Sept. 24, 1968 T. R. BAXTER 3,402,716

ADHESIVE STRIP SUTURE

Filed Jan. 30, 1964

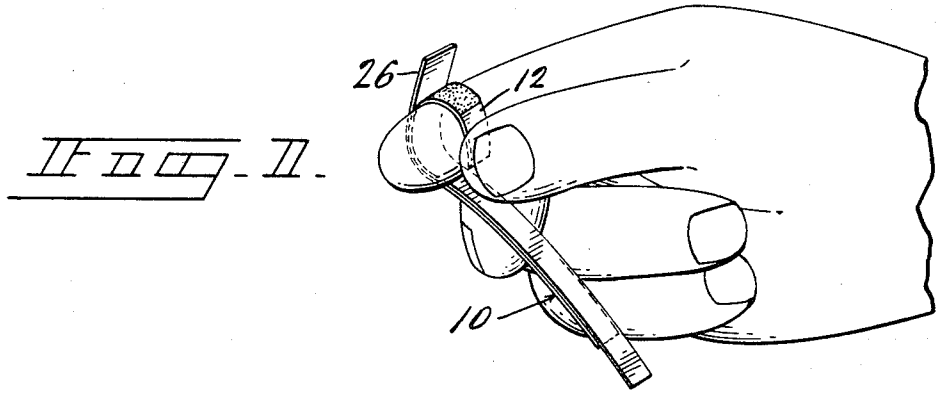

Fig. 1.

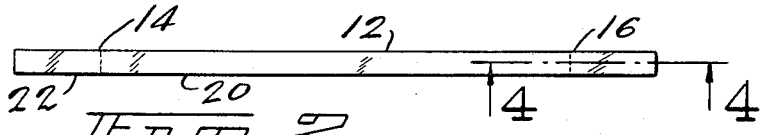

Fig. 2.

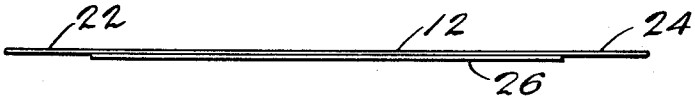

Fig. 3.

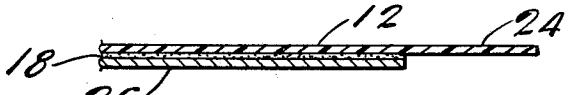

Fig. 4.

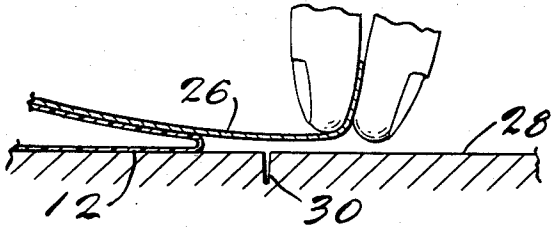

Fig. 5.

INVENTOR:
THOMAS R. BAXTER.
BY
Owen & Owen
ATT'YS.

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ADHESIVE STRIP SUTURE

Thomas R. Baxter, Mount Vernon, Ohio, assignor to Surgical Devices, Mount Vernon, Ohio, a corporation of Ohio

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The present invention relates to means for securing opposite side edges of a body wound or incision together. Means used for such a purpose are commonly called sutures.

The type of suture with which we are concerned comprises a backing strip that is coated with an adhesive which sticks the backing strip securely to the surface of the body on opposite sides of a wound or incision. It is necessary to protect the adhesive from exposure to bacteria and dirt to keep the adhesive sterile and also prevent the adhesive from becoming coated with foreign objects which prevents the adhesive from sticking to the body. A protective strip is therefore used to cover the adhesive and prevent either of the above mentioned harmful results from occurring.

There have been produced heretofore bandages having a backing strip projecting on opposite sides of a gauze pad. The portions of the backing strip which are positioned on opposite sides of the gauge pad are coated with an adhesive, and in one arrangement a single protective strip covers the entire backing strip with the ends of the protective strip being conterminous with the ends of the adhesive. With such an arrangement, it is necessary to insert a fingernail or other object between the adhesive and protective strip in order to separate the protective strip from the adhesive layer. This is difficult, time consuming, and impossible for a surgeon wearing rubber gloves.

