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PATENT REQUEST: STANDARD PATENT AND NOTICE OF ENTITLEMENT

I/We, being the person(s) identified below as the Applicant, request the grant of a patent to the person(s) identified below as the Nominated Person, for an invention described in the accompanying standard complete specification.

Full application details follow.

Applicant and Nominated Person:

JAMES F. HUTCHINSON

Osborne Road
Horsham, Victoria
Australia

Invention Title:

BITE ALARM FOR FISHING LINE

Name(s) of actual inventor(s):

James F. HUTCHINSON

Address for service in Australia: GRIFFITH HACK & CO.
601 St. Kilda Road, Melbourne Vic. Australia 3004.
Attorney Code: HA

ASSOCIATED PROVISIONAL DETAILS

Application Number Country Country Code Date of Application
PK5944 AU

Drawing Number recommended to accompany the abstract: 1

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I/We,

JAMES F. HUTCHINSON

of

Osborne Road
Horsham, Victoria
Australia

being the applicant in respect of this Application state the following:—

The person(s) nominated for the grant of the patent:

The applicant and nominated person is the inventor

The person(s) nominated for the grant of the patent is/are the applicant(s) of the provisional application(s) listed above.

JAMES F. HUTCHINSON

10th March 1992

GRiffITH HACK & CO.

Patent Attorneys for and on behalf of the applicant.
A bite indicator for a fishing line is disclosed which is intended to provide an alarm when a fish takes the line. The alarm indicator comprises a buzzer alarm (16) which is activated by a trigger (50) mounted in a housing (14). The trigger (50) supports a line (70) and is biased into a first position by a spring (65). When a fish takes the line (70) tension in the line (70) causes the trigger (50) to move against the bias of the spring (65) into contact with a terminal (92) to complete a circuit of the alarm (16) so that the alarm is sounded. The tension of the spring (65) can be altered by a tensioning cam (80) which is rotatable to move an arm (69) of the spring (65) so that the tension applied by the spring (65) to maintain the trigger (50) in the first position can be altered to suit the type of line (70) which is used and the conditions in which the fishing rod (20) is used.

It is recommended that figure 1 accompanies the abstract.
Invention Title:
BITE ALARM FOR FISHING LINE

The following statement is a full description of this invention, including the best method of performing it known to me:-
BITE ALARM FOR FISHING LINE

This invention relates to a bite alarm for a fishing line.

Alarm devices for providing an indication of when a fish bites a line are known. However, most devices are complicated to manufacture or to use and therefore have had limited success.

The object of this invention is to provide a bite alarm which is simple to manufacture and to use.

The invention provides a bite alarm for a fishing line comprising:
a trigger for contacting said fishing line and for moving from a first position to a second position when tension is applied to the fishing line;

alarm means which is actuated when the trigger moves to the second position to provide an indication of a bite; and

tensioning means for tensioning the trigger to alter the required amount of tension applied to the line before the tension in the line will cause the trigger to move to the second position.

Preferably the trigger is biased into the first position by biasing means.

Preferably the device includes tensioning means for tensioning the biasing means to alter the required amount of tension applied to the line before the tension in the line will cause the trigger to move to the second position.

Preferably the trigger includes a line support portion for engaging the line and which extends in a direction transverse to the line so that when a bite takes place the tension in the line causes the trigger to move from the first to the second position and then slip off the line support portion so that the line is free of the device.

Preferably the biasing means comprises a spring having a first arm and a second arm and a coil portion wound about said trigger, said first arm engaging an intermediate portion of the trigger and the second arm being retained relative to the trigger so that the trigger is biased into the first position.

Preferably said tensioning mechanism comprises a cam member for engaging said second arm and for moving said second arm so that the tension in the spring is altered to thereby alter the force which biases the trigger to the first position to thereby alter the force which is required to move the trigger to the second position.

In a second embodiment, the biasing means comprises a leaf spring which supports the trigger and said tensioning mechanism comprises a screw threaded member which
engages the leaf spring and which has a co-operating screw threaded member so that when the co-operating member is threaded on the screw threaded member the position of the leaf spring is altered to apply more tension to the trigger so that a greater tension is required in order for the trigger to move toward the second position.

