

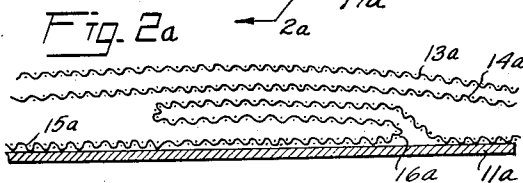
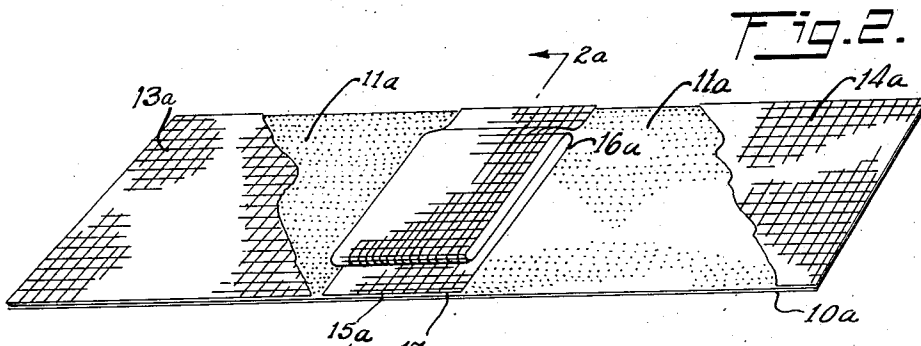
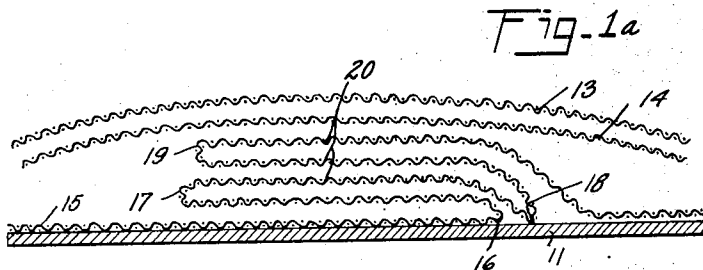
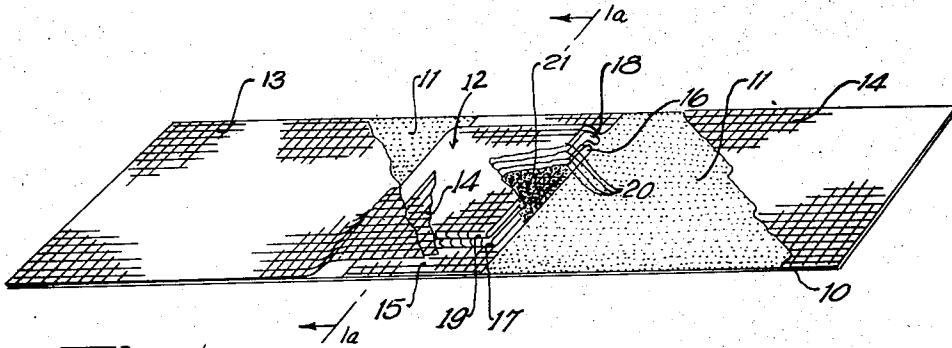
July 19, 1949.

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ADHESIVE BANDAGE AND METHOD AND
APPARATUS FOR MAKING THE SAME

2,476,924

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2 Sheets-Sheet 1



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Fig. 3.

