July 23, 1940. G. DE FINETTI 2,208,962

LOAD BEARING APPARATUS FOR TRANSPORT ON SHOULDERS

Filed Sept. 7, 1937 2 Sheets-Sheet 1

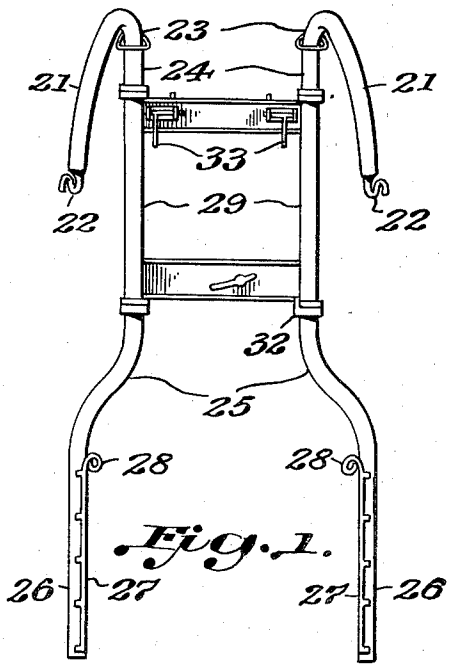


Fig. 1.

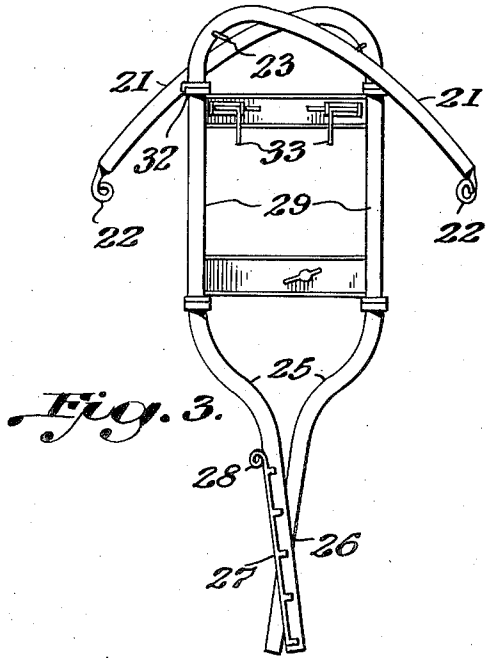


Fig. 3.

Fig. 4.

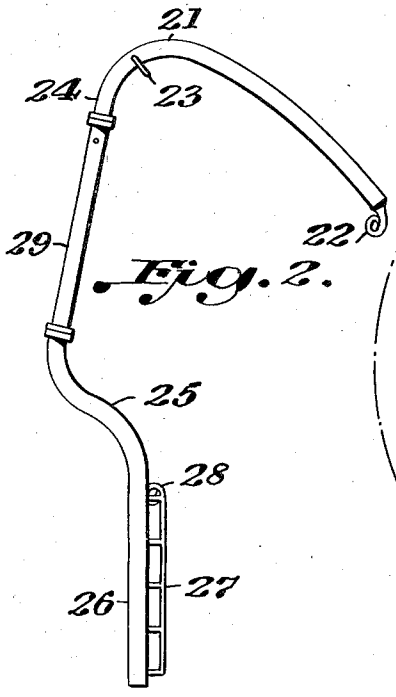
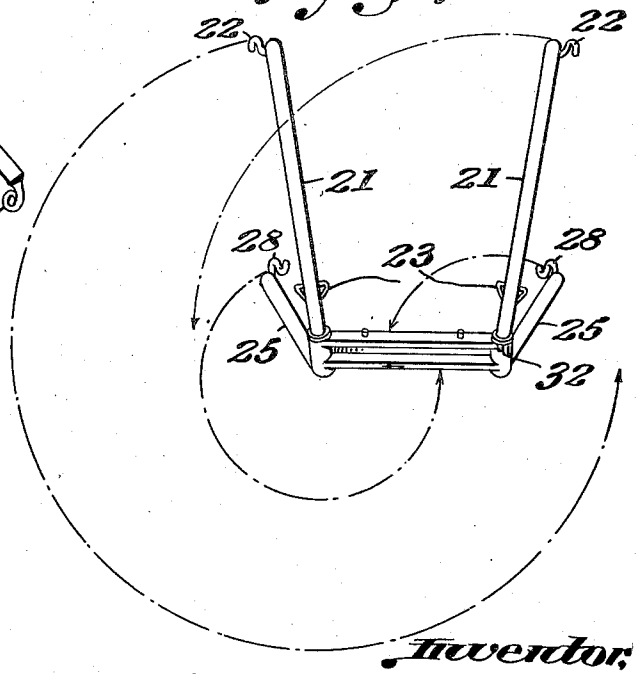


Fig. 2.



