Aug. 26, 1952 R. P. WOODRUFF 2,608,162

SKI TOW-ROPE CLAMP

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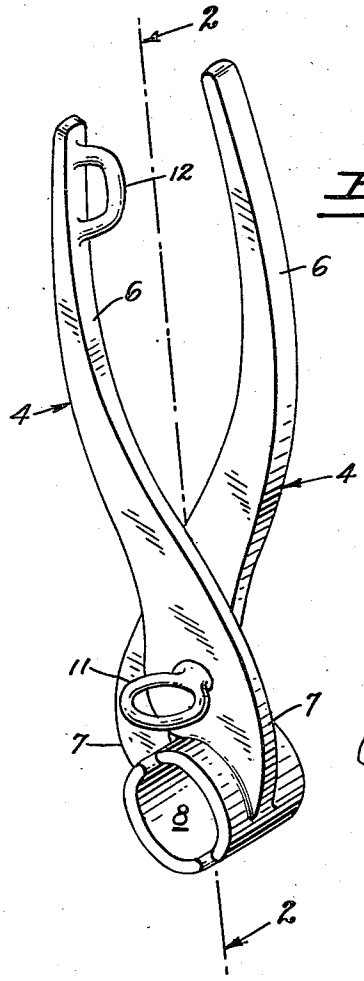


Fig. 1.

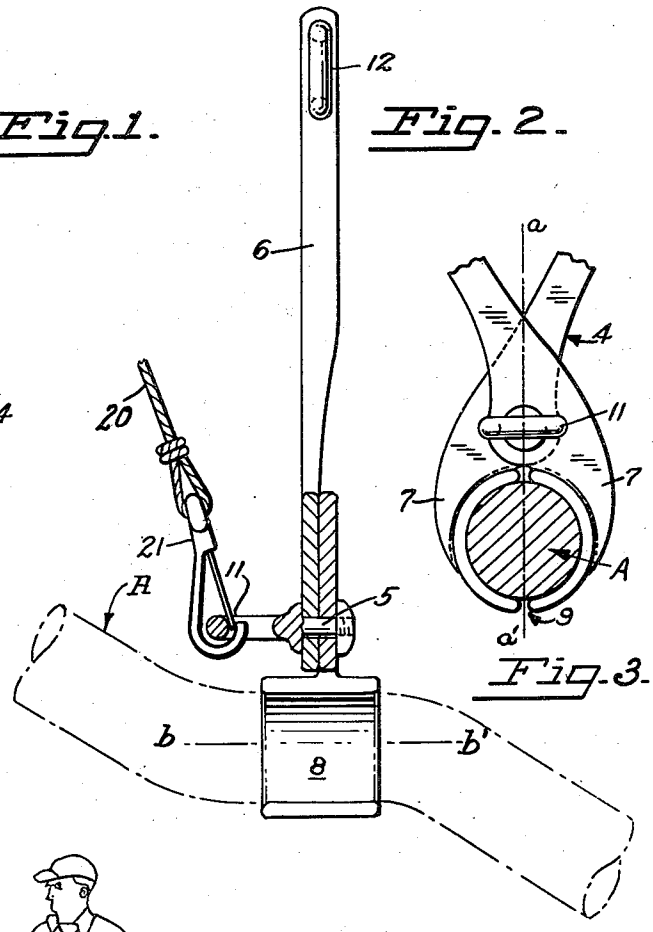


Fig. 2.

Fig. 3.

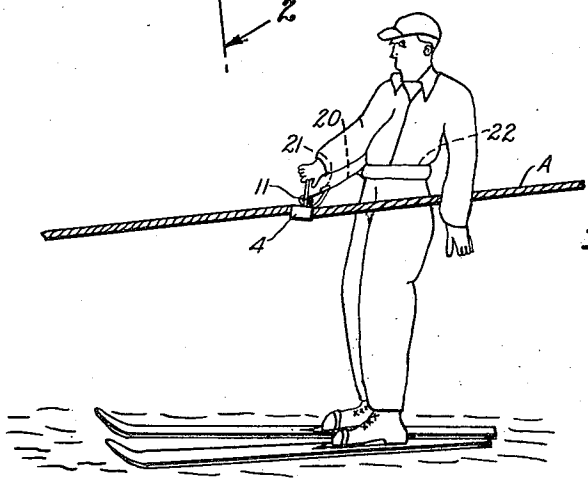


Fig. 4.

