W. D. KIMBALL AND C. G. MORTIMER.

SPLICED JOINT FOR BALE BANDS.

APPLICATION FILED MAR. 1, 1917. RENEWED MAY 6, 1920.

1,393,791. Patented Oct. 18, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

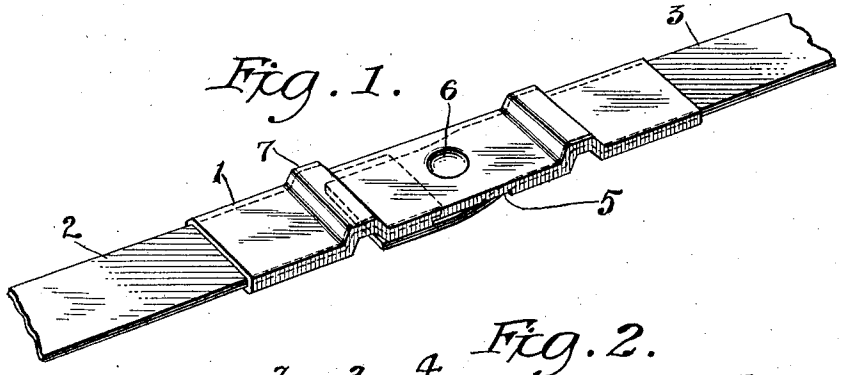


Fig. 2.

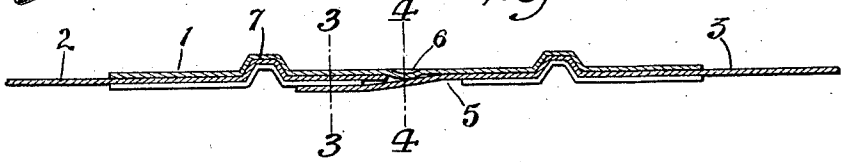


Fig. 3.

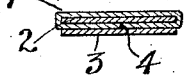


Fig. 4.



Fig. 5.

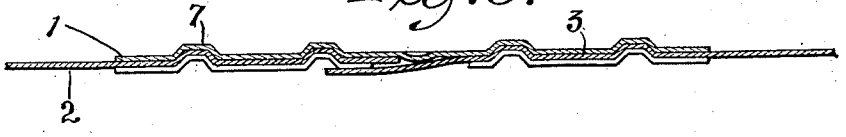
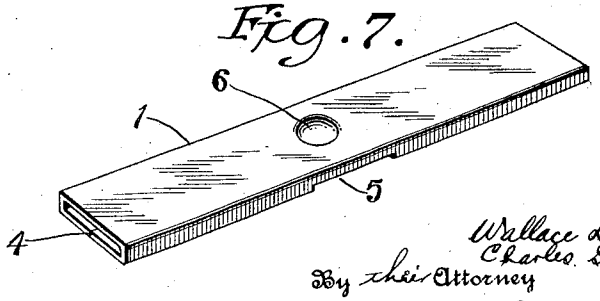


Fig. 6.



Fig. 7.



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2 SHEETS—SHEET 2.

Fig. 8.

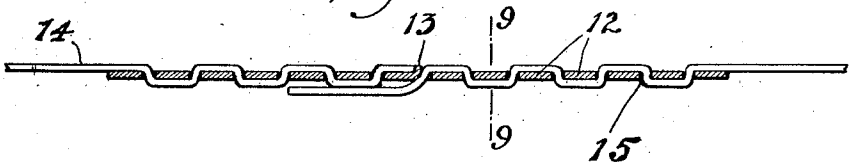


Fig. 9.

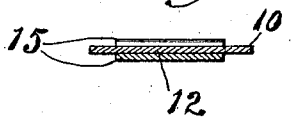
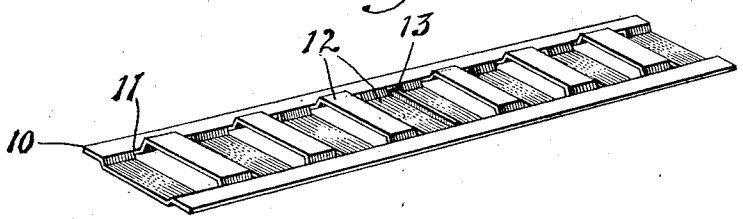


Fig. 10.



