

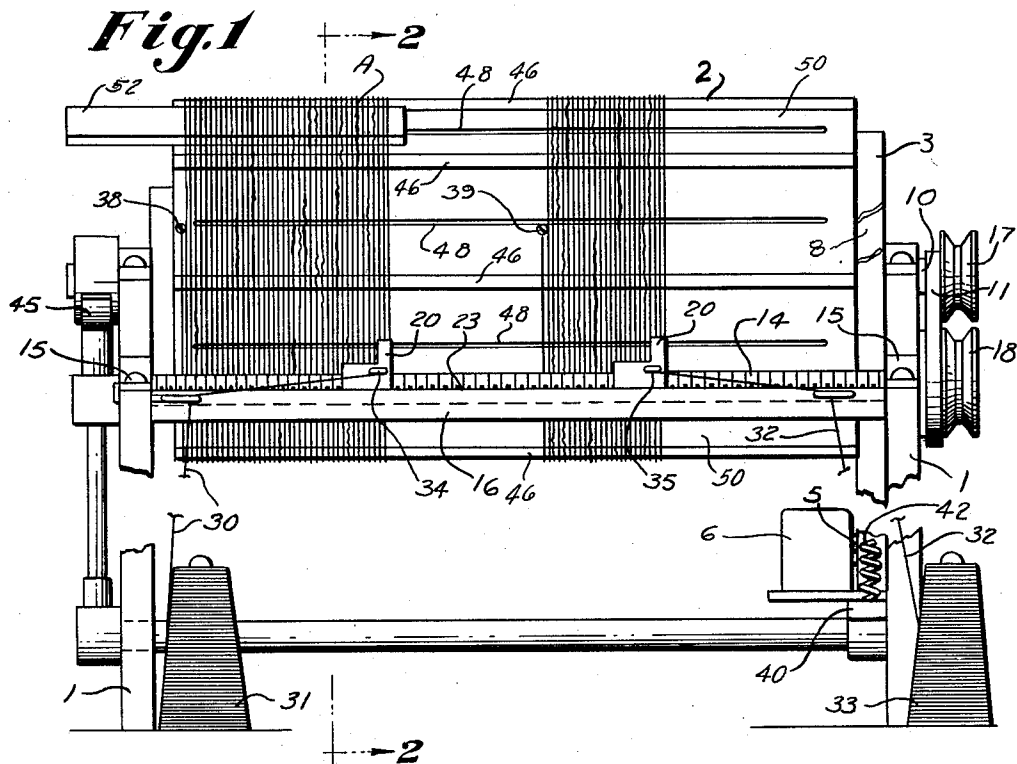
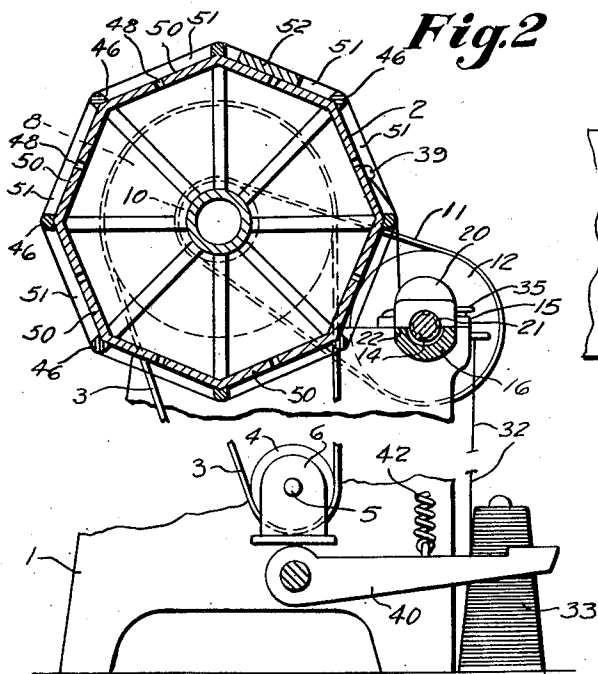
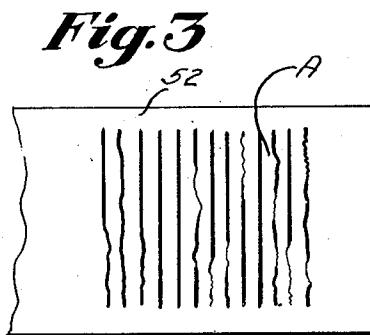
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YARN INSPECTING DEVICE

