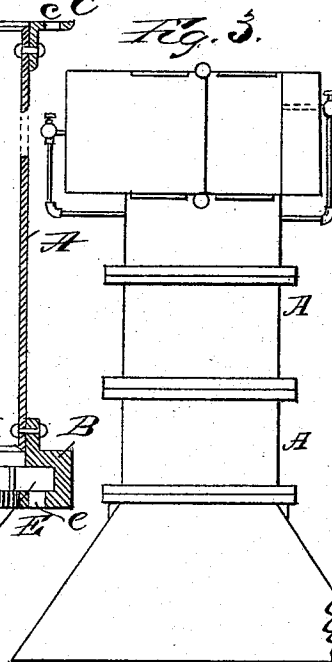
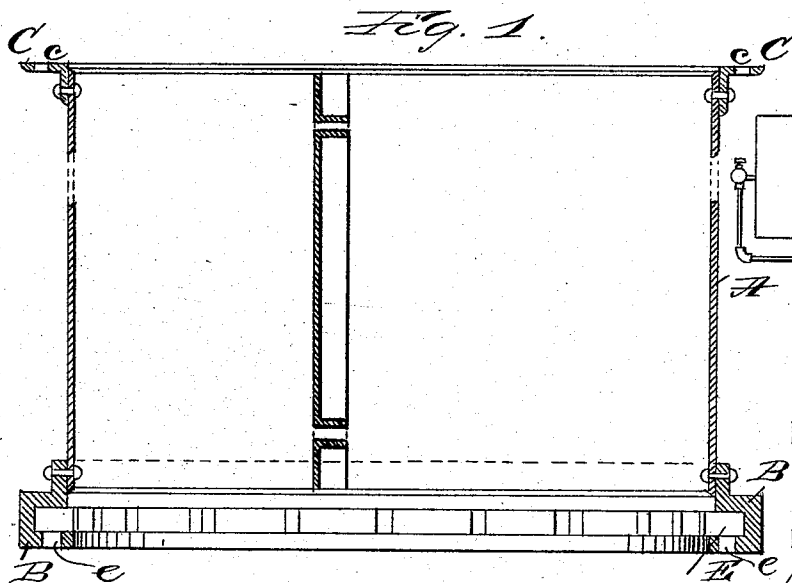
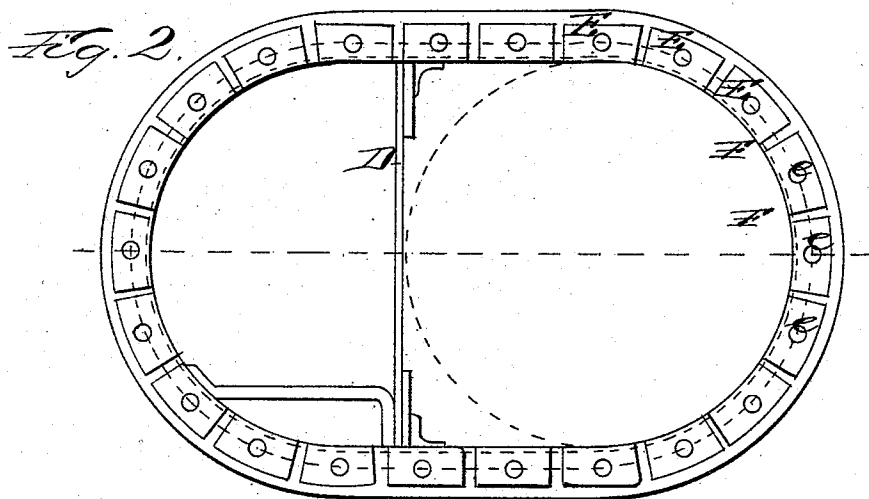


(No Model.)

C. SOOYSMITH & C. H. DEANS.
AIR SHAFT.

No. 532,604.

Patented Jan. 15, 1895.



WITNESSES:

A. F. Lynne
Baron Higham

INVENTORS.
Charles Sooy Smith
& Charles H. Deans
BY
J. P. Humphrey
ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES SOOYSMITH AND CHARLES H. DEANS, OF NEW YORK, N. Y., ASSIGNORS TO THE SOOYSMITH & COMPANY, OF NEW JERSEY.

AIR-SHAFT.

SPECIFICATION forming part of Letters Patent No. 532,604, dated January 15, 1895.

