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(54) **INSECT SWATTER**

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(58) **Field of Search** **43/135, 137; 124/17,
124/18, 35.1**

(56) **References Cited**

U.S. PATENT DOCUMENTS

883,915 A	*	4/1908	Slean	.....	43/135
1,009,531 A	*	11/1911	Kopp	.....	43/135
1,059,736 A	*	4/1913	Kilduff	.....	43/135
1,084,008 A	*	1/1914	Hamaker	.....	43/135
1,597,140 A	*	8/1926	Barto	.....	43/135
2,054,719 A	*	9/1936	Caron	.....	124/18

2,505,591 A	*	4/1950	Stone	.....	124/35.1
2,642,057 A	*	6/1953	Watkins	.....	124/18
3,704,981 A	*	12/1972	Pohr	.....	43/135
4,774,786 A	*	10/1988	Zaremba	.....	43/135
4,860,718 A	*	8/1989	Howell	.....	124/18

OTHER PUBLICATIONS

Advertisement, (Author Unknown), "# T318 Farm-House
Fly Swatter," 1st Qtr. 1994, single page.

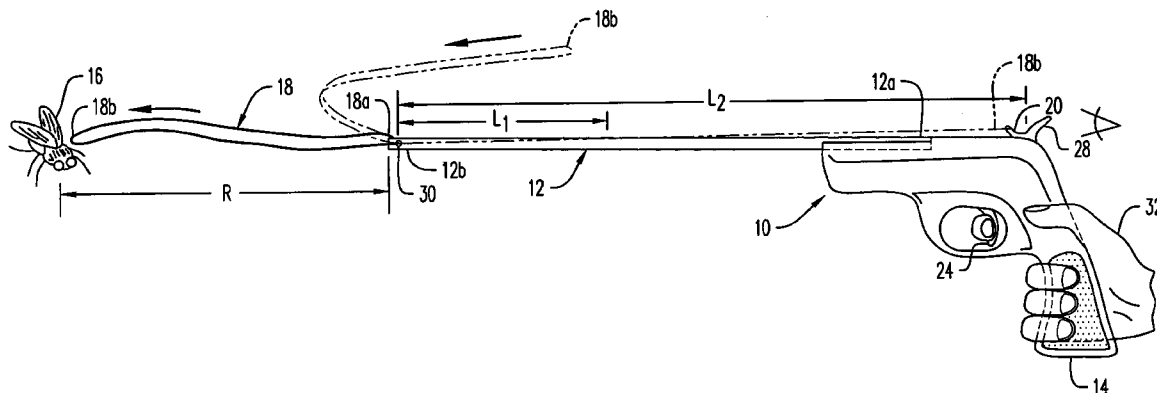
* cited by examiner

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(57) **ABSTRACT**

An insect swatter includes an elongate rod with an elastic
lash fixedly joined to a distal end thereof. The lash is sized
for being stretched from the rod distal end to adjacent a
proximal end of the rod so that release of the lash results in
spontaneous contraction thereof for swatting the insect. In
an exemplary embodiment, the swatter is in the form of a
pistol, with the lash extending from the distal end of the rod
to a latch operated by a trigger. Aiming the rod toward the
insect and pulling the trigger releases the lash for swatting
the insect.

