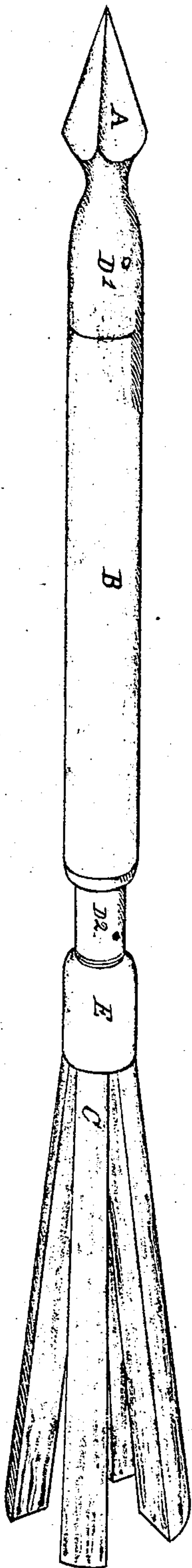


Ebenezer Pierce

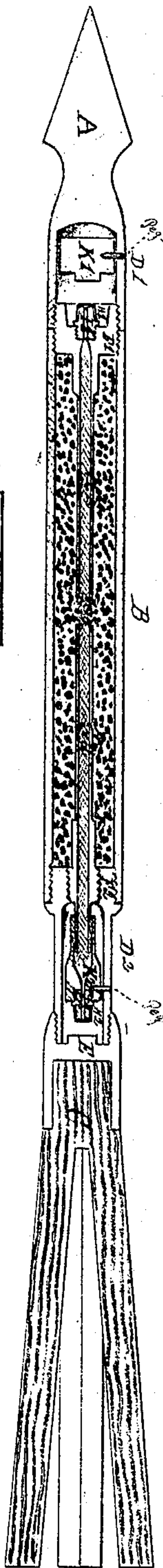
Bomb Lance

Fig. 1 N° 90868

Fig. 2



PATENTED
JUN 1 1869



Witnesses

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Letters Patent No. 90,868, dated June 1, 1869.

IMPROVEMENT IN BOMB-LANCES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, EBENEZER PIERCE, ship-master and whaler, of the city of Hallowell, county of Kennebec, in the State of Maine, have invented a certain new and useful Bomb-Lance for killing whales, and other similar purposes; and I do hereby declare the following specification, taken in connection with the drawings furnished, and forming a part of the same, to be a true, clear, and exact description thereof.

My invention relates to the novel construction and arrangement of the internal operative mechanism, by means of which the bomb-lance having been shot from a suitable gun, is ignited by the concussion of the discharge, but exploded only after any required number of seconds, to insure its destructive effect after penetrating the body of a whale.

My invention also relates to a tail-piece of novel construction, attached to the bomb, more perfectly securing its accurate flight.

Reference being had to the drawings,

Figure 1 represents one of my bomb-lances complete.

A is the lance-head or tip.

B is that portion of the bomb containing the charge of gunpowder, and is properly termed the magazine.

C is the tail-piece or guiding-apparatus. It is constructed of four pieces of hard wood, so fitted that when placed together, they form a cylindrical shaft. After being securely inserted into the breech of the bomb, a socket therein being provided for the purpose, small wedges are driven between the joints, which cause the outer ends to spread apart, and cause them to serve a similar purpose to that effected by a feather or feathers attached to the shank of an arrow. To insert the bomb into a gun, it is only necessary to compress the expanded ends, so that they will readily enter the muzzle. In using the bombs, a heavy sole-leather wad, or its equivalent, should precede the bomb in charging the gun.

D¹ and D² represent those portions of the bomb containing the operative mechanism for igniting the fuse, and are termed by me the fire-chambers. Both of these chambers are provided with a small hole, through which soft wooden pegs are inserted, which serve to prevent the hammers hereafter described, from action during ordinary handling or usage.

E is a breech-block, having a screw-socket for receiving the fire-chamber D², in its front end, and a plain socket for the reception of the tail-piece C at its rear end.

Figure 2 represents the bomb-lance complete, exhibited in longitudinal section.

External parts are lettered as in fig. 1.

In explaining the operative mechanism, I will first proceed with that contained within the fire-chamber D¹.

Similar parts in the two chambers are lettered alike, but are numbered in accordance with their relative position.

F¹ represents a screw-collar, by means of which the magazine B and fire-chamber D¹ are connected. At its rear end is inserted, and secured by soldering, a fuse-tube, hereafter described. Its front end is deeply recessed, and contains a gun-nipple, marked I¹, inserted in the usual manner.

G¹ is a stationary fuse-tube communicating from the gun-nipple I¹, to the interior of the magazine B. It is shown as filled with corded fuse. A filling of ordinary fuse-paste, or composition, packed directly into the tube, would no doubt serve an excellent purpose.

H¹ represents the percussion-cap.

