

(No Model.)

3 Sheets—Sheet 1.

A. SCHMITT.
DEVICE FOR THROWING LIFE LINES.

No. 538,626.

Patented Apr. 30, 1895.

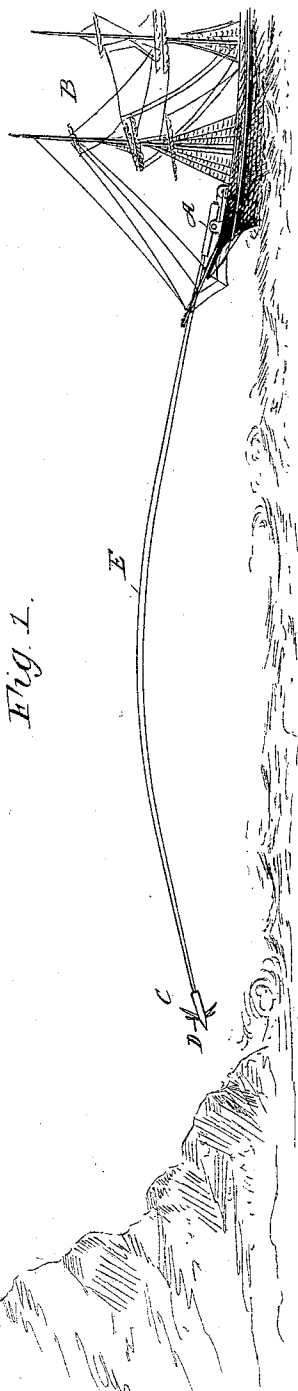


Fig. 1.

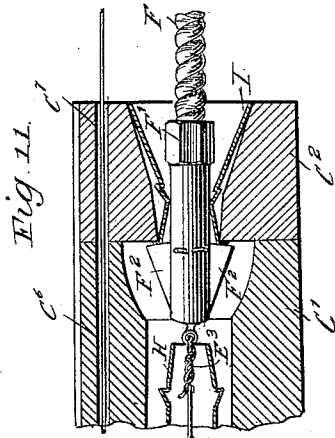


Fig. 11.

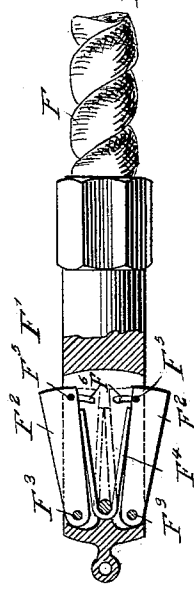


Fig. 10.

