Feb. 22, 1944. S. S. MINER 2,342,420

PARACHUTE JUMPER'S SUIT

Filed Oct. 24, 1941 3 Sheets-Sheet 1

Fig. 1.

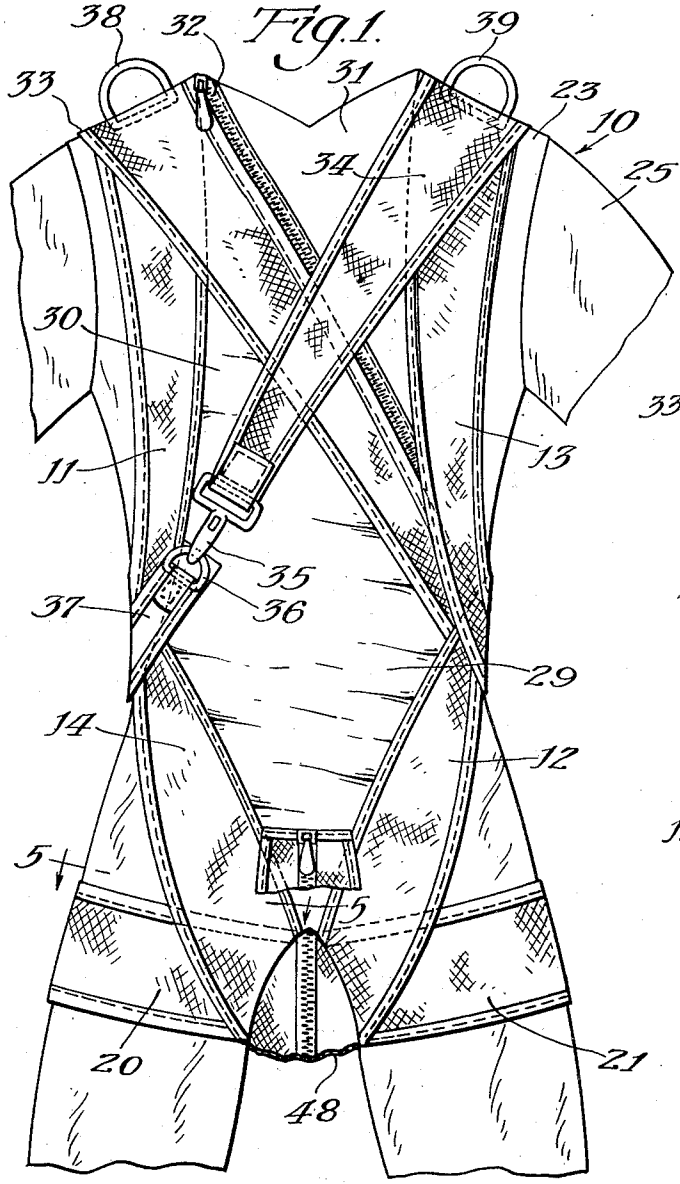


Fig. 2.

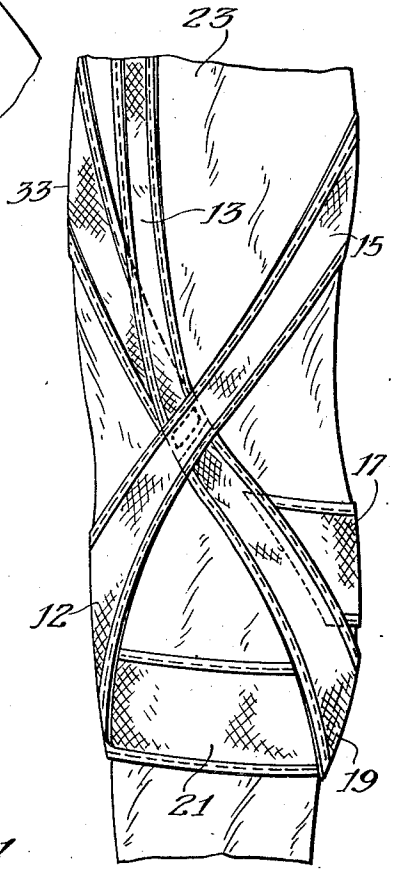
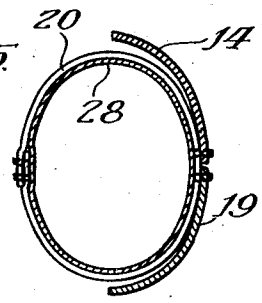


Fig. 5.



