United States Patent [19]

McElroy

[11] **3,907,255**

[45] **Sept. 23, 1975**

[54] **CABLE LOCK SHOE**

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[73] Assignee: **Cable Climber Safety Devices, Incorporated,** Lisbon, Ohio

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[52] **U.S. Cl.** ..... **254/156;** 188/188; 24/136 B

[51] **Int. Cl.²** **A62B 1/14**

[58] **Field of Search** ..... 254/156, 191; 104/239; 188/188, 189, 65.1; 24/136 B, 263 SC, 250 R; 294/74 R

[56] **References Cited**

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Assistant Examiner—Kenneth Noland
Attorney, Agent, or Firm—Blair & Brown

[57] **ABSTRACT**

A cable lock shoe is provided that has a side portion that includes sections that are arranged at a slight angle with respect to each other. Thus, the angle of the cable side of the shoe is parallel to the sloping side of the shoe from a point centered with the cam center line and this permits the shoe to clamp the cable when it moves upward without increasing pressure on the cam.

2 Claims, 5 Drawing Figures

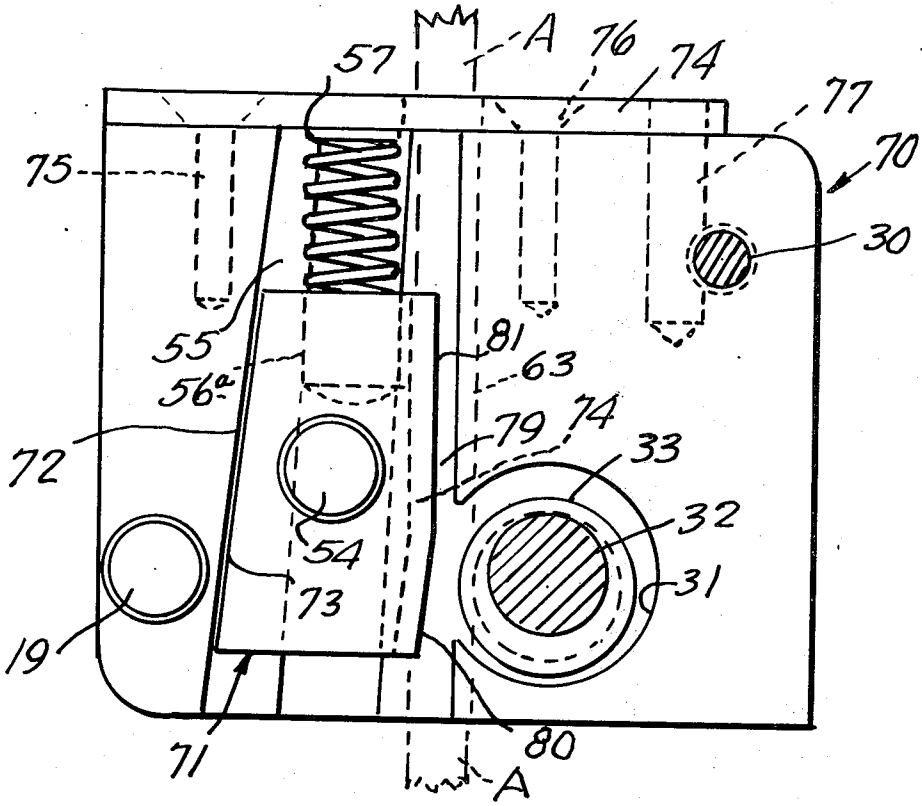


FIG. 1.