The invention also provides a bite alarm for a fishing line comprising:

- a trigger for contacting said fishing line and for moving from a first position to a second position when tension is applied to the fishing line;
- an alarm means which is actuated when the trigger moves to the second position to provide an indication of a bite; and
- line supporting means on said trigger for engaging said line and for enabling said line to be released from the trigger after the trigger is moved to the second position so that the line is free of the bite alarm so the bite alarm does not interfere with winding of the line onto a fishing reel.

A preferred embodiment of the invention will be described, by way of example, with reference to the accompanying drawings in which:

Figure 1 is a cross-sectional view of a bite alarm embodying the invention;

Figure 2 is a view of the bite alarm of figure 1 along the line II-II of figure 1;

Figure 3 is a perspective view of a trigger used in the bite alarm of figure 1;

Figure 4 is a view of a cam member (on an enlarged scale) used in the bite indicator of figure 1;

Figure 5 is a plan view of the bite indicator of Figure 1;

Figure 6 is a cross-sectional view of a second embodiment of the invention;

Figure 7 is a view along the line VII-VII of figure 6; and

Figure 8 is a cross-sectional view of a third
embodiment of the invention;

Figure 9 is a view of a trigger used in the embodiment of figure 8; and

Figure 10 is a view showing the third movement of the trigger.

With reference to the drawings, the bite alarm comprises a pair of housings 12 and 14 which are joined together. The housing 12 may comprise a conventional buzzer alarm and the housing 14 comprises a housing for containing the mechanism to be described hereinafter which detects a bite and triggers the alarm in the housing 12. The alarm in the housing 12 preferably is in the form of a buzzer schematically represented by the block 16 but may be a flashing light or other indicator which can attract the attention of a user of the fishing line.

Instead of providing separate houses 12 and 14 the alarm and mechanism for actuating the alarm may be included in a single housing.

The housings 12 and 14 are supported on a fishing rod 20 by a clamp assembly 22 which is connected to the housing 14 and surrounds the fishing rod 20. The clamp 22 may be joined by a screw 24 so the clamp engages the fishing rod 20 to secure the bite alarm on the fishing rod. The bite alarm 10 is preferably arranged so that it is on top of the rod 20 and slightly along the rod 20 from where a reel (not shown) is secured.

The housing 14 (as is best seen in figures 2 and 5) has a slot 30 in the end of the housing 14 adjacent the housing 12. The housing 14 also includes a pair of bores 32 and 34. The bore 34 is slightly offset from the bore 32 in the vertical direction as is best seen in figure 1. As is also best seen in figure 1, the slot 32 has inner wall 36 which has an upper vertical portion, and intermediate inclined portion and a lower generally vertical portion so that the slot 30 generally tapers from the top to the bottom of the housing 14.

A trigger 50 is mounted to the housing 14 and the trigger 50 is best shown in figure 3. The trigger 50
includes an axle 52 which is received in the bore 32, a generally vertical section 54 a transverse section 56 extending generally parallel to and in the same direction as the axle 52, a longitudinally extending portion 58 and a line support portion 60 which extends generally parallel to the axle 52 and portion 56 but on the opposite side of the longitudinal portion 58 to the axle 52 and portion 56.

The trigger 50 is mounted in the housing 14 by means of a spring 65 which has a first arm 66, a coil portion 68 and a second arm 69. The spring 65 is arranged in the slot 30 so that the coil portion 68 is generally aligned with the bore 32. The first arm 66 extends upwardly towards the top of the slot and the second arm 69 extends downwardly towards the bottom of the slot.

The trigger 50 is mounted to the housing 14 by inserting the axle 52 into the bore 30 so that it passes through the coil portion 68 of the spring 65 and so that the portions 54 and 56 generally extend around the housing 14 as best seen in figure 2 and with the longitudinal portion 58 extending in the longitudinal direction of the fishing rod as is best seen in figures 1 and 5. The arm 66 of the spring 65 is connected to an intermediate portion of the longitudinal section 58 of trigger 50 and the spring is tensioned in place by a tensioning cam 80 which is inserted into the bore 34 and which is best seen in figure 4. The tensioning cam 80 generally comprises a stem 82 which has a cut-out portion 84 at its end which forms a narrow cam 85 at the end of the stem 82. A handle 86 is arranged at the end of the stem 82 remote from the cut-out portion 84. The cam 80 is inserted into the bore 34 as is best shown in figure 2 so that the leg 69 of the spring 65 is arranged in the cut-out portion 84 and between the cam portion 85 and the wall 36 of the slot 30. The tensioning cam 80 generally holds the arm 69 of the spring 65 so that the spring 65 biases the trigger 50 into a first position shown in figure 1.