12 Claims, 2 Drawing Sheets



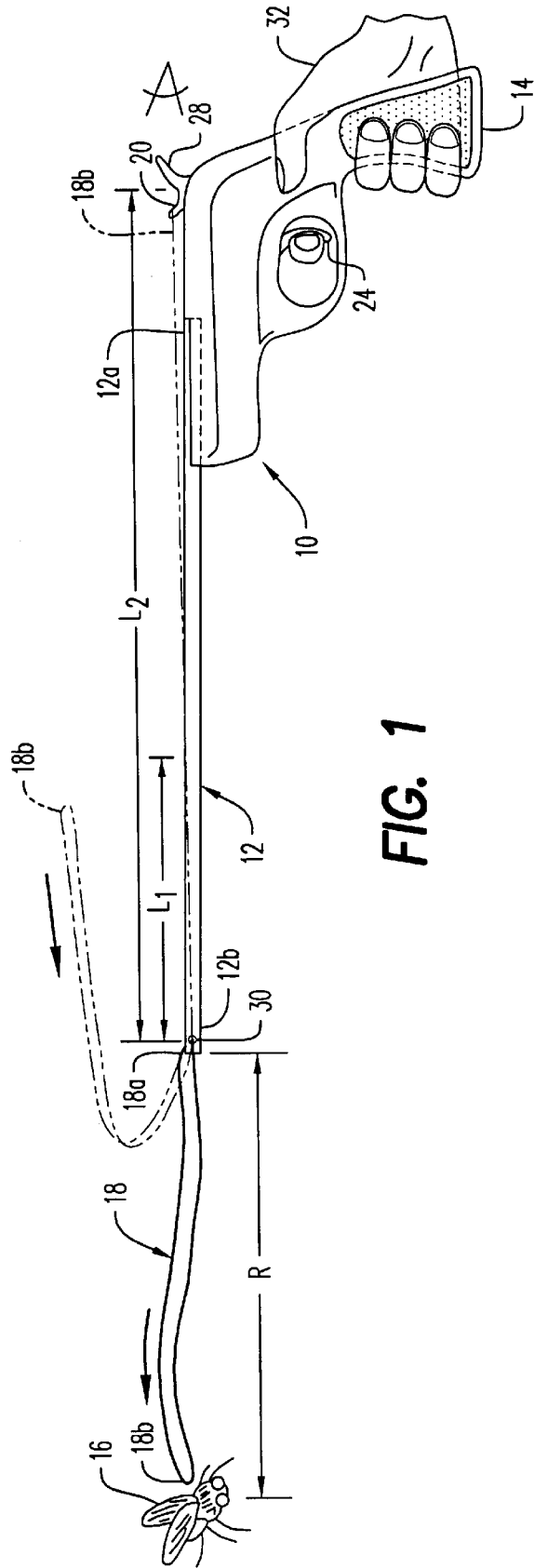


FIG. 1

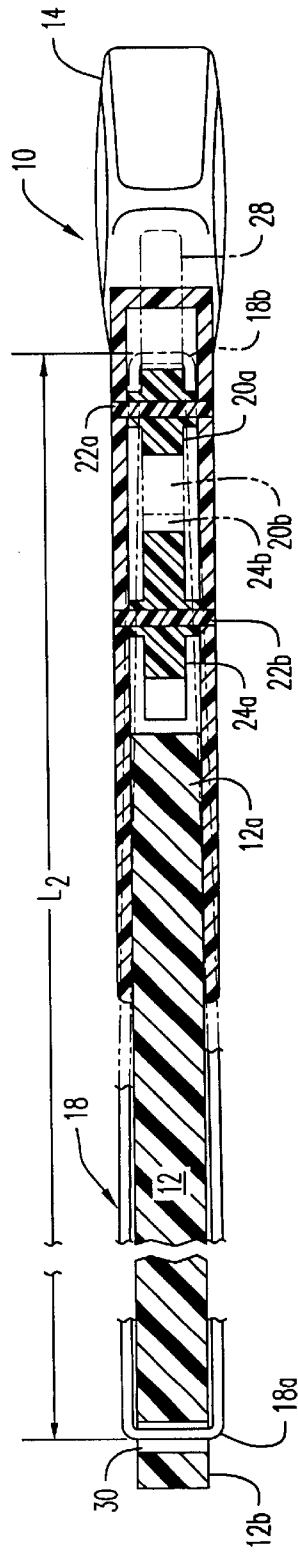


FIG. 4

1

INSECT SWATTER

The present invention relates generally to insect exterminators, and, more specifically, to an insect swatter.

BACKGROUND OF THE INVENTION

A typical insect swatter, commonly referred to as a fly swatter, has a long handle with a proximal end configured for being gripped by a person, and a distal end at which is secured a generally rectangular, perforated wire or plastic mesh. In operation, the swatter is manually moved through the air for striking the insect with the mesh. However, the swatter must be moved very quickly in order to swat fast-reacting flies for example, or the fly will escape. The relatively large swatter mesh is apparently detectable by the insect either through its vision or by sensing the air being displaced as the mesh is moved.

