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APPARATUS FOR CHECKING A WEB OF MATERIAL AS TO UNIFORMITY

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FIG. 1

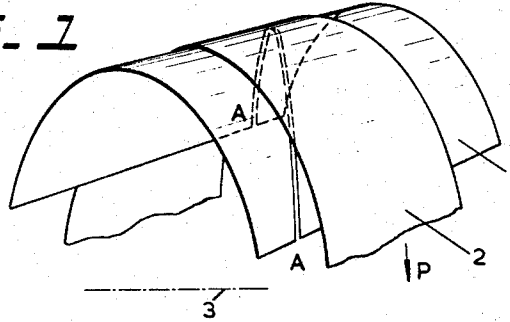


FIG. 2

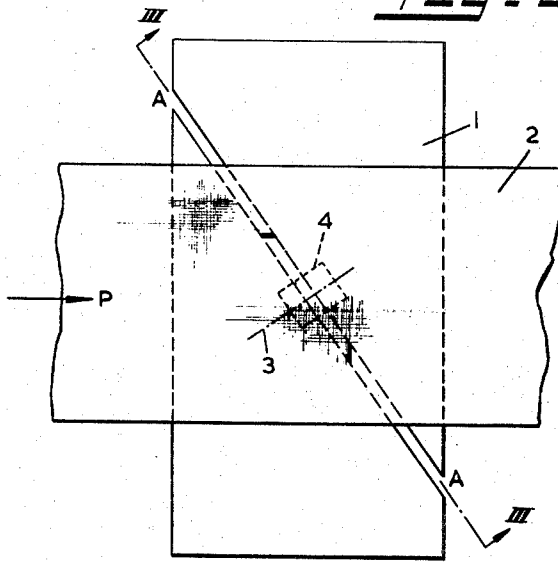
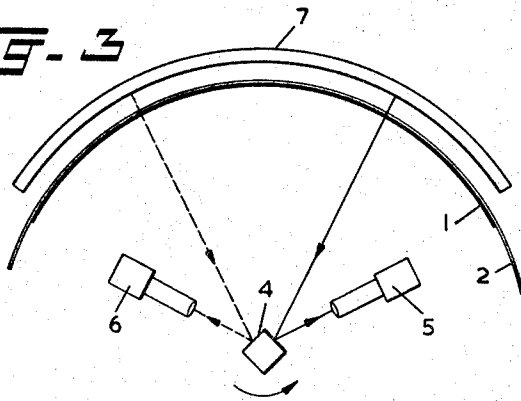


FIG. 3



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APPARATUS FOR CHECKING A WEB OF MATERIAL AS TO UNIFORMITY

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4 Claims. (Cl. 250—219)

This invention relates to an apparatus for checking a web of material as to uniformity, particularly for checking cloth as it comes from the loom, such apparatus being designed for checking webs of woven fabrics both as to uniformity of thickness, and of position, and of sequence of the warp and weft threads.

It is an object of the present invention to provide an apparatus for this purpose which, while of simple construction, rapidly gives reliable results without causing undue loss of time.

According to the present invention there is provided an apparatus for checking a web of material as to uniformity, which comprises a guide surface having a straight generatrix for guiding the web of material to be checked across said surface parallel to the generatrix thereof, there being provided on the axis of a circular-arcuate cross-section of said guide surface a mirror rotatable about said axis for reflecting light, transmitted via a light-transmitting zone located on said circular-arcuate cross-section, or emitted by a source of light disposed concentrically about said cross-section, to one or a plurality of photomultipliers for sensing the web to be checked.

In addition, an apparatus for checking a web of fabric, in accordance with the present invention, may be equipped with two photomultipliers, each provided with a slot-type diaphragm, the diaphragm of one photomultiplier being directed parallel to the warp threads, and the diaphragm of the other photomultiplier being directed parallel to the weft threads of the web of fabric to be checked.

In illustration of the invention, one embodiment will be described, by way of example, with reference to the accompanying diagrammatic drawings, in which:

FIG. 1 illustrates the guide surface with a web of fabric moving across it;

FIG. 2 is a plan view of the guide surface and the web of fabric;

FIG. 3 is a cross-section on the line III—III in FIG. 2.

Referring to the drawings, the apparatus shown is equipped with an ellipsoidal opaque guide surface 1 with a straight generatrix, so that when a web of fabric 2 is guided in the direction P and at right angles to the generatrix of the guide surface 1, the position of the warp and weft threads relative to each other is not changed. The guide surface 1 is in the form of a part of a cylinder having an ellipse for a directrix.

Formed on a circular-arcuate cross-section of the guide surface 1, i.e., in the form of an arc of a circle, having an axis 3, is a slot A—A. The axis 3 coincides with the axis of rotation of a rotary mirror 4, which cooperates with two photomultipliers 5 and 6, disposed on opposite sides of the axis of rotation of the mirror 4.

Disposed above the slot A—A, which is in the form of a circular arc, and positioned concentrically therewith is a source of light 7, which is likewise in the form of a circular arc.

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When the apparatus is in use, and as a web of fabric 2 is passed across the guide surface 1 in the direction of the narrow P, the rays of light emitted by the source of light 7, and partially intercepted by the web 2, are reflected by the rotary mirror 3 to the photomultipliers 5 and 6, for the latter to record both the nature and sequence of the warp threads and of the weft threads. In order to minimize interference of the weft threads in the recording of the warp threads and interference of the warp threads in the recording of the weft threads, it is desirable to provide the photomultiplier 5, designed to record the warp threads, with a slot diaphragm directed parallel to the warp threads, and it is desirable to provide the photomultiplier 6, designed to record the weft threads, with a slot diaphragm directed parallel to the weft threads.

Naturally, the opaque guide surface 1 provided with a slot A—A may be replaced with a fully transparent guide surface, provided the arcuate source of light and the axis of rotation of the rotary mirror are set in their proper positions.

We claim:

1. An apparatus for checking a web of fabric as to uniformity, which comprises means providing a convex cylindrical guide surface having a straight generatrix for guiding the web of material to be checked across said surface parallel to the generatrix thereof, a circular arcuate band-like zone of the guide surface transmitting light therethrough, a mirror positioned inwardly of the guide surface on the axis of said circular arcuate band-like zone, a light source positioned outwardly of the guide surface for passing light through the web and the circular arcuate band-like zone of the guide surface, means to rotate the mirror about the axis of the circular band-like zone, and a photo sensitive means disposed within the guide surface for receiving light reflected thereto by the mirror for sensing the light transmitting properties of the web to be checked.

2. An apparatus according to claim 1, comprising two photo sensitive means within the guide surface, said two photo sensitive means being disposed at different angles about the axis of the circular band-like light transmitting zone of the guide surface providing means, one of said photo sensitive means being receptive predominantly to light directed parallel to the warp threads of the web of fabric to be checked, and the other of said photo sensitive means being receptive predominantly to light directed parallel to the weft threads of such web of fabric.

3. An apparatus according to claim 2, wherein the photo sensitive means are photoelectric cells, each cell with a slot-type diaphragm, said diaphragms being directed, respectively, parallel to the warp threads and parallel to the weft threads of the fabric to be checked.

4. An apparatus according to claim 3, wherein the photoelectric cells are photomultipliers.

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