

F. SMITH.
PARACHUTE PACK AND HARNESS.
APPLICATION FILED DEC. 31, 1919.

1,367,723.

Patented Feb. 8, 1921.
2 SHEETS—SHEET 1.

Fig. 11

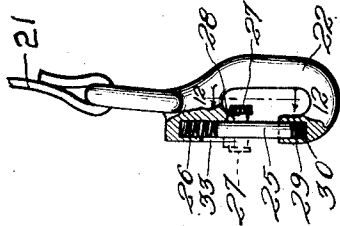


Fig. 12

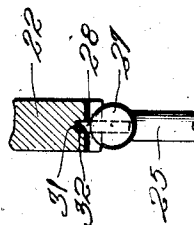


Fig. 3

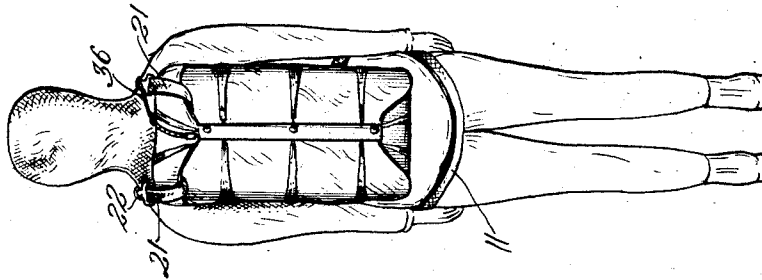


Fig. 5

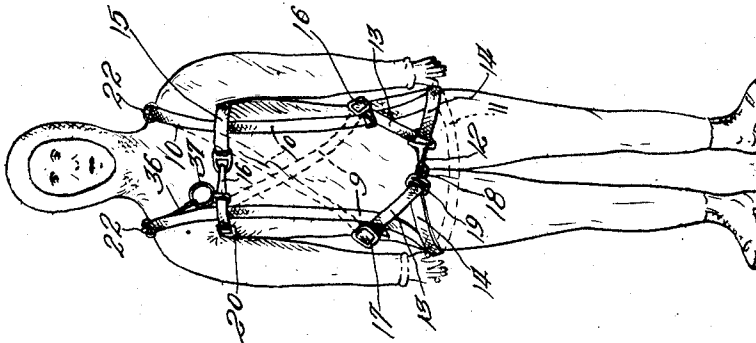
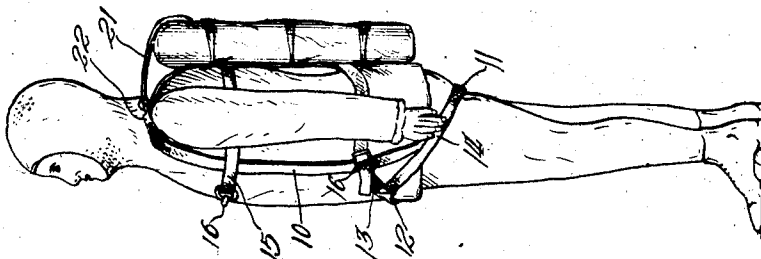


Fig. 1



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2 SHEETS—SHEET 2.

Fig. 4.

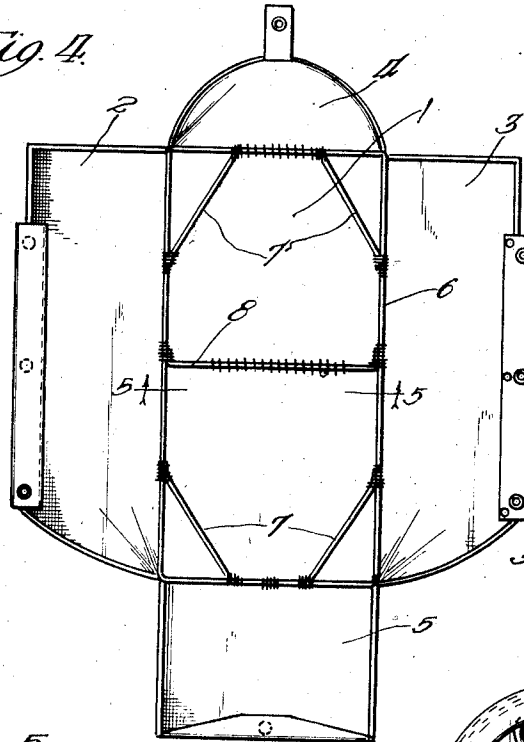


Fig. 5.

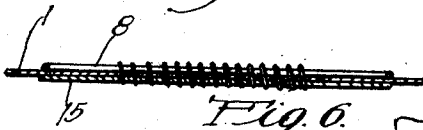


Fig. 6.

