

April 18, 1944.

L. SPRARAGEN

2,347,158

BEADING STRIP

Filed April 28, 1939

2 Sheets-Sheet 1

Fig. 1

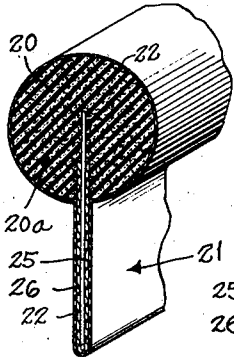


Fig. 2

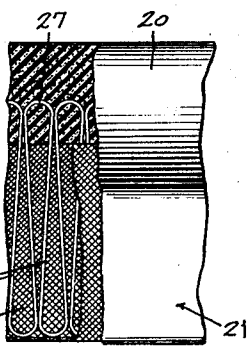


Fig. 3

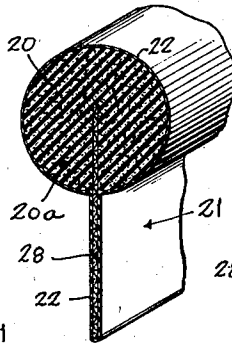


Fig. 4

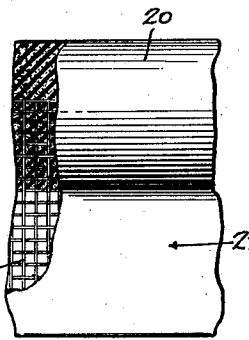


Fig. 5

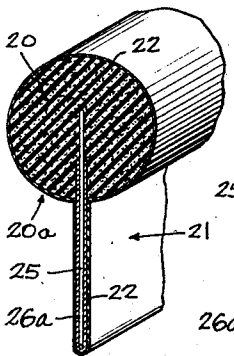


Fig. 6

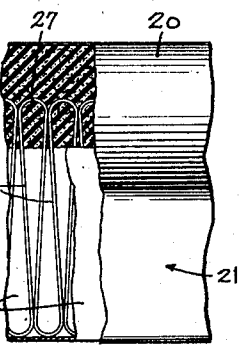


Fig. 7

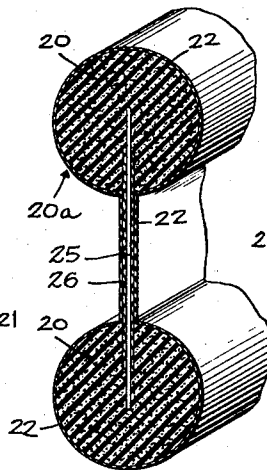


Fig. 8

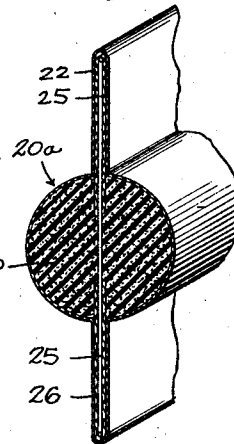


Fig. 9

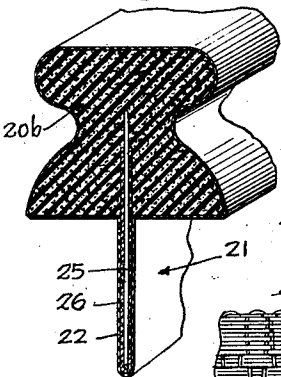


Fig. 10

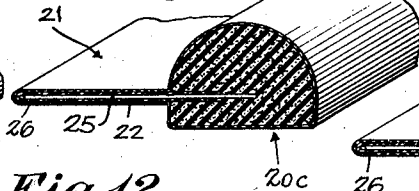


Fig. 11

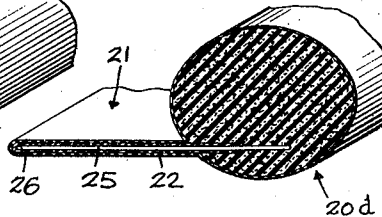
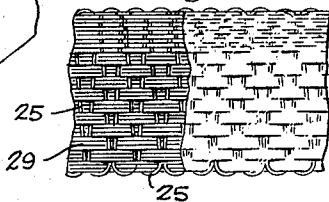


