

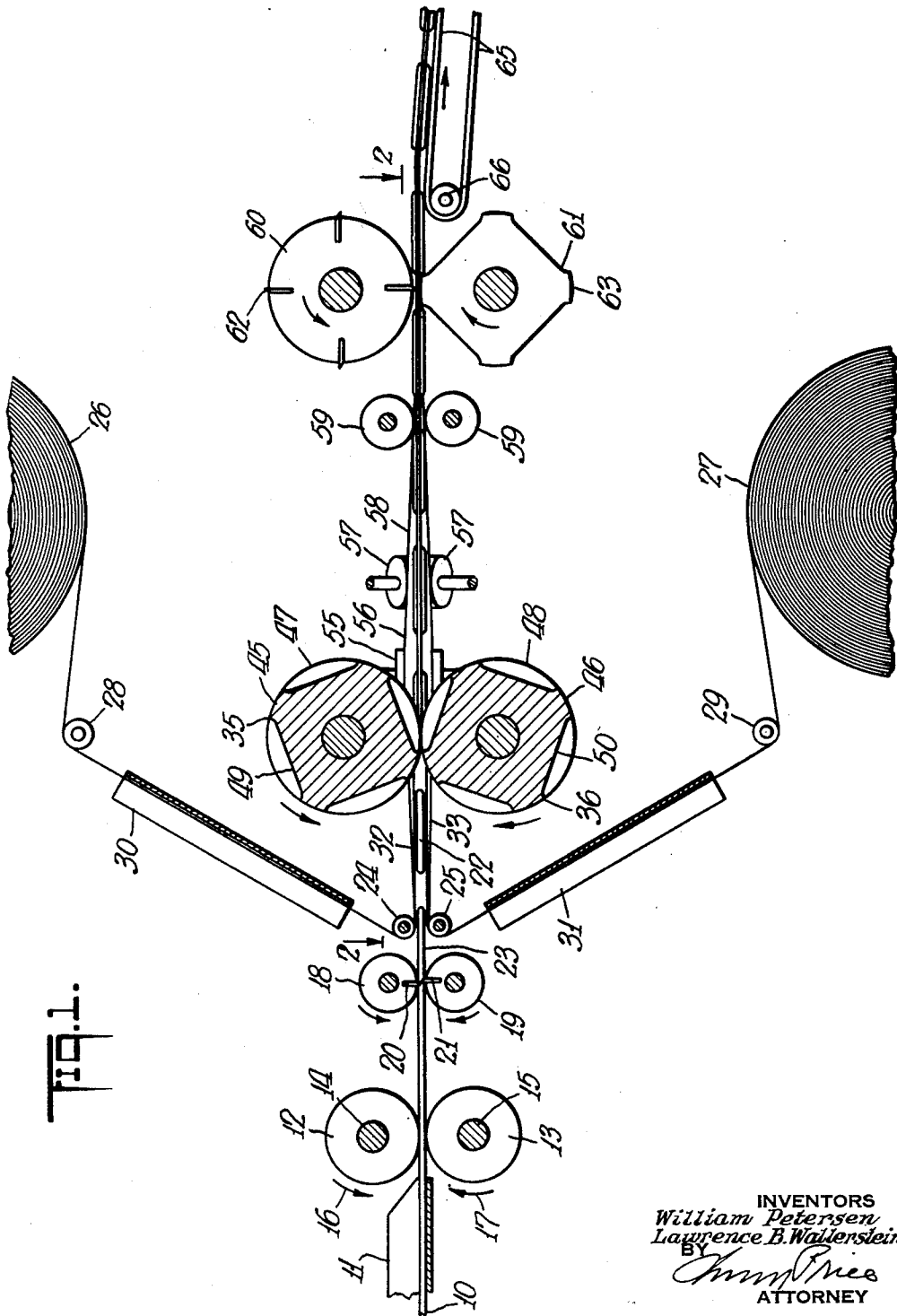
July 14, 1964

W. PETERSEN ET AL
SURGICAL DRESSING PACKAGING

3,140,572

Filed Sept. 17, 1957

2 Sheets-Sheet 1



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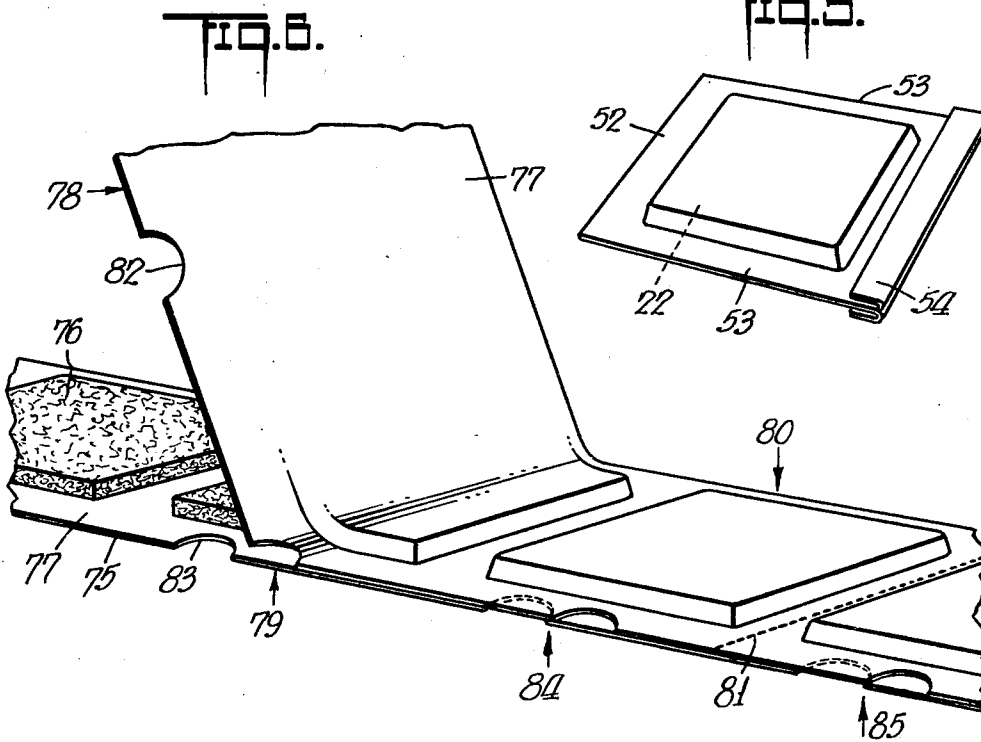
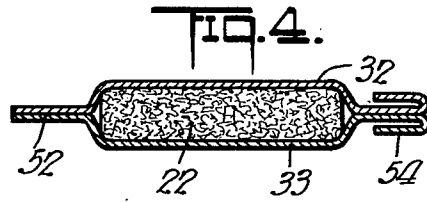
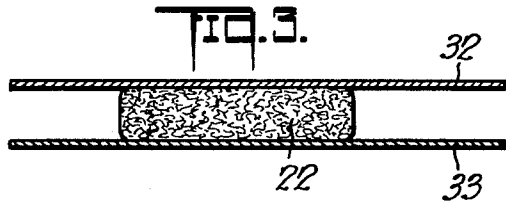
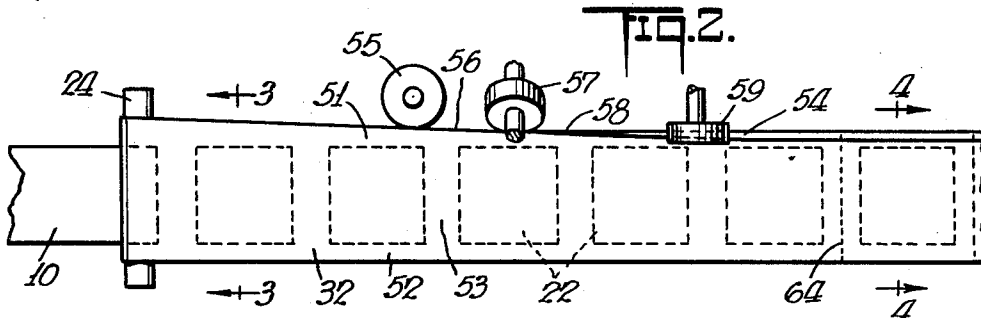
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SURGICAL DRESSING PACKAGING

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Filed Sept. 17, 1957, Ser. No. 684,595

3 Claims. (Cl. 53—28)

The present invention relates to methods in procedures for packaging surgical materials.

Although the present invention will be particularly directed to the packaging of various surgical dressings, such as, absorbent cotton, gauze and cut bandages and the like, it has a broad application to packaging of surgical dressings in general where it is desired to merchandise surgical dressings in unit packages and particularly in transparent cellophane or regenerated cellulose wrapping materials, with the assurance that the surgical dressings will be sterile and comply with all federal and state regulations in respect to sterility and other characteristics.

