Feb. 1, 1966 R. L. GORRELL ETAL 3,232,555

SKI ROPE RETRIEVER

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Fig. 1.

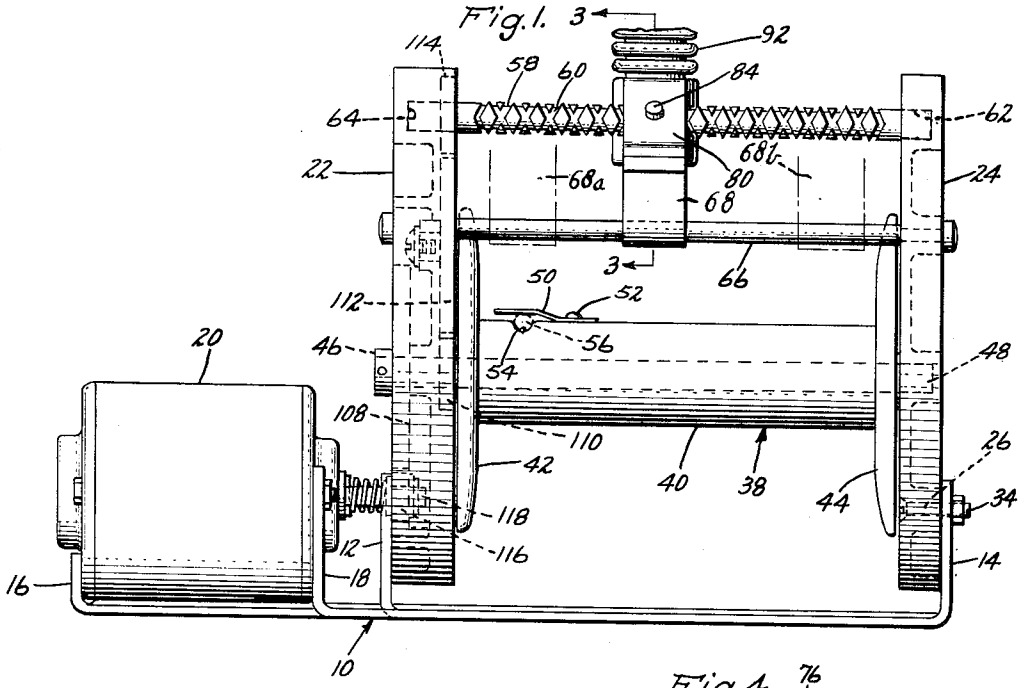


Fig. 4.

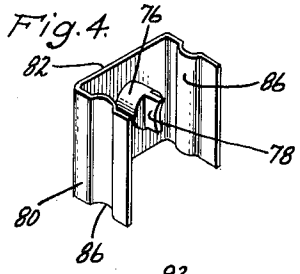


Fig. 2.

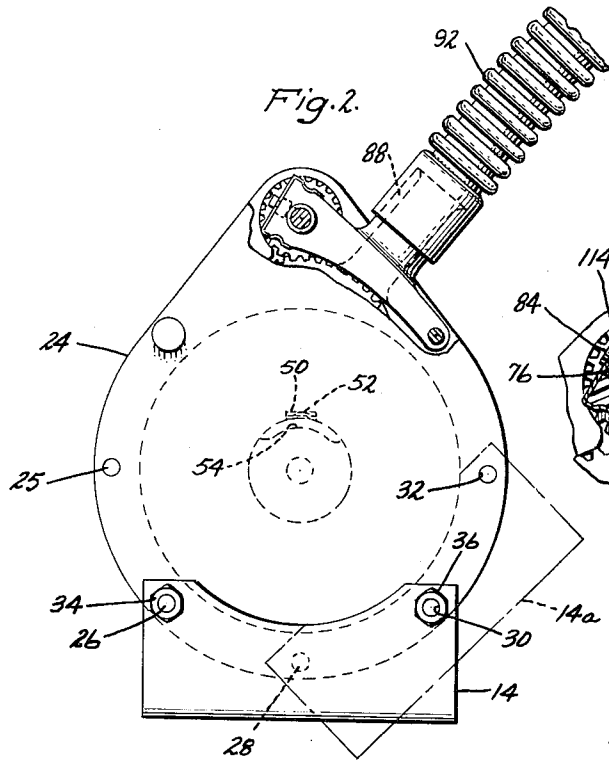
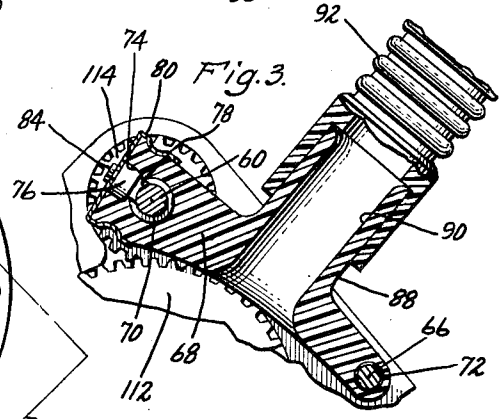


Fig. 3.



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Fig. 8.

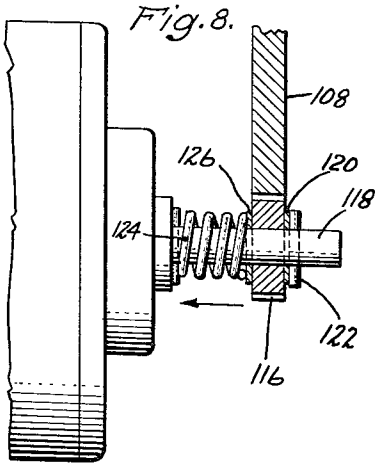


Fig. 7.