Inventor:
Samuel S. Miner
By: Zahl, Carlson, Fitzpatrick & Wells
Attorneys

Feb. 22, 1944. S. S. MINER 2,342,420

PARACHUTE JUMPER'S SUIT

Filed Oct. 24, 1941 3 Sheets-Sheet 2

Fig. 3.

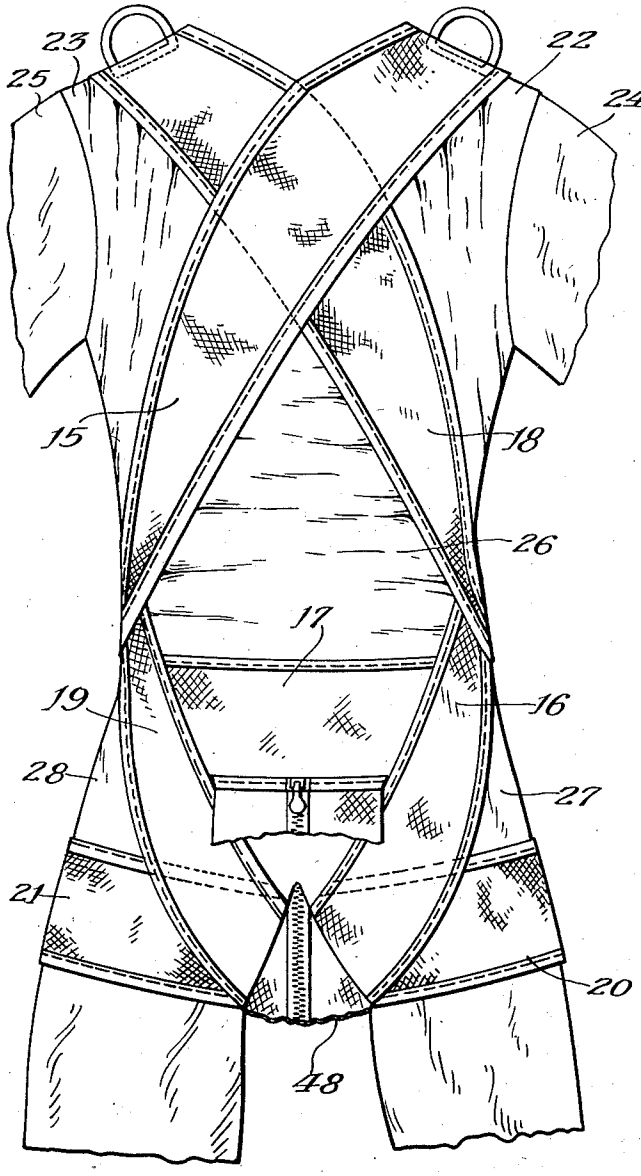
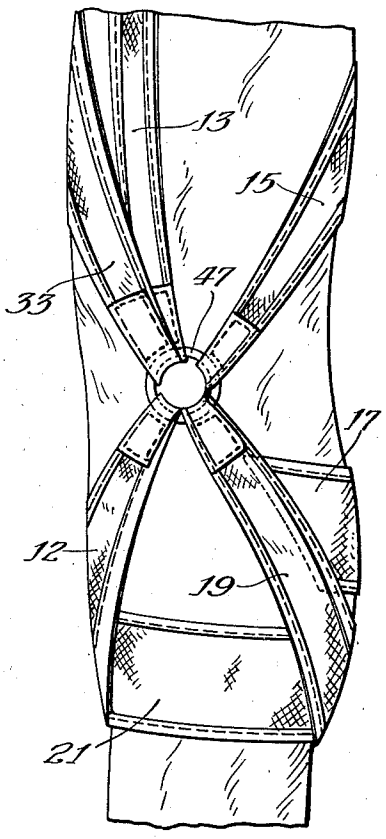


Fig. 4.