The present invention has a broad application to the packaging of various materials in heat activated adhesive-coated cellophane or regenerated cellulose, and it will be specifically described in its application to packaging and preparation of absorbent cotton, gauze, cut bandages and in general of prepared surgical dressings, particularly where such dressing are to be sterilized subsequent to or during the packaging thereof and in which said dressings are enclosed and sealed between two sheets of cellophane or regenerated cellulose.

The present invention will be particularly described in connection with cellophane or regenerated cellulose wrapped prepared bandage materials which has been sterilized by gas sterilization, involving mixtures of ethylene oxide 10% and carbon dioxide 90% at pressures of 20 to 33 lbs. per square inch and temperatures of 100 to 150° F.

It is among the objects of the present invention to provide inexpensive, readily operated, high production methods and machinery for the preparation of packaged, prepared surgical dressings, which will enable sterile packaging of relatively small specimens or quantities of surgical dressings in individual packages and which will enable the preparation of such packages in such a manner that they may be readily sterilized, if desired, or subsequently readily packaged, merchandised, displayed, shipped and consumed.

Another object is to provide a simple, readily handled, sterilized and durable package for surgical bandages, absorbent cotton and the like which will reliably retain its seal during sterilization and subsequently incidental to handling, merchandising, shipping, storing and consumption, and which may be readily opened by the ultimate consumer and re-sealed, if desired, by such consumer, with the assurance that there will be no necessary outside contact or contamination and with further assurance that the use of one or more of the packages will not affect the sterilization of the remaining packages in the same container or box or in the completed roll, if the material is so packaged.

Still further objects and advantages will appear in the more detailed description set forth below, it being understood, however, that this more detailed description is given by way of illustration and explanation only and not by way of limitation, since various changes therein may be made by those skilled in the art without departing from the scope and spirit of the present invention.

In accomplishing the above objects, it has been found most satisfactory to provide a cellophane or regenerated cellulose sheet wrapping material which may be utilized

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for the packaging of the absorbent cotton, cut bandages or other surgical material.

Desirably the packaging material is utilized in the form of two sheets having a heat activated adhesive facing between which the prepared surgical dressing material to be packaged is positioned.

The cellophane or regenerated cellulose sheet materials are desirably previously treated to give them both moisture-proof properties, as well as heat sealable adhesive faces.

The enclosing sheets may be provided with a heat activated adhesive on one side only, which will only adhere to another sheet carrying the same type of adhesive or coating and preferably which will not adhere to any prepared surgical dressing material inserted between the two sheets of paper.

This adhesive coating is desirably a partial polymerized combination of a natural or synthetic resin or latex particularly including a high proportion of an intermediate condensation product of a vinyl, acrylic or ethylene resinous material.

Although the wrapping material may widely vary, it has been found that sheets of translucent or transparent regenerated cellulose, known as cellophane may be most satisfactorily employed.

It is desired to employ a coated material or an impregnated material which will enable a heat bonding action with pressure.

In the preferred form of the invention, the prepared surgical dressing material, whether it consists of pre-weighed or pre-measured absorbent cotton, absorbent gauze or pre-cut bandages, is placed at desired intervals upon a strip of the sheet wrapping material which may be provided with heat activated adhesive coating.

Desirably the prepared surgical dressing material is so positioned that there will be a substantial margin of the wrapping sheet with the adhesive material thereon all around the prepared surgical dressing. Then the second sheet of wrapping material with or without the adhesive coating, is applied and the adhesive coating around the portions of the prepared surgical dressing is pressed against the top covering sheet by means of suitable recessed heated rollers and then also pressed together along the edges to form the final package.

If desired, the separate portions or separate packages of the prepared surgical dressing thus formed may be separated or scored by a suitable cutting or rotary knife arrangement.

During this operation, it may be desirable to so cut or overlap or fold back the edge portions of the wrapping material that a ready grip is provided to enable the fingers to separate the two wrapping sheets from the absorbent cotton, cut bandages or other material packaged.

The completed packages before or after separation may be placed in an enclosed chamber where they will be subjected to superatmospheric pressure of a sterilizing gas, such as 90% carbon dioxide and 10% ethylene oxide known as "Carboxide" gas.

