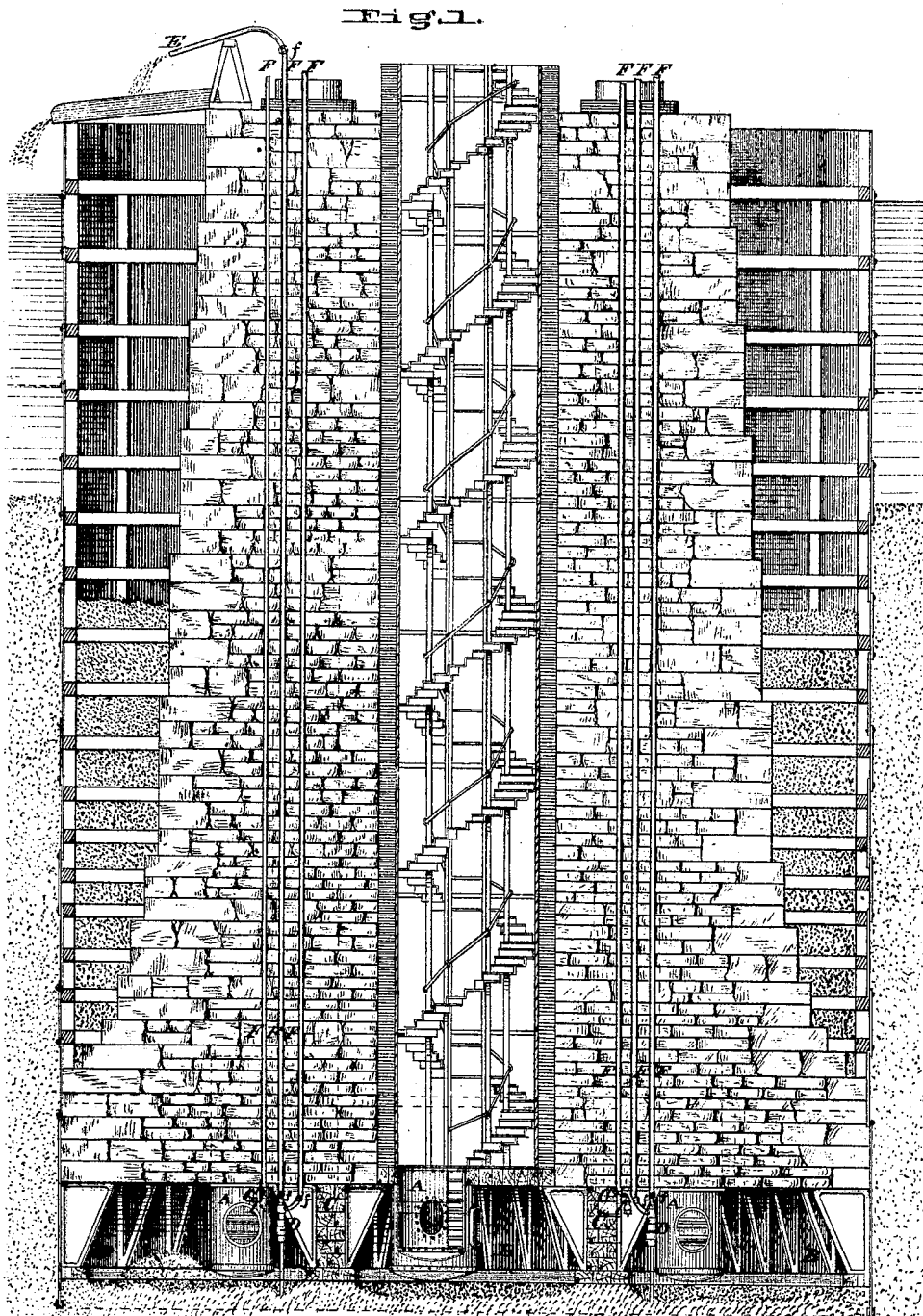


J. B. EADS.

Improvement in Constructing Sub-aqueous Foundations.

No. 123,685.

Patented Feb. 13, 1872.



ATTEST
Wm. L. Egan
Walter Allen

INVENTOR,
James B. Eads
By Knight, Bros & Atty.