Inventor:
Samuel S. Miner,
By Zabel, Carlson, Gutzbaugh & Wells
Attorneys

Feb. 22, 1944. S. S. MINER 2,342,420

PARACHUTE JUMPER'S SUIT

Filed Oct. 24, 1941 3 Sheets-Sheet 3

Fig. 6.

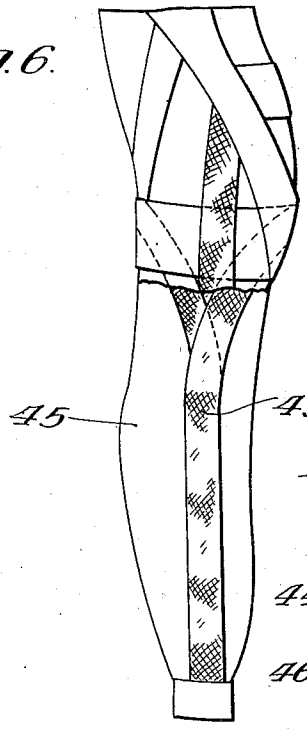


Fig. 7.

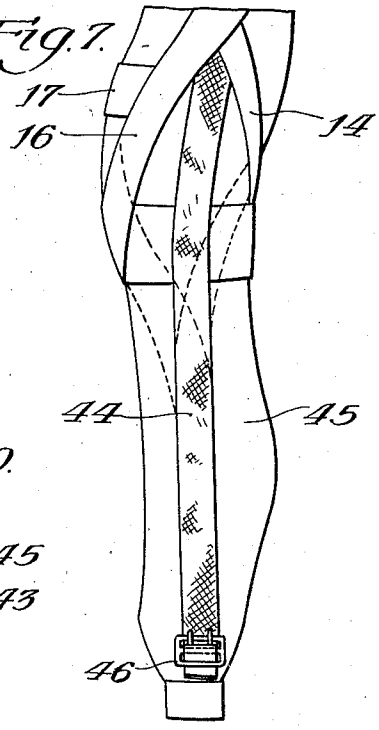


Fig. 10.

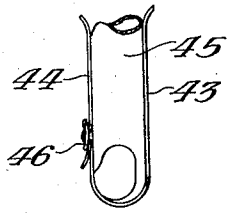


Fig. 8.

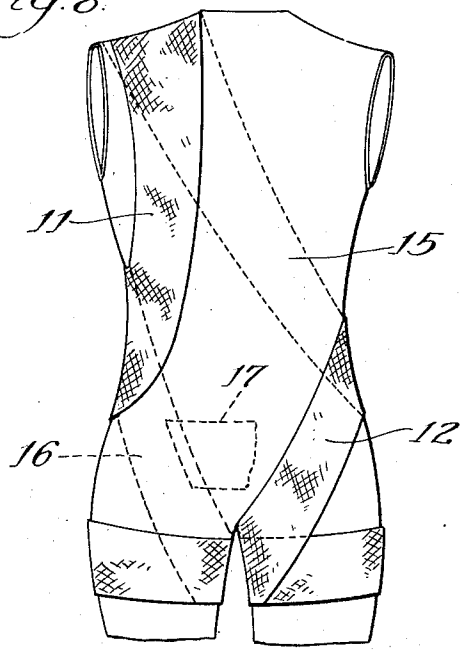
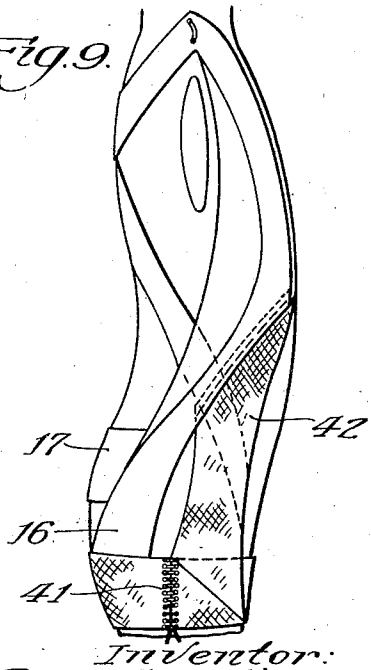


Fig. 9.



