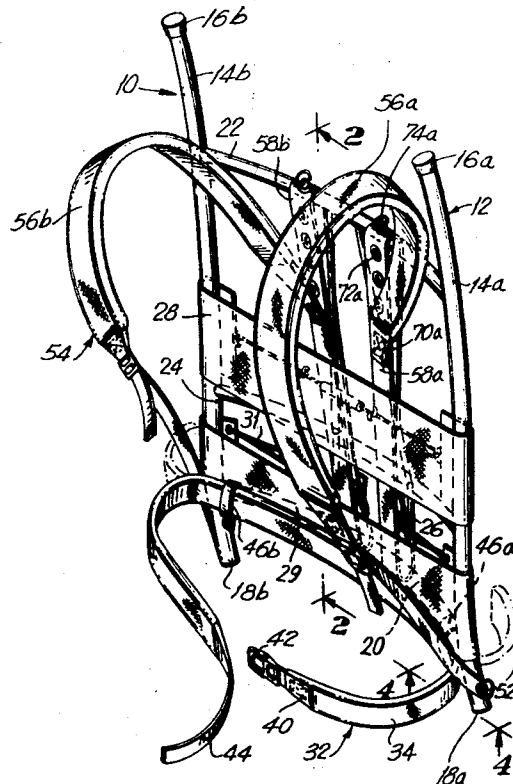
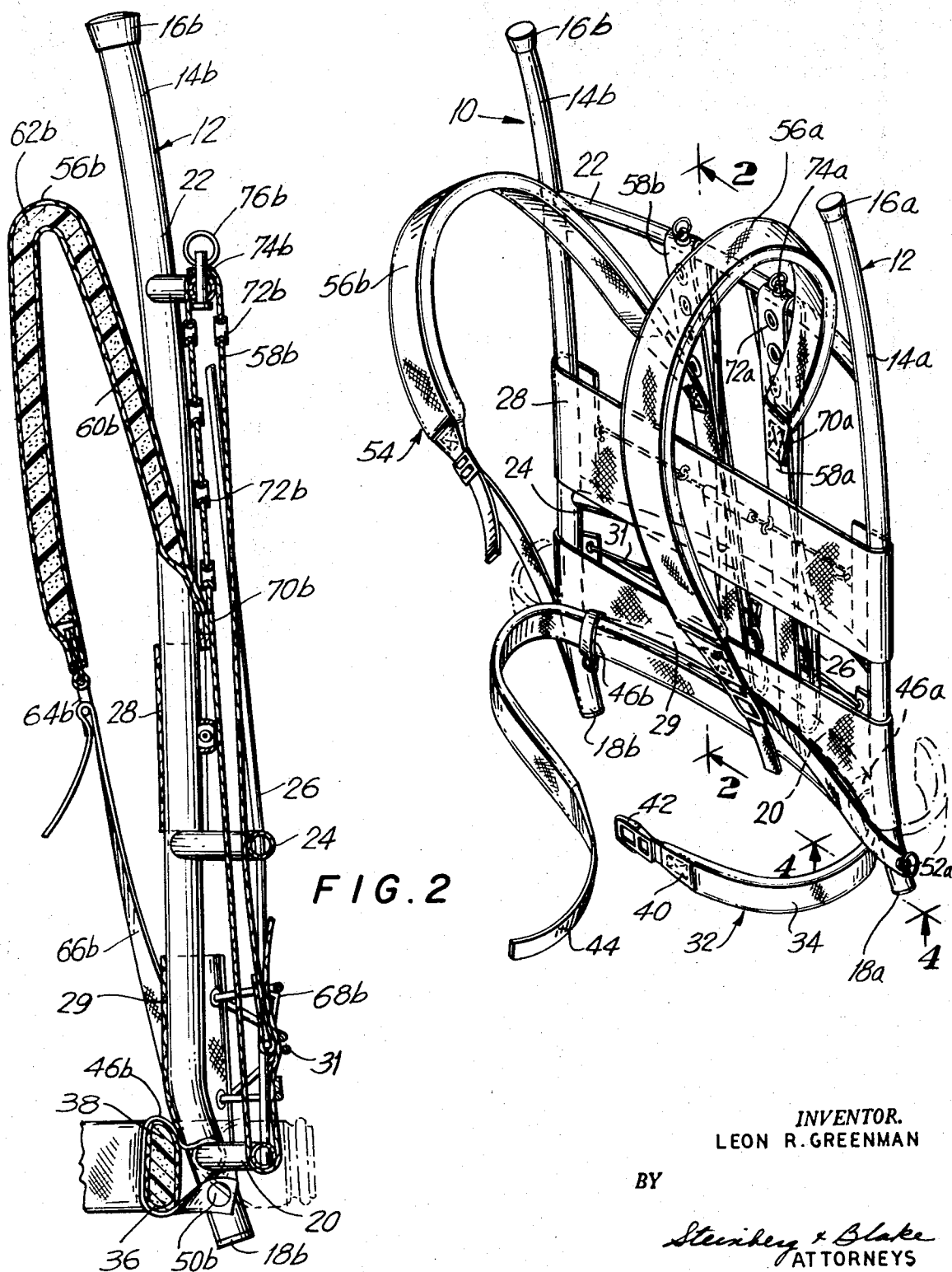