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SKI TOW-ROPE CLAMP

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1 Claim. (Cl. 104—217)

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This invention relates to an improved ski tow-rope gripping device.

The particular embodiment of my invention, which is illustrated in the drawings and which will be described hereinafter in greater detail, comprises, generally, a pincer-like instrument comprising a pair of crossed, pivotally attached levers which form two handles and two gripping jaws. The gripping jaws of the device, in turn, are provided with two complementary arcuate bearing surfaces having a radii of curvatures appropriate to grip effectively a ski tow-rope. An attaching member, such as an eyelet, is rigidly secured to the device proximate the point of pivotal attachment between the crossed levers and is adapted to permit securing thereto of a line which connects to the body of a user.

A principal object of the present invention is to provide a ski tow-rope gripper which is constructed so as to be immediately releasable from a ski tow-rope upon manual release of either of the handles of the device. Such a construction is particularly advantageous in that there is no possibility whatsoever of a skier not being able to release himself instantly from the rope when desired or when such becomes necessary.

Another object of the present invention is to provide a ski tow-rope gripper which may be clamped to a tow-rope in such a manner that the handle portions of the device may be held in a position projected laterally outwardly from the rope, or, if it is found more convenient a user may hold the device with the lengthwise axes of the handles projecting upwardly or downwardly and substantially normal to the axis of the rope.

Another object of the invention is to provide a ski tow-rope gripping device of the character hereinabove briefly described, wherein a body connecting line, which normally connects the body of a user to the instrument, is adapted to be attached to the device at a point thereon proximate the fulcrum or point of pivotal attachment of the crossed levers. Such an arrangement of parts constitutes a valuable element of my invention in that no amount of pull exerted on the instrument, via the body connecting line, will affect the pincer action of the instrument against the rope.

A further object of the present invention is to provide a gripping device which is exceedingly rugged in its construction, which may be manufactured relatively inexpensively, and which requires little or no skill or practice to operate properly, efficiently, and safely.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings in which similar characters of reference represent corresponding parts in each of the several views:

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Referring to the drawings:

Fig. 1 is a perspective view of the device.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1 showing the instrument in association with a tow-rope which is indicated fragmentarily in broken lines.

Fig. 3 is a fragmentary side elevational view of the gripping end of the device.

Fig. 4 is a sketch showing; a skier, a tow-rope, my improved clamp and a body connecting line, connecting said clamp to the belt of the skier.

Referring now more specifically to the drawings, the present invention comprises essentially a pincer-like instrument which, in turn, comprises a pair of crossed levers, indicated generally at 4, which are pivotally secured to one another by a pin 5. More specifically, the crossed levers 4 form a pair of handles, indicated at 6, and two gripping jaws, indicated at 7.

Each gripping jaw 7 is provided with an elongated arcuate gripping surface 8, and the point of closure and departure between the gripping jaws, indicated at 9, is disposed along a line drawn medially of handles 6 and pivot pin 5. This line is indicated at *a*—*a'* in Fig. 3. The bearing axis, indicated by the line *b*—*b'* in Fig. 2, of each arcuate gripping surface is disposed substantially normal to line *a*—*a'*. Preferably the length of each gripping surface 8 (considering the length of each surface as extending in the direction of line *b*—*b'*) should be not less than double the radius of curvature of each identically formed arcuate gripping surface 8. Assuming first that the diameter of a conventional ski tow-rope indicated generally at A, to be substantially one inch, the radius of curvature of each bearing surface 8 should be not greater than one-half inch and preferably a little less than one-half inch in order to insure that the gripping jaws will securely clamp around and bind against the tow-rope before closing against one another at their point of closure and departure 9. Further assuming, therefore, and for purposes of example only, that the radius of each arcuate or semi-circular bearing surface 8 is one-half inch or slightly less, then it follows that the length of each surface, measured along line *b*—*b'* should not be less than one inch.