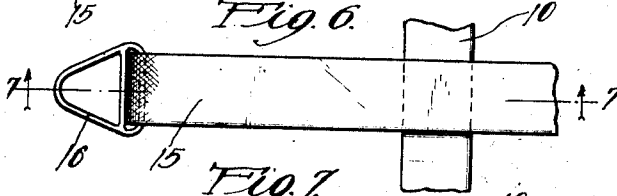


Fig. 7.

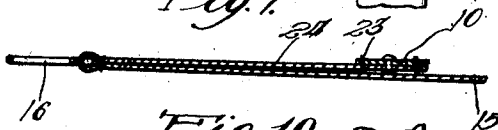
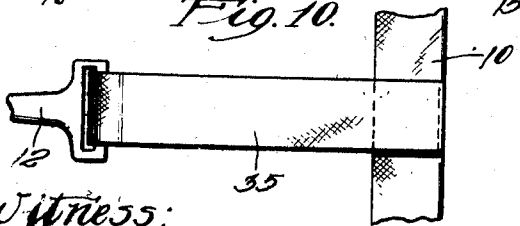


Fig. 10.



Witness:

Fig. 8.

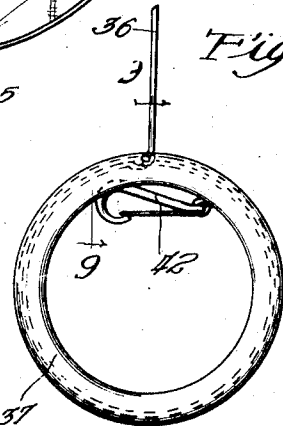
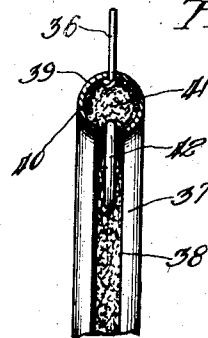


Fig. 9.



INVENTOR:

Floyd Smith,
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ATTORNEYS.

UNITED STATES PATENT OFFICE.

FLOYD SMITH, OF CHICAGO, ILLINOIS, ASSIGNOR TO FLOYD SMITH AERIAL EQUIPMENT COMPANY, A CORPORATION OF ILLINOIS.

PARACHUTE PACK AND HARNESS.

1,367,723.

Specification of Letters Patent.

Patented Feb. 8, 1921.

Application filed December 31, 1919. Serial No. 348,622.

To all whom it may concern:

Be it known that I, FLOYD SMITH, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Parachute Packs and Harness, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

In my prior applications Serial Nos. 246,999 filed July 27, 1918, and 293,047 filed April 29, 1919, I have disclosed a novel form of pack for parachutes and harness for supporting the pack on an aviator's back. The present invention has for its object to improve certain details of the pack and harness disclosed in the aforesaid applications so as to improve the construction thereof, simplify and make more convenient the attachment to and removal of the pack from the body of the aviator, and leave the aviator with more freedom of action when wearing the pack than has heretofore been the case.

A further object of the present invention is to produce a simple and novel harness of the type specified which may be readily adjusted so as to adapt it to fit persons differing greatly in size.

A further object of the present invention is to produce a simple and novel form of connection between the supporting straps or cables of the parachute and the harness which will permit the parachutist readily to release himself from the parachute as he nears the ground.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but, for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawings, wherein:

Figure 1 is a side view of an aviator wearing a pack and harness arranged in accordance with the present invention;

Fig. 2 is a front view and

Fig. 3 is a rear view of the aviator equipped as in Fig. 1;

Fig. 4 is a view of the inner side of the pack when it is opened out flat;

Fig. 5 is a section taken approximately on line 5—5 of Fig. 4 on an enlarged scale;

Fig. 6 is a fragment of the harness including a part of the breast strap and the adjacent part of the suspending strap or swing;

Fig. 7 is a section on line 7—7 of Fig. 6;

Fig. 8 is a side elevation, on an enlarged scale, of the ring adapted to be grasped by the aviator to open up the pack;

Fig. 9 is a section taken approximately on line 9—9 of Fig. 8, but on a larger scale than Fig. 8;

Fig. 10 is a fragment of a modification of the harness, including a section of the strap adapted to extend across the lower part of the body of the wearer and the adjacent part of the suspending strap or swing;

Fig. 11 is a view partly in side elevation and partly in section of an improved form of snap hook for attaching the harness to the supporting straps of the parachute; and

Fig. 12 is an enlarged section taken approximately on line 12—12 of Fig. 11.

