J. S. MORRIS.

Torpedo.

No. 59,924. Patented Nov. 20, 1866.

Fig. 1.

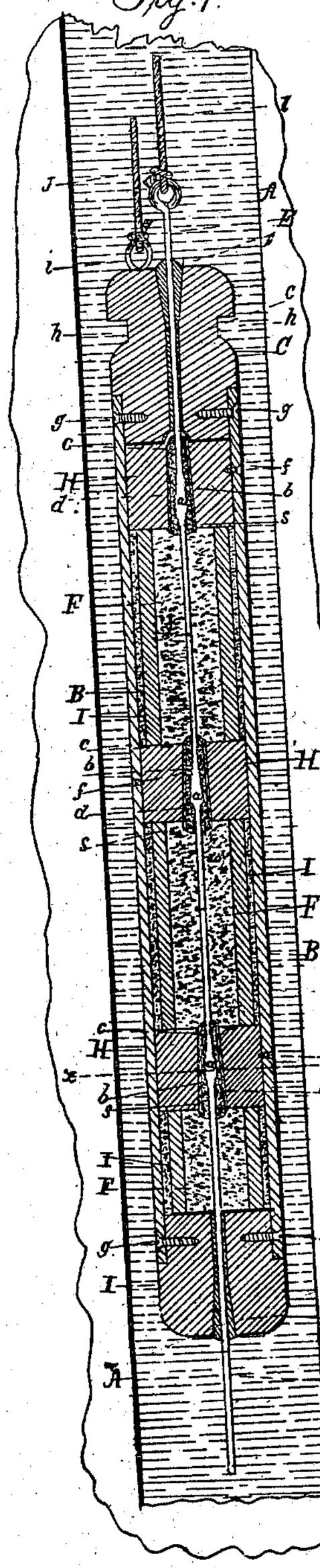
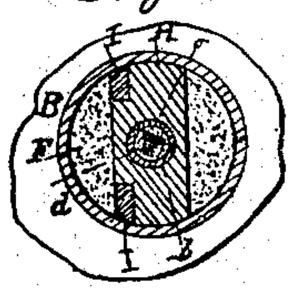


Fig. 2.



Witnesses

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IMPROVED TORPEDO.

JOHN S. MORRIS, OF BUFFALO, NEW YORK.

Letters Patent No. 59,924, *dated November* 20, 1866.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN S. MORRIS, of the city of Buffalo, in the county of Erie, and State of New York, have invented certain new and useful improvements in Torpedoes; and I do hereby declare that the following is a full, and exact description thereof, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a longitudinal vertical section of my improved torpedo represented in a well, and

Figure 2 is a cross-section of the same in the plane of line *x x*.

Like letters designate corresponding parts in both figures.

My improvement consists in the use or employment of a straight friction rod or wire passing longitudinally through the torpedo, and armed with teeth, or otherwise roughened, at different portions of the same, in combination with corresponding fuses or detonating tubes, by which the powder or other explosive substance may be ignited at several places at the same time. Also the manner of securing the fuses within the shell of the torpedo, and the peculiar construction of the bases or plugs for closing the ends of the shell, in combination with wax or other suitable material for packing around the friction rod.