By making the length of the bearing surfaces not less than double the radius of curvature of each of the gripping surfaces, there is not only

established a relatively large and extensive gripping area sufficient to effectively engage frictionally a rope and prevent undue slippage of the rope through the jaws, but the increased lengths of the gripping surfaces permits a secure and firm clamping of the device around a rope without causing the latter to kink or bend unduly when a towing strain is exerted on the device. In other words, the handles of the device may be maintained in a position disposed substantially normal to and maintained in a position projected outwardly from the rope so that a user's hand when grasping the handles is not subjected to continuous chafing or rubbing against the rope during towing operations.

An attaching member comprising an eyelet **11** is rigidly secured to the pincer-like instrument proximate the point of its pivotal attachment **5**. More specifically, eyelet **11** may be formed integral with pivot pin **5** which constitutes or defines the fulcrum point of the crossed levers **4**.

In normal use a user will secure a line such as indicated at **20** from belt **22**, about his body to eyelet **11** by means of a hook element **21** or by other suitable attaching means, to establish a direct towing means from the rope to the body which alleviates or eases the pulling strain which would otherwise be placed solely on the arms of a user. The particular manner or mode in which body connecting line **20** may be secured to the body or belt of a user is not considered a feature of the present invention. Body connection lines similar to presently disclosed line **20** are well known in the art, and both U. S. Patent No. 2,458,786, issued to E. E. Lagergren, dated January 11, 1949, and U. S. Patent No. 2,230,024, issued to C. J. Bousquet, dated January 28, 1941, illustrate conventional body connecting lines and specific ways in which such lines may be connected to the body or belt of a user.

It is noted in respect to the above that any pull exerted on the gripper via a body connecting line secured to eyelet **11** is transmitted to the device at the fulcrum point of the crossed levers and, therefore, no amount of pull or pressure exerted on the device through the body connecting line will affect the leverage action of the crossed levers **6**. Were the pull of the connecting line transmitted to the device at a point thereon located along one of the handles or gripping jaws, it is obvious that such a strain would tend either to force the gripping jaws open, or conversely, tend to force them more tightly together.

It is believed that the operation of the device has become self-evident from the foregoing description. It will suffice to state further that a user need usually only have to employ one hand

to operate the opening and closing of the device around the rope. During towing operations a user need only maintain relatively little manual pressure against the two handles of the device to keep the gripping jaws effectively clamped against the rope and to prevent them from springing apart. It is noted in this latter respect that a particular advantage of this invention is that although only relative little manual exertion is required to keep the gripping jaws firmly clamped around a tow-rope, that nevertheless, upon manual release of either of the handles **6**, the gripping jaws will instantly spring open and the device will release itself immediately from the tow-rope.

The present invention enables easy control on the part of the skier being towed. As for example, the skier may easily check his speed of ascent to avoid bumpy terrain by merely allowing the handle of the gripper to assume a more perpendicular position with respect to the plane of the two-rope thereby allowing the rope to slide through the rope bearing surface. When the skier is ready to proceed up the path again at an increased speed, he may merely pull the handles to kink the rope and to thereby establish positive frictional contact between the gripper and the rope.

Although I have described my invention in some detail by way of illustration and example for purpose of clarity of understanding, it is understood that certain changes and modifications may be practiced within the spirit of the invention and scope of the appended claim.

I claim:

A device for gripping a ski tow-rope comprising; a pincer-like instrument comprising a pair of crossed levers, a pivot pin attaching said levers pivotally to one another about a common fulcrum forming two handles and two gripping jaws, an eyelet formed integral with the pivot pin to permit the securing of a connecting line between the device and a skier's belt.

ROY P. WOODRUFF.

REFERENCES CITED

The following references are of record in the file of this patent:

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2,458,786	Lagergren	Jan. 11, 1949