This invention relates to the method of making a packing suitable moreparticularly for use in connection with dust guards for railway car axles. The packing sought to be made is one comprising a layer of relatively flexible sheet material of water, petroleuma nd oil repellent or proof material, provided with an opening through which the axle may extend, the margin of the opening being stretchable to make sealing contact with the axle even though its diameter may be somewhat wide limits.

In accordance with this invention the packing is formed up from a bias strip of suitably woven fabric such as asbestos cloth with or without wire reinforcing. This is folded about a length of flexible tubing and secured face to face beyond this tubing. The tubing is thereafter bent to annular form and is secured in such condition by means of the sheet material is then flattened out to lie substantially in a plane, the folded portion containing the tubing forming a rounded stretchable head preferably lying at one side of the general plane of the sheet material. This sheet material is then treated with suitable agents to render it oil and water resistant, or proof, and with a lubricant which will permit it to bear directly against a car axle to maintain sealing engagement therewith without undue friction or wear on the packing.

For a more complete understanding of this invention, reference may be had to the accompanying drawings in which:

Figure 1 is a plan view of the fabric strip used in making the packing and shows it indented to receive the core. Figure 2 is an elevation of the tubular core with its spring center. Figure 3 is a plan showing the core of Figure 2 enfolded in the strip of Figure 1. Figures 4 and 5 are perspective views showing further steps in the making of the packing. Figures 6, 7, and 8 are detail sections on the correspondingly numbered section lines of Figures 1, 3, and 5, respectively. Figure 9 is a fragmentary view partly in elevation and partly in section of the core member and the means of attaching its ends. Figure 10 is a central vertical section through a dust guard provided with a packing of this invention, the axle and axle box being shown in dotted lines.

Referring to the drawing, Figure 1 shows a length of bias fabric such as asbestos with or without a wire reinforcement, as may be desired, the ends of the bias fabric strip being parallel with the strands as shown at 2 and 3, parallel to each other and non-perpendicular to the side edges 4 and 5. In order to facilitate folding this strip longitudinally, for a purpose which will presently appear, a longitudinal indentation may be made substantially centrally of the width of the strip as shown at 6, to form up be done as is indicated in Figure 8 by passing an indented roll shown in dotted lines at 8 along the median line of the strip and preferably over a corresponding indented support 9. A lubricating material which will permit adhesion between the strip and a core member to be wrapped therein is then preferably applied to the strip along the indented portion. A satisfactory lubricant which will withstand the severe conditions of service is graphite. On this indented portion is then positioned a core member which may comprise a tube of flexible yielding material, such as rubber, shown at 10 in Figure 2, through which is extended a center contractible member 11. This member may well comprise a coil spring and in one end may be threaded a coupling coil 12 of smaller diameter which may be used later to couple the ends of the spring together as shown in Figure 9, the spring 12 being threaded into both ends of the spring 11. The side margins 13 and 16 of the strip 1 are then brought together around the core member and are secured together as by cementing. It is preferable not to apply cement to those portions of the strip which contact with the core. It being desirable to permit sliding motion between the core and the strip. The possibility of such sliding motion may be further insured by coating the central portion of the width of the strip with a non-sticky or lubricating material, such as graphite where the core is in contact therewith. The structure thus formed with the side margins of the strip cemented together is illustrated in Figure 3.

Next, this structure is bent into annular form, the ends of the center contractible member being joined together, as previously described and as shown in Figure 9, to form up the structure into the ring form. The parts are of such relative lengths that when the center spring member is so joined, the ends of the fabric strip may be brought into overlapping relation, as shown in Figure 4, but preferably the ends of the tube 10 are not quite together, thus permitting more or less opening up of this member with the spring 11 thus to provide a desired stretching characteristic to the annular bead portion 20 formed by the core and that portion of the fabric
strip in wrapping engagement therewith. The ends of the fabric strip in overlapping relation are secured together, as by cementing, and over the said ends there may be placed a strip of adhesive tape as shown at 21 in Figure 5.

The structure thus formed is then preferably subjected to a pressing operation, as shown in Figure 7, between dies 28 and 29, the die 28 being shown as flat to engage the full width of the overlapped margins of the fabric strip and the core portion, while the die member 29 is of greater internal diameter so as to permit the bead portion to project internally thereof. The result of this operation is to bring the secured margins of the fabric into substantially a single plane with the internal margin of the axle-receiving opening formed as a thickened bead projecting substantially wholly from one face of the secured margins.

After thus being formed up, the packing is subjected to treatment with a suitable lubricant such as graphite or the like, which together with the cement by which the layers are secured together, renders the packing substantially water, oil, and grease proof, and renders the inner face of the bead portion suitable for sealing contact with the axle, which may rotate therein without producing undue friction or wear of the packing.