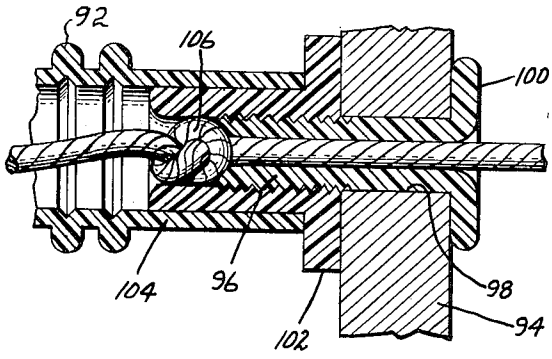


Fig. 5.

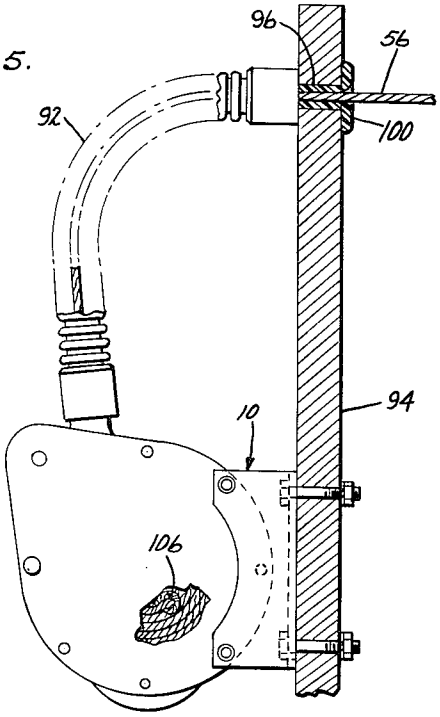
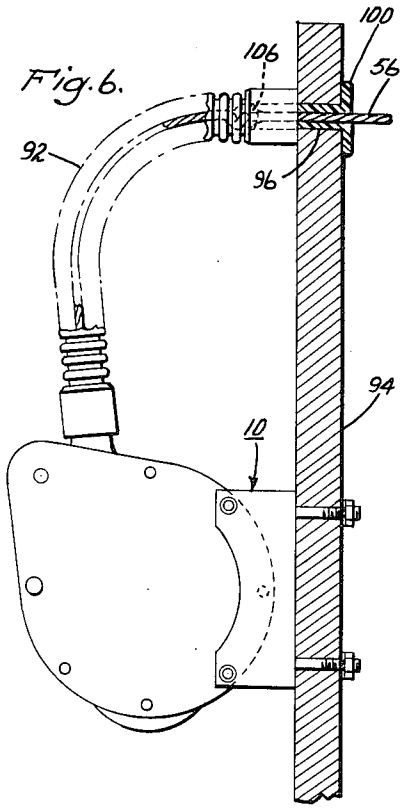


Fig. 6.



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3,232,555

SKI ROPE RETRIEVER

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Filed Jan. 21, 1963, Ser. No. 252,956
19 Claims. (Cl. 242—86.5)

The present invention relates to a ski rope retriever, and more particularly to a reel-type device which may be operated easily selectively to pay out and reel in a ski rope.

Water-ski ropes are conventionally retrieved manually by winding them around a suitable object such as a boat cushion or suitably fabricated frame, or by winding them into loose coils over the hand and elbow. Oftentimes, when the rope is paid out from such manually wound forms, they become snarled and tangled or otherwise knotted to an extent which requires appreciable time and effort in freeing the ropes. This problem is especially true with the newer polyethylene ropes and ropes which have a tendency to twist and tangle while they are being paid out such that it becomes desirable to provide some kind of a retrieving and paying out arrangement which can be performed with facility and without encountering these problems.

It is therefore an object of this invention to provide a ski rope retriever which is inexpensive, fully automatic, reliable and selectively operable for paying out and retrieving a ski rope.

It is another object of this invention to provide a ski rope retriever which may be permanently mounted on a boat or the like and which is constructed and operated in such a manner as to prevent damage to the rope, eliminate snarls and knots which normally inadvertently occur, and materially reduce the time of paying out and retrieving.

It is still another object of this invention to provide a ski rope retriever which embodies a load-taking device in combination with a reel, these structures being uniquely incorporated into an assembly wherein the reel carries the rope during storage and the load-taking device automatically takes the load of the skier when the rope is unwound from the reel, thereby effectively isolating skier loads from the reel structure itself.

Other objects will become apaprent as the description proceeds.

The above-mentioned and other features and objects of this invention and the manner of attaining them will become more apparent and the invention itself will be best understood by reference to the following description of an embodiment of the invention taken in conjunction with the accomapnying drawings, wherein:

FIG. 1 is a front elevation of one embodiment of this invention;

FIG. 2 is an end view thereof partly sectioned for clarity;

FIG. 3 is a fragmentary sectional illustration taken substantially along section line 3—3 of FIG. 1;

FIG. 4 is a perspctive view of the follower-pin retainer;

FIG. 5 is an end view, partly sectioned for clarity, of the retriever, of FIG. 1 mounted on the transom of a boat;

FIG. 6 is a view similar to that of FIG. 5 but showing the skiing rope fully paid out for towing a skier;

FIG. 7 is an enlarged fragmentary sectional illustration of the load-taking device of the preceding FIGS. 5 and 6; and

FIG. 8 is an enlarged fragmentary illustration, partly sectioned, of a slip-clutch mechanism used in the arrangement of FIG. 1.

