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METHOD AND APPARATUS FOR CUTTING LABELS HAVING PLASTIC FIBERS

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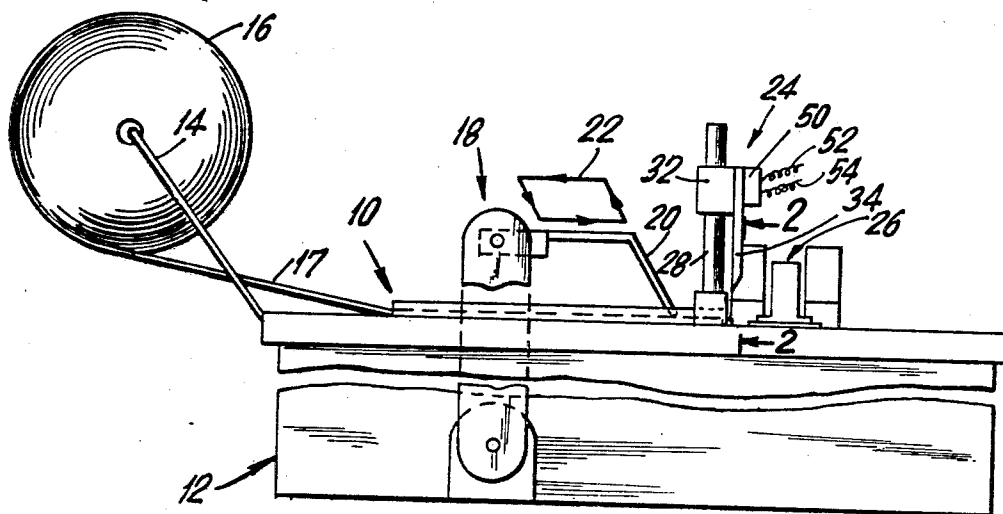


FIG. 1

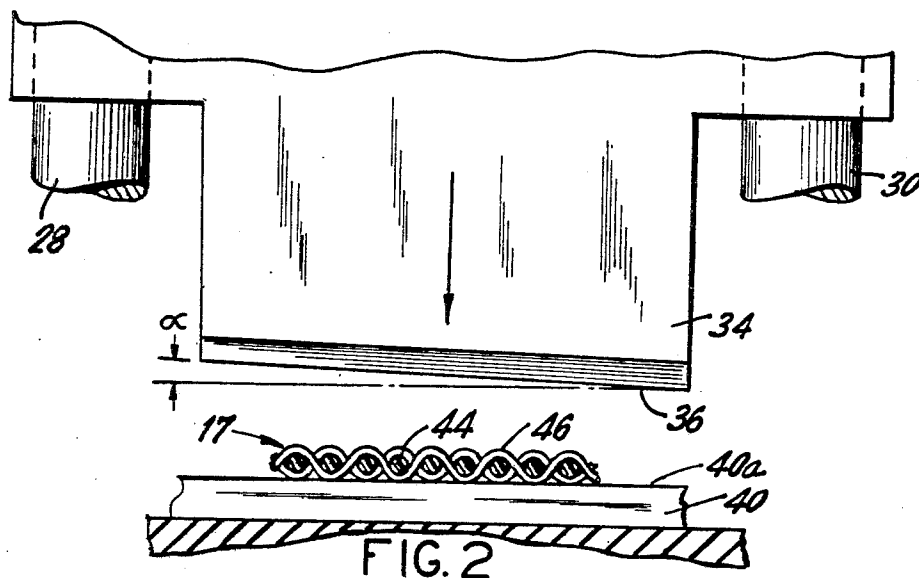


FIG. 2

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METHOD AND APPARATUS FOR CUTTING LABELS HAVING PLASTIC FIBERS

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4 Claims

ABSTRACT OF THE DISCLOSURE

A device for cutting labels which are made of threads in which at least a portion of the threads are of a plastic or resin such as a polyester construction includes a movable cutting blade member which is maintained in a heated condition and which is cyclically moved through a path intersecting a fixed cold shear blade over which the label to be cut is fed in order to effect its cutting by a combination of a shearing and heating action. In accordance with an embodiment of the invention, the cutting is carried out in a temperature range of approximately from 600° F. to 1400° F. and it has been found that the labels can be fed into association with the knife and the knife cyclically reciprocated in order to effect a fast cutting of the labels without any difficulty in the handling of the labels after they are cut.

SUMMARY OF THE INVENTION

This invention relates in general to a device for cutting labels and in particular to a new and useful device for cutting labels which are partially or entirely made of a plastic or resin material such as a polyester.

In recent years, labels which are employed for marking or identifying articles of clothing such as shirts, sweaters, underwear and the like have been made with fibers which are either partially or entirely made of plastic such as a polyester resin. A particularly popular label of this type is one in which the warp threads or the threads which extend longitudinally along the labels are made entirely of a polyester material and the weft threads are made of a cloth or textile material such as rayon or cotton. Labels of this nature are usually manufactured in a continuous strip of interconnected labels and they must be cut apart from the strip and then individually delivered to a means for effecting the pressing of the sides thereof and the subsequent packing of the labels into cartons. Great difficulty has been encountered in respect to the operation of machines for severing, folding and packing the labels because the knife mechanisms were not capable of making a clean cut of the labels so that they could be broken away from the associated connecting strip. Attempts to effect a crush-severing have been generally unsatisfactory, both from the standpoint of the maintenance of the operating parts and the finish of the label ends. It was found in accordance with the present invention that a particularly clean and fast cut could be effected if a heated guillotine-type knife were employed and constructed with an inclined cutting edge to effect a shear cut over a fixed cold knife blade or shear. The heated knife is provided with means to maintain the knife at a temperature approximately within the temperature range of from 600° F. to 1400° F. which has been found to be particularly suitable for cutting the labels with polyester fibers.

