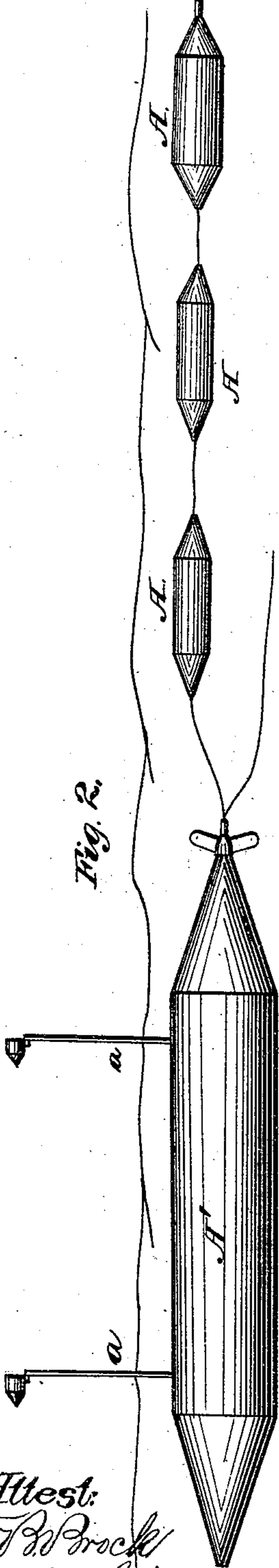


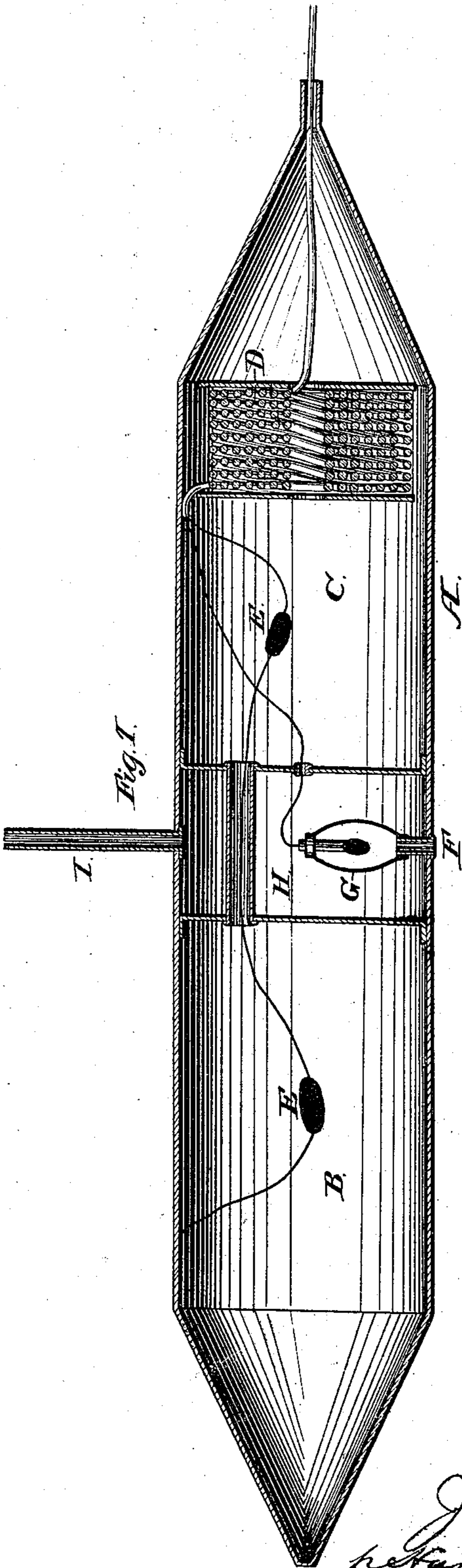
J. L. LAY.
Torpedo-Boat.

No. 211,301.

Patented Jan. 14, 1879.



Attest:
J. T. Brock
D. G. Stuart



Inventor
John L. Lay
per Harry D. Thinner
Att'y

J. L. LAY.
Torpedo-Boat.

No. 211,301.

Patented Jan. 14, 1879.

Fig. 3.