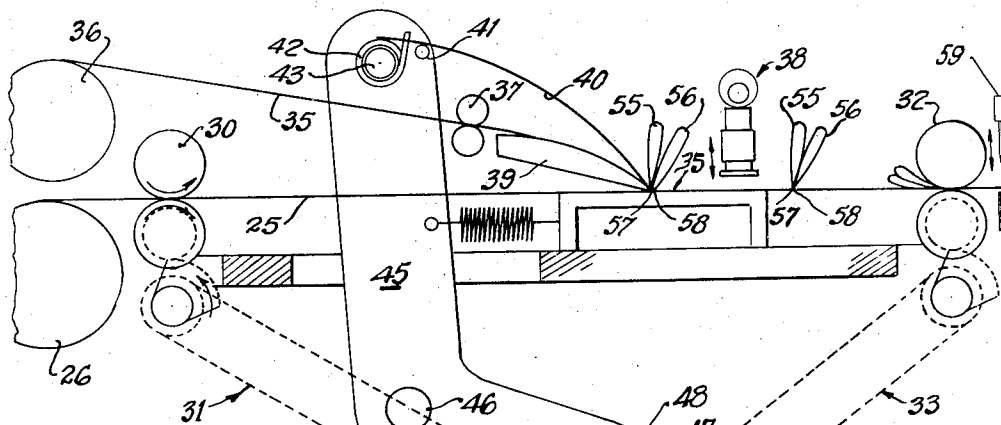
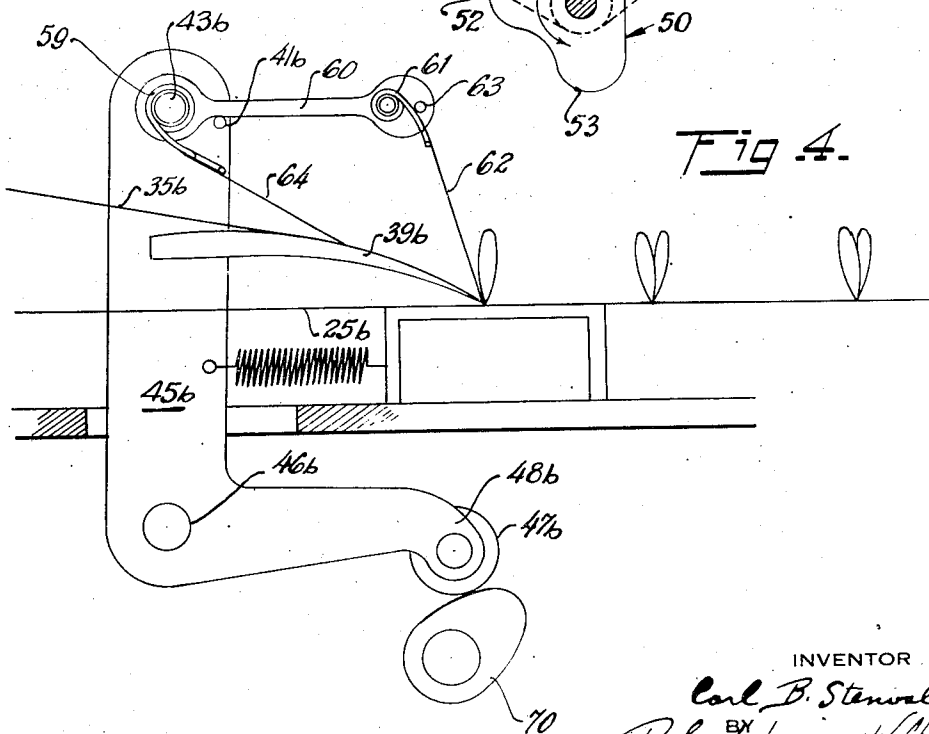


Fig. 4.



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UNITED STATES PATENT OFFICE

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ADHESIVE BANDAGE AND METHOD AND
APPARATUS FOR MAKING THE SAME

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Application November 8, 1947, Serial No. 784,805

14 Claims. (Cl. 128—156)

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This invention relates to adhesive bandages and to methods and apparatus for the forming of the same.

The type of adhesive bandage which is composed of a strip of fabric backing and a layer of adhesive with a gauze pad or the like on a longitudinal central portion thereof is highly advantageous for the covering of superficial cuts, abrasions, burns and other minor wounds and particularly for protecting small wounds such, for example, as a scratch on a finger or hand. A large number of proposals have been made for the formation of such bandages. Among these are the provision in such bandages of a pad composed of a plurality of layers of gauze which extend from edge to edge of the bandage and the provision of a pad wherein the layers of gauze all stop short of the side edges of the bandage. The former type has been subject to objection on the ground that the threads at those edges of the gauze which are coterminous with the side edges of the base strip tend to unravel, to become imbedded in the wound, or to produce an unsightly appearance. The latter type is subject to the disadvantage that the free adhesive at the sides of the pad tends to adhere to a portion of the wound which protrudes slightly beyond the coverage of the bandage, and to pull out the skin near the wound so as to give pain or to interfere with the healing process. In addition, the pad is either entirely dependent on its bottom layer to hold it in place, or else there must be provided supplemental stitching or other securing means.

