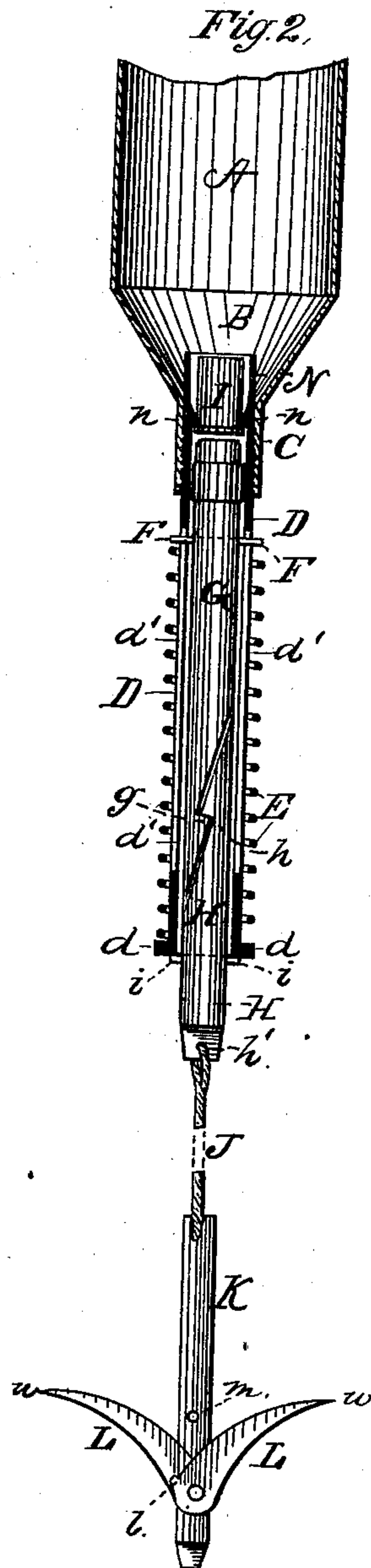
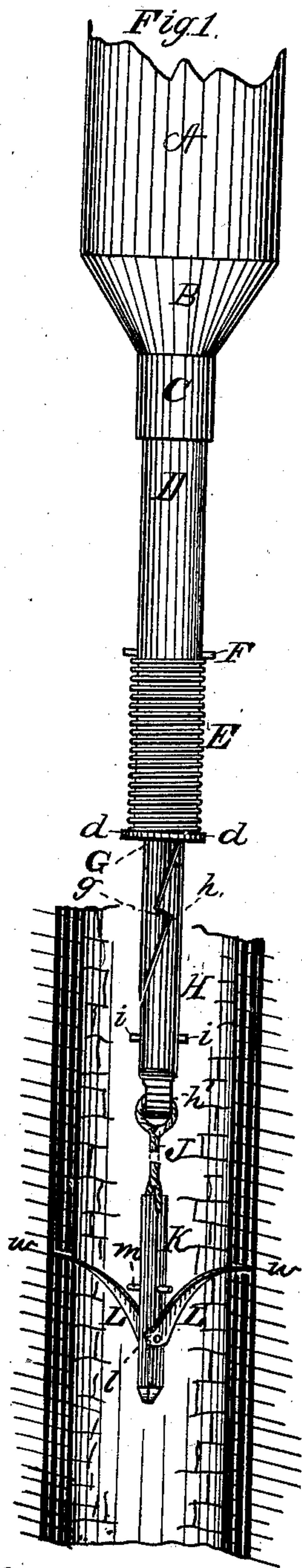


H. C. HUNTINGTON.
Torpedo for Oil-Wells.

No. 214,041.

Patented April 8, 1879.



Witnesses
John Willings
W. R. Edelen

Inventor.
Henry C. Huntington
By *James B. Boyce*
his Atty

UNITED STATES PATENT OFFICE.

HENRY C. HUNTINGTON, OF OIL CITY, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO SAMUEL T. PARKS, OF SAME PLACE.

IMPROVEMENT IN TORPEDOES FOR OIL-WELLS.

Specification forming part of Letters Patent No. **214,041**, dated April 8, 1879; application filed November 11, 1878.

To all whom it may concern:

Be it known that I, HENRY C. HUNTINGTON, of Oil City, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Torpedoes for Petroleum-Wells; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification, in which—

Figure 1 represents a side elevation of an improved torpedo as anchored in a well and in the act of firing off. Fig. 2 represents a section of the improved torpedo, partly in elevation, with the wings of the anchor fully extended.