If the swatter is moved quickly enough, the insect can be stricken which typically results in an offensive stain being created upon squashing of the insect.

Accordingly, an improved inset swatter is desirable which reduces the skill required for its effective use, and reduces resulting stains from the successful swatting of the insect.

SUMMARY OF THE INVENTION

An insect swatter includes an elongate rod with an elastic lash fixedly joined to a distal end thereof. The lash is sized for being stretched from the rod distal end to adjacent a proximal end of the rod so that release of the lash results in spontaneous contraction thereof for swatting the insect. In an exemplary embodiment, the swatter is in the form of a pistol, with the lash extending from the distal end of the rod to a latch operated by a trigger. Aiming the rod toward the insect and pulling the trigger releases the lash for swatting the insect.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention, in accordance with preferred and exemplary embodiments, together with further objects and advantages thereof, is more particularly described in the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. 1 is an elevational view of a hand-held insect swatter in accordance with one embodiment of the present invention.

FIG. 2 is an elevational, partly sectional enlarged view of the insect swatter illustrated in FIG. 1 showing a trigger and cooperating latch in cocked positions.

FIG. 3 is an enlarged, partly sectional view of the insect swatter illustrated in FIG. 2 showing a trigger and cooperating latch in fired positions.

FIG. 4 is a top, partly sectional view of the insect swatter illustrated in FIG. 2 and taken generally along line 4—4.

DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

Illustrated in FIG. 1 is an exemplary embodiment of an insect swatter **10** in the exemplary form of a pistol, although in other embodiments it may be in the form of a rifle or other suitable configurations. The swatter **10** includes an elongate rod **12** which may be solid as illustrated, or hollow if desired, and may have any suitable cross section such as circular for example. The rod **12** has a proximal end **12a** for being hand-held, and in the exemplary embodiment illus-

2

trated in FIG. 1 a gun-type handgrip **14**, in the exemplary form of a pistol handgrip, is suitably fixedly joined to the rod proximal end **12a**. In alternate embodiments, the handgrip **14** could be a rifle handgrip with a cooperating shoulder stock for example. The handgrip **14** provides a convenient manner for hand holding the elongate rod **12** and aiming it toward an insect **16**, such as a fly for example. The rod **12** has a distal end **12b**, opposite to the proximal end **12a**, which is aimed during operation at or toward the insect **16**. An elastic lash **18** in the exemplary form of a conventional annular rubber band has a proximal end **18a** fixedly joined to the rod distal end **12b** which retains the lash **18** to the rod **12**. The lash **18** has an opposite, distal end **18b** which is used for swatting or killing the insect **16**.

As shown in FIG. 1, the lash **18** is preferably so sized or so dimensioned for being stretched from the rod distal end **12b** to adjacent the rod proximal end **12a** so that release of the lash distal end **18b** spontaneously contracts or “fires” the lash **18** for swatting or whipping the lash distal end **18b** against the insect **16**.

An exemplary method of using the swatter **10** includes manually stretching the lash **18** by pulling the distal end **18b** thereof generally parallel to the rod **12** and adjacent to the rod proximal end **12a** which stores energy in the lash **18**. This is shown in phantom line in FIG. 1 and in solid line in FIG. 2. By aiming the rod distal end **12b** at the insect **16** and within reach or striking range **R** of the whipping lash **18**, and then releasing the lash distal end **18b**, the lash **18** spontaneously contracts for swatting the lash distal end **18b** against the insect **16**, with the kinetic energy released by the lash **18** being sufficient for killing or severely maiming the insect **16**.

In its simplest form, the rod **12** and the attached lash **18** form a whip, with the rod **12** being used for manually aiming the swatter **10** at the insect **16** so that the energy stored in the stretched lash **18** causes the lash **18** to accelerate from the rod proximal end **12a**, generally parallel along the rod **12** toward the rod distal end **12b**, and continue to travel in the same direction away from the rod distal end **12b** for impacting the insect **16**. The whipping action of the lash **18** is shown in three positions in FIG. 1 and will carry the lash **18** along the line-of-sight formed by the rod **12** aimed at the insect **16** for allowing easy and accurate swatting thereof. As long as the rod distal end **12b** is positioned within the whipping range **R** of the lash **18**, the insect **16** may be effectively swatted.