Inventor:
Samuel S. Miner,
By Zabel, Carlson, Fitzbaugh & Wells
Attorneys

Patented Feb. 22, 1944

2,342,420

UNITED STATES PATENT OFFICE

2,342,420

PARACHUTE JUMPER'S SUIT

Samuel S. Miner, Niles, Mich.

Application October 24, 1941, Serial No. 416,397

18 Claims. (Cl. 244—143)

The present invention relates to parachute garments and it is particularly directed to a garment of this character which is adapted for use not only in the parachute jump but as a suit to be used by the jumper after landing.

It is a principal purpose of my invention to provide a garment of the character described composed of stress taking and non-stress taking portions, the stressed portions being so constructed as to material and connections that the strain of supporting the wearer's weight and of taking the shock of parachute opening will be comfortably and safely distributed over those areas of the wearer's body that can withstand the strain.

A further purpose of my invention is to provide a parachute suit having the dual function of garment and parachute harness, thus dispensing with the usual harness. The wearer, upon alighting, can more quickly disengage himself from the parachute than from a harness, and there is the additional advantage of a smooth outer surface on the garment thus rendering negligible the likelihood of entanglement with plane or chute. Further, the suit is so designed as to fit the wearer's body without the binding accompanying the wearing of the ordinary harness.

My invention contemplates a construction wherein the stressed portions of the garment are so constructed either by using sufficiently strong material or sufficient plies of material or properly converging or contiguous bands of material or other suitable reinforcements as to withstand the strains to be encountered. The unstressed portions of the garment normally constitute the sleeves and the immediate areas around and beneath the attachment of the sleeves, the lower back and abdomen, and parts of the legs. In these unstressed areas the function of the material is that of a cover and the material should be such as to allow freedom of movement without too much bagginess. The areas on the lower back and abdomen may be provided with horizontal shirring to permit freedom of body movement, and the back above the horizontally shirred part may well be provided with pleats to give the desired freedom of movement.

It will be seen that the design will permit complete freedom of body movement while the wearer is on the ground, since the stressed areas are so disposed as to allow crouching, twisting, running or any normal bodily contortion without binding or interference. Thus the suit constitutes a practical and comfortable article of wearing apparel.

On the other hand, while the wearer is descending by means of a parachute, the stressed portions of the garment encase his body smoothly and comfortably, at the same time leaving his legs and arms free. With reference to his legs, it will be seen that the design contemplates that a portion of the strain may be carried by them, but that at the wearer's will, and in particular at the moment of alighting, the strain may be entirely removed from the legs by a slight lifting of the legs. Thus, as the wearer instinctively assumes the ideal posture for alighting from a jump, his legs are freed of the stress of his weight.

The detailed objects and advantages of the present invention will appear more fully from the following description, reference being had to the accompanying drawings wherein a preferred form of the invention is shown. It should be understood however that the drawings and description are illustrative only and should not be taken as limiting the invention except insofar as it is limited by the claims.

In the drawings:

Fig. 1 is a front view of the garment;

Fig. 2 is a view in side elevation of the garment with the shoulder part broken away;

Fig. 3 is a rear view of the garment;

Fig. 4 is a view in side elevation of a modified form of the garment wherein the parachute straps are attached at the side instead of at the shoulders;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 1;

Fig. 6 is a view in side elevation of the inner leg portion of the suit;

Fig. 7 is a view in side elevation of the outer leg portion of the suit;

Fig. 8 is a small, somewhat diagrammatic view showing the disposition of the stress carrying bands on the front and back of the body;

Fig. 9 is a view in side elevation illustrating a detail of construction whereby adjustment of the leg girth is provided, and another detail of construction whereby the leg of the wearer may be held in a semi-sitting position; and

Fig. 10 is a fragmentary view showing how the lower leg portions of the suit are fastened to the feet of the wearer.

Referring now in detail to the drawings, the present invention is shown as embodied in a garment 10. The garment is made up of a multiplicity of stress bearing portions that are in turn joined by non-stress bearing portions that cover those parts of the body which in the normal use of the garment need to be protected but which

should not be subjected to the strain or shock incidental to checking the fall of the body when a parachute opens. The stress carrying portions of the body are shown as individual webs or straps but of course the same result may be obtained by using, in these areas of the garment, multiple ply or mutliple web constructions instead of single ply material of adequate strength. In fact, if the suit is thought of as a more or less homogeneous structure, with the stress bearing areas suitably strengthened by any of the means herein described, the theory of the design will become more apparent. Thus, in the drawings, the areas represented as straps or bands attached to a completed garment may alternatively be considered to represent areas on the garment which require more strength than the areas of the garment functioning only as a cover.

