June 28, 1960 F. W. JOHNSON 2,942,315

LINE FASTENING DEVICE

Filed April 17, 1959

FIG. 1

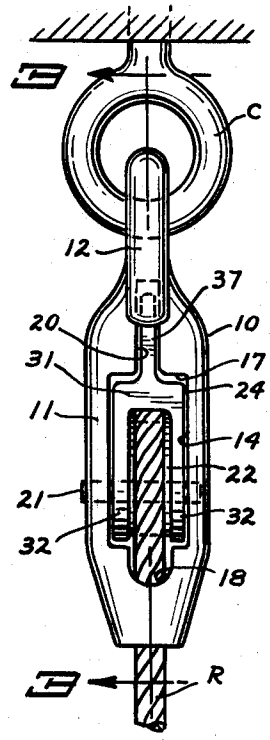


FIG. 2

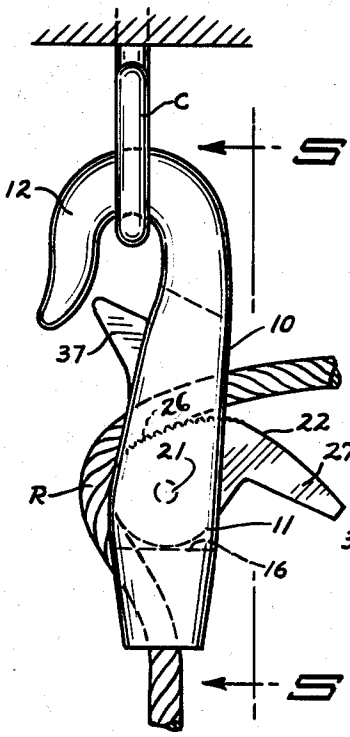


FIG. 3

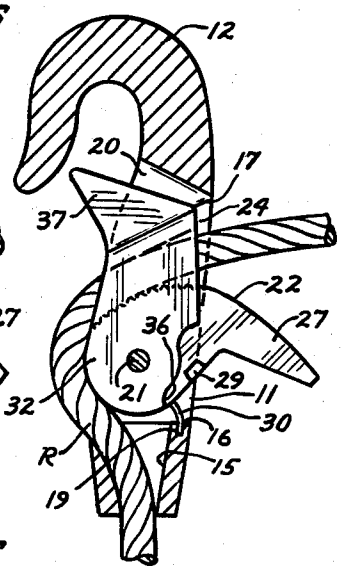


FIG. 4

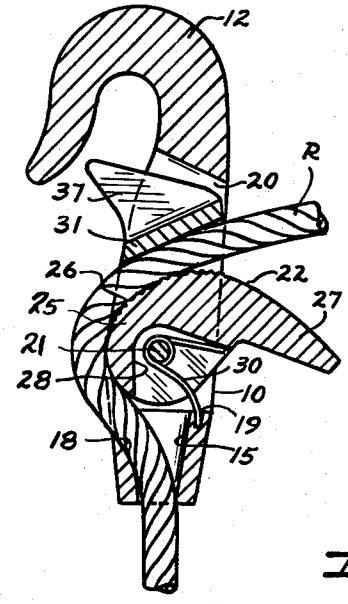


FIG. 5

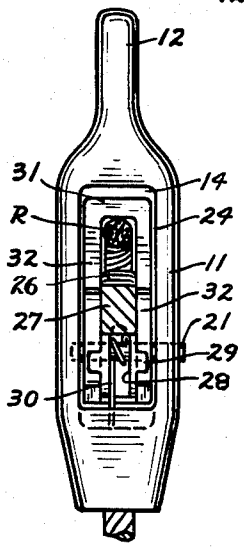
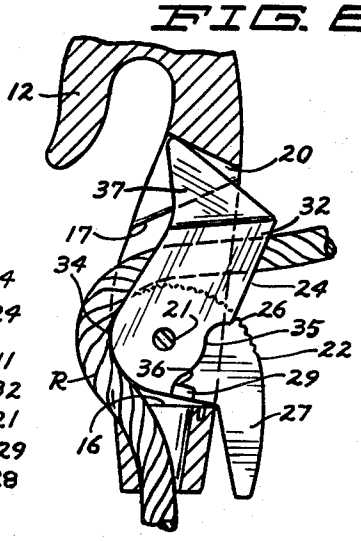


FIG. 6



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LINE FASTENING DEVICE

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3 Claims. (Cl. 24—134)

This invention relates generally to devices for tightening lines of various types and for securely connecting the line to other objects.