Fig. 12



INVENTOR
Louis Spraragen
BY *Johnson, Kline & Smith*
ATTORNEYS

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Fig. 13

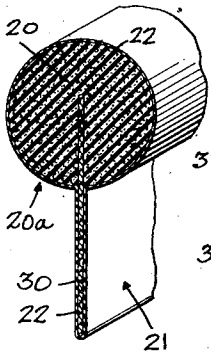


Fig. 14

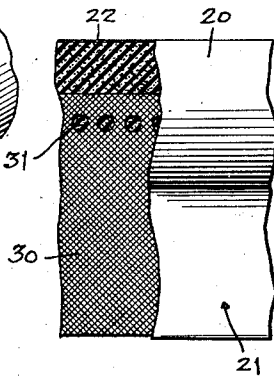


Fig. 15

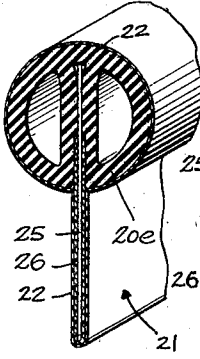


Fig. 16

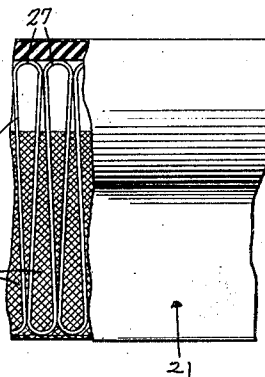


Fig. 17

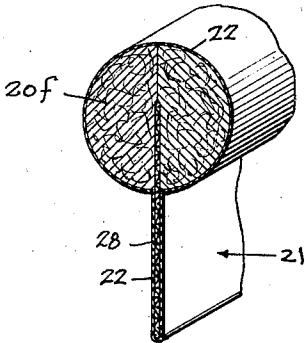


Fig. 18

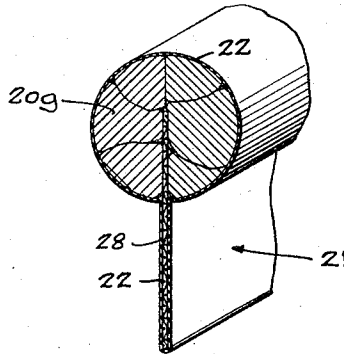
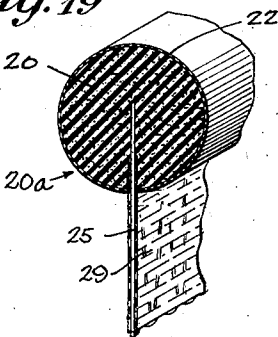


Fig. 19



INVENTOR
Louis Spraragen
BY *Johnson, Kline & Smith*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,347,158

BEADING STRIP

Louis Spraragen, Bridgeport, Conn., assignor to
Bridgeport Fabrics, Inc., Bridgeport, Conn., a
corporation of Connecticut

Application April 28, 1939, Serial No. 270,582

26 Claims. (Cl. 20-69)

This invention relates to a flexible beading strip, and, more particularly, to a strip having a resilient flexible cover intimately formed thereon.

Beading strips have long been used for applying finishing edges to upholstered articles, as sealing strips for closing the joint between two relatively movable members, and for weather-proofing openings or other like purposes.

When strips have been used in conjunction with upholstered devices, efforts have been made to cover the strips with a material which will blend with the material with which they are to be used.

In prior constructions, these covers have taken the form of fabric leather or artificial leather coverings disposed about the bead and secured in place thereon. If it was desired in these prior constructions to fit the beading about a curve having a short radius of curvature, it was practically impossible to get a smooth finished appearance, due to the fact that the material on the inside of the curve would bunch and the material on the outside of the curve would approach its limit of stretching and prevent the bead from being properly curved.

Further, when the bead is to be used as a weather stripping, or a seal, and subject to adverse conditions, the cover must, of course, be of such material as will protect the bead from deterioration.

An object of the present invention is to provide a beading strip which has an attractive appearance and is satisfactory for the purpose of sealing or ornamenting upholstered articles, and at the same time the beading strip, with its desired covering thereon, may be readily bent to the desired curvature. A further object of the present invention is the use of a cover of such material as to protect and prevent deterioration of the bead when used in locations where the bead is subjected to adverse conditions.

These objects are accomplished, according to the present invention, by providing the core or bead portion of the beading strip of flexible material and securing thereto an anchoring strip of flexible material and then covering the bead and anchoring strip with a flexible resilient coating intimately secured thereto so as to become integral therewith to bend and flex with the bead, which covering material not only protects the bead but also provides it with a suitable outward appearance that blends with the material with which it is to be used.