Referring to the drawings, and more particularly to FIGS. 1 and 2, a frame, generally indicated by the reference numeral 10, is fabricated of relatively strong sheet steel. Either secured to or as an integral part of this frame are two, spaced-apart, parallel and upstanding mounting flanges 12 and 14. To the left of the flange 12 as shown in FIG. 1 are two additional flanges 16 and 18 to which are rigidly secured by means of bolts or the like the opposite ends of a suitable electric motor 20.

Two end plates 22 and 24 which are formed preferably a suitably rigid and durable plastic material are fastened to the two mounting flanges 12 and 14, respectively. For mounting these end plates 22 and 24 to the respective flanges, equally angularly spaced holes 25, 26, 28, 30 and 32 (FIG. 2) are provided in both end plates, these holes being arranged in pairs 25–28, 26–30, and 28–32, the spacing between the holes of each pair being equal. Companion spaced apart holes are also provided in the flanges 12 and 14 which coincide precisely with any selected pair of end plate holes. As shown in FIG. 2, the hole pair 26–30 in the end plate 24 coincides with two companion holes in the flange 14, these aligned holes receiving nut and bolt assemblies 34 and 36, respectively, for securing the end plate 24 to the flange 14. The end plate 22 and the flange 12 are provided with substantially identical holes and bolts for securing the end plate 22 to the flange 12. The reason for this particular mounting arrangement will be explained more fully hereinafter.

Journaled for rotation in the end plates 22 and 24 is a spool generally indicated by the numeral 38 composed of the barrel 40 and opposite end flanges 42 and 44. The end flanges 42 and 44 are positioned adjacent the respective end plates 22 and 24, and the barrel 40 is provided with oppositely axially extended shaft portions 46 and 48 which are journaled in bearing sockets in the respective end plates 22 and 24.

Near the left-hand end of the barrel 40 as viewed in FIG. 1 is a preformed spring 50 which is secured to the barrel by means of a rivet, screw or the like 52. The barrel also is provided with a notch 54 immediately beneath the free end of the spring 50 for the purpose of receiving one end of a rope 56 which is clamped into the notch 54 by means of the spring 50.

An elongated traversing screw 60 having conventional reversing threads 58 thereon is journaled at its opposite ends in the end plates 22 and 24 as shown. The right-hand end as seen in FIG. 1 of the screw 60 is received by a socket 62 in the end plate 24 which prevents rightward movement of the screw, while the left-hand end of the screw 60 fits into a similar socket 64 in the end plate 22 which prevents leftward movement of the screw 60. By means of these sockets, the screw 60 is retained in place for rotation only about its axis. Suffice it to say, the screw 60 is arranged parallel to the spool 38.

A guide rod 66 is secured at its opposite ends to the end plates 22 and 24, respectively, and is spaced from and parallel to the screw 60.

Operatively mounted on the screw 60 and rod 66 is a follower 68 which preferably is formed of a suitable plastic material. This follower 68 is provided with spaced-apart and parallel bores 70 and 72 which slidably receive the traversing screw 60 and guide rod 66 respectively. The left-hand end portion of the follower as viewed in FIG. 3 is also provided with a detent bore 74 which extends at right angles to and intersects the bore 70. This bore 74 slidably receives a follower pin 76 having a thread segment 78 on the inner end thereof which meshes with the threads in the screw 60.

For retaining the follower pin 76 in its bore 74, a U-shaped spring clip 80 is used. The base 82 of this clip is

preferably flat and provided with a central aperture which receives a reduced diameter portion 84 of the pin 76 therethrough. The arms of the clip are provided with inwardly curved detent portions 86 which are preformed such as to snap into companion, retaining recesses in the left-hand end portion of the follower 68 as shown. When the spring clip 80 is snapped into place as shown in FIGS. 2 and 3, the follower pin 76 is retained into engagement with the traversing screw 60. If it should be desired to slide the follower 68 on the traversing screw without the follower pin 76 being in meshing engagement therewith, it is only necessary to remove the spring clip 80 and to withdraw the follower pin 76 from its bore 74 for freeing the follower to slide longitudinally on the screw 60.

Again referring to FIG. 3, the follower 68 is provided with a nozzle 88 having a passage 90 which extends in a direction which is approximately tangential with respect to the barrel 40 of the spool. While this tangential arrangement is preferred, it will appear obvious to a person skilled in the art that the angle of the passage 90 may be altered slightly with respect to the spool axis, and this angle can vary from one that is truly radial to another which is tangential to the outermost peripheral portions of the flanges 42, 44 or the coil and rope which is wound on the spool.

A short length or section of flexible tubing 92, preferably formed of plastic, is fitted or telescoped over nozzle 88 as shown more clearly in FIG. 3. This fit should be secure inasmuch as the tubing end must traverse with follower 68 in operation of the mechanism.

As shown in FIGS. 5 and 6, a preferred method of mounting the retriever on a boat comprises securing the frame 10 to the boat transom 94. A tubular member or eyelet 96 is fitted into an opening 98 drilled through the transom and carries an annular flange 100 which engages the outer side of the transom. The inner end of the eyelet 96 is threaded to receive thereon a nipple 102 which bears against the inner side of the transom 94. By this means, the eyelet 96 is rigidly secured to the transom.

The remaining end 104 of the flexible tubing 92 is secured to the nipple 102 by telescoping the former thereover as shown.

A ski rope 56 (FIG. 1) is secured to the spool 38 at one end and then threaded through the nozzle 90, the tubing 92 and the eyelet 96. A knot 106 is tied in the ski rope 56 as shown more clearly in FIGS. 6 and 7, this knot being too large to pass through the opening in the eyelet 96. However, the passage in the tubing 92 as well as the passage 90 in the nozzle 88 are made large enough to receive the knot 106 therethrough whereby the latter may be wound onto the spool 38 along with the rope 56.

