July 7, 1953 G. W. JARDINE 2,644,448

FOOT SLING

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Fig. 1.

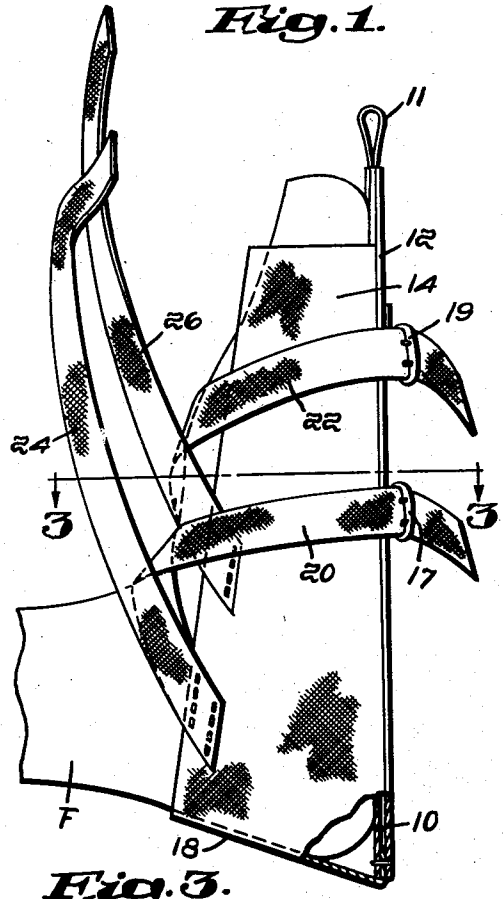


Fig. 2.

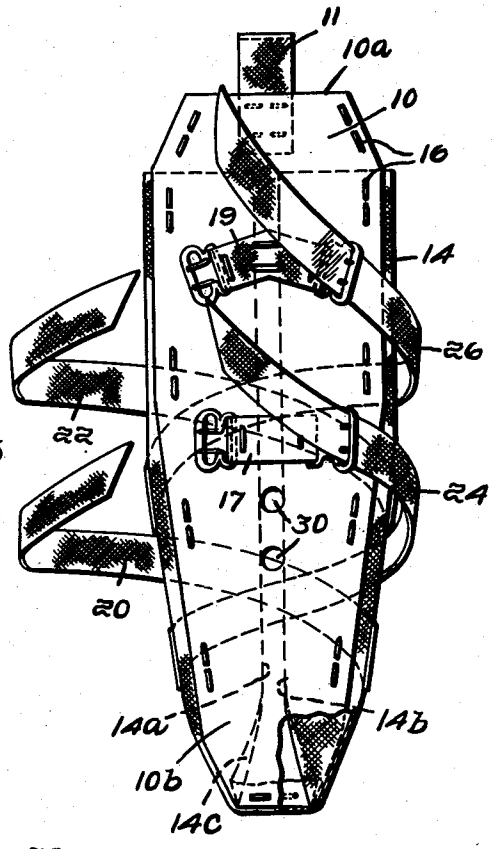
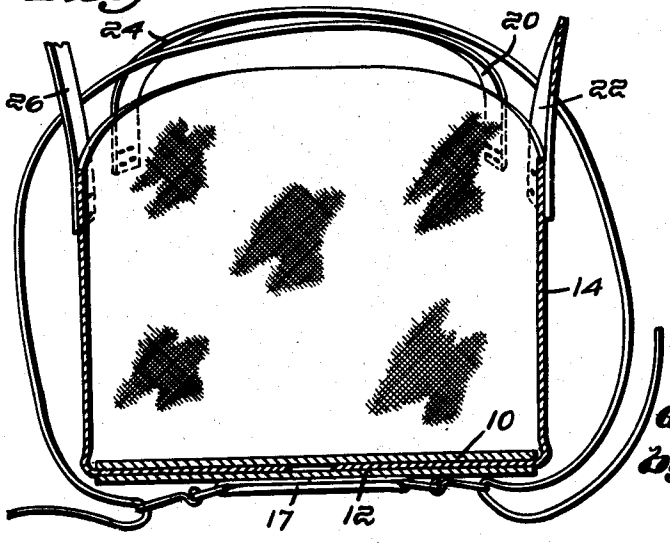


Fig. 3.



