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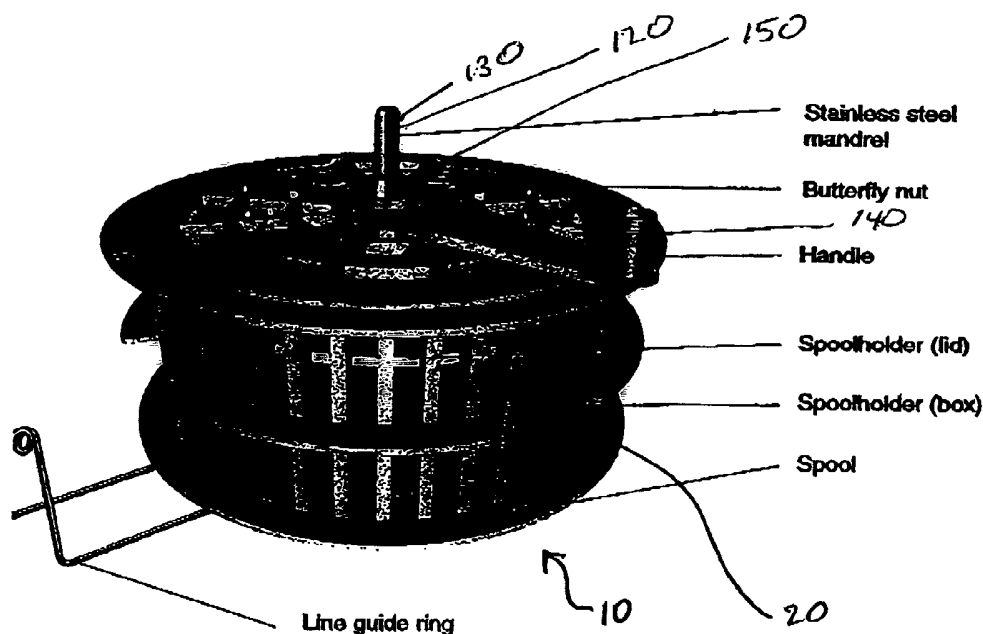
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(54) Title: SPOOL WINDER DEVICE



(57) Abstract: A device for unwinding, cleaning, storing, and rewinding flyline and backing is disclosed. The device includes a spool having sidewalls, a divider, vents, and an open side. The spool is fitted onto a spool holder to guide the spool while in use. A rotational force is applied to the spool to remove line or backing from a flyreel. A winder is provided for use with a flyreel in winding or rewinding flyline and backing onto the flyreel. The winder and the spool are preferably rotated via a cordless drill.



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SPOOL WINDER DEVICE

DESCRIPTION

Cross-Reference to Related Applications

This application claims the benefit of U.S. Provisional Application No. 60/357,341, filed February 15, 2002, which is hereby incorporated by reference herein in its entirety.

5

Technical Field

The present invention relates to fly fishing, and specifically to an improved device for removing, winding on, storing, and cleaning flylines.

0

Background of the Invention

Conventional saltwater fly fishing reels are commonly used in saltwater fishing. These reels are loaded with flyline, typically forty yards in length, followed by backing. Backing is conventionally a thin, braided nylon, and is often 100 and up to 400 or 500 yards in length.

5

Due in part to the material of which the backing is composed, the backing, and to some extent the flyline, tend to soak up saltwater. As the fly fishing reels ("flyreels") are exposed to this saltwater, corrosion occurs.

0

One prior art attempt to address this problem, which is in common use, is to form the flyreels using anodized aviation grade aluminum. However, even when such materials are used, flyreels tend to become corroded after significant

exposure to saltwater. Such flyreels tend to be rather expensive, and thus, it is particularly problematic when corrosion occurs.

One way to reduce corrosion substantially is to clean the flyline and backing after exposure to saltwater. Problems experienced with this, however, include the fact that it is difficult to unwind and rewind this lengthy, thin line which tangles and knots very easily, and which takes a long time to wind. Unwinding and rewinding this line is particularly tedious, since flyreels have a direct drive in which one revolution of the handle produces one revolution of the spool.

Another problem with conventional flyreels is that storing the line on a flyreel for any prolonged period of time can produce excessively coiled flyline because the spool of the flyreel has a relatively small diameter. The flyline has a "line memory," which holds the shape of the spool. This coiling can impair casting.

Therefore, it would be advantageous to provide a device which addresses the above identified problems.

Summary

In view of the deficiencies described above, it is an object of the present invention to provide an improved method for removing, winding on, storing, and cleaning flylines.

5 In accordance with the above objectives, the present invention is a device having three main components, a spool, a spool holder, and a winder. The invention can be used to remove flyline from flyreels, clean it, and store it. The device can also be used to wind the flyline back onto the flyreel, whether after cleaning or storing it, or winding new line onto the reel. Power may be provided by a rotational force, 0 whether manual or automatic such as with a hand crank or a rotational motor. Preferably, power is provided by a rotational motor such as a drill. Ideally, a cordless drill with progressive start, is used.

The device facilitates efficient unwinding, soaking, storing, and rewinding of the flyline. The device thus prolongs life of expensive saltwater flyreels by 5 preventing corrosion, prolongs life of flylines, reduces line memory, stores flylines on large diameter areated spools, enables quick flyreel filling for shop keepers and professionals, provides an easy storage solution of line while conducting reel maintenance, all in a manner which is convenient, easily utilized, and inexpensive.

In a preferred embodiment, the spool is preferably a perforated, cylindrical 0 spool, preferably made of plastic with a stainless steel mandrel. One face of the spool is preferably open, the other face (where the mandrel is fitted) is closed. The spool preferably can be fitted on any drill, ideally a cordless drill, preferably a drill with progressive start and reverse gear, by inserting the mandrel. The front end of the flyline is attached to the spool and by progressively starting the drill, the spool turns. 5 By doing so, the flyline is removed from the flyreel and wound onto the spool. The spool is preferably equipped with side walls so the line will not slip off the spool.

The spool also preferably includes a divider wall which can be used to separate the backing from the flyline.

0 Once all the flyline and backing are wound onto the spool, the rear end of the backing is detached from the flyreel. The spool is then removed from the drill and

can then be soaked, preferably in warm soapy water to remove the salt. Afterwards it is preferably rinsed and left to dry.

In a preferred embodiment, the spool holder is preferably a cylindrical box made of plastic with a bayonet closure. The spool holder preferably serves two functions. 1) It serves as a guide around which the spool can turn when winding line back onto the reel. As a matter of fact, the spool has to be guided when winding the line back onto the flyreel, in order to prevent it from spinning out of control. Ideally, materials are selected such that the coefficient of friction between the spool and the spool holder is just enough to ensure proper line tension while spooling. 2) The spool holder can also act as a container which holds the mandrels of the spool and the winder, the washers and nuts, and the user manual. This may be particularly useful for packaging and display for retail purposes, or for convenient transporting or storage.

The spool preferably has a line guide ring constructed of stainless steel or any other suitable material. The spool holder preferably has a slot configuration, or alternatively, two apertures in the bottom of its base adapted to receive the line guide ring. Before spooling flyline from a spool onto a flyreel, the line is slipped through the line guide ring to give better control when spooling.

In a preferred embodiment, the winder is preferably a rubber disk with curved slots and a central stainless steel mandrel which also fits in a drill. The slots are placed in pairs on either side of the mandrel. The axis of two facing slots (one pair) runs through the center of the winder. The axis of the other pair also runs through the center of the winder and is at a 90° angle compared to the axis of the first pair of slots. One pair of slots has a larger diameter and is spaced wider apart. The other pair has a smaller diameter and is less spaced.