Of importance is the fact that the knot 106 be located in the rope 56 at a location where the end of the rope as shown in FIG. 1 will not be withdrawn from the spool 38 when the knot 106 engages the inner end of the eyelet 96 as shown. Preferably, the knot 106 is located such that the rope will be wrapped onto the spool two or three turns at the time the knot engages the eyelet 96.

The assembly composed of the end plates 22, 24, the spool 38, the traversing screw 60 and the follower 68 resemble a conventional level-wind fishing reel to the extent that the ski rope 56 may be level-wound on the spool 38 in response to rotation of the spool 38 and reciprocating traversal of the follower 68 between the spool flanges 42 and 44. For the purpose of driving the spool 38 and traversing screw 60, a gear train is mounted in the end plate 22 as is shown more clearly in FIG. 1. This gear train is composed of a relatively large gear 108 secured to the shaft portion 46 of the spool, a smaller gear 110 on the same shaft portion, an idler gear 112 suitably journaled in the end plate 22, and another gear 114 which is secured to the screw 60. A driving gear 116 (FIG. 8) is rotatably mounted on motor shaft 118 and meshes with the larger gear 108. A backing washer 120 is mounted on the shaft 118 and is held against rightward movement thereon by means of a suitable pin 122 secured to the shaft. A heilcal compression spring 124 surrounds the shaft 118 and bears at its right-hand end (FIG. 8) against the gear 116 and at its left-hand end against a suitable, annular shoulder on the shaft 118. The force with which the spring 124 engages the gear 116 is made sufficient to clamp frictionally the gear 116 to the shaft 118 such that motor torque may be imparted to the gear 108 for rotating the latter. However, should the gear 108 for some reason be stopped from rotating by reason of an excessive load, the gear 116 will be permitted to slide between the spring 124 and the washer 120. For rendering the slipping torque more uniform, a suitable washer 126 may be interposed between the spring 124 and the gear 116.

In order to provide for freest operation in connection with paying-out and retrieving the ski rope, the angle of the nozzle 90 with respect to the transom 94 may be adjusted by selecting suitable pairs of holes 25–28, 26–30 and 28–32 in the end plates 22 and 24 for mounting the mechanism on the frame flanges 12 and 14. As shown in FIGS. 5 and 6, the hole pairs 28–32 are used such that the angle of the nozzle 88 extends almost parallel to the plane of the transom 94. If the frame 10 were to be mounted on some other part of a boat, such as the deck, floor, seat, framepiece or the like, then particular hole pairs in the end plates would be selected for providing the optimum operating angle of the nozzle with respect to the transom eyelet 96.

In operation, energization of the motor 20 causes rotation of the spool 38 and traversal of the follower 68. A ski rope initially fastened to the barrel 40 of the spool as previously explained is provided with the knot 106, and further is threaded through the nozzle 88, tubing 92 and eyelet 96. Since the ski rope normally is approximately 75 feet long, this means that approximately 75 feet of rope extends outwardly beyond the transom 94. The motor 20 when energized, winds the rope onto the spool 38, the traversal of the follower 68 serving to keep the winding level. When all the rope has been wound in, the motor 20 is de-energized. If desired, a knot or similar abutment may be provided in the rope 56 adjacent the distal end, this knot being of such size as will not pass through the transom eyelet 96. When this knot engages the eyelet, the spool 38 will be stopped in its rotation, thereupon resulting in the friction clutch of FIG. 8 as previously described to slip so as not to damage the motor 20. At this time, the motor 20 should, obviously, be de-energized.

When it is desired to pay out the rope, it is only necessary to withdraw it through the transom eyelet 96 until the knot 106 engages the eyelet. From this point forward, the boat is operated in the conventional manner with the skier holding onto the handle. The knot 106 takes the entire skier load and transfers it to the transom 94, which is the part of the boat which normally takes the skier's load.

While a knot 106 has been found to operate fully satisfactorily, still any type of an abutment secured to the rope and which will not pass through the eyelet 96 is sufficient. Such an abutment could be in the form of a relatively strong metallic ring crimped onto the rope in the proper location.

By means of the arrangement of this invention, the ski rope is level-wound on a spool located in a region of the boat away from all sharp objects. The flexible tubing 92 which extends between the reel and the transom prevents the rope from becoming entangled with wires, steering cords, braces and the like which are found in almost all boats. Furthermore, the tubing 92 possesses just enough stiffness that the rope is at all times maintained in substantial alignment with the nozzle passage 90 thereby contributing to the free movement of the rope to and from the spool. This is indeed an important aspect of the present invention wherein rapid, reliable operation in retrieving is desired. In an operating embodiment of this

invention, less than 30 seconds are required to retrieve a rope which is fully extended.

By providing the unique eyelet-abutment arrangement for the transom, the load of skiing is fully removed from the retriever and is applied directly to the boat transom which is normally regarded as being the strongest part of the boat. An additional advantageous feature of the flexible tube 92 is that the rope is at all times guarded from attritional contact with boat wires and cables which could otherwise be damaged or worn from repeated operations of the retriever.

While we have described above the principles of our invention in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of our invention.