In another arrangement the adhesive coated portions on opposite sides of the gauze pad have been covered with separate protective strips which overlap in the region of the gauze pad. With such a structure it is necessary to first expose a portion of the adhesive adjacent the center of the backing strip. If the portion which is first exposed is then stuck to the body before the remainder of the adhesive covering that portion of the backing strip is removed, the portion of the backing strip from which the protective strip is being removed is stretched in a direction away from the wound. This cannot be used to accomplish the purposes of the present invention, as will later become clear. If the protective strip is totally removed from one side portion of the backing strip, the backing strip may buckle so that portions of the adhesive stick together and the portion that is stuck together is thereafter difficult to straighten.

An object of the present invention is the provision of a new and improved suture comprising: a backing strip having a transversely extending weakened area spaced from one end of the backing strip, adhesive covering the portion of said backing strip adjacent and spaced to the opposite end from the weakened area and with the portion spaced toward said end from said weakened area being free of adhesive, and a protective strip covering said adhesive, whereby the uncoated portion of the backing strip can be easily detached from the portion containing the adhesive after the portion of the backing strip coated with adhesive is stuck to the body.

Another object of the invention is tne provision of a new and improve suture of the above described type wherein the protective strip is a relatively stiff material which remains substantially planar when the backing strip is peeled back away from the protective strip to permit

easy separation of the protective strip from the backing strip.

A further object of the invention is the provision of a new and improved suture of the above described type wherein the ends of the relatively stiff protective strip are substantially conterminous with the opposite edges of the adhesive to permit the end of the backing strips to be easily grasped.

A still further object of the invention is the provision of a suture of the generally above described type having a protective strip which can be doubled back under itself after an end of the adhesive coated backing strip has been stuck to the body, and in which the backing strip is made from a resilient material having "elastic memory" and which is progressively stretched as the protective strip is pulled back off of the backing strip.

Further objects and advantages will become apparent to those skilled in the art to which the invention relates from the following description of the preferred embodiment described with reference to the accompanying drawing forming a part of this specification, and in which:

FIG. 1 is an isometric view of a suture of the present invention showing the backing strip being peeled back by the thumb and fingers of a single hand of a user;

FIG. 2 is a plan view of the suture shown in FIG. 1;

FIG. 3 is a side view of the suture shown in FIG. 1;

FIG. 4 is an enlarged fragmentary sectional view taken along the line **4—4** of FIG. 2; and

FIG. 5 is a fragmentary sectional view showing the suture being applied to a body surface to hold opposite sides of an incision together.

The suture **10** shown in the drawing generally comprises a backing strip **12** having at least one laterally extending weakened area **14** adjacent one end of the backing strip **12**. The preferred embodiment shown has weakened areas **14** and **16** adjacent the opposite ends of the backing strip **12**, and the weakened condition of these areas is produced by at least one perforation extending through the backing strip, and preferably two or more perforations to form a row of the same.

According to the invention the backing strip **12** has an adhesive coating **18** on the portion **20** of its undersurface that lies between the weakened areas **14** and **16**. In some instances the adhesive coating **18** need only cover areas of the portion **20** adjacent the weakened areas **14** and **16** so that its center portion is uncoated, but in the preferred embodiment, the adhesive coating **18** extends continuously between the weakened areas **14** and **16**. The portions **22** and **24** lying outwardly of the weakened areas **14** and **16**, respectively, do not have an adhesive thereon.

The adhesive layer **18** is sterilized and is covered by a protective strip **26** which keeps the adhesive layer **18** sterile and free of dirt and foreign material which would decrease its adhesiveness. In some instances, the protective strip **26** may overlap one or more of the uncoated portions **22** and **24**, but in the preferred embodiment, the ends of the protective strip **26** are generally conterminous with the ends of the adhesive layer **18**.

According to further aspects of the invention, the protective strip **26** is made from a semi-rigid material that is sufficiently rigid that the protective strip **26** remains substantially planar when the suture is supported inwardly of a projecting end portion **22** or **24** and the backing strip **12** is peeled back over the protective strip **26**. Thereafter the exposed adhesive can be pressed against the body **28** on one side of an incision **30**, as shown in FIG. 5, and the protective strip **26** pulled across the incision **30** over the surface of the body. The backing strip **12** is not only folded down upon the surface of the body **28** during this operation, but the backing strip **12** is pulled taut during the same operation. The backing strip **12** is preferably of resilient elastomeric material having an