With the foregoing and other considerations in view the present invention contemplates the provision of an adhesive bandage wherein certain of the layers of gauze terminate short of the sides of the base strip but where, at each side, at least one layer extends out to the side and is in contact with the adhesive thereon. In its more specific aspects it contemplates a gauze pad having folds running longitudinally of the bandage, whereby the presence of loose threads out of contact with the adhesive is avoided without the presence of free adhesive at the side edges of the wound. Such folds can cooperate with the adhesively-secured side portions to retain a medicament particularly effectively when desired.

Moreover, the provision of adhesive bandages wherein all the gauze is spaced back from all the edges of the base involves, almost of necessity, the individual formation of the pads and the placing of them on the adhesive-coated base as

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an independent step. Even if the pads are formed continuously from a continuous strip of gauze, the gauze still has to be severed before the pads are laid upon the coated base. This base is ordinarily in the form of a web which is itself severed after the pads have been pressed against the adhesive coating. Thus, two cutting operations have been necessary. The present invention, on the other hand, contemplates the provision of pads from a single strip of gauze which remains unsevered until the web is cut into individual bandages. Pursuant to the invention a strip of gauze is formed into folds at spaced intervals, leaving an extent of unfolded gauze between each set of folds. The gauze is pressed against the adhesive-coated surface of the web. The web is thereafter cut along lines which bisect the unfolded portions of the web between the pads, thus providing pads which are securely bound to the base, but which in their upper layers do not reach the sides of the base, and which in use provide excellent protection for a wound.

Pursuant to the invention, further, there is provided mechanism including feeding means for a web, feeding means for a strip, and coordinated folded and cutting means, whereby methods as above indicated may be carried out and bandages as above indicated may be formed.

The invention accordingly comprises the article possessing the characteristics, properties, and relation of elements, the several steps and the relation and order of one or more of such steps with respect to each of the others, and the apparatus embodying features of construction, combination of elements, and arrangement of parts, adapted to effect such steps, all as exemplified in the detailed disclosure hereinafter set forth, the scope of the application thereof being indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

Figure 1 is a perspective view partly broken away of an adhesive bandage embodying the invention;

Fig. 1a is a large-scale somewhat diagrammatic sectional view along the line 1a—1a of Fig. 1;

Fig. 2 is a similar view of a modified form of bandage;

Fig. 2a is a large-scale somewhat diagrammatic sectional view along the line 2a—2a of Fig. 2;

Fig. 3 is a somewhat diagrammatic view illustrating a form of procedure for producing such

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a bandage pursuant to the invention and illustrating also apparatus for carrying out the same and embodying the invention; and

Fig. 4 is a similar view of a modified form of method and apparatus.

The adhesive bandage of Fig. 1 is of the general type commonly used on small cuts or abrasions and ordinarily provided in a size which will, for example, readily wrap around a finger. It comprises a cloth backing 10 carrying a layer of adhesive 11 and a central pad 12, the whole being covered until time for use by removable pieces 13 and 14 of wide-mesh cloth. The pad 12 in the present instance is formed from a single strip of gauze 15 which is creased at 16, folded back upon itself on a crease 17, creased at 18, and folded back again at 19 to provide five overlapping gauze layers 20. The creases are preferably and as exemplified disposed somewhat inwardly of the side edges of the members 10 and 11 and of the near edge (Fig. 1) of the lowermost layer 20 and of the far edge (Fig. 1) of the uppermost layer 20. In certain instances there is provided, in accordance with the invention, medicament as, for example, the antiseptic ointment 21 between the two upper ones of the layers 20.

As will be apparent, various modifications may be made without departing from the invention. For example, there is shown in Fig. 2 a construction which is generally similarly formed and in which similar parts are indicated by similar reference numerals bearing the subscript *a*, but wherein the strip 15*a* is only folded over and back upon itself once to provide only three overlapping layers and wherein, in the present instance, no medicament is provided.