Referring now to Figs. 1 to 4 and 8, the invention will best be understood by first following upon Fig. 8 the stressed areas which are to be covered by the stress bearing material of the garment. The stressed areas on the front of the garment (see Fig. 8), for one-half of the front portion of the body, have been shaded and are indicated at 11 and 12. In Fig. 1 these same parts have been indicated by the numerals 11 and 12. Fig. 1 shows also the corresponding or other half of the front stressed areas at 13 and 14. The back stressed areas, as indicated in Fig. 8, are shown in dotted lines and have been numbered for identification as 15, 16 and 17. These same parts are marked upon Fig. 3 with the corresponding numerals. The complementary stress bearing portions of the garment are indicated in Fig. 3 at 18 and 19. It will be noted that the front stress bearing portions 12 and 14 extend downwardly and inwardly from the sides of the body to the crotch, while these same stress bearing members are continued by joining with the stress bearing members 15 and 18, respectively, across the back. The two stress bearing members 15 and 18 meet approximately at the shoulder blades of the wearer and then extend over the shoulders where they join the front upper stress bearing members 11 and 13, respectively. The stress bearing members 11 and 13 do not cross at the front of the body. Instead they extend down and across the hip, the member 11 joining the member 16 and the member 13 joining the member 19. The stress bearing members 16 and 19 extend to the crotch where they, together with the stress bearing members 12 and 14, are joined to the leg encircling bands 20 and 21.

The path of the stress bearing parts of the garment is peculiar in that it can be traced without a break as follows: beginning with the stress bearing part 11 at the waistline and extending upwardly to the shoulder, this stress bearing part meets with the back stress bearing part 15 which extends diagonally across the back to the waistline on the opposite side from the beginning of the member 11. The part 15 crosses from the back to the front to be continued as the stress bearing part 12 down to the crotch where the stress bearing part 12 through the leg band 21 joins the stress bearing part 19 which continues up to the waistline and passes to the front of the body where it is continued as the stress bearing part 13 to the shoulder. At the shoulder the stress bearing part 13 is continued down across the back as the part 18, the part 18 in turn crossing at the waistline from the back to the front of the body and continuing as the front crotch stress bearing part 14 down to the leg band 20 through which it joins the stress bearing part 16 that goes up over the hip and meets the stress bering part 11. Thus one band of material properly cut may be used to form all of the stress bearing parts 11 to 16 and 19 to 21, inclusive. Or, utilizing another of the herein described constructions, a multiplicity of contiguous and converging strips, such as a strong tape, may be so fabricated together as to form the stressed areas referred to. Part 17 is a stressed area intended to help distribute strain across the hips between the parts 16 and 19 and to prevent them from sliding too far around the hips toward the front of the body when the wearer's legs are brought into the semi-sitting position. Although shown as a roughly rectangular area attaching to the edges of parts 16 and 19, it is in reality a part of the structural area 16, 17, 19 and can be constructed of the same pieces of material as the parts 16 and 19, providing that a multiplicity of tapes, as herein described, is used. This is a principle of design that applies in general throughout this description.

It will be noted that the stress carrying parts of the garment leave large open areas 22 and 23 where sleeves 24 and 25 are attached to the suit. A weaker fabric may be used for the sleeve portions 24 and 25 and to fill the areas 22 and 23. For the purpose of convenience and freedom in movement the cloth for the areas 22 and 23 may desirably be pleated or given the necessary fullness in any of the known fashions now used in garment construction. The rear part of the garment has a filling 26 of a weaker fabric to cover the area between the stress bearing parts 15, 16, 17, 18 and 19 and this fabric may be suitably constructed to give the desired flexibility and looseness. For example, in bending over there will be a tendency to stretch this fabric and horizontal shirring may be advisable to allow the necessary stretch; that is, the material 26 is gathered along the edges of the parts 15, 16, 18 and 19. The lighter, weaker fabric may be applied to the areas 27 and 28 over the hips at the sides.