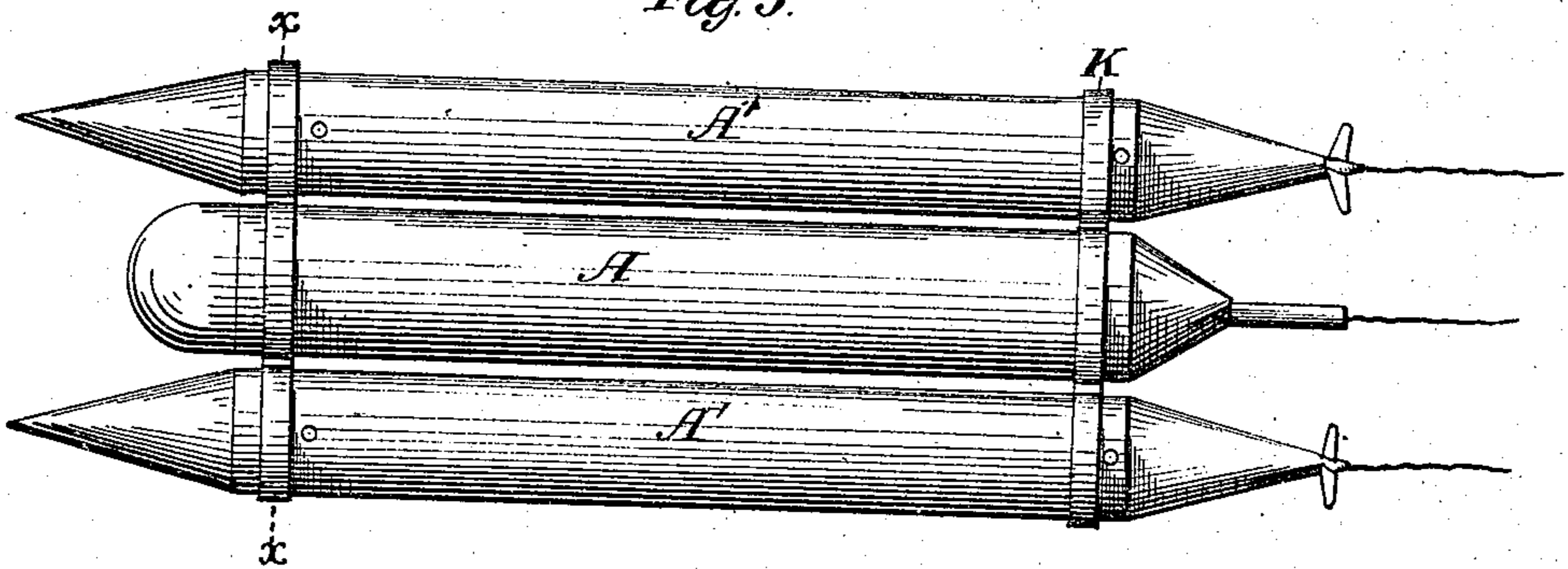


Fig. 4.

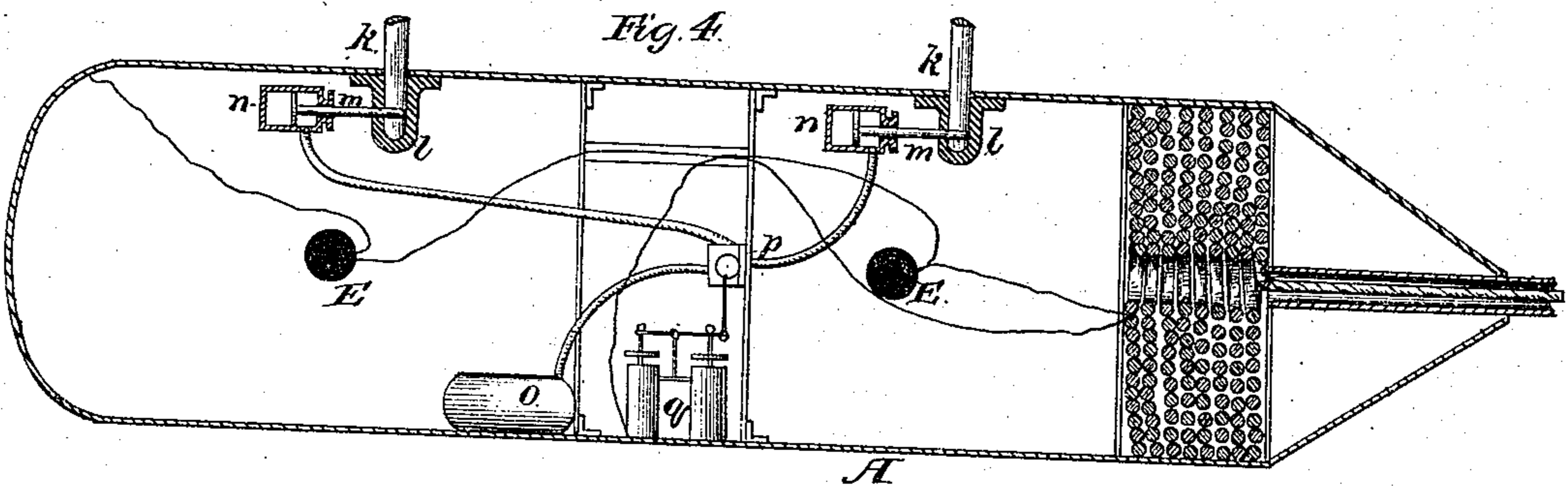


Fig. 5.