Application filed September 26, 1894. Serial No. 524,160. (No model.)

To all whom it may concern:

Be it known that we, CHARLES SOOYSMITH and CHARLES H. DEANS, of the city, county, and State of New York, have invented a new and useful Improvement in Air-Shafts, of which the following is such a full, true, and complete description as will enable others skilled in the art to make and use the same when taken in connection with the accompanying drawings, in which—

Figure 1 is a vertical section through the shaft. Fig. 2 is a transverse section of the same, and Fig. 3 is a vertical section of shaft with an air lock and caisson.

This, our invention, relates to that class of air shafts which are used in excavating at a very considerable depth below the surface of the ground, and under water, in excavating for foundations for high buildings, bridges, docks, and the like, and consists in the combination in an air shaft of a division wall or lattice whereby one part is divided from the other, and practically two distinct passage ways are created through the length of the air shaft, each of which connects with a separate chamber in the air lock, and the various modifications and combinations hereinafter specified and claimed.

In Fig. 1, the main wall of the air shafts is shown, marked A., to each end of which is fixedly bolted a ring B. to be joined with the ring C. of the adjacent section of the air shaft.

The cross section of the shaft is elliptical, and is divided across into two parts by the vertical wall D., as shown in Fig. 2. This division may be made by a solid wall of metal, or by a lattice work.

On one end of a section of the air shaft the ring C. is provided, in which are arranged bolt holes *c. c. c.* to receive the screw ends of a bolt, and into which the bolts are screwed. On the other end of the section of the air shaft is rigidly attached the ring B. in which there is a series of apertures E. E., in each of which is a bolt hole *e. e. e.*

When it is desired to attach one section of the air shaft to another, the section to be attached is placed on the lower section so that the ring B. rests on the ring C. of the next lower section, (the bolt holes having been previously arranged to correspond). A bolt is in-

serted in the hole *e.* through the apertures E. and screwed into one of the screw holes *c. c.* in the ring C. firmly connecting the upper and lower rings together, and making a continuous body of the air shaft.

The ribs F. F. should be left between the several apertures E. E. in the ring to give strength to it.

The sections are made elliptical in form, as shown in the drawings, provided with the vertical division wall D. and fitted at the top with a double chamber air lock, so that each division of the shaft may be used independently of the other division, while, at the same time, they are operated as a whole.

The arrangement of the air shaft with the air lock and caisson is shown in Fig. 3. The air shaft forms the subject matter of an application about to be filed by us.

It is found that greater facility in operating is had in dividing the air shaft into longitudinal sections, so that one part may be used for materials, and the other for operatives, as by this arrangement the materials are not delayed by the use of the shaft by the operatives, nor are the operatives endangered by the raising and lowering of the materials.

The arrangement of the rings and apertures E. E. leaves the interior of the shaft free from projections which are apt to interfere with the shaft.

The vertical division wall D. may be either solid sheet metal or a lattice work sufficient to protect the operatives on one side of the shaft from falling material on the other side.

The several sections of the air shaft may be readily removed when the sealing material in the caisson is in such position that the air pressure is to be permanently removed. The bolts holding the air lock to the top section of the air shaft are removed, the air lock taken off, and the bolts holding the top section to the next lower are next taken out and the top section raised to the surface, then the next lower section, until they are all removed from the interior of the masonry shaft which has been built around the air shaft leaving sufficient space between for the easy removal of the air shaft.

It is often found cheaper and more convenient to leave the section next the caisson in position, as it is apt to be binded with con-

crete so that its removal would not be economical.

The arrangement of the interior bolts in the air shaft holding these several sections together is found of great advantage, as there is seldom space sufficient between the air shaft and the masonry shaft outside for an operative to work in taking out bolts, while they may be readily removed from the interior of the air shaft.

The elliptical cross section of the shaft with a vertical division wall across the short diameter of the air shaft gives greater strength of construction with economy of material, and is much to be preferred to any other form of construction.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination in an air shaft of a vertical division wall dividing the air shaft into two parts, each of which connects with a separate chamber in the air lock.

2. The combination in an air shaft of a vertical division wall dividing the shaft into two parts, each of which connects with the caisson, and each with a separate chamber in the air lock, as specified.

CHARLES SOOY SMITH.
CHAS. H. DEANS.

Witnesses:

PAUL T. SCHNITZLER,
SUTHERLAND R. HAXTUN.