FIG. 1



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FIG. 3

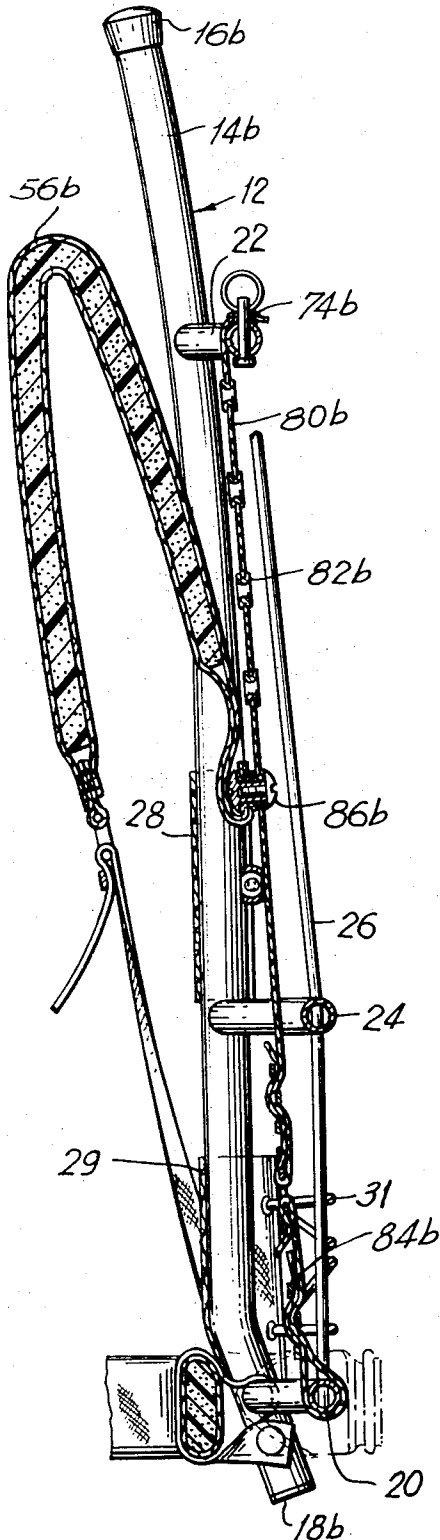


FIG. 4

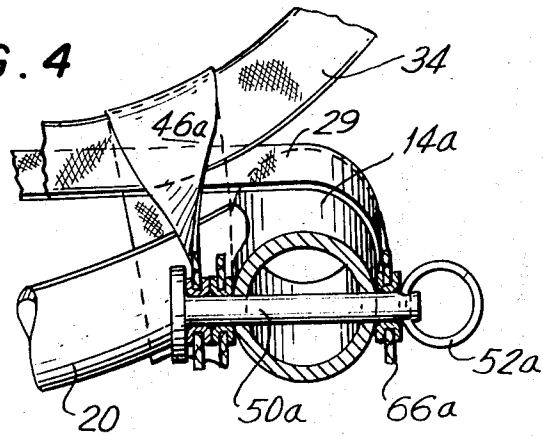
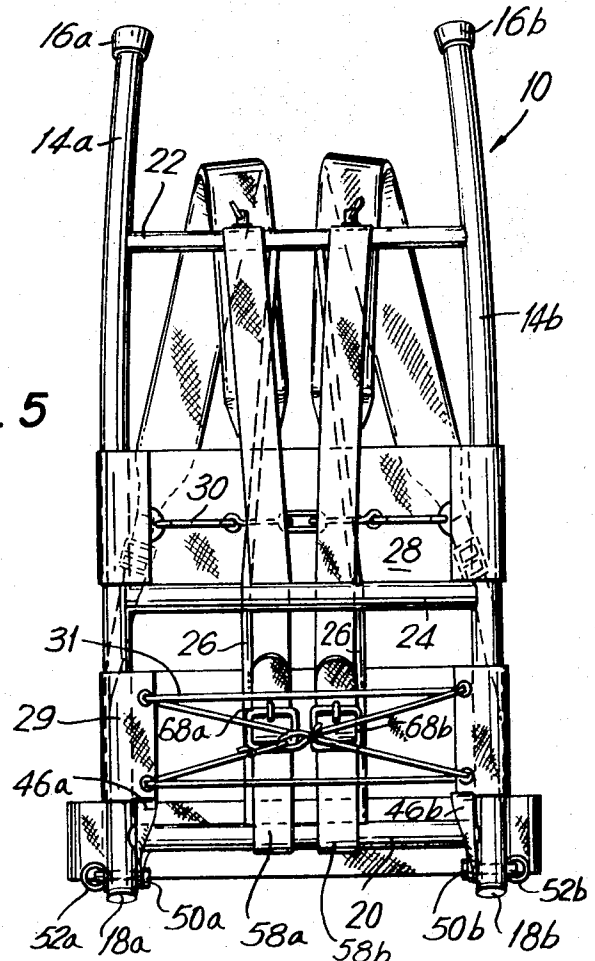


FIG. 5



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BACKPACK ASSEMBLIES**BACKGROUND OF THE INVENTION**

The present invention relates to structures for enabling hikers, campers, and the like, to carry loads.

In particular, the present invention relates to a backpack assembly to which the load is connected.

For many years it has been customary for people who travel on foot to carry loads in knapsacks in the form of simple canvas bags provided with shoulder straps which respectively encircle the shoulders of the user so as to provide for support of the load directly at the back of the user from his shoulders. However, in recent times it has become customary to use for this purpose substantially rigid pack frames which are connected to the shoulders in a manner similar to a knapsack. The load is then lashed or otherwise connected to the pack frame to be supported thereon.

Structures of this latter type, however, suffer from several drawbacks. One of the primary drawbacks of a conventional structure of this type resides in the fact that it is extremely fatiguing primarily because the main part of the load is carried at the shoulders. Ideally the load should be directed downwardly along the spinal column. For example, in certain primitive societies it is customary to support relatively large loads directly on the head so that the load force extends downwardly along the spinal column, and this manner of carrying a load is far less fatiguing than the situation where the load is carried on the shoulders. Because the load is carried on the shoulders, there is a rearward pull on the shoulders which must be constantly opposed and which results in rapid fatigue the downward force of the load being situated beside the spinal column instead of extending therealong as would be ideal. In addition, with conventional pack frames there are