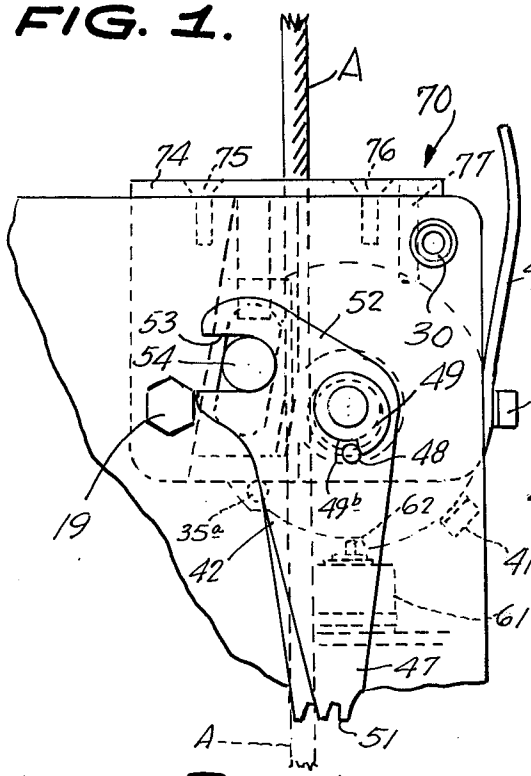


FIG. 2.

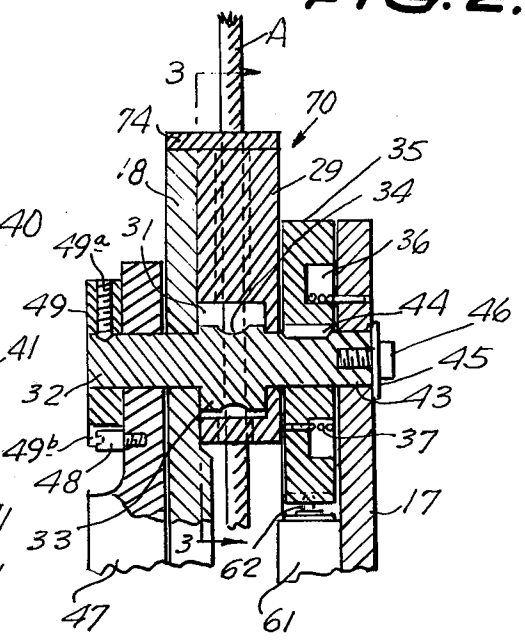


FIG. 3.

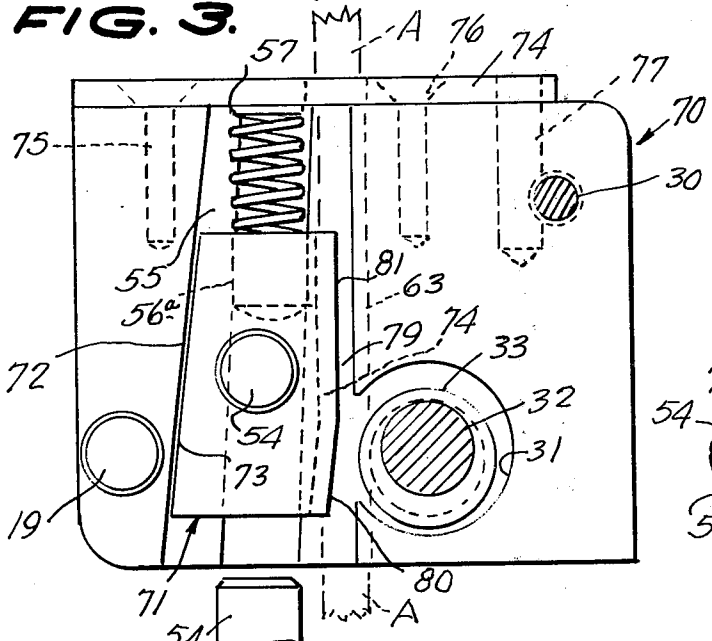


FIG. 5.

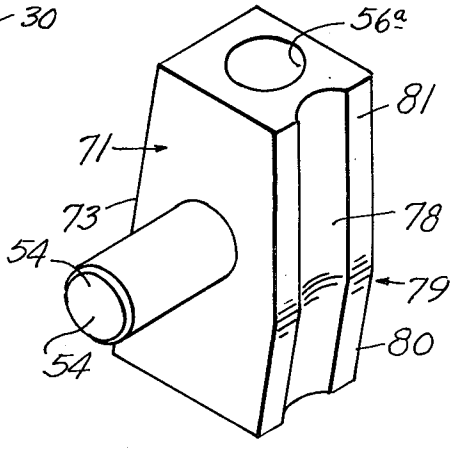
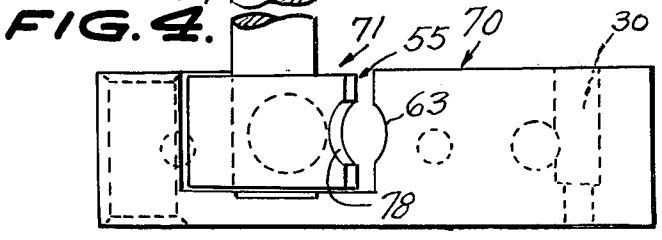


FIG. 4.