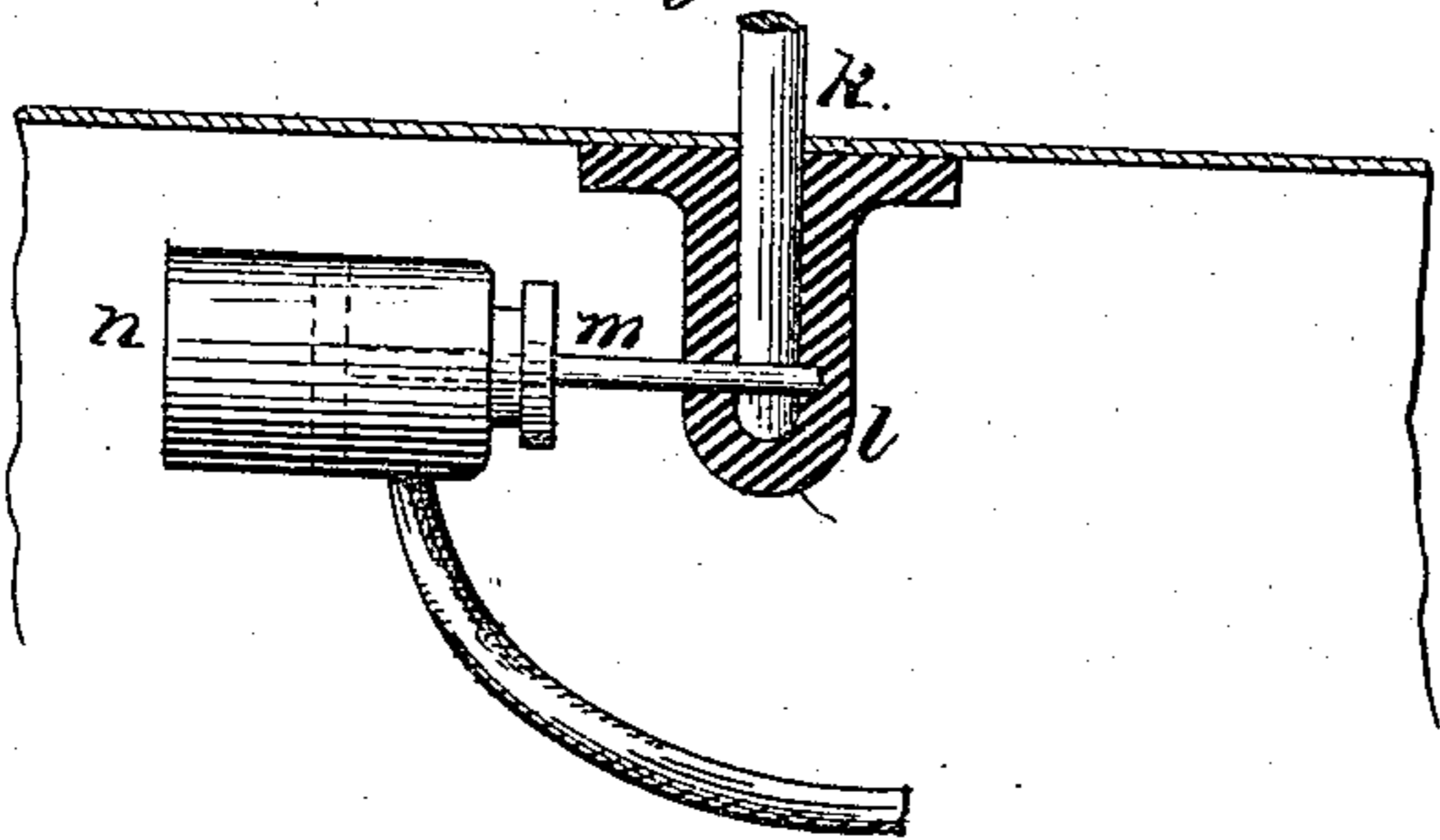
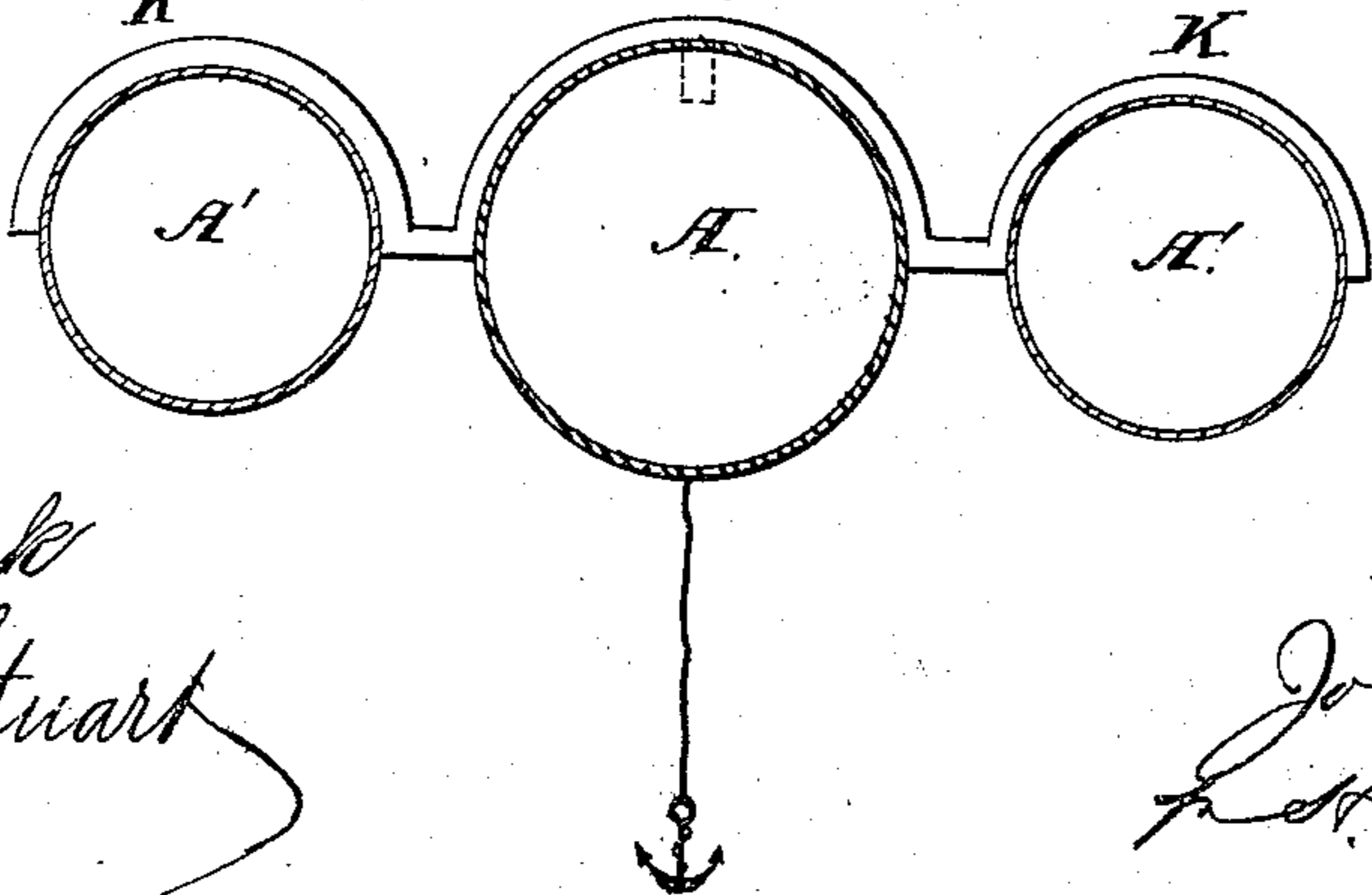


