United States Patent

[11] 3,527,208

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[45] Patented **Sept. 8, 1970**

[54] **INSTRUMENT FOR RELIEVING ITCHING UNDER CASTS AND SHIELDING BODY DURING CAST REMOVAL**
8 Claims, 10 Drawing Figs.

[52] **U.S. Cl.** **128/62,** 128/132, 128/83
[51] **Int. Cl.** **A61h 7/00**
[50] **Field of Search** 128/62, 132, 67, 82, 83; 30/286, 289

[56] **References Cited**

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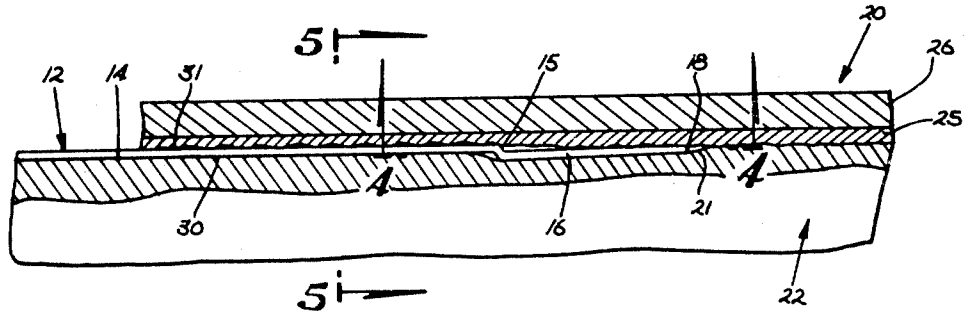
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Primary Examiner—L. W. Trapp
Attorney—Robert E. Geauque

ABSTRACT: An instrument for relieving an itching area of the skin under a cast, preferably constructed of a thin continuous strip of material having a body portion and an offset foot portion. The foot portion is inserted underneath the cast and sprung towards the skin so that reciprocation of the instrument causes a preferably textured surface of the foot portion to scratch and massage an area of the skin. During removal of the cast, the instrument can be inserted underneath the cast to protect the skin.