My invention consists of improved devices for exploding torpedoes in oil-wells—the novel method of anchoring the same suspended in any part of the well, without having the anchor supported on the bottom of the well, as all those used at present depend upon the bottom of the well to support the torpedo.

It also consists of improvements in the location of the spring apparatus, being below the torpedo-magazine in case of misfire. In case of misfire the torpedo is not lost. It can be withdrawn from the well uninjured, the fulminate recharged, supplied with a new anchor, and placed again in the well.

The torpedo-magazine is represented by A, which is provided with a conical base, B, said base terminating in a neck, C. The internal circumference of said neck has a screw-thread cut therein for the reception of the upper end of a barrel or tube, D. The lower end of tube D is provided with a shoulder, *d*, for holding in place the bottom of a spiral spring, E, surrounding said barrel on the outside. The upper end of said spring bears against a pin, F, projecting over at right angles with said spring, and plays vertically up or down in slots *d'* *d'*, formed in the directly opposite sides of tube D. Located inside of tube D is the firing-pin G, provided on its lower end with a latch, *g*, said latch engaging with a corresponding latch, *h*, forming the upper end of the trigger H.

Said trigger has a pin, *i*, which bears against the under side of the shoulder-ring *d*, and prevents the end of the firing-pin coming in contact with the cap I, containing the fulminate. The lower end of the trigger-bar H is provided with a hole, *h'*, for securing the anchor-rope J. The lower end of said rope is secured to the end of the anchor-bar K. Said bar has pivoted on opposite sides wings L L, provided with shoulders *l l*, to prevent said wings from dropping below their fulcrum. The bar is also provided with a stop-pin, *m*, to prevent said wings from falling on the opposite sides of the anchor-bar.

Secured to the upper part of neck C, and extending a short way into the magazine-chamber of the torpedo-shell A, is a short flue, N, provided at the bottom with an annular shoulder, *n*, for receiving the flanged rim of the fulminating-cap I.

In operating my improved torpedo, a wire cord is placed through the holes at the top of the shell A, and the torpedo lowered into the well. When it has reached the proper location in the well for the explosion the cord is drawn up a few inches, the wings L remaining stationary by means of the sharp points *w w* penetrating the walls of the well, and the anchor-bar K being also elevated with the torpedo. The tension of the bar and connecting-rope are so great as to depress the spiral spring E by means of the shoulder *d* as the tube D is being elevated. When the tube D has been elevated sufficiently it allows the latch *h*, forming part of the trigger-bar H, to escape from the latch *g*, forming the lower part of the firing-pin G. The anchor drops to the bottom of the well, while the firing-pin G comes in contact with the fulminating-cap I, thus exploding the torpedo.

In setting the torpedo, the pin F is forced down, taking the spring E with it, until the latch *g* has been forced out a sufficient distance to allow the latch *h*, forming the trigger, to engage with *g*, when it is drawn into tube D by means of spring E until stopped by pin *i*, which stops firing-pin G close to, but not in contact with, the fulminating-cap I.

Torpedoes, as heretofore constructed, have to be anchored at the bottom of the well to

discharge the fulminate, and the means of explosion is in contact with the cap, which is liable to explode at any moment by striking any slight obstruction that may project from the walls of the well. With my improved self-anchoring torpedo there is no such inconvenience or liability to explode, as it can be lowered into the well as roughly as possible, and no danger ensue to the operator. The firing-pin is never in contact with the cap until the latches are released at the moment of firing, and then it is accomplished by an upward pull by the operator. The anchor can be secured in any part of the well by pulling slightly upward, which drives the points of the anchor-wings into the walls of the well, as represented at Fig. 1, heretofore described.

I claim—

1. A torpedo provided at its lower end with an explosive cap and a tube surrounded by a spring, said tube inclosing a firing-pin provided with a beveled shoulder, by which it can be retracted by the trigger while in the tube, substantially as and for the purpose described.

2. A torpedo-anchor, suspended by a rope under the torpedo, and formed of an anchor-bar, K, having a pin, *m*, and wings L, loosely pivoted to said stem, substantially as and for the purpose described.

3. In a torpedo, the combination of a case, A B, having a neck, C, and tube D attached to its lower end, with a firing-pin, G, propelled by a spring and retracted by a trigger-rod having a beveled shoulder on its side, substantially as and for the purpose described.

4. The combination of the case A B, tube D, attached to its lower end, and flue N, provided with an annular shoulder, *n*, with a firing-pin having a beveled shoulder, *g*, and operated by a spring inclosing said tube, as and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

HENRY C. HUNTINGTON.

Witnesses:

JAMES C. BOYCE,
W. R. EDELEN.