Nov. 22, 1966 C. T. TROY 3,286,375

BOOT HAVING PANTS LEG RETAINING MEANS

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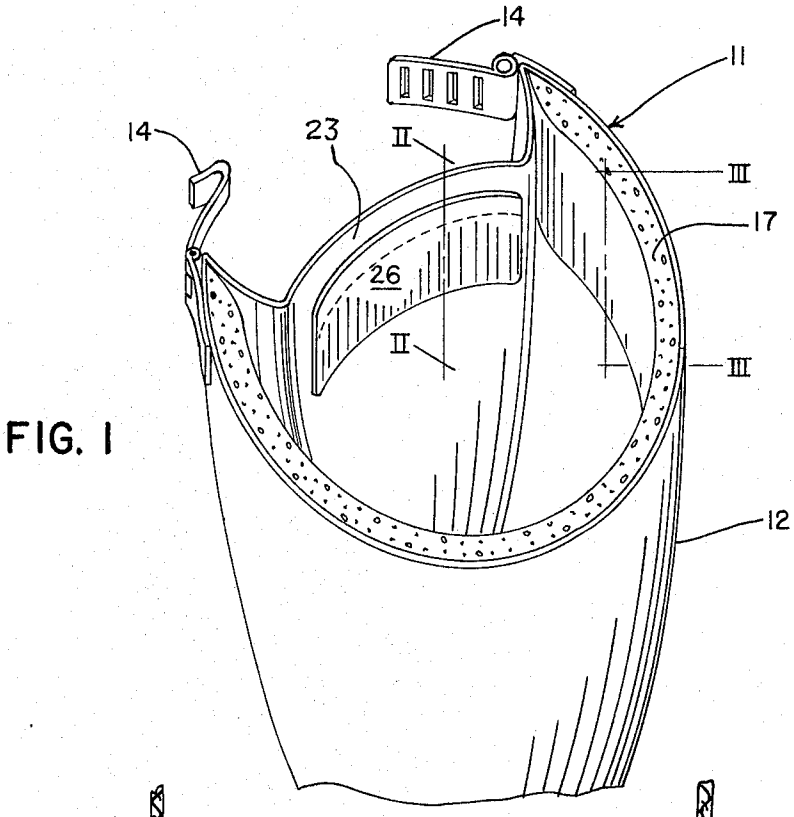


FIG. 1

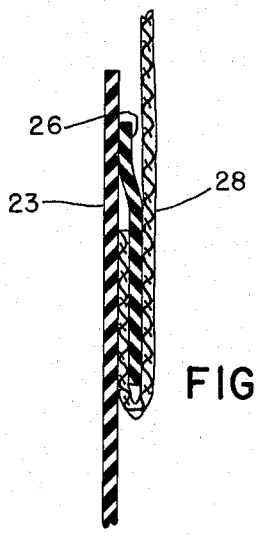


FIG. 2a

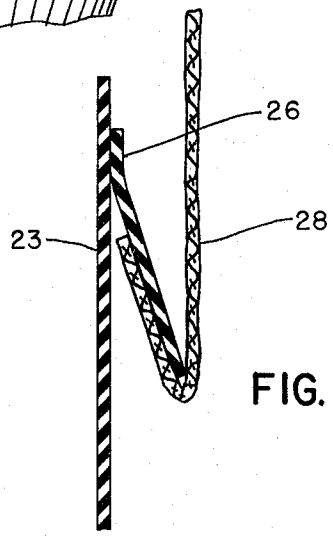


FIG. 2

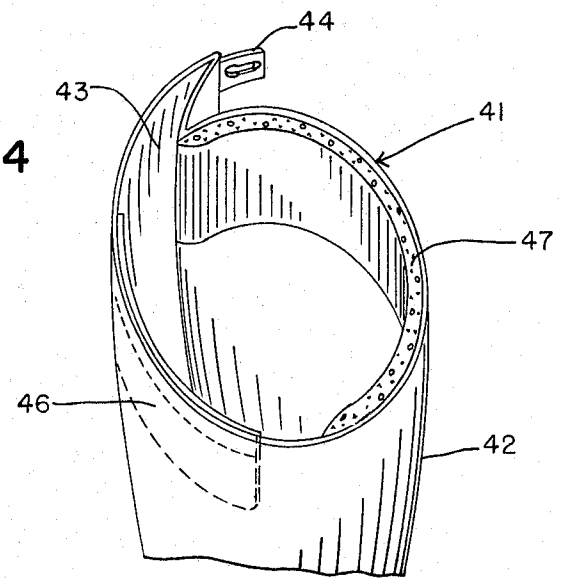
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FIG. 4



