Dec. 29, 1942. H. S. DRUM ET AL 2,306,719

SPINDLE FOR YARN PACKAGE DYEING APPARATUS

Filed Aug. 8, 1939

Fig. 1.

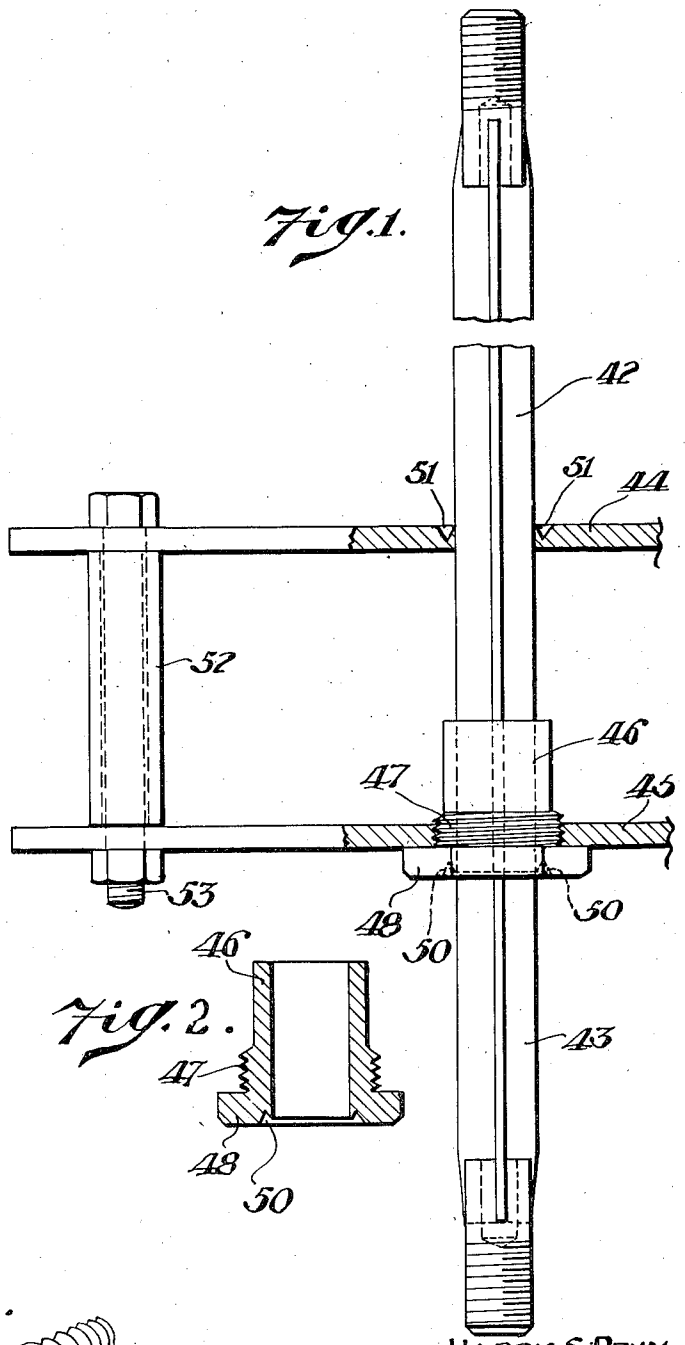
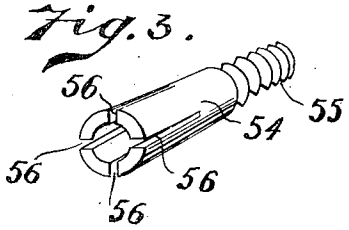


Fig. 2.

Fig. 3.



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Patented Dec. 29, 1942

2,306,719

UNITED STATES PATENT OFFICE

2,306,719

SPINDLE FOR YARN PACKAGE DYEING APPARATUS

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Application August 8, 1939, Serial No. 288,952

3 Claims. (Cl. 68—198)

The present invention relates generally to dyeing and/or treating apparatus for yarn packages and more particularly to an improved package mounting spindle and associated parts.

In spindles as heretofore constructed for use on a carrier of a yarn package dyeing apparatus of the type wherein the number of packages may run up into the hundreds it has been possible to treat but one size of yard packages because such carriers are made up for association only with a yarn package tube of given or standard diameter. Frequently tubes of special diameter, that is different from standard, are furnished with the yarn packages mounted thereon and where this occurs a special carrier with special spindles has to be purchased and thereby adding a prohibitive cost to the equipment. Also it has been found that in the use of sheet metal heads for the carrier certain threaded portions of the spindle are exposed to the liquid and thereby collect lint and other substances so that the liquid circulation is impaired. With this happening in a dyeing operation uniformity of treatment in a batch of packages is impossible.