In the drawings A represents the lower portion of an oil well filled with water, B the shell or case of the torpedo, C the upper and D the lower plug for securing the ends of the same; E is a rod or wire, extending longitudinally through the same, flattened or (preferably) made triangular in cross section at the different portions *a a a*, and roughened or provided with teeth, the friction of which causes the ignition of the detonating powder or other compound contained in the fuses or detonating tubes *b b*. These flattened or triangular portions, *a*, increase in width or size in a direction opposite to that of the intended motion, so that each tooth will successively act upon the friction composition as the rod is drawn or forced through it. The fuses *b b* consist of short tubes, (preferably slightly conical,) closed at one end except a hole for the passage of the friction rod E, and open at the other, through which the detonating or other friction composition, *c*, is first inserted; and then I prefer to fill the remainder of the tube with fine or rifle powder *d*, confining it within the former by means of a cotton or other easily ignited wadding *s*, by which means the firing of the powder F with which the shell A is filled is rendered absolutely certain. Of these fuses there may be any number required, according to the length of the case or powder magazine, so that the same may be ignited at a sufficient number of places to insure the instantaneous explosion or combustion of the entire quantity. By this arrangement a large amount of powder is saved and utilized, which in torpedoes fired at only one point, as is ordinarily done, would be unconsumed and immediately become wet and wasted, and, as a consequence thereof, the explosive and beneficial effects are proportionally greater. The fuses are secured in position by being inserted in blocks of wood H H, fitting transversely the shell A, and which are maintained in their relative position by being fastened to longitudinal pieces or stays I I. The whole may then be introduced into the case, and secured in proper place by screws *f f;* or if constructed as shown, the plugs C D would sustain them sufficiently without the screws. The plugs C D, I prefer to make of wood, on account of their greater cheapness; and they may be prepared so as to be impervious to wet by boiling in linseed oil and coating with a suitable material, or in any other desired manner. They are constructed as shown, and the ends, after being properly fitted, and dipped in any suitable preparation for rendering the joint tight, are driven or otherwise forced in, and then fastened by screws *g g*. At the outer end of each plug the hole through which the friction rod passes is enlarged, as represented, forming a recess, into which wax of any suitable kind may be poured, so as to render the passage water-tight, and still leave the rod capable of being easily slid through the same, as required in exploding the apparatus. The upper plug C is provided with a collar or groove, *h*, in which a "catch-all" or other suitable clutch may engage when from any cause it is required to raise the torpedo, and the ring or staple *i* and rope *j*, by which it is lowered down, proves insufficient for the purpose. The powder may be introduced at one end, after the other parts are inserted, and that then closed by the plug; or it may be filled in through a hole in C or D made for the purpose.

The apparatus may be exploded by three different methods, viz:

First, by extending the friction-rod a short distance below the lower plug, as shown, so that, as the torpedo is descending, the end of the rod will first strike the bottom of the well, when the weight of the apparatus will force the toothed portions *a* through the detonating powder, causing its explosion.

Second, a cord or wire, *l*, may be extended from the upper end of the friction-rod to the top of the well, and the firing effected by giving this cord, after the torpedo has reached the bottom, a sudden jerk or pull upward.

Third, the fuses may be inverted, and the explosion accomplished by dropping a weight, guided by a wire or cord attached to the friction-rod and passing through the weight, which sirikes the end of the said rod and causes the explosion.

If desired the friction-rod may be constructed with a roughened portion above each fuse, so as to act in an opposite direction from the one below, so that any two or all three of the above methods may be employed with the same torpedo, as required, which would render the firing certain.

In addition to the advantages already enumerated, I would call attention to the following:

The extreme simplicity of the various parts of my improved torpedo and its cheapness of construction. Constructing the toothed portions *a* triangular in cross section, as shown in fig. 2, presents three friction edges instead of two, which renders the ignition more certain. Firing the torpedo at different places by fuses arranged in a straight line and exploded by the same straight rod at the same instant not only effects the great saving and increases the beneficial results, but it is also a most simple arrangement, which enables the apparatus to be exploded by either of the three methods before specified and without the aid of complex mechanism. The arrangement of the parts H I with the detonating tubes enables the latter to be easily secured in place and maintained in their proper relative position within the case A.

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

A blasting cartridge or torpedo, constructed substantially as described.

I also claim the blocks H and stays I, in combination with the detonating tubes *b*, by which the latter are secured in place, and maintained in their proper relative position within the case A, substantially in the manner specified.

I also claim constructing the plugs C D, with the hole for the friction-rod enlarged at the outer end, when used in combination with wax, *o*, or other suitable substance for packing the same, and also constructing the former with the groove *h*, all arranged and operating substantially in the manner and for the purpose described.

JOHN S. MORRIS.

Witnesses:

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