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SAFETY DEVICE FOR DERRICKS.
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2 SHEETS—SHEET 1.

FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

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SAFETY DEVICE FOR DERRICKS.

In the accompanying drawings, Figure 1 is a side view partly broken away of my improved safety grip; Fig. 2 is a plan view; Fig. 3 is an enlarged section on the line 3-3, Fig. 2; Figs. 4 and 5 show the open and closed positions of the gripping jaws; Fig. 6 is an enlarged plan view partly in section of the centrifugal releasing device; Fig. 7 is a vertical section of same; and Fig. 8 is a modified form of my invention.

In the drawing, the numeral 2 designates a suitable base-plate which forms a support and guide for the sliding block 3, said block being provided with the trunnions 4, which pass through the openings 5 in the side rods 6. The rods 6 form part of a suitable shock absorber, which in the present case, consists of the spring 7 interposed between the collar 8 on said rod and the collar 9 on the U-shaped link 10. The link 10 is connected to a stationary member 11.

Arranged within space 12 of the block 3 are the gripping jaws 13 and 14. The gripping jaws are recessed as at 15 to receive the friction pulleys 16, said pulleys being mounted on bell-cranks 17. Springs 18 engage the opposite ends of said bell-cranks to force the friction pulleys 16 normally against the cable 19, which passes between the pairs of friction pulleys.

As illustrated in Fig. 2, the gripping jaws 14 are wedge-shaped; along their outer edges they are in engagement with the roller 20, the gripping jaws and the block 3 being recessed as at 21 and 22 to receive said rollers. The rollers are connected at top 23 and bottom by the straps 24 so that they move in unison, being held between the outer faces of the gripping jaws and the inner tapering walls 25 of the block 3.

The springs 25 are interposed between a partition 26 in the block 3 and the gripping jaws 13 and 14, said springs being seated in the recesses 27 in said jaws. The springs 25 are normally held in compression by the latch 28, which is pivoted at 29 to one of the gripping jaws, the opposite end of said latch passing through the opening 30 and engaging the partition 26. A spring 31 secured to one of the gripping jaws engages the latch 28 and holds said latch normally in engagement with the partition 26, as indicated in Fig. 2.

The automatic releasing device illustrated, consists of the pulleys 32 and 33, the pulley 33 being movable toward and from the cable 34, and said pulley is mounted on the end of bell-crank 35, pivoted at 36. A spring 33 is connected to the opposite end of the bell-crank 34 and to the block 3 at 37, thereby acting to hold the pulley 33 normally in contact with the cable and holding the cable in contact with the pulley 32. The pulley 32 is mounted on the shaft 40 and is adapted to rotate freely thereon, said pulley having the collar 41 to which is secured the hub 42 from which radiate the arms 43. The arms carry the fingers 44, which are movable to and fro on said arms, said arms comprising the slidable sleeve 45 having the threaded portion 46 with which the finger engages.

A spring 47 is interposed between said slidable sleeve and the cap 48 and the outer end of the arm 43. It will be apparent from this that as the pulley 32 is rotated, the centrifu-
gall action will tend to throw the fingers outwardly to the position indicated by dotted lines, Fig. 6.

The cable 19 passes through openings 49 and passes between suitable guide-pulleys 50.