Accordingly it is an object of the invention to provide a cutting mechanism for a label folding and processing device which includes a knife member which is reciprocated through the plane of the labels which are fed for the purpose of cutting away the label from its associated strip and wherein the knife member is provided with a heater for maintaining it at an elevated temperature.

A further object of the invention is to provide a cutting mechanism for labels which have plastic threads which includes a knife member which is reciprocated in respect to a fixed blade and which is inclined so as to effect a shear cutting action therewith and wherein the movable blade carries a heater which maintains the movable blade at an elevated temperature.

A further object of the invention is to provide a method for cutting labels wherein the labels are cut by a moving blade which is maintained at a temperature range varying from around 600 to 1400° F.

A further object of the invention is to provide a label cutting device particularly for cutting labels having plastic threads which is simple in design, rugged in construction and economical to manufacture.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated and described a preferred embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a somewhat schematic side elevational view of a label severing, folding and packing device having a cutting blade constructed in accordance with the invention; and

FIG. 2 is an enlarged fragmentary partial front elevational and partial sectional view taken along the lines 2—2 of FIG. 1.

DETAILED DESCRIPTION

Referring to the drawings in particular, the invention embodied therein comprises a label severing, folding and packing device generally designated 10 which is of the same general type as that indicated in U.S. Patent No. 3,106,809 in the name of the present inventor. The device includes a table generally designated 12 which mounts a bracket 14 which rotatably supports a reel 16 comprising a continuous strip of label materials. A continuous strip 17 of labels is fed outwardly from the reel 16 by a feeding device generally designated 18 which includes a gripper 20 which operates in the manner of the parallelogram movement arrows 22. The label strip 17 is fed in a timed sequence in order to present the inner end of each label in succession in a position below a cutting mechanism generally designated 24 so that the individual labels may be cut away from the continuous strip. Thereafter the labels are picked up by a slide member generally designated 26 which moves them off in a new direction and effects the pressing and subsequent packing thereof.

In accordance with the present invention the cutting mechanism 24 includes vertical guides 28 and 30 which support a knife block 32 so that it can be moved upwardly and downwardly by suitable mechanism (not shown) to effect the timed cutting of the labels from the strip 17. The cutting mechanism comprises a movable guillotine-type blade 34 which is movable with the block 32 upwardly and downwardly and which includes a cutting edge 36 which is inclined upwardly in respect to the plane of the label from one side to the other as indicated by the angle α . The movable blade 34 cooperates with a stationary blade 40 having a top surface 40a over which the label strip 17 is moved.

The label strip 17 is of a type which includes some threads 44 which are made of a polyester resin or other similar plastic material which is very difficult to cut cleanly so that it does not unravel. In the embodiment

illustrated, the warp threads 44 are made of a polyester material and the weft threads 46 are made of cloth such as rayon or cotton. In order to make sure that individual labels are cut cleanly and accurately away from the continuous strip 16 and in timed relation to the feeding mechanism 18, it has been found in accordance with the invention that the knife 34 must be heated and for this purpose a resistance-type heater 50 is mounted at the upper end of the movable blade 34 and it is supplied with suitable current for the resistance heater 50 through the indicated lines 52 and 54.

In accordance with the preferred method of the invention, the movable blade 34 is maintained preferably within the temperature range of from 800° F. to 1000° F. by the heater 50 and in this manner the knife may be operated effectively and rapidly in order to produce the desired cutting action on the label so that they may be fed in timed relationship to the slide mechanism 26 for further processing. The range of temperatures may be expanded somewhat and satisfactory cuts effecting smooth label end formations can be made in a temperature range of from 600° F. to 1400° F. using labels which include a substantial portion of resin fibers.

While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the inventive principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. A method of cutting individual labels from a continuous strip of a plurality of interwoven labels which is made at least partially of a plastic material such as a polyester resin and using a fixed shear and a knife movable past an edge of the fixed shear, comprising heating the movable knife to maintain it at a temperature in a range of approximately from 600° F. to 1400° F., feeding the label strips on the edge of the fixed shear and successively severing each label away from the strip by moving the movable knife through the plane of the label strip over the edge of each label to cut it away from the strip while maintaining the movable knife in its heated condition.

2. A device for cutting labels in which a portion of

the label is made of a plastic material such as a polyester resin comprising a cutting mechanism, means for feeding the labels from a continuous strip into association with said cutting mechanism, said cutting mechanism including a movable knife blade movable across the path of the label to cut the label, and heater means for heating said blade to maintain it at a temperature above the melting point of the resin of the label, said cutting mechanism including a fixed shear having a cutting edge over which the label is fed, said feeding means feeding said label strip over said fixed shear, said movable knife blade being movable past the edge of said fixed shear to cut the label.

3. A device according to claim 2, wherein said movable knife blade includes a guillotine-knife having an edge which is inclined upwardly from one side to the other from the plane of feeding of the label whereby to effect a shear cut of the labels with said fixed shear.

4. A device according to claim 2, wherein said feeding mechanism includes a reel supply of a continuous strip of interwoven labels, said means for feeding the labels including a member cyclically engageable with said strip for advancing it into association with said cutting mechanism, said continuous label strip comprising warps made of polyester resin and wefts of a textile material.

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