When the beads and attaching strips have been secured together, they are covered with the elas-

tic coating which firmly adheres to the surface of the bead and attaching strip so as to completely cover the same. This covering material will enable the bead and attaching strip to be fitted to a curve having a relatively short radius of curvature as it will yield, when the bead is applied to the curve, by stretching on the outside of the curve and compressing on the inside of the curve, thus presenting a smooth outward appearance.

In the preferred form of the invention, the flexible resilient material forming the cover can be deposited from a latex dispersion, synthetic latex, synthetic rubber, or any material of this nature and can be self-curing, air-cured, or heat-cured.

Further, the covering material can be provided with any suitable pigment, coloring material or filler so as to produce a surface which will blend with the upholstery or like material with which it is to be used. Also, the covering material can be provided with suitable materials which will resist deterioration of the seal in case the bead is to be used under adverse conditions, since it completely encloses the bead and attaching strip and seals it against contact with injurious elements.

The covering material may be applied to the assembled bead or attaching strips in many ways, as, for example, by dipping, spraying or otherwise applying the coating so as to completely cover the surface.

With a covering of this nature, various materials can be used for the bead and attaching strip. Rubber, sponge rubber, cotton bats, paper or fibrous cord, or the like material can be used for the bead, and stiff fabric such as crinoline or buckram, a laminated strip of wire loops positioned between cheesecloth, paper or fabric, and wire screen or the like material can be used for the attaching strip, since they will be adequately protected by the cover and will not present an objectionable appearance in use.

The bead, according to the present invention, can be of various sizes and shapes and can be located in various positions with respect to the attaching strip. In some cases, the bead can be omitted entirely and the stiff resilient attaching strip covered with a layer of latex deposited from a dispersion of latex or the like covering material and used in such a manner as to form a sealing or reinforcing member.

Other features and advantages will be apparent from the specification and claims when con-

sidered in connection with the drawings, in which:

Figure 1 is a perspective view of one form of the invention, using wire and cheesecloth as the attaching strip.

Fig. 2 is a side elevational view, partly in section, of the form of the invention disclosed in Fig. 1.

Fig. 3 is a perspective view of the form of the invention using wire screen as the attaching strip.

Fig. 4 is a side elevational view, partly in section, of the form of the invention shown in Fig. 3.

Fig. 5 is a perspective view of another form of the invention, with the attaching strip comprising wire loops disposed between paper.

Fig. 6 is a side elevational view, partly in section, of the form of the invention shown in Fig. 5.

Fig. 7 is a perspective view of a beading strip having beads at each edge of the attaching strip.

Fig. 8 is a perspective view of the form of the invention showing the bead intermediate the side margins of the attaching strip.

Fig. 9 is a perspective view showing the bead of irregular shape.

Fig. 10 is a perspective view of another form of the invention, showing the bead with a flat bottom and the attaching strip projecting from one side.

Fig. 11 is a perspective view showing an oval bead with the attaching strip projecting therefrom.

Fig. 12 shows a side elevational view of an attaching strip, forming a sealing means with the cover partly broken away.

Fig. 13 is a perspective view of another form of the invention, showing the attaching strip as a stiff fabric.

Fig. 14 is a side elevational view, partly in section, of the form of the invention shown in Fig. 13.

Fig. 15 shows another form of the invention in which the bead is formed by a hollow rubber member.

Fig. 16 is a side elevational view, partly in section, of the form of the invention shown in Fig. 15.

Fig. 17 is a perspective view of another form of the invention in which the bead comprises cotton bats.

Fig. 18 is a perspective view of another form of the invention in which the bead comprises paper or fibrous cord.

Fig. 19 is a perspective view of a form of the invention wherein the bead portion alone is covered with the resilient cover.

According to the present invention, a beading strip which can be readily bent to the desired curvature is provided with a flexible resilient cover which will bend with the beading strip so as to form a smooth surface when the beading strip is carried around a curve having a short radius of curvature.

The beading strip, in the preferred form of the invention, comprises a bead 20 of flexible material and an attaching strip 21 of relatively stiff bendable material secured thereto and the bead and attaching strip covered and completely enclosed by a relatively thin coating or film 22 of flexible material.

As shown in the drawings, the bead 20 can be of any desired shape, for example, it can be circular in cross-section, as shown at 20a, 20e, 20f and 20g in Figs. 1 through 8 and 13 through 19; it can be of an irregular shape, as shown at 20b in Fig. 9, wherein the sides of the bead are symmetrically disposed about the vertical axis; it can be semicircular so as to have a flat side, as shown

at 20c in Fig. 10; or it can be elliptical in cross-section, as shown at 20d in Fig. 11.