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UNITED STATES PATENT OFFICE.

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SPLICED JOINT FOR BALE-BANDS.

1,393,791. Specification of Letters Patent. Patented Oct. 18, 1921.

Application filed March 1, 1917, Serial No. 151,634. Renewed May 6, 1920. Serial No. 379,397.

To all whom it may concern:

Be it known that we, WALLACE D. KIMBALL and CHARLES G. MORTIMER, both citizens of the United States, residing, respectively, at the city, county, and State of New York and at No. 123 South Parkway, East Orange, Essex county, New Jersey, have invented new and useful Improvements in Spliced Joints for Bale-Bands, of which the following is a specification.

This invention relates to spliced joints or fasteners for bale-bands and box-straps, and has for its object to provide a strong and durable joint which may be readily applied to the bands or straps and which will permit of the ends of the band or strap being drawn past each other to tighten the band or strap around the bale or box on which it is used.

A further object of the invention is to provide a joint of this character in which the applied piece which holds the ends of the bands together is of simple construction and may be made of light sheet metal by a series of stamping or similar operations so as to be capable of manufacture upon automatic machines in large quantities at very low cost.

In the accompanying drawings we have illustrated several forms of our improved joint, all embodying the same essential features. In the said drawings:

Figure 1 is a perspective view showing one form of our invention;

Fig. 2 is a longitudinal sectional view of the joint shown in Fig. 1;

Figs. 3 and 4 are sectional views on correspondingly numbered lines of Fig. 2;

Fig. 5 is a longitudinal sectional view showing a slightly modified form of joint;

Fig. 6 is a similar view showing a further modification of the joint;

Fig. 7 is a perspective view of the sheet metal part by which the ends of the strap are connected in carrying out our invention;

Figs. 8 and 9 show in elevation and longitudinal section respectively a further modification of our bale tie, and

Fig. 10 is a perspective view of the modification.

Referring to the drawings, 1 indicates the sheet metal part by which the ends 2 and 3 of the strap or band are connected. The part 1 comprises essentially a flat tube of sheet metal preferably of about the weight or gage of the band to be connected, the bore of the tube being of a cross section to fit freely over the end of the band.

The sleeve or tube 1 is formed from a sheet of metal by folding the latter to proper shape, leaving a seam or opening along one face, as indicated at 4. At the middle of its length the sleeve is cut away on the side having the seam 4, as indicated at 5, and in the wall opposite the cut-away portion there is formed an offset or depression 6 which serves the double purpose of a stop for one end of the band and a cam for the other end of the band to deflect it out through the cut-away portion of the wall of the tube to permit the strap to be tightened on the box or bale before the strap and tube are crimped, as shown at 7.

In applying the bands or straps to the boxes or crates to be bound, the tube 1 will be slipped over one end of the strap until the end of the strap engages the middle offset. The strap will then be placed around the box and the other end of the strap thrust through the opposite end of the tube until it engages the offset 6 by which it will, upon continued thrust applied to the strap, be deflected to project out of the cut-away portion of the tube or sleeve and under the sleeve, as shown in Fig. 2.

After the band is drawn as tight as may be easily done by hand a stretching tool is applied to the ends of the band on each side of the sleeve 1, and the ends drawn toward each other until the band tightly encircles the box, thereby thrusting the end 2 of the strap farther under the opposite end of the tube. While the band is held tight with the stretching tool a crimper is applied to each end of the tube, crimping both walls of the tube and the intermediate strap together to thereby securely attach each end of the strap to its portion of the tube or sleeve 1.

In Figs. 1 and 2 we have shown but a single crimp at each end of the sleeve and with stock of the character usually employed for the strap and sleeve, a single crimp is stronger than the metal of the strap itself. The sleeve is preferably made of metal of the same gage as the strap so that the middle part of the sleeve will be at least as strong as

the strap, in fact, with the edges of the sleeve left uncut in the manner shown in the drawing, a lighter metal may be used for the sleeve if desired, without reducing the strength of the binding.

Instead of the single crimp for each end, we may prefer to use a tool designed to form a double crimp as indicated in Fig. 5, or the strap ends and sleeve may be corrugated together from end to end of the sleeve in the manner shown in Fig. 6. When the corrugations of Fig. 6 are used, each individual crimp or corrugation may be less acute than the single or double crimp shown in the other views, and may be made by a corrugating roller or similar device.