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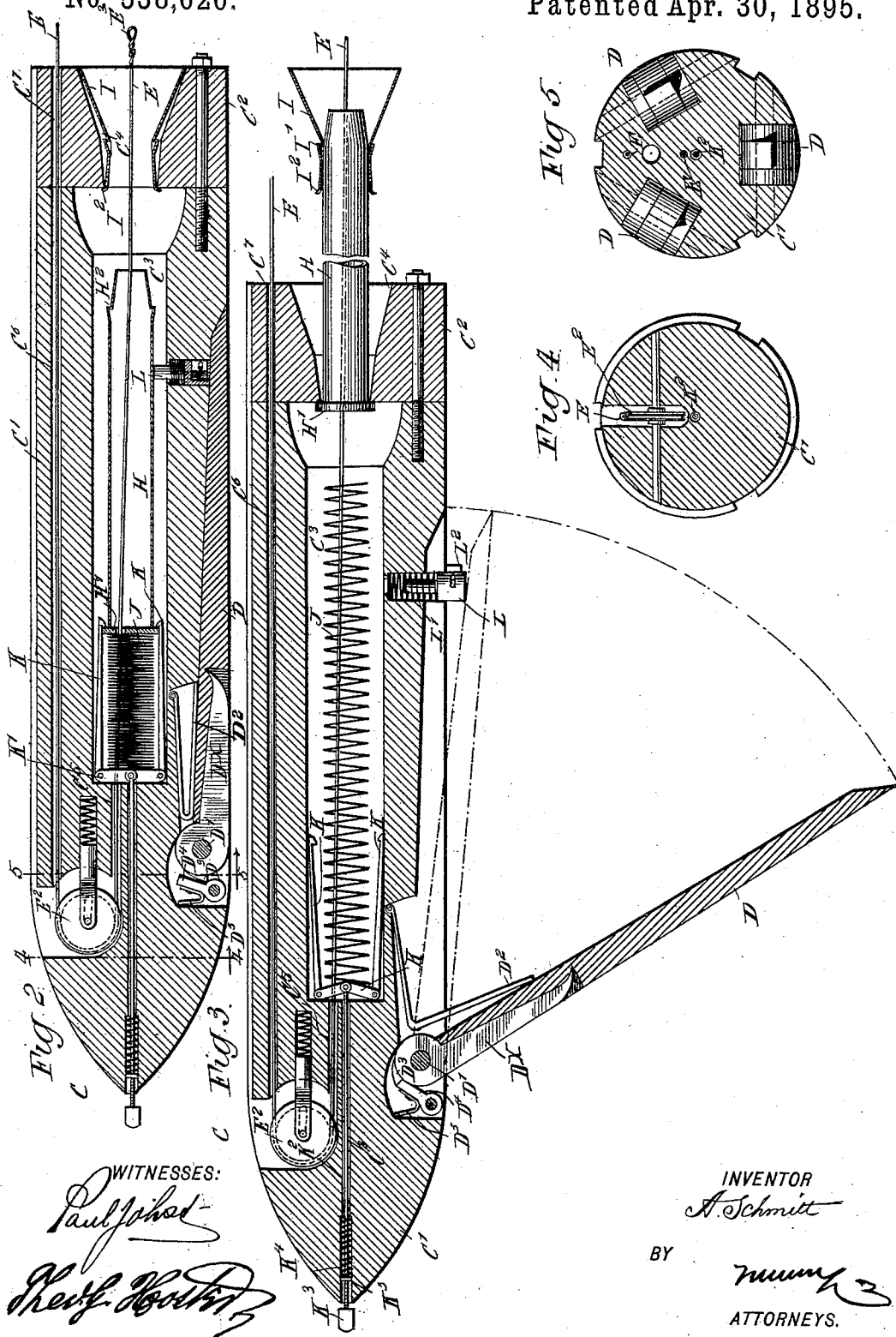
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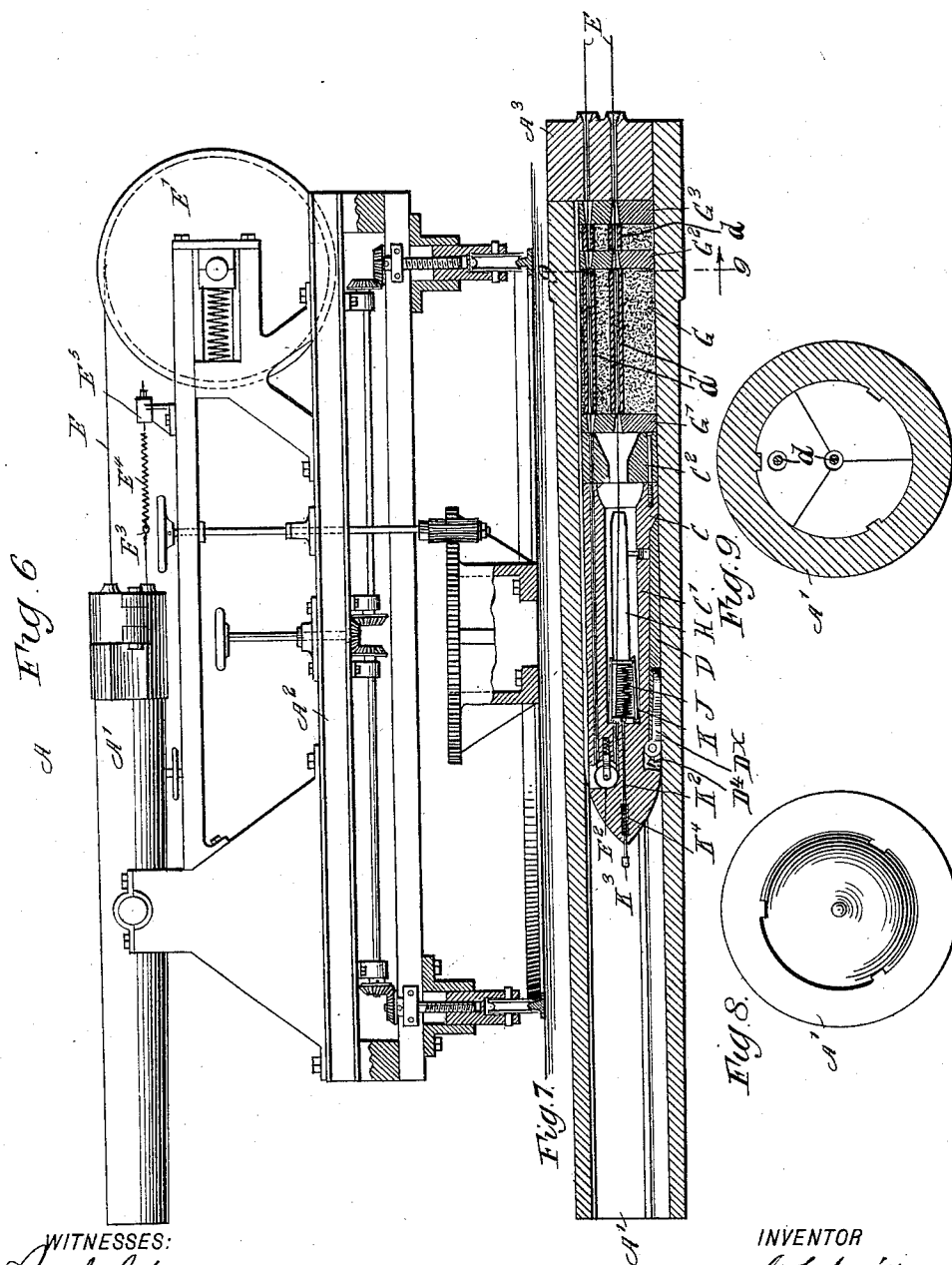
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3 Sheets—Sheet 3.