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YARN INSPECTING DEVICE

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1 Claim. (Cl. 28—72)

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My invention relates to a new and useful yarn inspecting device and it relates more particularly to a device whereby a plurality of yarns may be inspected simultaneously with a great saving of time and effort.

In the manufacture of yarns it is necessary that each lot produced should be inspected and graded or calibrated, so that when the yarn is sold for the manufacture of finished goods, the character of the goods produced (except for defects occurring during the weaving or knitting thereof) can be predetermined. Thus if the yarn used is not inspected beforehand, it is necessary to inspect and sort the finished goods into "firsts" and "seconds" or some similar gradation. If however, the yarn is inspected and graded beforehand, the finished goods produced can be graded as "firsts" or "seconds" according to the grade of the yarns used in the manufacture thereof. In the inspection of yarns, it has been found that if a few yards from a given cone are inspected, it is safe to assume that the rest of the cone would probably average the same number of defects per yard, if any, as appeared in the few yards inspected, and by inspecting a few yards from a few cones belonging to one lot of manufactured yarns, it is possible to estimate within practical limits the general condition of the whole lot of yarn, without the necessity of inspecting each and every cone of the yarn produced. For example, if a lot of yarn is produced and wound on one hundred cones and a few yards are inspected, of say, each of twenty cones picked at random, it is safe to assume that the yarn on all the one hundred cones is approximately the same calibre as the specimens inspected. In this way the manufacturer can represent all the one hundred cones as being of a particular grade depending on the number of defects per yard occurring in the yarn specimens from a number of cones, picked at random from the lot of yarn in question.

It is therefore the object of my invention to produce a novel inspecting device which is inexpensive to make and easy to operate, and on which yarn specimens from a number of cones can be inspected simultaneously and in very short order.

A still further object is to produce an improved method of inspecting yarns.

To the above ends my invention consists of a large drum of a known circumference on which the yarn specimens may be wound, means for rotating said drum, a feed screw shaft rotating synchronously with said drum for feeding the

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yarn specimens onto the drum and means for permitting the simultaneous winding on said drum of yarn specimens from a number of different cones.

5 My invention further consists of various other details of construction and advantage all as hereinafter set forth in connection with the accompanying drawings, in which:

10 Fig. 1 is a side elevational view of a drum inspecting device embodying my invention.

Fig. 2 is a view partly in end and partly in vertical section, taken on line 2—2 on Fig. 1.

Fig. 3 is an enlarged view showing the improved use of my device.

15 Referring to the drawings in which like reference characters indicate like parts; 1 indicates any suitable frame or housing in the upper portion of which is suitably rotatably mounted a drum 2. The drum is driven by the belt 3 which travels over the pulley 4 on the shaft 5, driven by the motor 6 and over the pulley 8 carried by or otherwise associated with the drum 2. The shaft supporting the drum 2 is also provided with the pulley 10, over which travels the belt 11 which also engages the pulley 12 to rotate the feed screw 14 which is journaled in the bearings 15 and which rotates in the semi-cylindrical casing 16, which may contain a lubricant, if desired. In order to vary the speed, if so desired, the extra pulleys 17 and 18 are also provided. 20 represents a feed half-nut, the threaded part 21 of which is adapted for engagement with the upper half of the feed screw 14, and the legs 22 of which are adapted to ride on the upper edges 23 of the semi-cylindrical trough or casing 16.