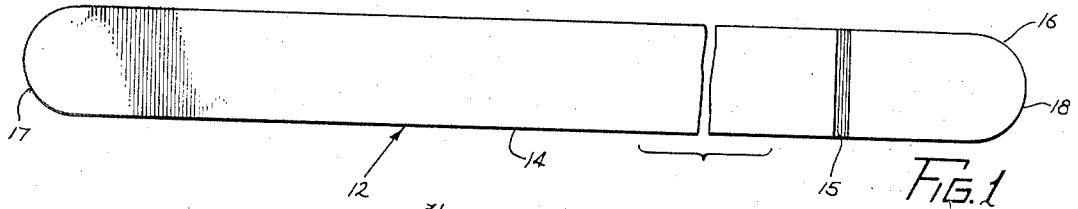


FIG. 1

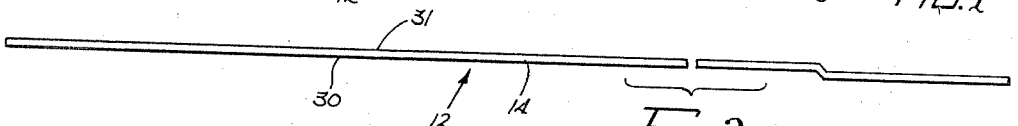


FIG. 2

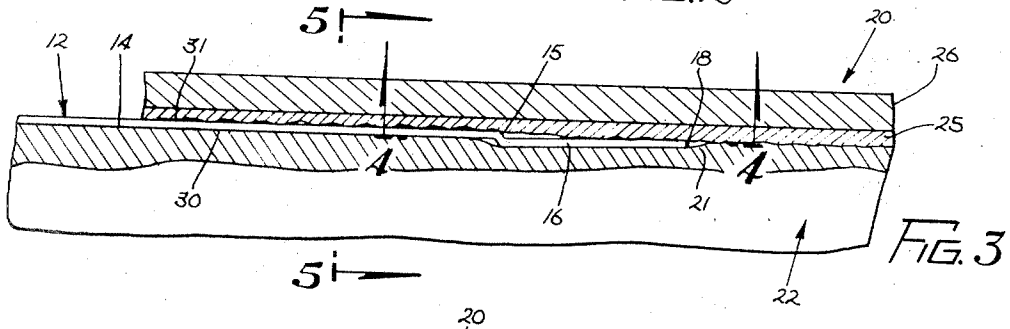


FIG. 3

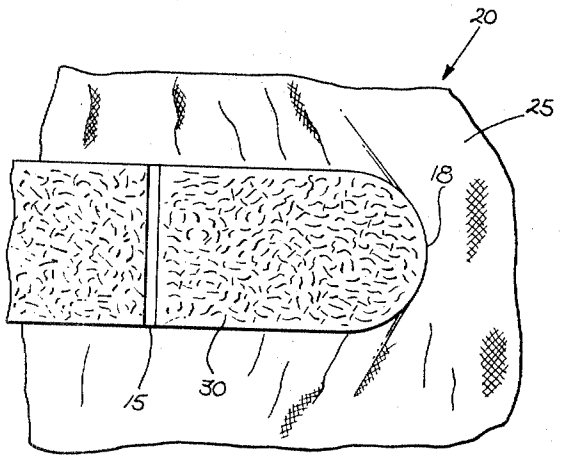


FIG. 4

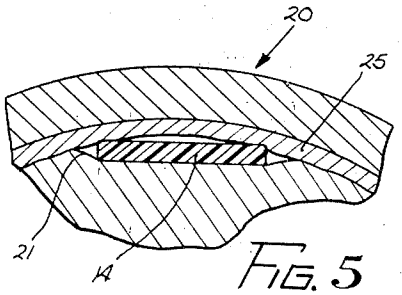


FIG. 5

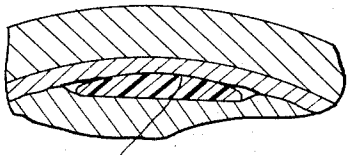


FIG. 6

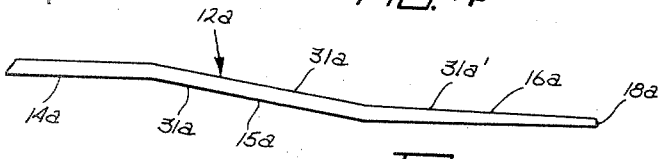


FIG. 7

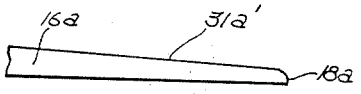


FIG. 8

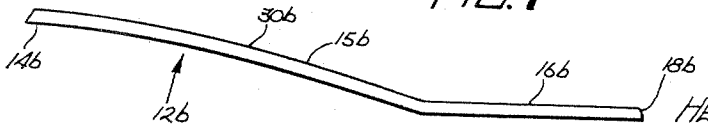


FIG. 9

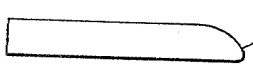


FIG. 10

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INSTRUMENT FOR RELIEVING ITCHING UNDER CASTS AND SHIELDING BODY DURING CAST REMOVAL

This invention relates to an instrument for relieving an itching area of skin under a cast and more particularly to an instrument which can be inserted between the cast and the skin to effectively produce a scratching action. The instrument can also be used to protect the skin underneath the line along which the cast is cut for removal. The skin under a cast often develops an itch because it is confined by the cast and shielded from the air. A thin bamboo strip has been used to relieve the itching under a cast by inserting the bamboo strip between the interior surface of the cast and the outer surface of the skin and until the end of the strip reaches the itching area. However, the surface of a bamboo strip tends to grip both the skin and the interior surface of the cast as it is inserted and therefore, the strip does not slide readily to the itching area. Also, the bamboo strip does not have sufficient flexibility to follow relative sharp changes in shape of a cast in order to reach the itching area. In U.S. Pat. No. 2,711,731, there is disclosed a metallic scratching device having an enlarged end with sharp corners. The enlarged head makes it difficult to insert the device underneath a cast and the sharp corners on the enlarged end can hang up on both the skin and the interior of the cast during insertion and removal of the device.