Fig. 6.



Attest:
J. B. Brock

D. G. Stuart

Inventor

John L. Lay
Per J. D. Minors
Atty

J. L. LAY.
Torpedo-Boat.

No. 211,301.

Patented Jan. 14, 1879.

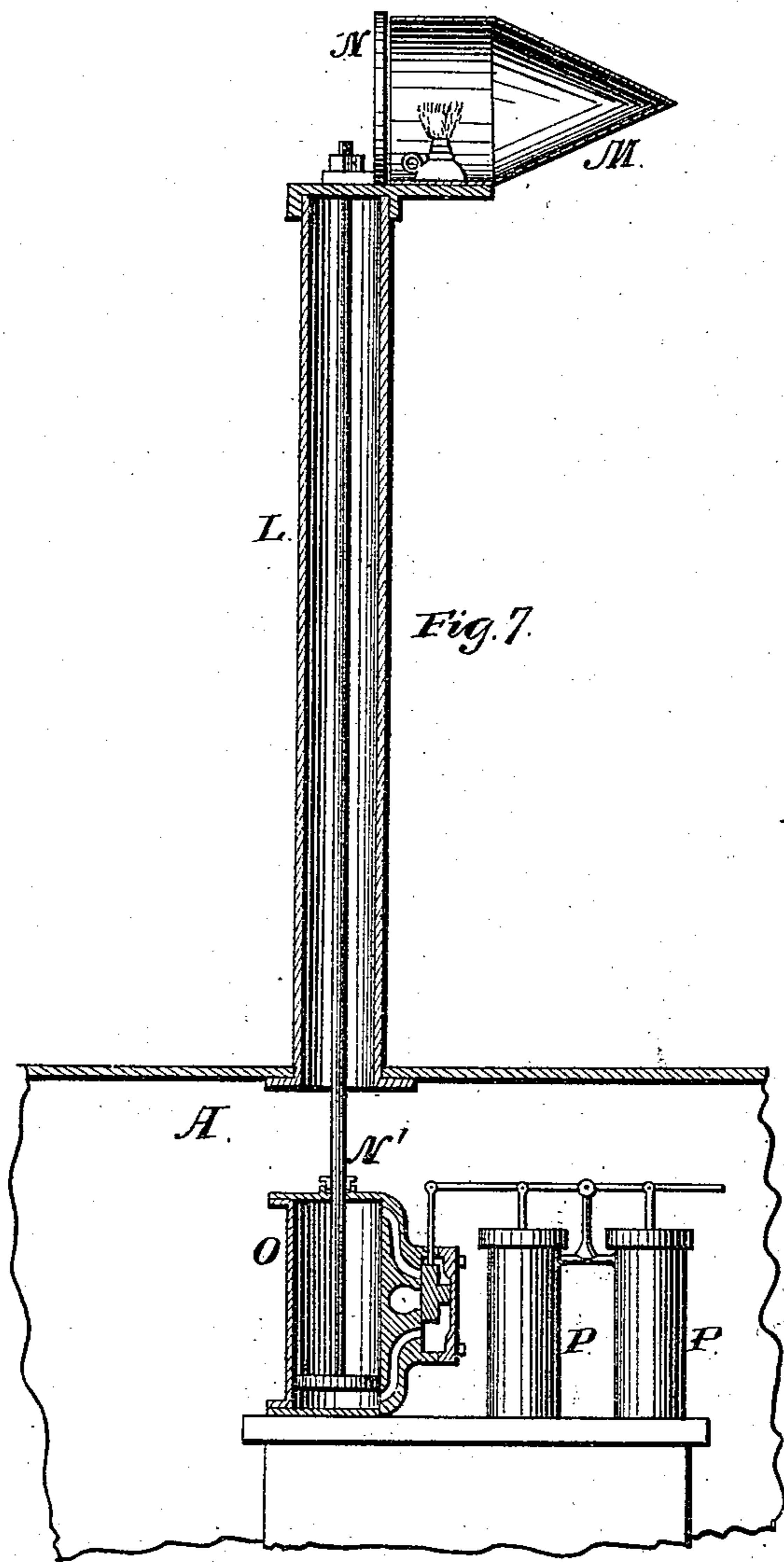


Fig. 7.