K¹ represents a hammer. It is a round piece of solid metal, square-faced at one end, with a slight projection on the other, facing the nipple, and is fitted to slide smoothly, yet freely within the fire-chamber D¹. The holes before mentioned in the fire-chamber, are here shown, exhibiting in red ink the position of the peg, inserted to control the hammer and prevent its movement, as already described, during ordinary usage. These pegs may be removed before inserting the bomb into the gun, or allowed to remain, as the concussion of the discharge is sufficient to operate the hammer, regardless of their presence. In practice I prefer to allow them to remain, being careful not to have them of too great strength.

I will now proceed to explain the operative mechanism at the other end of the bomb, in fire-chamber D².

As will be observed, the parts are lettered as in chamber D¹, with a numerical distinction only. In this connection, F² is the solid end of the fire-chamber D². Passing through and soldered to the centre of this bulkhead, is the stationary fuse-tube G². In the drawing it is secured by means of a screw-thread, but in practice I prefer to solder it.

The construction of hammer K² differs from K¹ as follows:

Instead of being a simple solid piece of metal, as already described, the hammer K² is constructed of a short piece of metal pipe, somewhat larger in diameter than the fuse-tube G², and should slide freely over that end projecting into the fire-chamber. This pipe is soldered into a metal collar, which forms the hammer, *per se*. Into its reverse end is inserted a gun-nipple, in the usual manner, the bore of which communicates with the interior of the tube already described. This gun-nipple is marked I², and the percussion-cap, H².

To a person skilled in the art, the operation of my bomb-lance is obvious. The magazine being charged with powder, the fuse-tubes loaded, percussion-caps adjusted to the nipples, and the lance discharged from a suitable gun, the resulting concussion of the hammers operating upon the percussion-cap, ignites the fuses, and explosion follows.

The hammers K¹ and K², although differently constructed, perform precisely the same functions.

In putting the parts of the bomb-lance together, it would be well to use tallow or other suitable substance upon all of the screw-connections, to secure gas-tight joints.

It is obvious that a bomb-lance could be constructed, possessing but half the mechanism herein shown, using that only at either end of the bomb. To secure, however, a practically perfect missile, which could not well fail to explode, it is deemed of importance by me to employ the duplicated mechanism. The cost of the bomb-lance thus constructed, would not be much greater, while the proportion of wasted, inoperative bombs would be greatly lessened.

I am aware that a variety of bomb-lances have been constructed and used to a greater or less extent. They have generally, however, belonged to that class of projectiles exploded by means of a fuse fired from the flame during the discharge of the gun. For common use these bombs are, to a certain degree, objectionable, as they are too liable to injury by exposure to the elements.

I am also aware that bomb-lances, exploded by means of percussion-caps, have to a limited extent been constructed. In such, however, a fuse-tube sliding within a chamber, to which it is nicely fitted and adjusted, is provided with a nipple at one of its ends. Explosion of a percussion-cap placed thereon, is effected by the concussion resulting from the discharge of the gun, as it is apparent that the interior of the bomb next behind the end of the fuse-tube, would be projected against the nipple.

Bomb-lances constructed with this sliding tube, are open to a variety of serious objections. They are expensive, from the extreme nicety with which the sliding tube should be fitted to its chamber, by the way of which it enters the magazine. Should the tube be fitted too closely, its free action would be prevented, and hence rendered inoperative. The parts in close contact are also liable to corrosion, or to be clogged with particles of dirt. Again, in practice, it is often deemed desirable to vary the time for burning the fuse. When the sliding tube is employed, this is im-

practicable on account of certain spring-connections deemed necessary for their operation, and on account of the chamber before referred to.

In my bomb-lance, as herein described, the time of explosion may be readily varied by shortening the fuse-tube and fuse, to suit the requirements of the occasion.

It is obvious also to persons skilled in the art, that in my bomb-lance no possibility exists of premature explosion. The fire-chambers are independent of the magazine, communicating therewith only by way of the fuse. The operative parts of my bomb-lance, the hammers K^1 and K^2 , are loosely fitted, rendering them inexpensive in their construction, and unerring in their operation.

I am also aware that a variety of devices have been constructed with a view to secure the accurate flight of a bomb-lance. I am not aware, however, that the quartered cylindrical shaft, herein described, has ever before been used.

Having thus described my invention,

I claim as new, and desire to secure by Letters Patent of the United States—

1. The independent fire-chamber D, having no means of communication with the magazine, except through the nipple and stationary fuse-tube, substantially as herein shown and described for the purposes specified.

2. The tail-piece C, consisting of the divided cylindrical shaft, connected with the bomb, and expanded, substantially in the manner and for the purposes herein specified.

3. The bomb-lance herein described, consisting of a lance-head and magazine, with or without the tail-piece, provided with independent fire-chambers, and independent hammers, the whole constructed, arranged, and operating substantially as herein described for the purposes specified.

EBENEZER PIERCE.

Witnesses:

JNO. S. SLATER,
FRANK A. JACKSON.