a pair of side frame members to the lower ends of which a pair of straps are respectively connected. These straps are adapted to extend from the lower ends of the side frame members around the front of the waist where they are buckled together. At an elevation somewhat higher than these latter waist-engaging straps it is conventional to provide a backband which is stretched between the side frame members and which directly engages the back of the user. Because the backband is situated at an elevation higher than the straps which are buckled at the front of the waist, these latter straps and the backband form a turning couple tending to swing the top of the pack frame rearwardly away from the shoulders about the backband as a fulcrum, so that this construction in itself creates a highly undesirable rearward pull on the shoulders.

A further problem which is encountered with construction of the above type resides in the fact that the length of the pack frame is not suited to all individuals. Even though it is customary to provide pack frames in several different lengths for relatively tall and relatively short individuals, as well as for individuals of intermediate stature, respectively, nevertheless many individuals cannot find in these lengths a pack frame which is ideally suited to their own stature. The critical factor in this connection is the distance between the waist and shoulders of a given individual, and this latter distance for a particular individual is in many cases so sharply different from any available size of pack frame that a conventional pack frame can be used only with considerable discomfort and fatigue. With relatively short individuals of slight builds problems are very frequently encountered, particularly because pack frames of the above type are often used by young boys. It is not uncommon, for example, for the lower end of the pack frame to be situated so far below the waist of a relatively short individual that it unavoidably bounces undesirably against the back and creates an extremely difficult situation.