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Filed Sept. 7, 1937 2 Sheets-Sheet 2

Fig. 10.

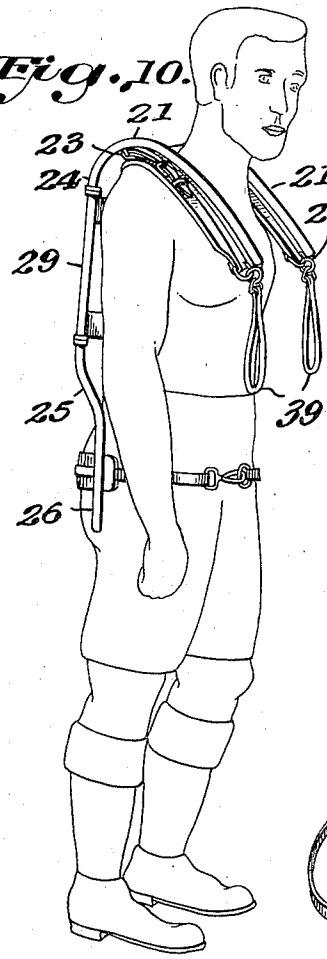


Fig. 5.

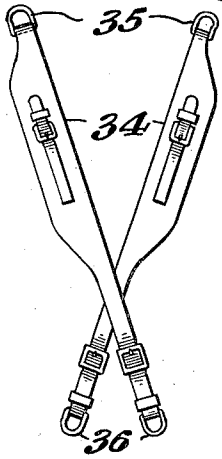


Fig. 11.

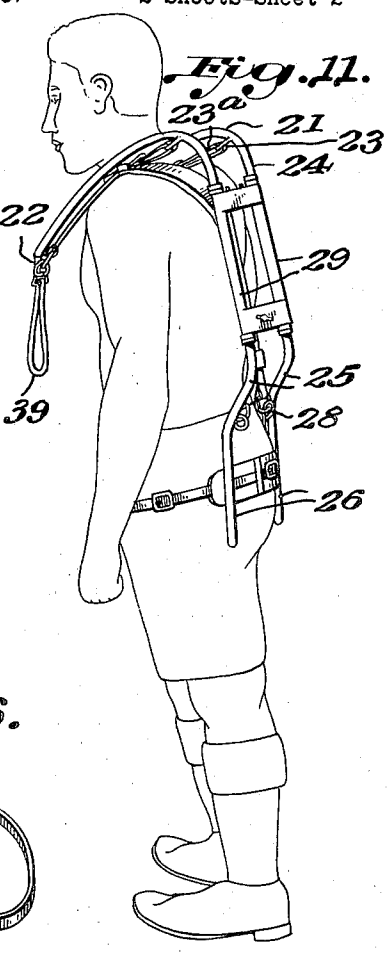


Fig. 6.

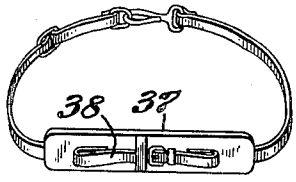


Fig. 8.

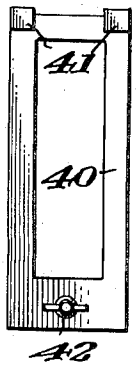


Fig. 7

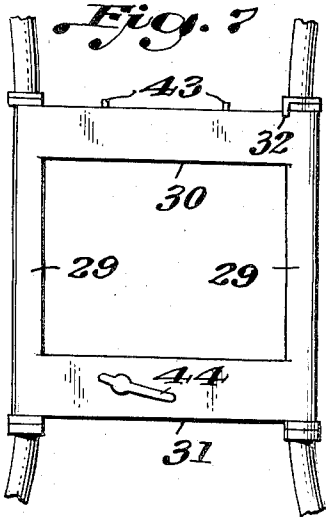
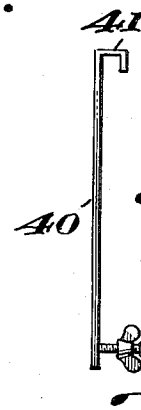


Fig. 9.