The winder is preferably fitted onto the drill by means of its mandrel. Once fitted onto the drill, the winder is pressed onto the flyreel, in such a manner that the handle and the counterweight which equip most flyreels on the market are lodged in the slots of the winder. The various diameters and spacing of the slots match the size of about 80% of all flyreels commonly found in the world. The winder is

preferably centered on the flyreel. Circular ribbing on the bottom of the winder gives the user visual guidance to center the flyreel on the winder. The rear end of the backing is attached to the flyreel and the activation of the drill makes the reel turn, winding the line on it. Only slight pressure is needed to keep the winder on the reel. The circular ribbing also prevents the flyreel from slipping out of the center while winding the line back onto the flyreel. Ideally, the winder is made of rubber so that it does not damage the flyreel.

Other features and advantages of the invention will be apparent from the following detailed description taken in conjunction with the following drawings.

Brief Description of the Drawings

Fig. 1 is a perspective view of the spool of the present invention.

Fig. 2 is a side view of the spool of the present invention.

Fig. 3 is another side view of the spool of the present invention.

5 Fig. 4 is a side view of a preferred embodiment of the present invention showing the bayonet closure of the lid of the spool holder.

Fig. 5 is a side view of the spool holder of the present invention.

Fig. 6 is a side view of the spool holder of the present invention.

Fig. 7 is an exploded view of the line guide ring of the present invention.

0 Fig. 8 is an exploded view of another embodiment of the present invention showing the attaching means of the spool holder for the line guide ring.

Fig. 9 is a cross-sectional view of the spool of the present invention.

Fig. 10 is a perspective view of the winder of the present invention.

5 Fig. 11 is a perspective view of another embodiment of the present invention showing the circular ribbing of the winder.

Fig. 12 is a side view of the winder of the present invention showing the winder mandrel.

Fig. 13 is a side view of the handle of the present invention.

Fig. 14 is another side view of the handle of the present invention.

0 Fig. 15 is yet another side view of the handle of the present invention.

Fig. 16 is a perspective view of another embodiment of the present invention showing the mandrel of the spool, a nut and a washer.

Fig. 17 is a perspective view of another embodiment of the present invention showing a drill interfaced with the mandrel of the spool.

5 Fig. 18 is a perspective view of another embodiment of the present invention showing a drill interfaced with the winder mandrel.

Fig. 19 is a perspective view of another embodiment of the present invention showing the winding of line from a flyreel onto a spool.

0 Fig. 20 is a perspective view of another embodiment of the present invention showing the winding line from a spool back onto a flyreel.

Fig.21 is a perspective view of the handle, spool, spool holder, and winder of the present invention.

Fig. 22 is an open view of the spool holder and spool of the present invention.

5 Fig. 23 is a open view of the spool holder and spool of the present invention.

Detailed Description

While this invention is susceptible of embodiments in many different forms, there is shown in the drawings and will herein be described in detail preferred embodiments of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the broad aspect of the invention to the embodiments illustrated.

A device 10 for manipulating flyline is disclosed. The device 10 includes a spool 20 for winding line onto, and a spool holder 30 for holding the spool in alignment during use. The spool 20 is rotatably fitted onto the spool holder 30 via an open side 40 of the spool 20. The spool 20 and holder 30 preferably interlock such that the spool 20 is prevented from vertical displacement while spinning. In one embodiment, the holder 30 includes a circumferential flange 50 at its base, and the spool 20 includes a circumferential groove 60 on its interior at its open end 40, the circumferential flange 50 being adapted to interlock with the groove 60 to prevent the spool from vertical displacement while spinning.

The spool 20 comprises a cylindrical frame 70, preferably composed of vertical frame members 80. The vertical frame members 80 preferably have a substantially rectangular cross-section having a width along the circumference longer than a depth in the axial direction for added rigidity. The spool 20 has side walls 90 extending radially beyond the outer circumference of the frame 70, at least one divider 100 extending radially from an inner circumferential line of the frame 70, vents 110 within the frame 70, and a mandrel 120 extending axially from a side wall 90 of the spool 20.

The mandrel 120 preferably has a threaded interface 130, and is adapted to receive a handle 140, such as via being secured by a nut 150. Preferably, the mandrel 120 has a threaded hole at the distal end for attachment via a screw 160. The screw 160 preferably has a head with slanted sides to form a substantially flush fit with a base of the side of the spool 20, the spool side being adapted with slanted openings to interface with the screw 160.

The spool 20 ideally includes a means for attaching a line, such as notches 210.

The system of the invention also includes a winder 170 having openings 180 on at least one side for interfacing with a flyreel, and a winder mandrel 190 extending axially therefrom for use with a drill or handle 140. While a handle would not likely be used in this context since the flyreel typically includes a handle, the handle 140 could be used if the object being wound has no handle. The winder 170 preferably has four slots 180 comprising a first pair and a second pair on either side of the winder mandrel 190, an axis of the first pair running through the center of the winder 170 and an axis of the second pair being at a 90 degree angle relative to the axis of the first pair.

The winder 170 is preferably composed of a rubber disk, and the slots 180 are preferably curved so as to lock engagement points on a flyreel when turning and prevent it from slipping out of center. In a preferred embodiment, the winder 170 includes circular ribbing 200 to prevent slipping and to allow for visual alignment.

The spool holder 30 is preferably constructed of plastic, and comprises a compartment having a cavity 220 for receiving a weighted substance, such as sand or water, to hold the spool 20 in place in use. Ideally, attached to the spool holder 30 is a line guiding means 230 which can be permanently or removably mounted to the spool holder 30. The line guiding means 230 is preferably a rod or wire having a line guiding ring 240 through which the line is strung before usage. It can be attached via locking components 250.

In another preferred embodiment, as shown in Fig. 1, the spool 20 is made out of molded plastic, fitted at the closed face with a stainless steel mandrel 130, and held in place with a stainless steel screw 160 and a washer and nut 150. The spool 20 preferably has two walls 90 on either side to prevent line from slipping off the spool 20. The walls 90 are preferably equipped with notches 210 to attach the flyline. Preferably, the spool 20 also has a divider wall 100 in four sections, to separate flyline from backing. The spool 20 preferably has a very open construction so that the flyline can be cleaned thoroughly and afterwards can dry quickly.

Also, in one preferred embodiment, the spool holder 30 is a cylindrical box with a lid, both made out of molded plastic. The lid of the spool holder 30 is preferably locked into place with a bayonet closure. Any other suitable closure is also contemplated. The bottom of the spool holder 30 preferably has an anti-slip matting. The function of the spool holder 30 is to serve as a guide for the spool to spin around. The spool holder 30 can be weighted, such as by filling it with sand or pebbles for extra stability. Also, the spool holder 30 can preferably serve as a container for the mandrels, screws, washers, and a user manual (see also Fig. 23).

In a preferred embodiment, the winder 170 is a rubber disk, similar to a grinding disk, equipped with a stainless steel mandrel 190, secured with a stainless steel screw and washers. The mandrel may be similar to the mandrel 120 on the spool 20. Four oblong slots are placed opposite to each other at a 90° angle. Each pair of slots preferably has a different diameter and spacing, in order to accommodate a wide variety of flyreels, and may be curved in order to lock into place with engaging components of a flyreel.

The spool 20 can be fitted onto a drill, preferably a cordless drill. Optionally, the mandrel 120 of the spool 20 is equipped with a threaded interface 130. The threaded interface 130 allows for a handle 140 to be fitted on the spool 20 for spooling line onto the spool manually. The drill preferably has a progressive start and a reverse gear. By activating the drill, the flyline and/or backing is spooled onto the spool 20.

