Nov. 17, 1959 C. B. TOALDO 2,912,736

ROPE GRABS

Filed Oct. 7, 1957

FIG. 1.

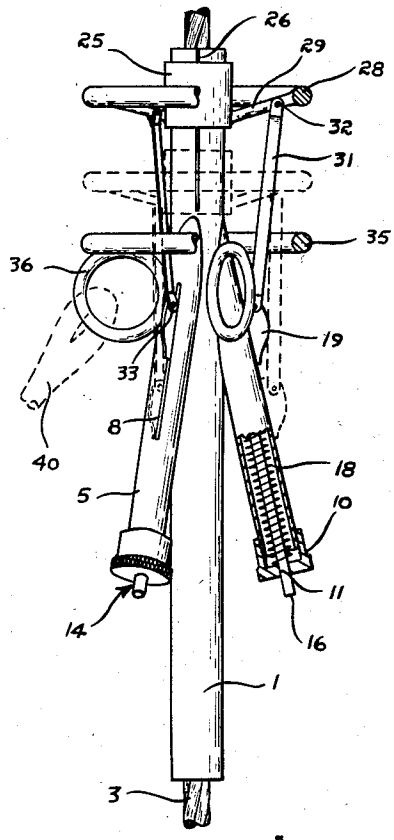


FIG. 2.

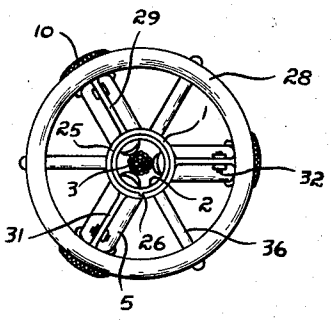


FIG. 3.

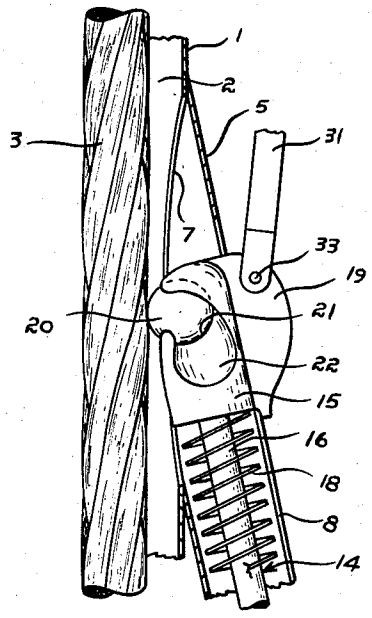
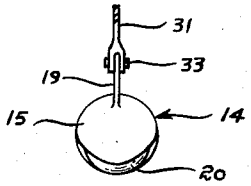


FIG. 4.



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ROPE GRABS

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5 Claims. (Cl. 24—136)

My invention relates to improvements in rope grabs.

This invention relates to a safety device such as may be used on a scaffold or other similar structure which is suspended from above by means of ropes.

The objects of the invention are to provide means whereby a rope may pass freely through the grab in one direction and be positively gripped and held against movement in the opposite direction.

Further objects are to ensure that the gripping force exerted upon the rope is directly proportional to the load upon the scaffold, and to provide means controllable by the workmen on said scaffold for releasing or partly releasing the gripping action as required.

Still further objects are to provide means whereby the rope gripping elements may easily be replaced, if necessary, and to ensure that said elements cannot become dislodged once they have been installed in their selected positions within the rope grab.

Referring to the accompanying drawings:

Figure 1 is an elevation of the invention with parts being shown in section.

Figure 2 is a plan.

Figure 3 is an enlarged section of a portion of the grab showing a ball and its supporting claw.

Figure 4 is a plan of the claw.

In the drawings like characters of reference indicate corresponding parts in each figure.

The numeral 1 indicates a sleeve having a bore 2 through which a safety rope 3 is adapted to extend and equidistantly spaced about said sleeve are three tubes 5 which are upwardly and inwardly inclined. The tubes communicate with the bore 2 of the sleeve through oval openings 7, see Figure 3, and are provided with longitudinal slots 8. A cap 10 having a central opening 11 is threadedly fitted to the lower end of each tube 5.

Mounted in each tube is a plunger 14 having a cylindrical claw 15 and a stem 16 which projects outwardly of the tube through the central opening 11 of the cap. A spring 18 surrounds the stem between the claw 15 and the cap and serves to urge the plunger in an upward direction. The claws are each provided with a fin 19 which projects through the slot 8 and prevents rotation of the plunger within the tube. Each claw is fitted with a cable gripping ball 20 which is lodged in a recess 21 in said claw so as to project slightly beyond the periphery of the claw and towards the centre of the bore 2 of the sleeve. An upwardly directed slot 22 extends from one side of the claw into the recess and it is through this slot that the ball is entered into the recess prior to the placement of the plunger into the tube. It will be noticed that once the ball is lodged in the recess and the claw is enclosed within the tube the slot 22 is always covered by the tube wall so that there is no possibility of the ball becoming accidentally displaced from the plunger.