A. SCHMITT.
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Patented Apr. 30, 1895.



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UNITED STATES PATENT OFFICE.

ANTON SCHMITT, OF BUTLER, NEW JERSEY, ASSIGNOR OF THREE-FOURTHS
TO ALBERT STROEBELE, OF SAME PLACE, AND WILLIAM HERBERT, OF
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DEVICE FOR THROWING LIFE-LINES.

SPECIFICATION forming part of Letters Patent No. 538,626, dated April 30, 1895.

Application filed November 13, 1894. Serial No. 528,624. (No model.)

To all whom it may concern:

Be it known that I, ANTON SCHMITT, of Butler, in the county of Morris and State of New Jersey, have invented a new and Improved Life-Line-Throwing Apparatus, of which the following is a full, clear, and exact description.

The invention relates to life and vessel saving apparatus, and its object is to provide a new and improved apparatus for use on marine vessels, to establish communication with the shore, and to aid a disabled or drifting ship in making a safe landing.

The invention consists principally of an anchor adapted to be fired from a cannon on board the vessel, and carrying a line for drawing a heavy chain or cable to the said anchor after the latter is embedded in the ground, the said chain or cable being adapted to be fastened in the anchor by the line, so that on winding up the chain or cable on a windlass on board the vessel, the latter is dragged toward the anchor and shore, and a landing is effected.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter fully described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the improvement as applied. Fig. 2 is an enlarged sectional side elevation of the anchor with the grapnel-arms closed. Fig. 3 is a similar view of the same with the arms open. Fig. 4 is a transverse section of the same on the line 4 4 of Fig. 2. Fig. 5 is a similar view of the same on the line 5 5 of Fig. 2. Fig. 6 is an enlarged side elevation of the cannon for shooting the anchor, parts being in section. Fig. 7 is an enlarged sectional plan view of the same with the anchor in position in the cannon-barrel. Fig. 8 is an enlarged front end view of the same. Fig. 9 is an enlarged transverse section of the same on the line 9 9 of Fig. 7. Fig. 10 is an enlarged sectional side elevation of the cable-head, and

Fig. 11 is an enlarged sectional side elevation of the anchor with the cable-head in place thereon.

