(No Model.)

H. C. TULLY.

BALE TIE.

No. 499,809. Patented June 20, 1893.

Fig. 1.

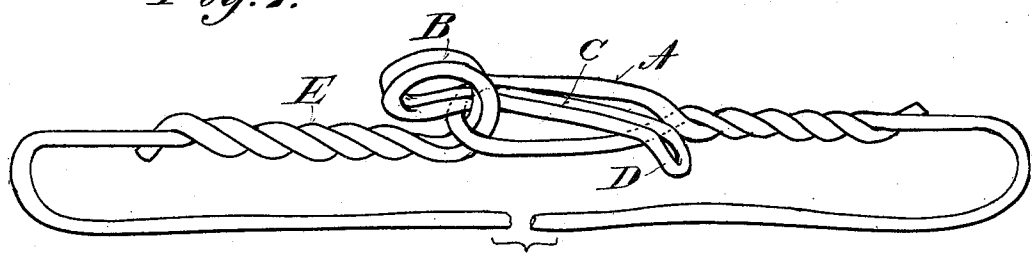


Fig. 2.

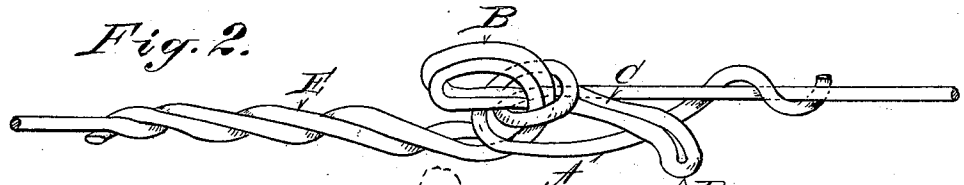


Fig. 3.

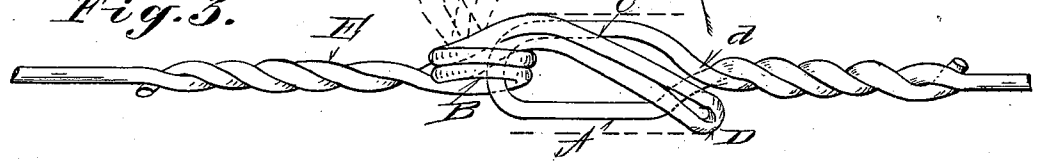
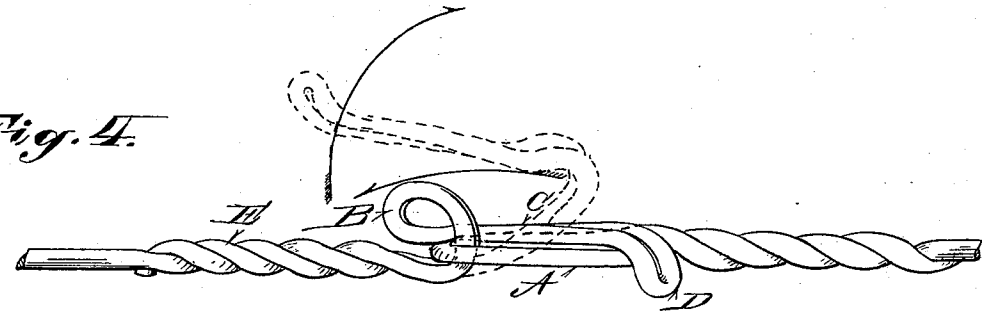


Fig. 4.



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BALE-TIE.

SPECIFICATION forming part of Letters Patent No. 499,809, dated June 20, 1893.

Application filed January 19, 1893. Serial No. 458,964. (No model.)

To all whom it may concern:

Be it known that I, H. CLINTON TULLY, a citizen of the United States, residing at Mechanicsburg, in the county of Champaign and State of Ohio, have invented certain new and useful Improvements in Bale-Ties, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in bale ties, the peculiarities of which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings on which like reference letters indicate corresponding parts: Figure 1, represents a perspective view of the meeting, or interlocking ends of my bale-tie adapted for a dimension tie; Fig. 2, a similar view applied as an adjustable tie; Fig. 3, a plan view of Fig. 1; and Fig. 4, a side view of the same.

In baling hay, straw, &c., the proper quantity of material is reduced by the press to the desired size, and the tie encircling the same is secured by fastening the ends together.

In the form of tie shown in Fig. 1, called a dimension tie, the length is adapted to the size of bale desired, the ties being uniform in length to secure uniformity in size of bales.

In Fig. 2, the tie may be of any convenient length, being adjustable in its binding length according to the size of the bale in the press.

One of the meeting ends of my dimension tie, is formed with a loop A formed by twisting up the end of the wire, and constitutes the female member. The other end is adapted to be inserted within the loop, and consists of a doubled coil portion B, formed by turning the doubled end of the wire upward and backward, downward and forward, to constitute a coiled hook, and a tongue portion C extending forward of the coil portion and laterally toward the other side of the coil, as shown in the plan view, Fig. 3. The tip D of the tongue is bent downward, as shown in Fig. 4, the side view, and is formed by the extremity of the doubled wire constituting the male member. The male member may be twisted back of the coil, as shown at E, or otherwise formed, the preferred form of the doubled portion forming the coil and tongue, being parallel, or lying side by side, as shown.

