

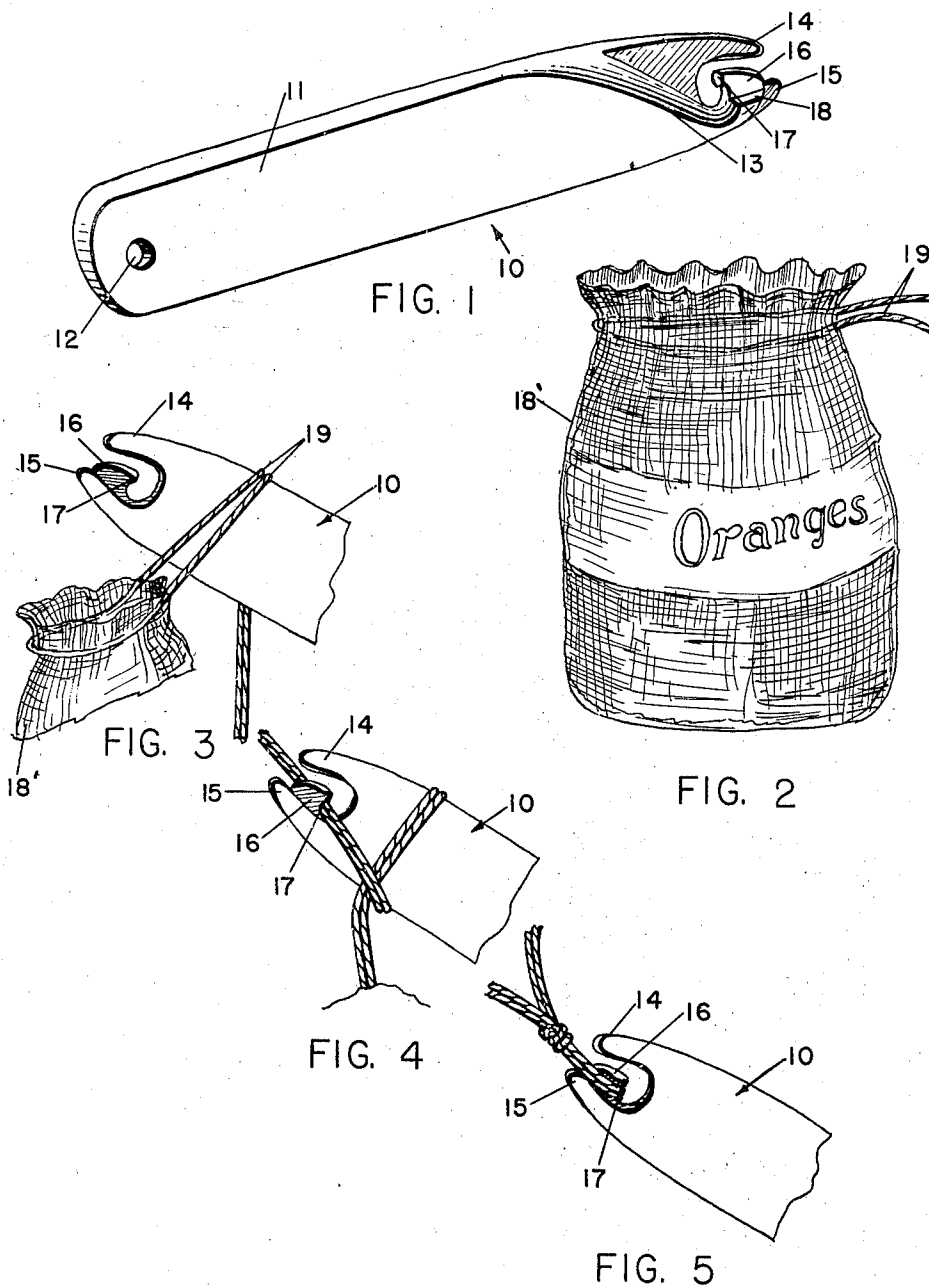
Jan. 18, 1949.