The improved apparatus comprises principally a cannon A located on board the vessel B and adapted to fire an anchor C having grapnel arms D, so as to securely hold the anchor C in the ground at or near the shore. The anchor C carries a line E, which has one end fastened on the carriage of the cannon A, the other end unwinding from a drum E' held on the carriage and shown in Fig. 6. Thus, when the anchor C is fired onto the shore, the line E is carried along in such a manner that its ends remain on board the vessel, so that one end can be connected with the head F' of a heavy chain or cable F, which can be then drawn out by the line E and fastened in the anchor C, as indicated in Fig. 11, to firmly connect the vessel with the anchor located in the ground at or near the shore. By then winding up this chain or cable on a suitable drum or windlass on board of the vessel B, the latter can be dragged toward the shore so as to effect a safe landing.

The anchor C is arranged in the shape of a projectile, to fit snugly in the barrel A' of the cannon A, and in and between the breech-block A³ of the cannon and the anchor C is placed a charge G of any suitable construction and composition, to fire the said anchor C out of the barrel to the shore, as previously explained. Now, in order to obtain the proper direction for the anchor C when firing the same from the cannon, I mount the barrel A' on a carriage A² adapted to be turned and moved into an inclined position to give an inclined position to the cannon barrel as the case may require.

The anchor C is provided with a body C', having a pointed end and provided with a base C² bolted or otherwise fastened to the base or rear end of the body C'. The latter is provided with a bore C³ registering with a conical bore C⁴ in the base C², and through these registering bores extends one run of the line E, the latter passing at the front end of the bore C³ through a small bore C⁵ to a pulley E² mounted to rotate in suitable

yielding bearings arranged in the head C'. From this pulley extends the other run of the line E, through registering apertures C⁶ and C⁷ in the body C' and base C², so as to return to the drum E' mounted on the carriage A², as previously mentioned and illustrated in Fig. 6.

One end of the line E is provided with a loop E³, connected with a spring E⁴, fastened on a bracket E⁵, on the carriage A², so that a yielding connection is made between the bracket E⁵ and the line to prevent entangling of the line at the time the anchor C strikes and buries itself into the ground.

In the bore C³ is held loosely a tube H, through which passes part of the line E as is plainly indicated in Fig. 2, and this tube H is adapted to engage a funnel I held in the base C² and adapted to form a guideway for the head F' of the heavy chain or cable F at the time the latter is to be connected with the anchor C'. See Fig. 11.

The front end of the tube H is provided with a cap H', on which presses a spring J coiled in the bore C³ and resting against the front end thereof, the said spring being held in a closed or compressed position by the cap H', which is engaged by hooks K, pivoted at their rear ends on links K' resting on the front of the bore C³ and pivotally connected with a rod K² extending centrally through a bore C³ in the front end of the body C', as is plainly shown in Fig. 2. The extreme outer end of this rod K² is provided with a head K³ extending beyond the point of the body C' so as to first strike the ground at the time the anchor is fired, whereby the said rod K² is pressed inward to cause the links K' to disengage the hooks K, so as to release the cap H' and to permit the spring J to force the tube H outward through the bore C⁴ of the base C², and to carry the funnel I along, as shown in Fig. 3, the outward movement of the tube H being limited by the cap H' being seated against the inner face of the base C². The rod K² is held normally in an outermost position by a spring K⁴ coiled on the rod K² and pressing on a collar K⁵ thereof, as is plainly shown in Figs. 2 and 3.

