

IRA W. SHALER.  
Improvement in Torches.

No. 118,751.

Patented Sep. 5. 1871.

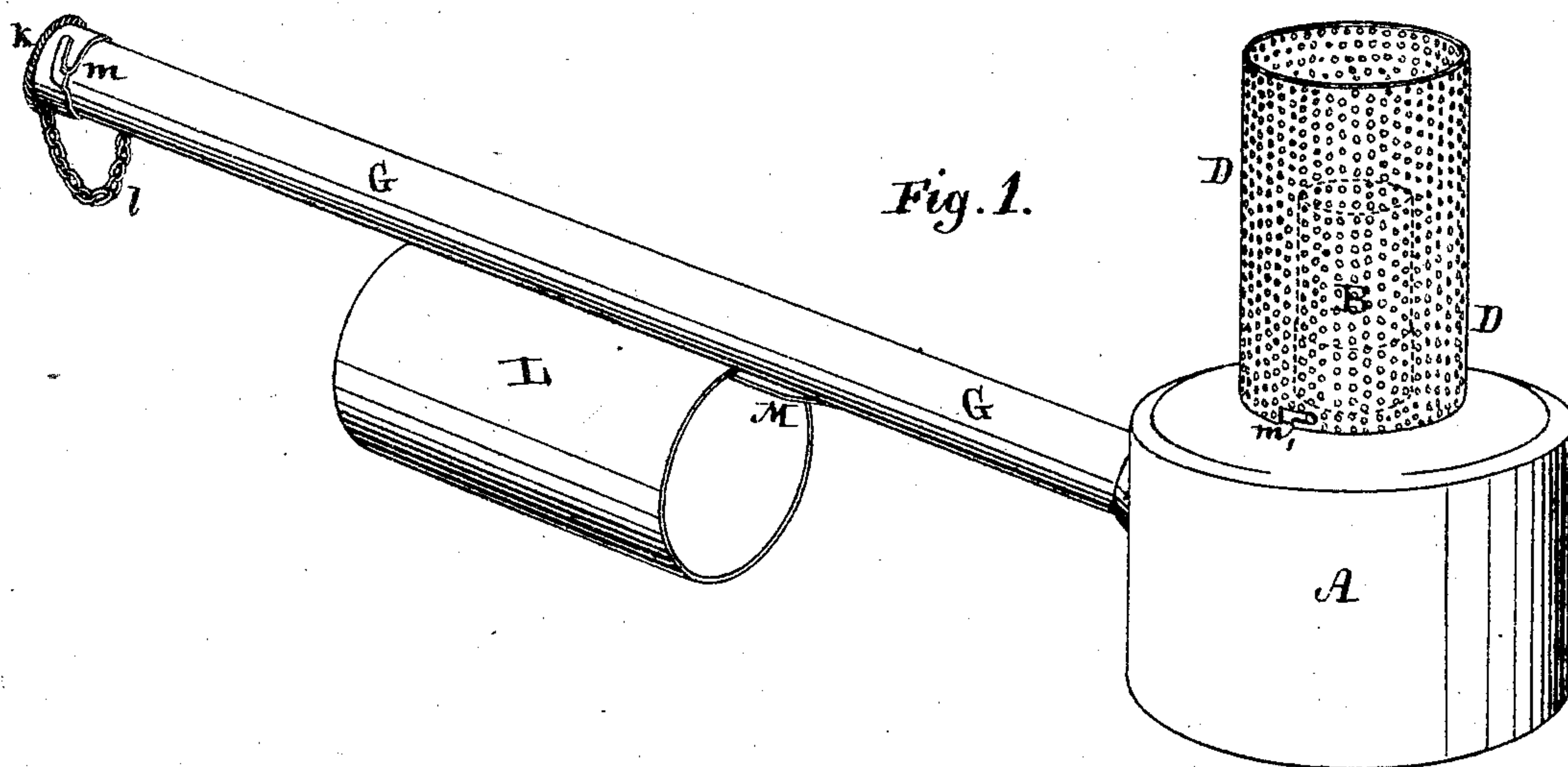


Fig. 1.

