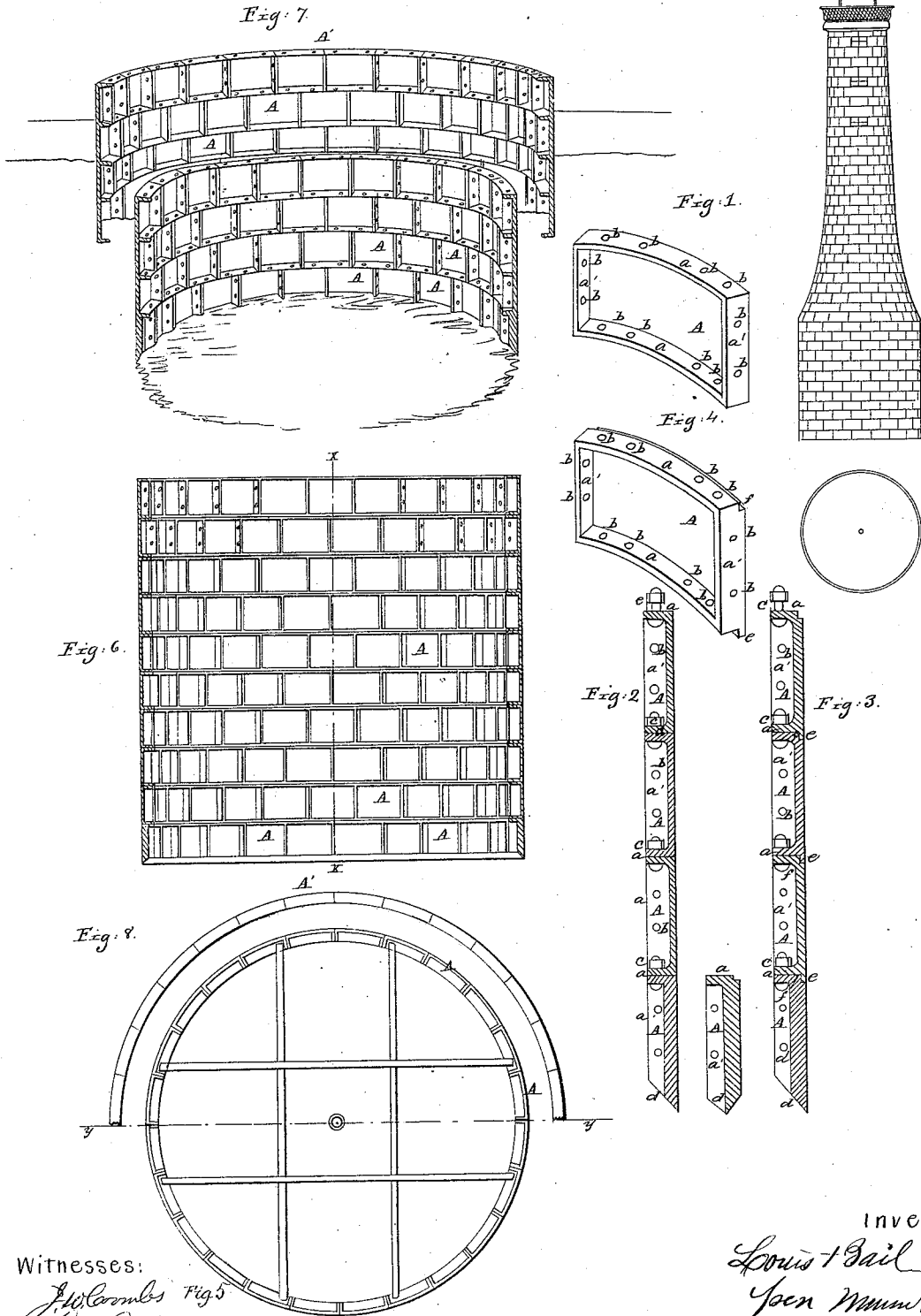


L. Bail

Constructing Foundations

No. 34,474.

Patented Feb 26, 1862.



Witnesses:
J. W. Corlies Fig. 5
G. W. Reed

Inventor:
Louis T. Bail
John Munnell
 Attorneys

UNITED STATES PATENT OFFICE.

LOUIS BAIL, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN CONSTRUCTION OF FOUNDATIONS FOR LIGHT-HOUSES, PIERS, &c.

Specification forming part of Letters Patent No. 34,474, dated February 25, 1862.