The present invention provides an instrument for both scratching an itching area underneath the cast and for gently massaging the skin under the cast. When the cast is being removed, the instrument can be inserted opposite the cut line in order to act as a protective shield for the skin. The instrument is preferably formed out of a plastic material which has a smooth surface on one side and a textured surface on the other side. A foot portion is located at one end of the instrument and is offset from the elongated body of the scratcher toward the skin when the instrument is inserted underneath the cast. The texturing on the foot portion creates a pleasant scratching and massaging sensation on the area of the skin to which it is applied since the offset produces a spring action to insure firm contact between the foot portion and the skin. As the instrument is inserted, the textured surface moves along the skin surface and produces very little drag or friction even though the skin is damp or moist and the cast is tight fitting. The smooth surface of the instrument on the side facing the cast enables it to slide easily against the rough surface of the cast while the instrument is being inserted.

It is therefore an object of the invention to provide an instrument for relieving an area of itching skin under a cast and which has sufficient strength to reach and scratch the itching area while at the same time being flexible enough to follow and conform to the contours of the body and cast.

Another object of the invention is to provide an instrument for scratching under a cast which is formed of a long, thin, body portion having a foot portion at one end which is offset in the direction of the skin as the instrument is being inserted into the cast; the offset of the foot causing depression of the foot into the skin to provide a scratching and massaging action on the skin.

Another object of the invention is to provide an instrument for scratching an itching area under a cast which has a smooth surface on the cast side and has a textured surface on the skin side in order to move smoothly over the cast and skin surfaces during insertion of the instrument to the itching area.

These and other objects of the invention not specifically set forth above will become readily apparent from the accompanying description and drawings in which:

FIG. 1 is a top plan view of an instrument of the present invention showing the offset foot portion;

FIG. 2 is a side elevational view of FIG. 1;

FIG. 3 is a side elevational view similar to FIG. 2 with the instrument inserted between the cast and the skin of the wearer of the cast;

FIG. 4 is an enlarged plan view taken along line 4–4 of FIG. 3 showing the textured surface on the body and foot portions of the instrument which is adjacent the skin surface;

FIG. 5 is a vertical section along line 5—5 of FIG. 3 showing the body portion of the instrument;

FIG. 6 is a vertical section similar to FIG. 5 of a modification showing a different cross sectional shape of the body portion of the instrument;

FIG. 7 is a partial side elevational view of a modification of the invention showing a slanted section of the body portion connecting wtth the foot portion;

FIG. 8 is an enlarged view of the foot portion of the instrument of FIG. 7;

FIG. 9 is a side elevational view of another modification showing the body having a curved section connecting with the foot portion; and

FIG. 10 is an enlarged view of the foot portion of the instrument of FIG. 9.

The invention shown in FIGS. 1—5 comprises an instrument **12** having an elongated body portion **14** connected, by an offset portion **15**, to a foot portion **16**. The plane of the foot portion **16** is in a plane substantially parallel to the plane of the body portion. Ends **17** of the body portion **14** and end **18** of foot portion **16** are both round to avoid sharp corners. The instrument **12** can be constructed of a continuous strip of thin plastic material which is flexible enough to follow and conform with the contours of the body and cast when it is inserted between the interior surface of the cast and the outer skin of the wearer of the cast. The amount of offset of the foot portion is such that the body portion and the foot portion can be snugly inserted between the cast and the skin with the foot portion engaging the skin.

