L. A. PECK. 2 Sheets—Sheet 1

Apparatus for Projecting Life-Saving Lines, &c.

No. 206,126. Patented July 16, 1878.

Fig. 1.

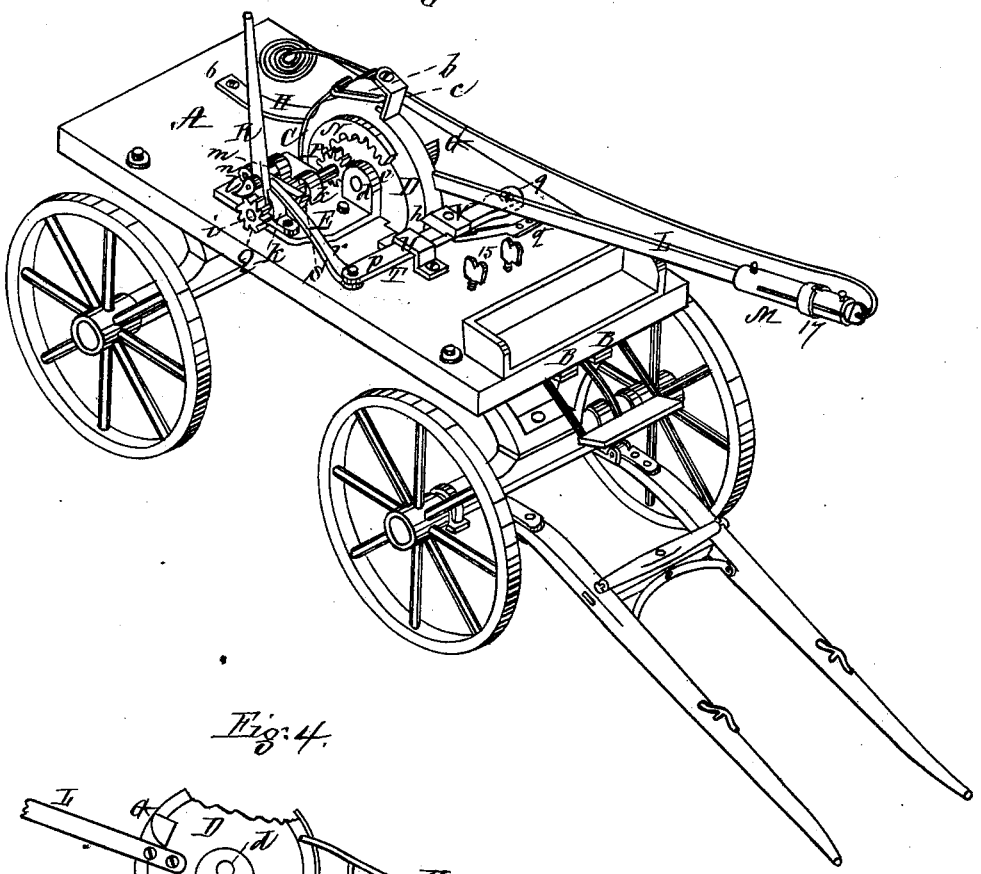
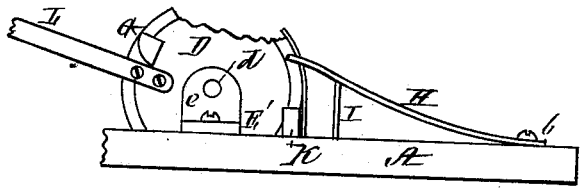


Fig. 4.



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2 Sheets—Sheet 2.

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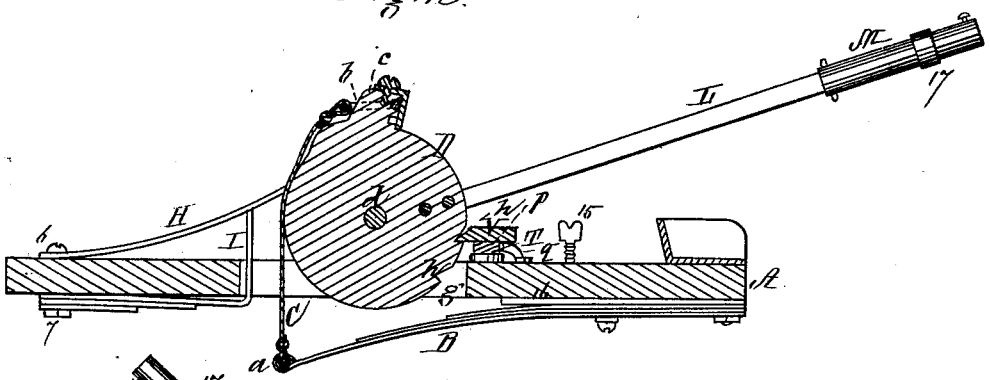
Apparatus for Projecting Life-Saving Lines, &c.