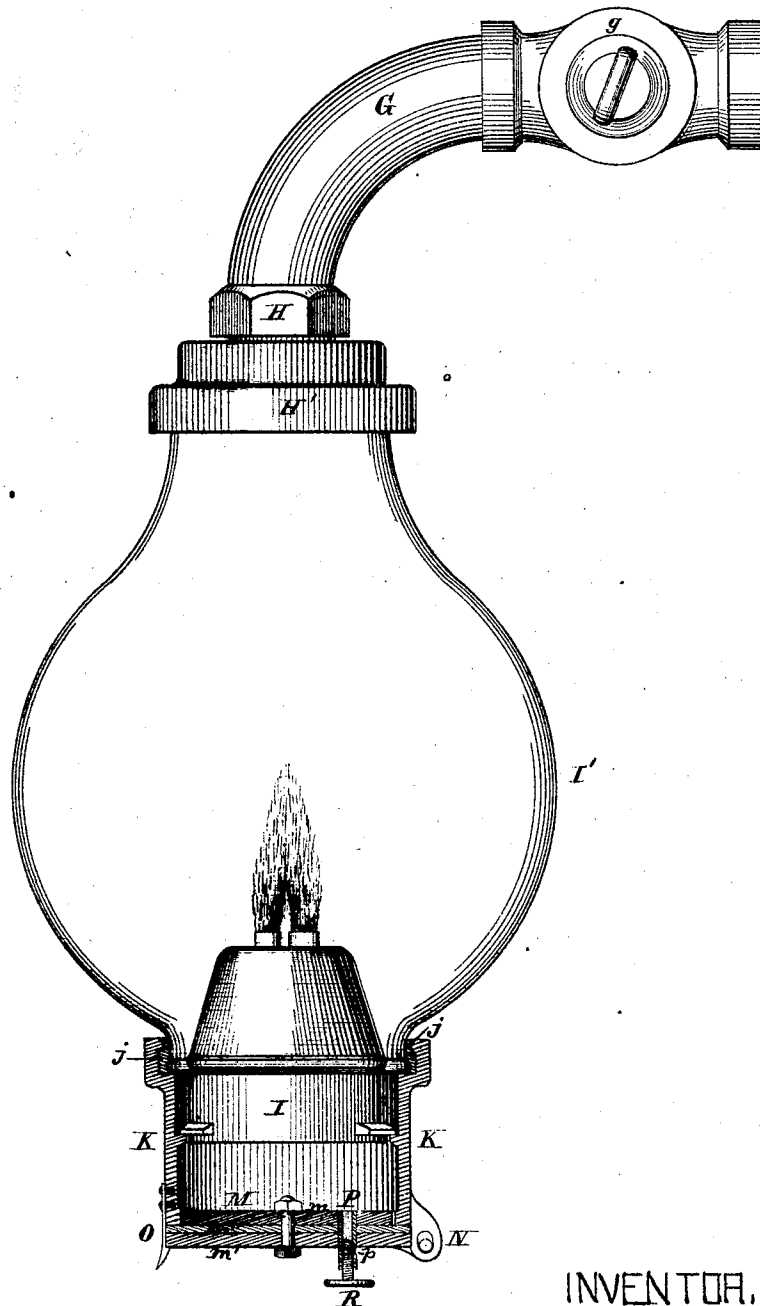
J. B. EADS.

Improvement in Constructing Sub-aqueous Foundations.

No. 123,685.

Patented Feb. 13, 1872.

Fig. 2.



ATTEST.
Jas. L. Ewin
Walter Allen

INVENTOR,
James B. Eads
By Knight, Bros. & Atty.

UNITED STATES PATENT OFFICE.

JAMES B. EADS, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN CONSTRUCTING SUB-AQUEOUS FOUNDATIONS.

Specification forming part of Letters Patent No. 123,685, dated February 13, 1872.