The cellophane or regenerated cellulose wrapper will be permeable to sterilizing gases at elevated temperatures and pressures, such a gas, for example, being 10% of ethylene oxide and 90% of carbon dioxide at temperatures ranging from 100° to 150° F. and pressures varying from 10 to 20 to 30 pounds above atmospheric pressure.

With radiation sterilization, the packages before or after separation may be subjected to the radiation treatment for a pre-determined length of time to give the desired sterilizing effect. With radiation sterilization, the use of mylar and/or polyethylene sheet wrapping materials is possible.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:

FIG. 1 is a diagrammatic layout of a packaging mechanism according to the present invention, in side elevation.

FIG. 2 is a top plan view of the arrangement of FIG. 1 upon a reduced scale as compared to FIG. 1, upon the line 2—2 of FIG. 1, with the recessed pressure and cutting rollers removed to more clearly show the operation.

FIG. 3 is a side sectional view upon the line 3—3 of FIG. 2, upon an enlarged scale as compared to FIG. 2, showing the prepared surgical dressing material or absorbent cotton inserted between two sheets of wrapping material before the adhesive coating or coatings are sealed together.

FIG. 4 is a transverse vertical sectional view upon an enlarged scale as compared to FIG. 2, showing the completed package with the marginal edges of the wrapping material sealed together by means of the adhesive coating and with the edges at one side rolled back to permit a consumer most readily to open the package.

FIG. 5 is a top perspective view of the package of FIG. 4.

FIG. 6 is a top diagrammatic perspective view showing an alternative packaging system in which a different arrangement is provided to enable a consumer to open the completed package.

Referring to FIG. 1, there is shown a system and mechanism for packaging absorbent cotton or surgical gauze in small, pre-determined swatches or squares.

A ribbon 10 of absorbent cotton or surgical gauze is fed past the guide 11 to the upper and lower feed rollers 12 and 13, respectively.

These feed rollers are mounted upon the shafts 14 and 15 and they turn in the direction indicated by the arrows 16 and 17.

The guide 11 is provided with suitable means to shape or trim the ribbon of absorbent cotton or surgical gauze 10 and to assure proper alignment of the same as it is fed to the rollers 12 and 13.

The strip of absorbent cotton or surgical gauze then passes to the upper and lower cut-off rollers 18 and 19, having the cooperating knives 20 and 21, which serve to cut the strip of absorbent cotton or surgical gauze 10 in a number of squares or swatches indicated at 22.

The piece of cotton or gauze as indicated at 23, will enter between the rollers 24 and 25 before it is cut off by the knives 20 and 21.

In the meanwhile the heat sealable sheet 26 and 27 is fed from the rolls shown at the top and bottom of FIG. 1, over the rollers 28 and 29 and through the oblique guides 30 and 31 to the rollers 24 and 25, which at this time also grasp and engage the forward end of the strip 23 before it is cut between the knives 20 and 21.

The cut swatches or specimens of the absorbent cotton or surgical gauze, as indicated at 22, will be carried by the upper and lower wrapping sheets 32 and 33 to the sealing rollers 35 and 36.

The sealing rollers, having internal heating means, are provided with the pressure contact portions 45 and 46, maintained at an appropriate sealing temperature, which extend between the pads 22 and also with the pressure contact edges 47 and 48, which will press on the edges of the package to assure a seal thereof.

The adhesive coated sides of the paper 32 and 33, or other wrapping material, will face toward each other and toward the square or swatch of absorbent cotton or surgical gauze.

The recesses 49 and 50 are so spaced and positioned that they will fit over and around the squares or swatches 22 and apply relatively high pressure to the adhesive coating around the area occupied by the swatch 22.

It is desirable to so time the entire motion of the mechanism, as shown in FIG. 1, that the pads are always received in the recesses 49 and 50 so that there will be no crushing of the prepared surgical dressing material being packaged or wrapped. As a result, referring to FIG. 2, there will be a substantially perfect seal formed in the areas 51 and 52 along the edges of the strip 32 and at 53 in the spaces between the swatches 22.

It is then desirable, but not necessary, to form reversed flaps or edges, as indicated at 54 in FIGS. 4 and 5, to enable a package to be more readily opened.

The roller 55 may serve first to open the edges at the position indicated at 56 in FIGS. 1 and 2. Then the oblique rollers 57 will fold the edges partly back at the position indicated at 58 in FIGS. 1 and 2.

The folding rollers 57 may be omitted and the package may have a notched edge to facilitate a tear-type opening, enabling ready access by the ultimate consumer.