Also mounted in the housing 14 are batteries 90. A first terminal 92 which preferably is in the form of a
the trigger 50 has abutted the end plate 92 continued tension on the line 70 will cause the line 70 to slip off the line support 60 so that the line drops to a position beneath the rod 20 where it is in its usual position for being wound onto the reel (not shown). Thus, the line 70 is completely disengaged from the bite alarm 10 and the bite alarm 10 does not impair normal operation of the line 60 when the rod and reel is operated by the fisherman. Thus, once the alarm has been set off the line 70 automatically removes itself from the bite alarm 10 so that the fishing rod and reel can be operated conventionally without any restriction or impairment from the bite alarm 10.

In the preferred embodiment of the invention the tension applied to the spring 65 can be altered so that more or less force is required in order for the trigger 50 to move from the first position shown in figure 1 to the second position where it contacts the terminal plate 92. This can be important in a number of environments. Firstly, if a heavy line 70 is used the weight of the line may force the trigger 50 into engagement with the end plate 92 if the tension applied by the spring 65 is insufficient. Furthermore, in rough weather movement of a boat or waves etc. may cause tension in the line 70 which could move the trigger 50 into the second position to give a false alarm.

In order to prevent this from happening the tensioning cam 80 can be rotated by engaging the handle 86 and rotating the tensioning cam 80 so that it moves about its longitudinal axis C marked in figure 4. This causes the cam portion 85 to move from the position shown in solid lines in figure 4 to the position shown in dotted lines in figure 4 and movement of the cam portion from the position shown in solid lines to dotted lines pushes the arm 69 of the spring 65 to the right in figure 1 or to the position shown in dotted lines in figure 4. This effectively tightens the spring 65 so that greater tension is applied to the spring to bias the trigger 50 into the first position shown in figure 1. Thus, more force is required in order to move the spring 50 into the second position where it abuts the terminal plate 92 and
small plate and which projects through an opening (not shown) in the housing 14 is in contact with the batteries 90 and a second terminal plate 94 is also in contact with the batteries 90. A wire lead 96 extends from the terminal plate 94 out of the housing 14 and then into the housing 12 into electrical contact with the buzzer 16. A second lead 71 for completing a circuit to the buzzer 16 also extends from the buzzer 16 out of the housing 12 into the housing 14 and into electrical contact with the arm 69 of the spring 65.

When the trigger 50 is mounted in the housing and the bite alarm is connected to the rod 20 fishing line 70 which is unwound from the fishing reel (not shown) on the rod is located over the alarm device so that it is supported on the line support portion 60 as is shown in figure 1. When the fishing line 70 is supported on the line support 60 with the spring 65 biasing the trigger 50 into the first position shown in figure 1 the electric circuit to the buzzer 16 is open and therefore the buzzer is not operating. When a fish takes the line 70 tension is applied to the line 70 generally in the direction of arrow A which pulls the line 70 downwardly in the direction of arrow B to move the trigger 50 against the bias of the spring 65 so that the trigger 50 is moved from the position shown in figure 1 to a second position where it abuts the terminal plate 92. In order to move from the first position to the second position the trigger 50 generally pivots about the axle 52 which is retained in the bore 32. When the trigger 50 abuts the terminal plate 92 an electric circuit is completed from the batteries through the trigger 50 through the spring 65 to the lead 71 and then to the buzzer 16 so that the buzzer is set off to provide a buzzing alarm that a fish has taken the line 70.

When the buzzer sounds a fisherman is altered to the fact that a fish has taken the line and may take the fishing rod and operate the reel in the conventional manner with a view to landing the fish. When the tension is applied to the line 70 by the fish taking the line and wha
therefore heavier lines can be used or the device can be used in rough sea without fear of a false alarm. By suitable adjustment of the cam tensioner 80 between the position shown in solid lines in figure 4 and dotted lines in figure 4, various degrees of additional tension can be applied to the spring 65 to suit the conditions in which the fishing rod is being used and the weight of the line which is being used so that false alarms are not given.