The lash **18**, like a whip cord, is completely flexible, (not rigid), but unlike a whip cord, it is also elastically stretchable. It may have any suitable cord-like configuration, such as the rubber band disclosed in the preferred embodiment. In this way, energy may be conveniently stored in the stretched lash **18** by stretching it in one direction, and then the energy is released which carries the lash **18** along the line-of-sight in the direction opposite to the stretching direction thereof to accurately hit the insect **16**. The striking energy includes the energy stored in the stretched lash **18**, as well as any additional energy due to the whipping effect. The lash **18** is therefore not an expendable, one-shot projectile, but remains with the rod **12** for repeated use.

Since the lash **18** itself stores the energy used for moving the lash **18**, it is relatively easy to use and does not require the fast hand action required of a typical fly swatter. Whipping of the lash **18** is spontaneous and occurs within a fraction of a second for quickly swatting the insect **16** well before its ability to react thereto. Furthermore, the lash **18** is relatively small as compared to conventional fly swatters, and is less visible by the insect **16** compared thereto, and

moves less air than a conventional fly swatter which reduces the ability for the insect 16 to sense the striking action of the lash 18.

Yet further, the energy imparted by the whipping lash 18 against the insect 16 is confined to a very small point which in most cases immediately kills the insect 16 with little or no stain therefrom due to the striking thereof.

In its simplest form, the lash 18 may be manually stretched and held at its distal end 18b adjacent to the rod proximal end 12a and then manually released for swatting the insect 16. However, in order to add additional convenience and accuracy in using the swatter 10, it preferably further includes a latch or hook 20 as shown in more particularity in FIG. 2. The latch 20 may simply be in the form of a straight, smooth bar having an enlarged proximal end 20a through which extends a latch pin 22a for pivotally joining the latch 20 to the handgrip 14 adjacent to the rod proximal end 12a for releasably latching the lash distal end 18b thereto. The latch 20 is joined to the top of the handgrip 14 in a suitable cavity therein.

The latch 20 is shown in FIG. 2 in a first or cocked position wherein the latch 20 extends generally perpendicularly upwardly from the rod 12, or from its longitudinal centerline axis, for retaining or latching the lash distal end 18b thereto. The latch 20 in its cocked position is preferably inclined slightly rearwardly away from the rod 12 to ensure that the lash distal end 18b does not inadvertently slip therefrom prior to firing.

Means including a trigger 24 are operatively joined to the latch 20 for selectively releasing the latch 20 from its cocked position upon pulling the trigger 24 rearwardly to release the lash distal end 18b for swatting the insect 16 therewith. Shown also in FIG. 2 is the trigger 24 having an enlarged proximal end 24a which is pivotally joined to the handgrip 14 by a trigger pin 22b extending therethrough so that the trigger 24 may be pivoted between the first or cocked position thereof holding the latch 20 in its cocked position, and a second or fired position illustrated in FIG. 3 releasing the latch 20 for being pivoted to its fired position also shown in FIG. 3.

In its fired position, the latch 20 is inclined forwardly toward the rod distal end 12b for allowing the lash distal end 18b to slip or slide off the latch 20 as shown in FIG. 3 for spontaneously contracting the lash 18 toward the rod distal end 12b. The trigger 24 is operatively joined to the latch 20 by any suitable means for releasing the latch 20 to pivot from its cocked position to its fired position upon pulling of the trigger 24. In an exemplary embodiment, the latch 20 includes an elongate latch cam 20b which extends generally radially outwardly from the latch proximal end 20a and the latch pin 22a toward the trigger proximal end 24a. And, the trigger 24 includes a complementary, elongate trigger cam 24b extending generally radially outwardly from the trigger proximal end 24a and trigger pin 22b therethrough, with the two cams 20b, 24b being engaged in the cocked positions for preventing rotation of the latch 20 as shown in FIG. 2. When the trigger 24 is pulled rearwardly as shown in FIG. 3, the trigger cam 24b slides past the latch cam 20 which allows the stretched lash 18 to pull the latch 20 into its fired position by rotating it counterclockwise, which in turn then allows the lash distal end 18b to slip from the latch 20 and be released therefrom. A suitable latch stop pin 22c is joined to the handgrip 14 adjacent to the latch pin 22a for limiting the counterclockwise rotation of the latch 20 by abutting the latch cam 20b as shown in FIG. 3.