What is claimed is:

1. A ski rope retriever comprising a frame having a pair of spaced-apart parallel mounting flanges, two flat end plates of plastic material secured to said flanges, respectively, in parallel spaced apart relation, each said flange having two spaced apart mounting holes, said end plates having a plurality of spaced apart mounting apertures which are arranged in pairs having a spacing equal to that between said mounting holes of each flange, said plates being mounted on the respective flanges by means of bolts passing through aligned holes and apertures, respectively, a spool having a barrel and opposite end flanges, said barrel having two oppositely extending coaxial shaft portions which are journaled in said end plates for rotatably mounting said spool, said end flanges being disposed adjacent to said end plates, respectively, an elongated traversing screw having reversing threads journaled at its opposite ends in said end plates, respectively, an elongated guide rod having opposite ends mounted in said end plates, respectively, said traversing screw and rod being parallel to each other and to said spool, a follower having two opposite end portions provided with parallel bores, respectively, which slidably receive said screw and rod, respectively, the one end portion which receives said screw having a detent bore which extends at right angles to and intersects the bore in said one end portion, a follower pin slidably received by said detent bore and having a thread segment which meshes with the threads in said screw, a U-shaped spring clip removably forcefully clamped over in straddling relationship said one end portion with the base of said clip retaining said follower pin in said detent bore and into engagement with said threads, the opposite arms of said clip having detent portions which fit into detent recesses in said end portion, a nozzle on said follower between said end portions, said nozzle having a passage therethrough which extends in a direction approximately tangentially of said spool, a section of flexible tubing secured at one end to said nozzle, a transom having an eyelet-abutment assembly secured thereto; said assembly including a tubular member having threads on one end and a flange on the other end, said tubular member passing through a companion hole in said transom with the flange thereof engaging one transom side, a nipple threaded onto said one end of said tubular member and into engagement with the opposite side of said transom; the other end of said flexible tubing being secured to said nipple, a rope passed through said tubular member, said tubing and said nozzle and being secured at one end to said spool, means securely mounting said frame with respect to said transom in a position in which said nozzle extends in a direction transverse to that of said tubular member, said rope having a knot therein which passes through said nozzle and tubing but which is too large to pass through said tubular member, said tubular member serving as an abutment for said knot, the length of said rope between said spool and said knot being greater than the distance from said spool, through said nozzle and tubing to said tubular member, whereby slack rope between said spool and tubular member is assured; a motor mounted on said frame, a gear train mounted in one of said end plates and rotatably connecting said motor, said spool and said traversing screw together, the ratio of said gear train being such as to provide level winding of a rope on said spool, said gear train including a shaft extending from said motor, a spur gear rotatably mounted on said shaft, an abutment on said shaft which is engageable by said spur gear, and a compression spring on said shaft which forces said spur gear into engagement with said abutment thereby providing a slip clutch.

2. A ski rope retriever comprising a frame having a pair of spaced apart parallel mounting flanges, two flat end plates of plastic material secured to said flanges, respectively, in parallel spaced apart relation, each said flange having two spaced apart mounting holes, said end plates having a plurality of spaced apart mounting apertures which are arranged in pairs having a spacing equal to that between said mounting holes of each flange, said plates being mounted on the respective flanges by means of bolts passing through aligned holes and apertures, respectively, a spool having a barrel and opposite end flanges, said barrel having two oppositely extending coaxial shaft portions which are journaled in said end plates for rotatably mounting said spool, said end flanges being disposed adjacent to said end plates respectively, an elongated traversing screw having reversing threads journaled at its opposite ends in said end plates, respectively, an elongated guide rod having opposite ends mounted in said end plates, respectively, said traversing screw and rod being parallel to each other and to said spool, a follower having two opposite end portions provided with parallel bores, respectively, which slidably receive said screw and rod, respectively, the one end portion which receives said screw having a detent bore which extends at right angles to and intersects the bore in said one end portion, a follower pin slidably received by said detent bore and having a thread segment which meshes with the threads in said screw, a U-shaped spring clip removably forcefully clamped over in straddling relationship said one end portion with the base of said clip retaining said follower pin in said detent bore and into engagement with said threads, the opposite arms of said clip having detent portions which fit into detent recesses in said end portion, a nozzle on said follower between said end portions, said nozzle having a passage therethrough which extends in a direction approximately tangentially of said spool, a section of flexible tubing secured at one end to said nozzle, a transom having an eyelet-abutment assembly secured thereto; said assembly including a tubular member having threads on one end and a flange on the other end, said tubular member passing through a companion hole in said transom with the flange thereof engaging one transom side, a nipple threaded onto said one end of said tubular member and into engagement with the opposite side of said transom; the other end of said flexible tubing being secured to said nipple, a rope passed through said tubular member, said tubing and said nozzle and being secured at one end to said spool, means securely mounting said frame with respect to said transom in a position in which said nozzle extends in a direction transverse to that of said tubular member, said rope having a knot therein which passes through said nozzle and tubing but which is too large to pass through said tubular member, said tubular member serving as an abutment for said knot, the length of said rope between said spool and said knot being greater than the distance from said spool, through said nozzle and tubing to said tubular member, whereby slack rope between said spool and tubular member is assured; and means connected to said spool and traversing screw for rotating the same at such relative speeds as will level wind a rope onto the spool.