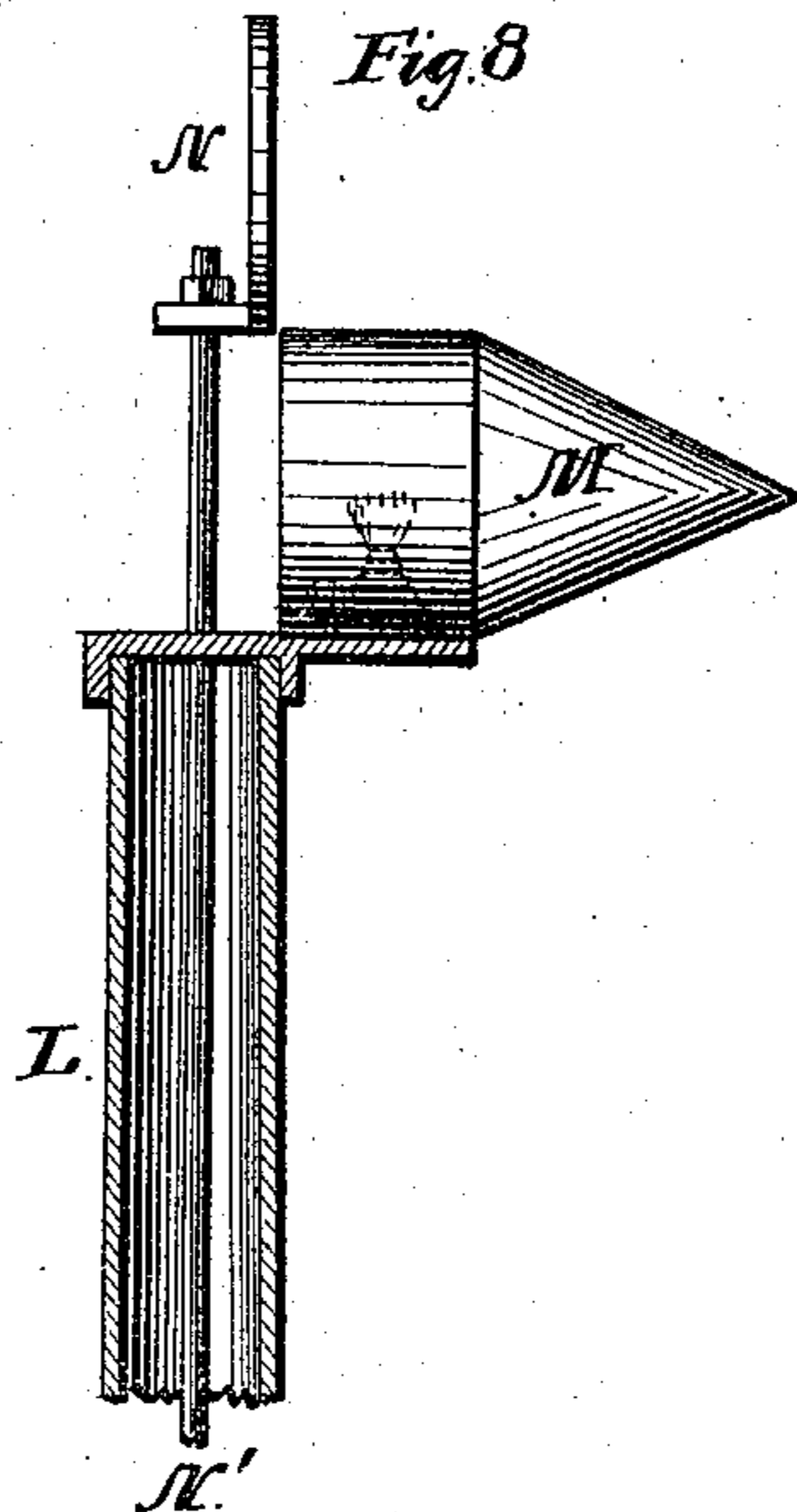


Fig. 8.

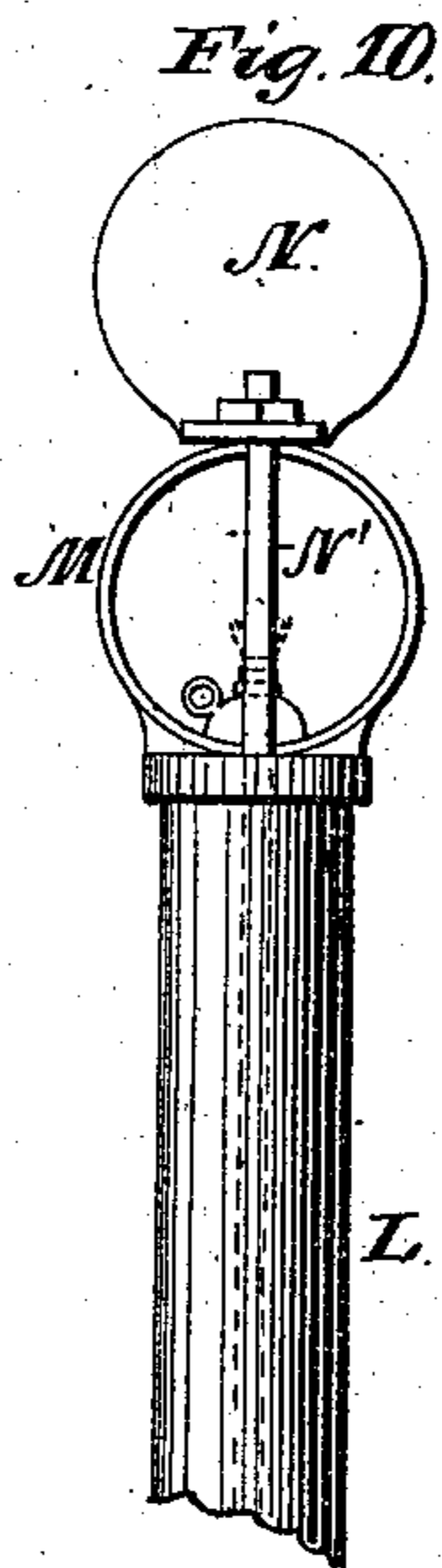