The winder 170 preferably can also be fitted onto a drill. The winder 170 is pressed onto the face of a flyreel. By activating the drill, the flyline and/or backing is wound onto the flyreel.

When spooling the flyline and/or backing onto the spool 20, the end of the flyline is attached to the spool 20, using one of the line attacher notches 210. By making the drill turn, the flyline and/or backing is stripped off the flyreel. Once all the line is on the spool 20, it is untied from the flyreel. The spool 20 is removed from the drill and is soaked in fresh water for a period of time. Then it is left to dry in the

open air. When the line is dry, it can either be wound back onto the reel using the winder 170 or the spool 20 can be stored with the line on it until the next use.

As shown in the figures, when winding the flyline and/or backing onto the flyreel, the spool 20 is slipped over the spool holder 30 and the end of the flyline and/or backing is attached to the flyreel. A groove 60 at an open end, on the inside of the spool 20 fits over a circular flange 50 at the base of the spool holder 30 to prevent the spool 20 from riding upwards while spinning. There is also disposed on the spool 20 preferably a line guide ring constructed of stainless steel or any other suitable material to give better control of the line when spooling. The line guide ring 230, 240 is preferably fitted into slots at the bottom of the spool holder 30. Alternatively, it is inserted in two holes in the base of the spool holder 30. The line is slipped through the line guide ring before spooling.

In one hand, the user presses the drill equipped with the winder 170 against the face of the flyreel, which is held in the other hand, in such a manner that the slots in the winder 170 fit around the handle and counter weight found on most flyreels. The slots are curved in shaped to prevent the flyreel from slipping out of center while winding line back onto the reel. There is further a circular ribbing 200 at the bottom of the winder 170 to give the user visual guidance to center the flyreel on the winder. The ribbing 200 also prevents the flyreel from slipping out of center while winding the line back onto the flyreel. After making sure the winder is well centered on the flyreel, the drill is progressively started which makes the flyreel turn.

The flyline and/or backing are thus wound onto the flyreel. The user makes sure the line is spread evenly on the flyreel. During the process of winding, the spool 20 spins around the spool holder 30, preventing it from running wild. The friction between the spool 20 and the spool holder 30 is just right to create proper line tension and even filling of the flyreel.

The preferred components and packaging of the invention are as follows. On the left, starting from top: the spool; the spool holder; and the winder. On the right, starting from top: the spool fitted over the spool holder, showing the bayonet closure, which could optionally close via an O-ring seal of the lid; the invention as

it can be packaged: mandrels, screws, washers and user manual are inside the spool holder.

A method for manufacturing and a method of using the device of the present invention is additionally intended within the scope of the invention, as detailed herein.

While the specific embodiments have been illustrated and described, numerous modifications come to mind without significantly departing from the spirit of the invention, and the scope of protection is only limited by the scope of the accompanying claims.

CLAIMS

What is claimed is:

5 1. A device for manipulating flyline comprising:
a spool for winding line onto, and
a spool holder for holding the spool in alignment during use, wherein the
spool is rotatably fitted onto said spool holder via an open side.

0 2. The device according to claim 1, wherein the spool comprises a
cylindrical frame having side walls extending radially beyond the outer circumference
of the frame, at least one divider extending radially from an inner circumferential
line of the frame, vents within the frame, and a mandrel extending axially from a side
wall of said spool.

5 3. The device according to claim 2, wherein said vents are formed
between axially extending vertical frame members.

0 4. The device according to claim 3, wherein said frame members
have a substantially rectangular cross-section having a width along the circumference
longer than a depth in the axial direction.

 5. The device according to claim 2, wherein said mandrel further
comprises a threaded interface adapted to receive a handle having an interface hole.

5 6. The device according to claim 5, further comprising a handle
affixed to said mandrel via a nut.

0 7. The device according to claim 2, wherein said mandrel further
comprises an aperture adapted to receive a screw to tighten said mandrel of said spool
to said spool.

8. The device according to claim 7, wherein the screw has a head with slanted walls wherein when the screw is tightened, its head is substantially flush with a base of a wall of said spool.

5 9. A system comprising the device according to claim 1, and further comprising a winder having openings on at least one side for interfacing with a flyreel and a winder mandrel extending axially therefrom.

10 10. The system according to claim 9, wherein said winder has four slots comprising a first pair and a second pair on either side of the winder mandrel, an axis of the first pair running through the center of said winder and an axis of the second pair being at a 90 degree angle relative to the axis of the first pair.

11. The system according to claim 9, wherein said winder is a rubber
.5 disk
having curved slots.

12. The system according to claim 9, wherein said winder further
10 comprises circular ribbing on a back side of said winder.

13. The device according to claim 1, wherein said spool further
comprises a means for attaching fishing line.

14. The device according to claim 13, wherein said means for
.5 attaching fishing line comprises at least one notch in said spool.

15. The device according to claim 1, wherein said spool holder is
constructed of plastic.

16. The device according to claim 1, wherein said spool holder comprises a compartment having a cavity for receiving a weighted substance.

5 17. The device according to claim 1, wherein said spool holder further comprises a circumferential flange at its base, and wherein said spool further comprises a circumferential groove at an open end and inside of said spool, the circumferential flange being adapted to interlock with the groove to prevent said spool from vertical displacement while spinning.

0 18. The device according to claim 1, wherein said device further comprises a line guiding means detachably connected to said spool holder.

5 19. The device according to claim 1, wherein said line guiding means comprises a rod having a line guiding ring and an attachment configuration for attaching to said device.

