

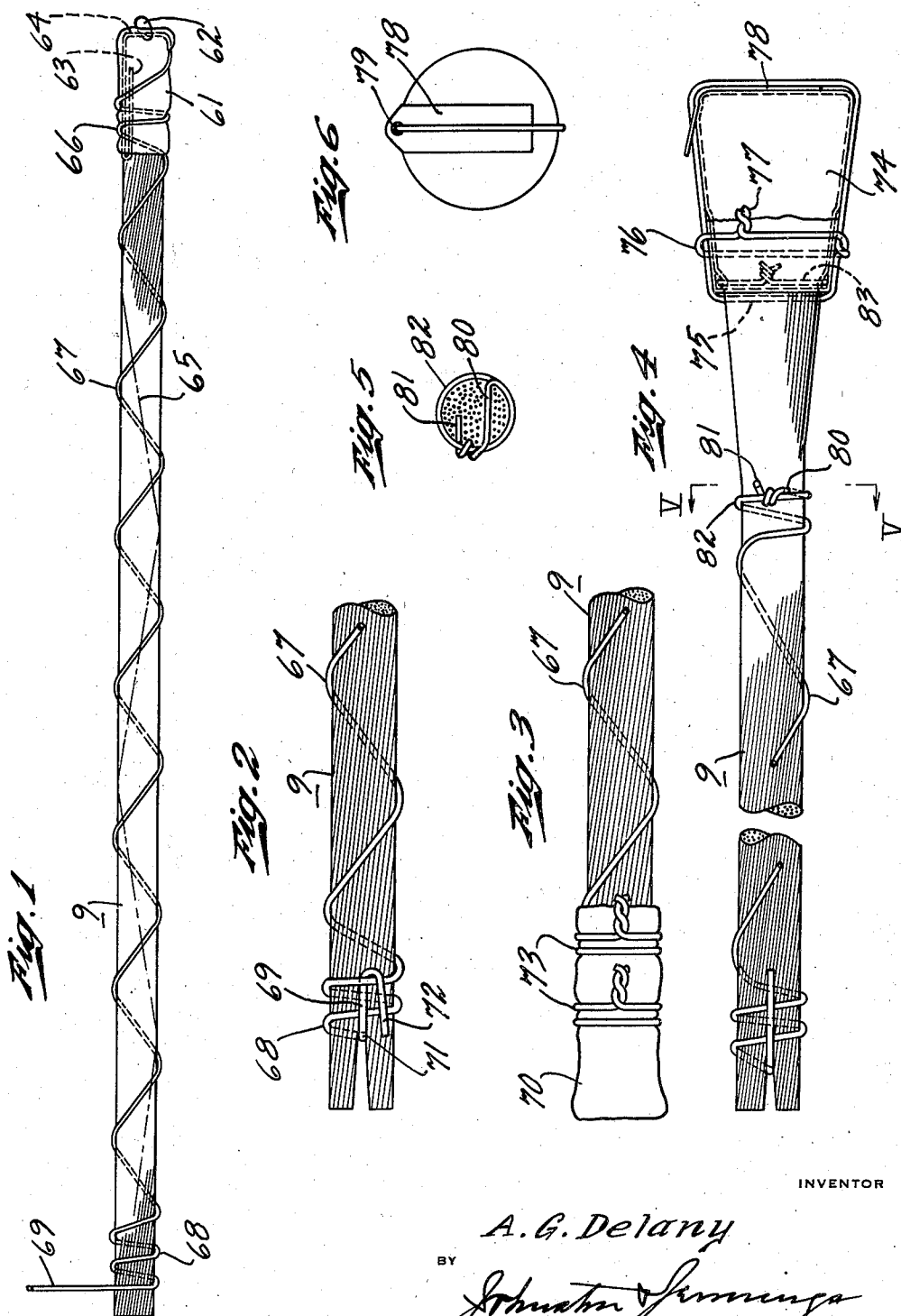
July 19, 1938.