In use, the packing is secured toward its outer margin in face to face relation with a relatively rigid plate member 30, shown in Figure 10, and which is provided with an opening as at 31 of sufficient size to receive the axle loosely therethrough, the bead portion of the packing being relied upon to make sealing contact with the axle. Being secured to the plate 30 remote from the bead portion, this bead portion is permitted a lateral motion relative to the plate member 30 which permits it to expand or contract its opening in accordance with the diameter of the axle against which it bears and permits the axle to be inserted or withdrawn, the size of the opening of the packing automatically adjusting itself when this is done. The structure so formed together with the ends of said fabric together and the ends of said core member together and the ends of said fabric together, the ends of said tube being unattached to each other, and then pressing the secured margins of said fabric into substantially a single plane with the indented portion and said core forming a thickened bead about its interior periphery.

From the foregoing description of the preferred method of making up this packing, it should be understood by those skilled in the art that various changes and modifications might be made without departing from the spirit or scope of this invention as defined by the appended claims.

I claim:

1. The method of making a packing which comprises folding a strip of bias fabric over a core piece and securing the adjacent face portions of the strip together beyond said core piece, bringing the ends of said core piece and the ends of said strip into proximity and respectively securing said ends together to form an annular member, and then pressing the secured layers of said strip into substantially one plane extending outwardly from said core piece and the folded portion and interposed core piece laterally of said plane in offset relation to said secured layers.

2. The method of making packing which comprises folding a strip of bias fabric over a resilient tubular core piece having a contractible member extending therethrough, securing the layers of said strip together, bringing the ends of said contractible member together and securing them and the ends of said strip together with the folded portion forming an axle-engaging annulus from which the folded layers of said strip project outwardly substantially in a plane, and offsetting said annulus from one face of said layers.

3. The method of making a packing which comprises extending a length of bias asbestos fabric substantially centrally of its width, placing in said indentation a core piece of yielding material, bringing the side margins of said length together, placing the said core piece and said indented portion together in face to face relation, bringing the end portions of said core piece and the end edges of said strip together and respectively securing said portions and ends together, and then pressing said secured strip margins into substantially one plane and with said core piece and that portion of the strip enclosing said core piece forming a thickened inner margin for an axle-receiving opening and projecting substantially wholly from one face of said margins.

4. The method of making a packing which comprises indenting a length of bias asbestos fabric substantially centrally of its width, applying a lubricant to said length along said indented portion, placing in said indentation a core piece of yielding material, bringing the side margins of said length together about said core piece and cementing them together in face to face relation, bringing the end portions of said core piece and the end edges of said strip together and respectively securing said portions and ends together, and then pressing said secured strip margins into substantially one plane and with said core piece and that portion of the strip enclosing said core piece forming a thickened inner margin for an axle-receiving opening and projecting substantially wholly from one face of said margins.

5. The method of making a packing which comprises indenting substantially centrally of its width a length of bias asbestos fabric having non-bias ends, placing in said indentation as a core a tube of yieldable material containing a contractible center member, bringing the edge portions of said length into face to face relation and there cementing them, bringing the ends of the structure so formed together and securing the ends of said center member together and the ends of said fabric together, the ends of said tube being unattached to each other, and then pressing the secured margins of said fabric into substantially a single plane with the indented portion and said core forming a thickened bead about its interior periphery.

6. The method of making a packing which comprises indenting substantially centrally of its width a length of bias asbestos fabric having non-bias ends, placing in said indentation as a core a tube of yieldable material containing a contractible center member, bringing the edge portions of said length into face to face relation and there cementing them, bringing the ends of the structure so formed together and securing the ends of said center member together and the ends of said fabric together, the ends of said tube being unattached to each other, and then pressing the secured margins of said fabric into substantially a single plane with the indented portion and said core forming a thickened bead about its interior periphery and projecting substantially wholly from one side face of said secured margins.

7. The method of making a packing which comprises extending a length of bias asbestos fabric substantially centrally of its width, placing in said indentation a core piece of yielding material, bringing the side margins of said length together, placing the said core piece and said indentedportion together in face to face relation, bringing the end portions of said core piece and the end edges of said strip together and respectively securing said portions and ends together, and then pressing said secured strip margins into substantially one plane and with said core piece and that portion of the strip enclosing said core piece forming a thickened inner margin for an axle-receiving opening and projecting substantially wholly from one face of said margins.
there cementing them, bringing the ends of the structure so formed together and securing the ends of said center member together and the ends of said fabric together, the ends of said tube being unattached to each other, then pressing the secured margins of said fabric into substantially a single plane with the indented portion and said core forming a thickened bead about its interior periphery, and then applying a lubricating agent to said packing.

3. The method of making a packing which comprises indenting a length of bias asbestos fabric substantially centrally of its width, placing in said indentation a core piece of yielding material, bringing the side margins of said length together about said core strip and cementing them together in face to face relation, bringing the end portions of said core piece and the end edges of said strip together and respectively securing said portions and ends together, and then pressing said secured strip margins into substantially one plane and with said core piece and that portion of the strip enclosing said core piece forming a thickened inner margin for an axle-receiving opening and projecting substantially wholly from one face of said margins, and then treating said packing with a lubricant.

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