In order to enable the tube H to carry the funnel I, and to dislodge the same from the base C², as previously explained, I provide the rear end of the tube with a shoulder H² adapted to engage an annular recess I', formed in the funnel I, so that on the outward movement of the said tube, the shoulder engages the annular recess, and consequently carries the funnel I along. The latter is normally held in position in the conical bore C⁴ of the base C² by having its inner end slightly bent over to form flanges I² lightly seated on the inner face of the base C². As the funnel I is made of sheet metal the flanges I² readily disengage the inner face of the base C², as the metal bends or yields inwardly by being struck with considerable force by the tube H propelled outward by the force of the spring J.

The grapnel arms D, previously mentioned are preferably three in number, as indicated in Fig. 5, and each is pivoted at D' on the forward end of the body C', and is adapted to fold into a longitudinal recess formed in the body C', so as to present no projection on the body surface when the anchor is in position in the barrel A'. Each arm D is bifurcated at its pivot-point D' and recessed along its outer face to receive a pivoted arm D^x also fitting flush with the outer surface of the body as seen in the drawings. Each grapnel arm D is held in a closed position by the wall of the barrel, but as soon as the anchor is fired out of the cannon barrel, the grapnel arms swing into an open position, as shown in Fig. 1, by the action of V-shaped springs D² pressing on the inner faces of the said arms, as will be readily understood by reference to the drawings. On the pivot end of each arm D is formed a shoulder D³, adapted to be engaged by a pawl D⁴, pivoted in the body C' and pressed down by a spring D⁵. See Figs. 2 and 3. When the arms D and D^x swing outward by the action of the spring D², then the shoulder D³ glides over the free end of the pawl D⁴, so that a return or closing movement of the arm D^x is prevented when a pull is exerted on the rear end of the body C'. Thus it will be seen the projectile is provided with two sets of arms D and D^x, the forward arms D^x being rigid while the rear arms D are elastically held open.

In order to prevent the grapnel arms from closing in case they have not fully opened, and prevent them from closing by the lug D³ and pawl D⁴, I provide a spring-pressed pin L for each arm, the said pin being fitted to slide in the body C resting normally on the inner face of the arm D. See Fig. 2. Now, when the arm D swings outward after leaving the barrel A', the said pin L is forced outward by its spring L', and in case the arm D tends to close by the nature of the ground in which the anchor was fired, then it will strike the said pin L, which thus prevents a complete closing of the arm D, as will be understood by reference to the bottom line in Fig. 3. The lug L² on the said pin L prevents the latter from returning to a closed position, the said lug resting against the outer surface of the body D'.

The charge G previously mentioned is provided with a number of heads G', G², G³, between which the explosive material is placed, and which are connected with each other by indestructible tubes d, through which the runs of the line E pass, the latter also passing through apertures in the said heads G', G², G³, to prevent the line from being injured at the time the charge explodes, to propel the anchor D out of the barrel A'.

The head F' for the chain or cable F is provided with wings F², normally folded into a recess in the forward end of the head, the said wings being pivotally connected with the

head at F^3 as is plainly shown in Fig. 10. The inner sides of the wings F^2 are pressed on by the free ends of the V-shaped spring F^4 held in the said head, and the outward swinging motion of the wings is limited by pins F^5 held in the wings and engaging segmental slots F^6 formed in the head. Now, it will be seen that by this arrangement the wings F^2 are normally in an open or outermost position, so as to extend, at their free ends, beyond the surface of the base to engage the inner face of the base C^2 of the anchor C, as shown in Fig. 11, and as hereinafter more fully described in detail.

The head F' is of a size corresponding to the smallest diameter of the funnel I, so that when the head passes into the funnel the wings F^2 are closed while passing through the smallest part of the funnel, and they are again expanded by the force of the spring F^4 after the wings have passed the smallest diameter of the funnel.

The barrel A' is preferably provided with longitudinal ribs as shown in Figs. 7, 8 and 9, engaged by correspondingly shaped longitudinal grooves formed in the exterior surface of the body C' , so that the anchor C is properly guided while being shot out of the barrel to its destination.