In the front of the garment an abdominal portion 29 is formed between the stress bearing parts 12 and 14. This abdominal portion extends upwardly and is continued as portions 30 and 31 to the neck of the garment, the portions 30 and 31 being secured to and extending between the stress bearing parts 11 and 13. Although it is not desired to place any of the strain of supporting the wearer upon his abdomen it is nevertheless considered desirable to so fashion the portion 29 as to provide some support for his abdomen, particularly at the moment of parachute opening. This is done by so shaping the portion 29 of the garment that when the parts 12 and 14 are taut under the strain of supporting the wearer's weight a certain tenseness will result in the part 29 thus providing the desired support for his abdomen.

In order to open the garment so as to put it on the parts 30 and 31 are joined by suitable fastening means 32 such as the well known "zipper." A reinforcing strip 33 is joined with the portion 30 and extends from the shoulder diagonally down to the waistline in the front of the garment. A loose strap 34 extends diagonally down from the other shoulder and has a snap fastener 35 snapping into a ring 36 on a short strap 37 fastened at the waistline. The reinforcing members 33 and 34 desirably are adjustable in length. This adjustment may be provided where the snap 35

fastens to the strap 34 and the adjustment of the strap 33 may be at its point of attachment at the waistline, this attachment being made to any one of the overlapping stress bearing members, for example, the top one. The fastener 35 is intended primarily as a convenience in removing the garment, although the garment may actually be removed if the parts 34 and 37 are not separable, provided only that the part 34 is free of the suit and not attached to it between the part 37 and the shoulder. Parachute attaching means 38 and 39 are provided on the shoulders, being suitably fastened to the stress bearing parts as indicated in Figs. 1 and 3.

It will be evident from the foregoing description that the completed suit provides stress bearing parts across the shoulders and back, across the front and back of the hips, and vertically on the sides of the chest so as to leave the parts most liable to be injured by violent shock free of any support. These parts are the abdominal region and the lower chest, the collarbone area around the neck, and the lower part of the back, also the areas directly under the arms where a shock might break a rib. The reinforcing straps 33 and 34 across the chest are not intended primarily as stress bearing members but they do equalize the stresses from side to side and for that reason have to be sufficiently strong to take substantial strains. It will be noted that at the crotch the stress bearing members are so arranged that regardless of how the shock hits there is no tendency to pull the legs away from each other or to crush the hips. The parts 16 and 19 are intended to support the wearer's weight by passing over his body downwardly from the hips toward the crotch over the areas at the juncture of his buttocks and thighs. The leg bands 20 and 21 are desirably made adjustable in girth; for example, by providing them with eyelets and lacing as indicated at 41 in Fig. 9. Although this feature is illustrated only in Fig. 9 it is intended to apply to Figs. 1 to 4, inclusive, as well. In connection with these leg girths an important function of their design should be borne in mind. Their purposes are several—first to insure proper positioning at all times of the parts 12, 14, 16 and 19 which are desirably held in close proximity, yet without binding, to the areas in the wearer's crotch which are to support his weight. Thus when the stressed portions 12, 14, 16 and 19 are suddenly drawn taut by the opening of the chute there is no effect of jerking or mauling. Instead there is a somewhat gentler pulling and lifting action.

Further these parts 20 and 21 serve to distribute the strain at the crotch and to provide a means whereby parts 42 (shown in Fig. 9 and described below) may exert a lifting action upon the legs to bring the wearer into the desired semi-sitting position.

In Fig. 9 there is another feature which may desirably be used in connection with the shoulder-attached parachute rings. This feature constitutes triangular gussets 42 which are attached at their lower edges to the corresponding leg band and which are attached along their upper edges to the corresponding members 11 and 13. The function of the triangular gussets is to hold the leg of the wearer in a semi-sitting position when the suit is pulled upwardly by his weight being suspended from the rings 38 and 39. It will be appreciated that the suit has a certain looseness sufficient to permit freedom of motion, and the small amount of upward movement is sufficient to cause the triangular gussets to exert a lifting action upon the legs when the weight is being carried by the rings 38 and 39. The part 42, as shown in Fig. 9, is shown to be attached to the suit only at its upper and lower ends, and somewhat along its rearward edge. In this construction, which is of course only one of several which may be used, this would mean that the forward edge of part 42 would be free of the garment. Another construction is to fashion the garment in this area so that 42 would be an outer layer, and the underlying stressed areas an inner layer of the garment at this point. This would enable the part 42 to perform its function independently of the part 12 or 14 and yet not be a loose web of material free of the garment.