3. A ski rope retriever comprising a frame having a pair of spaced apart parallel mounting flanges, two flat end plates secured to said flanges, respectively, in parallel

spaced apart relation, a spool having a barrel and opposite end flanges, said barrel having two oppositely extending coaxial shaft portions which are journaled in said end plates for rotatably mounting said spool, said end flanges being disposed adjacent to said end plates respectively, an elongated traversing screw having reversing threads jounraled at its opposite ends in said end plates, respectively, an elongated guide rod having opposite ends mounted in said end plates, respectively, said traversing screw and rod being parallel to each other and to said spool, a follower having two opposite end portions provided with parallel bores, respectively, which slidably receive said screw and rod, respectively, the one end portion which receives said screw having a detent bore which extends at right angles to and intersects the bore in said one end portion, a follower pin slidably received by said detent bore and having a thread segment which meshes with the threads in said screw, a U-shaped spring clip removably forcefully clamped over in straddling relationship said one end portion with the base of said clip retaining said follower pin in said detent bore and into engagement with said threads, the opposite arms of said clip having detent portions which fit into detent recesses in said end portion, a nozzle on said follower between said end portions, said nozzle having a passage therethrough which extends in a direction approximately tangentially of said spool, a section of flexible tubing secured at one end to said nozzle, a transom having an eyelet-abutment assembly secured thereto; said assembly including a tubular member having threads on one end and a flange on the other end, said tubular member passing through a companion hole in said transom with the flange thereof engaging one transom side, a nipple threaded onto said one end of said tubular member and into engagement with the opposite side of said transom; the other end of said flexible tubing being secured to said nipple, a rope passed through said tubular member, said tubing and said nozzle and being secured at one end to said spool, means securely mounting said frame with respect to said transom in a position in which said nozzle extends in a direction transverse to that of said tubular member, said rope having a knot therein which passes through said nozzle and tubing but which is too large to pass through said tubular member, said tubular member serving as an abutment for said knot, the length of said rope between said spool and said knot being greater than the distance from said spool, through said nozzle and tubing to said tubular member, whereby slack rope between said spool and tubular member is assured; and means connected to said spool and transversing screw for rotating the same at such relative speeds as will level wind a rope onto the spool.

4. A ski rope retriever comprising a frame having a pair of spaced apart parallel mounting flanges, two flat end plates secured to said flanges, respectively, in parallel spaced apart relation, a spool having a barrel and opposite end flanges, said barrel having two oppositely extending coaxial shaft portions which are journaled in said end plates for rotatably mounting said spool, said end flanges being disposed adjacent to said end plates respectively, an elongated traversing screw having reversing threads journaled at its opposite ends in said end plates, respectively, an elongated guide rod having opposite ends mounted in said end plates, respectively, said traversing screw and rod being parallel to each other and to said spool, a follower having two opposite end portions provided with parallel bores, respectively, which slidably receive said screw and rod, respectively, the one end portion which receives said screw having a detent bore which extends at right angles to and intersects the bore in said one end portion, a follower pin slidably received by said detent bore and having a thread segment which meshes with the threads in said screw, a U-shaped spring clip removably forcefully clamped over in straddling relationship said one end portion with the base of said clip retaining said follower pin in said detent bore and into engagement with said threads, the opposite arms of said clip having detent portions which fit into detent recesses in said end portion, a nozzle on said follower between said end portions, said nozzle having a passage therethrough which extends in a direction approximately tangentially of said spool, a section of flexible tubing secured at one end to said nozzle, a transom having an eyelet-abutment assembly secured thereto; said assembly having an opening therethrough and a nipple onto which the other end of said flexible tubing is fitted, a rope passed through said assembly, said tubing, and said nozzle and being secured at one end to said spool, said rope having an abutment secured thereto which is larger than the opening in said assembly but small enough to pass through said nozzle and tubing, the length of said rope between said spool and said abutment being greater than the distance from said spool, through said nozzle and tubing to said assembly, whereby slack rope between said spool and assembly is assured.

5. A ski rope retriever comprising a frame having a pair of spaced apart parallel mounting flanges, two flat end plates secured to said flanges, respectively, in parallel spaced apart relation, a spool having a barrel and opposite end flanges, said barrel having two oppositely extending coaxial shaft portions which are journaled in said end plates for rotatably mounting said spool, said end flanges being disposed adjacent to said end plates respectively, an elongated traversing screw having reversing threads journaled at its opposite ends in said end plates, respectively, an elongated guide rod having opposite ends mounted in said end plates, respectively, said traversing screw and rod being parallel to each other and to said spool, a follower having two opposite end portions provided with parallel bores, respectively, which slidably receive said screw and rod, respectively, the one end portion which receives said screw having a detent bore which extends at right angles to and intersects the bore in said one end portion, a follower pin slidably received by said detent bore and having a thread segment which meshes with the threads in said screw, a U-shaped spring clip removably forcefully clamped over in straddling relationship said one end portion with the base of said clip retaining said follower pin in said detent bore and into engagement with said threads, the opposite arms of said clip having detent portions which fit into detent recesses in said end portion, a nozzle on said follower between said end portions, said nozzle having a passage therethrough which extends in a direction approximately tangentially of said spool, a section of flexible tubing secured at one to said nozzle, a transom having an eyelet-abutment assembly secured thereto; said assembly having an opening therethrough and a nipple onto which the other end of said flexible tubing is fitted.

6. A ski rope retriever comprising a frame having a pair of spaced apart parallel mounting flanges, two flat end plates secured to said flanges, respectively, in parallel spaced apart relation, a spool having a barrel and opposite end flanges, said barrel having two oppositely extending coaxial shaft portions which are journaled in said end plates for rotatably mounting said spool, said end flanges being disposed adjacent to said end plates respectively, an elongated traversing screw having reversing threads journaled at its opposite ends in said end plates, respectively, an elongated guide rod having opposite ends mounted in said end plates, respectively, said traversing screw and rod being parallel to each other and to said spool, a follower having two opposite end portions provided with parallel bores, respectively, screw thread means removably mounted onto said follower for engagement with the threads of said traversing screw, a nozzle on said follower between said end portions, said nozzle having a passage therethrough which extends in a direction approximately tangentially of said spool, a section of flexible tubing secured at one end to said nozzle, a transom having an eyelet-abutment assembly secured thereto; said assembly having an opening therethrough and a nipple onto which the other end of said flexible tubing is fitted.