No. 206,126 **Patented July 16, 1878.**

Fig. 2.



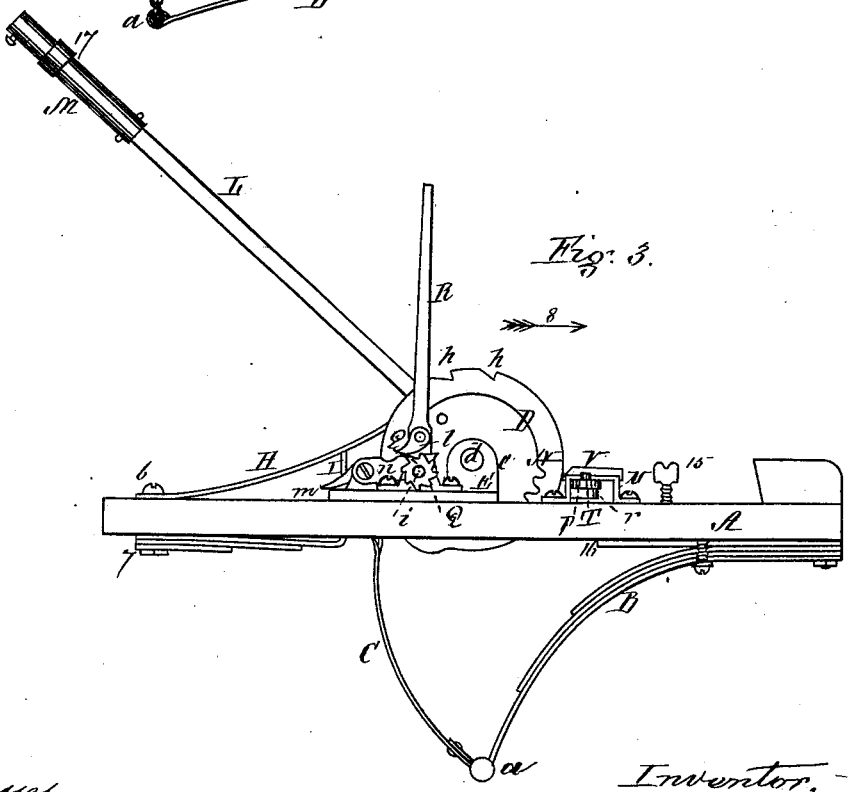


Fig. 3.

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UNITED STATES PATENT OFFICE.

LEWIN A. PECK, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN APPARATUS FOR PROJECTING LIFE-SAVING LINES, &c.

Specification forming part of Letters Patent No. **206,126**, dated July 16, 1878; application filed December 19, 1877.

To all whom it may concern:

Be it known that I, LEWIN A. PECK, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Apparatus for Projecting Life-Saving Lines, Rockets, Fishing-Gear, Mail-Packages, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my improved projecting apparatus, mounted on wheels, ready for use. Fig. 2 is a longitudinal vertical section through the center of the same. Fig. 3 is an elevation of one side of my apparatus, the parts being in the positions they occupy immediately after the object has been projected therefrom, the carriage being omitted. Fig. 4 is an elevation of a portion of the opposite side.

My present invention relates to certain improvements in apparatus for projecting objects, for which Letters Patent of the United States No. 156,648 were granted to me on the 10th day of November, 1874; and this invention consists in the application of gearing to the driving-wheel, which is connected with and regulates the tension of the actuating-spring, whereby I obtain a greater purchase, which enables me to utilize a more powerful spring than was possible heretofore where the driving-wheel was wound up by applying the hand of the operator directly to a lever extending out therefrom; and my invention also consists in a spring-catch of peculiar construction for holding the driving-wheel when wound up.

My invention also consists in an arm for connecting the spring-catch with the winding-up lever, the catch being moved out of contact with the driving-wheel by pressing back the handle of the lever, whereby the actuating-spring is liberated and the arm for casting the projectile thrown over by the rotation of the driving-wheel, as desired.

My invention also consists in an actuating-spring of novel form, and arranged with respect to the driving-wheel in a different manner than that set forth in the Letters Patent No. 156,648, above referred to.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents a platform mounted on wheels and provided with shafts, by which my apparatus, which is applied thereto, may be readily transported from place to place.

