March 5, 1968 E. M. SIEGLITZ, JR 3,371,390

BALE TIE

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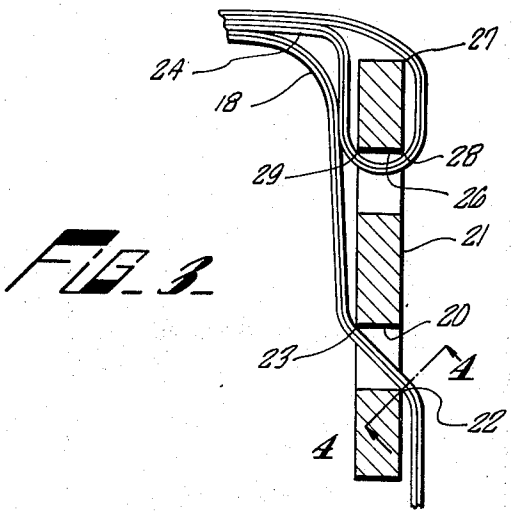


FIG. 3

FIG. 1

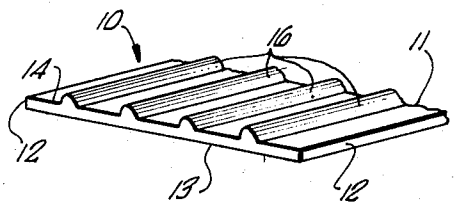


FIG. 2

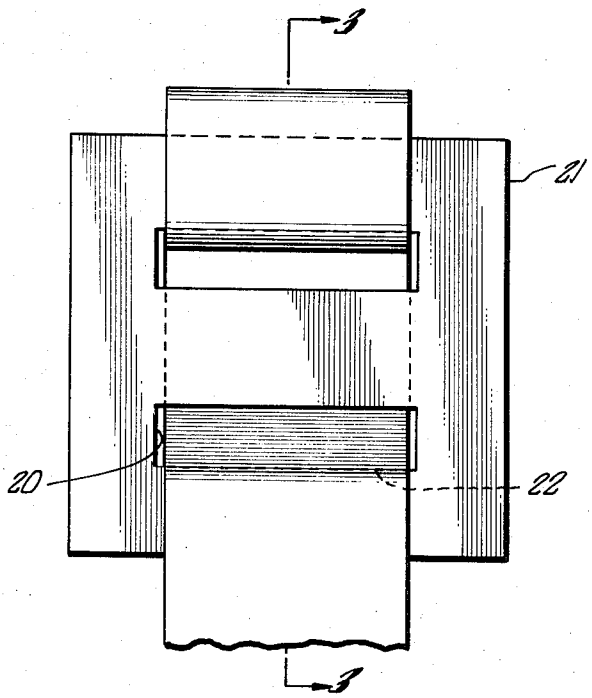
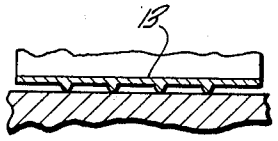


FIG. 4



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BALE TIE

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ABSTRACT OF THE DISCLOSURE

A bale tie having an elongated, flexible metal band provided with laterally-spaced ribs that project from the band to prevent stress concentrations in and failure of band when in use.

This invention relates to apparatus for confining a bale of compressible material, such as cotton.

It has been common practice in the past to secure compressible materials with ties, such as elongated metal bands, fastened together at their ends by a buckle. An example of prior art bale-tie apparatus is shown in my Mexican Patent No. 57,015.

The metallic bands used prior to this invention for confining compressible materials are generally flat and smooth on the two opposite major surfaces. Such bands have been subject to failure, particularly where the bands pass over the relatively sarp edges of the buckle. Failure usually starts along one edge of the band and spreads almost instantaneously across the band to release it with violent and dangerous force.

This invention provides a band with means which hold the major plane of the band spaced from the buckle to prevent contact of the major surface of the band directly with the buckle. Such a band can withstand greater force without failure than the previous conventional flat type of band.

Briefly, this invention provides a bale tie comprising an elongated band of flexible material having a plurality of longitudinally extending and laterally spaced ribs projecting from the band.

In a typical tie of this invention, the band is about 1 inch wide, approximately .04 inch thick, and has ribs which are raised about .05 inch above a major surface of the band. Preferably, the ribs are parallel, spaced from the side edges of the band, and are located on a common side of the band.