Referring now to Figs. 6 and 7, these figures show the stress bearing parts of the legs of the suit and how they are arranged to permit the wearer to stand with a part of the strain on his feet, if desired, while falling, and which permit him to draw his legs upward and remove the strain from the feet. Each of the leg portions of the suit comprises a stress bearing part 43 along the inside of the leg, this stress bearing part extending out at the seat to join and form an extension of one or more of the hip stress bearing parts. As shown the parts 43 are divided at their upper ends and become continuations of the parts 12 and 19 at one side, and 14 and 16 at the other side. On the outside of each leg of the suit there is another stress bearing part 44 which follows straight up the leg from the foot over the hip where it attaches to the corresponding one of the back stress bearing parts 15 and 18 where they cross the hip to the front, the attachment being at the juncture of parts 15 and 18 with the parts 13 and 11. The weaker material 45 of the leg portions of the suit is preferably made slightly baggy at the knees so that when the knee is bent the distance from the hip to the foot along the line of the strap 44 is shortened to thus remove the strain from the feet. Any suitable adjustable fastener 46 may be used for securing the bottom ends of the leg portions to the feet. For example, a strap, as illustrated in Figs. 6, 7 and 10 may be made to pass over the boot or shoe and under the instep. Or means may be provided to attach the bottom leg portions of the garment directly to the boot or shoe of the wearer. A further device is to fashion a foot portion on the garment, fitting the wearer's foot like a stocking inside his boot or shoe.

With reference to the construction of the suit at the crotch, it is contemplated that a fly portion 48 of a suitable kind, for example, a "zipper," may extend from the center of the lower edge of the part 17 forward through the crotch to the lower abdominal area. This fly portion of the garment should preferably be made full and loose and should attach where it passes through the center of the crotch to the lower edges of the parts 20 and 21.

Referring now to Fig. 4, in this form of the invention the change made from that in the main form consists in applying a parachute attaching ring 47 at the waist instead of at the shoulders. In this form of the invention the stress bearing parts 12, 13, 15 and 19 as well as the reinforcing strip 33 are attached to the ring 47. The corresponding stress bearing parts at the opposite side are connected to another ring (not shown) and these rings are utilized for the purpose of attaching the parachute to the suit. The construction otherwise is essentially

the same as that shown in Figs. 1 to 3, inclusive. This alternative construction will be seen to provide a means whereby the wearer may commence his descent (before the opening of the parachute) in either an upright or headlong position. In the event that his position is headlong there will be no snapping or whipping effect when the chute opens. The parachute attaching means 47 are preferably located slightly above the wearer's center of gravity in order to bring him slowly and positively to a natural upright position after the opening of the parachute.

From the above description it is believed that the features and advantages of my invention will be readily apparent to those skilled in this art. Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back, other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, and relatively weak covering portions joined to said stress bearing portions to complete the garment.

2. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back, other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, and relatively weak covering portions joined to said stress bearing portions to complete the garment, said first named stress bearing portions being connected across the back and spaced apart across the front of the garment.

3. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, and relatively weak covering portions joined to said stress bearing portions to complete the garment, said second named stress bearing portions being connected across the back and spaced apart across the front of the garment.

4. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back, other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, and relatively weak covering portions joined to said stress bearing portions to complete the garment, said covering portions including a sleeve portion at each side embodying a sleeve and joined to the corresponding first named stress bearing portion from the shoulder to the waist line and including vertically running gathers to provide fullness at the arms and sides.

5. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back, other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, and relatively weak covering portions joined to said stress bearing portions to complete the garment, said covering portions including a back covering portion extending across the upper back area of the garment between the first named stress bearing portions and extending across the lower back area between the second named stress bearing portions.

6. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back, other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, and relatively weak covering portions joined to said stress bearing portions to complete the garment, said covering portions including a front covering portion

extending across the chest and upper abdominal area of the garment between the first named stress bearing portions and extending across the lower abdominal area of the garment between the second named stress bearing portions.

7. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back, other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, and relatively weak covering portions joined to said stress bearing portions to complete the garment, said covering portions including a back covering portion extending across the upper back area of the garment between the first named stress bearing portions and extending across the lower back area between the second named stress bearing portions, the back covering portion being gathered at points along its meeting lines with the stress bearing portions.

8. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back, other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, and relatively weak covering portions joined to said stress bearing portions to complete the garment, and additional stress bearing members forming part of said garment and extending from each side at the waist line across the chest portion of the garment to the shoulder on the other side.

9. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back, other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, and relatively weak covering portions joined to said stress bearing portions to complete the garment, and additional stress bearing members forming part of said garment and extending from each side at the waist line across the chest portion of the garment to the shoulder on the other side, one of said last named members being free of the garment between its ends.

10. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back, other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, and relatively weak covering portions joined to said stress bearing portions to complete the garment, and additional stress bearing members forming part of said garment and extending from each side at the waist line across the chest portion of the garment to the shoulder on the other side, one of said last named members being free of the garment between its ends and the garment having a slit in the covering along the other of said members and fastening means along said slit for separably fastening the material along its edges together.

11. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back, other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, leg bands of relatively great strength secured to said last named stress bearing members at the crotch and relatively weak covering portions joined to said stress bearing portions to complete the garment.

12. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back, other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, and relatively weak covering portions joined to said stress bearing portions to complete the garment, said garment including leg coverings composed in part of relatively great strength portions extending lengthwise along the inner and outer sides of the leg coverings and

connected with the aforesaid stress bearing portions for the body.

13. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back, other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, leg bands of relatively great strength secured to said last named stress bearing members at the crotch and relatively weak covering portions joined to said stress bearing portions to complete the garment, said garment including leg coverings composed in part of relatively great strength portions extending lengthwise along the inner and outer sides of the leg coverings and connected with the aforesaid stress bearing portions for the body.

14. A garment for parachute jumpers adapted to serve both as a ground dress and as a harness to withstand the forces incident to stopping the falling body when a parachute opens and to distribute the forces to the appropriate parts of the body, said garment comprising stress bearing portions of relatively great strength overlying the shoulders and extending down toward the sides at the front and back, other stress bearing portions also of relatively great strength passing through the crotch and upwardly and outwardly across the front and rear surfaces of the hips, each of said last mentioned portions extending substantially to the waist line on its respective side and being joined approximately at the waist line of the garment with the first named stress bearing portions, leg bands of relatively great strength secured to said last named stress bearing members at the crotch and relatively weak covering portions joined to said stress bearing portions to complete the garment and said garment having lifting strips connecting the front parts of the leg bands with the front parts of the first named stress bearing portions, whereby lifting of the aforesaid front parts relatively to the body of a wearer effects a lifting action at said leg bands.

15. A parachute jumper's outfit comprising stress bearing members providing a harness adapted to support the body and leg coverings composed in part of portions of relatively great strength extending lengthwise along the inner and outer sides of each leg covering and connected with the body stress bearing members.

16. A parachute jumper's outfit comprising stress bearing members providing a harness adapted to support the body and leg coverings composed in part of portions of relatively great strength extending lengthwise along the inner and outer sides of each leg covering and connected with the body stress bearing members, said portions of relatively great strength being joined at the bottom of each leg covering whereby the wearer may stand on them.

17. A parachute jumper's outfit comprising stress bearing members providing a harness adapted to support the body and leg coverings composed in part of portions of relatively great strength extending lengthwise along the inner and outer sides of each leg covering and connected with the body stress bearing members, the portions of relatively great strength extending along the inner sides of the leg coverings being divided at the top of the leg portion into two sections, one section extending forwardly and the other section extending rearwardly to join the body supporting stress bearing members.

18. A parachute jumper's outfit comprising stress bearing members providing a harness adapted to support the body and leg coverings composed in part of portions of relatively great strength extending lengthwise along the inner and outer sides of each leg covering and connected with the body stress bearing members, the outer portions of relatively great strength in said leg coverings extending beyond the leg coverings to the waist part of the harness and being joined with said stress bearing members.

SAMUEL S. MINER.