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2,459,530

BAG AND CONTAINER TYING DEVICE

Filed Nov. 21, 1946



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2,459,530

BAG AND CONTAINER TYING DEVICE

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Application November 21, 1946, Serial No. 711,265

2 Claims. (Cl. 289—17)

1

This invention relates to an improved device for speedily tying of knots and is particularly adapted for use in tying the closure cords of containers, bags and the like which contain fruits, vegetables and the like.

The principal object of the invention is to provide a simple and inexpensive device of this character which can be conveniently supported in the hand of the operator.

The invention has for a further object to provide a device of the character named which is simple in construction, reliable in operation and has no moving parts.

Other and further objects and certain advantages of the invention will become apparent from the detailed description of the device.

For the purpose of this application there has been elected to set forth one particular structure but it is to be understood that it is here presented for illustrative purposes only, and is not to be accorded any interpretations such as might have the effect of limiting what is claimed as the invention short of its true and comprehensive scope in the art.

In describing the invention in detail, reference will be made to the accompanying drawings in which:

Figure 1 is a perspective view of the improved tying device;

Figure 2 is a view of a fruit bag illustrating one use of the tying device;

Figure 3 is a view with parts broken away illustrating the first step in tying a closure cord, string and the like;

Figure 4 is a view showing the second stage of tying; and

Figure 5 is a view showing the last step of tying a knot.

Knot-tying devices heretofore proposed were difficult to use and incorporated moving parts which resulted on relatively short life.

By the device disclosed in the drawing a tight and secure knot can be speedily tied and the knot is such that it can be easily untied. This is highly essential particularly in connection with citrus fruit bags as it permits inspection of the bag contents without impairing the closure cord.

It is to be understood that the tying device can be made from any suitable material, but it is preferred that it be reasonably light weight material such as aluminum, plastic or the like.

Referring to the drawings in detail, 10 indicates tying device generally. The hand portion 11 which is formed out of a suitable light weight material, for example aluminum or plastic, is suitably shaped to fit comfortably in the hand

2

of the operator. In one of the body portions 10 is formed an opening 12 by means of which the device may be secured to the wrist of the operator. Adjacent the other of the body portion is cut-out portion 13 and the end terminates in rounded end members 14 and 15. Positioned between the members 14 and 15, but rearwardly from their ends, is member 16 which is provided with hook-like portion 17. Shoulders 18 are formed adjacent the sides of the member 16. On these shoulders the securing means such as cord 19 lay when the knot is being tied.

In Figure 2 is shown a fruit container or bag 18' with the closure means 19 secured adjacent 15 the open end.

The manner in which this device may be used will now be described, reference being had to Figures 3, 4, and 5 of the drawings. The knot tier is held in the right hand, hold the flat side of device as shown in Figure 3. Pass the device under the string to be tied which is held in the left hand. The loose end of the string should now be passed under the hook portion 17 of the member 16 and pulled loop down tight against 25 the hook. The device or tool should be held tight against the top of the bag or container as shown in Figure 4. The tool should now be pulled away from the bag with a short jerk. The knot is now tied with the cord under the hook member 17 and lying on shoulder 18 on both sides of member 16. The tool is tilted slightly to release it from the knot.

The bag tying device ties a knot that is tight and secure but that can easily be untied by pulling on the free end of the cord and the contents of the container or bag can be inspected. The cord can be retied as the cord has not in any manner been impaired.

The device has no mechanical parts to wear out and this insures a long life. Closure cords can be speedily tied without injury to the operator, and the tool is so formed that the cord does not slip off the hook during the tying operation.

These results are obtainable through the fact 45 that the particular way in which the end zones of the closure cord are positioned on the device or implement preliminary to the withdrawal of the latter, have the effect of producing a knot of the slip-knot type, a knot known as the single bowline knot. This form of knot remains tied as long as the free ends of the cord are not pulled and a pull on these withdraws the loop from the bight and breaks the bight effect. Hence, the knot so formed is necessarily temporary in nature due to the ease with which it 55 can be untied. Because of this vulnerability,

the knot differs from knots used for splicing, the latter generally including "jam" characteristics designed to prevent unloosening of the knot by pulling on either end.