To all whom it may concern :

Be it known that I, JAMES B. EADS, of the city and county of St. Louis, and State of Missouri, have invented certain new and useful Improvements in the Construction of Sub-Aqueous Foundations, of which the following is a specification:

The first part of my improvement consists in combining water, sand, smoke, and other pipes with a caisson or air-chamber used in sinking sub-aqueous foundations by means of the plenum-pneumatic process (the said pipes being built upward with the masonry) to facilitate the construction of the work. The second part of my invention consists in a lamp so constructed as to burn in air at about the normal density, although placed in the air-chamber. The chimney of the lamp is in direct communication with one of the pipes aforesaid, and the lamp is surrounded by a case, of which the glass globe forms a part, the chamber within the case being supplied with air through a cock or valve or other adjustable orifice. I have found that candles or lamps used in the compressed air-chamber emit great quantities of smoke, and that oil-lamps are dangerous, as in case of accident the burning oil—or, indeed, burning matter of any kind—is very difficult to extinguish when the air-pressure is great. Further, the lights, when burning openly in the chamber, fill the air with foul gases. From these causes it is very desirable that the lights should be supplied with air at about its normal density, and that the noxious matter resulting from combustion should escape outside the working-chamber. To accomplish these ends I have used the said lamp in a transparent chamber within the air-chamber, and having direct communication with the outer air and adjustable communication with the compressed air of the working-chamber.

Figure 1 is a vertical section of a pier under construction embodying my improvements. Fig. 2 shows the lamp and case partly in section and partly in elevation.

A are the air-locks; B, the air-chamber; C, the timber-guides; D, the sand-pumps, one of which discharges at E. F are pipes for the sand-pumps for the discharge of gases from the lamp, &c. These pipes may be permanently fixed in the masonry, or may pass up

outside the masonry from the top of the caisson. Any of the pipes F may be used either as the water-supply pipes or as the discharge-pipes of the sand-pumps, and also for the supply of air from the air-pumps, or as discharge-pipes or chimneys for the products of combustion arising from the lamps, and likewise for the introduction of sand, cement, or other material. For the purpose of filling the air-chamber when the caisson shall have reached the rock or other permanent resting place the top of these pipes are arranged so as to be closed tightly by means of cocks or valves *f*, when it is desirable to detach the pumps, pipes, lamps, &c., from the air-chamber, and are also provided with valves or cocks within the air-chamber, so that they may be closed at their lower ends, as is necessary when introducing materials into them that are to be passed into the air-chamber or when lengthening them out at their upper ends. G is the chimney-pipe of the lamp I, having a cock or valve, *g*, to close the pipe when the lamp-case is opened. H is a union-coupling, with which the chimney-pipe is attached to the metallic cap H' of the glass globe I'. J is a joint, by which the lower portion K of the case is attached to the globe. The joint is shown as made tight by cement *j*, occupying the space between the metal and glass, as shown. The joints between the globe and metal may be made in the described or other suitable manner. M is a door closing the bottom of the case, said door consisting of an upper disk, *m*, and a lower disk, *m'*, of greater diameter. Between the disk is held a gasket, *m''*, of rubber or other proper substance to shut against the bottom of the case and to render the joint air-tight. N is the door-hinge, and O a catch by which the free edge of the door is sustained when the cock *g* is closed. When the door is closed and the cock *g* open, the pressure of air in the working chamber keeps the door tightly pressed against its seat. P is a pipe extending downward through the door L and communicating with the inside of the case. The interior of the pipe P is screw-threaded to receive a thumb-screw, R. *p* is an orifice through one side of the pipe P, and the entrance of air through the said orifice is regulated by turning the screw R, by which the orifice may be partially or wholly closed.

I distinctly disclaim the use of shafts or tubes of large size built up in the masonry, in combination with an air-lock at their upper ends, for the passage of men and materials into or out of the air-chamber, (through the masonry,) as in the construction of bridge-foundations in the Rhine at Kehl. My claim is based solely on the use of tubes independently of those in the manner referred to at Kehl, and only for the purposes set forth, whereby much greater convenience is secured for the workmen in going in and out of the air-chamber, and greater economy, safety, and celerity is obtained in constructing the work.

I claim as my invention—

1. The combination of the pipes F with the air-chamber B, substantially as and for the purposes set forth.

2. The lamp or lantern, arranged substantially as set forth.

3. In combination with the lamp, substantially as set forth, the stop-cock or valve *g*, as and for the purpose set forth.

In testimony of which invention I have hereunto set my hand.

JAS. B. EADS.

Witnesses:

SAML. KNIGHT,
GEO. C. FABIAN.