35 The operation is as follows: When it is desired to inspect yarn 30 from the cone 31 and yarn 32 from the cone 33, it is merely necessary to thread the yarns 30 and 32 through eyelets 34 and 35 on the half-nuts 20, and to tie free ends of the yarns to posts 38 and 39 on the drum. The switch controlling the motor 6 is now turned on and the drum is rotated thus winding the yarn from the cones 31 and 33 around as shown in Fig. 1. The motor 6 is then turned off and by depressing the brake lever 40, which is tensioned by a spring 42, the brake shoe 45 acts to stop the rotation of the drum 2. The yarn thus wound around the drum is then inspected for defects and the defects are 45 averaged with respect to the number of yards of the yarn wound on the drum. Thus, if the circumference of the drum is 6 ft. and if an average of 2 defects are found for each turn of the yarn around the drum, it will be seen that this particular yarn averages a defect per yard and the 50

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yarn is thus correspondingly graded. The drum is painted in a color which will contrast with the color of the yarn to be inspected, to facilitate vision and accuracy in inspection. In order to facilitate the removal of the yarn wound around the drum after it has been inspected, the drum is provided with one or more longitudinal slots 48 so that a knife may be passed over the yarn and through the slot, thus cutting the continuous turns of yarn into small sections which can be easily removed from the drum. While in the drawing I have illustrated the inspection of yarn from only two cones, it is to be understood that in practice the number of cones, the yarns of which may be inspected simultaneously, is limited only by the length of the drum 2 and of the feed screw 14.

The structure thus far described is substantially the same as that disclosed in my prior Patent No. 2,052,711 of Sept. 1, 1936, entitled Yarn inspecting device and reference may be had to that patent for details not herein fully described.

According to my present invention, the drum 2 is made of a hexagonal or other polygonal cross section and the intersections or meeting edges 46 of adjacent sides 50 are raised with reference to the planes of said sides so that, when a yarn is wound about the drum, there will be relatively large spaces 51 between the yarn and the surfaces of the sides of the drum. The spaces 51 should be big enough to allow insertion of a piece of board, cardboard or the like 52 between the yarn and the corresponding side of the drum. By this means, defective yarns can, without being disturbed, be cut off, removed and preserved for reference. For example, if defective threads occur, as at A in Figs. 1 and 3, a board or the like 52 is inserted between the defective yarn convolutions and the adjacent side of the drum, the defective yarn convolutions are glued to the board, so as to retain the position and appearance that they had when first wound about the drum, and the yarn convolutions are then severed along the upper and lower edges of the board, as viewed in Figs. 2 and 3. The board carrying the defective yarn is then sent, from the inspection department, back to the factory for analysis so that

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the conditions responsible for the defect might be determined and corrected. Since various defects in the yarn may be produced by various defects in the machines or processes, having the defective yarn available for analysis is very helpful. In the case of a purchaser who wants an adjustment made, having conclusive evidence of the defective yarn can be very persuasive.

It will thus be seen that I have also produced an improved method of inspecting yarn, namely, the step of spacing the yarn from the drum, inserting a board or the like between the yarn and the drum, gluing the defective yarn portion to the board and finally cutting off the ends of the glued yarn portion from the remaining yarn and removing the board which shows the yarn exactly as it was cast on the drum.

While I prefer to make the drum polygonal, it is obvious that a cylindrical drum could be used with means for causing the yarn to be spaced from the drum.

What I claim is:

The method of inspecting yarn which includes winding the yarn about a drum, spacing at least a portion of each convolution of yarn from a corresponding drum portion, and when said yarn is defective, inserting a board or the like between said convolutions and said drum portion, securing said convolutions to said board without disturbing their appearance or position, severing the portions secured to said board from said convolutions, and removing said board.

EDWARD O. JENNINGS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,052,711	Jennings	Sept. 1, 1936
2,376,773	Hogan	May 22, 1945

FOREIGN PATENTS

Number	Country	Date
91,419	Germany	Apr. 15, 1897