CABLE LOCK SHOE

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

The present invention relates to electric hoists, and more particularly to improved cable lock shoes for such hoists.

SUMMARY OF THE INVENTION

A cable lock shoe is provided for an electric hoist wherein the action or movement of the parts is made more efficient as compared to previous constructions. In accordance with the present invention the angle of the cable side of the shoe has been changed so that it is parallel to the sloping side of the shoe from a point centered with the cam center line. This construction permits the shoe to clamp the cable when it moves upward without increasing pressure on the cam.

The primary object of the present invention is to provide a cable lock shoe that will insure that the action and movement of the parts will perform with increased efficiency and wherein the shoe can clamp the cable when it moves upward without increasing pressure on the cam.

Yet another object of the present invention is to provide a cable lock shoe that is relatively economical to manufacture and efficient in operation and which is rugged in structure and efficient in use.

Still other objects and advantages will become apparent in the following specification when considered in light of the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a fragmentary elevational view illustrating the present invention;

FIG. **2** is a vertical sectional view;

FIG. **3** is a view generally taken on the line **3—3** of FIG. **2**;

FIG. **4** is an end view thereof; and

FIG. **5** is a perspective view of the cable lock shoe of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail, wherein like reference characters indicate like parts throughout the several figures, the reference numeral **70** indicates the improved cable lock shoe of the present invention that is used as an attachment for an electric hoist and an improvement over prior electric hoists such as that shown in prior U.S. Pat. No. **3,333,822,** issued Aug. **1, 1967.**

As shown in the drawings of the present invention a pair of plates **17, 18** are secured together in spaced parallel relation by means of securing elements such as bolts and nuts. A block **29** is connected to the upper end of plate **18** by a suitable bolt and nut assembly **19** and a bolt **30.** The block **29** has an annular recess **31** that is closed by the plate **18.** A stub shaft **32** extends through the block **29,** the block recess **31** and plate **18** being rotatably supported thereby and having an offset cam **33** integral with the stub shaft **32.** The periphery of the cam **33** is provided with an annular groove **34** which is adapted to receive a portion of cable A therein as shown in the drawings.

A roller **35** has a stop **35***a* extending from it's inner face and an annular recess **36** in it's outer face in which is positioned a coil spring **37.** An L shaped handle **40** is connected to the roller **35** by bolts **41.** The roller **35** is provided with a peripheral recess **42** defined by a reduced diameter portion of the roller **35.** An end portion **43** of the stub shaft **32** and the roller **35** are keyed together by a key **44** that is retained in place by means of a washer **45** and bolt **46** which are arranged in threaded engagement with the stub shaft **32.**

As shown in the drawings there is provided a pawl **47** which is pivotally mounted on the end of the stub shaft **32,** and a screw **48** extends from the pawl **47.** A cam **49** is fixedly attached to the stub shaft **32** by a plurality of set screws **49***a* and has a peripheral recess **49***b* with screw members **48** positioned within the recess **49***b* as shown in the drawings.

The pawl **47** has an inverted L shaped configuration and has teeth **51** in an end of one leg thereof. The pawl **47** has a second leg **52** that is provided with an end recess **53.** A stub shaft **54** is secured to or integral with the shoe **71,** and the stub shaft **54** extends laterally of the shoe **71,** and into recess **53.** The block **29** has an elongated recess **55** of which one side is tapered at **72,** and the shoe **71** is slidable in the recess **55** with a tapered side **73** abutting the tapered side **72** of the recess **55.** A coil spring **57** is seated within the top recess **56***a* of the shoe **71,** and the coil spring **75** is held in place by a retainer plate **74** maintained in it's proper location by means of securing elements **75, 76** and **77,** FIG. **3.** The spring **57** urges the shoe **71** towards the bottom of the recess **55.** A normally open micro-switch **61** is supported beneath the roller **35** and has an operating plunger **62** for normally engaging the periphery of roller **35** within recess **42** for leaving the micro-switch **61** open until the handle **40** is pivoted to the left in FIG. **1,** when the plunger **62** is depressed by the roller **35** closing the micro-switch **61.**