Fig. 10.

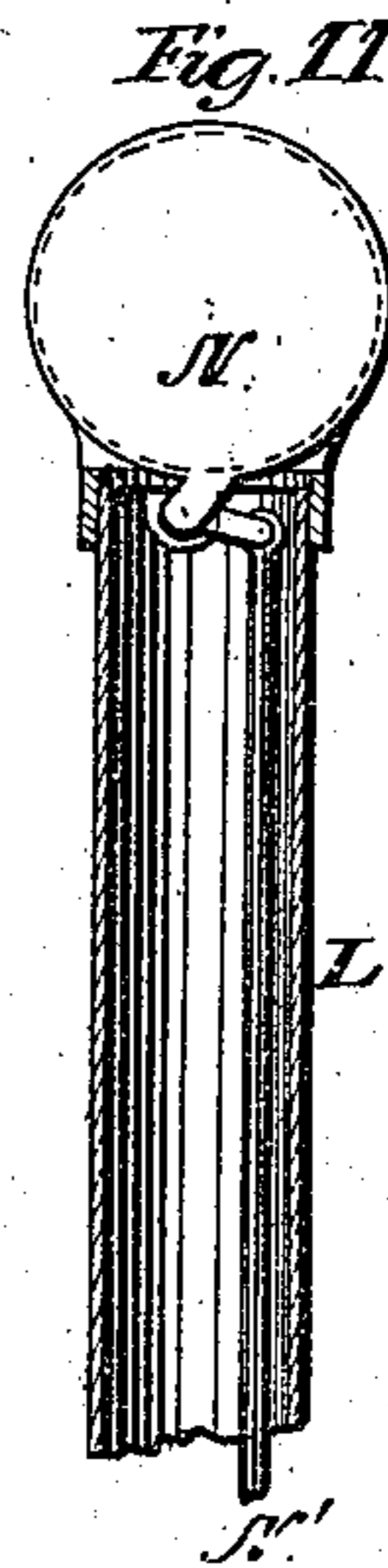


Fig. 11.

