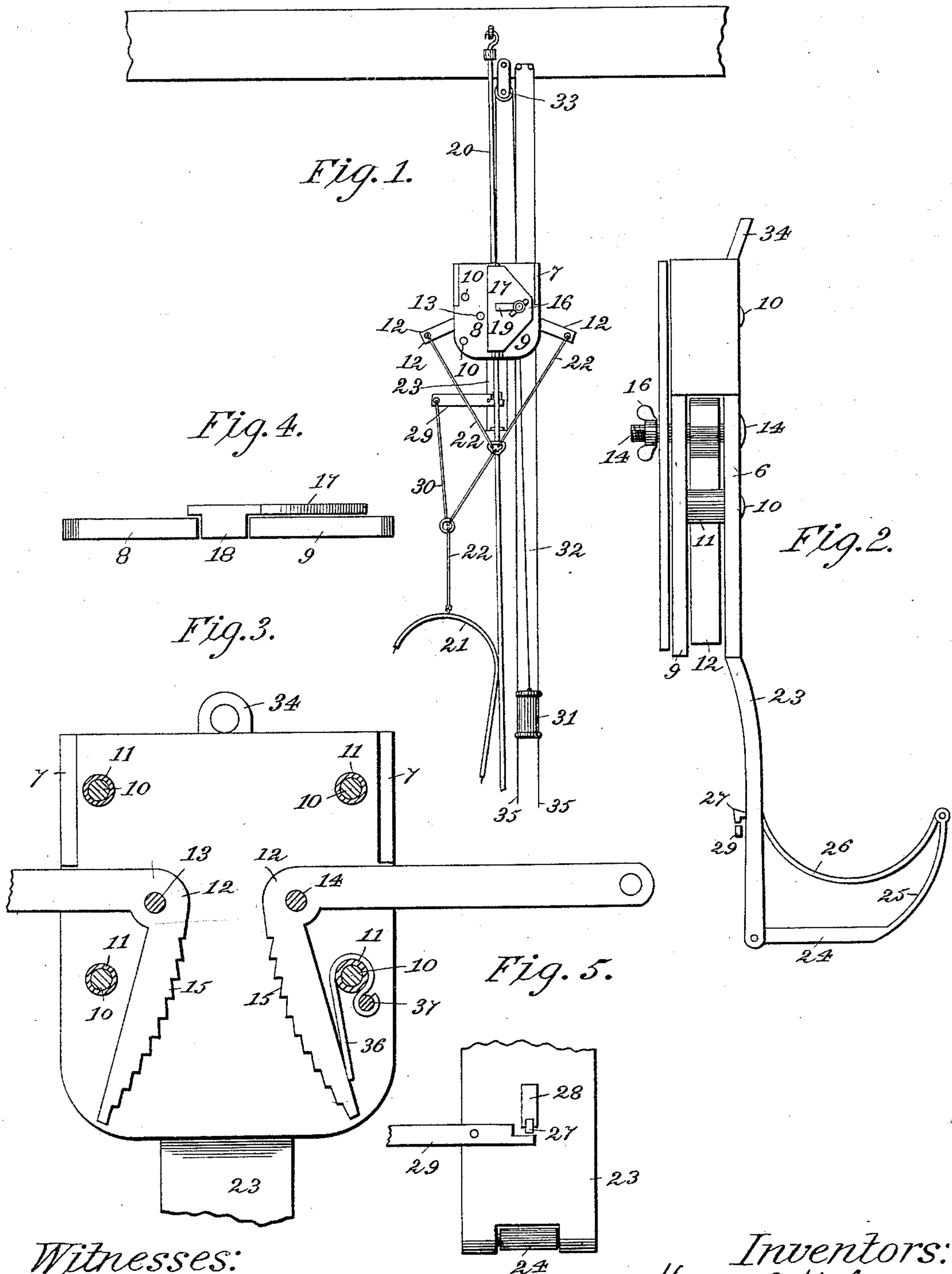


(No Model.)

H. T. HAHN & J. SCHRÖDER.
SAFETY MACHINE.

No. 424,550.

Patented Apr. 1, 1890.



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY T. HAHN AND JOHN SCHRÖDER, OF HICKORY GROVE, SCOTT
COUNTY, IOWA.

SAFETY-MACHINE.