B B are two curved flat springs, of the form seen in Fig. 2, arranged side by side, and secured at their upper ends to the under side of the platform near its front, the lower ends of these springs being connected by a coupling-pin, *a*, to the center of which is secured the lower end of a metal strap, C, the upper end of which is provided with a loop, *b*, which is caught over a hook-shaped projection, *c*, extending out from the surface of the periphery of a wheel, D, the shaft *d* of which rotates in bearings *e* in standards rising from plates E E′, secured to the upper side of the platform, the wheel D being located at or near the center of the platform, and its lower end extending down through a slot, *g*, formed therein.

The periphery of the wheel is provided with notches *h*, cut transversely across it, and from one side of the periphery extends a projection, G, which serves as a stop, which, when the wheel D is rotated by the recoil of the springs B B, to be hereinafter described, comes into contact with the upper end of a reversed bent spring, H, the lower end of which is secured at 6 to the upper side of the platform, the tension of the spring H being increased by another spring, I, bent in the form of a right angle, the spring I being secured at 7 to the under side of the platform, and projecting up through a slot therein and bearing constantly on the under side of the spring H. These springs H I serve as cushions to receive and relieve the blow occasioned by the contact of the projecting stop with the upper end of the spring H on the recoil of the actuating-springs B B; and to still further reduce the concussion from the recoil of these springs B B, I attach a rubber block, K, to the platform at a point immediately in line under the stop G, so that when it strikes the upper end of the spring H the latter, in being brought down thereby, will

receive a yielding support, thus assisting in taking up and dissipating the blow caused by the unwinding of the actuating-springs.

The stiffness of the actuating-springs may be increased by turning the thumb-screws 15 down upon the plates 16 interposed between the upper ends of the springs and under side of the platform.

To one side of the driving-wheel D is secured the lower end of a long arm, L, which extends out radially therefrom, and is provided at its upper end with a tube or socket, which forms the holder M for the object to be projected, this tube being preferably split so as to act as a spring, by which a pressure is exerted on the object to retain it in the tube till the arm arrives at the proper inclination for discharging the object therefrom.

The distance to which the object is to be projected depends on several conditions—viz., the strength of the actuating-springs and the greater or less degree of tension given them, the length of the projecting arm, the position of the object in the holder, (whether nearer or farther from the center of the driving-wheel,) and the degree of pressure exerted on the object by the spring-holder, which pressure may be regulated by a sleeve or band, 17, sliding thereover to a point opposite to the position occupied by the inclosed object, which is thus griped and held until the time arrives for its release, to be more particularly described.

I will now refer to the principal feature forming the subject-matter of this invention—viz., the mechanism for winding up and operating the driving-wheel D, by which the tension of the actuating-springs B is regulated.

On the side of the driving-wheel opposite the stop G and arm L is located a segmental rack, N, into which engages a pinion, P, secured to the inner end of a short horizontal shaft, *i*, revolving in bearings *k*, the outer end of this shaft being provided with a ratchet-wheel, Q, with which engages a pawl, *l*, pivoted to a long lever, R, the lower end of which surrounds the shaft *i*, which thus forms its pivot, the vibration of the lever in the direction of the arrow S causing the pawl *l* to rotate the ratchet Q, and, through the connections described, revolving the wheel D backward against the resistance of the springs B, the lower ends of which are brought up by the strap C, and the tension of the springs thus increased, as desired.

To prevent the forward revolution of the driving-wheel D by the recoil of the actuating-springs while their tension is being increased and until the proper time for releasing the same, I employ another ratchet-wheel, S, and pawl *m*, the ratchet being secured to the shaft *i* intermediate between the ratchet Q and the pinion P.

The shaft *i* may be moved longitudinally within its bearings, so as to be readily engaged with or disengaged from the segmental rack N of the driving-wheel, and when thrown into gear therewith may be securely held in that position by swinging a pivoted stop or check, *n*, over the shaft *i*, between one of its bearings, *k*, and the ratchet S, which thus prevents the outward movement of the shaft.

After the actuating-springs have been drawn up to the required tension by the winding up of the driving-wheel D in the manner just described, the latter is prevented from unwinding and held in the position seen in Fig. 1 by means of a spring-catch, T, of the following construction:

A long arm, *p*, pivoted at 9 to the upper side of the platform, extends nearly transversely across the platform and under a bridge or guide, U, a wedge-shaped projection, V, being secured to the upper side of the arm *p* at a point opposite the surface of the periphery of the driving-wheel, and being pressed into one of its notches, *h*, when brought in line therewith by a spring, *q*, placed at the back of the arm *p*, and bearing against it, the arm L and projectile-holder M being inclined back, as seen in Fig. 1, in which position the object is placed in the desired position in the holder. For instance, where a life-saving line is to be taken off to a wreck, a lead or other weight, with one end of a light line attached thereto, may be placed therein, and the sliding sleeve may be moved along the tube to a point opposite it, the diameter of the lead being about that of the interior of the split tube, so that the latter may be compressed and spring against it, to hold it in place and prevent its flight therefrom until the arm reaches the proper inclination.