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UNITED STATES PATENT OFFICE

2,208,962

LOAD BEARING APPARATUS FOR TRANSPORT ON SHOULDERS

Giuseppe de Finetti, Milan, Italy, assignor to Alberta Hauss Burke, Cincinnati, Ohio

Application September 7, 1937, Serial No. 162,751
In Italy September 16, 1936

3 Claims. (Cl. 224—25)

As it is known, the transport on shoulders of loads of any kind is cause of great labour on plain ground and, all the more, on broken and steep ground. The devices employed up to now for this purpose are based on the use of shoulder-pieces through which the arms are passed, wherefore the force of gravity or weight of the transport apparatus (sack, basket, supporting frame, or the like) and that of the load is decomposed into a couple of forces which both have an oblique direction with respect to the vertical axis of the bearer's body; one of these forces acts backwards and reacts on the shoulders, with a compression of the shoulder muscles, the upper muscles of arms, and those of the thorax, thus limiting the freedom of respiration; the other force acts in a twisting sense from back to front, and compresses the bearer's loins causing sharp painful sensations as the load becomes considerable.

The present invention relates to a load bearing apparatus which eliminates the above drawbacks and removes any painful sensation in the lumbar region, and greatly reduces the human labour. Said apparatus, in fact, transmits the loads mainly on the bearer's shoulders, drawing it near to the vertical, and reduces to a small amount the twisting force acting from back to front, which is transmitted not to the lumbar region, but to the pelvis in the sacrum zone, leaving complete freedom to the chest, the sides and the waist-line.

More precisely, the invention resides in the combination of a metallic framework, comprising two rigid and robust but light elements, symmetrically at right and left of the bearer, connected to each other by horizontal transverse members, belts adhering to the shoulders, shoulder-blades and buttocks and fastened to said metallic framework, and a load-supporting device interchangeably fixed to said metallic framework.

The details of the apparatus will be described with reference to the attached drawings wherein several embodiments of the invention are represented by way of example.

Figs. 1 and 2 represent the front and side view of the part constituting the framework;

Fig. 3 represents the same framework folded in position of reduced outline;

Fig. 4 represents the plan of the same framework and indicates the sense of rotation of the various parts;

Figs. 5 and 6 represent the fixing belts of the framework represented by Figs. 1 and 4;

Fig. 7 represents the central part of the apparatus for the support of the interchangeable frames;

Figs. 8 and 9 represent a front and a side view of the interchangeable frame;

Figs. 10 and 11 represent the unloaded framework mounted on the shoulders of a bearer.

The apparatus consists of two distinct parts, i. e. the metallic framework and the fixing belts.

In the embodiment represented in the drawings the framework comprises two symmetric pieces which in the upper part, in correspondence to the bearer's shoulders, have the shape of a bow **21**, ending with a "pig-tail" hook **22** and provided with stirrups **23** directed downwards. In the intermediate portion, in correspondence to the bearer's back the two symmetric pieces are firstly straight as at **24**, then bent outwards and forwards as at **25**, ending with another straight portion **26** placed in correspondence to the sacral region of the bearer. On these terminal straight portions **26** are fixed on the framework several suitable stirrups **27**, ending on the top with a "pig-tail" hook **28**.

If it is desired to render the apparatus less cumbersome when not in use, the same may be constructed so as to be rendered foldable. In this case, the straight portions **24** of the framework are passed through two tubes **29**, wherein they may rotate. Said tubes are fixed to each other by horizontal transverse members **30—31**. By rotating within said tubes **29**, the framework may be folded and flattened, that is the portions **25** may turn their curve inwards (Fig. 3) while the upper portions **21** may cross with partial superposition with respect to each other. The sense of rotation is shown by the arrows in Fig. 4. Suitable stops **32** are provided to limit the rotation of the arms and two bolts **33** may fasten the framework in the open position.