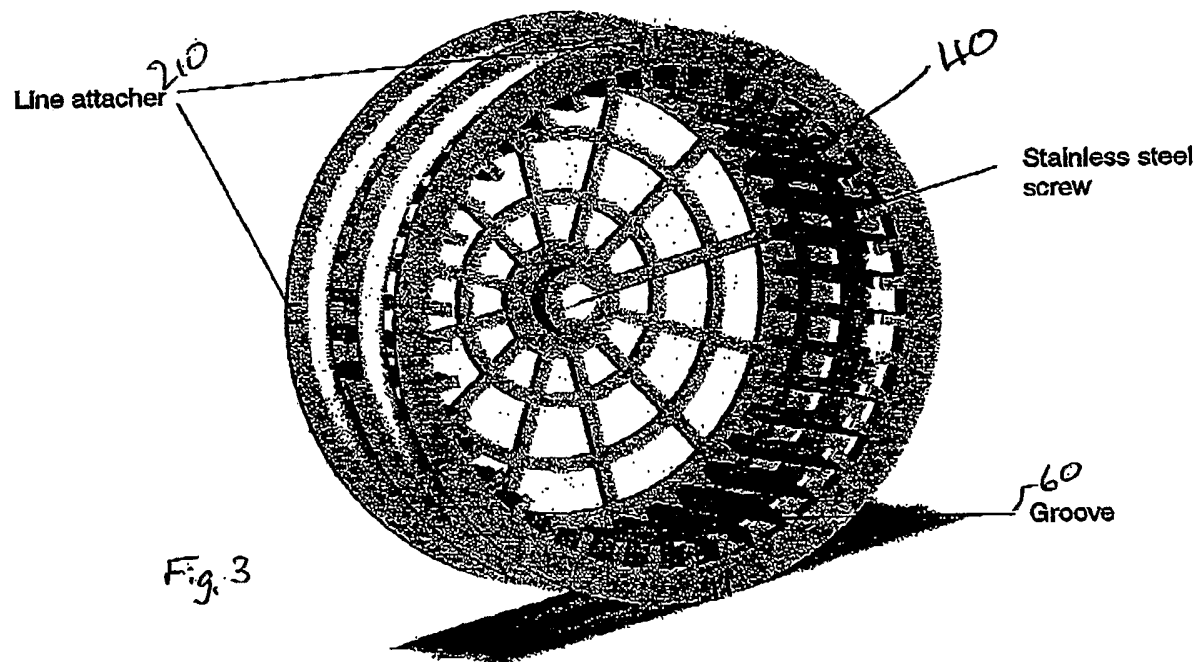
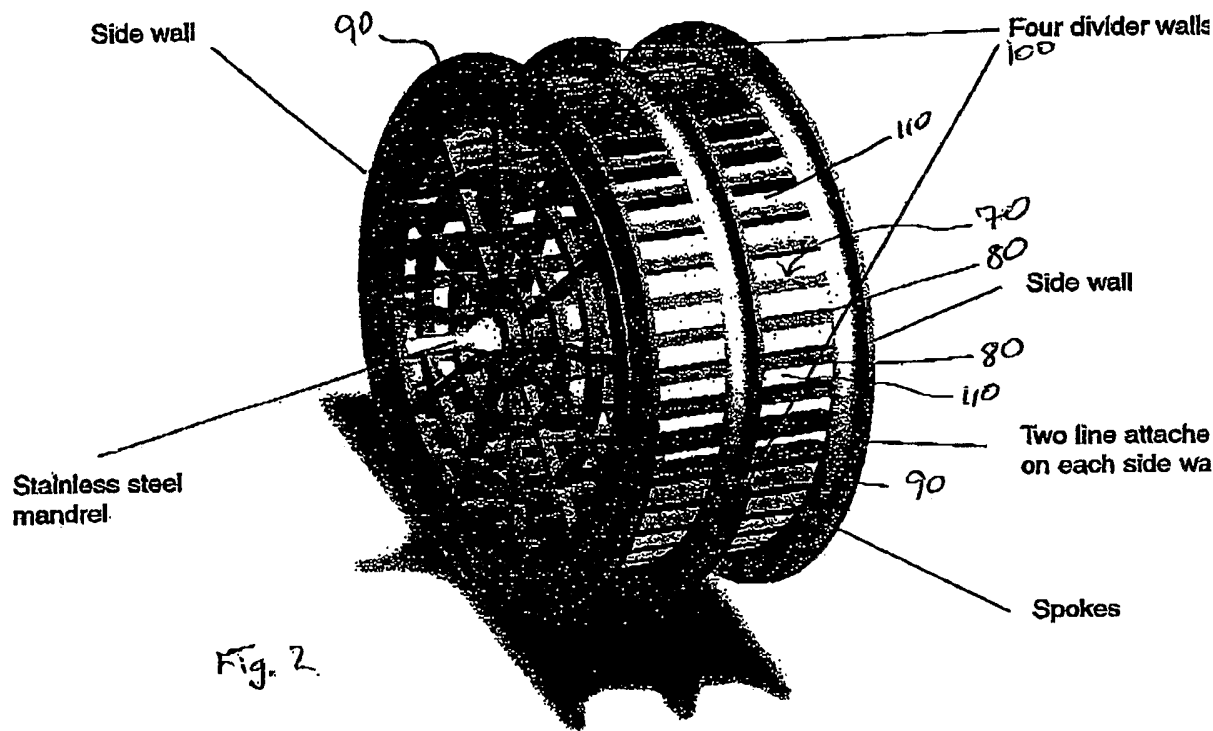
20. A method of manipulating flyline comprising:
attaching line from a reel to a spool,
rotating the spool to remove the line from the reel and onto the spool,
0 inserting the spool into a device adapted to secure the spool while the spool is spinning,
pressing and centering a winder on the reel, and
applying a rotating force to the winder and reel such that line is removed
from the spool back onto the reel.

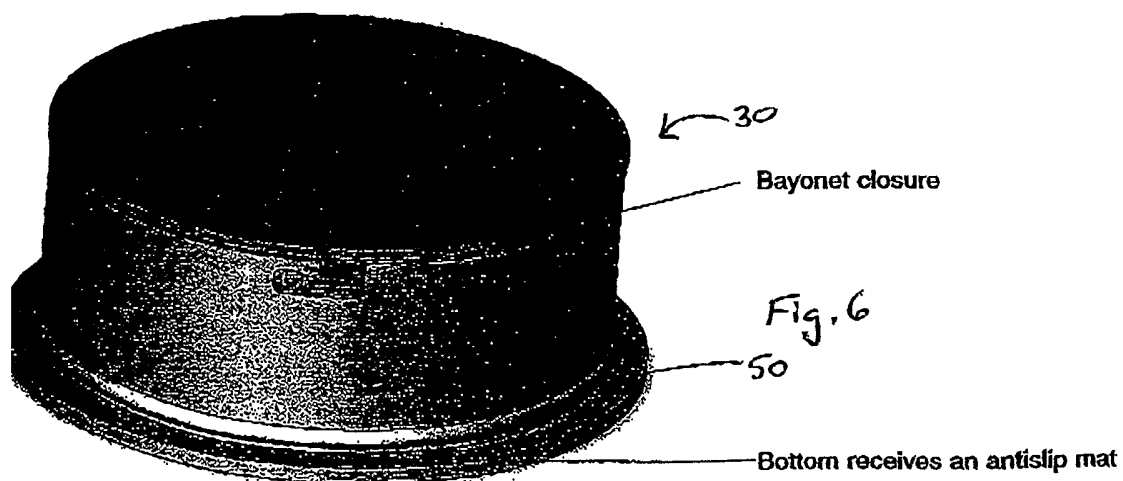
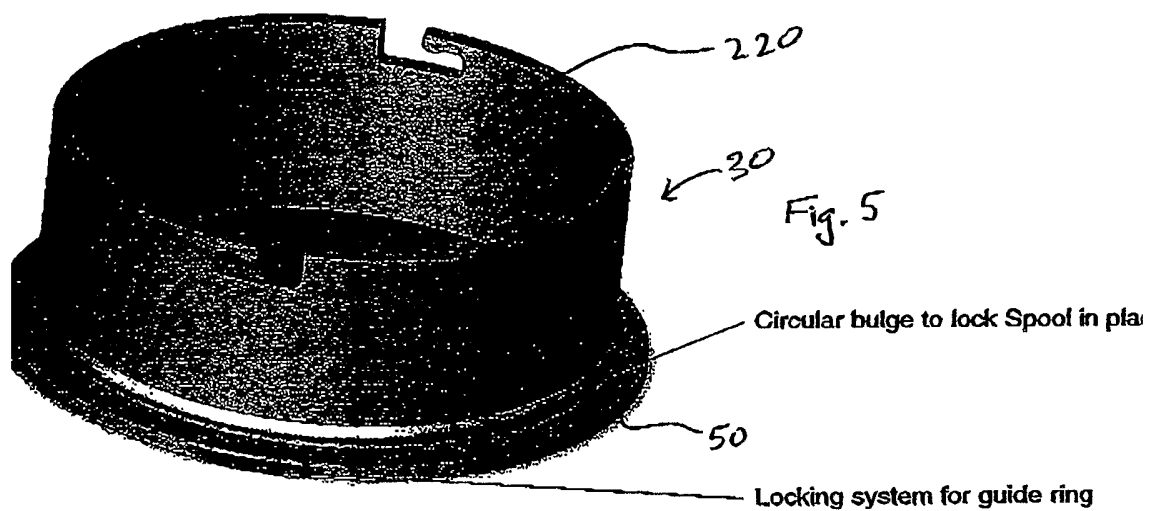
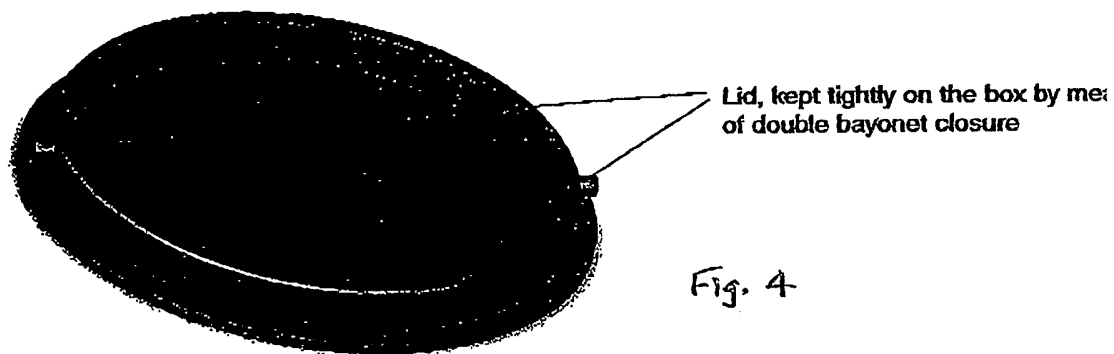
21. A method of manufacturing a device for manipulating flyline comprising:

providing a spool, with at least one open face, to receive flyline from a reel,

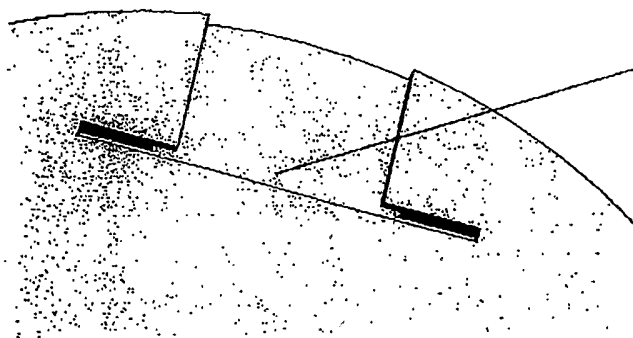
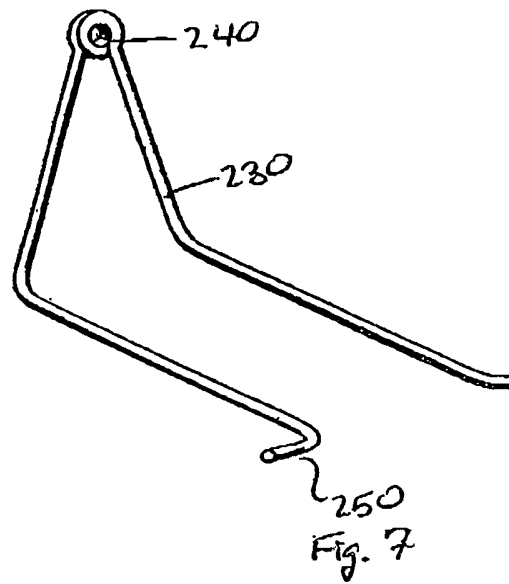
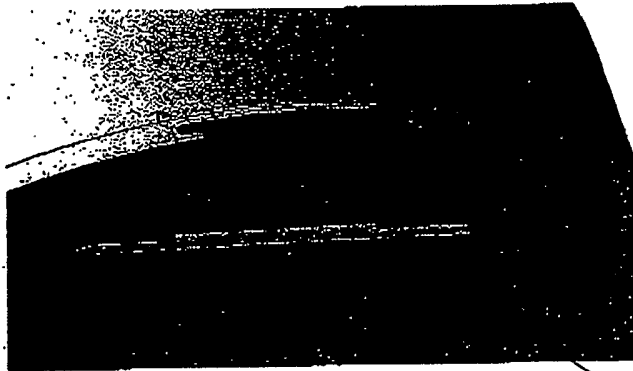
5 providing an attaching means on said spool to allow a rotational force to be applied to said spool, and

providing a device to hold said spool down while it spins.



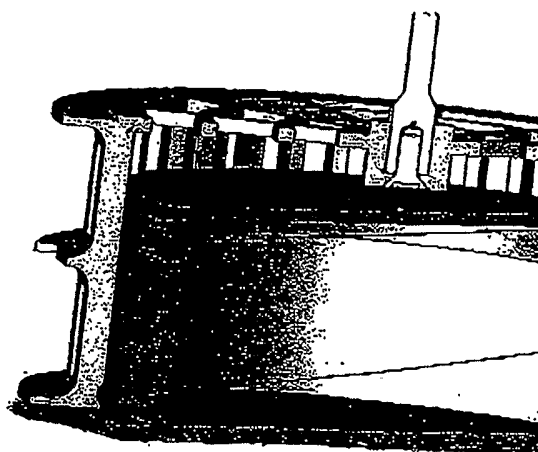


Line guide ring, to be inserted in the notch at the base of the box



Locking system for guide ring
250

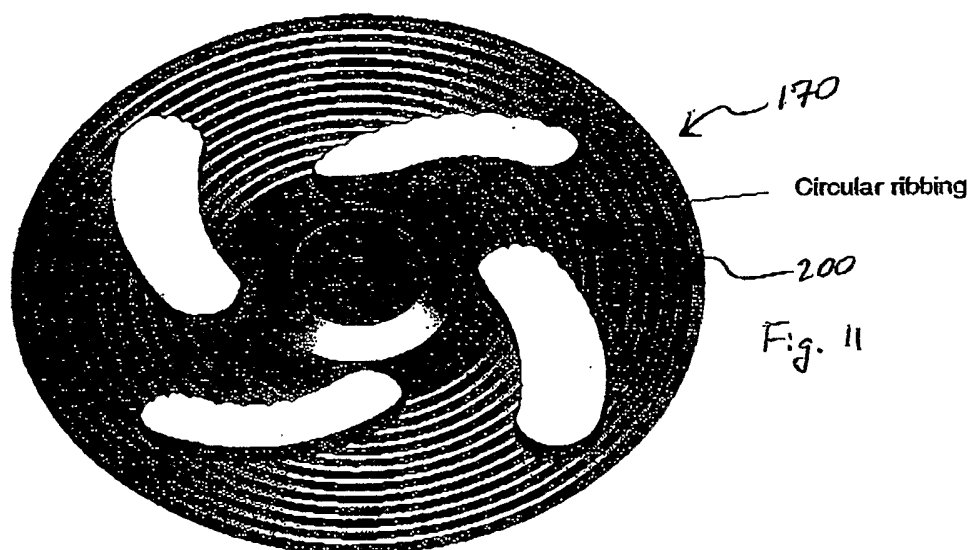
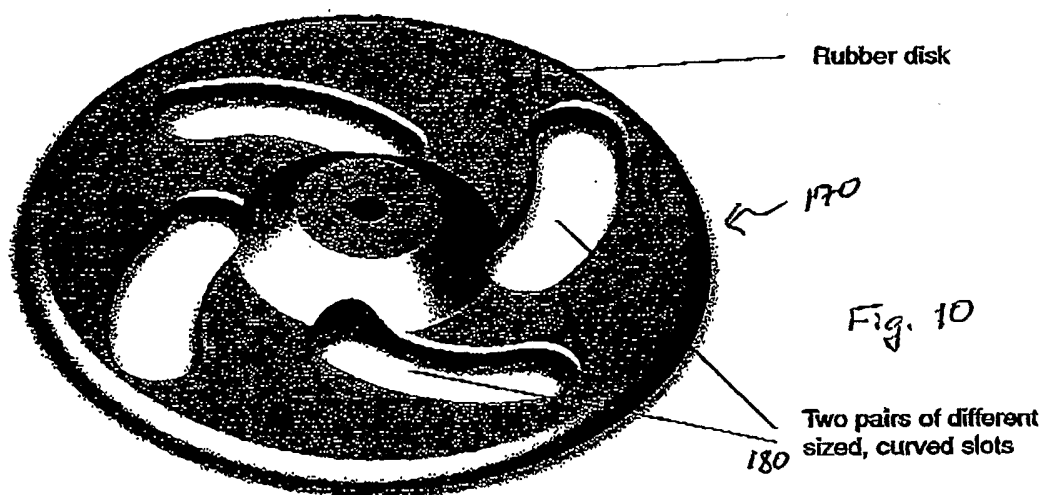
Fig. 8