7. A ski rope retriever comprising a frame having a pair of spaced apart parallel mounting flanges, two flat end plates of plastic material secured to said flanges, respectively, in parallel spaced apart relation, each said flange having two spaced apart mounting holes, said end plates having a plurality of spaced apart mounting apertures which are arranged in pairs having a spacing equal to that between said mounting holes of each flange, said plates being mounted on the respective flanges by means of bolts passing through aligned holes and apertures, respectively a spool having a barrel and opposite end flanges, said barrel having two oppositely extending coaxial shaft portions which are journaled in said end plates for rotatably mounting said spool, said end flanges being disposed adjacent to said end plates respectively, an elongated traversing screw having reversing threads journaled at its opposite ends in said end plates, respectively, an elongated guide rod having opposite ends mounted in said end plates, respectively, said traversing screw and rod being parallel to each other and to said spool, a follower having two opposite end portions provided with parallel bores, respectively, which slidably receive said screw and rod, respectively, the one end portion which receives said screw having a detent bore which extends at right angles to and intersects the bore in said one end portion, a follower pin slidably received by said detent bore and having a thread segment which meshes with the threads in said screw, a U-shaped spring clip removably forcefully clamped over in stradding relationship said one end portion with the base of said clip retaining said follower pin in said detent bore and into engagement with said threads, the opposite arms of said clip having detent portions which fit into detent recesses in said end portion, a nozzle on said follower between said end portions, said nozzle having a passage therethrough which extends in a direction approximately tangentially of said spool, and means for rotating said spool and screw at a predetermined relative rate.

8. A ski rope retriever comprising a frame having a pair of spaced apart parallel mounting flanges, two flat end plates of plastic material secured to said flanges, respectively, in parallel spaced apart relation, each said flange having two spaced apart mounting holes, said end plates having a plurality of spaced apart mounting apertures which are arranged in pairs having a spacing equal to that between said mounting holes of each flange, said plates being mounted on the respective flanges by means of bolts passing through aligned holes and apertures, respectively, a spool having two oppositely extending coaxial shaft portions which are journaled in said end plates, an elongated traversing screw having reversing threads journaled at its opposite ends in said end plates, respectively, an elongated guide rod having opposite ends mounted in said end plates, respectively, said traversing screw and rod being parallel to each other and to said spool, a follower having two opposite end portions provided with parallel bores, respectively, which slidably receive said screw and rod, respectively, means for threadedly engaging said follower with said screw, a nozzle on said follower and having a passage extending in a direction generally tangentially of said spool, and a section of flexible tubing secured at one end to said nozzle for providing an extension of the nozzle passage.

9. A ski rope retriever comprising a frame having two spaced apart end supports, a spool journaled in said end supports for rotation about a given axis, an elongated traversing screw having reversing threads, said screw being journaled in said end supports for rotation about its axis, said screw being parallel to said spool, a follower mounted on said screw for movement longitudinally thereof, said follower having a follower pin mounted therein which disengageably meshes with the threads of said screw, means yieldably urging said follower pin into meshing engagement with said threads, means on said frame for guiding said follower longitudinally of said screw, a rope-receiving aperture in said follower, a section of flexible tubing secured at one end to said follower in registry with said aperture, and means providing an aperture in the other end of said section of a size smaller than the passage in said tubing and the aforesaid aperture in said follower.

10. A ski rope retriever comprising a frame having two spaced apart end supports, a spool journaled in said end supports for rotation about a given axis, an elongated traversing screw having reversing threads, said screw being journaled in said end supports for rotation about its axis, said screw being parallel to said spool, a follower mounted on said screw for movement longitudinally thereof, said follower having a follower pin mounted therein which disengageably meshes with the threads of said screw, means yieldably urging said follower pin into meshing engagement with said threads, means on said frame for guiding said follower longitudinally of said screw, a rope-receiving aperture in said follower, a section of flexible tubing secured at one end to said follower is registry with said aperture, means providing an aperture in the other end of said section of a size smaller than the passage in said tubing and the aforesaid aperture in said follower, and a rope threaded through said tubing and both of said apertures, said rope being fastened at one end to said spool, said rope further having an abutment thereon of a size which passes through said rope-receiving aperture and said tubing but which will not pass through said smaller aperture, said rope abutment being disposed to move through said tubing and rope-receiving aperture in opposite directions between said spool and said smaller aperture.

11. The retriever of claim 10 and including a rigid structure on which said frame and end supports are securely mounted, said aperture means being fixed secured to said structure at a location spaced from said frame and end supports.

12. The retriever of claim 10 and including a rigid structure on which said frame and end supports are securely mounted, said aperture means being fixedly secured to said structure at a location spaced from said frame and end supports, and means for adjusting the position of said follower with respect to said aperture means.

13. A ski rope retriever comprising a frame having a pair of spaced apart parallel mounting flanges, two flat end plates secured to said flanges, respectively, in parallel spaced apart relation, a spool having a barrel and opposite end flanges, said barrel having two oppositely extending coaxial shaft portions which are journaled in said end plates for rotatably mounting said spool, said end flanges being disposed adjacent to said end plates respectively, an elongated traversing screw having reversing threads journaled at its opposite ends in said end plates, respectively, an elongated guide rod having opposite ends mounted in said end plates, respectively, said traversing screw and rod being parallel to each other and to said spool, a follower having two opposite end portions provided with parallel bores, respectively, which slidably receive said screw and rod, respectively, means threadedly connecting said follower to said screw, a nozzle on said follower between said end portions, said nozzle having a passage therethrough which extends in a direction approximately tangentially of said spool, a section of flexible tubing secured at one end to said nozzle, a transom having an eyelet-abutment assembly secured thereto; said assembly having an opening therethrough and a nipple onto which the other end of said flexible tubing is fitted.