The device may be arranged on the crane or derrick either in horizontal or vertical position, and the lifting cable 19 passes through it as indicated. The spring 36 acts to force the pulley 33 into contact with the cable 19 and also forces said cable into contact with the pulley 32, although not with sufficient force to interfere with the proper movement of the cable. In the same manner, the springs 18 act to normally force the pulleys 16 into contact with the cable. The latch 28 holds the springs 28 in compression, and if for any reason, the cable 19 should start to "run away" as the movement of the cable is accelerated, its action on the pulley 32 will be to rotate said pulley at a high rate of speed, and said pulley rotating in the direction of the arrow, the fingers 44 will be extended by the centrifugal action, and will strike the outer end of the latch 28, throwing said latch from engagement with the partition 26 and permitting the springs 25 to act to drive the gripping jaws in the direction of the moving cable. Where said gripping jaws are wedge-shaped, as indicated in Fig. 2, the action will be to force said gripping jaws toward each other so that the jaws will grip the rope tightly and check its movement. This movement of the gripping jaws will act to carry the rollers 20 in the same direction, and this will increase the wedging action. The cable in this manner is gripped by the gripping jaws in such a way as to slow down its movement, and the jar occasioned by such checking of the rope will be taken up by the shock absorber, consisting of the rods 6, spring 7, etc.

In Fig. 8, I have illustrated another form of my invention in which the gripping jaws 52 are connected by the toggle links 33 to the block, thereby dispensing with the rollers 20 and the use of the tapering or wedge-shaped gripping jaws.

The gripping jaws 13 and 14 and gripping jaws 52 are connected by an equalizer bar 54, which acts to hold the gripping jaws in parallel relation.

What I claim is:

1. In a safety device for cables, the combination of a cable, spring actuated parallel gripping jaws adapted to engage directly with said cable, means for holding said jaws in released position, and means operated by movement of the cable for releasing said holding means.

2. In a safety device for cables, the combination of a cable, spring actuated parallel gripping jaws adapted to engage directly with said cable, means for holding said jaws in released position, and a centrifugal device engaged by the cable adapted to release said holding means.

3. In safety devices, the combination of a cable, spring actuated parallel gripping jaws, means for holding said gripping jaws in released position, a pulley, means for holding said pulley in contact with said cable, and a centrifugal device on said pulley adapted to release said holding means.

4. In a safety device for cables, the combination of spring actuated gripping jaws, a cable, means for holding said gripping jaws in released position, a pulley, means for holding said pulley in contact with said cable, radiating arms carried by said pulley, and movable fingers carried by said arms adapted to engage said holding means.

5. In a safety device for cables, the combination of spring actuated gripping jaws, a cable, means for holding said gripping jaws in released position, a pulley, means for holding said pulley in contact with said cable, radiating arms carried by said pulley, and movable weighted fingers carried by said arms adapted to engage said holding means.

6. In a safety device for cables, the combination of spring actuated gripping jaws, a cable, means for holding said gripping jaws in released position, a pulley, means for holding said pulley in engagement with said cable, radially extending arms carried by said pulley, and spring actuated movable fingers on said arms adapted to engage said holding means.

7. In a safety device for cables, the combination of spring actuated gripping jaws, a cable, means for holding said gripping jaws in released position, a spring actuated pulley engaging said cable, a pulley opposite said first-named pulley, said cable being held in engagement with said last-named pulley by the pressure exerted by said first-named pulley, and a centrifugal device carried by said second-named pulley adapted to release said holding means.

8. In a safety device for cables, the combination of spring actuated gripping jaws, a cable, spring actuated pulleys on said gripping jaws directly engaging said cable, and means for holding said gripping jaws in released position, and means operated by said cable for releasing said holding means.

9. In a safety device for cables, the combination of spring actuated parallel gripping jaws, a cable, a latch connected to one of said jaws, a fixed abutment engaged by said latch, and means operated by the movement of the cable to release said latch.

10. In a safety device for cables, the combination of spring actuated wedge-shaped parallel gripping jaws, a cable, rollers engaging the outer edges of said gripping jaws, an abutment between which and said
gripping jaws said rollers are located, means for holding said jaws in release position, and means operated by the cable for releasing said holding means.

11. In a safety device for cables, the combination of a movable member, spring actuated gripping jaws carried by said member, a cable, means for holding said gripping jaws in release position, means operated by a cable for releasing said holding means, and a shock absorber connected to said movable member.

In testimony whereof, I the said JAMES FARMER have hereunto set my hand.

JAMES FARMER.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."