Some of the objects of the present invention are to overcome the foregoing objections and disadvantages to the present day treatment of yarn in package form; to provide an improved spindle for mounting yarn packages on the carrier of a package treating apparatus; to provide a spindle for mounting yarn packages wherein provision is made for accommodating yarn supporting tubes of different diameter; to provide a spindle mounting wherein each spindle is firmly clamped in place without exposing screw threads to the treating liquid; to provide a novel means for interlocking one end of a spindle to a threaded end piece; and to provide other improvements as will hereinafter appear.

In the accompanying drawing Fig. 1 represents a fragmentary elevation in part section of a yarn package carrier manifold showing a package spindle embodying one form of the present invention; Fig. 2 represents a section of the spindle fastening nut; and Fig. 3 represents a perspective of the spindle end piece before assembly, and which serves in association with a retaining nut to hold the package in place on the spindle.

Referring to the drawing one form of the present invention is shown in assembled condition as a part of a yarn package carrier which may be of any well known type but is here illustrated as a manifold through which liquid circulates to enter the package supporting spindle which is formed as a double ended unit, that is the spindle **42** projecting from one side of the manifold is integral with the spindle **43** projecting from the other side of the manifold. Thus the stem forming the two spindles is a continuous length of fin structure, cross-shaped in transverse section, which passes through both plates **44** and **45** of the manifold to project from opposite sides thereof. Each spindle projecting part is of the normal length of a package mounting spindle so that in use one or more packages can be mounted on each projecting part while all are on the same axis.

For fastening this form of spindle in position on the manifold a bushing type of nut is used consisting of a short bushing body **46** having an externally threaded portion **47** and a flanged head **48**. The threaded portion **47** has a length substantially equal to the thickness of the manifold plate so that there is little opportunity for lint or fibers to collect on the bushing. The bushing body **46** is preferably welded to the stem fins to become an integral part thereof. The head **48** is formed with a circular groove **50** concentric with the spindle and of a diameter to receive the end of the package supporting sleeve. A like groove **51** is formed in the opposite manifold plate concentric with the spindle for the same purpose.

In order to properly brace the manifold plates and maintain proper spaced relation thereof, spacer sleeves **52** are secured by bolts **53** between the plates where necessary.

The outer ends of the unitary spindle respectively carry coaxially disposed cylindrical members **54** each having a threaded portion **55** for the reception of a locking nut by which the packages are retained upon the spindles during the treating operation. These members **54** are secured to the spindle by a novel welded connection in that lengthwise slots **56** are cut in the tubular ends of the members **54** to respectively telescope with the spindle fins and be welded thereto to form an integral assembly. As shown the spindle body is of finned construction throughout its length to provide a plurality of lengthwise disposed passages which are enclosed by the package tube or core so that liquid flow is axially directed throughout the length of the spindle to pass through the yarn package.

In connection with the bushing body **46** it should be noted that this is extended well within the manifold as a means to brace and maintain the spindle in true alinement at all times. Since this connection is at one plate of the manifold only, the spindle is free to expand and contract

by sliding engagement with the other manifold plate.

The subject matter of this application relates generally to the type of yarn treating apparatus disclosed in Patent No. 2,180,896, November 21, 1939, and copending application Serial No. 249,674.

Having thus described our invention, we claim:

1. A yarn package support and manifold assembly consisting of two spaced manifold plates having holes respectively in alined relation, one of said holes being larger than the other and internally threaded, a bushing nut threaded into said threaded hole, a longitudinally grooved spindle passing through and welded to said bushing and extending through the hole in said other plate but unsecured to said plate for expansion purposes, said spindle contacting the respective walls of said hole and bushing with a groove thereof forming a longitudinal passage through said hole and said bushing, whereby fluid can flow through both plates from the space between said plates.

2. As a new article of manufacture, a longitudinally grooved spindle having threaded shanks at opposite ends and a bushing comprising a sleeve merging into an enlarged threaded portion with the latter terminating in an enlarged flange forming a unitary body having a full length axial bore of a diameter to receive the spindle, said body being welded to the spindle to form a rigid connection therewith intermediate said shanks, and a groove in said spindle forming with the axial bore a longitudinal slot lengthwise thereof and extending completely through said bushing.

3. A yarn package support and manifold assembly consisting of two spaced manifold plates, a stem passing through said plates to form two oppositely disposed package spindles, and a stem supporting reinforcing bushing nut formed as a sleeve having a portion threaded into one of said plates and a flange abutting the outer face of such plate, said nut being welded to said stem, and said stem having a longitudinal slot forming a passage from the space between said plates to the outer side of the respective plates.

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