The non-metallic part will be of leather, strong fabric or rubber. This comprises the elements: shoulder-pieces, belt and handles. The two-shoulder-pieces **34** extend into belts which cross on the back, ending with rings **35, 36** to be hung on "pig-tail" hooks **22** and **28** of the metallic framework. Said shoulder-pieces are provided superiorly each with a belt **23***a* which is fastened to the stirrup **23** of the framework. The band **37** fitted with buckle is adjustable in its length; it is fastened to the lower part of the metallic framework by a belt **38** passing through the stirrups **27**. The plurality of these stirrups **27**, already mentioned, allows one to vary the height of the band according to the tallness of the bearer. The handles **39** (Figs. 10 and 11) are provided

with a metallic ring to be hung on the "pig-tail" hooks 22.

The pieces described heretofore constitute the invariable part of the apparatus, whereon has to be fixed a load supporting device. In Figs. 8 and 9 one of the possible embodiments of said device is represented. It comprises a frame 40 provided at the top with two hooks 41 and at the bottom with a threaded bolt with wing-nut 42.

In relation with the above, the upper transverse member 30 of the main framework is provided with two registering teeth 43, the lower transverse member is provided with a slot 44 with a circular hole for the passage and fastening of the wing-nut 42. The load supporting frame now described will be variously completed by means of rings, arms of different outline and projection, hooks and so on, according to the type and characteristics of the load to be carried. Numberless interchangeable load supporting frames, different from each other, may be used.

Of course the constructive and dimensional details of the apparatus, the ways of adapting the same on the bearer's body and fastening the load on said apparatus may vary according to the requirements, without exceeding the limits of the present invention.

What I claim is:

1. An apparatus for the transport of loads on the shoulders of a person, comprising a metal frame formed of two horizontal transverse members and two robust but light supporting elements, upright tubes at each end of the transverse members, said elements extending from the buttocks of the person up over the shoulders and having substantially upright straight portions rotatably mounted in said tubes to enable said elements to be folded against the transverse members, belts adjustable with buckles, fastened to said metallic framework, bearing on the shoulders, shoulder-blades and buttocks in the sacrum zone and leaving complete freedom to the chest, sides and waist-line, a load-supporting device secured to said metallic framework, and means on said transverse members for fixing the apparatus in the open position.

2. An apparatus for the transport of loads on the shoulders of a person, comprising a rigid frame, two robust but light supporting elements for carrying said frame, each of said supporting elements having a substantially straight portion, an upper curved portion extending forwardly over the person's shoulders and a lower forwardly offset portion extending downwardly to the buttocks of the person, means for rotatably mounting said elements, one on each side of said frame, for rotation about substantially vertical axes to enable the forwardly extending and lower offset portions of said elements to be folded to lie substantially parallel to said frame, main flexible elements secured to the forward ends of the upper curved portions of said supporting elements and extending over the person's shoulders and downwardly and secured to the lower forwardly offset portions of said supporting elements behind the person, other flexible elements extending from the upper portion of said supporting elements behind the person's back forwardly and secured to the main flexible elements at points where the latter engage the person's shoulders, said main flexible elements being of an effective length less than the lengths of the supporting elements to maintain the latter spaced from the person's body and the combined effective length of the main and other flexible elements extending between the foremost and rear points of the portions of said supporting elements extending over the shoulders being less than the length of said supporting elements between said points, to maintain the supporting elements spaced from contact with the person's body, and a member extending between the lower forwardly offset portions of said supporting elements for engaging the buttocks of the person.

3. An apparatus for the transport of loads on the shoulders of a person, comprising a pair of robust but light supporting elements adapted to be placed on the person's back, said elements having a portion extending forwardly and downwardly over the person's shoulders to a point spaced forwardly from the person's chest, said elements having lower forwardly offset portions extending downwardly to the buttocks of the person, a rigid frame mounted on said elements intermediate said forwardly extending and forwardly offset portions, main flexible elements secured to the ends of the supporting elements spaced in front of the person's chest and extending over the person's shoulders and downwardly and secured to the lower forwardly offset portions of said supporting elements behind the person, other flexible elements extending from the upper portion of said supporting elements behind the person's back forwardly and secured to the main flexible elements at points where the latter engage the person's shoulders, said main flexible elements being of an effective length less than the lengths of the supporting elements to maintain the latter spaced from the person's body and the combined effective length of the main and other flexible elements extending between the foremost and rear points of the portions of said supporting elements extending over the shoulders being less than the length of said supporting elements between said points, to maintain the supporting elements spaced from contact with the person's body, and a member extending between the lower forwardly offset portions of said supporting elements for engaging the buttocks of the person.

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