In Figs. 8 and 9 we have illustrated a further modification of our invention in which the fastening element is made from a flat strip of metal by the single operation of a cutting and bending die, and which also admits of being very readily applied without special tools. In this form of the invention the fastener is made of a strip 10 of sheet metal provided with a series of transverse slots extending along the middle of the strip and terminating short of the edges as indicated at 11, the slots being preferably formed by punching out narrow strips of metal instead of by simply slitting the sheet.

By the same operation the sheet may be bent as shown, that is, each alternate strip between two adjacent slots is bent down below the plane of the sheet to an extent sufficient to permit the end of the band to be threaded between the oppositely bent strips.

The cross bar 12 at the middle of the length of the tie is provided with a turned-up edge 13 formed by cutting the metal to form the opening between the middle cross bar and the adjacent cross bar on one side around three edges only, so that the piece of metal will be turned up by the action of the punching die instead of completely detached from the sheet. The turned up edge 13 acts as a stop to be engaged by one end of the strap to be connected when the end is thrust between the alternate cross bars as shown. In applying this form of tie to the band it may, if desired, be first crimped on the end 14 of the band by clipping the tie sheet over the end of the band until it engages the turned up edge 13 and then flattening the offset cross bars 12 to corrugate the band, as shown more particularly in Fig. 9. After the fastener has been attached to one end of the band or strap the strap will be placed around the box or bale and its opposite end thrust through the open portion of the fastener with the end of the strap projecting above or below the crimped end of the fastener. This end of the fastener will then be flattened by hammering operation with a suitable tool after the band is drawn tight, and effectively seal the two ends of the band together.

The band, however, may be attached to the box at one operation in the manner heretofore pointed out in the alternate form of the device. Also, if desired, the turned up edge 13 may be omitted and both ends of the band thrust through the entire length of the fastener in overlapping relation, and both bands and the fastener crimped or corrugated together by a single flattening operation.

We claim:

1. A spliced joint comprising two strap ends to be connected, a tube or sleeve having different portions surrounding the two strap ends, each said portion and its inclosed strap end having a crimp or corrugation therein, said tube or sleeve having a portion of its wall cut out on one side to permit one end of the strap to project therethrough.

2. A spliced joint comprising two strap ends to be connected, a sleeve surrounding each of said strap ends each strap end and its inclosing sleeve being corrugated to prevent withdrawal of said strap end from the sleeve, and an opening cut in the wall in one side of the said sleeve to permit one of said strap ends to project therethrough.

3. A spliced joint comprising two strap ends to be connected, a sleeve surrounding each of said strap ends each strap end and its inclosing sleeve being corrugated to prevent withdrawal of said strap end from the sleeve, and an opening cut in the wall in one side of said sleeve to permit one of said strap ends to project therethrough, and means for deflecting said strap end to cause it to project through said opening.

4. A bale tie consisting of a flat metal tube of a size to encircle the bale band or strap, said tube having a portion of one wall intermediate its end cut away to allow the free end of one strap to project therethrough.

5. A bale tie consisting of a flat metal tube of a size to encircle the bale band or strap, said tube having a portion of one wall intermediate its end cut away to allow the free end of one strap to project therethrough, and an offset or projection on the wall opposite the said opening for deflecting the end of the band through the opening.

6. A spliced joint comprising two strap ends to be connected, and a sheet metal piece having different portions surrounding the two strap ends, said strap ends and sheet metal portions being crimped or corrugated together so as to prevent relative longitudinal movement of the strap ends with the free end of one strap projecting through the side of the sheet metal piece and in over-

lapped relation with the other strap end, but outside the sheet metal piece.

7. A spliced joint comprising two strap ends to be connected and a sheet metal piece having different portions surrounding the two strap ends, said sheet metal piece having a transverse projection in line with the end faces of the strap ends to thereby act as a stop to one strap end and deflect the other laterally away from the sheet metal piece, the sheet metal piece and the portions of the strap ends surrounded thereby being crimped or corrugated together so as to prevent relative longitudinal movement of the strap ends.

Signed at New York city, in the county of New York and State of New York, this 29th day of January, 1917.

WALLACE D. KIMBALL.
CHARLES G. MORTIMER.