

G. H. PALMER.
Knapsacks.

No. 139,731.

Patented June 10, 1873.

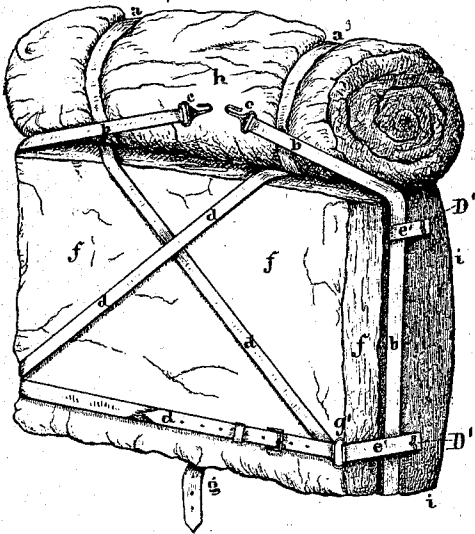


Fig. I

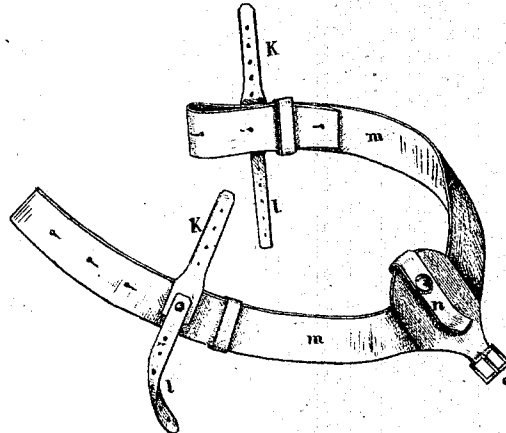
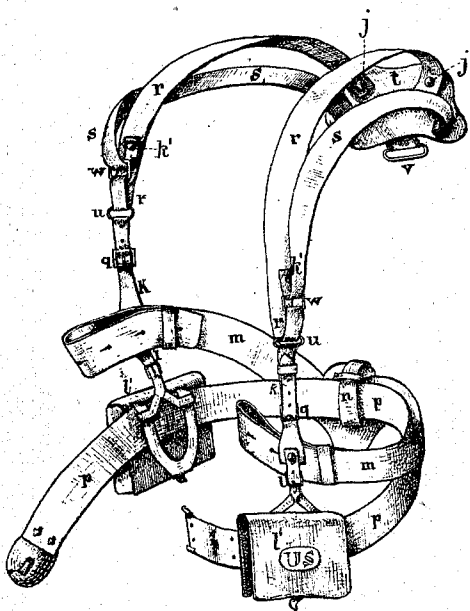


Fig. II



Witnesses: Fig. III

James Van Voast
Wm. V. Richards

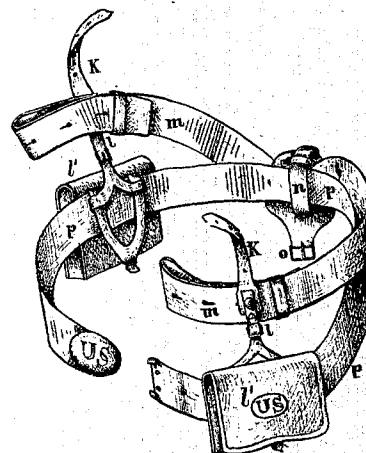


Fig. IV Inventor:

George H. Palmer.

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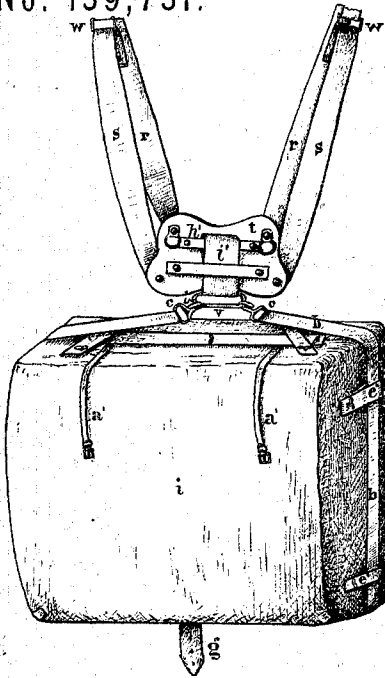