In FIG. 3, the instrument **12** is shown inserted between the cast **20** and the skin surface **21** of the wearer's body **22**. The length of the body portion **14** is sufficient to reach any area of the skin surface underneath the cast from an end of the cast. Also, the body **14** must be of sufficient strength to control the direction of insertion movement so that the foot portion may be directed to the itching area. While the body and foot portions must have sufficient width and thickness to provide the proper strength, the width must be narrow enough that it will not bridge excessively against the concave surface of the cast and the thickness must be thin enough for the instrument to slide easily between the cast and skin without damage to either, even in the event of a tight fitting cast. One suitable form of the instrument has been fabricated from a flexible plastic sheet material approximately ¾" in width and approximately 1/16" in thickness and this construction provides sufficient strength to direct the foot portion **16** to the itching area.

In applying the cast **20** to the body **22** of the wearer, a layer **25** of soft material is placed over the skin before application of the plaster layer **26**. The soft material serves to protect the skin from abrasive action of the plaster. The two materials usually used for the soft material are stockinette and sheet wadding. The stockinette is much like a cotton sock and while it is intended to fit smoothly on the body surface, it can become folded underneath the cast to provide an obstacle to the insertion of the instrument. The same problem would occur to even a greater extent with sheet wadding because sheet wadding is very soft and pliable and becomes easily bunched up if the patient tries to scratch under the cast.

FIGS. 3—5 illustrate the manner in which the scratching instrument moves between the cast and the skin to an itching area. The width of the body portion and foot portion is such that no substantial gap is produced by bridging across the concave interior surface of the cast (see FIG. 5) and the thickness of the instrument is compatible with proper strength, yet thin enough to fit easily between the cast and the skin without damage to either, even though the cast fits tightly to the skin. The surface **30** of the instrument, which is placed adjacent the skin, has a texture such as illustrated in FIG. 4 and this texture can take the form of pebbling, pigskinning, rigiding, etc. The textured surface of the foot portion **16** is located opposite the itching area and as it is moved back and forth, it creates a pleasant scratching and massaging sensation on the skin. When the instrument is being inserted to the itching area, the textured surface prevents the instrument and skin from com-

ing into close, uninterrupted surface contact which would result in excessive drag and friction interfering with movement of the instrument. The surface **31** of the instrument, which engages the interior surface of the cast, is smooth so that this surface slides easily against the rough surface of the cast. Because of the differences in the texture of the surfaces **30** and **31** the patient will instinctively select the textured surface for application against the skin when the instrument is inserted under the cast.

As stated, the offset portion **15** serves to position the foot portion **16** in a plane offset from the plane of the body **14** of the instrument. When the foot end of the instrument is inserted between the skin and the cast, the forward rounded end **18** of the foot leads the way and the end of the foot is bent upward slightly by the skin toward alignment with the plane of the body portion **14**. Thus, the foot portion produces a spring like force against the skin to insure firm contact between the foot pad and the skin. This firm contact insures a pleasant scratching and massaging action as the foot surface is moved back and forth over the itching area and allows the scratcher to slide between the skin and cast without snagging on the layer **25** of material of the cast. In other words, should the material of layer **25** become folded over or bunched up, the foot portion **16** will tend to slide under this obstruction since it wants to assume its normal offset position in the direction of the skin. In other words, the spring-like action of the foot portion **16** slightly depresses the skin and separates the cast layer **25** from the skin so that the instrument can slide past obstructions in the padding layer without catching.

Referring to the modified instrument **12*a*** shown in FIG. **7**, the foot portion **16*a*** is connected to the body portion **14*a*** by the sloping portion **15*a*** which is longer than the portion **15** of FIG. **1** to provide more spring action for the foot portion **16*a*** than is provided by portion **15**. Also, the angles at the ends of portion **15*a*** are not as sharp as at the ends of portion **15**. In the modified instrument **12*b*** of FIG. **9**, the foot portion **16*b*** is connected to the body portion **14*b*** by an offset portion **15*b*** which curves into the body portion **14*b*** so that no predominant angle exists between them. An enlarged portion of foot **16*a*** is illustrated in FIG. **8** and it is noted that the curved end **18*a*** has a surface which tapers back to join a tapered surface **31*a'*** which connects with the surface **31*a*** on the remainder of the instrument. Thus, the insertion of the foot **16*a*** into the space between the cast and the skin becomes somewhat easier and the shape of the edge **18** avoids snagging on the under padding layer **25**. In the modification of FIG. **9**, the end **18*b*** of the foot portion **16*b*** is rounded to provide a lift to the under padding layer **25** of the cast with the lift taking place more promptly than with the tapered end **18*a*** and tapered surface **31*a'***. The modified instruments of FIGS. **7** and **9** can have the same width, the same rounded ends, and the same surface finish as described for the instrument of FIG. **1**.