14. A ski rope retriever comprising a frame having a pair of spaced apart parallel mounting flanges, two flat end plates secured to said flanges, respectively, in parallel spaced apart relation, a spool having a barrel and opposite end flanges, said barrel having two oppositely extending coaxial shaft portions which are journaled in said end plates for rotatably mounting said spool, said end flanges being disposed adjacent to said end plates respectively,

an elongated traversing screw having reversing threads journaled at its opposite ends in said end plates, respectively, an elongated guide rod having opposite ends mounted in said end plates, respectively, said traversing screw and rod being parallel to each other and to said spool, a follower having two opposite end portions provided with parallel bores, respectively, which slidably receive said screw and rod, respectively, means threadedly connecting said follower to said screw, said follower having an opening therethrough, a section of flexible tubing attached at one end to said follower in registry with the opening thereof, a transom having an eyelet-abutment assembly secured thereto; said assembly having an opening therethrough and a nipple onto which the other end of said flexible tubing is fitted.

15. A ski rope retriever comprising a frame having a pair of spaced apart parallel mounting flanges, two flat end plates secured to said flanges, respectively, in parallel spaced apart relation, a spool having a barrel and opposite end flanges, said barrel having two oppositely extending coaxial shaft portions which are journaled in said end plates for rotatably mounting said spool, said end flanges being disposed adjacent to said end plates respectively, an elongated traversing screw having reversing threads journaled at its opposite ends in said end plates, respectively, an elongated guide rod having opposite ends mounted in said end plates, respectively, said traversing screw and rod being parallel to each other and to said spool, a follower having two opposite end portions provided with parallel bores, respectively, which slidably receive said screw and rod, respectively, means threadedly connecting said follower to said screw, said follower having an opening therethrough, a section of flexible tubing attached at one end to said follower in registry with the opening thereof, an abutment device having an opening therethrough, the other end of said section of flexible tubing being attached to said abutment device in registry with the opening therethrough.

16. A ski rope retriever comprising a level-wind reel having a follower, said follower having an opening therethrough, a section of flexible tubing attached at one end to said follower in registry with the opening thereof, an abutment device having an opening therethrough, the other end of said section of flexible tubing being attached to said abutment device in registry with the opening therethrough.

17. A ski rope retriever comprising a frame, a level-wind reel having a follower, means for mounting said reel onto said frame and for adjusting the position of said follower with respect to said frame, said follower having an opening therethrough, a section of flexible tubing attached at one end to said follower in registry with the opening thereof, an abutment device having an opening therethrough, the other end of said section of flexible tubing being attached to said abutment device in registry with the opening therethrough.

18. A ski rope retriever comprising a frame having a pair of spaced apart parallel mounting flanges, two flat end plates secured to said flanges, respectively, in parallel spaced apart relation, a spool having a barrel and opposite end flanges, said barrel having two oppositely extending coaxial shaft portions which are journaled in said end plates for rotatably mounting said spool, said end flanges being disposed adjacent to said end plates respectively, an elongated traversing screw having reversing threads journaled at its opposite ends in said end plates, respectively, an elongated guide rod having opposite ends mounted in said end plates, respectively, said traversing screw and rod being parallel to each other and to said spool, a follower having two opposite end portions provided with parallel bores, respectively, which slidably receive said screw and rod, respectively, the one end portion which receives said screw having a detent bore which extends at right angles to and intersects the bore in said one end portion, a follower pin slidably received by said detent bore and having a thread segment which meshes with the threads in said screw, a U-shaped spring clip removably forcefully clamped over in straddling relationship said one end portion with the base of said clip retaining said follower pin in said detent bore and into engagement with said threads, the opposite arms of said clip having detent portions which fit into detent recesses in said end portion, a nozzle on said follower between said end portions, said nozzle having a passage therethrough which extends in a direction approximately tangentially of said spool, a section of flexible tubing secured at one end to said nozzle, an abutment device having an opening therethrough, the other end of said flexible tubing being fitted to said abutment device.

19. A ski rope retriever comprising a frame having a pair of spaced apart parallel mounting flanges, two flat end plates secured to said flanges, respectively, in parallel spaced apart relation, a spool having a barrel and opposite end flanges, said barrel having two oppositely extending coaxial shaft portions which are journaled in said end plates for rotatably mounting said spool, said end flanges being disposed adjacent to said end plates respectively, an elongated traversing screw having reversing threads journaled at its opposite ends in said end plates, respectively, an elongated guide rod having opposite ends mounted in said end plates, respectively, said traversing screw and rod being parallel to each other and to said spool, a follower having two opposite end portions provided with parallel bores, respectively, which slidably receive said screw and rod, respectively, the one end portion which receives said screw having a detent bore which extends at right angles to and intersects the bore in said one end portion, a follower pin slidably received by said detent bore and having a thread segment which meshes with the threads in said screw, a U-shaped spring clip removably forcefully clamped over in straddling relationship said one end portion with the base of said clip retaining said follower pin in said detent bore and into engagement with said threads, the opposite arms of said clip having detent portions which fit into detent recesses in said end portion, a nozzle on said follower between said end portions, said nozzle having a passage therethrough which extends in a direction approximately tangentially of said spool.

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