

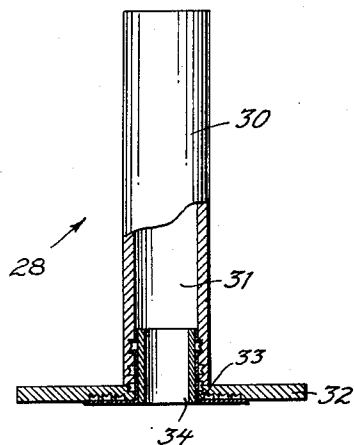
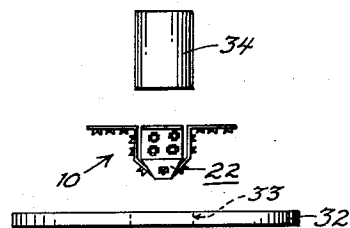
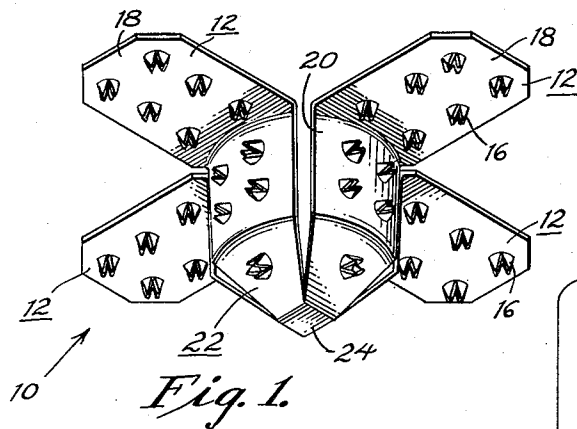
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FLANGE FASTENING CLIP FOR SPOOLS

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FLANGE FASTENING CLIP FOR SPOOLS

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4 Claims. (Cl. 85-40)

The present invention relates to improvements in spools, and is more particularly concerned with the provision of means for securing together the core and end flanges of spools manufactured from cardboard or similar fibrous materials.

Spoofs of the type herein referred to are intended primarily for mill use, and serve as temporary holders for narrow fabrics, wire, belting, and the like in the mill, or for shipment, as the case may be. Inasmuch as these spools are ordinarily thrown away after use, it is essential that they be constructed of the cheapest and most easily manufactured material adaptable for the purpose, and that their cost of manufacture be as low as possible. Simultaneously, it is essential that these spools have the requisite strength to remain assembled for a sufficient period of time to perform their intended purpose.

In commercial practice these spools are usually constructed of paper cardboard, pasted chipboard, binders' board or the like, and comprise a tubular rolled paper core to which are fixed two flat end flanges which may be, and preferably are, manufactured from the above-mentioned materials.

In the manufacture of these spools, a principal item of cost has been the provision of satisfactory means for securing the two end flanges to the paper cylinder which forms the core of the spool. A variety of means have heretofore been suggested. These include by way of example, a plug or bushing which is secured by staples to the end flange and fits into the end of the tube or core, such plug being then cemented into place therein.

The use of individual strips of bent sheet metal provided with penetrating prongs or points has also been suggested, and has gained relatively widespread commercial acceptance. In the manufacture of spools utilizing such means, the end flange is placed over the paper core, and three angled strips of the aforesaid type are positioned 120 degrees apart, with one arm of the strip on the end flange and the other arm of the strip within the paper core. The strips are then rammed into position by a bushing or locking member which is retained permanently within the paper core. This form of securing means gives a spool having satisfactory strength, and which holds up well in use. However, securing means of the aforesaid type are relatively expensive to apply in the manufacture of spools. Thus, it is necessary that the strips be positioned individually about the core. The positioning of the individual strips is a most time-consuming operation and significantly adds to the cost of manufacture of the spools.

The use of continuous eyelets has also been suggested. The use of continuous eyelets or securing means in which all of the component elements are bridged or joined together has likewise not proven altogether satisfactory. Thus, the continuous bridge portion of the securing means resists expansion, and the securing means is not able to accommodate to paper cores having various inside diameters, or distorted inner wall surfaces.

This invention has as an object the provision of im-

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proved means for securing the end flanges of a spool to the core thereof.

This invention has as a further object the provision of a securing element of simple and inexpensive construction which will permit the assembly of the end flanges and core of a spool into a rigid and serviceable unit.

These and other objects are accomplished by the flange fastening clip of the present invention which includes a plurality of strips, as of sheet metal or the like, joined together at the center of the clip. Each of the strips, which strips are preferably of substantially uniform width, is provided with bosses having penetrating prongs. In the clip's central portion each of the strips is slitted inwardly so that the bridging center portion is greatly weakened.

Each of the strips is bent so that the body of each strip is disposed in at least three planes. Thus, the outermost portion of each strip is disposed in a generally horizontal plane, with the adjacent portion disposed in a generally upright plane. The slit central portion is generally disposed in a plane angularly positioned to the vertical, with such slit central portion assuming in a preferred embodiment of the invention a generally pyramidal shape.