As shown in FIGS. 2 and 3, a trigger return spring 26 in the exemplary form of a flexible cantilever is operatively

joined between the trigger 24 and the handgrip 14, with the spring 26 being positioned for providing a returning force on the trigger 24 to return the trigger 24 to its cocked position upon finger release thereof. In the exemplary embodiment illustrated in FIGS. 2 and 3, the spring 26 extends integrally from the trigger proximal end 24a and generally parallel to the upper portion of the trigger 24 itself, and defines a space therebetween in which is disposed a stationary trigger stop pin 22d which is fixedly joined to the handgrip 14. In FIG. 2, the trigger 24 is in its cocked position with the return spring 26 being disposed on one side of the trigger stop pin 22d in an undeflected position for holding the trigger 24 in its forwardmost position abutting the opposite side of the trigger stop pin 22d. Upon pulling the trigger 24 rearwardly, which is shown in phantom line in FIG. 2 and in solid line in FIG. 3, the spring 26 elastically flexes against the trigger stop pin 22d as the trigger 24 is pulled rearwardly which allows the cooperating latch and trigger cams 20b, 24b to disengage so that the elastic lash 18 may pivot the latch 20 counterclockwise and be released therefrom. When the trigger 24 is released, the return force provided by the spring 26 causes the trigger 24 to rotate clockwise until the trigger 24 abuts the stop pin 22d.

Other conventional types of return springs may be used such as tension or compression springs disposed on suitable sides of the trigger 24 to provide the same returning force if desired.

In the exemplary embodiment illustrated in FIGS. 2 and 3, the latch 20 preferably also includes a conventional thumbgrip 28 integrally joined thereto and extending rearwardly, generally perpendicularly therefrom for manually returning or cocking the latch 20 to its cocked position. After the lash 18 is fired, the latch 20 rotates counterclockwise until the latch stop pin 22c prevents further rotation thereof. With, or without releasing the trigger 24, the thumbgrip 28 may be pressed downwardly for rotating the latch 20 clockwise to return it to its cocked position. If the trigger 24 is in its released position, cocking of the thumbgrip 28 causes the latch cam 20b to temporarily displace the trigger 24 upon sliding against the underside of the trigger cam 24b. When both the latch 20 and the trigger 24 are returned to their cocked positions, the lash 18 may be reloaded or reaffixed to the latch 20 in preparation for the next shot thereof.

As indicated above, the lash 18 is in the exemplary form of a rubber band, with the lash proximal end 18a forming a first loop as shown in more particularity in FIG. 4, and the lash distal end 18b forming an opposite, second loop positionable around the latch 20 as shown in FIGS. 2-4 for being simply retained or latched thereby. As shown in FIG. 2, the rod distal end 12b preferably includes a keyhole slot 30 sized for receiving the lash proximal end loop 18a therethrough for retaining the lash 18 to the rod 12 without allowing unintended disconnection therefrom when the lash 18 is fired. The keyhole slot 30 includes an enlarged cylindrical portion extending laterally through the middle of the rod distal end 12b, and a rectangular portion which faces or is open downwardly. The rectangular portion is preferably narrower than the unstretched cross section of the lash 18 to prevent its passage therethrough, with the cylindrical portion being suitably larger than the undistorted cross section of the lash 18 for loosely fixedly joining the lash 18 to the rod 12. In order to replace a worn or broken lash 18, the worn lash 18 may be suitably removed from the keyhole slot 30, with the replacement lash 18 being initially manually stretched so that its cross section is narrower than the rectangular portion of the keyhole slot 30 for allowing it to be inserted through

5

the rectangular portion and into the cylindrical portion of the keyhole slot **30** wherein it is retained after being unstretched.