SPECIFICATION forming part of Letters Patent No. 424,550, dated April 1, 1890.

Application filed July 6, 1889. Serial No. 316,729. (No model.)

To all whom it may concern:

Be it known that we, HENRY T. HAHN and JOHN SCHRÖDER, citizens of the United States, residing in Hickory Grove township, in the
5 county of Scott and State of Iowa, have invented a new and useful Safety-Machine, of which the following is a specification.

Our invention relates to improvements in safety devices or machines for preventing ac-
10 cidents to persons from the falling or breaking of scaffolds and ladders upon which they may be, or accidents to persons in falling from buildings, windmills, bridges, and other structures.

Our improvement also relates to safety de-
15 vices in which the person by the use of a belt and chain or other device about his body connects himself to the safety device, and by precipitating his weight upon such
20 connection with the safety device clutches such device upon a wire rope or cable, which is pendently attached to a sustaining object, and by such means he is suspended and held from falling; and the objects of our inven-
25 tion are, first, to provide means by which a person in falling from any distance where injury would naturally result or into water is arrested, held, or suspended, and the injury averted, and, second, to afford facili-
30 ties for moving the device up and down with the person as he may ascend or descend in the discharge of his duties or labors. We attain these objects by the mechanism illus-
35 trated in the accompanying drawings, in which—

Figure 1 is a front view of our safety-ma-
chine with its wire or cable supported at its
upper end from a beam, together with means
for suspending such device or machine at
40 any required height. Fig. 2 is a side view of our safety-machine, drawn upon an enlarged scale, the chains, wires, or straps being omitted. Fig. 3 is a front view, the outer plate being removed. Fig. 4 is an end view of the
45 outer plate and movable plate, and Fig. 5 is a front view of a vertical section of the pendent bar for sliding the safety device downward upon its wire or cable.

Similar figures refer to similar parts
50 throughout the several views.

3 is the rear plate of the safety device or machine provided with upper projecting side rims 7, and 8 and 9 are two pieces forming the front plate. The plates are held together parallel with each other by the rivets 10, sur- 55 rounded by the collars 11, against the respective ends of which the inner faces of the plates rest. The upper part of plates 8 and 9 also rest between the side rims 7. The hooked clutches 12 are secured at their re- 60 spective angles by pivots 13 and 14 through the plates, upon which pivots the hooked clutches may rotate. The ends of each of said hooked clutches are notched crosswise or roughened, as at 15. The plates 8 and 9, 65 when secured to the rear plate, have an intervening space centrally and in vertical line between them. A movable plate 17, having an inner vertical projection 18 and a cross aperture or slot 19, is placed against the outer 70 surface of the pieces 8 and 9 forming the front plate, so that the projection 18 fits into the intervening space between such pieces, and its cross aperture or slot registers with the aperture through the piece 9 for the pivot 14, 75 which projects sufficiently through such cross-aperture to receive a thumb-nut 16, the end of such pivot and the interior of said nut being screw-threaded.

A wire, wire cable, or rope 20 is pendently 80 attached to a sustaining object. In the drawing Fig. 1 it is illustrated as being secured to a hook and the hook secured into a staple in a cross timber or beam. The wire, wire cable, or rope may extend to the ground and be 85 there secured in any manner or may hang loosely. The method of attaching the upper end of such wire, wire cable, or rope must necessarily depend upon circumstances—as, for instance, it may, when a person is work- 90 ing upon a building, be attached to any portion of the building which will cause it to be safe and convenient to the person. So, too, any means of attachment insuring permanency and safety may be adopted. When so 95 attached, the thumb-nut 16 is unscrewed sufficiently to permit the projection 18 of the movable plate to be taken out of the intervening space between the pieces 8 and 9 and permit the wire, wire cable, or rope 20 to pass 100

into such intervening space and between the hooked clutches 12. The projection 18 is then replaced in such intervening space and the thumb-nut screwed up so as to hold the movable plate 17 in position.

The operator or person is provided with a belt 21 around his body or other device, to which is secured chains, ropes, or chain-links 22, the opposite end of one of each being secured to the outer ends of the arms of said clutches.

The weight of the body of a person upon the chains 22 forces downward the arms of the clutches and throw inward the outer ends of the hooks, so that the wire, wire cable, or rope 20 is grasped between said hooked clutches at their notched or roughened surfaces sufficiently tight to suspend the person.