The clip of the present invention may be positioned in place as a unit, and after it is so positioned may be dismembered at the weakened central portion. The clip of the present invention possesses the ease of installation of integral fastening clips, and the advantages of shape distortion, accommodation to varying core size, etc. possessed by individual strips.

For the purpose of illustrating the invention there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

Referring to the drawings wherein like reference characters refer to like parts:

Figure 1 is a perspective view of the flange fastening clip of the present invention.

Figure 2 is a plan view of the flange fastening clip of the present invention.

Figure 3 is an exploded view of a spool incorporating the flange fastening clip of the present invention.

Referring to the drawings, the flange fastening clip of the present invention is designated generally by the numeral 10, and is preferably made of sheet metal, although it is to be understood that sheet metal is merely a shop expedient, and the invention is not limited thereto. Flange fastening clip 10 includes a plurality of strip elements 12, four of which are shown in the illustrated embodiment of the present invention. Each of the strip elements 12 includes a plurality of perforations 14 formed therein by any type of punching device which provides an outstanding boss made up of random penetrating points or teeth 16.

Each of the strip elements 12 is bent at a right angle to provide a horizontal leg 18 and a vertical leg 20 and is bent inwardly and centrally in the portion thereof adjacent the lowermost end of vertical leg 20 to form a central pyramidal or truncated pyramidal portion designated generally by the numeral 22.

The strip elements 12 are joined together at the apical center 24 of central pyramidal portion 22, with the sides of strip elements 12 slit taperedly inwardly along slits 26. While slits 26 greatly weaken central pyramidal portion 22, sufficient land is left therein to provide the structural strength necessary to retain flange fastening clip 10 as an integral unit. This may be accomplished even though the bridge or land region at apical center 24 constitutes but a small percentage of the total area of flange fastening clip 10.

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Figure 3 demonstrates the assembly of a spool unit or spool assembly designated generally by the numeral 28 which incorporates clip 10.

Spool unit 10 includes a tube or core 30, preferably made of cardboard or the like, and a pair of end flanges 32 preferably made of similar material. To retain end flanges 32 in their fixed or secured position, the spool unit 28 is provided with a flange fastening clip 10 of the present invention and a locking member 34 for each end flange 32. Locking member 34 comprises a bushing of cardboard or like material.

The assembly of spool unit 28 is effected by placing end flange 32 at each end of tube 30, with the opening 33 in end flange 32 concentrically positioned in respect to the bore 31 of core 30, and then positioning flange fastening clip 10 within the bore of tube 30 with the horizontal legs 18 outermost and superposed over the outermost face of end flange 34. The juncture is made by inserting locking member 34 within the cup formed by the strip elements 12 of flange fastening clip 10 and then tearing the flange fastening clip 10 apart by extending slits 26 and urging the points 16 on the horizontal legs 18 and vertical legs 20 into the outermost face of end flange 32 and the inner wall surface of tube 30 respectively.

A preferred method and apparatus for accomplishing this operation is described and shown in our co-pending patent application Serial No. 539,305, entitled "Method and Apparatus for Assembling Spools," filed on even date herewith.

The slight deformation of locking member 34 when it is operatively positioned, and the resiliency and roughness formed by the perforations 14 in strip elements 12 maintain the locking member 34 securely in position, within spool 28. In turn, locking member 34 securely locks the strip elements 12 in position to anchor the end flange 32 in its operative position.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

We claim:

1. A readily dismembered integral clip for joining the end flange and core of a spool including a center portion, a plurality of inwardly extending slits in said center portion, a plurality of strips extending outwardly from said center portion, with each of said strips having a plurality of outwardly extending projections defined by spaced

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punchings, and each of said strips being bent to form a generally horizontal outermost portion and a generally upright portion adjacent said outermost portion.

2. A readily dismembered integral clip for joining the end flange and core of a spool including a plurality of strips extending outwardly from a center portion, diagonal discontinuous slits substantially demarcating the innermost ends of said strips, with each of said strips having a plurality of outwardly extending projections defined by spaced punchings, and each of said strips being bent to form a generally horizontal outermost portion and a generally upright portion adjacent said outermost portion.

3. A readily dismembered integral clip for joining the end flange and core of a spool including a center portion, a plurality of slits in said center portion, each of said slits extending inwardly to a point spaced a relatively small distance from the centerpoint of said clip, a plurality of strips extending outwardly from said center portion, each of said strips having a plurality of outwardly extending projections defined by spaced punchings, and each of said strips being bent to form a generally horizontal outermost portion and a generally upright portion adjacent said outermost portion.

4. A readily dismembered integral clip for joining the end flange and core of a spool including a plurality of strips extending outwardly from a center portion, diagonal discontinuous slits substantially demarcating the innermost ends of said strips, the centermost portion of the clip being undivided, with each of said strips having a plurality of outwardly extending projections defined by spaced punchings, each of said strips being bent to form a generally horizontal outermost portion, a generally upright portion adjacent said outermost portion and an innermost portion angularly disposed to said upright portion, said innermost portions of the strips being conjointly disposed substantially in the form of a pyramid, with said slits being the side edges of said pyramid, and the undivided center portion being the apical portion of said pyramid.

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