"elastic memory" so that it is stretched to some extent as the protective strip **26** is pulled over the surface of the body **28**. Once the backing strip has been stretched across the incision **30** and adhered to the surface of the body on opposite sides of the incision **30**, the resilient nature of the elastomeric material draws and holds the opposite side surfaces of the incision **30** into tight engagement. The suture being now properly placed, the uncoated ends **22** and **24** of the strip **12** may be torn away at the weakened lines **14** and **16** leaving only the coated portion thereof in place over the wound or incision. The backing strip may be made of any suitable elastic material, such as a thermoplastic resin. Polyolefins, such as a mixture of polyethylene and polypropylene, have been found to be an excellent material. The adhesive must be one which adheres strongly to the backing strip **12** and should preferably be one which can be sterilized by autoclaving. Numerous suitable adhesives can be obtained commercially for this purpose. The protective strip **26** should be relatively stiff and be capable of being removed from the adhesive layer **18** without removing the adhesive layer **18** from the backing strip **12**. A silicone-treated paper that is relatively stiff compared to the backing strip **12** has been found to give excellent results.

While the invention has been described in considerable detail, it is not desired to be limited to the particular embodiment shown and described, and it is intended to cover hereby all novel adaptations, modifications, and arrangements thereof which come within the practice of those skilled in the art to which the invention relates.

What I claim is:

1. A suture comprising: an elongated flexible backing strip having a pair of transversely extending weakened areas respective ones of which are spaced inwardly from respective ends of said backing strip, a layer of adhesive covering the portions of said backing strip adjacent and spaced toward each other from said weakened areas, the portions of said backing strip positioned toward the ends of said backing strip from said weakened areas being uncoated, and a relatively stiff protective strip extending between said weakened areas and covering said adhesive with the ends of said protective strip being generally conterminous with the outer edges of said layer of adhesive, said relatively stiff protective strip being sufficiently stiff to remain substantially planar when said suture is supported inwardly of one of said weakened areas and said elastic backing strip is peeled back away from the protective strip to achieve separation of said adhesive and said protective strip.

2. A suture comprising: an elongated flexible backing strip having a pair of transverse rows of perforations respective ones of which are spaced inwardly from respective ends of said backing strip, a layer of adhesive covering the portions of said backing strip adjacent and spaced toward each other from said rows of perforations with the outer edges of said adhesive being generally conterminous with said perforations, the portions of said backing strip positioned toward the ends of said backing strip from said rows of perforations being uncoated, and a relatively stiff protective strip extending between said rows of perforations and covering said adhesive with the ends of said protective strip being generally conterminous with the ends of said layer of adhesive, said relatively stiff protective strip being sufficiently stiff to remain substantially planar when said suture is supported inwardly of a row of perforations and said elastic backing strip is peeled back away from the protective strip to achieve separation of said adhesive and said protective strip.

3. A suture comprising: an elongated flexible backing strip having a transversely extending weakened area adjacent one end of said backing strip, a layer of adhesive covering the portion of said backing strip adjacent to and spaced toward the opposite end of said backing strip from said weakened area, the portion of said backing strip spaced toward said one end of said backing strip from said weakened area being uncoated with adhesive, and a relatively stiff protective strip covering said adhesive with the outer edge of said protective strip being generally conterminous with the outer edge of said layer of adhesive, said relatively stiff protective strip being sufficiently stiff to remain substantially planar when said suture is supported inwardly of said weakened area and said one end of said backing strip is peeled back away from the protective strip to achieve separation of said adhesive and said protective strip.

4. A suture comprising: an elongated flexible generally planar backing strip having a transversely extending weakened area adjacent one end of said backing strip, a layer of adhesive covering the portion of said backing strip adjacent to and spaced toward the opposite end of said backing strip from said weakened area with the outer edge of said layer of adhesive being generally conterminous with said weakened area, the portion of said backing strip spaced toward said one end of said backing strip from said weakened area being uncoated with adhesive, and a protective strip covering said adhesive, and whereby said uncoated end portion of said suture can be easily detached by breaking said backing strip at said weakened area after said adhesive coated backing strip has been secured to the body.

5. A suture comprising: an elongated flexible generally planar backing strip, a layer of adhesive on said backing strip, said adhesive being spaced from at least one end of said backing strip to leave a portion at said one end which is uncoated with adhesive, and a relatively stiff protective strip covering said adhesive with the outer end of said protective strip positioned inwardly of said one end of said backing strip, said relatively stiff protective strip being sufficiently stiff to remain substantially planar when said suture is supported inwardly of said uncoated end of said backing strip and said one end of said backing strip is peeled back away from the protective strip to achieve separation of said adhesive and said protective strip.

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DALTON L. TRULUCK, *Primary Examiner.*