Fig. V

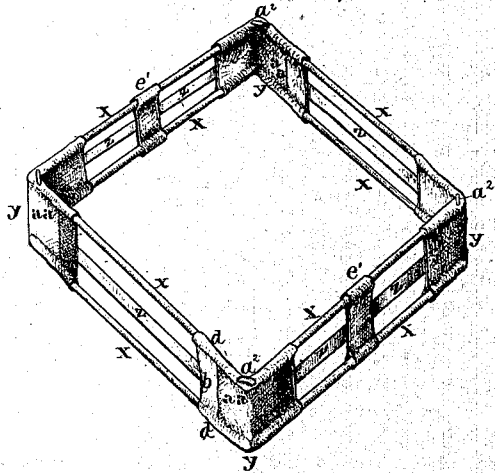


Fig. VI

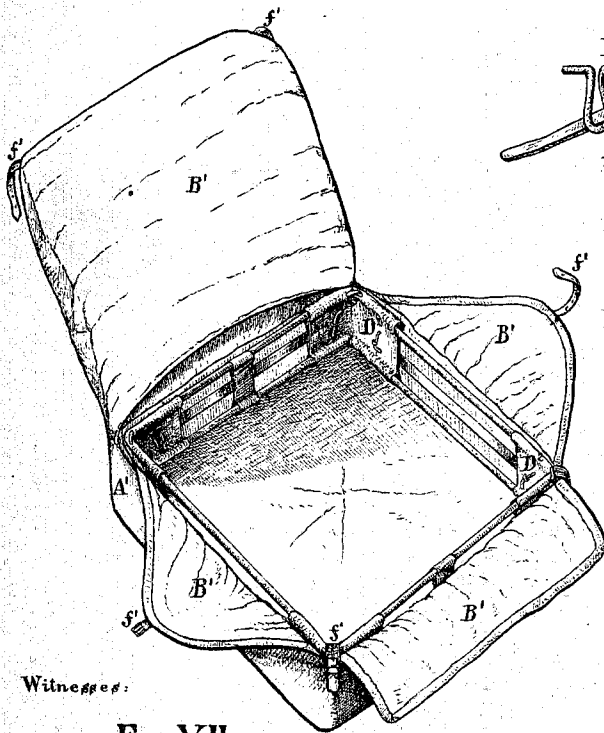


Fig. VII

Witnesses:

James Van Bratt
H. V. Richards

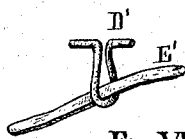


Fig. VIII

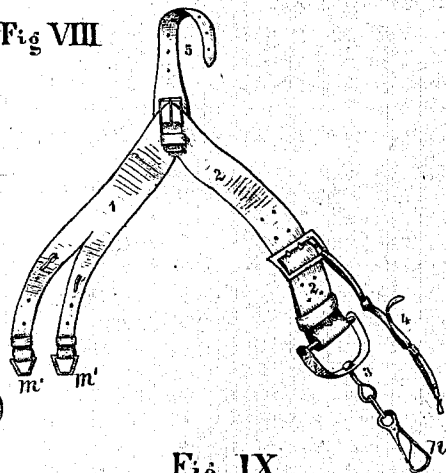


Fig. IX

Inventor:

George H. Palmer

UNITED STATES PATENT OFFICE.

GEORGE H. PALMER, OF MONMOUTH, ILLINOIS.

IMPROVEMENT IN KNAPSACKS.

Specification forming part of Letters Patent No. **139,731**, dated June 10, 1873; application filed January 6, 1873.

To all whom it may concern:

Be it known that I, GEORGE H. PALMER, of Monmouth, in the county of Warren and State of Illinois, have invented a new and useful Improvement in Army Equipments, of which the following is a specification:

The invention consists in the improvement of knapsacks, as hereinafter described and pointed out in the claims.

