Claims

1. A device for retracting a firing pin of a rope system cable spiking tool comprising:

an adapter having an aperture for receiving a breech block of the rope system cable spiking tool;

a safety latch extending from a top side of the adapter adaptable to block and unblock a path of a striking latch of the rope system cable spiking tool;

a firing pin puller having a retainer adaptable to grip one end of a firing pin of the cable spiking tool;

one or more remote controllers configured to selectively transmit a first signal pattern and a second signal pattern, wherein ~~each~~the first signal pattern is ~~unique~~different from the second signal pattern; and

a receiver configured to trigger the safety latch to unblock the path of the striking latch upon receiving the first signal pattern and subsequently trigger the firing pin puller to pull the firing pin away from the cable spiking tool upon receiving the second signal pattern.

2. The device according to claim 1 wherein the safety latch comprises:

a spring loaded latch bolt with an angled end such that the latch bolt retracts when the striking latch of the cable spiking tool engages the angled end of the latch bolt and extends back to original position after the striking latch of the cable spiking tool moves past the angled end of the latch bolt blocking the path of the striking latch of the cable spiking tool; and

a first actuator coupled to the spring loaded latch bolt and configured to move the latch bolt to a retracted position such that the angled end of the latch bolt is hidden in the safety latch to unblock the path of the striking latch of the rope system cable spiking tool.

3. The device according to claim 2 wherein the safety latch is a solenoid latch.

4. The device according to claim 2 wherein the firing pin puller comprises:

a retainer adapted to receive a firing pin;

a connector coupled to the retainer; and

a second actuator secured to the connector and configured to move the retainer together with the firing pin away from the rope system cable spiking tool.

5. The device according to claim 4 wherein the second actuator is a linear actuator.

6. The device according to claim 4~~1~~ wherein the receiver comprises:

one or more signal readers; and

a microprocessor operatively configured to:

in response to receiving the first signal pattern, activate the first actuator to trigger the latch bolt to move to the retracted position; and

in response to receiving the second signal pattern, activate the second actuator to move the firing pin away from the rope system cable spiking tool.

7. The device according to claim 6 wherein the first signal pattern comprises of a first signal, and the second signal pattern comprises of a second signal and a third signal simultaneously and continuously transmitted for a predetermined period of time.

8. The device according to claim 6 wherein the microprocessor is operatively configured to:

in response to receiving another first signal pattern, activate the first actuator to trigger the latch bolt to move back to the extended position.

9. The device according to claim 8 further comprises a retract button communicatively connected to the receiver and the microprocessor is operatively configured to activate the second actuator to move back to the retracted position in response to receiving a signal from the retract button.

10. A method of using the device according to any one of claims 4~~1~~-9 for retracting a firing pin of a rope system cable spiking tool comprising:

mounting the adapter onto a breech block of the rope system cable spiking tool;

pivoting the striking latch of the rope system cable spiking tool to an almost upright position such that the striking latch of the rope system cable spiking tool moves past the angled end of the latch bolt;

inserting a firing pin into the retainer;

supplying power to the device;

triggering the one or more remote controllers to send the first signal pattern to a receiver to trigger the first actuator to move the latch bolt to the retracted position; and

triggering the one or more remote controllers to send the second signal pattern to the receiver to trigger the second actuator to move the firing pin puller to the extended position.

11. A method of retracting a firing pin of a rope system cable spiking tool comprising:

mounting an adapter of a device onto a breech block of the rope system cable spiking tool;

pivoting a striking latch of the rope system cable spiking tool to an almost upright position such that the striking latch of the rope system cable spiking tool moves past an angled end of a latch bolt of a safety latch of the device;

inserting a firing pin into a through opening of a retainer of a firing pin puller of the device;

supplying power to the device;

triggering ~~the~~ one or more remote controllers to send a first signal pattern to a receiver of the device wherein in response to receiving the first signal pattern, the receiver triggers a first actuator of the device to move the latch bolt from an extended position to a retracted position such that the angled end of the latch bolt is hidden in the safety latch to unblock a path of the striking latch of the rope system cable spiking tool; and

triggering the one or more remote controllers to send a second signal pattern to the receiver wherein in response to receiving the second signal pattern, the receiver triggers a second actuator to move the firing pin puller to an extended position pulling the firing pin away from the rope system cable spiking tool.

12. The method according to claim 11 wherein the receiver activates a buzzer in response to receiving the first signal pattern.

13. The method according to claim 11 wherein the receiver triggers the first actuator to move the latch bolt to the retracted position in response to receiving the first signal pattern comprising of a first signal, and the receiver triggers the second actuator to move the firing pin puller to an extended position in response to receiving the second signal pattern comprising of a second signal and a third signal simultaneously and continuously transmitted for a predetermined period of time.

14. The method according to claim 11 further comprising:

triggering the one or more remote controllers to send another first signal pattern to the receiver of the device wherein in response to receiving the another first signal pattern, the receiver triggers the first actuator of the device to move the latch bolt back to the extended position.

15. The method according to claim 14 further comprising:

removing the firing pin from the retainer; and

pressing a retract button to send a signal pattern to the receiver wherein in response to receiving the signal pattern from the retract button, the receiver triggers the second actuator to move back to the retracted position.

16. A device for retracting a firing pin of a rope system cable spiking tool comprising:

an adapter configured to couple with a breech block of the rope system cable spiking tool;

a safety latch extending from a top side of the adapter adaptable to block and unblock a path of a striking latch of the rope system cable spiking tool;

a firing pin puller adaptable to guide movement of a firing pin of the cable spiking tool; and

a receiver configured to trigger the safety latch to unblock the path of the striking latch upon receiving a first signal pattern and subsequently trigger the firing pin puller to pull the firing pin away from the cable spiking tool upon receiving a second signal pattern.

17. A device for retracting a firing pin of a rope system cable spiking tool comprising:

an adapter configured to couple with a breech block of the rope system cable spiking tool;

a safety latch extending from a top side of the adapter adaptable to block and unblock a path of a striking latch of the rope system cable spiking tool;

a firing pin puller adaptable to guide movement of a firing pin of the cable spiking tool;

a first reader configured to receive a first signal pattern from one or more remote controllers to trigger the safety latch to unblock or block the path of the striking latch upon receiving the first signal pattern; and

a second reader configured to receive a second signal pattern from one or more remote controllers to trigger the firing pin puller to pull the firing pin away from the cable spiking tool upon receiving the second signal pattern.

18. The device according to any one of claims 1, 11, 16 or 17, wherein the first signal pattern comprises a first signal, and the second signal pattern comprises a second signal and a third signal simultaneously and continuously transmitted for a predetermined period of time.

19. The device according to claim 18, wherein the first signal and second signal are generated by a first remote controller and the third signal is generated by a second remote controller.

20. The device according to claim 18, wherein the frequency of the first signal is the same as the frequency of the second signal, the amplitude of first signal is different from the amplitude of the second signal and the frequency of the third signal is different from the frequency of the first and second signals.