In the preferred embodiment of the invention the line support portion 60 merely comprises an integral portion of the trigger 50 which can preferably be formed by suitably bending wire or the like. However, in alternative embodiments the support portion 60 could be provided by a thin resilient spring member or the like to increase the likelihood of the line 70 disengaging from the support portion 60 when a fish takes the line 70 and after the trigger 50 abuts the end plate 92.

With reference to figures 6 and 7 which show a second embodiment of the invention and which like reference numerals designate like parts to those described with reference to figures 1 and 5, the housing 14 supports batteries 90 which are arranged in side by side relationship and are electrically connected by a plate 101. Lead 96 extends from the batteries 90 to an alarm buzzer (not shown) which may be in a separate housing or, as with the earlier embodiment, the alarm and the mechanism for actuating the alarm may be incorporated in a single housing. One of the batteries 90 is provided with a terminal block 92.

A leaf spring 104 is arranged in the housing and comprises trigger 50 which as is best seen in figure 7 is supported on the leaf spring 104 and with the leaf spring 104 being arranged within the U-shaped confines of the trigger 50. The trigger 50 also includes an end block 105 and a line support portion 107 for supporting the line 70.

A tensioning mechanism comprises a screw threaded bolt or the like 109 with the head 111 being arranged beneath the leaf spring for retaining the bolt in the
opening 113. The bolt 109 extends through an opening 115 in the housing and co-operates with a nut or the like 117 which is screw threaded on the bolt 109.

Additional tension is applied to the leaf spring 104 by screwing the nut 117 on the bolt 109. The nut 117 engages the housing 14 and therefore continued threading of the nut 117 on the bolt 109 draws the bolt upwardly in the direction of arrow D in figure 6 to thereby pull the leaf spring 104 upwardly. This applies additional tension to the trigger 50 so that more force on the line 70 is required in order to move the trigger from the first position shown in figure 6 to the second position where it contacts the terminal plate 92 to form an electric circuit.

The leaf spring 104 may be made integral with the housing 14 or may be joined to the housing 14. The trigger 50 is preferably formed from metal and supported on the leaf spring 104.

When a fish takes a line 70 the line is tensioned which forces the line downwardly in the direction of arrow E in figure 6 to cause the trigger 50 to move against the bias of the leaf spring 104 so that the trigger contacts the terminal block 92. This completes the electric circuit from the batteries through the trigger 50 to the leaf spring 104 through the lead 71 to the buzzer and back to the batteries through the lead 96 so that the buzzer is sounded to provide an indication of a bite.

As in the earlier embodiment, the tensioning mechanism formed by the threaded bolt 109 and the nut 117 can be adjusted to provide various degrees of tension to the leaf spring 104 so that different forces are required on the line 70 in order to move the trigger 50 from the first position to the second position to provide an alarm.

Figures 8, 9 and 10 show a third embodiment of the invention. In this embodiment the trigger 50 has a curved end 152 and a contact end 154. The trigger could be in the form of a leaf spring as shown in figures 9 and 10 or in the form of a wire. The curved end 152 is sandwiched between a battery 90 and top 160 of the device 10. The free
end 154 is spaced from a second battery 90. The batteries 90 are connected to an alarm 12. The top 160 of the device 10 includes a boss 170 which supports a screw 180 which is in screw thread engagement with an opening 182 in the boss 170. The screw 180 is able to project all the way through the opening 182 and engages the trigger 50 so that a desired amount of tension can be applied to the trigger 50. By screwing the screw 180 inwardly the free end 154 of the trigger 50 is moved closer to its associated battery 90 and by screwing the screw 180 outwardly of the opening 182 the free end 154 is able to move further away from its associated battery 90 in view of the natural resiliency of the material from which the trigger 50 is made.

After attaching the alarm 10 to a fishing rod the line 70 is draped over line engaging portion 107 which is integral with the trigger 50 or otherwise connected to the trigger 50. Slack in the line is then taken up by a fishing reel attached to the rod 20. The screw 180 is screwed in until the free end 154 is pressed against the battery 90 to thereby sound the alarm 12. The tension screw 180 is then backed off until the buzzer sound just ceases. This has then correctly tensioned the trigger 50 and has effectively cancelled out any outside influences caused by waves, wind, current, line weight etc. leaving the alarm to respond to the lightest touch indicating a bite.

