June 18, 1940. L. G. CHALCHOFF 2,204,663

CLAMPING DEVICE

Filed Dec. 30, 1938

FIG. 1.

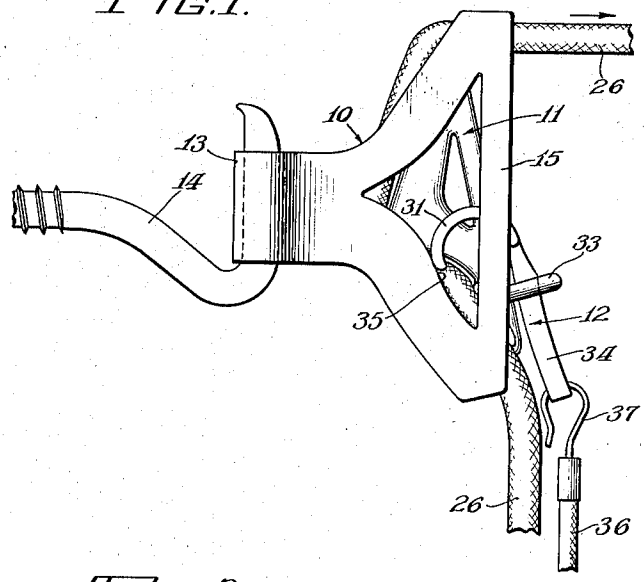


FIG. 2.

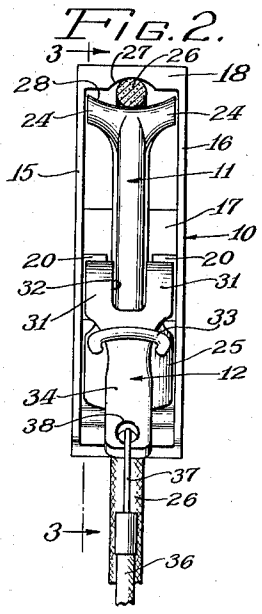


FIG. 3.

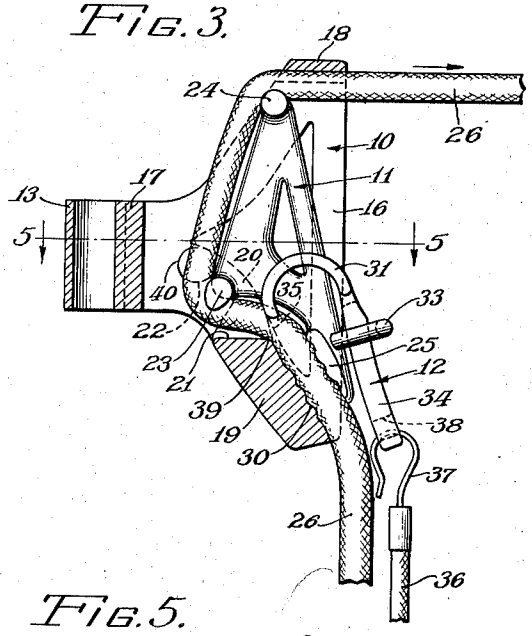


FIG. 4.

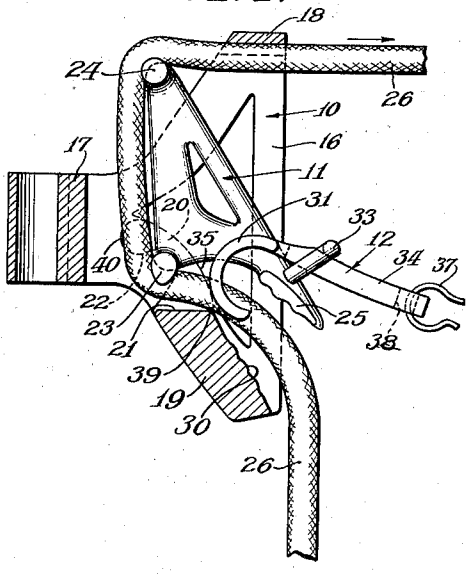
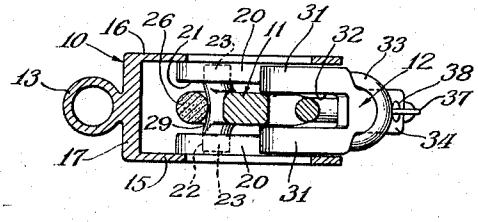


FIG. 5.



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Patented June 18, 1940 2,204,663

UNITED STATES PATENT OFFICE

2,204,663

CLAMPING DEVICE

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Application December 30, 1938, Serial No. 248,541

4 Claims. (Cl. 24—133)

This invention relates to clamping devices particularly adapted for retaining ropes, lines, or the like.

The clamping devices contemplated by my invention exert a frictional retaining force or "grip" on a rope or the like passed thereinto that is proportional to the stress or tension in the rope or the like, this frictional force being produced by a lever or equivalent device which presses against the rope or the like at one point thereof and which affords a leverage through which the pull exerted by the line is effective to clamp the rope at that point. When it is required to release the rope or line from the grip of the clamp, the lever or like member is moved against the tension of the line and into a position where it will no longer be in clamping engagement with the line.