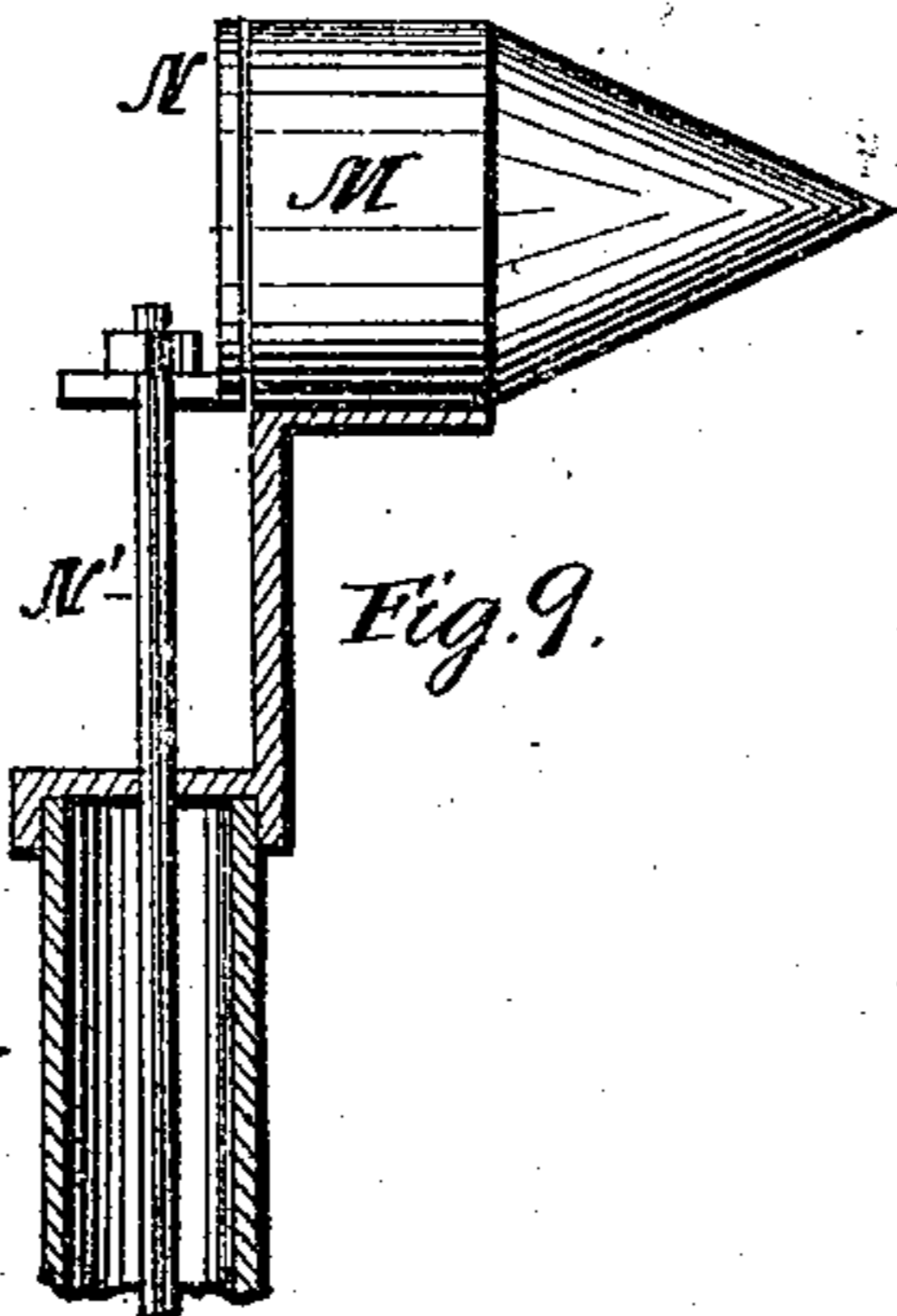


Fig. 9.

Attest:

J. P. Brock

W. G. Stuart

L

Inventor:

John L. Lay
by H. D. Miner
att'y.

UNITED STATES PATENT OFFICE.

JOHN L. LAY, OF BUFFALO, NEW YORK.

IMPROVEMENT IN TORPEDO-BOATS.

Specification forming part of Letters Patent No. **211,301**, dated January 14, 1879; application filed December 19, 1878.

To all whom it may concern:

Be it known that I, JOHN L. LAY, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Movable Torpedoes; and I do hereby declare that the following is a full, clear, and exact description thereof, 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 the letters of reference marked thereon, which form a part of this specification.

My invention relates to such torpedo-boats as are controlled in their movement in the water by means of an electric wire or cable connecting the boat with the shore or other station, and which may be either self-propelled by means of an engine and operated by compressed air or gas, or towed by such a boat as is shown in other patents granted to me.

The details of my invention will be more fully pointed out and claimed hereinafter.