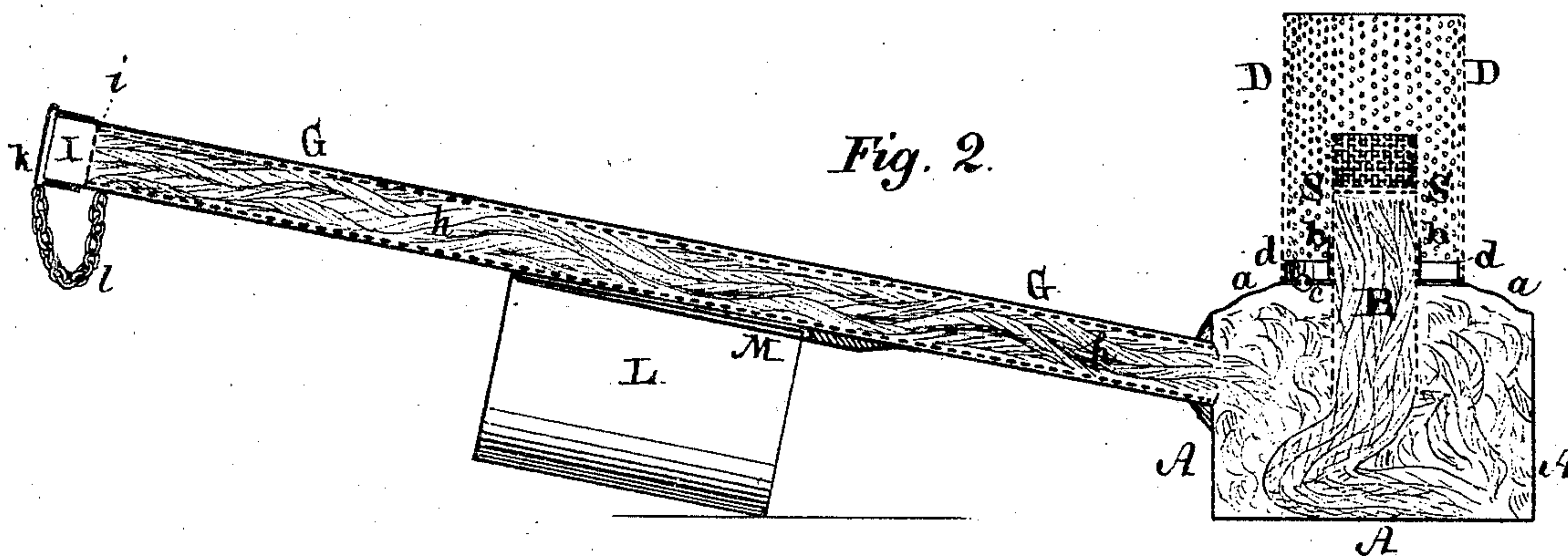


Fig. 2.

Witnesses.

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# UNITED STATES PATENT OFFICE.

IRA W. SHALER, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN TORCHES.

Specification forming part of Letters Patent No. 118,751, dated September 5, 1871.

*To all whom it may concern:*

Be it known that I, IRA W. SHALER, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Petroleum or other Hydrocarbon Torch; and I hereby declare that the following is a full, clear, and exact description of the same.

The seventieth section of the act of Congress approved February 28, 1871, provides that vessels shall, on the approach of any steamer during the night-time, show a lighted torch upon that point or quarter to which such steamer shall be approaching; but no means were heretofore known to carry out this provision of the act with the desired effect or with adequate safety to the vessel or its cargo and passengers. Torches of ordinary construction are difficult to light, produce insufficient light, particularly against a strong current of air, such as is always attending fast-going steamers, and are liable to be blown out or extinguished by wind and rain, and perhaps at the very moment when it is desirable or necessary to show a strong light or blaze. They are also dangerous because of their drippings in the vicinity of highly-inflammable matter, such as abounds on vessels of every description. The object of my invention, therefore, is to obviate the dangers and insufficiencies of torches as heretofore used and known; and I have attained the same by the devising a signal-torch, which, while affording all the requisite means of safety, durability, and efficiency, is also of comparatively inexpensive use.

To enable others to make and use my said invention, I shall now describe the manner in which the same is or may be carried into effect.

The general conformation of my torch is that of a huge smoking-pipe, consisting in the main of a bowl and a stem, together with such appurtenances as may be necessary for the proper operation of the apparatus. The bowl A, as shown in the drawing, is a cylindrical vessel, made of sheet metal, and provided with a cap, *a*, to which is secured, by rivets *c*, a double concentrically-flanged collar, C, the interior flange *b* of which so holds a wire-gauze tube, B, as to penetrate the vessel to the middle, or thereabout, and to project therefrom above the vessel to a certain elevation determined by the capillary action of the wire-gauze on the fluid the vessel is to hold. The tube B, which I shall call the flame-tube, is