The principal object of this invention is to provide a novel clamping device which is adaptable to a wide variety of uses where quick action is required in fastening a line or rope, and which is made up of parts that are simple, inexpensive and few in number.

Another object is to enable a clamping device of the type described above to be expeditiously released when it is required to free the line or rope from the grip of the clamp.

Further objects and advantages will be apparent from the following description, taken in connection with the accompanying drawing in which

Fig. 1 is a side elevation of my novel clamp structure;

Fig. 2 is a front elevation of the clamp;

Fig. 3 is a vertical sectional view taken along the line 3—3 of Fig. 2 and showing the clamp in closed position;

Fig. 4 is a vertical sectional view similar to Fig. 3 but showing the clamp in open position; and

Fig. 5 is a plan sectional view taken along the line 5—5 of Fig. 3.

In the preferred embodiment of my invention illustrated herein, the clamp comprises a frame 10, a clamping lever 11, and a hook-shaped releasing member 12. An eye 13 soldered, brazed or otherwise secured to the frame 10 receives a hook 14 which is utilized to secure the clamp in the position of use. The several parts are preferably constructed of suitable rust-resisting material, such as brass or copper-plated steel or the like.

The frame 10 includes two triangularly shaped side members 15 and 16 which are joined at the narrow ends thereof by a crosspiece 17, to which the eye 13 is secured. Another crosspiece 18 connects the side members 15 and 16 at one extremity of the widened portions thereof. A block or shoulder 19 joins the other extremities of the widened portions of the side members 15 and 16 and, as best shown in Figs. 3 to 5, the shoulder 19 has extensions as 20 between which a longitudinal opening or throat 21 is defined. A socket as 22 is provided on the underside of each of the extensions 20.

The clamping lever 11 has pivot pins 23 extending therefrom substantially midway between the ends thereof. When the lever 11 is assembled in the frame 10, the pins 23 seat in the sockets as 22 on the undersides of the extensions 20. As shown in Figs. 2 to 4, a pair of lugs 24 are provided at the upper extremity of the lever 11, these lugs 24 extending from the lever 11 in opposite directions. The lower extremity of the lever 11 is flattened, as indicated at 25 and cooperates with the shoulder 19 to clamp the rope or line 26 therebetween.

The rope or line 26 that is to be gripped by the clamp passes between the crosspiece 18 of the frame 10 and lugs 24 on the lever 11. Curved recesses, indicated respectively at 27 and 28 in crosspiece 18 and between lugs 24, Fig. 2, facilitate the passage of the rope 26. A curved recess 29, Fig. 5, is likewise defined between the pins 23 of lever 11, so that the end of the rope 26 may be conveniently threaded around the pins 23 and through the throat 21. Thereafter the rope 26 is gripped between the shoulder 19 and the flat piece 25 on lever 11. The adjacent surfaces of the shoulder 19 and of the flat piece 25 which are adapted to grip the rope 26 are preferably ribbed, as indicated at 30, to increase the retaining force exerted by the clamp.

The pull of the line 26 in the direction of the arrow, Figs. 1, 3 and 4, tends to pivot the lever 11 about its pins 23 in a clockwise direction, and causes the flat portion 25 to squeeze the rope 26 against the gripping surface of the shoulder 19. This effectively retains the rope 26 against slipping, in a well-known manner. If it is desired to increase the tension in the line 26, the free end of the line 26 is pulled downwardly by hand, causing the tension of the line to be cancelled, in so far as the lever 11 is concerned, so that the slack in the line 26 can then be taken in. Upon release of the manual pull on the free end of the line 26, the lever 11 will again be moved clockwise and the flat portion 25 will again bear on that section of the rope 26 which is disposed

thereunder and will squeeze the rope against the gripping surface of the shoulder 19.

When it is desired to release the rope 26 from the grip of the clamp, my novel releasing means is employed in a manner which will now be explained. The releasing member 12 has curved extensions 31 at one end thereof, an opening 32, Fig. 5, being defined between these extensions. The member 12 is inserted in position so that the shank 34 thereof extends through a suitable opening in an eye or post 33 which is fast on the lever 11, while the ends of the curved extensions 31 of the member 12 bear on the inclined surfaces 35 of the extensions 20 on the shoulder 19. The shank 34 is sized to fit loosely within the opening in the post 33. The opening 32 in member 12 permits the lever 11 to pass between the extensions 31 of the member 12. A hook 37 to which a cord 36 is attached is conveniently inserted into a hole 38 in the shank 34 of the member 12.

Normally, when the clamp is in use, the parts occupy the relative positions shown in Fig. 3. When the rope 26 is to be released, the cord 36 is grasped and pulled to thereby swing the member 12 counterclockwise, Fig. 4. Preferably the inclined upper surfaces 35 on the extensions 20 of the shoulder 19 are made smooth so that the curved extensions 31 of the member 12 will slide freely thereon as the member 12 is moved rotatively. As the shank 34 bears against the post 33 during its outward movement, it forces the lever 11 to swing counterclockwise, disengaging the flat portion 25 thereof from the rope 26, which is then released.