Furthermore, conventional pack frames have their outer side frame members located at a given distance apart from each other, and this latter distance is considerably greater than the distance between the sides of an individual who has a relatively small waist. In this case even though the straps at the bottom of the side frame members of the pack frame are

buckled to each other at the front of the waist, these straps together with the frame form a hollow space in which the waist is accommodated with an undesirably large clearance permitting free movement of the waist in this space, and in this case also extreme discomfort and rapid fatigue are unavoidable.

SUMMARY OF THE INVENTION

It is accordingly a primary object of the present invention to provide a backpack assembly which will avoid the above drawbacks.

In particular, it is an object of the invention to provide a backpack assembly which will enable the load to be supported at the hips rather than at the shoulders. Also, it is an object of the present invention to provide a backpack assembly where the shoulders will function to balance the load which is carried at the hips.

An additional object of the present invention is to provide a structure which will enable a backpack assembly to be adjusted so as to conform to the distance between the waist and shoulders of a given individual.

A further object of the present invention is to provide a backpack assembly which will lend itself to a connection whereby contact is made with the waist through the entire 360° thereof so as to eliminate any possibility of a free space in which the waist can move about with respect to the pack frame.

Also, an important object of the invention is the provision of a structure which can be readily applied to existing conventional frames at relatively low cost and without the use of any special tools.

Thus, in accordance with the invention the backpack assembly has a pack frame which at a lower region is operatively connected with a waist-encircling means which is adapted to completely encircle the waist of the user while connecting the lower region of the pack frame to the user through this waist-encircling means. A shoulder-engaging means for engaging the shoulders of the user is operatively connected to the pack frame at an elevation higher than the waist-encircling means. This shoulder-engaging means functions to balance the pack frame and any load carried thereby at the waist-encircling means which functions to provide for support of the pack frame and any load carried thereby at the hips of the user.

BRIEF DESCRIPTION OF DRAWINGS

The invention is illustrated by way of example in the accompanying drawings which form part of this application, and in which:

FIG. 1 is a perspective elevation of a backpack assembly of the invention;

FIG. 2 is a sectional elevation taken along line 2-2 of FIG. 1 in the direction of the arrows;

FIG. 3 is a sectional elevation similar to FIG. 2 but showing another embodiment of a shoulder-engaging means;

FIG. 4 is an upwardly directed sectional plan view fragmentarily illustrating the connection between a waistband and the pack frame on one side of the latter, the section of FIG. 4 being taken along line 4-4 of FIG. 1 in the direction of the arrows; and

FIG. 5 is a rear elevation of the structure of FIGS. 1 and 2.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to the drawings, and to FIGS. 1, 2, and 5 in particular, the backpack assembly 10 illustrated therein includes a pack frame 12. This pack frame 12 is substantially rigid and includes a pair of substantially upright outer side frame members 14a and 14b. These side frame members are in the form of hollow metal tubes and are made of a light metal such as aluminum, for example. The top ends of the side frame members 14a and 14b are closed by cups 16a and 16b, respectively, for example, while the bottom ends of the tubular side frame members are respectively closed by plastic plugs 18a and 18b, for example.

The pack frame 12 further includes transverse frame members. Thus, at the lower region of the pack frame 12 there is a lower transverse frame member 20 which extends between and is connected at its ends to the side frame members 14a and 14b as by being welded thereto, for example. These transverse frame members further include an upper transverse frame member 22 which also extends between and is fixed at its ends respectively to the side frame members 14a and 14b. In addition, there is an intermediate transverse frame member 24 which extends between and is fixed at its ends to the side frame members 14a and 14b. These transverse frame members are made of the same material as the side frame members and are also in the form of elongated hollow tubes. The transverse frame members 22 and 24 may, for example, be welded at their ends to the side frame members in the same way as the lower transverse frame member 20.

