(No Model.)

A. SÖHNER.

FRAME FOR CARRYING KNAPSACKS, &c.

No. 385,429. Patented July 3, 1888.

Fig. 1.

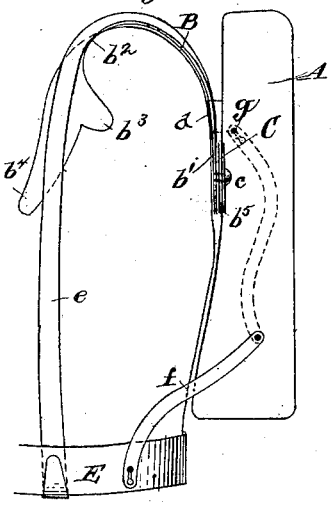


Fig. 2.

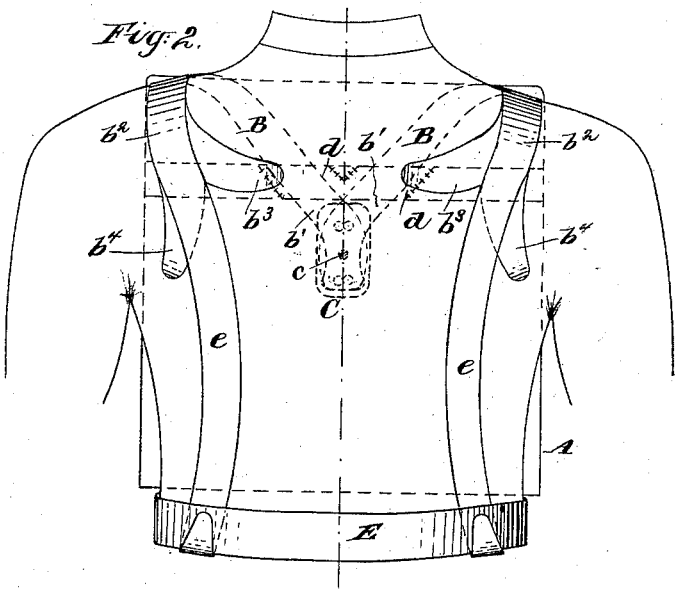


Fig. 3.

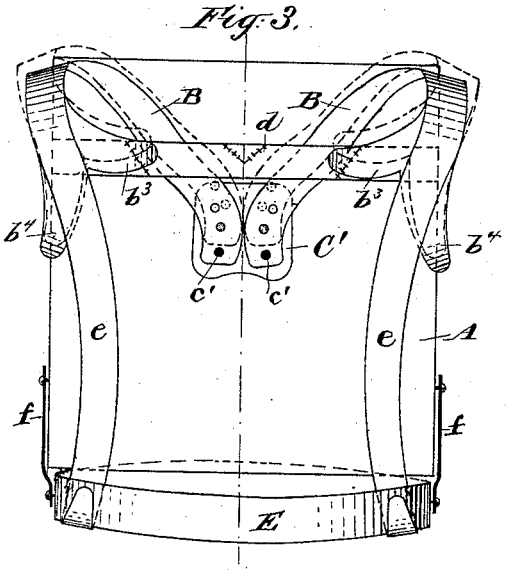


Fig. 5.

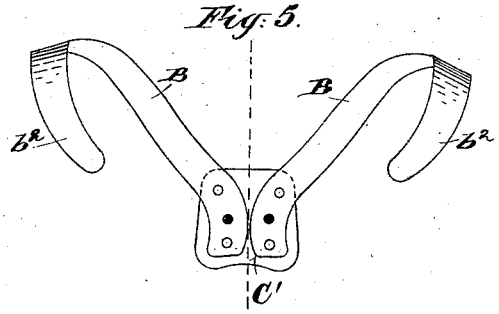


Fig. 6.