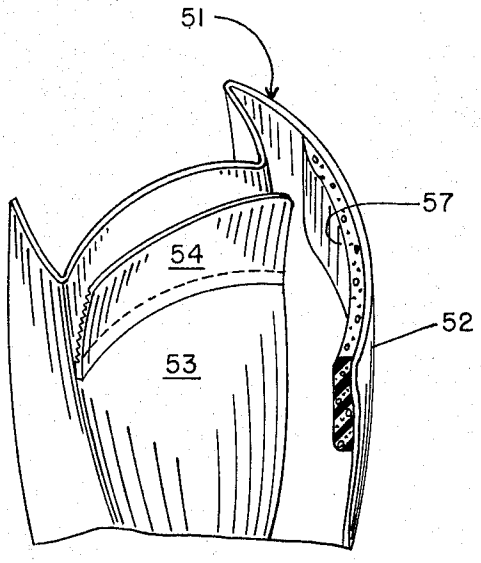


FIG. 5

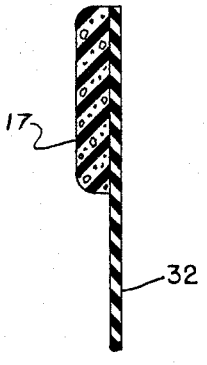


FIG. 3

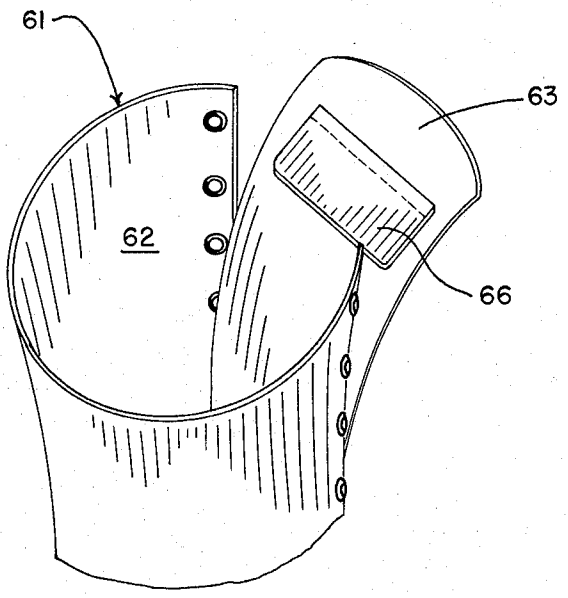
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FIG. 6



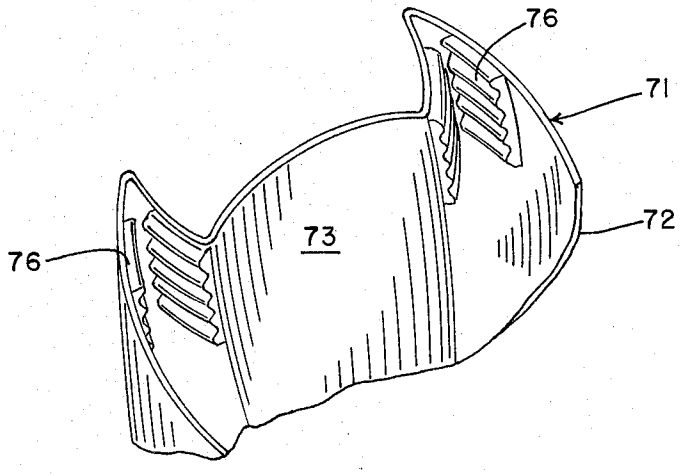


FIG. 7

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BOOT HAVING PANTS LEG RETAINING MEANS

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5 Claims. (Cl. 36—7.1)

This invention relates to improvements in foot wear and, more particularly, to means for securing the lower end of a pants leg within the leg-surrounding portion of an overshoe or boot. For purposes of this specification and the appended claims, the term "boot" is used to describe an article of foot wear that has an upper portion that encircles the lower leg and terminates in a region between the ankle and the knee of the wearer. As such, the term includes both overshoes that are worn over normal footwear and boots that are worn without other shoes, such as hunting or hiking boots.

