May 19, 1931. R. P. HAYDEN 1,806,458

MECHANISM FOR SLITTING FABRIC

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Fig. 5

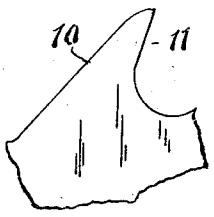


Fig. 6

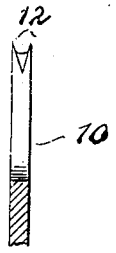


Fig. 1

Fig. 7

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Fig. 2

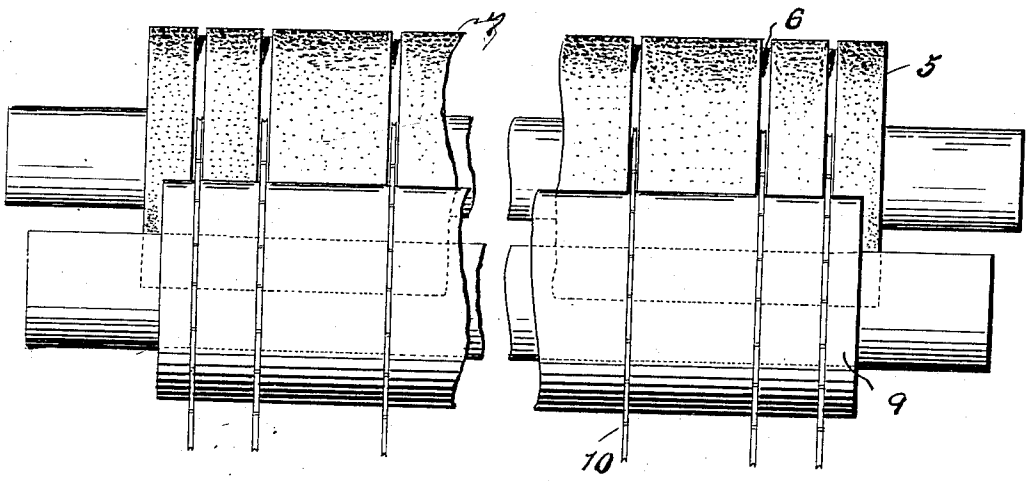


Fig. 4

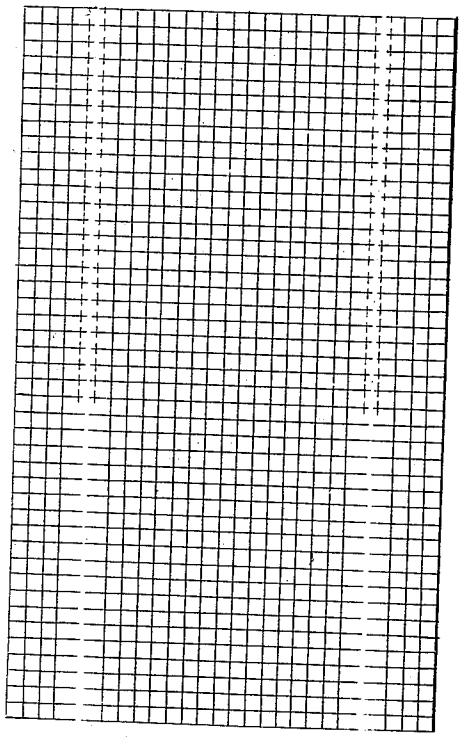
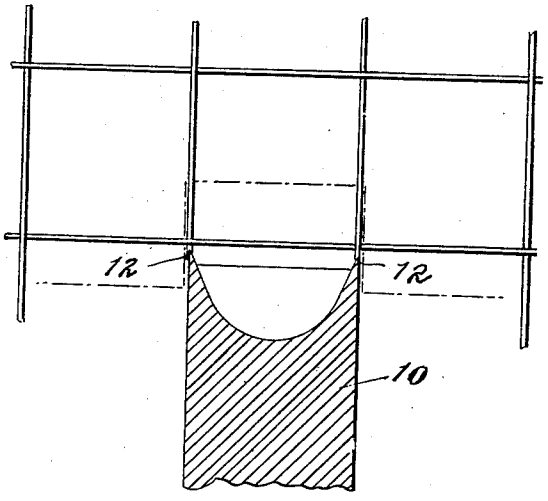


Fig. 3



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UNITED STATES PATENT OFFICE

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MECHANISM FOR SLITTING FABRIC

Application filed April 18, 1929. Serial No. 356,081.

The invention is more particularly addressed to the manufacture of surgical gauze dressings or bandages and mainly of the low cost or non-selvage class of bandages which are strips emanating from bulk fabric as by longitudinally slitting it. That practice suffers the disadvantage that it makes for loose threads or ravelings which give the article an unfinished or crude appearance without regard to the fact that the hazard of loose threads is very objectionable in wound dressing. Many methods and machines heretofore have been proposed as having certain advantages in slitting bandage fabric. Some of them are fairly good and others are impracticable and even those having some point of merit are objectionable from some weighty cause or other, as for example, initial cost as well as cost of maintenance of the machine, but principally because they distort the fabric which of course means eventual if not immediate raveling conditions. The old practice generally was to blaze a trail or path for the slitting instrumentalities by spreading or separating certain of the warp or longitudinal threads, thus making for two distinct operations,—separation and slitting.