The block **29** has a groove **63** that extends the height thereof and the groove **63** communicates with recesses **31** and **55** and is of a diameter for slidably receiving therein the cable A so that the cable can pass downwardly and around the drum (not shown). The shoe **71** has a longitudinally extending groove **78** therein, and the groove **78** has a cable A normally slidably mounted for riding therein as shown in the drawings.

The cable side **79** of the shoe **71** is shown in FIG. **5** while the numeral **73** indicates the sloping side thereof. The cable side **79** includes a lower portion **80** that is parallel with the sloping side of the shoe, and an upper portion **81** arranged at an angle with respect to the lower portion **80** as shown in the drawings.

From the foregoing, it will be seen that there has been provided an electric hoist which is an improvement over previous hoist such as that shown in prior U.S. Pat. No. **3,333,822.** In accordance with the present invention there is provided the improved cable lock shoe **71.** The cable lock shoe shown in prior U.S. Pat. No. **3,333,822** had one side straight, that is the cable side was straight. The cam pressed the cable against the side of the cable lock shoe which in turn caused an upward pressure on the shoe when the cable moved upward. The shoe compressed the cable A against the cable lock block to stop cable movement.

In accordance with the present invention certain disadvantages have been overcome, and it has been found that movement of the cable lock shoe was limited because the lower section of the shoe below the center line of the cam was wider restricting the movement upward of the shoe. As shown in FIG. **5** of the present ap-

plication for example, the angle of the cable side of the shoe as indicated by the numeral **80** is parallel to the sloping side **73** of the shoe from a point centered with the cam center line. This permits the shoe **71** to clamp the cable and it moves upward without increasing pressure on the cam.

In addition with the present invention the recess **45** extends all the way to the top of the block, and the spring **57** is held in place by the retainer **74.**

The operation is otherwise generally the same as the described in prior U.S. Pat. No. **3,333,822.** Thus, the cable A is passed through openings **63** and can hang downwardly from a drum (not shown). The upper end of the cable A can be attached by any support (not shown) so that the same hangs therefrom. A load such as scaffolding, basket, may be attached to straps by fastening ropes (not shown) from the load through suitable openings. It will be noted that a drive motor can be actuated to move the hoist up or down the cable A as desired or required. Then the lever **40** can be pushed to close the micro-switch **61** and the drive motor will then turn pinions, gear wheels and the like so that the cable A will move the load upwardly or downwardly along the cable depending upon the direction of drive of the motor that is selected or being utilized.

Having thus described the preferred embodiment of the invention it should be understood that numerous structural modifications and adaptations may be resorted to without departing from the spirit of the invention.

What is claimed is:

1. In an electric hoist for vertical movement on a stationary cable, a block on said hoist and movable therewith, a vertical recess in said block and having said cable extending therethrough adjacent one side thereof, said one side of said recess extending parallel to said cable and having a cable receiving groove extending therealong, the side of said recess opposite said groove sloping inwardly upwardly toward said cable, a generally circular recess formed in said block adjacent to and communicating with said vertical recess on said one side of said vertical recess, a cam mounted for rotation in said circular recess and adapted to engage said cable upon rotation of said cam, a cable lock shoe mounted for vertical sliding movement in said vertical recess, a downwardly and outwardly sloping wall on said shoe arranged in confronting relation to said inwardly sloping side of said vertical recess to move said shoe laterally in a cable clamping direction as said shoe moves upwardly in said recess, a groove formed in the side of said shoe toward said cable for engaging said cable, said side of said shoe toward said cable extending vertically from its upper end to a point intermediate its upper and lower end and then extending parallel to said downwardly and outwardly sloping wall for the rest of its length whereby the shoe does not bind against said cam when moving upwardly in a cable clamping direction.

2. A device as claimed in claim **1** wherein a recess is formed in the upper end of said block, a coil spring is seated in said last named recess and means on said block retains the upper end of said spring.

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