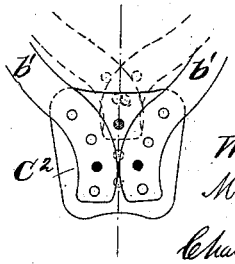
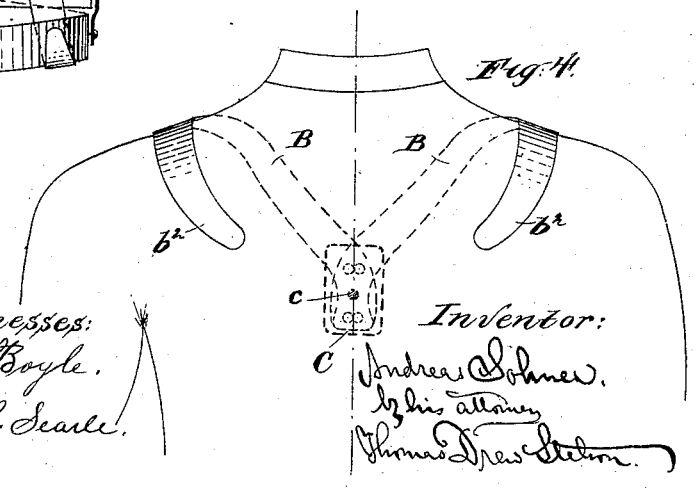


Fig. 4.



Witnesses:
M. F. Boyle.
Charles R. Searle.

Inventor:
Andreas Söhner.
by his attorney
Thomas Drew Stetson.

UNITED STATES PATENT OFFICE.

ANDREAS SÖHNER, OF BERLIN, GERMANY.

FRAME FOR CARRYING KNAPSACKS, &c.

SPECIFICATION forming part of Letters Patent No. 385,429, dated July 3, 1888.

Application filed June 27, 1887. Serial No. 242,620. (No model.)

To all whom it may concern:

Be it known that I, ANDREAS SÖHNER, residing at Berlin, in the Kingdom of Prussia, in the German Empire, have invented a certain new and useful Improvement in Frames for Carrying Burdens on the Back, of which the following is a specification.

In the present invention the center of gravity of a burden—as, for example, a knapsack—carried on the back is placed, essentially, high and forward without bending forward the upper body. It further reduces the effect of torsion, which tends to bend the upper body backward. The vertical pull (or weight) is received directly and equally by the shoulders, and the torsion is effectually resisted by a fair bearing on the upper part of the thorax.

The back frame consists, essentially, of two supporting-hooks of elastic or flexible metal, as steel or hard brass, or of whalebone, cane, or any other suitable material, which hooks will rest upon the shoulders of the person, bent according to the form of the wearer, each of the hooks reaching with one arm down the back and with the other arm down the breast of the person, and both being adjusted in position. The burden is fastened near the lower part of the back arms of the hooks. Thereby the hooks lie close upon the shoulders, while the breast-arms thereby will bear against a strong portion of the breast. The back arms may be arranged on the back, either separately at the side of one another, or together, one over the other. They are adjusted connected to a sufficiently-large metal plate to which the burden is fastened. In order that these supporting-hooks may be used without change, as well for broad or for narrow and tall or short men, the back arms and the metal plate are so provided with holes that the back arms may be connected with the plate at different lengths, and a lateral regulation be effected by joining either the lower or the middle or the upper holes of the hooks with either the lower, the middle, or the upper holes of the metal plate. The application of the burden to the plate at the back may also be varied. If a lower point of application be given to the burden, the frame will become adapted for taller men; or, on the contrary, by transferring the point of application of the burden above the point of attachment of the back arms the frame will be adapted for small people.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a side elevation. Fig. 2 is a view from the front, showing the device in place. The remaining figures show modifications. Fig. 3 is a view from the front. Fig. 4 is a corresponding view of a part. Fig. 5 is a corresponding view of the same parts adjusted wider, and Fig. 6 is a corresponding view of a part with provisions for still further adjustment.

Similar letters of reference indicate like parts in all the figures where they occur.

In the preferred form of my invention A is the knapsack.

B B are the metal hooks; b' b', the back arms of the same, and b^2 b^2 the main breast-arms.