The bead can be formed of various materials which are flexible and capable of bending and also are resilient enough to form a seal if used for that purpose.

Preferably, the bead 20a is made of solid rubber, sponge rubber, or the like, as illustrated in Figs. 1 to 11, 13, 14 and 19, and can be molded directly on the attaching strip, can be formed in two halves and cemented together, or can be formed in a solid piece with a slit therein for receiving the attaching strip.

If desired, the bead can be formed as a hollow rubber member 20e which can be two separate hollow members secured together or can be extruded as a single member and folded into circular formation as shown in Figs. 15 and 16. In extruding the bead, it can be formed with its surface, which is shown engaging the attaching strip, in a straight line, or it may be extruded in such a manner that there is a tendency for these surfaces to move toward one another, and, therefore, assume the circular formation shown in Fig. 15.

Also, the bead can be formed from cotton bats 20f molded so as to form halves of the bead, and either stitched or cemented together, as shown in Fig. 17. Also, the bead may be formed from a paper 20g, which may be twisted in the form of a rope or ropes of other fibrous material secured together by stitching or cementing as shown in Fig. 18.

The beads are mounted and held in proper position by attaching strips. These strips are of stiff bendable material having sufficient resiliency to hold the bead in proper position, and, in the instance where the beading strip is used as a seal or weather stripping, will press the bead into proper sealing relation with a cooperating member.

The attaching strip may take many forms, as shown in the drawings. It may comprise a reinforced laminated strip including a plurality of loops of wire 25 disposed between layers of cheese-cloth 26, as shown in Figs. 1, 2, 7 to 11, 15 and 16, or disposed between layers of paper 26a or other fabric, as shown in Figs. 5 and 6, with the ends of the wires forming loops 27 projecting beyond one edge of the cheesecloth or other material which is to be secured in the bead.

The laminated strip is secured in the bead by having the edge thereof disposed within the bead with the material of the bead extending through the loops to interlock therewith, and the fabric firmly adhered to the material of the bead by cement or other adhesive material. The laminated strip is positioned with respect to the bead so as to extend radially therefrom, or it can project at an angle to the axis of the bead, as shown in Figs. 10 and 11.

The cheesecloth or other material of the laminated strip, which is used with the wire loops, can be suitably treated with a binder or rubber cement which will cause the rubber to adhere thereto so that the rubber of the bead or the cement used in securing the strip in place in the bead will firmly hold the laminated strip in the bead.

The attaching strip may also comprise a strip of wire screening 28, as shown in Figs. 3, 4, 17 and 18. In this form of the invention, the screening is positioned so as to extend into the bead, and the rubber or material on the bead is caused to adhere to the wire and through the apertures in the screen to securely anchor the strip to the

bead. The wire screening may have the strands thereof of the same thickness, or the strands, which are perpendicular to the axis of the bead, may be heavier as the strip may require.

The attaching strip may also take the form of a plurality of loops of wire 25 interwoven with fabric 29 as shown in Fig. 12, or it may comprise a stiff fabric 30 such as crinoline or buckram suitably treated and interlocked with the material of the bead. If the fabric is sufficiently roughened to obtain this interlock, no further operations are necessary on the fabric. However, if it is desired to obtain a more secure hold between the attaching strip and the bead, a plurality of openings 31 can be provided along the edge of the attaching strip which is positioned in the bead so that the material of the bead can be interlocked therewith.

In cases where the bead is not desired, it may be omitted as shown in Fig. 12 and the attaching strip utilized as a sealing or reinforcing member.

The beads, especially when made of rubber or artificial rubber, according to the present invention, are preferably treated or impregnated with a bonding material or other composition before they are covered with a thin coating or layer of resilient flexible material which becomes intimately secured thereto so as to bend with the bead. If desired, the beads and attaching strips can also be impregnated with the bonding material prior to the application of the cover so that it more readily adheres thereto.

In the preferred form of the invention, the covering material comprises a deposit from a dispersion of latex, and the thin coating or layer thereof can be formed by dipping, spraying or otherwise applying the latex to the treated bead and attaching strip so as to completely enclose and encase the same. The cover when so made will completely seal the bead and attaching strip against engagement by foreign materials and will enable the various types of bead and attaching strips, as noted above, to be used with satisfactory results. Other materials may be used for the cover, such as synthetic latex, rubber, synthetic rubber, or the like resilient flexible materials, and the cover materials can be self-curing, air-cured, or heat-cured.