Referring to the figures, the loop A is shown engaged with the male member back of the coil and under the same. The tongue extends forward and rests upon the loop. The end of the tongue engages with the portion of the loop opposite the same which forms a stop against lateral motion. The tip of the tongue, bent downward below the plane of the loop, provides additional security against lateral displacement of the tongue, as will be presently described. The tongue may be formed without the turned down tip end, but the latter is the preferred construction.

Referring to the plan view, Fig. 3, it will be seen that the coil of doubled wires extends out laterally in one direction, while the tongue extends forward and is inclined in the other direction, engaging near its end with a portion, *d*, of the loop, forming a stop or shoulder therefor. When strain is brought upon the tie, the coil tends to straighten out or uncoil, which tendency is resisted by the tongue bearing on the loop. The lateral arrangement of the coil tends to throw the tongue to one side in the direction of the arrow, Fig. 3, under the pulling strain. This lateral tendency of the tongue is resisted by the shoulder *d* of the loop and the coil forms a stiff coiled hook or kink. To further secure the tongue from lateral motion under coupling strain, the tip end D thereof is turned down as shown. This hooks over the loop and assists the shoulder *d* in maintaining the tongue in place. The tongue may be used without the tip D and the stop *d* may be relied on to prevent the lateral tendency.

Referring to Figs. 3 and 4, the dotted positions indicate action of the male member when the tongue is forcibly disengaged from its stop on the female member and coupling strains brought to bear on the tie. The tongue will move laterally in the direction of the arrow, Fig. 3, to the first dotted position, the coil turning sidewise in the opposite direction and opening out. If the strain is continued, the tongue will turn farther backward till it reaches about the second dotted position, Fig. 3, when it will rise and turn over forward, as indicated in Fig. 4, the coil straightening out.

This action, which has been found by experiment to be substantially as described, shows that the opening out of the coil is only possible when the tongue is left free to turn laterally. The main part of the coil, as seen from Fig. 4, is back of the end of the loop A, and the forward extension rests against the side of the coil and presses directly down upon the same. This arrangement of the coil causes the latter to reduce in size and form a rigid kink rather than to pull over forward. Experiment has demonstrated this tendency of the parts, substantially as above described.

Referring again to Fig. 3 it will be noted that the inside width of the loop A is less than the outer width of the interlocking male member. This allows the parts when coupled to have a certain forward and backward play without danger of becoming uncoupled—that is, when the bale is compressed after coupling the tie, the meeting ends may slide by each other, and the loop slip along back of the coil, without danger of the male member slipping out of the loop, when the tie again becomes tight. In other forms of ties this difficulty causes considerable trouble. In my form, practical use has shown that this difficulty is overcome satisfactorily.

Referring to Fig. 2, the male member is formed as previously described for a dimension tie, but the female member or loop, is formed by wrapping the meeting end around the coil and carrying the end forward under the tongue, to the main wire as shown. The tongue will rest upon the loop thus formed, and the twist or turn about the coil and tongue forms the loop. The loop may be formed by one turn of the wire around under the coil and then forward to form a single loop as in the other figures; or the wire may be carried around under the coil, over the tongue, back under the coil and forward under the tongue to the main wire, as shown in Fig. 2. Other constructions of the loop may be used, as I lay claim in particular to the form of male member herein shown and described, irrespective of the form of the female member to be used therewith, as well as one constituting a shoulder or stop for the tongue, as above described.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A bale tie, the meeting ends of which consist of a loop at one end provided with a shoulder or stop, and an interlocking doubled coil forming a hook for said loop, and provided with a tongue extending forward above the loop and engaging with said stop or shoulder to prevent lateral displacement under coupling strain.

2. A bale tie, the meeting ends of which are provided respectively the one with a loop, and the other with a double coil portion forming a hook for said loop, and having a forward tongue extending across the loop and bent downward at its tip end to engage therewith and prevent lateral displacement under coupling strain.

3. In a bale tie, the combination with a loop on one end of the tie, of a hook on the other end formed by bending the doubled wire over, backward and down forward at one side, of the coil and extending it forward and across toward the other side and then downward at the tip end, the doubled wire forming said coil and tongue being substantially parallel as shown.

4. The herein described hook end for a bale tie, the same consisting of a coil formed of doubled parallel wires bent upward and backward and forward to form a coil, and then extended forward and bent laterally to the opposite side to form a tongue, and then downward at the tip end of said tongue.

5. In a bale tie, the combination with a loop on one end of the tie, of a hook on the other consisting of a coil bent upward and backward and down forward, and then extended forward and bent laterally in the other direction to form a tongue, the width of the loop inside being less than the width of the hook and tongue outside, whereby the accidental uncoupling of the parts is avoided, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

H. CLINTON TULLY.

Witnesses:
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WARREN M. MCNAIR.