To project the lead the maximum distance it should be placed in the bottom of the tubular holder, with the sliding sleeve brought down to hold it there until the arm L (on the recoil of the springs B) is swung up into a vertical position, when the centrifugal force of the released driving-wheel overcomes the friction of the tube upon the lead, and the latter is cast in the direction and over the wreck, when the light line is overhauled and the hawser or life-line at the other end thereof is drawn on board and secured as desired.

The spring-catch is pressed back to liberate the driving-wheel D, and thus release the actuating-springs by means of an arm, *r*, loosely pivoted to the free end of the arm *p*, the outer end of the arm being provided with a projection, which is fitted into a hole in the side of the lever R when the pawls *l m* are thrown out of contact with their ratchet-wheels Q S; and by this construction, when the lever R is pressed back from the vertical, the arm *p* is moved back and its wedge-shaped projection drawn out of the notch *h* of the driving-wheel D.

When the object is to be cast a short distance, it is confined by the sliding sleeve at or near the outer end of the split tubular holder, and it is ejected therefrom when the arm arrives at a position about forty-five degrees forward of a vertical line, as seen in Fig. 3.

To cast an object a distance between the maximum and minimum power of the appara-

tus, it should be held at the center of the tube, when it will be discharged therefrom when the arm L arrives at an inclination half-way between the vertical and forty-five degrees forward thereof.

The line connected with the weight to be projected is intended to be wound up in the manner of a Flemish coil, whereby it delivers from the center, and is therefore not liable to become foul.

The looped end of the strap C is hooked over the projection *c*, for the reason that it is removed farther from the center of the wheel D, and a greater purchase thereby obtained to bend the springs B, and, if desired, this projection may be made adjustable, so as to slide in toward the center and be secured in this position when the entire strength of the actuating-spring is not required to be used.

Instead of employing a split tubular holder for receiving the object to be projected, the end of the arm may be split and the object provided with a hole, so as to slip it in place thereover, by which means the necessary friction is obtained for holding the object till it is to be cast therefrom; and any other means of connecting the object to the arm L may be used that will effect the desired end.

In practice, I prefer to inclose the springs and some of the working parts within a casing, as thereby they are better protected from the action of the weather, and therefore less liable to corrode.

Where powerful actuating-springs are to be employed, I prefer to duplicate the cushioning-springs H I K, so as to provide an adequate means for taking up the recoil of the actuating-springs, in which case another stop, G, would be necessary on the other side of the driving-wheel D; and these springs H I K may be located under the platform, if desired.

Where objects are to be projected only short distances, a spiral spring may be employed under the apparatus and inclosed within a tubular casing, or otherwise be kept in place, this form of spring being compact, and its location out of the way.

Rockets with time-fuses may be projected by my improved apparatus to a considerable elevation before they receive an impetus to carry them still higher by the explosive force within them.

A cylindrical or other shaped receptacle, weighted at one end, and containing mail-matter to be transferred at sea from one ship to another, without delaying either of them by the passage of boats between them, may be placed in my projectile apparatus and cast so as to reach the required destination; and my apparatus may be used to advantage in various fishing operations and in casting lines over buildings in case of fire, &c., and may be mounted, or not, on wheels, and located on a vessel or at a station on the coast, &c.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The pinion P, with its shaft *i* and a means of rotating the same, in combination with the driving-wheel D, provided with a toothed rack, N, for the purpose of drawing back the projectile-arm L against the resistance of its actuating-spring, substantially as described.

2. The spring-catch T, consisting of the pivoted arm *p*, spring *q*, and wedge-shaped projection V, in combination with the notched driving-wheel D, substantially as and for the purpose set forth.

3. The arm *r*, in combination with the spring-catch T and lever R, for releasing the driving-wheel and liberating the actuating power, substantially as and for the purpose described.

4. One or more actuating-springs, B, of the form and arrangement shown, in combination with the connecting-strap C and driving-wheel D and a means of winding up and liberating the same, as and for the purpose set forth.

Witness my hand this 12th day of December, 1877.

LEWIN A. PECK.

In presence of—
N. W. STEARNS,
P. E. TESCHEMACHER.