As is best shown in figure 10, when a bite takes place the trigger is pulled to the second position so the free end 154 contacts the battery 90 to complete the circuit to the alarm and sound the alarm. Since the line 70 is held on the line engaging portion 107 to one side of the trigger when the trigger arrives at the second position (shown by reference 154′) due to movement in the direction of arrow D in figure 10 the trigger is twisted so that the line engaging portion 107 moves into an inclined position 107′ so that the line 70 can easily slip off the engaging portion 107.

In the preferred embodiment of the invention the buzzer 16 may also be provided with switches which can be
switched from one position to another so that the buzzer emits different sound tones. This can be useful if a fisherman is using more than one rod. By switching the buzzer so that the buzzer will sound with a different tone when the line is taken by a fish, the fisherman will be provided with an indication of which one of his lines has been taken.

Since modifications within the spirit and scope of the invention may readily be effected by persons skilled within the art, it is to be understood that this invention is not limited to the particular embodiment described by way of example hereinabove.
THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A bite alarm for a fishing line comprising:
   a trigger for contacting said fishing line and for moving from a first position to a second position when tension is applied to the fishing line;
   alarm means which is actuated when the trigger moves to the second position to provide an indication of a bite; and
   tensioning means for tensioning the trigger to alter the required amount of tension applied to the line before the tension in the line will cause the trigger to move to the second position.

2. The bite alarm of claim 1 wherein the trigger is biased toward the first position by biasing means.

3. The bite alarm of claim 2 wherein bias is provided by a spring or by resiliency of the material from which the trigger is made.

4. The bite alarm of any one of the preceding claims wherein the trigger includes a line support portion for engaging the line and which extends in a direction transverse to the line so that when a bite takes place the tension in the line causes the trigger to move to the second position and then slip off the line support portion so that the line is free of the bite alarm.

5. The bite alarm according to claim 2 wherein the biasing means comprises a spring having a first arm and a second arm and a coil portion wound about said trigger, said first arm engaging an intermediate portion of the trigger and the second arm being retained relative to the trigger so that the trigger is biased toward the first position.

6. The bite alarm according to any one of claims 1 to 4 wherein the tensioning means comprises a cam member for engaging said second arm and for moving said second arm so that the tension in the spring is altered to thereby alter the force which biases the trigger to the first position to thereby alter the force which is required to move the trigger towards the second position.

7. The bite alarm according to any one of claims 1 to
4 wherein the tensioning means comprises a screw threaded member which engages the trigger for moving the trigger towards and away from the second position to provide a desired amount of tension to the trigger to thereby alter the tension in the line which is required to move the trigger to the second position.

8. The bite alarm according to claim 2 wherein the biasing means comprises a leaf spring which supports the trigger and said tensioning means comprises a screw threaded member which engages the leaf spring and which has a co-operating screw threaded member so that when the co-operating member is threaded on the screw threaded member the position of the leaf spring is altered to apply more tension to the trigger so that a greater tension is required in order for the trigger to move from the first position to the second position.

9. A bite alarm for a fishing line comprising:
   - a trigger for contacting said fishing line and for moving from a first position to a second position when tension is applied to the fishing line;
   - an alarm means which is actuated when the trigger moves to the second position to provide an indication of a bite; and
   - line supporting means on said trigger for engaging said line and for enabling said line to be released from the trigger after the trigger is moved to the second position so that the line is free of the bite alarm so the bite alarm does not interfere with winding of the line onto a fishing reel.

10. The alarm of claim 9 including tensioning means for tensioning the trigger to alter the required amount of tension applied to the line before the tension in the line will cause the trigger to move to the second position.
11. A bite alarm indicator substantially as hereinbefore described with reference to any one of the embodiments described with reference to the accompanying drawings.

DATED THIS 10th DAY OF March 1992

JAMES F. HUTCHINSON
By His Patent Attorneys

GRIFFITH HACK & CO.
Fellows Institute of Patent
Attorneys of Australia