To all whom it may concern:

Be it known that I, LOUIS BAIL, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful improvement in the construction of foundations for light-houses and other structures which are to be built on sand or on sand-beaches washed by the ocean, the invention also being applicable to the construction of coffer-dams used in the construction of the foundations of piers and abutments beneath the water-surface; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a detached perspective view of one of the segment-plates pertaining to my invention; Figs. 2 and 3, vertical sections of my invention, taken on the line *x x*, Fig. 6; Fig. 4, a detached perspective view of one of the segment-plates shown in Fig. 3; Fig. 5, a plan or top view of my invention; Fig. 6, a vertical section of the same, taken in the line *y y*, Fig. 5; Fig. 7, a perspective sectional view of the same with coffer-dam; Fig. 8, a top or plan view of coffer-dam; Fig. 9, an elevation of a light-house constructed according to my invention.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the employment or use of cast-iron plates of segment form provided at their concave side with flanges to admit of the insertion of bolts to secure the plates together, and thereby form a strong metal cylinder, which, while in the course of construction, is gradually filled with concrete or other suitable material.

The object of the invention is to obtain a ready means whereby foundations for light-houses and other structures, as well as coffer-dams, may be built of a material previously prepared, and which may be conveniently transported and expeditiously put together to form the foundation or structure suitable for sandy foundations.

To enable others skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents segment-plates of cast-iron, which are cast with flanges *a a'* at their inner concave sides, the top and bottom flanges *a* projecting horizontally from the edges of the

plates, while the flanges *a'* at the ends of the plate project obliquely from the plate forming radii with the cylinder, which is formed by the connecting of the several plates together. These flanges *a a'* are clearly shown in Figs. 1 and 4, and it will be seen by referring to these figures that the flanges are provided with bolt-holes *b*. The segment-plates *A* may be galvanized or covered with a coat of pitch-tar or other suitable substance to prevent oxidation. The plates *A* are laid in tiers one over the other and secured together by screw-bolts *c*, water-proof cement, leather, or india-rubber strips being placed between the joints to prevent leakage. In constructing, for instance, a foundation for a light-house where a coffer-dam is required, the first tier of plates for the latter are laid on the beach, which is dry at low water. This coffer-dam, (designated by *A'*, Figs. 7 and 8,) being only a temporary structure, may be comparatively light, and when sunk to the usual depth its interior is kept dry by means of a suitable pump. The foundation is then commenced by laying the lower tier of plates *A*, which have sharp lower edges *d*, as shown in Figs. 2 and 3. This lower tier of plates may be thicker or heavier than the upper ones when several tiers are secured together. The hollow cylinder thus formed will gradually sink by its own gravity and the sand is removed from within the cylinder. This excavating or removing of the sand can be done by manual labor assisted by a common suction-pump, or by a centrifugal pump or other means. As the excavating proceeds the progress of building the foundation continues, the structure gradually sinking under the accumulating weight, and in order to keep the structure vertical the excavating is performed at the most elevated side, so as to favor the settling of the structure at that point, and in this way, by the aid of a plumb-line only, the foundation may be kept perfectly vertical.

If necessary, iron bars may be placed within the cylinder to serve as braces, the ends of said bars resting on the flanges *a*. These flanges *a* also serve as supports for scaffolding for the workmen.

When the cylinder has reached a firm foundation and is sufficiently high above the surface of the beach, it is filled in with concrete or with stone. When these cannot be con-

veniently had, layers of sand and iron bottoms may be alternately laid up to the surface of the cylinder. The iron bottoms may also be laid with the concrete when the latter is used. I do not, however, confine myself to any particular material or manner of filling in the cylinder.

In certain cases where materials are not at hand or in the vicinity of the locality of the structure to be erected the whole edifice may be constructed of the segment-plates. This would be advantageous in the construction of light-houses. (See Fig. 9.)

I would remark that when a foundation is sunk to a considerable depth streams of fresh water may be encountered, and in this case a water-pipe may be laid before the filling in of the cylinder is commenced, and a supply of the fresh water obtained at a trifling cost for after use.

I would further remark that, if desired or found necessary, the lower outer edge of each plate A may be provided with a pendent lip *e*, and the upper outer edges provided with a

recess *f*, as shown in Figs. 3 and 4, so that when the plates are connected together the recesses *f* of one row or tier of plates may receive the lips *e* of the row or tier immediately above it. This may render the connection of the plates rather more secure than it otherwise would be.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

Constructing the foundations and other portions of light-houses, coffer-dams, and other similar structures of cast-iron segment-plates A, provided at the inner or concave sides with flanges *a a'* to receive screw-bolts *c*, for the purpose of securing the plates together to form a cylinder, and then filling the cylinder with concrete, stone, or other suitable material, substantially as set forth.

LOUIS BAIL.

Witnesses:

JOHN D. CANDEE,
E. I. SANFORD.