To keep feet dry and warm in inclement weather, it is often advantageous to insert the lower end of the pants leg into the upper portion of a boot. This is especially true in winter when there is snow that may approach or exceed in depth the height of the boot. However, as is commonly known, the pants leg is easily pulled out of the boot and, when this occurs, the pants leg must constantly be reinserted to preserve the weatherproof integrity of the boot.

It will be appreciated that when the leg is bent at the knee, such as in walking through deep snow, climbing stairs, or getting in and out of vehicles, and the like, the pants leg is alternately stressed in tension and relaxed along its front portion. Since the upper portion of the pants is generally secured in a relatively fixed position about the waist of the wearer, this tension developed in the forward portion of the pants leg is transmitted to the lower portion of the pants leg, tending to pull it out of the boot. It has been observed that when the lower portion of a pants leg is comfortably secured within a boot, a stress rising as high as six pounds may, in many instancse, be developed when the knee is flexed, such as in climbing stairs.

In attempts to resist the above-described forces tending to pull a pants leg out of a boot, boots have been constructed with laces, metal fasteners, straps and buckles, and the like, that are adapted to reduce the effective circumference of the upper portion of the boot. By these means, the boot may be brought into frictional engagement with the pants leg and the pants leg is held bound between the upper portion of the boot and the lower leg of the wearer. While these methods may be effective during periods of light activity, they often fail to accomplish their purpose when the boot is worn by a physically active person for an extended period of time, such as by deliverymen, mail carriers, farmers, hunters, sportsmen, and children. The reason that these methods are often ineffectual lies in the simple fact that the frictional forces developed between the pants leg and the boot are not sufficient to resist the repetitive tensile forces developed along the front of the pants leg. This is particularly true in the case of overshoes, such as arctics, that are secured as by a zipper or by metal hook and buckle. As these closure means are, at best, adjustable only within narrow limits, it is not practical to rely on them to develop sufficient frictional forces to secure the pants within the boot. Further, the amounts of these frictional forces will vary not only with the circumference of the lower leg of the individual wearer, but also are subject to variations caused by the particular clothing worn by an individual on any given occasion. Such variations in clothing may include, for example, the presence or absence of long underwear, the weight

of such underwear, the thickness and number of stockings that are worn, and the weight of the fabric used to construct the pants legs themselves.

Boots that are provided with laces allow for greater latitude in adjusting the circumference of the upper portion of the boot to conform to the thickness of the lower leg and surrounding clothing. Thus, with this type of boot, it is frequently possible to obtain a more secure engagament between the lower pants leg and the upper portion of the boot. However, even boots of this sort are not completely satisfactory as the effective pants-restraining forces will vary according to such factors as the height of the boot, the length of pants leg available for engagement within the upper portion of the boot, and the tightness of the lacing. In this latter regard, to develop the desired frictional forces between a laced boot and the pants leg, it is frequently necessary to lace the boots so tightly that they are uncomfortable to the wearer and may partially inhibit blood circulation in the lower leg. In addition to the discomfort of wearing a tightly laced boot over a prolonged period of time, the loss of circulation may prevent the feet from staying as warm as otherwise might be possible.

Accordingly, it is an object of this invention to provide a boot of the class described that will aid in keeping the feet and lower legs of the wearer warm and dry in inclement weather.

A further object of this invention is to provide boots of the class described that will securely retain the lower portion of a pants leg therein without discomfort to the wearer.

Still a further object of this invention is to provide boots of the class described that will retain the lower portion of the pants within the upper portion of the boot even though the upper portion of the boot may not be sufficiently adjustable to enable secure frictional contact with the lower pants leg.

And yet a further object of this invention is to prevent snow from entering a boot at its upper extremity.

Briefly, these and other objects of this invention are achieved by providing gripping means within the interior upper portion of a boot, which means is adapted to engage in securing relationship a lower portion of a pants leg. When necessary, an additional means is provided to insure that the gripping means remains locked in secure frictional engagement with the pants leg.