A primary object of the invention is to provide a new and improved device for simultaneous gripping a line and providing an openable attachment means for connecting the line to another object, said device being normally retained in gripping condition by tension on the line itself, and having a single control means for releasing the line and opening the attachment means.

With this and other objects in view the invention broadly comprises a housing integrally carrying an open mouthed hook, a clamping cam pivotally mounted in the housing for movement between a gripping and a releasing position with respect to a line running through the housing, a keeper member having a tongue and pivoted to the housing for movement of the tongue between opening and closing positions with respect to the mouth of the hook, a control handle on the clamping cam, and the clamping cam and keeper member being interengageable whereby the tongue will be moved to its hook opening position responsive to handle operation of the cam to its line releasing position.

The above mentioned and other objects of the invention will be brought to light during the course of the following specification, reference being made to the accompanying drawing, in which—

Fig. 1 is a front plan view of the device in closed condition in use to firmly connect a line or rope R to an anchored connecting ring C.

Fig. 2 is a side elevation of the device in the condition shown in Fig. 1.

Fig. 3 is a longitudinal section through the device housing taken along line 3—3 of Fig. 1 and showing the internal clamping and keeper members in elevation.

Fig. 4 is a longitudinal section through all components of the device taken on line 3—3 of Fig. 1.

Fig. 5 is a section taken along line 5—5 of Fig. 2 and looking in the direction of the arrows.

Fig. 6 is a longitudinal section similar to Fig. 3 but showing the clamping and keeper members moved to a rope releasing position allowing the rope to be pulled through the device and the hook to be disengaged.

Referring now more particularly to the drawings reference characters will be used to denote like parts or structural features in the different views. The housing for the device is a casting denoted generally at 10 having an elongated body portion 11 with a hook 12 integrally formed at one end to extend outwardly and back along the body portion in spaced relation thereto as shown in Fig. 2 so that the hook has an open mouth disposed between the end thereof and the body of the housing. The hooked end of the housing may for purposes of convenience be referred to as the upper end. The body of the housing has an elongated chamber 14 formed therein and opening through what may be referred to as the front and rear of the body portion as respectively viewed in Figs. 1 and 5. The lower end of the housing opposite

the hooked portion 12 is provided with a round tapered bore 15 in open communication with chamber 14. The interior top and bottom walls of chamber 14 are respectively denoted at 17 and 16. An internal groove 18 is formed in the housing lower end portion between bore 15 and the wall 16 to receive a cable or rope such as designated at R. Also, a small socket 19 is provided in the lower portion of the housing opening into chamber 14 through the wall 16. Near the upper end thereof the body portion is provided with a deep slot 20 which is in open communication with the chamber 14 through chamber wall 17. This slot 20 forms a reduced extension of the chamber 14 at the upper end thereof in fore and aft alignment with the hook 12.

A pivot pin 21 extends transversely across the chamber 14 with its ends mounted in the side walls of the housing 10. A clamping member or cam designated generally at 22 is mounted on the pivot pin in a transversely centered position. A keeper member, designated generally at 24, is also journaled on pin 21 having portions receiving the pin on opposite sides of member 22.

Clamping member 22 is a flat plate having the general plan configuration of an enlarged comma such as used in writing or printing with a rounded main portion 25 (Fig. 4) and a tail or handle 27. The member 22 is provided with a cable seating groove along a portion of the periphery thereof opposing groove 18 and which connects with serrated edge portion 26 which in turn extends to the handle 27.

In its bottom side the cam member is provided with a pocket or recess 28 through which pin 21 extends (Fig. 4). It is also provided in the same area with a pair of transversely aligned laterally projecting ears 29 which are of such limited length as to lie within the chamber 14. A wire spring 30 is disposed within the pocket 28 encircling pin 21 with one end resting against the upper wall of the recess 28 and the other end held in socket 19 of the housing so as to yieldably retain the clamp member in the position shown in Fig. 4 with handle 27 directed rearwardly.

Guard or keeper member 24 is generally U-shaped with the bight portion formed by a wall 31 adapted to rest flush against the chamber wall 17. The side walls or legs 32 of the keeper extend downwardly in chamber 14 and are provided with aligned apertures for reception of pin 21. The journaled end portions of legs 32 are rounded as at 34 (Fig. 6) so as to conform to the rounded portion 25 of the clamping member. These side walls 32 also have their rear edges cut away as at 35 to allow the ears 29 to extend into the planes of the legs 32. This cut away portion forms a shoulder 36 at the lower end of each leg which faces ear 29 and which is equally spaced radially speaking with the ear so that ear 29 and the corresponding shoulder 36 are interengageable.