Suitable pigments, coloring material or fillers can be added to the covering material to provide a desirable surface on the beading strip so that the strip will blend with the material with which it is used. Also, the covering material can be provided with suitable materials which will render it resistant to deterioration when the beading strip is used for sealing or weather stripping.

With this cover of flexible resilient material intimately secured to the bead and attaching strip, the beading can be used as a binding strip for upholstery, a sealing strip between movable members, and a weather stripping, for example, about openings. The attaching strip will enable the beading strip to be properly positioned and will resiliently hold it in such a position.

When the strip is to be carried around a curve having a short radius of curvature, the flexible covering will yield with the bead so as to stretch on the outside of the curve and compress on the inside of the curve, providing a smooth surface on the bead at the curve.

In the form of the invention shown in Fig. 19, the sponge rubber bead portion has an attaching strip secured thereto similar to that shown in Fig. 12 comprising wire loops 25 interwoven with

fabric 29. In this form of the invention, the coating of resilient material is placed only over the bead 20a, and the fabric of the attaching strip is dyed so as to have the same color as the surface of the bead. This form of the invention may be desirable where the attaching strip is to be covered by upholstery, and, therefore, will not be required to have the covering or coating of elastic material disposed thereover.

The beading strip can be attached in position by having its attaching strip provided with a dry adhesive or thermoplastic adhesive, which can be caused to adhere upon being rendered tacky or by heat and pressure or can be cemented in place. Also the beading strip can be attached by stitching, tacking or otherwise fastening it to the frame or element to which it is to be secured, and the resiliency of the attaching strip will hold the bead in proper position.

It is to be understood that in the broader aspects of the invention the various types of beads can be used with the various types of attaching strips and be covered with any one of the above covering materials suitable for the use to which the strips are to be applied.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

I claim:

1. A beading strip comprising a flexible bead portion; a laminated attaching strip comprising wire loops disposed between layers of fabric secured to the bead portion, said bead and attaching strip being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

2. A beading strip comprising a flexible bead portion; a laminated attaching strip comprising wire loops disposed between layers of fabric with the ends of the loops projecting beyond the edge of the fabric so as to be interlocked with and secured to the bead portion, said bead and attaching strip being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

3. A beading strip comprising a solid flexible bead portion; a strip of wire screen having one edge thereof secured to the bead portion to form an attaching strip for the bead, said bead being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead and attaching strip which will bend with the bead without bunching material secured to the bead and strip of wire screen.

4. A beading strip comprising a solid flexible bead portion; a strip of wire screen having one edge thereof secured to the bead portion to form an attaching strip for the bead, said bead portion being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead portion and attaching strip and forming a flexible cover completely enclosing and encasing the bead portion and wire screen and intimately secured thereto.

5. A beading strip comprising a flexible bead

portion; a stiff woven textile fabric strip having one edge thereof secured to the bead portion, said bead portion and stiff woven textile fabric attaching strip being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead portion and attaching strip and adhering securely thereto and forming a flexible cover for the bead portion and attaching strip which will bend with the bead without bunching.

6. A beading strip comprising a bead of flexible fibrous material; a flexible resilient attaching strip secured thereto, said bead and attaching strip being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

7. A beading strip comprising a bead of flexible paper-like material; a flexible resilient attaching strip secured thereto, said bead and attaching strip being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

8. A beading strip comprising a bead of cotton bat material; a flexible resilient attaching strip secured thereto, said bead and attaching strip being impregnated with a binder; and an outwardly non-adhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

9. A beading strip comprising a bead of fibrous rope-like material; a flexible resilient attaching strip secured thereto, said bead and attaching strip being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

10. A sealing strip including a resilient strip impregnated with a bonding compound and having a covering comprising a coating directly deposited from a dispersion of latex secured to the impregnated surface of the strip.

11. In a sealing strip, an attaching strip; a bead of flexible resilient material secured to the attaching strip intermediate the edges thereof and projecting from both faces of the attaching strip, said bead and attaching strip being impregnated with a binder; and an outwardly non-adhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

12. A bead strip comprising an attaching strip and a pair of flexible beads secured to the edges of the strip, said bead and attaching strip being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

13. A beading strip comprising a bead of flexible material; a flexible resilient attaching strip secured thereto and projecting therefrom for resiliently urging the bead into proper position, at

least said bead being impregnated with a bonding compound; and a relatively thin, outwardly non-adhesive cover directly deposited from a dispersion of latex and intimately secured to the surface of the impregnated bead and attaching strip.