Ordinarily the weight of the plates, hooked clutches, and belt-connecting chain is such that the device will slide downward on the wire, wire cable, or rope 20; hence it is desirable to provide mechanism for holding the device in a desired position. We accomplish this result by providing a pendent bar 23, which may be an extension of the rear plate, at the bottom of which is a hinged bar 24, the opposite end of which is curved, as at 25, and which end has hinged to it a curved piece 26, the front end of which is provided with a hook or clasp 27, which may be passed through a longitudinal aperture 28 in pendent bar 23, the inner end of the hook bearing against the outer surface of said pendent bar below said aperture, thus holding bar 24 and curved piece 26 in the position shown in Fig. 2. An arm 29 is loosely pivoted on the front face of pendent bar 23, so that its end may rest beneath the hook or clasp 27 when passed through the aperture 28, as shown in Figs. 1, 2, and 5, and at the outer end of said arm is attached a rope, chain, or strap 30, the opposite end of which is attached to the belt-connection 22. By pulling downward on the curved piece 26 the safety device or machine may be caused to slide or move downward on the wire, wire cable, or rope 20 against its tendency to move upward by means of the weight attachment, which we will now describe.

A weight 31 is attached to a rope 32 of sufficient length and passed over a pulley 33, which is secured in proper position to some permanent object above the safety device or machine, and its non-weighted end secured to the top of the rear plate 6 or to a ring 34, attached thereto. The weight 31 may be provided with side projections, with vertical perforations to accommodate wires or ropes 35, the upper end of which may be secured to a permanent object sufficiently above the weight and in line therewith, and its lower ends secured to the ground or other permanent object below said weight and in line therewith. The wires or ropes 35 when so passing through the apertures in said weight and so secured

form guides for said weight in its movement upward and downward.

The weight tends to draw the safety device or machine upward, and the operator by means of the curved piece 26 pulls it downward, as he may desire. To avoid accidents, the arm 29 has its front end resting beneath the hook or clasp 27, and if the operator falls his weight upon the rope or chain 30 throws the hook or clasp 27 out of the aperture 28, and piece 26 and bar 24, through their hinges, drop downward, thus throwing the weight of the operator on the belt-connection 22, causing the hooked clutches to grasp the wire, wire cable, or rope 20 and arresting the operator from falling.

In addition to the mechanism described for holding the device in position, a spring 36 may be arranged around a pivot 37 on the interior plate 6, and carried forward around and to the rear of the lower collar 11, so that its rear end may rest against hooked clutch 12 to force such hooked clutch against the wire, wire cable, or rope 20. Such mechanism is illustrated in Fig. 3 as applied to one hooked clutch; but in practice both hooked clutches are to be so supplied with springs.

If the weight of the arms of the hooked clutches are such as to throw the hooked clutches together and grasp the cable too tightly, so that the weight 31 does not act with sufficient force to raise the safety device or machine, springs may be arranged upon such safety device or machine to bear upward against the arms, and concaved pulleys may be arranged between the rear and front plates to guide the cable 20 and avoid friction and misplacement. Many other changes and modifications may be made in our machine without departing from the scope of our invention.

From the description here given the mode of operation of our machine may be readily understood without further statement.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a safety device or machine, the combination, with a rope, wire, or cable pendently attached to a sustaining object, of a rear plate, two hooked clutches with horizontal oppositely-extending arms pivotally attached to such plate, a front plate in two pieces, with a central vertical space intervening, secured to such rear plate with said clutches interposed between such rear and front plates, a rope, strap, or chain secured to the outer end of each clutch-arm and the free ends secured to a belt arranged to be secured to the person of the operative, a plate arranged to close the intervening central space between the two pieces forming the front plate, means for attaching the same to the front plate, and mechanism for sustaining the plates and clutches in position when non-operative and for moving the same upward and downward, substantially as described.

2. In a safety device or machine having a cable pendently attached to a sustaining object, and pivotal clutches to fixedly grasp such cable when sustaining the weight of the operative, in combination with a weight and mechanism to move the clutches upward, the pendent bar 23, hinged bar 24, hinged curved piece 26, hook 27, aperture 28, pivoted arm 29, and rope, chain, or strap 30, substantially as described.

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Witnesses:

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