In the drawings, Figure 1 is a longitudinal section of one of my torpedoes or mines for conveying large quantities of dynamite or other explosive. Fig. 2 is a side view of a series of these mines or torpedoes towed by a single self-propelled boat. Fig. 3 is a top or plan view of such a mine or torpedo conveyed by two boats. Fig. 4 is a section of the torpedo A, Fig. 3, showing the device for detaching the same. Fig. 5 is an enlarged view of one of the detaching devices. Fig. 6 is a cross-section of Fig. 3 on line *x x*. Fig. 7 is a view of a sight-rod or post carrying a light. The remaining figures, 8 to 11, are details or modifications of the same.

A, Fig. 1, is the body or hull of the torpedo or mine, which carries a charge of dynamite or similar explosive agent in each of the chambers B C. A coil of cable is carried in the compartment D, which communicates by means of a wire with fuses or detonators E E, which may be ignited by a spark through the cable. A pipe, F, communicates with the sea, and is covered by a rubber bag, G, in which is a fuse or cap, which may be exploded by a wire leading to the cable. When this bag is exploded the water rushes into compartment H through the pipe, and air being permitted to escape through pipe I, which has a suitable valve, to

be opened at the proper time, the compartment H is flooded and the torpedo sinks. Any one of these torpedoes, or all of them, may be provided with sight or guide rods or lights, as shown at *a a*, Fig. 2, and the operation of which will be hereinafter explained.

The rearmost torpedo will generally carry the coil of cable by which all the boats are guided or operated, an insulated wire extending from that one to each of the others, by which that one can be manipulated. The shore or station connections are such as are usual in this class of devices.

Fig. 3 shows a mode of conveying a single large mine or torpedo by two self-propelled boats.

The mine A is slung up under yoke K by means of pins *k*, extending downward into sockets *l* in the torpedo. A piston-rod, *m*, enters a hole in this rod *k*, and retains the torpedo close up against the yoke K.

The piston-rods have piston-heads in the cylinders *n*. Pipes lead from compressed-air or gas reservoir *o* to the cylinders.

A cock at *p* is opened by the electro-magnets *q*, so as to permit the gas to enter the cylinders, draw back the pistons, and release the pins *k*, when the torpedo, being of greater specific gravity than water, will sink to the bottom, where it may be held by anchors. The boats A' A', still held together by yokes K, may then be directed back to the station by means of the connecting-cable.

The next part of my invention relates to a hooded light, which I use with either of the boats A or A'. This light is attached to the boats for night service, in lieu of the sight or guide rods which I use in the day-time.

The light, which may be any form of lantern not easily extinguished, is supported at the end of a tube, L, and inside of a hood or reflector, M. A shield, N, closes the back or open side of this hood when it is desirable to conceal the light entirely. A rod, *n'*, extends from this shield down through the tubular support L, and has at its lower end a piston in the cylinder O. This piston is driven up and down in the cylinder as gas from the reservoir is admitted to it through the agency of slide-valve, operated by the magnets P P.

The operation is as follows: The vessel be-

ing in motion, with the points of the hoods toward the enemy, when the operator desires to see the light he moves the valve through the medium of the cable and magnets. The shield may be lifted up above the hood, as shown in Figs. 8 and 10, or drawn down below it. As soon as the operator has ascertained the position of the torpedo he closes the lantern by a reverse movement of the piston. The light will not be at any time visible from the front of the hood; but if the shield or some equivalent device be not used it may be approximately located by the reflection of the rays of light from the water; and to avoid this I have devised the cover or shield for the hood.

The shield may turn on a pivot, as in Fig. 11, instead of moving up and down.

In this application I have deemed it unnecessary to show all the electric wires which may be used, as well as the instruments at the operator's station, such being well known in the art.

Having thus described my invention, what I claim is—

1. A series of movable torpedoes, at least one of which shall be self-propelled, all connected together by a cable, as described, and all controlled by wires passing through the cable, as set forth.

2. A torpedo having a coil chamber or reel for the electric cable, a water-ballast chamber which may be flooded by the bursting of a rub-

ber bag, as shown, and one or more chambers for charges of dynamite or other explosive, as set forth.

3. The combination of two self-propelled torpedo-boats, a yoke or support retaining the two in their relative position, as shown, and a torpedo removably attached to the yoke, as shown and described.

4. The combination of torpedo-boats A' A', yokes K, pins *k*, and pistons *m*, working in cylinder *n*, all substantially as described.

5. The combination, with a submarine torpedo-boat, of a hooded light having a movable shield, whereby the light may be entirely concealed or revealed in one direction when the shield is moved, substantially as shown.

6. The combination, with a torpedo-boat, of a tubular standard, a hooded light, a movable shield, and a rod extending from the shield to the operating-cylinder and piston, as set forth.

7. The combination of standard L, hood M, shield N, rod *n'*, cylinder and piston, and the slide-valve, operated by means of electro-magnets through the cable, as set forth.

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

JOHN L. LAY.

Witnesses:

GEORGE E. HAIGHT,
H. D. WINSOR.