In order that this invention can be better understood, it will now be described in connection with the accompanying drawings in which:

FIG. 1 is a perspective view illustrating a portion of a boot constructed in accordance with this invention;

FIG. 2 is a sectional view taken through line II—II of FIG. 1 showing the gripper element in an unsecured position with respect to a pants cuff;

FIG. 2*a* is a sectional view taken through line II—II of FIG. 1 showing the gripper element in its secured position with respect to a pants cuff;

FIG. 3 is a sectional view taken through line III—III of FIG. 1;

FIG. 4 is a perspective view illustrating another embodiment of this invention in which different boot locking means is illustrated;

FIG. 5 is a partial perspective view of a boot showing a different type of gripper element;

FIG. 6 is a partial perspective view of a boot showing the gripper element attached to the tongue of the boot;

FIG. 7 is a partial view in perspective illustrating a different type of gripper element.

With reference to FIG. 1, there is shown a boot **11** of the so-called "arctic" type. Attached to the boot **11** is a gusset **23** that may be folded in upon itself to alter

the effective circumference of the upper portion of the boot. When folded in the position of reduced circumference, hook and buckle means **14** are utilized to secure the boot in a closed position.

In accordance with this invention, a gripper element comprised of a flap **26** is attached to the upper inner surface of the gusset **23**. This flap is attached to the gusset at the upper end of the flap as by gluing, stitching, or riveting, and preferably is constructed of a fairly rigid material.

A portion of the interior of the upper end of the boot **12** is provided with a resilient cushion **17** which may be comprised of a foam or sponge-like material. This cushion **17** may be attached to the upper part of the boot **12** by any convenient means such as by gluing.

In use, the locking means **14** are opened, allowing the gusset to be extended into its open position. The foot and lower leg of the wearer are inserted through the upper portion **12** of the boot. The gripper element **26** is then inserted downwardly into a pants cuff. If the pants are cuffless, the lower portion of the pants is simply turned upward to form a cuff which similarly is engaged by the gripper means **26**. For convenience of description, as used herein, the word "cuff" is used to describe either a permanently sewn cuff or one that is prepared by turning the cloth upward at the bottom of cuffless pants.

After the cuff has been engaged with the gripping element **26**, the gusset is folded to its closed position and the locking device **14** is engaged in a position that will secure the upper portion of the boot **12** so that the lower portion of the pants leg is tightly held by the gripper element **26** as best shown in FIG. 2*a*.

The proper closing of the upper portion of the boot will result in the cuff of the pants being held securely as shown in FIG. 2*a*. If the effective circumference of the upper portion of the boot **12** is not sufficiently reduced, the pants cuff **28** and the gripper element **26** will not be held securely between the gusset **23** and the leg of the wearer as shown in FIG. 2. In this event, repeated tensile stresses transmitted to the cuff **28**, induced by flexing the leg, will cause the cuff **28** to ride around the free end of the gripper element **26** and eventually allow the escape of the lower portion of the pants from the top of the boot **12**.

To avoid the above difficulty, the upper portion of the boot should be snugly fitted about the pants leg and the leg of the wearer. Since, as mentioned above, the thickness of a person's leg may vary considerably, as well as the thickness of the material, such as socks and underwear, surrounding the lower leg, means must be provided to insure that the cuff **28** and the gripper **26** are firmly held against the gusset **23**. Since locking means **14** are capable of only relatively slight adjustment, additional means should be provided to insure a firm contact between the lower leg and the boot. It is for this reason that a resilient member **17** is attached to the inner upper portion of the boot. This resilient member **17** is of sufficient thickness to insure that varying sized lower legs may be securely bound by the circumference of the upper portion of the boot **12**. Further, since the calf muscles are constantly flexed and relaxed as when walking, the resilient means **17** will accommodate the accompanying changes in the diameter of the calf and keep the upper portion of the boot **12** in firm securing relationship with the leg of the wearer. As previously discussed in connection with FIGS. 2 and 2*a*, this prevents the gripper **26** from moving away from the gusset **23** and permitting the cuff to be pulled around the lower portion of the gripper means **26**.

FIG. 3 is a view in section taken through line III—III of FIG. 1 showing the resilient member **17** as attached to the upper portion of the boot **32**.

FIG. 4 illustrates a slightly different type of locking mechanism **44** on a boot where a gusset **43** is folded over

onto itself by a single fold and secured by locking means **44**. Generally, the gusset will be located on one side of this type of boot so that when the locking means **44** are engaged, the folded gusset will lie across the forward portion of the boot. In this instance, it is convenient to locate the gripping element **46** on a side portion of the boot. The cuff may easily be engaged with the gripper element as described with respect to FIG. 1; however, if there are side stitchings on the cuff, it may be desirable to twist the lower portion of the pants slightly to avoid interference with such stitching. Note that within this type of boot, a resilient member **47** may be located along the front and side of the boot.