The construction of the pack is best shown in Fig. 4, the same comprising a rectangular piece of flexible material, preferably waterproof fabric, having side flaps, 2 and 3, and top and bottom flaps, 4 and 5, respectively. The pack is the same as that illustrated in my aforesaid application Serial No. 293,047 except that there is a rectangular wire frame, 6, laid upon the rectangular central portion and secured thereto so as to register with the marginal edges of the latter. This frame serves to give to the pack when folded about a parachute a definite comparatively flat shape which prevents the pack from projecting out too far behind the aviator. The frame may be reinforced by braces extending across the corners as indicated at 7. The frame may also be cross-braced from side to side, one such brace being shown at 8. In packs of this kind the harness is attached to the central rectangular section, 1, and with the frame present, it is possible to attach the harness in such a way that the weight of the pack and its inclosed parachute will be transferred to the harness through the frame; thus insuring greater security of support and less danger of accidental tearing of the pack than where the harness is stitched directly to the fabric.

While it is essential that the harness be such as will securely support the parachute

ist when he is descending with the parachute, it is also highly desirable that the harness be such as not to cramp the wearer or interfere with his freedom of movement while carrying the pack or while descending with the parachute. In accordance with my invention I so construct the harness that the weight of the descending parachutist is adapted to be borne by a swing in which he is comfortably seated in such a manner as to retain freedom of movement for his legs; the wearer of the harness being therefore comfortable and having the free use of his legs at all times whether walking about, seated, or descending with the parachute. The swing is made up of two straps, 9 and 10, extending downwardly in front from the shoulders of the wearer to about the hips where they pass rearwardly and are joined together by a transverse strap, 11, on which the wearer will be seated when he assumes a sitting position. From the shoulders each of the straps extends diagonally across the back of the wearer to about the waistline, where both straps are brought forwardly and secured to the front members of the swing; the strap, 9, being attached at the waist to the strap, 10, and the strap, 10, being attached to the strap, 9. In order to tie the swing in place I employ connecting means between the lower ends of the approximately vertical front members, which connecting means extend across the lowermost part of the trunk of the wearer, instead of in the vicinity of the waist or around the legs as has heretofore been customary. In the arrangement shown, the connecting means consists of two wings fastened together at their meeting ends by a snap hook, 12, or the like. Each wing is preferably made up of two straps, 13 and 14, attached at their outer ends to the vertical front members of the swing at the waist and at the hips respectively; each set of straps, 13 and 14, and the intervening section of the corresponding vertical strap forming an open triangle whose base is near the side of the wearer and whose apex is in front of the wearer. To complete the harness there is a strap, 15, extending across the wearer at the chest, the same being fastened to the straps of the swing and having a snap hook or other readily detachable fastening device, 16, at the middle.

All of the straps are made adjustable so as to permit the harness to be quickly made larger or smaller to suit the figure of the person who is to wear it. Thus, at the point where the strap, 9, joins the strap, 10, in the vicinity of the waist of the wearer, and at the point where the strap, 10, similarly joins the strap, 9, are buckles, 17, which will permit the effective length of the swing to be varied. The adjustment in the lower front cross connection may conveniently be secured

by permitting the snap hook, 12, on one connecting member to be engaged in any one of a series of openings, 18, in a fitting, 19, arranged at the apex of the opposite triangular connecting member. The chest strap may conveniently be provided with a buckle, 20, for adjusting its length.

The harness is attached to the pack preferably by stitching those portions of the straps, 9, 10 and 15, which lie across the back of the wearer to the section, 1, of the pack at such points that there will be a direct connection between the harness and the metal frame in the pack.

The supporting straps, 21, from the parachute are attached to the harness by suitable fastening means, preferably snap hooks, 22, of a peculiar construction, at the shoulders.

In getting into the harness or taking it off the arms of the wearer must be slipped through the shoulder loops of the straps, 9 and 10, lying above the chest strap, 15. In order to make these arm openings large and thus permit the harness to be readily put on and off, I prefer to attach the strap, 15, to the straps, 9 and 10, in the manner illustrated in Figs. 6 and 7. Referring to these figures, it will be seen that the strap, 15, after passing forwardly, crosses the strap 9 or 10, as the case may be, and continues across the chest for a considerable distance. The end of the strap, 15, is then passed through the corresponding member of the fastening device, 16, and is carried back to the strap 9 or 10 where it is securely fastened by suitable fastening means, 23. When the chest strap is fastened around the body of the wearer its effective length is the distance between the two members of the fastening device, 16, without regard to the end sections, 24. When the strap is unfastened, however, its effective length becomes augmented by the end sections, 24, and therefore the front ends of the chest strap hang down in the form of loops at the time the wearer is getting into or out of the harness and he can freely slip his arms into and out of the shoulder loops.