Bayonet closure

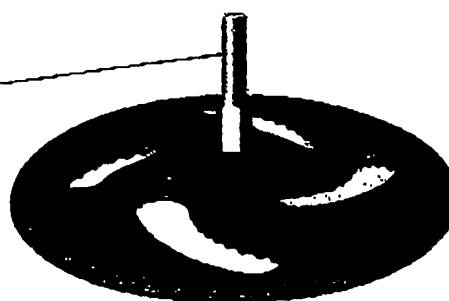
Circular bulge to lock Spool in place

Fig. 9



Mandrel made out of stainless steel, held in place by screw. Identical mandrel as on the Spool.

Fig. 12





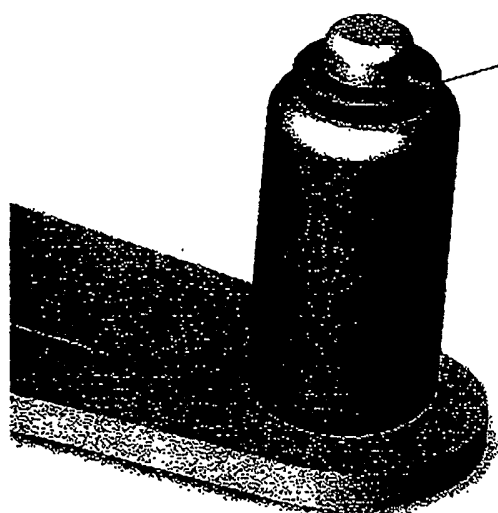
Handle complete

Fig. 13



Handle alone

Fig. 14



Nylon circlips

Fig. 15



Butterfly nut & washer



Mandrel (fits into the spool)