Once the member 12 is moved into the position shown in Fig. 4, it tends to retain itself in that position with very little tension required in the cord 36. This feature may be enhanced or modified, as desired, by imparting the appropriate curvature to the extensions 31 on the member 12. Due to the circuitous path of the rope 26 through the clamp structure, the rope 26 will be released gradually rather than suddenly or jerkily.

After the rope 26 has been "let out" the desired amount, the member 12 may be easily restored to the position as shown in Fig. 3. This feature is of great importance where my clamp is used to hoist loads vertically and where it is necessary to lower the suspended load from time to time and raise it back up again. In this event the clamp is supported in a position at right angles to that as shown in Figs. 1 to 4, and the cord 36 is made sufficiently long that it will depend to a point where it can be grasped. By pulling on the cord 36 the releasing member 12 is operated and the rope 26 is gradually and easily released. When the load has been lowered the necessary distance, the cord 36 is released to start the releasing member 12 moving back into its inoperative position. The lever 11 then restores itself, under the influence of the stress exerted by the rope 26, as noted hereinabove, to thereby bring the releasing member 12 into its inoperative position and cause the flattened portion 26 of the lever 11 to clamp the rope against the gripping surface of the shoulder 19. When the load is to be raised again, the free end of the rope 26 is pulled and the load is thereby hoisted. The circuitous route of the rope 26 through the clamp structure does not hinder the hoisting of the load since the rope 26 bears on smoothly rounded corners as 28 (on lugs 24), 29 (on pins 23) and 39 (on shoulder 19).

My novel clamp eliminates the necessity of winding the free end of the rope or line around a cleat or the like, thus materially decreasing the time required to fasten and unfasten the rope. This is of utility in securing clothes lines, stringing up animals for skinning or dressing, fastening lines on sailing vessels, and many other uses.

The manner of mounting the releasing member 12 on the lever 11 renders it easy to assemble and replace and permits relative movement between the member 12 and the lever 11 without resorting to the use of an enclosed pivotal mounting.

When the clamp is to be dissembled, the rope 26 is removed from the clamp and the cord 36 is unhooked from the member 12. Removal of the rope 26 permits the pins 23 on the lever 11 to be slid past the rounded ears 40 on the extensions 20 of shoulder 19, whereupon the lever 11 is free to be removed from the frame 10. The member 12 is easily separated from the lever 11 by sliding the shank 34 back out through the eye 33. After the lever 11 has been reassembled in the frame 10 and the rope 26 inserted, the pins 23 will be prevented from leaving the sockets 22 by the rope 26. Preferably, the shank 34 of the releasing member 12 is of such length that it can be removed from the eye 33 on lever 11 only when the lever 11 is removed from the frame 10. In this way, my novel clamp can be attached to the rope or line and sold with the line, without danger of the parts becoming separated.

Thus, while I have illustrated and described a selected embodiment of my invention, it is to be understood that this is capable of variation and modification and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. A clamping device comprising a frame through which a rope or the like to be clamped is passed, said frame being provided at the bottom with a fixed rope gripping surface and having at opposite sides open bearing sockets located at an intermediate point between the gripping surface and the top of the frame, a clamping lever having laterally extending pivot means journaled in said bearing sockets and retained therein by said rope when the same is arranged in the frame and is clamped between the same and said lever, the latter being provided with an upper rope receiving portion and having a lower portion cooperating with the gripping surface of the frame to clamp the rope.

2. A clamping device comprising a frame through which a rope or the like to be clamped is passed, said frame comprising substantially triangular side members, a block connecting the side members at one extremity of the frame and provided with extensions having open bearing sockets at their under sides and a cross piece connecting the opposite extremities of the frame members, and a substantially triangular clamping lever having laterally extending pivot portions journaled in said sockets and retained therein by the rope when the same is arranged in the clamping device.

3. A clamping device comprising a frame through which a rope or the like to be clamped is passed, said frame being provided with a rope

gripping surface, a clamping lever pivoted in the frame and cooperating with said gripping surface for clamping the rope and provided at one side of its pivotal point with a projecting eye, and a releasing member loosely and removably arranged in said eye and having an inner portion fulcrumed on the frame beyond the pivotal point of the lever, the outer portion of the releasing member forming an operating arm for swinging the lever in a direction to release said rope.

4. A clamping device comprising a frame through which a rope or the like to be clamped is passed, said frame having a gripping surface, a clamping lever pivoted in the frame and cooperating with the gripping surface thereof for clamping the rope and provided at one side of its pivotal point with a projecting eye, and a releasing member loosely and removably arranged in said eye and having a curved forked inner portion straddling the lever and fulcrumed on the frame beyond the pivotal point of the lever, the outer portion of the releasing member constituting an operating arm for moving the lever in a direction to release said rope.

LOUIS G. CHALCHOFF.