It is understood that the instrument **12** can vary in thickness and width along its length. Also, the instrument can be made of any suitable material and because the instrument is used against intact skin, sterilization would not be mandatory. The use of plastic material for the instrument would avoid the cold touch and feel that steel would have on the skin. The instrument could be made out of a material having a convex top, such as surface **31*c*** illustrated in FIG. **6**, which engages the under padding of the cast so that it will more precisely fit the convex under surface and take up slightly less volume between the skin and the cast area.

The instrument of the present invention can also serve as a shield between the skin and the cast at the time of removal of the cast with a cutting tool. The instrument is simply inserted underneath the cast opposite the line along which the cast is to be cut, and the instrument has sufficient thickness and resiliency to resist the action of the cutting tool should it attempt to move against the skin. The presence of the shield allows the surgeon to proceed with speed and accuracy in removing the cast and the shield is easily and accurately positioned along the cut line. Also, during the cast cutting operation, the patient is more mentally relaxed and cooperative since he is protected.

To reach an itching area, the instrument is inserted between the cast and the skin at the edge of the cast closest to the itching area and the foot portion **16** will follow along the skin surface and curvatures thereof until the foot portion reaches the itching area. Thereafter, reciprocation of the foot textured surface over the itching area, while the foot surface presses against the skin, provides relief from the annoyance of the itch. During insertion, should the end **18** encounter a folded or bunched area of the under padding layer **25**, the curved end **18** will permit the instrument to move laterally of this area or underneath the area with ease since the foot portion is sprung downwardly toward the skin and away from the under padding. It is understood that an offset foot portion can be located at each end of a body portion, with one foot offset more than the other so that the lesser offset foot portion can be used for tighter casts and the foot portion with greater offset can be used for looser fitting casts. Various other modifications are contemplated by those skilled in the art without departing from the spirit and scope of the invention as hereinafter defined by the appended claims.

I claim:

1. An instrument for relieving an area of skin under a cast comprising:

a straight flat body portion;

a single straight flat foot portion located alone at one end of said body portion;

an offset portion connecting said body portion and said foot portion; said foot portion being offset slightly from said body portion in only one direction and by an amount resulting in snug insertion of said foot portion between the cast and the skin; and

said foot portion being offset in the direction of the skin as the instrument is inserted under the cast, the offset of the foot portion causing depression of the foot portion into the skin to provide a scratching and massaging action on the skin.

2. An instrument as defined in claim **1** wherein said portions being formed from a flexible continuous thin flat strip of material and said foot portion being in a plane substantially parallel to the plane of said body portion; said foot portion being sprung against the skin when inserted underneath said cast so that movement of said foot portion over an area of the skin will relieve the skin area.

3. An instrument as defined in claim **1** wherein the surface of said instrument adjacent the skin after insertion under the cast is textured to produce an itching and massaging of said skin area.

4. An instrument as defined in claim **3** wherein the surface of said instrument adjacent the under layer of said cast is smooth.

5. An instrument as defined in claim **1** wherein said offset portion slopes angularly between said body portion and said foot portion.

6. An instrument as defined in claim **1** wherein the surface of said foot portion is tapered toward the end of said foot portion to facilitate insertion of said foot portion underneath the cast.

7. An instrument as defined in claim **1** wherein all said portions of said instrument are of substantially the same width.

8. An instrument as defined in claim **1** wherein all said portions of said instrument are of substantially the same thickness.