composed of a sheet of wire-gauze rolled into a cylinder with one or more concentric folds. The tendency of the tube to unfold will always insure a perfectly tight friction-joint between the tube and the interior collar-flange *b*. The tube may be rolled into the desired-sized cylinder and then tied by means of a wire band, or it may otherwise be fastened so as to permanently maintain its form and diameter. This tube is provided, at about midway between the flange *b* and the top of the tube, with a diaphragm, S, completely closing the tube at that point. The outer collar-flange *d* is intended to hold, concentrically with the wire-gauze tube, a cylinder, D, of perforated sheet metal, the meshes or perforations of which are of such dimensions as to allow the surrounding air to penetrate the interior of the cylinder, yet check violent currents of air or gusts of wind to sensibly disturb the equilibrium of the air within the capacity of said cylinder. With the bowl or vessel A is connected a sheet-metal stem or tube, G, which contains a wire-gauze tube, *h*, formed substantially in the manner as the flame-tube before referred to. At the outer end the wire tube *h* is closed by a wire-gauze diaphragm, *i*, which extends transversely from side to side of the tube G and acts as a cut-off. The end of the tube G is mounted by a mouth-piece, I, which in its turn is provided with a cap, *k*. For convenience the cap is attached, by the chain *l*, to the tube G, so that when it is removed from the mouth-piece it may not be misplaced or lost. I prefer to use, as a means of attachment of the cap to the mouth-piece, the well-known bayonet-catch device, and a similar contrivance is used for attachment of the cylinder D to the collar *d*, as shown at *m*. To complete my apparatus I use an extinguisher or hood, L, which is a cylinder, closed at one end and fitting over so as to incase the cylinder D when the apparatus is not used. When in use, however, the hood is removed, and in order to prevent its being displaced or lost I provide the tube G with a spring-hook or clamp, M, upon which it is slipped and held by spring-pressure. The spring-hook I prefer to locate at the lower part of the stem and at such distance from its juncture with the bowl that when the hood is placed on the hook it shall, in connection with the bowl, form a support for the torch, as shown in Fig. 2 of the accompanying drawing.

I have thus described in its minutest details



the signal-torch as constructed by me; but it is obvious that, both as to form of the various parts and the material of which the same are composed, as well as the manner in which the same are combined, may be greatly varied without departure from the essential character of my invention. Thus the stem, which is shown attached to the upper side of the vessel, may be attached to the middle thereof or the lower side; or, again, it may form a bend and terminate at the bottom of the bowl. It is also apparent that the hood and the means provided for connecting it with the torch form no essential part of the torch proper, and may be dispensed with, if desired. Other protecting devices in lieu of the foraminous cylinder may be used.

The apparatus thus constructed is used in the following manner: The bowl is filled with cotton wicking or other absorbent material, whether fibrous or cellular in its texture. The flame-tube is similarly filled with wicking up to the diaphragm S. It is then inserted, that part of the tube which is filled with wicking projecting downward into the vessel. The stem-tube *h* being likewise filled with wicking, it will be seen that the whole apparatus, beginning from the diaphragm *i* in the tube *h* to the diaphragm S in the tube B, is filled with wicking or the equivalent thereof. For use this whole absorbent mass is filled with hydrocarbon or other fluid. Care should be taken in filling that no more liquid shall be introduced but what can be held in suspension by the capillary action of the absorbent material.

In order to have the torch in readiness for use it is lit at the upper end of the wire-gauze flame-tube, the latter having the property, by its capillary action, of drawing liquid up through its meshes until a small quantity of the inflammable liquid borders the top of the flame-tube. It can thus be instantly ignited, and a small annular flame will be produced, which will be kept alive

according to the capacity of the vessel—that is, according to the quantity of hydrocarbon liquid absorbed—and the capacity of the vessel is always calculated for use of twelve hours' night-service. When an approaching vessel is in sight the operator at the bow blows through the tube, and instantly a large blaze or flame will be produced. This flame can be repeated as often as it may be deemed necessary.

It is not necessary to explain that this apparatus is inexplorative, not liable to drip inflammable matter about the deck of the vessel, and therefore that it is perfectly safe; also, that it is readily kindled and kept ready for instantaneous use, and that a large flame can be produced at any time and as often (the weather to the contrary notwithstanding) as may be desired; also, that it is economical, since the burning material is not blazed away except when it is desired to produce signaling effects.

Having thus described my said invention, I shall state my claims as follows:

1. A signal-torch for marine and like purposes, substantially as herein shown and described.
2. The combination of the three following elements, constituting a signal-torch, operating substantially as herein described: first, a vessel holding hydrocarbon fluid in suspension in wicking or other absorbent material; second, a flame-tube projecting from the holder; and, third, a blast-tube, all substantially as herein shown and described.
3. The hood and the method of its attachment to the stem, when the apparatus is in use, so as to afford a support to the torch.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

IRA W. SHALER.

Witnesses:

A. POLLOK,  
EDM. F. BROWN.