This invention relates to the packing of yarn packages and relates more particularly to an improved arrangement for the packing of yarn packages which will support said packages securely during storing and shipping.

The bulk of the yarn produced in the textile industry is wound into packages, such as bobbins, cones, cheeses, pirns and the like. During the storing and shipping of these yarn packages they must be supported so as to prevent them from rubbing against each other or against the walls of the carton in which they are contained. The tremendous number of yarn packages produced in the textile industry makes it important that the arrangement employed for the packing of the yarn packages not only provide adequate support for the yarn packages, but also be inexpensive so as not to add excessively to the cost of the yarn.

It is an important object of this invention to provide an arrangement for the packing of yarn packages which will fulfill the foregoing requirements and which will be simple and efficient in construction and use.

A further object of this invention is to provide an arrangement for the packing of yarn packages which will support said packages securely and prevent them from rubbing against each other or the walls of the carton in which they are contained.

Other objects of this invention will be apparent from the following detailed description and claims.

According to the present invention, there is provided in a carton in which a plurality of packages of yarn are to be packed in superposed layers, a plurality of trays adapted to support each of said layers and to engage the packages of yarn securely and thereby hold them against movement. The trays each comprise a pair of pads of cardboard, corrugated board, or the like, one of which is provided with a plurality of apertures therein. Positioned between the pads are strips of any suitable material, such as metal, provided with a plurality of rounded projections that are adapted to extend through the apertures in the pad. The packages of yarn, each of which is provided at one end with an aperture which may comprise a recess extending into the package or a passageway extending through the package, are placed on the trays in such a manner that the projections enter into the apertures in the packages and thereby hold the said packages securely against undesired movement. The upper and lower cardboard pads are secured together with the strips therebetween by any suitable means, such as staples, to form a strong unitary structure.

The tray of this invention not only holds the packages of yarn securely against undesired movement, but the presence of the metal strip therein also strengthens and stiffens the said trays so that there is less likelihood of damage to the packed carton during storing and shipping.

A preferred embodiment of this invention is shown in the accompanying drawings wherein Fig. 1 is a cross-sectional view of a carton containing bobbins of yarn packed in accordance with this invention, Fig. 2 is a cross-sectional view taken along the line 2--2 in Fig. 1 in the direction of the arrows, Fig. 3 is a perspective view, partly broken away, of a tray for supporting the bobbins of yarn, Fig. 4 is a detail cross-sectional view of the manner in which the bobbins of yarn are engaged, in Fig. 5 is a cross-sectional view taken on the line 5--5 in Fig. 4 in the direction of the arrows, and Fig. 6 is a perspective view of a portion of the member for engaging the bobbins of yarn.

Referring now to the drawings, the reference numeral 11 designates a carton in which are arranged a plurality of bobbins 12 disposed in superposed layers 13, 14 and 15. The bobbins 12 each comprise a bobbin support 16 having a passageway 17 extending longitudinally thereof and having a yarn winding 18 therein. The layers 13, 14 and 15 are supported on trays, indicated generally by reference numeral 19, both formed of corrugated board. The lower pad 20 is impervious, whereas the upper pad 21 has a plurality of perforations 22 therein. Positioned between the pads 20 and 21 are a plurality of narrow metal strips 23 arranged parallel to one another and provided with a plurality of upstanding rounded projections 24 that are positioned to extend through the perforations 25 in the upper pad 21. The pads 20 and 21 are fastened together to form a unitary structure by means of staples 25.

To pack the carton 11, the bobbins 12 are placed on the trays 19 in such a manner that the projections 24 enter into the passageway 17 extending through the said bobbin. By designing the projections 24 so that they fit the passageway 17 rather closely, there is obtained a secure support of the bobbins 12 whereby they are held against movement into contact with one another or into contact with the walls of the carton 11. Packing is continued in this manner until there are obtained the desired number of layers of bobbins 12 to fill the carton 11 after which a plain pad 26 is placed on the topmost layer 13 and the carton is closed and sealed.

As an alternative to the arrangement shown in the drawings, the topmost layer 13 may have placed thereon a tray 19 arranged so that the projections 24 extend downwardly from the lower surface of said tray and enter into the upper end of the passageway 17 further to engage the bobbins 12. In addition, a second tray 19, arranged so that its projections 24 extend downwardly and engage the passageways 17, may be disposed under each of the layers of bobbins of yarn, with the exception of the lowermost layer, whereby an even more rigid packing of the bobbins 12 may be secured.

It is to be understood that the foregoing detailed description is given merely by way of illustration and that many variations may be made therein without departing from the spirit of my invention.

Having described my invention, what I desire to secure by Letters Patent is:

1. A packed carton comprising an outside casing of corrugated board, a plurality of wound yarn bobbins arranged in superposed layers, said bobbins having axial passageways, flat trays supporting said layers of bobbins, said trays comprising pairs of flat pads of corrugated board secured to each other in face-to-face relation to form a unitary structure, one pad of said pair having a plurality of apertures arranged in parallel rows, and individual strips of metal positioned between said pads and in parallel and separate relation, said strips having portions which are bent out of the plane of said pads at spaced intervals to form spaced rounded projections extending through said apertures and fitting closely in the axial passageways of said bobbins, said projections hold-
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3. ing said bobbins against relative movement and said strips acting to strengthen and stiffen said trays.

2. A packed carton comprising an outside casing, a plurality of packages of yarn each having an opening in at least one end thereof and arranged in superposed layers, flat trays supporting said layers of packages, said trays comprising pairs of flat pads of corrugated board secured to each other in face-to-face relation to form a unitary structure, a pad of said pair having a plurality of apertures arranged in parallel rows, and individual strips of substantially rigid material positioned between said pads and in parallel and separate relation, said strips having portions which are bent out of the plane of said pads at spaced intervals to form spaced rounded projections extending through said apertures and fitting closely in the openings of said packages of yarn, said projections

4. holding said packages against relative movement and said strips acting to strengthen and stiffen said trays.

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