In the formation of adhesive bandages in accordance with the invention an adhesive-coated web 25 of relatively heavy cloth or other suitable flexible material is fed intermittently as from a roll 26 along a path as between and by means of a pair of rolls 30, having intermittent driving means 31, and a pair of rolls 32, having intermittent driving means 33. A strip of gauze 35, which is considerably narrower than the web 25, is drawn as from a roll 36 by means of a set of rollers 37 which have a surface speed corresponding to the surface speed of the rollers 32 plus an increment sufficient to feed the material for the folds to be formed, and which are continuously operated. Above the path of the web 25 there is mounted a plate 39 over which the gauze 35 passes in its travel from the roll 36 to the web. Movable back and forth on top of the plate 39 is the end of a flat spring or tongue 40 which extends back over a stop pin 41 to join a torsion spring 42 which pulls the spring 40 against the stop pin 41. The spring 42 is mounted on a pin 43 fixed to a bell-crank lever 45 which is pivoted at 46. A ballbearing 47 carried at the free end of the lever by means of brackets 48 rides on a cam 50 which rotates on a shaft 51. The cam contains two rises 52 and 53 and a single "rest" 54, so that the spring 40 will be drawn back and thrust forward twice in succession and will thereafter be idle for a period. The means 31 and 33 are arranged that the rollers 30 and 32 will move only while the portion of gauze which is between the folds is being payed out. When the rise 53 moves under the roller 47, the spring will be drawn back over the gauze 35 on the plate 39; the adhesive on the web 25 serving to prevent the gauze being drawn rearwardly by the spring 40. As the roller 47 rides into the hollow between the rises 53 and 52, the

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spring 40 is thrust forwardly to form a fold 56; the end of the spring 40 serving to frictionally engage the material 35 on the plate 39. As the roller 47 climbs the rise 52, the spring 40 is again drawn back; and, as the roller descends toward the rest 54, the spring 40 is thrust forward to form a fold 55 in proximity to the fold 56. While the roller 47 is vertically stationary during the movement of the rest 54 past it, the movement of the web 35 draws out the gauze 35 to provide the space between one pair of folds 55-56 and the next pair of folds 55-56.

Thus, two folds 55 and 56 may be formed in the gauze 35, with an unfolded portion of gauze between them and the next pair of folds. The forward movements of the spring 40 not only form the folds; but also, in the present instance, push the gauze against the adhesive on lines 57 and 58 which will correspond to the creases 16 and 18 in the bandage of Figure 1. The gauze now travels forward with the web until it encounters an obstruction—in this instance the surface of the upper roll 32—and is pressed rearwardly thereby so that the folds 55 and 56 will lie against a portion of gauze which follows the folds. In the exemplified arrangement, the upper roll 32 will now press the folds down against the gauze and the web to provide the four upper layers 20 of a pad such as the pad 12 of Fig. 1. Medicament may be applied to the gauze, as indicated at 38. A reciprocating cutter 59 severs the web between the pads to provide bandages such as shown in Fig. 1.

Various other procedures and means may be used without departing from the invention in its broader aspects. There is illustrated in Fig. 4 a form which differs from that of Fig. 3 mainly in the provision of two simultaneously operated tongues instead of a single tongue, and in a change in the shape of the cam. A web 25*b* similar to the web 25, and a strip of gauze 35*b* similar to the strip 35, are provided, and are, for the most part, similarly handled. The exemplified apparatus includes members 41*b*, 43*b*, 45*b*, 46*b*, 47*b* and 48*b* all of which are similar respectively to the parts shown in Fig. 3 that are designated by similar reference numerals without subscripts. The plate 39*b* extends rearwardly further than the plate 39. On the pin 43*b* there is mounted a torsion spring 59 controlling an arm 60 on the free end of which is a torsion spring 61 carrying a flat spring 62 and bearing against a stop pin 63. A second flat spring 64 is carried by the torsion spring 59. A single-rise cam 70 replaces the cam 50. As the rise in the cam becomes operative, the springs 61 and 64 are simultaneously drawn back and simultaneously moved forward, so as to form two folds in the gauze; the spring 62 operating over the forward portion of the plate 39*b* to the same extent as the spring 40, and the spring 64 operating simultaneously over the rear portion of the plate 39*b* to the position shown in Fig. 4 to move forward with the spring 62, and then over the forward portion to form the second fold. The remaining operations in this form of procedure are similar to those exemplified in Fig. 3.

Since certain changes in the above article and in carrying out the above method and in the constructions set forth, which embody the invention, may be made without departing from its scope, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. An adhesive bandage comprising an adhesive-coated flexible base strip, and a pad on a longitudinal central portion thereof and including a plurality of layers of gauze, certain of said layers extending to the sides of said strip and certain of said layers terminating short of the sides of said strip.

2. An adhesive bandage comprising an adhesive-coated flexible base strip, and a pad on a longitudinal central portion thereof and including a plurality of layers of gauze one of which extends to one side of said strip and is in contact with the adhesive thereon, another of which extends to the other side of said strip and is in contact with the adhesive thereon, and at least one other of which terminates short of both sides.