Figure 1 is a perspective view of the knapsack, showing the side next to the back of the wearer with the blanket strapped on it and the over-coat strapped on the top. Fig. 2 is a perspective view of the waist-brace, the back-pad, and straps for connecting the waist-brace to the shoulder-straps. Fig. 3 is a perspective view of the back-pad, shoulder-straps, waist-brace, carrying-braces, and cartridge-boxes. Fig. 4 is a perspective view of the waist-brace, carrying-braces, cartridge-boxes, and the straps for suspending them from the shoulder straps. Fig. 5 is a perspective view of the knapsack suspended from the back-pad. Fig. 6 is a perspective view of the skeleton frame. Fig. 7 is a perspective view of the covering applied to the frame with the flaps for opening the knapsack raised. Fig. 8 is a detail view of the device for detachably connecting the straps to the knapsack and the cover to the frame, and Fig. 9 is a perspective view of the saber and carbine-sling.

Similar letters of reference indicate corresponding parts.

I make the frame of small, tough, flexible pieces of wood, X, butted together at the ends and secured at the corners by strong duck, canvas, or other heavy cloth, *b*, in which the sticks are bound at the edges, as shown in Fig. 6; and between the sticks are strong thick pieces of leather *a a*, fastened to the cloth and turned around the corners. They are to hold the sticks apart the width of the cloth pieces *d*, and to afford sufficient strength for holding the covering and the straps, which are attached to them. About half an inch from the end the wood pieces have a hole by which they are tied together by strong leather strings, as shown at *a*². The cloth pieces of each corner are connected together by straps Z, which prevent them from sliding up on the rods, and bind the frame strongly together at

the corners. The rods of each side of the frame may also be connected together at the middle by canvas pieces *e'*, if preferred, and they may also be re-enforced by strong leather pieces like *a*¹ *a*¹, if desired. The cover *A'*, of flexible material, preferably glazed canvas or India-rubber cloth, being shaped so as to envelop all sides except one and having flaps, *B'*, for that, as represented in Fig. 7, is fastened on by metal loops *D'*, Fig. 8, with a toggle piece, *E'*, the said loop being inserted through the canvas and leather corner-pieces, as represented at *D*², and the flaps are provided with means of buckling together when folded down, as indicated by the buckles and straps *f'*. *a*³ represents the coat-straps; *h*, the coat; *b*, the suspending-straps; *d*, the blanket-straps; and *e' e'*, loops for the suspending-straps. The lower loop-straps *e'* also unite with the straps *d* by the metal loops *e'* to secure the blanket, the said straps *d* passing through the metal loops and meeting and buckling together at the middle of bottom of the knapsack. The loops *e' e'* are connected to the knapsack by the metal loops *D'*, that they can be readily shifted as may be required for changing the knapsack sides about. *t* is the back-plate with a metal loop or ring, *i* suspended from a bar, *h'*, by a leather loop, *i'*, to which the knapsack is attached by hooks C, so that it can be readily detached at any time. *r* and *s* represent the double shoulder-straps; *m*, the waist-brace; and *p*, the waist-belt. The shoulder-straps are connected to the back-plate *t* by rivets *j*, which are suitably arranged to allow the straps to turn freely as required in separating and adjusting them on the wearer, also for shifting them about to different positions for ease in sustaining the load. *s* are the outer straps, and *r* the inner ones—two for each shoulder. They are wider along the middle than near the ends, for greater bearing-surface. The straps pass through the metal loops *w* on the straps *r*, at the front ends, and are secured to the said straps *r* at *k'* by rivets, which allow them to turn freely. The straps *r* pass through metal loops *u* in the straps *k*, by which the waist-brace *m* and the waist-belt *p* are suspended. The waist-belt *p* passes through the loop *u* on the brace *m* at the back, at which point the said brace *m* has a point extending downward in the angle of the back, and ter-

minates with a buckle, *o*, for the connection of the strap *g* at the bottom of the knapsack. *U* represents the cartridge-boxes, which are detachably connected to the waist-belt *p*.