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FOOT SLING

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5 Claims. (Cl. 128—84)

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This invention relates to an improved surgical appliance for use as a foot sling by hospital and other bed patients where it is essential to support an injured leg or foot in a raised and suspended position.

In this connection it is found that special problems are encountered in providing a device which will furnish the right amount of supporting action with a minimum of discomfort. A specific instance of this arises, for example, in maintaining a broken lower limb in traction. Where a leg is thus suspended there is a definite tendency for the ankle muscles to relax and allow the foot to incline forwardly into an undesirable position. This condition is one known as "foot drop" and requires positive corrective action. Appliances heretofore utilized have proved to be generally unsatisfactory, either because they exert an undue amount of pressure at one point or another along the upper side of the foot, or they do not provide an accurate supporting action, so that the forepart of the foot is held at the correct angle to avoid foot drop.

The present invention is concerned with the problem indicated and aims to provide an efficient, positive foot sling which will afford a proper corrective action for the foot where the limb is in traction and which will, moreover, perform this function in such a way that a minimum of discomfort is realized. It is also an object of the invention to provide a combination splint and bandaging appliance which is highly useful in supporting a foot with fractured or broken bones, or in connection with amputation cases. Still a further object is to devise a device of the character indicated which is cheap to manufacture and which utilizes relatively inexpensive materials in its construction so that the foot sling may be used by a patient and thrown away, as is customary with various other bandaging equipment.

These and other objects and novel features will be more fully understood and appreciated from the following description of a preferred embodiment of the invention selected for purposes of illustration and shown in the accompanying drawings, in which

Fig. 1 is a side elevational view of the foot sling of the invention showing a portion of a foot suspended in the sling and indicating fastening straps in a partially assembled position;

Fig. 2 is a bottom plan view of the sling with the foot removed; and

Fig. 3 is a cross-sectional view taken on the line 3—3 of Fig. 1.

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In accordance with the invention I combine a bandage and splint assembly with holding straps applied in a novel manner so as to comprise a highly useful suspension appliance which I have chosen to refer to as a "foot sling." In the foot sling structure shown in the drawings numeral 10 refers to a base member formed of a thin sheet material, such as paper, plastic, metal, or the like, which combines flexibility with a sufficient amount of rigidity to provide an appreciable supporting effect such as might be desired in certain types of splints. The degree of rigidity in the base member may vary to fit the specific use for which it is designed. A suspension element 11 consisting of a loop or similar device is secured at the extreme forward end of the base to provide a means of attaching the base to a raised support, such as a wall hook or frame portion of a bed, in which a patient may be lying.

Preferably the base member may comprise an inner layer 10 and an outer layer 12, each of which are cut out in the form shown in Fig. 2. As illustrated therein, the base has a relatively wide forward upper section terminating in a square end 10*a* and tapered downwardly or rearwardly to form a relatively narrow heel supporting section 10*b*. Attached to the layers 10 and 12 is a protective covering 14 of a fabric such as light canvas, or other suitable sheet material. Lower edges of the covering member 14 may, for example, be secured between the layers 10 and 12 by wire staples 16, or other desirable fastening means, such as stitching, or the like.

In accordance with the invention the protective wrapping is preferably arranged so as to provide a forwardly inclined heel pocket section, generally indicated by numeral 18, (Fig. 1) wherein it will be seen that the rearmost portion of the heel pocket extends forwardly at an angle to the plane of the base member so that the heel pocket fits snugly around the heel of a foot received therein, and the upper forepart of the foot is cradled in a position which tends to prevent its falling forwardly. This relative arrangement of the protective wrapping on the base may be achieved in one suitable manner by drawing the covering member about the edges of the tapering base in the position suggested in dotted lines in Fig. 2. As shown therein the edges 14*a* and 14*b* overlap the base and occur slightly spaced apart and in parallel relation to one another. In this position central portions of the covering are drawn sharply forward to form the heel pocket, as noted, and the excess material at the rearmost point on the base is folded under, as at 14*c*.