The operation is as follows: When the vessel B is disabled or has passed into a dangerous position near the shore, then the charge G in the cannon A is fired, to shoot the anchor C out toward the shore, the anchor carrying the line E, so that when the anchor finally burrows into the ground at or near the shore, then it is held securely in place by the grapnel arms D, and at the same time communication is established with the vessel by the line E. A chain or heavy cable is now fastened to one end of the line E removed from the cannon barrel A' and then the other end of the said line is pulled so that the run with the chain or cable attached moves outward, while the other run is hauled in, it being understood that the line readily passes over the pulley E^2 contained in the body C' as previously explained. The head F' on this chain or cable F finally enters the funnel I, and by its expanded wings F^2 moves the funnel inward to again seek the said funnel in the bore C^4 of the base C^2 as is plainly illustrated in Fig. 11, and then the wings F^2 again close, on a further pull of the line E, the said wings then passing through the mouth or narrow portion of the funnel to the inside of the enlarged front end of the bore C^3 , to again swing outward or expand to abut against the inner face of the base C^2 . By this arrangement the head F' is securely connected with the anchor C, so that a very strong connection is made between the fastened anchor and the vessel B. This chain or cable F may now be used for sending baskets containing human beings to the shore, or the end of the cable on board of the ship is wound

up on a drum forming part of a suitable windlass, so that the ship is drawn toward the anchor and consequently to the shore to effect a proper landing.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A saving apparatus comprising a cannon held on board of the vessel, an anchor having pivoted grapnel arms and adapted to be fired from the said cannon, a line passing over a pulley in the said anchor and having its ends extending to the vessel, and a chain or cable connected with the said line and having a head adapted to be drawn by the said line into engagement with the said anchor, substantially as shown and described.

2. A saving apparatus of the class described, comprising an anchor having grapnel arms, a line passing over a pulley in the said anchor, and a cable or chain having a head connected with one end of the said line, and having a head adapted to engage the said anchor, substantially as shown and described.

3. A saving apparatus of the class described, comprising an anchor having grapnel arms, a line passing over a pulley in the said anchor, a cable or chain connected with one end of the said line, and having a head adapted to engage the said anchor, and a funnel for guiding the said cable head in the said anchor, substantially as shown and described.

4. A saving apparatus provided with an anchor having a head formed with a conical bore, and a cable base having spring-pressed wings adapted to pass through the said anchor base to the inside of the anchor, the said wings opening to abut against the inner case of the said anchor head, substantially as shown and described.

5. A saving apparatus provided with an anchor having spring-pressed grapnel arms, and pins adapted to be released by the said arms at the time the latter swing open, the said pins serving to prevent the arms from closing, substantially as shown and described.

6. A line throwing projectile comprising a body adapted to be discharged from a gun and provided with two sets of arms, the ends of the arms of one set being located behind the ends of the arms of the other set, substantially as set forth.

7. A line throwing projectile comprising a body adapted to be discharged from a gun and provided with two sets of arms, one set of arms being shorter than the other set substantially as set forth.

8. A line throwing projectile having two sets of grappling arms adapted to fold flush with the surface thereof, the ends of the arms of one set extending behind the ends of the arms of the other set substantially as set forth.

9. A line throwing projectile having two sets of grappling arms adapted to fold flush with the surface thereof when the projectile is in the gun, the ends of the arms of one set ex-

tending behind the ends of the arms of the other set and means for causing said arms to unfold when the projectile is discharged from the gun, substantially as set forth.

- 5 10. A line throwing projectile having folding grappling arms adapted to be unfolded when the projectile is discharged from the gun and provided with means for retaining said arms in their opened position, substantially as set forth.

- 15 11. A line throwing projectile having two sets of grappling arms pivotally connected and adapted to be unfolded when the project-

ile is discharged from a gun, one set of said arms being provided with means whereby the arms are held rigidly against folding, substantially as set forth. 15

12. A line throwing projectile having two sets of grappling arms, one set being elastically held in an unfolded position and the other set being rigidly held in an unfolded position, substantially as set forth. 20

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Witnesses:

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