C is the metal plate. The soldier's knapsack is fitted to the metal plate C and fastened by riveting or sewing. The breast-arms are provided each with two branches, b^3 b^4, of which the upper ones, b^3, extend nearly horizontally along a fair bearing-surface beneath the collar-bone, and the lower ones, b^4, extend down by the side of the breast. The back arms, b', are connected by their middle holes with the middle hole of plate C. A bolt, *c*, connects plate C with the back arms and transmits the burden of the knapsack to my back frame. The width and thickness of the hooks are so calculated that the arms with a certain elasticity must join closely to the body. In order to give to the hooks a better hold and a guiding on the knapsack, a transverse piece, *d*, is fastened at its ends by sewing to the sides of the knapsack, beneath or behind which the back arms, b', pass loosely and are supported and may be guided upward or downward, as desired. The weight of the knapsack, supported by the bolt *c* and tending to fall backward, is partially held against such tendency by the strap *b*.

For aiding the breast-arms, and not depending upon their elasticity alone to properly hold the burden to the upper body, straps *e e* are extended from the bolt *c* over the shoul-

ders to a waist-belt, E, and there hooked fast. By this construction a secure fitting of the knapsack will be effected and the comfort of the wearer increased. Further, in order to transfer the burden of the knapsack partly upon the haunches, stays *f f* are provided between the knapsack and waist-belt. These stays also serve for lifting the knapsack somewhat off the back of the person, so that air may circulate between the knapsack and the back of the bearer, thereby avoiding a disagreeable sense of warmth or sweat on the body.

The said stay, when taking off the knapsack, may be brought into the position shown by dotted lines in Fig. 1 and retained there by buttons *g*.

Figs. 1 and 2 show a back frame with the back arms arranged overlapping one upon the other, suitably for narrow-chested men.

Fig. 3 shows carrying-hooks B B arranged side by side on a plate, C′, each hook with a bolt or pin, *c′ c′*, fastened in the lowest holes. The dotted lines show the hooks combined with the middle holes of the plate C′. It will be seen that by this higher placing, as well as a greater distance between the shoulder-vault and the point of suspension of the burden, an enlarging of the shoulder-width has been effected, so that the back-frame now will be adapted for a larger and broader-built person.

Fig. 4 shows the hooks B B, with their breast-arms b^2 b^2, without branches, arranged over each other on the plate C, as in Fig. 1. Fig. 5 shows the same hooks on a plate, C′, arranged at the side of one another, as shown in Fig. 3, thus accommodating the construction to a broader man.

Fig. 6 shows a plate so provided with holes as to permit the fastening of the back arms one upon the other, as well as at the side of one another.

The fastening of the burden to the plates C C′ C^2 of course may be effected in any suitable way analogous to the method shown in the drawings and corresponding to the special kind and form of the burden by suspending or putting the burden on hooks, catches, consoles, &c., combined with the plates, or by any other convenient means.

I claim as my invention—

1. The combination, with the burden A, of the frame for carrying said burden on the back, said frame comprising two hooks, B B, adapted to the form of the body and having holes in their longer arms, the perforated plate C, having a series of holes, and means, as the bolt C′, engaging the holes in the hooks and plate for adjusting the former in height and width, said burden being secured to said plate by a bolt, substantially as specified.

2. In a burden-supporter, the hooks B, whose front arms, b^2, are forked, as at b^3 b^4, for the purpose set forth, in combination with the plate C, to which the rear ends of said hooks are secured, the belt E, and flexible straps *e*, passing over the shoulders and connecting said belt with said plate, substantially as specified.

3. In a burden-supporter, the transverse strap *d*, in combination with the burden A and with the hooks B B, adjustably secured thereto, the strap passing between said hooks and the wearer and adapted to hold the upper part of the burden reliably to the hooks, while allowing the latter to be adjusted as to height and width, substantially as specified.

4. In combination with the hooks B B, for carrying burdens, the stays *f f*, pivoted to the lower portion of the burden, the buttons *g*, adapted to hold the stays when out of use, and suitable provisions for engaging said stays with the waist-belt E, adapted to allow the burden to be partially borne by the haunches when required, as herein specified.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ANDREAS SÖHNER.

Witnesses:

CARL GRONERT,

B. ROI.