To form the present knot by the use of the implement, care must be taken to follow the procedure indicated in Figs. 3 to 5 in certain particulars, viz: in training the two ends, which can be considered as a unit, care must be taken that in completing the convolution as in Fig. 4, the leading end must pass in rear of the trailing end, with the leading end then carried forward to the open ended slot without changing sides until the slot is reached; the leading end is then carried through the slot in rear of the hook, and then led forward on such other side. The same results are obtained whether the beginning of the convolution is provided on the same side as indicated in Fig. 4 or on the opposite side, but the succeeding laying of the leading end must present the above indicated conditions. When the implement is withdrawn suddenly as indicated, the bight provided by the convolution is passed into overlying relation to the trailing and leading end zones with the hook producing the loop, doing this without slippage. By then removing the loop from the hook, the implement is completely released from the tied container.

A knot of this type is of particular advantage in the particular service for which the implement is provided, since it provides efficient packaging if left undisturbed, but is available at all times for releasing the knot to permit inspection of package content without breaking or affecting the cord, so that the package can be re-tied by use of the same cord. With the implement employed for the re-tying action, the container is given its initial characteristics, although it had been opened and its content inspected.

Since the hook is of less thickness than the thickness of the body portion, thus providing the shoulders 18, the developing loop produced by passing the convolution from the body over the nose of the implement offers no obstruction to the free movement of the convolution being cast off, the threads of the loop lying above the shoulders 18.

As will be understood, a knot of this type requires that the bight must be positioned at an intermediate point in the combined length of the free ends of the closure cord and of the developed loop, and that such free ends and the loop must extend for material distances beyond the bight, if the knot is to remain tied. If the loop is of but slight or small length extent, it is releasable by slight drawing of the free ends, possibly by accidental manipulation. If the free ends of the cord be of slight or small extent, similar accidental manipulation of the loop can draw such ends through the bight and thus transform the knot into a non-slip or jam type knot. To assure the proper conditions in this respect, the rearwardly-open face of the hook is spaced materially rearward of the end of the nose to assure the formation of a loop of the desired length, while the procedure of moving the implement into close proximity to the container by lateral movement of the implement after the convolution has been made assures the production of free ends of a desired length extent beyond the bight.

What is claimed:

1. A knot-tying implement for tying closure cords of containers, wherein the ends of the

closure cord are tied with a knot of the slip-knot type to produce a temporary closure of the container releasable by drawing upon the free ends of the cord, said implement comprising a generally flat body-portion having one end zone formed as a nose for positioning the closure cord end zones thereon with the latter including a portion having a convolution relation to the body proper and with such cord end zones arranged to produce the knot by movement of the applied zones relative to the direction of length of the implement, said implement having its nose zone of decreasing width toward the end of the nose with such nose zone bifurcated, the opposite side walls of the bifurcation being substantially symmetrical and spaced apart to provide an open-ended recess portion having the width of its open end sufficient to permit the free passage of a formed loop therethrough and with the recess enlarged rearwardly of such open end, one of the side walls of the recess carrying a hook formation projecting into the enlarged zone of the recess with the projected length less than the width of such enlarged zone, said hook having a rear face positioned remote from the end of the nose a distance greater than the width of the enlarged zone of the recess, whereby after the cord end zones have been applied to the nose end zone of the implement with such cord end zones extending through the recess enlarged zone in rear of the rear hook face and the applied formation tightened to place the implement in close proximity to the container, sudden withdrawal movement of the implement lengthwise will develop the knot formation with the knot bight and free cord ends external of the recess and with a closed loop mounted on the hook and releasable therefrom for free passage through the open end of the recess with the loop intact, the distance dimension of the hook rear face and the position of the implement relative to the container prior to the withdrawal movement causing the knot to be formed with its loop length and free cord end portions projecting on opposite sides of the knot bight with the projected lengths amply sufficient to maintain knot integrity in the absence of intentional release of the loop of the knot by drawing on the free ends of the cord.

2. An implement as in claim 1 characterized in that the thickness of the hook is materially less than the thickness of the body of the implement to thereby present shoulders within the nose open end on opposite sides of the hook and above which loop portions may rest during the movement of the convolution portion within the casting-off period, whereby the rapid withdrawal of the implement may be provided without interference between the convolution portion and the developing loop formation to assure proper positioning of the bight of the knot.

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