As shown in FIG. 2, the latch **20** extends upwardly from the handgrip **14** or generally perpendicularly to the longitudinal centerline of the rod **12**, and the keyhole slot **30** is open downwardly in the direction opposite to the upward extension of the latch **20**. In this way, the lash **18** is inclined slightly upwardly from the keyhole slot **30** to the latch **20** when latched thereto which provides good retention of the lash **18** to the latch **20** in its cocked position while also providing good aiming capability along the longitudinal axis of the rod **12**.

Accordingly, in order to use the swatter **10**, the thumbgrip **28** is cocked to position the latch **20** in its cocked position, with the trigger **24** also being positioned in its cocked position as shown in FIG. 2 for example. Stretching of the lash **18** is manually accomplished by the operator or user of the swatter **10** by pulling the lash distal end **18b** generally parallel to the rod **12** and adjacent to the rod proximal end **12a** for latching the lash distal end loop **18b** around the latch **20**. As shown in FIG. 1, the handgrip **14** is gripped by the hand **32** of the operator or user to aim the swatter **10** along its rod **12** at the insect **16**, with the rod distal end **12b** being correspondingly aimed at the insect **16** with the fired lash **18** being within striking range **R** thereof. Upon pulling the trigger **24**, the latch **20** is released and spontaneously contracts or fires for swatting the insect **16** with the lash distal end **18b**. The lash **18** may be reloaded and refired as often as desired until the lash **18** wears out or breaks. In that case, the lash **18** is readily replaced.

As shown in FIG. 1, the lash **18** has an unstretched free length L_1 . The rod **12** and cooperating latch **20** have or define a collective cocked length L_2 measured linearly between the keyhole slot **30** and the latch **20** in its cocked position. The cocked length L_2 is preferably selected for stretching the lash **18** to about its maximum stretched length without breaking thereof to maximize the potential energy therein. In a preferred embodiment, the cocked length L_2 is at least three times the lash unstretched length L_1 which not only provides substantial striking energy within the lash **18**, but also provides a substantial amount of striking range **R** which is the distance between the insect **16** and the rod distal end **12b**. Of course, the striking range **R** is at least as large as the lash unstretched length L_1 , and in actuality it is larger than the unstretched length L_1 since the kinetic energy in the striking lash **18** causes the lash **18** to stretch in the opposite direction from the rod **12** toward the insect **16** at which it is aimed.

In an exemplary embodiment of the present invention, the lash **18** may be in the form of a common rubber band having an unstretched length L_1 of 17 cm with a 2 mm square cross section. The cocked or stretched length L_2 of the lash **18** is about 60 cm which provides a substantial striking range **R** for the swatter of about 38 cm, which is greater than twice the unstretched length L_1 . The swatter **10** may be manufactured from any suitable material. In the exemplary embodiment illustrated in the Figures, all components of the swatter **10** may be formed of conventional molded plastic. Plastic is preferred for the trigger **24** since the integral return spring **26** may be formed of suitably thin plastic for providing an effective elastic return force for the trigger **24**. In other embodiments, the rod **12** and handgrip **14** may be formed of wood or metal as desired. Although the swatter **10** is illustrated in the Figures as being in the form of a long barreled pistol, it may take any suitable form including that of a rifle or other analogous shooting implement so that the stretched lash **18** may be suitably aimed at the insect **16**

6

within an effective striking range **R** thereof for ensuring undetected swatting thereof.

While there have been described herein what are considered to be preferred and exemplary embodiments of the present invention, other modifications of the invention shall be apparent to those skilled in the art from the teachings herein, and it is, therefore, desired to be secured in the appended claims all such modifications as fall within the true spirit and scope of the invention.