Numerals 17 and 19 indicate pairs of strap fastenings which include a fabric body portion secured to the bottom of the base element 12, as shown, and carrying buckles with pointed tongues. It will be noted that the strap fastenings are attached to the base in spaced relation to one another at the central forward part of the base 12, and the front pair of strap fastenings are arranged to extend rearwardly at diverging angles, as shown. This allows the straps to fit smoothly over the top of an injured foot without excessive pressure being exerted at any one point thereon.

It will be apparent that when a foot is placed in the heel pocket and then raised in suspension, considerable supporting action takes place at the Achilles tendon region and there is a definite tendency for the covering to pull upwardly on the base 10 so that it assumes a position such as that suggested diagrammatically in Fig. 1. Straps 20, 22, 24 and 26 are combined with the protective covering and base to supplement the above described supporting action when engaged over a foot contained in the appliance. The straps are adapted to extend above one another diagonally across the foot and may be firmly secured by stitching, stapling, or similar fastening means, along the top edge of the protective covering at both the inner and outer border and at spaced-apart points therealong, as suggested in Fig. 1. It will be apparent that when these straps are engaged in the buckles 17 and 19 and tightened upon themselves they cooperate with the protective covering 14 and the base and the suspension loop 11 in holding the base in a raised position such as that shown in Fig. 1. In practice it is found that by arranging the straps in a proper manner across the top of the foot F and by adjusting the straps so that they exert the correct amount of tension, there may be realized a sufficient supporting action to overcome foot drop when a leg is in traction.

At the same time little, if any, discomfort is realized by the patient since the supporting action takes place over the whole area of the foot rather than at any one localized area thereon. Moreover, by attaching the suspension loop to the front edge of the base at the point shown, all of the above advantages are realized, while at the same time allowing the patient to exercise the injured limb by flexing this member and bending either the knee or the ankle. As such exercises are often important in the treatment of injured limbs, this flexibility feature is highly desirable in conjunction with a maintenance of the foot in a permanently raised position.

In addition to the features noted it will be seen also that the protective covering may, when so desired, be used as a bandage to tightly hold the bones of the foot against the base, which then becomes a very practical splint. Where this type of use is desired it is pointed out that this construction of the base with a square cut open end, allows the toes to have room for movement and the open end also furnishes a desirable ventilating effect. I have also provided ventilating holes 30 through the base which further function to increase comfort of a heavily wrapped and bandaged foot.

Various other advantages are present in connection with the improved appliance of the invention. For example, when a dressing has to be changed the sling allows easy removal of bandaging and other covering material and therefore aids in the care of the injured member. If desired, protective pads may be inserted between the foot and the base, or between the foot and the inner surface of the protective wrapper to develop greater or lesser protective action at localized points on the surface of an injured foot. The entire device can be made up of light, relatively cheap materials and can be used and thrown away in the same fashion as is the case with conventional bandaging materials.

While I have shown a preferred embodiment of the invention it should be understood that changes and modifications may be resorted to in keeping with the spirit of the invention as defined by the appended claims.

I claim:

1. An improved foot sling comprising a base member for receiving the sole of a foot thereagainst, a protective covering including a heel pocket secured to the base and adapted to receive the heel of said foot in a suspended position, a suspension element fastened at the forward end of the base for attaching the base to a raised supporting member, intermediate portions of the protective heel pocket covering being attached to the base in a manner so as to extend at an angle less than 90° with respect to the plane of the base, and cooperating strap members for maintaining the heel pocket and base in a substantially fixed position when the said foot is received therein.

2. A structure as defined in claim 1, in which the strap members are secured at two opposite free edges of the protective covering, and means located at the under side of the base for fastening the straps at two separated points thereon to maintain the base in a desired position of adjustment.

3. A structure as defined in claim 1, in which the strap means includes two pairs of straps located centrally of the base, one ahead of the other.

4. A structure as defined in claim 1, in which the base includes a plurality of layers of material secured one to the other with the protective covering margin attached therebetween.

5. A structure as defined in claim 1, in which the intermediate portions of the protective covering have folded-over marginal edges and are fastened to the base member to produce the said angular arrangement of the heel pocket with respect to the base.

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