In holding a bale of compressible material, the band is disposed around the bale of material and passed through openings in a buckle, which may be conventional, so the band is held firmly around the bale. The projecting ribs on the band extend toward the buckle so that where the band passes over a relatively sharp corner of the buckle, the ribs engage the buckle and hold the band spaced from it to avoid any direct contact and stress on the edges of the band.

These an other aspects of the invention will be more fully understood from the following detailed description and the accompanying drawings, in which:

FIG. 1 is a perspective fragmentary view of the presently preferred embodiment of the band;

FIG. 2 is an elevation of the band held by a buckle;

FIG. 3 is a view taken on line 3—3 of FIG. 2; and

FIG. 4 is a view taken on line 4—4 of FIG. 3.

Referring to FIG. 1, a bale tie **10** includes an elongated band **11** of metallic material such as steel. The band is generally rectangular in cross section, and has side edges **12**, a flat bottom surface **13**, and a top surface **14** on which are formed elongated longitudinally extending and

laterally spaced parallel ribs **16** which project above the top surface of the band.

Although not entirely critical, the band is approximately 1 inch wide, about .04 inch thick, and the ribs extend about .05 inch above the top surface of the band. The ribs are spaced about .15 inch apart, and the outer ribs are spaced from the adjacent side edges of the band. In the embodiment shown in FIG. 1, four ribs are formed on the top surface of the band, although different numbers of ribs may be used satisfactorily.

In manufacturing the typical band in accordance with this invention, a ribbon or band of plain blank material, such as steel, is heated to about 1500° F. and passed between two rollers, one of which has grooves in it shaped and spaced apart to form ribs on the top surface of the band as it passes between the rollers. In a typical process, a blank band 0.875 inch wide and 0.100 inch thick is formed to the dimensions given above with respect to the band shown in FIG. 1.

As shown best in FIGS. 2, 3, and 4, the band is disposed around a bale of compressible material, such as cotton (not shown), which is held in a conventional cotton press (not shown). The cotton press forms no part of this invention, but a typical one is shown in my Mexican Patent No. 57,015. One end **18** of the band extends through a lower rectangular opening **20** in a conventional buckle plate **21**. The band first bends over an outer edge **22** of the lower opening **20** in the buckle plate, and then over an inner edge **23** in the upper portion of the lower opening in the buckle plate. The end **18** of the band then passes up between the compressed material and the inner face of the buckle plate. The surface of the band with the ribs faces the outer edge **22** of the lower opening in the buckle plate so that the ribs hold the major surface of the band spaced from the edge **22** of the buckle.

The opposite end **24** of the band is looped through an upper opening **26** in the buckle plate so that the band curves around edges **27**, **28**, and **29** of the buckle plate. The surface of the band with the ribs faces the buckle so the band is held spaced from the relatively sharp buckle edges.

When the pressure of the cotton press is released from the cotton bale, the bale tends to expand and forces the ends of the band against the buckle so that the band is held by the friction between the buckle and the bale to prevent the bale from expanding further. The tension applied to the band by the edges of the buckle is borne by the ribs of the band which prevent the side edges of the band from being directly contacted or stressed by the buckle. Thus, even if the ribs are deformed or subject to high stress, the band does not rupture, and bales of compressible material can be held more firmly and with greater safety than previously possible with bands of corresponding size and weight.

I claim:

1. Apparatus for holding a bale of compressible material, the apparatus comprising a buckle plate having openings through it, an elongated band disposed around the bale and extending through the openings in the buckle plate so the band is held together around the bale, the band having a plurality of longitudinally extending and laterally spaced ribs projecting, from it toward the buckle, the ribs being in contact with the buckle to hold the band spaced from the buckle.

2. Apparatus for holding a bale of compressible material, the apparatus comprising a buckle plate having openings through it, an elongated band disposed around the bale and extending through the openings in the buckle plate so the band is held together around the bale, the band having a plurality of longitudinally extending and

laterally spaced ribs projecting from it toward the buckle, the ribs being in contact with the buckle to hold the band spaced from the buckle, the ribs being spaced from the side edges of the band.

3. Apparatus for holding a bale of compressible material, the apparatus comprising a buckle plate having openings through it, an elongated band disposed around the bale and extending through the openings in the buckle plate so the band is held together around the bale, the band having a plurality of longitudinally extending and laterally spaced ribs projecting from a common side of the band toward the buckle, the ribs being in contact with the buckle to hold the band spaced from the buckle.

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