The illustrated pack frame 12 also includes a pair of reinforcing rods 26 both of which are clearly visible in FIG. 5. These rods extend at their lower ends through openings formed in an upper surface portion of the lower transverse frame member 20 into the interior of the latter. From the lower transverse frame member 20 the reinforcing rods 26 extend upwardly through openings of the intermediate transverse frame member 24, and at their top ends the rods 26 extend into lower openings which are formed in the upper transverse frame member 22.

The side frame members 14a and 14b support just above the intermediate transverse frame member 24 a backband 28 in the form of an elongated rectangular cloth web which extends around the side frame members 14a and 14b in the manner indicated in the drawings. The free ends of the backband 28 are situated at the rear side of the side frame members 14a and 14b. These free ends of the band 28 can be pulled toward each other by a conventional turnbuckle assembly 30.

This backband 28 forms an upper backband located over a lower backband 29 situated just above the lower transverse frame member 20 and tensioned by lacing 31.

A waist-encircling means 32 is provided for encircling the waist of the user, and this waist-encircling means 32 is operatively connected with the pack frame 12 to support the latter and any load carried thereby on the hips of the user. The waist-encircling means 32 includes a 360° waistband 34 which in the illustrated example includes an outer tubular cloth envelope 36 within which a yieldable elastic pad 38 of foam rubber or the like is situated, as shown most clearly at the lower portion of FIG. 2. One of the free ends of the envelope 36 is permanently fixed, as by suitable sewing, for example, to an extension 40 which carries a buckle 42, while the other end of the tubular envelope is fixed with an extension 44 which coacts with the buckle 42 for fastening the 360° waistband 34 about the waist of the user. The waist-encircling means 32 further includes a pair of substantially nonstretchable loops 46a and 46b. These loops 46a and 46b take the form of elongated canvas webbing provided with overlapping free ends at each loop. A headed pin 50a extends through a pair of aligned grommets at the overlapping free ends of the loop 46a, and this pin has its shank extending through aligned openings formed at the lower end region of the side frame member 14a. At its outer free end the shank of the headed pin 50a is formed with a transverse bore through which a wire ring 52a passes for connecting the loop 46a to the side frame member 14a in this way. In the same way a headed pin 50b extends through a pair of grommets at the free ends of the loop 46b, and the shank of the pin 50b extends through aligned openings at the lower end of the side frame member 14b. The free end of the shank of pin 50b where it is situated outwardly beyond the side frame member 14b is formed with a transverse opening receiving a wire ring 52b. It is to be noted that the headed pins 50a and 50b are in any event present on a conventional pack frame 12 as described above for the purpose of connecting the lower ends of the shoulder straps to the outer side surfaces of the side frame members 14a and 14b as pointed out below. Therefore, no additional operations are required to provide the structure with these pins 50a and 50b. Thus, the loops 46a and

46b as well as the waistband 34 which forms with these loops the waist-encircling means 32 are capable of connection to a conventional pack frame structure without the use of any special tools.

It is also to be noted that the loops 46a and 46b are connected to the inner surfaces of the side frame members 14a and 14b just below the lower transverse frame member 20. Also, these loops 46a and 46b extend around the transverse frame member 20, so that this frame member extends at its free ends directly through the loops 46a and 46b. In addition the waistband 34 extends through the loops 46a and 46b. The relationship between these components described immediately above is particularly apparent from FIG. 4 in connection with the structure at the lower end region of the side frame member 14a.

As is particularly apparent from FIGS. 2 and 4, the loops 46a and 46b extend with substantial clearance around the transverse frame member 20 and the waistband 34 which is located with loops 46a and 46b in front of and overlapping the lower region of backband 29. As a result, with the waistband 34 snugly encircling the waist of the user the pack frame 12 and any load carried thereby can pull downwardly on the loops 46a and 46b so as to cause the load to be supported substantially entirely at the waistband 34. Since this waistband 34 encircles the waist of the user through 360°, substantially the entire load will be supported on the hips of the user. As is well known, the legs of an individual are capable of exerting tremendous upward forces equal to many times the weight of the individual. Therefore, by supporting the entire load on the hips with the structure of the invention the load is transmitted directly through the pelvic region to the powerful legs. While with a conventional knapsack or backpack assembly the load will ultimately also be carried by the legs, with these conventional arrangements the load is transmitted through the spine by way of forces which are situated off-center with respect to the spine, and this is the source of the undesirable fatigue with the conventional structures as well as with the tiring of the shoulders to which the load is directly connected. In contrast, with the structure of the invention there is no load transmission through the spine and instead the load is transmitted by way of the hips through the pelvic region directly to the legs, so that it is possible with the structure of the invention to comfortably carry even large, heavy loads over long distances and for long periods of time without undesirable fatigue.