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2,124,271

BALE TIE BUNDLE

Filed Oct. 28, 1935



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2,124,271

BALE TIE BUNDLE

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Application October 28, 1935, Serial No. 47,084

3 Claims. (Cl. 206—46)

My invention relates to an improved bundle of material, flexible in character and cut to lengths, which it is desirable to tie tightly and securely together into cylindrical packages, in such manner that there will be no slippage or relative displacement of the articles in a package.

My invention, more particularly, though not exclusively, is concerned with an improved bundle of bale ties, which are lengths of wire formed with an eye at one end and which heretofore have been arranged straight and parallel and secured in a cylindrical package by encircling bands of wire twisted at different points about the package, the ends of the ties being enclosed in canvas or fabric covers which in turn were secured by separate wire ties.

My present invention constitutes in part a continuation of my application, Serial No. 637,901, filed on October 15th, 1932, granted June 29, 1937, Patent No. 2,085,082 for a Bale tie bundle and method of producing the same.

According to my present invention, bale ties, wires, or like articles, hereinafter referred to as bundle elements, are grouped as usual into a cylindrical package, but before the securing means is applied, they are subjected to a substantial degree of twist about the long axis of the package so that the elements do not lie parallel throughout the bundle. I propose to take advantage of this twist in the bundle elements as a means to enable the tie or binder wire to secure the bundle elements more effectively against slippage or displacement during handling.

One object of my invention is to wind a flexible binder, preferably a wire, helically about the bundle with coils applied near the bundle ends and the wire ends beyond said coils passed about the bundle ends, or drawn in between the ends of bundle elements so as to prevent slippage of the end coils either about, or lengthwise of, the bundle, thereby to hold all of the interposed windings tight and the bundle secure.

My invention further contemplates utilizing the binding wire to secure the burlap or canvas end cover initially applied to the bundle.

My invention further contemplates securing the end cover, initially applied to the bundle, by a separate wire tie and starting the application of the bundle tie wire beyond such cover by passing its free end at the desired point through the loose bundle elements and securing it to the tie wire before rotating the bundle to twist its elements and apply a tight initial coil followed by the windings lengthwise along the twisted bundle.

My invention further contemplates weaving the

exposed wire that is passed about a bundle end through a tag or label thereby to secure such label or tag in exposed position where it can be seen when the bundles are stacked.

My invention embodies further novel features and details of construction hereinafter more particularly described and claimed, reference being had to the accompanying drawing wherein;

Fig. 1 is a side elevation of a bundle twisted and tied in accordance with my present invention with the end of the tie wire beyond its final coil shown ready to be drawn through the bundle and made fast.

Fig. 2 is an enlarged detail view showing the binding wire at its terminal end anchored through the bundle ties to hold it against slippage.

Fig. 3 is a view showing the end of the bundle appearing in Fig. 2 with its cover applied.

Fig. 4 shows a modified method of tying on the cover at the eye-end of the bundle and of starting the initial binder coil at an intermediate point along the bundle with suitable anchorage for both ends of the binder wire by passing them through the bundled elements.

Fig. 5 is a cross sectional view taken on the line V—V of Fig. 4.

Fig. 6 is an end view of Fig. 4.

Similar reference numerals refers to similar parts throughout the drawing.

In producing the improved bundle or package of bale tie wires illustrated in Figs. 1 to 3, I assemble the bale ties for a bundle into a cylindrical mass 9 and I apply over the eye-ends of the ties a canvas cap or cover 61. An information tag 62 is provided with a small opening by which it is strung onto the binding wire that passes over the bundle end. The end portion 63 of the binding wire is then placed within the cap after which the wire is bent back, the cover is folded into position and then the wire bearing the tag is drawn tightly across the covered end of the bundle at 64 and returned along the opposite side of the cover from the portion 63 (see Fig. 1). The covered end of the bundle with the binder wire projecting therefrom is then made fast in a chuck or to any other suitable rotating element and is suitably supported while it is subjected to rapid rotation with its bundle elements left free to form themselves into a twist. This rotation acts to produce a considerable twist of the outer bundle elements about the long axis of the bundle, this twist being indicated by the dotted line 65 in Fig. 1, and as the bundle elements are thus drawn into a hard compact twisted mass and while the twisting is going on, the rotation of the bundle is uti-

lized to enable an initial tight coil 66 to be applied about the cover and the bent end 63 of the tie wire after which the wire is guided to apply the spiral windings 67, the pitch of which is controlled by the feed of the binder wire along the bundle. The twist of the wires in the bundle is increased by the duty imposed on them to overcome the frictional drag on the binder wire being wound on the bundle.