Fig. 16

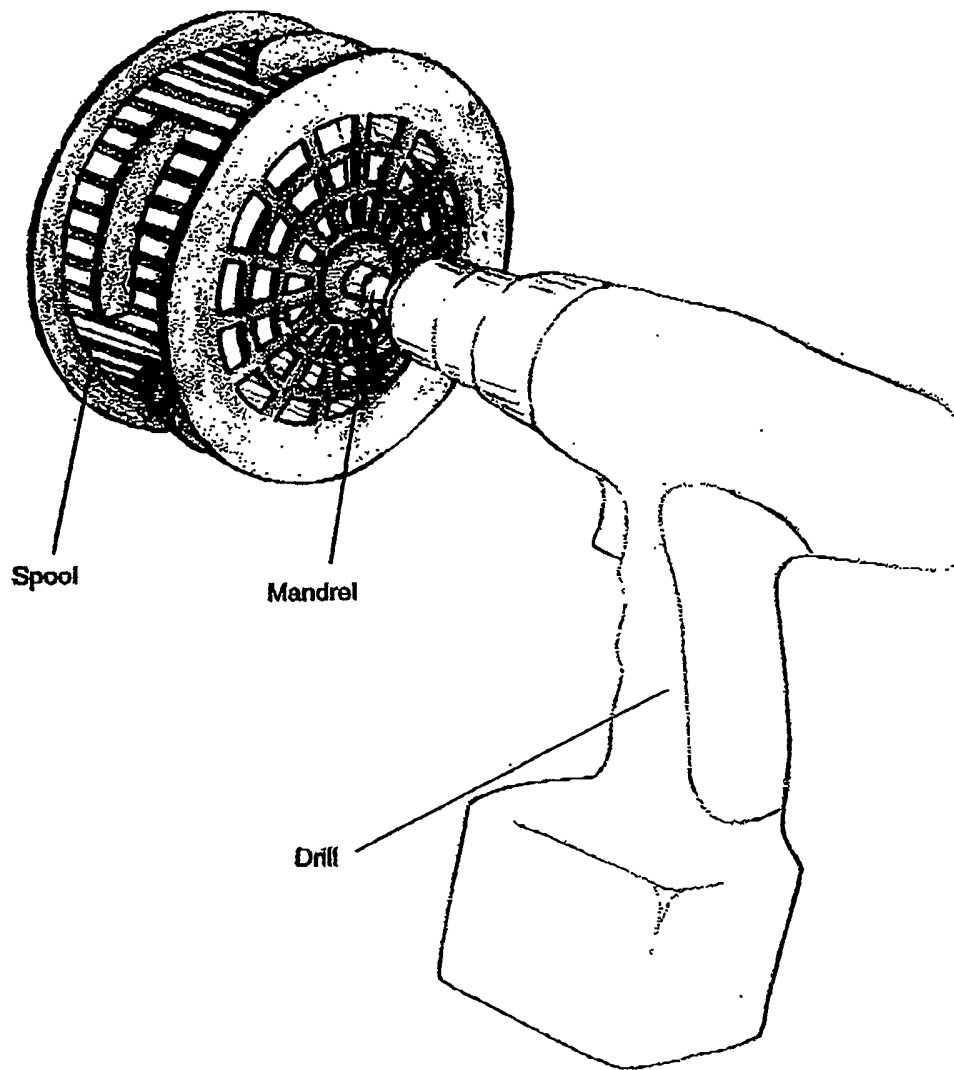


Fig. 17

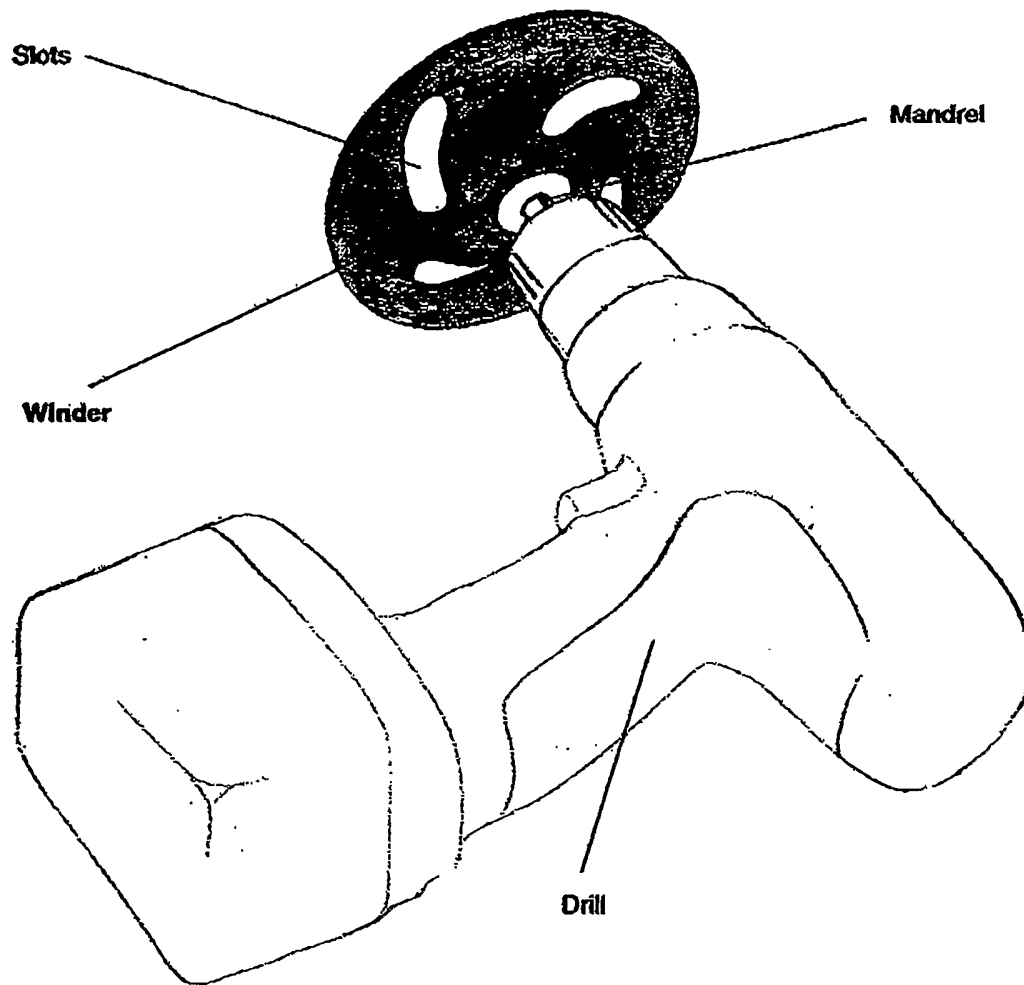
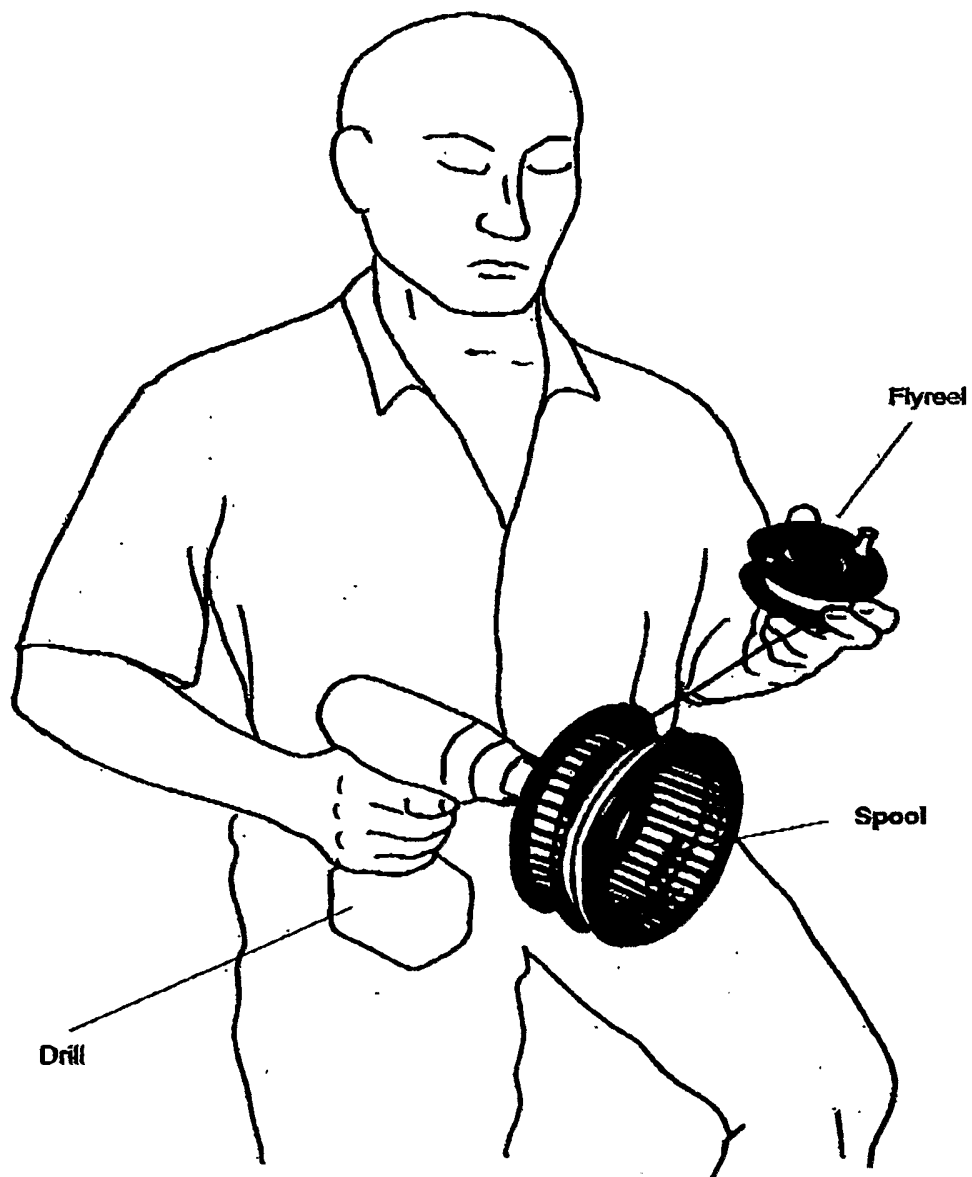


Fig. 18



The flyline is attached to the Spool. When the drill turns, it spools the flyline and/or backing off the flyreel. The flyline is spooled on one side of the Spool and the backing on the other side. They are separated by the divider walls. These divider walls can also separate two flylines for storage.