3. An adhesive bandage comprising an adhesive-coated flexible base strip, and a pad on a longitudinal central portion thereof and including a single gauze strip folded upon itself and extending from one side to the other of said base strip with creases therein at points inwardly of the sides of the base strip.

4. An adhesive bandage comprising an adhesive-coated flexible base strip, and a single gauze strip folded upon itself at least four times to provide a pad of at least five layers disposed longitudinally centrally of the base strip and gauze portions adhesively secured to said base strip at each side of said pad and all of which are in contact with the adhesive coating on the base strip at at least a portion of their extent.

5. An adhesive bandage comprising an adhesive-coated flexible base strip, and a pad on a longitudinal central portion thereof and including a single gauze strip folded upon itself at least twice to provide a pad of at least three layers disposed longitudinally centrally of the base strip and gauze portions adhesively secured to said base strip at each side of said pad.

6. An adhesive bandage comprising an adhesive-coated flexible base strip, and a strip of gauze folded to lie across a longitudinally central portion of the base strip with the creases extending longitudinally of the base strip and disposed inwardly of the longitudinal edges of the base strip and with the end portions of the strip of gauze in contact with said adhesive and extending to the longitudinal edges of the base strip to provide a pad which is disposed inwardly of all edges of the base strip and which is secured thereto by said end portions.

7. A method of forming an adhesive bandage which comprises providing a flexible base carrying a coating of adhesive, folding a strip of gauze at least twice upon itself on lines nearer together than the width of the base, and laying an outer fold of the gauze transversely against the adhesive on a portion of said base which is generally central of a pair of the edges thereof.

8. A method of forming an adhesive bandage which comprises providing a flexible base carrying a coating of adhesive, folding a strip of gauze a plurality of times on lines nearer together than the width of the base, laying an outer fold of gauze transversely against the adhesive on a portion of said base which is generally central of a pair of the edges thereof and the inner side of a portion of the other outer layer of gauze against the adhesive, to hold the pad securely in place.

9. A method of forming an adhesive bandage which comprises providing a flexible base carrying a coating of adhesive, folding a strip of gauze

upon itself, forming a crease in said gauze and pushing the crease against said adhesive, and pressing the resultant folds back and compacting against said base said resultant folds and a portion of said strip of gauze beyond said folds.

10. A method of forming an adhesive bandage which comprises providing a flexible base carrying a coating of adhesive, providing a strip of gauze, forming a plurality of creases in said gauze and drawing said creases together, adhering the creased gauze to the coated base, and thereafter flattening the folds intermediate said creases to form a pad with additional creases on the side opposite the aforesaid creases.

11. The method of making adhesive bandages which comprises intermittently moving a web of adhesive-coated material along a path, continuously feeding a narrower strip of gauze toward a longitudinally central portion of said path, forming the gauze into a plurality of folds at spaced intervals along its length as it approaches the web, adhering the gauze to the web and compacting the folded portions of the gauze to form pads, and cutting the web between at least certain of said pads to provide individual bandages.

12. The method of making adhesive bandages which comprises moving a web of adhesive-coated material along a path, feeding a narrower strip of gauze toward a central portion of the web, forming the gauze into a plurality of folds at spaced intervals along its length to provide pads, adhering to the web the pads and the intermediate unfolded gauze portions, and cutting the web on lines bisecting said intermediate gauze portions to provide strips wherein the gauze extends to each side of the longitudinally centrally-located pads.

13. Apparatus for the manufacture of adhesive bandages comprising means to feed an adhesive-coated web along a path, means to feed a strip of gauze toward the web, means to fold the gauze upon itself, means to cause said folding means to operate only at spaced intervals, an obstruction in the path of said folds to press them against said web, and means to cut said web and said strips at points intermediate said groups of folds.

14. Apparatus for the manufacture of adhesive bandages comprising means to feed an adhesive-coated web along a path, means to feed a strip of gauze toward the web, means to fold the gauze upon itself and press the creases against the adhesive coating on said web, a roll on the side of said web on which said folds are formed to press said folds back to form a pad and to press the portions of said strip between said folds against the web to secure them thereto, means to cut said web transversely, and means to operate said cutter means at intervals to cut said web between said pads to provide individual bandages.

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Certificate of Correction

Patent No. 2,476,924

July 19, 1949

CARL B. STENVALL

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 3, line 67, after the word "are" insert *so*; column 4, line 10, for "web 35" read *web 25*; column 5, line 65, for "gauge" read *gauze*;

and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 16th day of May, A. D. 1950.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.