When the binding wire approaches the uncovered end of the bundle, it is wound in a tight coil 68, after which it is cut off to leave a tie end 69. This tie end, as shown in Fig. 2, is then passed about the bundle end and is drawn inwardly between the loose ends of the bundle elements to form the through or anchor pass 71 (Fig. 2) after which its end 72 is bent back inwardly along the bundle. Thus it serves as a lock or anchor to hold the coil 68 securely from slipping and loosening the windings 67. It is obvious that the tight coil 68 about the twisted bundle elements will cause the latter to securely anchor the through pass 71 against further slippage axially inwardly of the bundle, and thus by means of the lock applied by the binder wire end, the coil 68 is securely held against slippage inwardly of or around the bundle and thereby the windings 67 are held tight. A cover 70 is applied over the coil 68 and is secured by one or more external wire coils 73, see Fig. 3.

In Figs. 4 to 6 I show the bundle elements as wires having larger eyes than shown in Fig. 1, and I apply the initial cover 74 over them and secure it by a separate tie wire which at 75 is passed through the ties while they are loose and then one end is passed over the covered end of the bundle and brought back near the free edge of the cover where the wire ends are twisted and then wound around the bundle to provide a securing coil 76 after which they are twisted together at 77.

If desired, before the cover 74 is thus secured, its free edges may be tied by a coil of wire 83 and then folded back over this coil ready to be bound in place by the tie wire coil 76. A stock or shipping tag 78 has the tie wire woven through its eye 79 and then drawn over the tag to hold it in diagonal position across the end of the bundle. This secures the tag in most convenient display position.

The application of the binder wire to wrap the bundle starts well beyond the canvas cover 74, and its end is anchored by passing a portion 80 thereof through the loose bundle after which I twist it about the binder wire and stick its free end 81 into the bundle. Then I commence to

rotate the bundle and as I twist its elements I wind the initial tight coil 82 and then start the application of the spiral windings 67 and continue same to the other end of the bundle when the free end of the binder wire is made fast substantially as described in connection with Figs. 2 and 3. The twist applied to the bundle wires will cause them to prevent the wire element 80 from slipping lengthwise of the bundle and this through-pass 80 of the wire, followed by its interlock with the binder wire, will secure the coil 82 against slippage along or about the bundle and hold the spiral windings 67 securely against working loose under handling or shipment.

It will also be noted that the spiral winding 67 and the bundle elements are twisted in the same direction but at a different pitch. Bale tie wires being practically non-resilient, there is no tendency for the bundle to become untwisted and it remains in its twisted condition. This twist of the bundle holds the individual wires against longitudinal displacement, as well as holds the binder wire against longitudinal displacement on the bundle during shipment or handling.

While I have shown my invention in but two forms, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:

1. A commercial package composed of a cylindrical bundle of bale tie wires having a permanent twist about the bundle axis, and a binder wire coiled spirally about the bundle and made fast near each end of the bundle, one end portion of the binding wire encircling tightly the twisted bundle and having its end extending transversely through and anchored to the bundle.

2. A commercial package composed of a cylindrical bundle of bale tie wires having a permanent twist about the bundle axis, and a binding wire coiled spirally about the bundle and made fast near each end of the bundle, the two end portions of the binding wire each encircling tightly the twisted bundle and having their ends extending transversely through and anchored to the bundle.

3. A commercial package as defined in claim 1 in which the spiral winding and the bundle of bale tie wires are twisted in the same direction but at a different pitch.

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