In Fig. 9 the combined saber and carbine sling is represented by the straps 1, 2, and 5, 1 being the saber-sling, which is split upward to within about six inches of the junction with strap 2, and has a metal loop, *m'*, at the end of each branch for hooking on the saber. 2 is the carbine-sling, to which a hook, *n'*, is swiveled at 3, and a snap-hook is attached by strap 4. This sling is attached to the back-pad *t* by the buckle and strap 5, and the strap 4 is carried forward under the right arm and hooked into the metal loop *w*, ring *u*, or buckle *g*, as preferred.

The knapsack-frame is covered with linen or cotton duck, having on one side a water-proof flap of vulcanized-rubber cloth. It may be reversed on the back by simply hooking it from the back-pad, turning it, and changing the supporting-straps to the opposite side. By this means the canvas back may be turned outward in hot weather, and the water-proof flap outward in rainy weather. The glazed flap is protected from the sun when turned toward the back.

The knapsack is easily manipulated. It sets closely to the back. Whatever is strapped to it on the side next the back has a tendency to make it tip toward the back instead of from the back. The straps and the covering attached to the frame may be removed and replaced at pleasure. The knapsack may be worn at almost any place desired on the back. When the overcoat and blanket are strapped on it is more comfortably worn so that the top of the overcoat shall be about as high as the shoulders. On campaign, the knapsack may be left in quarters, and the blanket, overcoat, haversack containing rations, attached to the back-pad. The overcoat, when the knapsack is carried, may be attached, by its straps, to the back-pad. At inspection or on the march the knapsack can be unhooked from the back-pad, leaving the overcoat and the carrying-braces on the body, and the soldier can lie down to rest with the overcoat still fast to the back-pad, the overcoat serving for a support to his head and shoulders. He can also unbuckle his waist-belt, and none of his equipments will fall off should he spring suddenly from the ground, his waist-belt being unbuckled.

The knapsack may be put on and off three ways. The braces are first put on, and the knapsack hooked to the back-pad. The waist-belt, with waist-brace attached, may be buckled on, and the knapsack, with back-pad hooked on, swung on the back; or the carrying-braces may be attached to the knapsack, and all put on together like a coat. They are taken off in a similar manner. All are taken off together by unbuckling the waist-belt and pushing the straps off the shoulders.

By the carrying-braces a man may carry or

drag a heavy load without the use of his arms, leaving his body unbound, without pressure on chest or around the waist. They are light and simple and easily repaired when broken. They set snugly on the person, yet comfortably, and can not fall off the shoulders, though worn without a waist-belt. From one to four cartridge-boxes may be worn on the waist-belt and supported on the back and shoulders. Cartridge-boxes, or other articles attached to the waist-brace or the waist-belt, and carried behind the back, are supported by the back part of the hips, the shoulders, and back, and tend to balance the weight of the pack attached to the back-pad. When applied to cavalry, these braces support on the back and shoulders the weight of the cavalryman's arms and ammunition, thus relieving the waist and hips of the weight of the saber, the pistol, and the cartridge-boxes. They are worn the same as the infantry braces, the carbine-sling taking the place of the knapsack on the back-pad. The carbine cartridge-box is carried behind the back, at the apex of the waist-brace, which supports it, the cartridge-box balancing the weight of the carbine. The soldier may ride or march with his belt unbuckled without having the equipment disarranged. If he is required to do duty on foot he can strap his clothing, &c., to the back-pad of the braces. The carrying-braces tend to hold the body in an erect position, and prevent the shoulders drooping forward. The bars on the back-pad *t* may be dispensed with and the metal ring or hook *v* attached to the middle of the back-pad by a leather strap or loop. Near the upper corners of the back-pad small metal rings *a*² may be attached by leather straps, to receive straps to bind any load to the back-pad. The saber-sling may be dispensed with, and the carbine-sling alone attached to the back-pad, and the saber suspended on the waist-belt, so as to be supported on the shoulders and back by the carrying-braces, the strap *i*, on the waist-brace, being buckled to the waist-belt and supporting waist-belt and saber. By drawing up or letting out the strap *g* in buckle *o* the weight of the knapsack is changed from the shoulders to the hips, or equally divided between shoulders, back, and hips, or all weight placed on the hips, or all on the shoulders. These changes are for the purpose of giving ease to the wearer.