Fig. 19

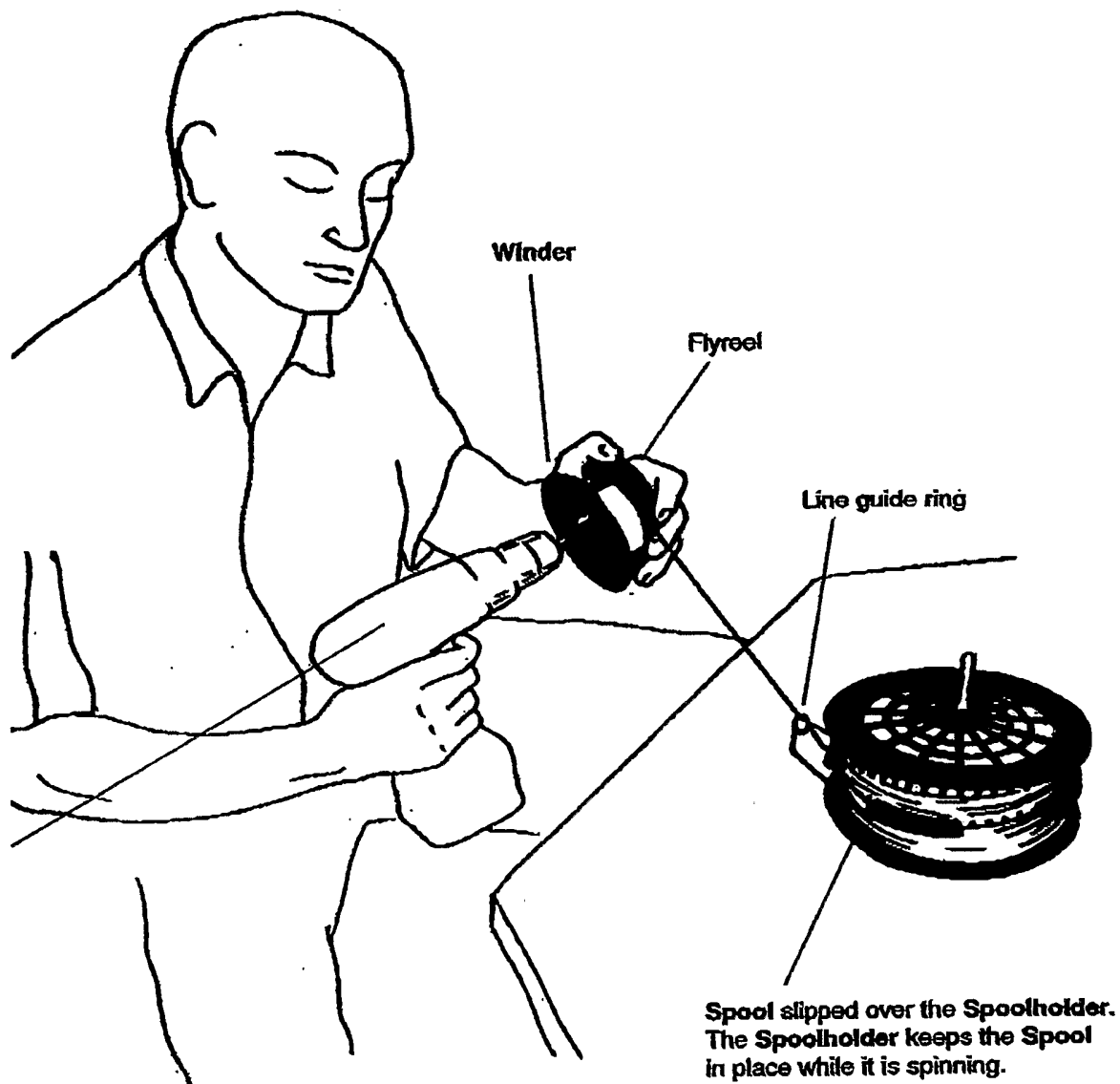


Fig. 20

After the flyline is cleaned and desalinated, it is tied to the flyreel. The Winder is placed onto the drill and pressed against the face of the flyreel. The handle and counter-weight of the flyreel fit into the slots of the Winder. When the drill turns, it reels the flyline and backing onto the flyreel, through the line guide ring. The spool containing the flyline and backing spins around the Spoolholder. The friction between these parts as well as the friction of the line passing through the guide ring ensure proper line tension on the flyreel.

SpoolTool
 General presentation
 Design: Roland Henion
 Seychelles, August 2001
 Reduced to 65%

Fig. 21

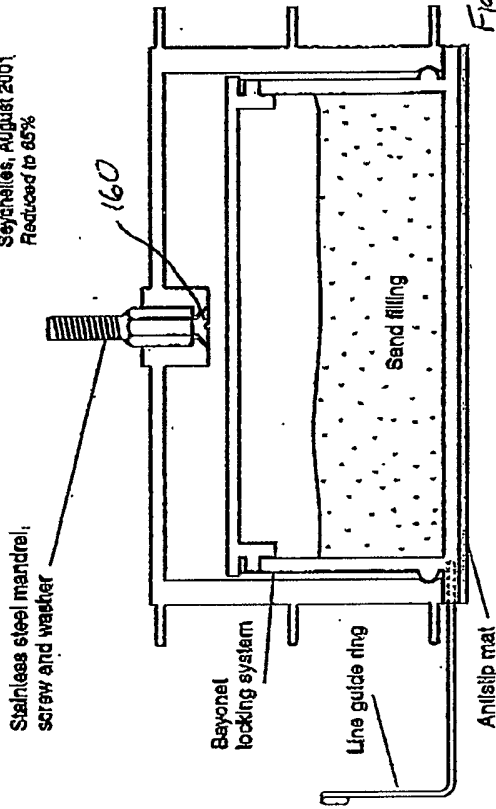
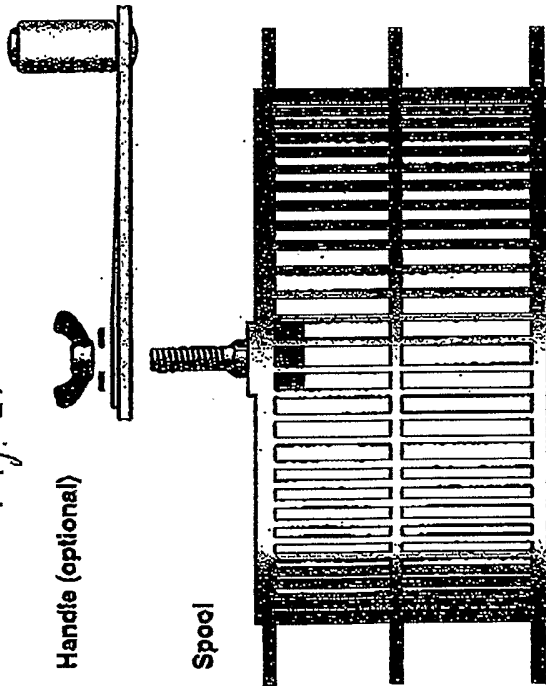
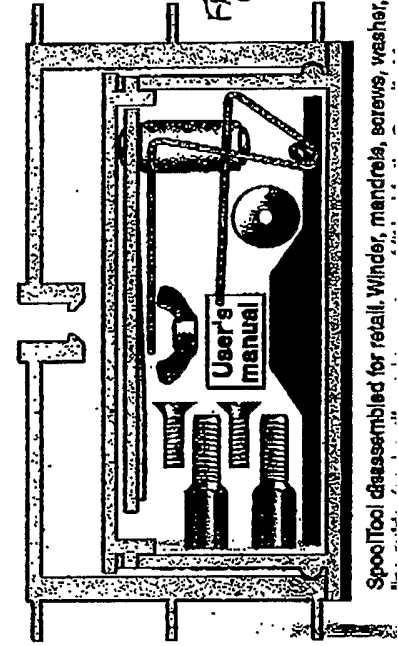


Fig. 22

Spool spins around Spoolholder which is weighted with sand for stability. Groove at the inside of spool clicks onto ring at the bottom of Spoolholder. Stainless steel mandrel screwed onto the Spool.

Fig. 23



INTERNATIONAL SEARCH REPORT

 Internat Application No
 PCT/IB 03/00514

 A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A01K89/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

 Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 A01K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 839 687 A (MAGNAFICI WILLIAM E) 24 November 1998 (1998-11-24) claim 1 figures 5-8	1,20,21
X	US 5 513 463 A (DRINKWATER GERALD F) 7 May 1996 (1996-05-07) figure 1 claim 1	1,20,21
X	US 6 015 111 A (BERKE JOSEPH J) 18 January 2000 (2000-01-18) abstract figures 2,3 claim 1	20,21
	-/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

° Special categories of cited documents :

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- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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Date of the actual completion of the international search

27 June 2003

Date of mailing of the international search report

04/07/2003

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Authorized officer

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INTERNATIONAL SEARCH REPORT

Internat Application No
PCT/IB 03/00514

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 102 319 A (ANNABEL JEFFREY C ET AL) 15 August 2000 (2000-08-15) abstract figure 1 -----	20,21

INTERNATIONAL SEARCH REPORT

Internat Application No
PCT/IB 03/00514

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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US 5513463	A	07-05-1996	NONE	
US 6015111	A	18-01-2000	NONE	
US 6102319	A	15-08-2000	NONE	