In FIG. 5, a similar arrangement is shown whereby the lower portion of the pants leg may be securely held within the confines of the upper portion **52** of the boot **51**. In this embodiment, the gripper element **54** is attached at its lowermost portion and is open at its upper portion. This may be advantageous for greater ease in inserting the lower portion of the pants leg into the gripper **54**. It will be appreciated that the boot **51** may not hold the lower pants leg as securely with the upturned gripper element **54** as is the case with the downturned gripper element **26**. Accordingly, it may be desirable to increase the frictional contact between the lower portion of the pants leg and the gripper element **54** by providing corrugations or other roughened surfaces on the innermost surfaces of the gripper element **54** facing the gusset **53**. Such corrugations or other friction-increasing devices may also be utilized with boot **11** as shown in FIG. 1 when desirable. As the boot **51** is of the gusset type, a resilient member **57** is furnished to accommodate the different thicknesses of legs as is done in FIG. 1. However, if the locking means (not shown) are of the lace type, such resilient member will not always be required. Note that a cuff or upturned portion of the pants leg is not required in the use of this modification.

As illustrated in FIG. 6, the gripper element **66** is attached to the tongue **63** of a lace type boot. As the laces (not shown) frequently will permit securing the tongue **63** and gripper element **66** tightly against the leg, the resilient member **17** (FIG. 1) often may not be required.

In FIG. 7, there is illustrated a further type of gripper element especially adapted for a gusset type boot. These gripper elements **76** comprise a pair of elements having mating irregular surfaces. In this instance, a slack fold is made in the bottom portion of the pants leg and the slack fold is inserted between one or both of the mating pairs of gripper elements **76**. Again, depending on the type of locking mechanism used to secure the upper portion **72** of the boot **71**, a resilient member may or may not be required.

As described in accordance with the accompanying drawings, a separate gripper element has been shown. It should be understood, however, that this gripper element could be an integral part of the tongue or gusset of the boot. In this type of construction, the topmost portion of the gusset or tongue can be folded back, and, when reinforced to provide adequate stiffness and to hold it in this folded position, this topmost portion of the gusset or tongue, will itself, provide the gripper element.

As can be appreciated from the above description of the drawings, the essential element of this invention is a gripper element adapted to engage the lower portion of a pants leg. Additionally, it is important that the upper portion of the boot fit snugly around the leg of the wearer so that the gripper element may not loosen and allow the pants leg to be pulled out therefrom. If the boot is provided with sufficiently variable locking means, such as laces, these locking means may be sufficient to secure the upper portion of the boot and the gripper element against the pants leg in the desired manner. However, if the locking means are comprised of hooks, zippers, or straps and buckles, intimate contact

between the upper portion of the boot and the leg may not be achieved and, therefore, a resilient member to take up any slack should be provided. Also, such resilient member is required if the boots are of the type that are not provided with any means for adjusting the circumference of the upper portion of the boot, such as cowboy boots, engineers' boots, and the like.

Although certain embodiments of the invention have been shown in the drawings and described in the specification, it is to be understood that the invention is not limited thereto, is capable of modification, and can be rearranged without departing from the spirit and scope of the invention.

I claim:

1. A gusset type boot having means to engage the lower end of a pants leg and secure said pants leg in the upper portion of said boot comprising at least one pair of gripping elements adapted to seat in mating relationship to each other, said pair of elements being fixedly positioned in facing relationship to each other within a fold formed between the upper portion of the boot and the gusset, with one of said elements being positioned on the gusset and the other one of said elements being positioned on said upper portion of the boot.

2. A boot of the class described having pants leg retaining means, said means comprising a downwardly extending flap mounted along its upper edge to an interior upper portion of said boot adapted to receive an upturned

portion of the bottom of said pants leg between said flap and said upper portion, and means to secure said flap in a closed position whereby said upturned portion is held in frictional engagement between said flap and said upper portion.

3. A boot according to claim 2 in which said upper portion is a tongue.

4. A boot according to claim 2 in which said upper portion is a gusset.

5. A boot according to claim 2 in which said means to secure said flap in a closed position comprises in combination a locking device for said upper portion of said boot and a resilient member provided on the interior of the upper portion of said boot spaced from said flap.

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