The structure of the invention further includes a shoulder-engaging means 54 which functions, not to support the load, but only to balance the load at the waist-encircling means 32. This shoulder-engaging means 54 includes a pair of shoulder straps 56a and 56b and a pair of fastening straps 58a and 58b. In a manner which is described below the straps 56a and 58a are connected together to form one set of straps of the shoulder-engaging means, and the straps 56b and 58b are similarly connected together to form a second set of straps of the shoulder-engaging means 54.

The shoulder strap 56b includes an upper portion having a fabric tubular envelope 60b which encloses a resilient elongated elastic pad 62b, as shown most clearly in FIG. 2. At its front end this upper portion of the strap 56b terminates in a buckle 64b. An elongated canvas webbing 66b is connected at its upper end to the buckle 64b. At its lower end the webbing 66b is provided with a grommet through which the shank of the pin 50b extends with the ring 52b situated outwardly beyond this grommet so that the strap 56b is connected to the lower outside region of the side frame member 14b in this way.

The other strap 56a is constructed in the same way as the strap 56b. This strap 56a has a lower canvas webbing 66a provided with a grommet through which the shank of the pin 50a passes with the ring 52a situated outwardly beyond this grommet, as shown most clearly in FIG. 4. In this way the pair of shoulder straps are connected at their lower ends to the pins 50a and 50b at the outer side surface portions at the lower ends of the side frame members 14a and 14b, respectively.

The fastening strap 58b of the set of straps 56b and 58b of the shoulder-engaging means 54 is in the form of a single elongated length of canvas webbing terminating at one end in a buckle 68b (FIG. 2) to which the other end of the strap 58b is connected with this buckle directed rearwardly, so that the fastening strap 58b can be pulled tightly around the upper and lower transverse frame members 22 and 20, as indicated in FIG. 2. The upper free end of the strap 56b is directly stitched to the fastening strap 58b to form the connection 70b where these straps 56b and 58b are permanently connected to each other. The other fastening strap 58a is tightly pulled in the same way around the transverse frame members 20 and 22. The shoulder strap 56a is directly stitched to the fastening strap 58a to form the permanent connection 70a therebetween (FIG. 1).

An adjusting means of the invention makes it possible to adjust the elevation of the connection between the shoulder-engaging means 54 and the frame. This adjusting means coacts with at least one of the straps of each set to adjust the backpack assembly to the user, and in particular to the distance between the waist and shoulders of a given individual. In the example of FIGS. 1, 2 and 5 this adjusting means includes a series of openings which are formed in and distributed along each of the fastening straps 58a and 58b. Thus, FIG. 2 shows this series of openings which are respectively reinforced by the series of grommets 72b. In the same way a series of grommets 72a are provided at the series of openings formed in the fastening strap 58a.

As is indicated in FIG. 2, a headed pin 74b extends upwardly through openings formed in the upper transverse frame member 22 and through a selected opening of the fastening strap 58b which engages the top surface of the transverse frame member 22. A wire ring 76b extends through a transverse bore of the shank of the headed pin 74b just over the selected opening of the strap 58b so as to maintain the latter laterally positioned at the transverse frame member 22. In the same way a headed pin 74a extends through a selected opening of the strap 58a.

Thus, with this construction by locating a selected opening of each fastening strap at the transverse member 22 it is possible to adjust the elevation of the connections 70a and 70b between the straps of the pair of strap sets which form the shoulder-engaging means 54. For an individual of relatively short stature the connections 70a and 70b will be situated at a considerable distance below the transverse frame member 22, while for an individual of taller stature these connections will be situated closer to the transverse frame 22. The curvature of straps 56a and 56b shown in the drawings is only for convenience of illustration. During use of the structure, the shoulder straps will extend from the tops of the shoulders almost straight back substantially horizontally to the connections 70a and 70b, respectively. The fact that the pack frame 12 extends through a considerable distance upwardly beyond the head of the user is immaterial. Therefore, it becomes possible with this construction to adjust the particular backpack assembly to the requirements of a given individual providing the most comfortable mounting of the structure on the individual. It will be seen that with this construction there is an adjustment of the distance between the waist band 34 and the connections 70a and 70b, so that the point of connection of the shoulder straps to the fastening straps, respectively, is adjusted in elevation with respect to the waist to be accommodated to the distance between the waist and shoulders of a given individual.