At its upper end the keeper member 24 carries a tongue 37 which extends upwardly from wall 31 into the slot 20 and forwardly toward hook 12 to substantially close the open mouth of the hook formed between the hook and the body portion of the housing. Keeper 24 is movable about pivot 21 between a forward closed position, such as shown in Figs. 2, 3 and 4, with portion 31 resting against wall 17 and an open position shown in Fig. 6 with tongue 37 retracted and abutting against the end of slot 20.

Operation of the device will now be readily understood. The body portion 25 of the clamping member has a volute shape with the serrated edge gradually increasing in radius from the pivot in its extension toward handle 27. The end portion of line R to be secured by the device is threaded through bore 15 at the lower end of the housing, upwardly through the cut away portion 18, and over the clamping member 22, and rear-

wardly through chamber 14 between the keeper wall 31 and the serrated surface 26 on the member 22. To facilitate threading the line R through the device the members 22 and 24 are held in the position shown in Fig. 6 against tension of spring 30. In this condition the spacing between surface 26 and wall 31 is greater than the diameter of line R.

When handle 27 is now released the clamp member will pivot toward the position shown in Fig. 4 with surface 26 moving the line R upwardly away from the pivot against wall 31 and thus pivoting the keeper to the closed position shown in Fig. 4 with tongue 37 locking the hook 12 on ring C or any similar object mounted on the member to which the line R is to be attached. Because line R is now clamped between the member 22 and keeper portion 31 it will be obvious that any pull on the line in a downward direction will tend to further close the clamp increasing the grip on line R. The device accordingly securely connects the rope to ring C at the desired adjusted length, the tension on line R prohibiting any loosening of the grip on the line. Even when tension on line R is removed or is intermittent, the spring 30 will maintain the clamp member 22 in a closed or locked position.

When it is desired to loosen line R or to disconnect it from ring C the housing is grasped and handle 27 is pressed forwardly pivoting member 22 in an opening direction to release its grip on the line and to allow the line to slip freely through the housing. With continued operation of handle 27 in a clamp opening direction the ears 29 will engage shoulders 36 on the keeper 24 pivoting the keeper to the position shown in Fig. 6 with tongue 37 withdrawn for removal of hook 12 from the ring C. Opening movement of members 22 and 24 is limited respectively by engagement of handle 27 and tongue 37 with portions of the housing.

It will thus be understood that the device is so constructed that the tension on line R assures both a firm grip of the device on the line and closure of hook 12. However, when it is desired to disconnect or loosen the line both the clamping and keeper members are opened simultaneously by operation of the handle 27. The device accordingly economically and effectively carries out the aforementioned objectives.

It is understood that suitable modifications may be made in the structure as disclosed provided that such modifications come within the spirit and scope of the appended claims. Having now therefore fully illustrated and described my invention, what I claim to be new and desire to protect by United States Letters Patent is:

1. A line fastening device comprising a housing having an open mouthed hook formed at one end thereof, said housing having an opening extending therethrough for receiving a flexible cable member, a clamp member disposed within the opening and pivoted to the housing for pivotal movement between cable clamping and releasing positions, a keeper member having a tongue and disposed within the opening and pivoted to the housing coaxially with the clamp member for movement between a first position with the tongue extending across the open mouth of the hook and a second position with the tongue retracted from across said mouth, said clamp member and keeper member having facing stops equally spaced radially from said pivot axis and circumferentially positioned to be interengageable as the clamp member is moved from its clamping to its releasing position whereby the clamp member as it is pivoted to its releasing position will move the keeper member from its first to its second position.

2. A device for fastening a line to an anchor element comprising an elongated housing having upper and lower ends and front and rear sides, a hook at the upper end of the housing extending over the housing front for receiving the anchor element and having a downwardly opening mouth, the housing having an internal chamber opening through the front and rear sides thereof, a pivot pin mounted on the housing to extend transversely through the chamber, a clamping cam journaled on the pin and having a rearwardly projecting handle, said cam having a gripping surface along its upper edge, a keeper journaled on the pin and having a tongue portion extending upwardly and forwardly to close said opening, said keeper having a wall portion disposed above said cam surface in spaced opposing relation thereto for disposition of a line between said wall portion and cam surface, and spring means disposed between the housing and cam urging the cam toward said wall portion to clamp the line therebetween.

3. The subject matter of claim 2 wherein the cam is provided with a laterally projecting lug engageable with the keeper at a point offset from the pivot axis as the cam handle is moved downwardly to move said tongue portion of the keeper rearwardly to open the mouth of the hook.

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