Now the object of this invention is to provide for slitting fabrics of the nature of surgical gauze in such way as to lessen the cost of the operation and in such way as to obviate distortion of the fabric and so that the divided strips or bandages will be wholly free from raveling and otherwise superior to bandages produced according to the old practice.

The nature of the invention is a mechanism for severing the warp and filler at one operation and in such way that there is no spreading or disturbance such as is calculated to set up undesirable stress or distortion making for immediate or eventual raveling.

The accompanying drawings illustrate the preferred embodiment of means for practicing the invention.

Figure 1 is a sectional-elevational partly diagrammatical view, more particularly showing the relation of the slitting instrumentalities.

Fig. 2 is a top view of the tooth cutters and grooved die or platen roll.

Fig. 3 is a view principally in diagram and on a greatly enlarged scale showing how the cutters cooperate with the roll.

Fig. 4 is a plan view of gauze in severed state, in part showing the presence of cut warp and filler particles and in part freed of such particles.

Figs. 5, 6 and 7 are details of the toothed cutters.

Aside from the particulars hereinafter stated, the machine may be as usual or of any approved construction. According to the invention, there is provided a die or platen roll 5, having spaced annular grooves or recesses 6 for cooperation with complemental cutters or slitters. The tread or periphery of roll 5 between its grooved areas is tired with abrasive material as, for example, fine emery cloth 7. The effect of this is to establish such traction as will lend cooperative aid in preventing distortion of the goods between the grooved areas or channels, and to provide continuous cutting surfaces 8, at the marginal limits of the grooves, for cooperation with the main cutters. Obviously the die roll 5 and cutter-carrying roll 9 are mounted for rotation in opposite directions. The cutter-carrying roll 9 centers a plurality of cutters 10 one for each groove of the die roll. The cutters are of disc form or more accurately speaking of generally circular saw type, each preferably being equipped with twenty teeth, which project, as at 11, in the direction of rotation, although the number of teeth may vary according to the thread count or according to other controlling circumstances. The undercutting or spacing of the teeth of course makes for the independence of the same to establish the desired interruption between cutting areas. The teeth have hollow points, that is to say their points are concaved or grooved, the groove vanishing rearwardly in the body of the shank. The effect of this is to establish twin cutting surfaces 12 which converge and ultimately vanish in the bodies of the respective teeth.

It will be understood that the cutter-carry-

ing roll and the die roll are on fixedly adjusted centers with sufficient clearance or tolerance for the hollow point cutters to clear the bottoms of the grooves of the die roll. Hence, with gauze passing over the die roll in the direction of the arrow, the coordinate effect of the die roll provisions and the hollow points or twin cutting edges of the toothed cutters is contemporaneously to sever the warp or longitudinal threads and the weft or filling threads of that part of the gauze tracked between the toothed disc cutters and the grooves of the die roll. This is shown somewhat exaggerated in Fig. 3, and on a somewhat less exaggerated scale in Fig. 4. In the latter, it will be observed that the slit areas are bounded by crosses at or in the region of intersecting warp and weft threads, and that such crosses represent the cutting waste. It is a merit of the annularly interrupted or toothed cutters that their overhung construction permits them to perform the additional function of at least to some extent picking the loose threads or thread particles. However, the elimination of such material is mainly provided for by a picker 13 and suction element 14, either or both, interposed between the slitting instrumentalities and the rewinding roll.

Having described my invention, I claim

1. Mechanism for slitting bandage fabric, comprising, in combination, a platen roll having annular grooves each providing continuous cutting dies, and a circular cutter-carrying roll the periphery of each cutter being equipped with interrupted cutter elements each presenting twin cutting surfaces mounted to track the grooves for cooperation with the continuous cutting dies.

2. Mechanism for slitting bandage fabric, comprising, in combination, a platen roll having dies defined by annular grooves or channels, a circular cutter-carrying roll, the periphery of each cutter being interrupted to provide hollow point cutter elements, the hollow point cutter elements defining dual cutting surfaces for cooperation with the dies.

3. Mechanism for slitting bandage fabric, comprising, in combination, fabric supports including a platen roll having annular grooves or channels to establish continuous cutting dies, sleeves of abrasive material on said roll between said grooves, and a complemental roll equipped with spaced radial elements each defining dual cutters for cooperation with the dies.

4. Mechanism for slitting bandage fabric, comprising, in combination, fabric supports including a platen roll interrupted by annular grooves or channels, and a circular cutter-carrying roll in operative relation therewith, the periphery of each cutter being equipped with hollow point cutter elements presenting twin cutting surfaces adapted and arranged to traverse the grooves.

5. A cutter having spaced teeth formed with hollow cutting points, the grooves forming the hollow points vanishing rearwardly in the bodies of the teeth and forming twin cutting surfaces, combined with a platen die whereby the cutter is effective to remove a zone of fabric including a warp thread.

6. Mechanism for slitting surgical gauze to provide non-raveling bandages comprising a platen having continuous annular cutting dies over which the gauze is passed, and slitting mechanism embodying radially directed peripherally spaced cutting elements whereof each defines twin cutting surfaces, which cooperate with the dies to remove zones of fabric, each inclusive of an entire warp thread, in separating the fabric into strips.

In testimony whereof I affix my signature.

ROBERT P. HAYDEN.