It is furthermore to be noted that the headed pins 74a and 74b are in any event present on a conventional pack frame 12. These headed pins are conventionally used to connect the upper rear ends of the shoulder straps to the pack frame, but of course with this conventional construction there is no possibility of adjusting the elevation of the connection of the shoulder straps to the pack frame. However, with the structure of the invention no particular tools or special modifications of the conventional structure are required. The fastening straps

58a and 58b are simply passed around the transverse frame member 20 and 22 of the conventional pack frame 12 and fastening pins 74a and 74b are passed through selected openings of the fastening straps in the manner described above, so that in this way the structure of the invention can be used with conventional constructions without any difficulty.

Also, it is to be noted that the shoulder-engaging means 54 functions only to balance the load. There is no supporting of the load which instead is supported from the waistband 34, as pointed out above, by way of the loops 46a and 46b of the waist-encircling means 32. Thus, when using the structure of the invention, the user will quickly and instinctively assume an attitude where the load creates no rearward or forward pull at the shoulders and instead is balanced at the loops 46a and 46b. As a result, it becomes possible to eliminate any discomfort at the shoulders, and the possibility of fatigue is very greatly diminished.

Under some conditions the user may not wish to have the waistband 34 extending around his waist and buckled at the front. For example, when the pack frame 12 is carried without any load or is lightly loaded, it may be so light that the user may simply wish to support the lightly loaded pack frame at his shoulders, thus providing a convenient solution to the problem of carrying about the light load. For this purpose it is only necessary for the user to turn the waistband 34, which is now unbuckled, around its longitudinal axis so that the waistband can extend around the pair of side frame members 14a and 14b and be buckled at the rear of the lower region of the pack frame 12, as indicated in dot-dash lines in FIGS. 1 and 2. In this way the padded waistband 34 will comfortably engage the user since the buckle is directed rearwardly, and the light load will simply be supported at the shoulders with the band 34 padding and insulating the user's back from transverse member 20.

FIG. 3 illustrates an embodiment which will accomplish the same results as the structure described above. The embodiment of FIG. 3 differs from that of FIGS. 1, 2 and 5 only with respect to the fastening straps and the connections of the shoulder straps thereto, respectively.

Thus, referring to FIG. 3, it will be seen that instead of the fastening strap 58b there is a fastening strap 80b connected at its top and bottom ends with the upper and lower transverse frame members 22 and 20 respectively extend. For this purpose the fastening strap 80b extends around the transverse frame member 20 and is attached to and carries a slider 84b. An unillustrated strap corresponding to the strap 58b is provided for the strap set which is not illustrated in FIG. 3. The strap 80b is formed with a series of openings distributed therealong and reinforced by the grommets 82b, and in addition the strap 80b has a buckle assembly above slider 84b which enables the strap to be pulled tightly between the transverse frame members 20 and 22. It is to be noted that the headed pin 74b extends through a top opening of the strap 80b to connect it to member 22 and to prevent it from shifting along the transverse frame member 22. The unillustrated fastening strap of the other strap set which is not shown in FIG. 3 is constructed in precisely the same way and has the position occupied by the strap 58a of FIG. 1.

In the embodiment of FIG. 3 the upper free end of the shoulder strap 56b is formed with an opening reinforced by a grommet, and this opening can be aligned with any selected one of the series of openings of the fastening strap 80b. A releasable fastener 86b passes through the aligned grommets to releasably fasten them to each other. This fastener may take the form of a suitable bolt and nut, for example. Thus, the releasable fastener 86b enables the upper free end of the shoulder strap 56b to be connected to any selected one of the openings formed in the fastening strap 80b, so that the adjusting means of the embodiment of FIG. 3 also enables the elevation of the connection between the shoulder and fastening straps to be adjusted. The unillustrated set of straps of the embodiment of FIG. 3 are capable of being adjustably connected to each other in precisely the same way. Thus, this embodi-

ment will also achieve all of the advantages of the embodiment of FIGS. 1, 2 and 5. During use, the shoulder straps of the embodiment of FIG. 3 will extend substantially horizontally forwardly from the fastening straps, respectively.