I propose in practice to have the skeleton frame covered with heavy cotton or linen canvas with straps and buckles attached for closing its side flaps, so that when this canvas covering becomes soiled it can be removed from the frame and washed, and on this I will have an outside flap of vulcanized-rubber cloth, covering the top and one side of the knapsack, but not attached to the canvas covering of the frame, but to the top of the frame, by the same brass loops, Fig. 8, that hold the blanket-straps to the frame. It will be adjustable to either side of the knapsack,

and can be put on or off the knapsack without removing the canvas covering. The flap will be held down by straps attached to its lower edge, buckling into buckles attached by straps which will be attached to the bottom of the knapsack by the brass loops, Fig. 8. The suspending-straps *b* of the knapsack may, instead of terminating in the hook *C*, be attached (at those ends) to a ring, and this ring hooked on the hook *v* on the back-pad.

The back-pad obviates the necessity of attaching straps supporting the knapsack directly to it. Its shape enables the straps for the shoulders to be attached in such a manner as to separate them on the back and shoulder, giving more bearing-surface. It confines the straps so that they cannot slip off the shoulders. It gives additional bearing-surface for the weight carried. It prevents the load carried from pulling directly downward on the shoulders. It tends to pull toward the center of the back, which, by means of the pad, supports a portion of the weight. It obviates the necessity of having the straps which pass over the shoulders continue any further down the back than the back-pad. In other carrying-braces the straps pass down the back and under the arms, round the waist, and compress the chest.

The manner of connecting together the front ends of the shoulder-straps insures an equal bearing of each strap on the shoulder when a load is carried. If the ends were connected directly together without using the metal loop *w*, then, when a load was carried, one strap would sometimes sustain all the weight—the strap would have too much play in the loop *w* which holds the buckle. The outside strap, being riveted to the inside strap *r* at its swell or widest part, separates the straps, giving more bearing-surface in front of the shoulders. The waist-brace, in combination with the shoulder-straps and back-pad, supports the load, and enables the wearer to shift its pressure from one place to another to give him ease. The knapsack being on the back-pad and the strap *g* attached to buckle *o* on the waist-brace, the load rests equally on both shoulders and upper part of back. Now, by shortening the strap *g* the bottom of the knapsack may be brought to

rest on the sacrum or back part of the hips, a portion of the weight being taken from the shoulders. By taking up this strap still more, and letting out the straps *k*, the knapsack rests on the sacrum, and the pressure on the shoulders is transferred to their front portion, and is only sufficient to prevent the top of the knapsack from falling back. By letting out the strap *g* the whole weight may be brought to bear on the back and shoulders. The waist-brace supports the waist-belt, and whatever is slung to the waist-belt, at three points—the two straps *i* and the loop *u*. At the apex it supports the waist-belt and a portion of the load carried on the back-pad.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The knapsack-frame of flexible wood sticks *X*, canvas corner-pieces *b*, leather stiffeners *a a*, connecting-straps *Z*, and ties *a*², combined substantially as specified.

2. The combination, with a knapsack-frame constructed as described, of cover *A' B'* detachably attached to said frame, substantially as specified.

3. The coat-straps *a*, blanket-straps *d*, suspending-straps *b*, and loops *e' e'*, combined and arranged in detachable and adjustable connection with the knapsack, substantially as specified.

4. The combination of the back-pad, double shoulder-straps, and waist-brace *m*, substantially as represented in Fig. 3.

5. The combination of the waist-belt *p* with the waist-brace *m* and shoulder-straps, substantially as specified.

6. The combination of the saber and carbine slings, substantially as specified.

7. The combination of the saber and carbine slings with the back-pad and shoulder-braces, substantially as specified.

8. The detachable fastening-loop *D'* and toggle-piece *E*, in combination with the knapsack and the straps attached thereto, substantially as specified.

GEORGE H. PALMER.

Witnesses:

JAMES VAN VOAST,
W. V. RICHARDS.