Adjacent the top of the sleeve 1 a collar 25 is slidably mounted and is non-rotatively held by means of key and slot means 26. The collar supports a concentric hand

ring 28 which is connected thereby by radial spokes 29. A connecting arm 31 is secured at one end to each spoke by means of a pin 32 and the opposite end of said arm is similarly secured to the fin 19 of a plunger as at 33. Beneath the collar 25 a second hand ring 35 encircles the sleeve 1 and the lower ends of the arms 31, which ring is rigidly secured to said sleeve by vertically disposed eyes 36.

In use, the rope grab is securely fastened to the scaffold by ropes 40, one only shown, which pass through the eyes 36 and hold the sleeve 1 in a substantially vertical position. The ring 28 is pressed downwardly to further compress the springs 18 and withdraw the balls 20 from the bore of the sleeve whereupon the lower end of the rope may be threaded through the sleeve and the rope allowed to hang freely alongside the scaffold. When the ring 28 is released the balls 20 are urged into gripping contact with the rope by the springs 18 and the rope grab is set to function as a safety device. Should any part of the hoisting mechanism fail the initial movement of the scaffold in a downward direction will result in the plungers 14 being drawn upwardly to a slight extent. This results in the balls gripping the rope so tightly that further movement relative to the sleeve is impossible. Obviously the greater the load upon the scaffold the tighter will be the grip exerted upon the rope by the grab.

During the normal lowering of the scaffold the hand ring 28 is depressed to the extent required to permit the rope to run freely through the sleeve.

What I claim as my invention is:

1. A rope grab adapted for attachment to a scaffold, said grab comprising a vertical sleeve through which a safety rope is adapted to extend, radially disposed inclined tubes communicating at their upper ends with the vertical sleeve, an upwardly urged rope engaging member in each of the tubes, and means carried exteriorly of the sleeve for forcing the rope engaging members downwardly and radially away from the axis of the sleeve, each of said rope engaging members being a claw mounted upon a stem, said claw having a recess and a ball within said recess, said recess being restricted to the size of the ball and engaging the ball to prevent substantial movement relative to the endwise movement of the claw within its tube.

2. A rope grab adapted for attachment to a scaffold, said grab comprising a vertical sleeve through which a safety rope is adapted to extend, radially disposed inclined tubes communicating at their upper ends with the vertical sleeve, an upwardly urged rope engaging member in each of the tubes, said sleeve being fitted with a hand ring, said hand ring being connected to each of the rope engaging members by a connecting rod and said hand ring being mounted in sliding engagement with the sleeve, each of said rope engaging members being a claw mounted upon a stem, said claw having a recess and a ball within said recess, said recess being restricted to the size of the ball and engaging the ball to prevent substantial movement relative to the endwise movement of the claw within its tube.

3. A rope grab as claimed in claim 1, wherein the cylindrical claw is being provided with a slot through which the ball is inserted into clutching position, the slot of the claw being disposed to one side of a radius drawn through the axis of the sleeve and the ball whereby said slot is covered by a wall of its tube when the ball is pressed into its innermost rope engaging position.

4. A rope grab adapted for attachment to a scaffold, said grab comprising a vertical sleeve through which a safety rope is adapted to extend, radially disposed inclined tubes communicating at their upper ends with the vertical sleeve, an upwardly urged cylindrical claw non-rotatively mounted in each of said tubes, each of said

claws having a ball clutched therein on opposite sides of its periphery and normally engaging the safety rope, a hand ring slidably mounted on the vertical sleeve and a rod operatively connecting each of the cylindrical claws to the hand ring.

5. A rope grab adapted for attachment to a scaffold, said grab comprising a vertical sleeve through which a safety rope is adapted to extend, radially disposed inclined tubes communicating at their upper ends with the vertical sleeve, an upwardly urged cylindrical claw non-rotatively mounted in each of said tubes, said claws each having a recess and an upwardly directed slot communicating with said recess, a ball seated in each of said recesses and normally engaging the safety rope, said slots being covered by a wall of the tubes to prevent projection of the balls from the recesses, a hand ring slidably mounted on the vertical sleeve and a rod operatively connecting each of the cylindrical claws to the hand ring.

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