Thus, with the structure of the invention the load will be primarily carried at the hips while the shoulders will have only a balancing function, and in this way the possibility of rapid fatigue is very greatly diminished and at the same time an exceedingly comfortable transportation of a load will be provided. Because the waistband 34 of the waist-encircling means 32 extends completely around the waist of the wearer and engages the waist through the entire 360°, there is no possibility of the formation of a free open space in which the waist of the user can move about with respect to the structure. Furthermore, the structure of the invention is readily adapted to existing structures without any particular tools or the like being required for this purpose, and the cost of the structure of the invention is very low. The assembly of the components of the invention with the pack frame requires no particular skill and can be very rapidly and conveniently carried out.

I claim:

1. A backpack assembly comprising a pack frame having a lower end region, waist-encircling means for encircling the waist of the user of the assembly, said waist-encircling means being operatively connected to said lower region of said pack frame for supporting the latter and a load carried thereby on the hips of the user, and shoulder-engaging means for engaging the shoulders of the user, said shoulder-engaging means being operatively connected to said frame at least in part at a region thereof higher than said lower region for balancing said frame and a load carried thereby on said waist-encircling means, so that balancing of the frame and load will take place at the shoulders and supporting of the frame and load will take place at the hips of the user of the assembly, said waist-encircling means including a 360° waistband which is adapted to completely encircle the waist of the user, and said pack frame including a pair of outer substantially upright side frame members, and said waist-encircling means further including a pair of substantially nonstretchable loops fixed to said side frame members, respectively, and through which said band passes, said frame further including a transverse frame member extending at said lower region of said frame between and connected at its ends to said side frame members, respectively, and said transverse frame member also extending through said loops.

2. The combination of claim 1 and wherein said loops are fixed to said side frame members beneath said ends of said transverse frame member, respectively.

3. The combination of claim 1 and wherein said frame further includes an upper transverse frame member situated over said transverse frame member at said lower region, said

shoulder-engaging means including a pair of fastening straps each extending between and connected to said transverse frame members and a pair of shoulder straps respectively having upper ends connected with said fastening straps and lower ends connected to said side frame members at said lower region of said frame.

4. The combination of claim 3 and wherein each fastening strap and shoulder strap connected thereto forms a set of straps, and adjusting means coacting with at least one of the straps of each set for adjusting the elevation of the connection between the straps of each set.

5. A backpack assembly comprising a pack frame having a lower end region, waist-encircling means for encircling the waist of the user of the assembly, said waist-encircling means being operatively connected to said lower region of said pack frame for supporting the latter and a load carried thereby on the hips of the user, and shoulder-engaging means for engaging the shoulders of the user, said shoulder-engaging means being operatively connected to said frame at least in part at a region thereof higher than said lower region for balancing said frame and a load carried thereby on said waist-encircling means, so that balancing of the frame and load will take place at the shoulders and supporting of the frame and load will take place at the hips of the user of the assembly said pack frame including a pair of substantially upright outer side frame members and upper and lower transverse frame members extending between and connected to said side frame members, said shoulder-engaging means including a pair of shoulder straps respectively having lower ends connected to said side frame members and said pair of shoulder straps adapted to extend from lower ends of said side frame members upwardly around the front and then over the shoulders of the user back to said pack frame where said shoulder straps respectively terminate in upper ends, and said shoulder-engaging means further including a pair of fastening straps respectively connected to said upper ends of said shoulder straps and each carried by said upper and lower transverse frame members, each fastening strap and the shoulder strap connected thereto forming a set of straps, and adjusting means coacting with at least one of the straps of each set for adjusting the elevation of the connection between the straps thereof, said adjusting means including an elongated portion of each fastening strap formed with a plurality of openings passing therethrough and distributed therealong, said shoulder straps being respectively fixed permanently to said fastening straps and a releasable fastener carried by one of said transverse frame members and extending through a selected one of said openings of each fastening strap for situating the connection thereof to a shoulder strap at a selected elevation, each of said fastening straps being in the form of an endless band extending around said upper and lower transverse frame members.

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