14. A beading strip comprising a bead of flexible material; a flexible resilient attaching strip anchored in and cemented to the bead to project therefrom and provide a means for mounting the beading strip, said bead and attaching strip being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

15. A beading strip comprising a hollow rubber bead; a flexible resilient attaching strip having loops projecting from the margin thereof and interlocked with the bead material, said bead and attaching strip being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

16. A beading strip comprising a flexible bead portion; a stiff combined textile and wire attaching strip having loops of wire projecting from one edge thereof and interlocked with the bead portion, said bead and attaching strip being impregnated with a binder; and an outwardly non-adhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

17. A beading strip comprising a bead of flexible material having a flat surface; a flexible resilient attaching strip secured to said bead and extending from the flat surface, said bead and attaching strip being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

18. A beading strip comprising an irregular shaped bead having a flat surface and an attaching strip extending from said bead substantially perpendicular to said flat surface, said bead and attaching strip being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

19. A beading strip comprising a D-shaped bead of flexible material; a combined textile and metal attaching strip secured thereto and extending therefrom, said bead and attaching strip being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead and attaching strip and adhering securely thereto and forming a flexible cover for the bead which will bend with the bead without bunching.

20. A beading strip comprising a bead of flexible material; a flexible resilient attaching strip anchored in the bead to project therefrom and provide a means for mounting the beading strip; and a relatively thin, outwardly-nonadhesive,

impervious coating of tough, flexible, wear-resisting material permanently secured to the surfaces of the bead and attaching strip to form an integral layer thereabout yielding to permit the bead to be bent into a curve of short radius without buckling and without more crumpling than that produced by bending of the bead of flexible material.

21. A beading strip comprising a flexible bead; a flexible resilient attaching strip secured thereto and projecting therefrom, said bead and attaching strip being impregnated with a bonding compound; and an outwardly nonadhesive coating of rubber-like material intimately secured to the surfaces of the impregnated bead and attaching strip to form an integral layer thereabout which will bend with the bead without bunching.

22. A beading strip comprising a bead of flexible fibrous material; a flexible resilient attaching strip secured thereto, the bead and attaching strip being coated with a bonding agent; and a relatively thin, outwardly nonadhesive coating of tough, flexible, wear-resisting material permanently secured to the treated surfaces of the bead and attaching strip to form an integral cover thereabout yielding to permit the bead to be bent into a curve of relatively short radius without buckling and without more crumpling than that produced by bending of the material of the bead.

23. A beading strip comprising a bead of flexible paper-like material; a flexible resilient attaching strip secured thereto, the bead and attaching strip being coated with a bonding agent; and a relatively thin, outwardly nonadhesive coating of tough, flexible, wear-resisting material permanently secured to the treated surfaces of the bead and attaching strip to form an integral cover thereabout yielding to permit the bead to be bent into a curve of relatively short radius

without buckling and without more crumpling than that produced by bending of the material of the bead.

24. A beading strip comprising a bead of flexible material; a stiff woven fibrous textile fabric attaching strip anchored in the bead to project therefrom and provide a means for mounting the beading strip; and a relatively thin, outwardly-nonadhesive, impervious coating of tough, flexible, wear-resisting material permanently secured to the surfaces of the bead and attaching strip to form an integral layer thereabout yielding to permit the bead to be bent into a curve of short radius without buckling and without more crumpling than that produced by bending of the bead of flexible material.

25. A beading strip comprising a flexible bead portion; an attaching strip of stiff crinoline having one edge thereof secured to the bead portion, said bead portion and stiff crinoline attaching strip being impregnated with a binder; and an outwardly nonadhesive coating deposited from a dispersion of latex covering the impregnated bead portion and attaching strip and adhering securely thereto and forming a flexible cover for the bead portion and attaching strip which will bend with the bead without bunching.

26. A beading strip comprising a bead of flexible material; a flexible resilient attaching strip anchored in the bead to project therefrom and provide a means for mounting the beading strip; and a relatively thin, outwardly-nonadhesive, impervious coating of tough, flexible, wear-resisting material permanently secured to the surfaces of the bead to form an integral layer thereabout yielding to permit the bead to be bent into a curve of short radius without buckling and without more crumpling than that produced by bending of the bead of flexible material.

LOUIS SPRARAGEN.

CERTIFICATE OF CORRECTION.

Patent No. 2,347,158.

April 18, 1944.

LOUIS SPRARAGEN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, second column, line 62-63, claim 3, strike out the words "material secured to the bead and strip of wire screen"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 13th day of June, A. D. 1944.

Leslie Frazer

(Seal)

Acting Commissioner of Patents.