Finally, the rollers 59 will press the reversed edges into the shape as indicated at 54 in FIG. 4.

As shown in FIG. 4, the reversed edges 54 may be readily grasped by the fingers to permit opening of the package and removal of part, or all, of the absorbent material therein.

Then the strip of material is passed between the upper and lower cutting rollers 60 and 61.

The paper roller 60 is provided with a series of cutting knives or serrated blades 62 for scoring, while the lands or elevated portions 63 on the roller 61 serve as platens for each blade 62.

Normally the knives 62 will not cut the paper strips at positions 53, but will merely score or partly serrate the wrapping strips, as is indicated at 64 in FIG. 2, so that the separate packages may be detached from each other by the consumer.

The cut-off 62 may be varied to give either a perforated effect or a complete severance.

After scoring between the rollers 60 and 61, the strip passes onto a conveyor belt or take-off 65, which is driven upon the rollers 66.

In packaging, the separate elements may be separated along the scored lines 64 and packed as separate elements or the entire strip may be rolled or folded into a suitable container, can or carton.

In the alternative embodiment in FIG. 6, the lower wrapping strip receives the squares or pads of absorbent cotton 76.

The upper strip 77 will also have an adhesive coating upon the lower side, as indicated at 78, and this upper sheet may be applied to the lower sheet at the position 79 and then a reciprocating flat bed or circular roller member, such as indicated at 35 and 36 in FIG. 1, may be applied at the position 80, followed by scoring at position 81.

The upper and lower strips are provided with a series of cut-outs 82 and 83, which will not match but will be offset as indicated at positions 84 and 85. This will permit the consumer readily to separate the contacting sheets and remove some, or all, of the pad 76 of the prepared surgical dressing.

However, preferably the arrangement shown in FIGS. 1 and 6 is most desirably applied to the package of absorbent cotton, adhesive bandages, adhesive plaster, cotton dabs, gauze bandages, gauze pads, medicated plasters, surgical gauze and the like.

The resultant adhesive-coated, pressure-sealed and/or heat-sealed package may be sterilized without breaking the seal and may be handled without difficulty in packaging, shipping, merchandising and so forth.

The offset recesses 82 and 83 of FIG. 6 and the turn-back strips 54 of FIGS. 4 and 5 enable ready separation

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or opening of the final package and, if desired, the package may be sealed by pressure of the fingers.

While there has been herein described a preferred form of the invention, it should be understood that the same may be altered in details and in relative arrangement of parts within the scope of the appended claims.

The present application is a continuation-in-part of Serial No. 280,954, filed April 7, 1952.

Having now particularly described and ascertained the nature of the invention, and in what manner the same is to be performed, what is claimed is:

1. A packaging machine for prepared surgical dressings, comprising feeding devices for continuous strips of dressings and for continuous cohesive coated wrapping strips, which, upon heat and pressure, will form an air tight enclosure around the dressings, cutters for feeding and cutting said dressings, means to engage the cut dressings between said wrapping strips, means to press said wrapping strips together with heat and pressure around said cut dressings and means to score the wrapping strips between said dressings, and means for rolling back and reversely folding the edges at one side of the strips.

2. A method of packaging square pads of absorbent cotton between two sheets of paper which on their adjacent faces are each coated with a pressure sensitive adhesive which adhesive coatings will stick to each other which comprises feeding the pads of cotton between the sheets with spacing between the pads and then passing the sheets, between which are positioned the spaced pads of cotton, between recessed contacting rollers to cause the coatings to adhere together and around the pads, said recessed contacting rollers receiving pads of cotton in said recesses and the side edges of said sheets being folded over and reversely to enable more ready opening of the resulting package.

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3. A method of packaging absorbent cotton in square pads between elongated strips of impermeable cellulosic material having adhesive facings on the opposite adjacent faces of the strips which will only adhere to one another upon pressure and not to the absorbent cotton, said strips being wider than the square pads, which comprises feeding a relatively narrow strip of absorbent cotton horizontally and cutting off said pads, feeding the strips of cellulosic material obliquely from above and below reversely to the direction of travel of the strip of absorbent cotton gripping the forward end of the pad as it is being cut off between the upper and lower strips of cellulosic material and then pressing the strip material together around the square pads while simultaneously cutting the strips between the square pads and rolling upwardly and reversely the edges of the strips on one side so that the edges will be turned back toward the square pad.

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