Accordingly, what is desired to be secured by Letters Patent of the United States is the invention as defined and differentiated in the following claims:

What is claimed is:

1. An insect swatter comprising:

an elongate rod having a proximal end for being hand-held, and an opposite distal end for being aimed at an insect;

an elastic lash in the form of an annular rubber band having a proximal end forming a first loop fixedly joined to said rod distal end, and also having an opposite distal end forming a second loop, said lash being sized for being elastically stretched from said rod distal end to adjacent said rod proximal end so that release of said lash distal end spontaneously contracts said lash for swatting said lash distal end against said insect;

a latch pivotally joined adjacent to said rod proximal end for releasably latching said lash distal end so that said second loop is positioned around said latch for being retained thereby, said latch being pivotable between cocked and fired positions, and including a thumbgrip extending generally perpendicularly therefrom for manually returning said latch to said cocked position thereof; and

means pivotally joined adjacent to said latch for selectively releasing said latch to release said lash distal end for swatting said insect therewith.

2. A method of using the swatter of claim 1 comprising: stretching said lash by pulling said distal end thereof generally parallel to said rod and adjacent to said rod proximal end;

latching said lash distal end to said latch;

aiming said rod distal end at said insect; and

releasing said latch for spontaneously contracting said lash for swatting said insect with said distal end thereof.

3. A swatter according to claim 1 further comprising:

a gun handgrip fixedly joined to said rod proximal end;

said latch being pivotally joined to said handgrip; and

wherein said latch releasing means includes a trigger operatively joined to said latch for releasing said latch upon pulling said trigger.

4. A method of using the swatter of claim 3 comprising: stretching said lash by pulling said distal end thereof generally parallel to said rod adjacent to said rod proximal end;

latching said lash distal end to said latch;

gripping said handgrip to aim said rod distal end at said insect; and

pulling said trigger to release said latch to spontaneously contract said lash for swatting said insect.

5. A swatter according to claim 3 wherein:

said rod distal end includes a keyhole slot; and

said lash first loop is disposed through said keyhole for fixedly joining said lash to said rod.

7

6. A method of using the swatter of claim 5 comprising:
 stretching said lash by pulling said lash second loop
 generally parallel to said rod and adjacent to said rod
 proximal end;
 latching said lash second loop around said latch;
 gripping said handgrip to aim said rod distal end at said
 insect; and
 pulling said trigger to release said latch to spontaneously
 contract said lash for swatting said insect.
 7. A swatter according to claim 5 wherein:
 said latch extends upwardly from said handgrip;
 said keyhole slot is open downwardly in a direction
 opposite to said upward extension of said latch; and
 said lash is inclined upwardly from said keyhole slot to
 said latch when latched thereto.
 8. A swatter according to claim 5 wherein:
 said latch is pivotable between said cocked position
 wherein said latch extends generally perpendicularly to
 said rod for retaining said lash second loop thereon, and
 said fired position wherein said latch is inclined for-
 wardly toward said rod distal end for allowing said lash
 second loop to slip off said latch for spontaneously
 contracting said lash; and
 said trigger is operatively joined to said latch for releasing
 said latch to pivot from said cocked position thereof to
 said fired position thereof upon pulling said trigger.
 9. A swatter according to claim 8 further comprising:
 a spring joined between said trigger and said handgrip;
 said trigger being pivotable between a cocked position
 holding said latch in said cocked position thereof, and

8

a fired position releasing said latch for pivoting said
 latch to said fired position thereof; and
 said spring being positioned for providing a returning
 force on said trigger to return said trigger to said cocked
 position thereof upon release of said trigger.
 10. A method of using the swatter of claim 9 comprising:
 cocking said thumbgrip to position said latch into said
 cocked position thereof;
 stretching said lash by pulling said lash second loop
 generally parallel to said rod and adjacent to said rod
 proximal end;
 latching said lash second loop around said latch;
 gripping said handgrip to aim said rod distal end at said
 insect; and
 pulling said trigger to release said latch to said fired
 position thereof to spontaneously contract said lash for
 swatting said insect.
 11. A swatter according to claim 9 wherein:
 said lash has an unstretched length;
 said rod and latch have a collective cocked length mea-
 sured between said keyhole slot and said latch in said
 cocked position thereof; and
 said cocked length is selected for stretching said lash to
 about its maximum stretchable length without breaking
 thereof.
 12. A swatter according to claim 11 wherein said cocked
 length is at least three times said lash unstretched length.

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