It is often advantageous for the parachutist to be able to release himself from the parachute just before landing. This may conveniently be accomplished by making the snap hooks, 22, in the form illustrated in Figs. 11 and 12. When the parachute is descending, the snap hooks, 22, take vertical positions as illustrated in Fig. 11. These snap hooks are so formed that if the parachutist takes hold of the supporting straps, 21, at points just above the snap hooks, the latter may readily be unfastened without letting go of the straps so that, at the proper time, they may be unhooked from the harness. In the arrangement shown, the snap hook is provided with a sliding bolt, 25, normally held in its locking position by a spring,

26, the bolt being arranged vertically during the descent of the parachute. The bolt is provided with a laterally-projecting head or finger-piece, 27, having a projection, 28, extending in the direction of the length of the bolt. In the socket, 29, into which the free end of the bolt is entered when in a locking position is a spring, 30, acting in opposition to the spring, 26, and stronger than the latter. In the body of the hook, behind the projection, 28, is a notch, 31, into which the projection, 28, is adapted to be pressed by the spring, 30, so as to lock the bolt against turning. The projection has a cam-shaped face, 32, which permits the projection to be lifted out of the notch and the bolt to be turned when the parachutist presses laterally on the head or finger-piece, 27, with a finger or thumb. When the bolt is turned through an angle of 180 degrees so as to bring the head and projection into the position illustrated in dotted lines in Fig. 11, the shank portion of the member 27 and the projection register with a slot, 33, communicating with the bolt chamber and therefore the bolt may be moved upwardly into an unlocking position. It will thus be seen that normally the bolt is locked against accidental displacement because the member 27 and the projection, 28, serve as stops to prevent it from being retracted. When the hook is to be unfastened the bolt must first be turned through an angle of 180 degrees and it may then be lifted.

Instead of making the connection between the lower ends of the vertical portions of the swing of the harness in the manner heretofore described, it may in some cases be sufficient to use a single strap fastened to the strap, 9, and another single strap attached to the strap, 10, as illustrated in Fig. 10.

It will usually be the practice to open a pack of the character described by means of a pull cord, 36, as illustrated in Fig. 2, lying along one of the straps of the harness and having a ring, 37, which may conveniently be grasped by the parachutist, to operate the cord. In Figs. 8 and 9 I have illustrated an arrangement which will permit the pack to be opened in this manner while at the same time providing means to connect the pull cord to some part of an airplane or other vehicle of the air, if desired, so that the parachute will be opened automatically when the parachutist jumps. Referring to these figures, 37 represents a ring of comparatively large diameter made out of a tube having a slot, 38, extending around the same at the inner diameter. The pull cord, 36, extends through an opening in the periphery of the ring and is provided with a knot, 39, within the tubular section thereof. An additional length of cord or cable, 40, beyond the knot, is then coiled up within the

tube and is sealed in place by a filling, 41, of paraffin or other material, which will permit the section, 40, to be readily withdrawn. The free end of the part, 40, of the cord or cable is provided with a snap hook, 42, or the like which, when the parts are assembled, projects out of the slot in the tube so as to be in position to be grasped for the purpose of withdrawing the attached length of cord or cable.

I claim:

1. A harness comprising a U-shaped swing made up of approximately vertical front members and a lower cross member adapted to serve as the seat of the swing, the upper ends of said front members being carried rearwardly and then continuing as back members diagonally from one side to the other, each back member being secured to the opposite front member at about the waistline of the harness, a breast strap, and a direct cross connection between the lower ends of the front members adapted to extend across the lower part of the trunk of the wearer.

2. A harness comprising a U-shaped swing made up of approximately vertical front members and a lower cross member adapted to serve as the seat of the swing, the upper ends of said front members being carried rearwardly and then continuing as back members diagonally from one side to the other, each back member being secured to the opposite front member at about the waistline of the harness, a breast strap, a direct cross connection between the lower ends of the front members adapted to extend across the lower part of the trunk of the wearer, means for adjusting the effective length of the swing, and means for adjusting the effective length of said cross connection.

3. A harness comprising a U-shaped swing made up of approximately vertical front members and a lower cross member adapted to serve as the seat of the swing, the upper ends of said front members being carried rearwardly and then continuing as back members diagonally from one side to the other, each back member being secured to the opposite front member at about the waistline of the harness, and a cross connection between the lower ends of said front members comprising two devices connected by a detachable fastening, each of said devices consisting of a strap extending forwardly and upwardly as an approximate continuation of the cross member of the swing, together with a strap extending forwardly and downwardly as an approximate continuation of the corresponding back member.

4. A harness comprising a U-shaped swing made up of approximately vertical front members and a lower cross member

adapted to serve as the seat of the swing, the upper ends of said front members being carried rearwardly and then continuing as back members diagonally from one side to the other, each back member being secured to the opposite front member at about the waistline of the harness, a breast strap attached to said back members and extending to the front and across said front members, each of the ends of the breast strap being folded backwardly underneath the main portion of the breast strap and being secured to the corresponding front swing member so as to leave the overlying portion of the breast strap free of direct connection with the corresponding front member.

In testimony whereof, I sign this specification.

FLOYD SMITH.