

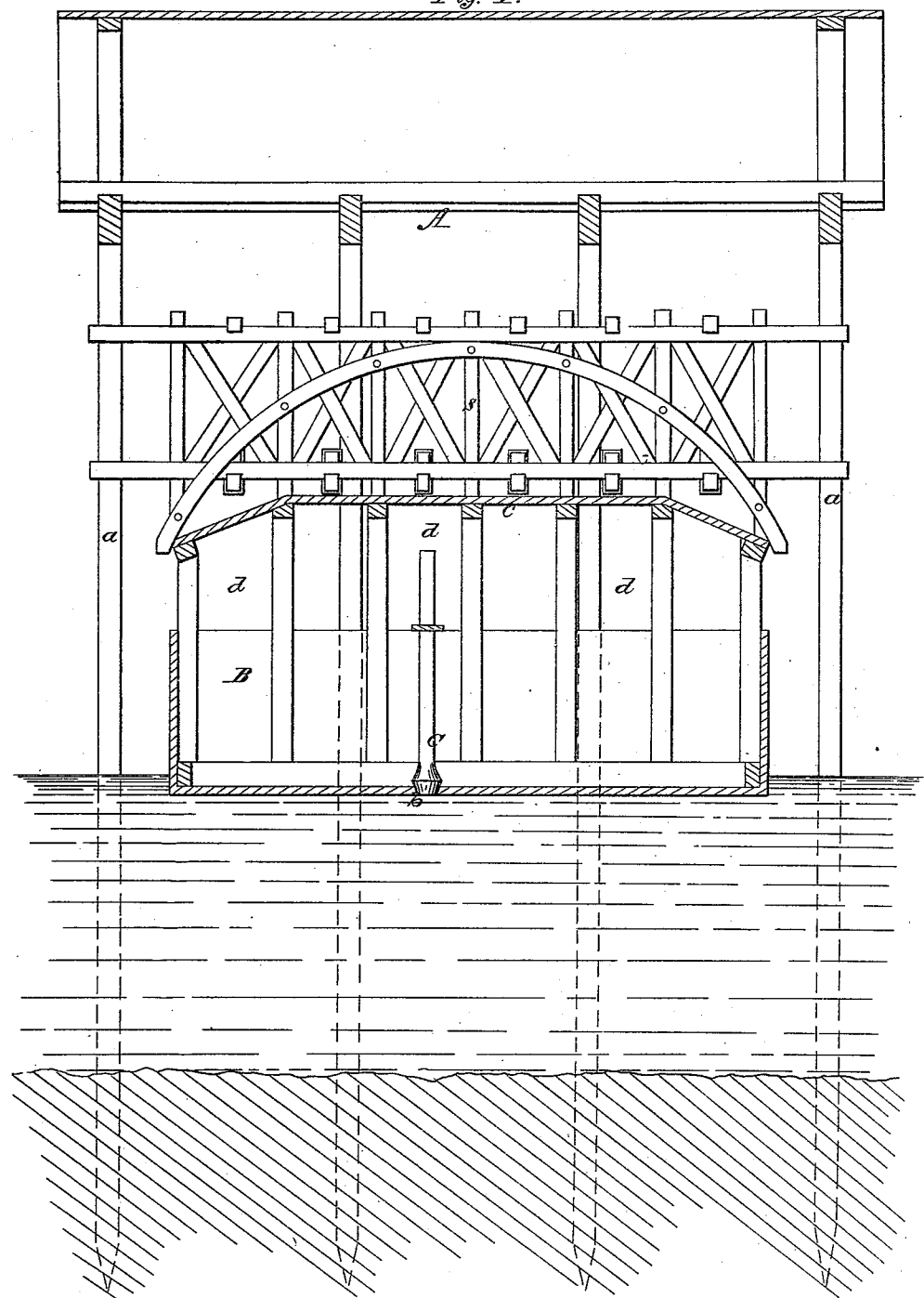
Steel, 35 sheets.

J. Du Bois. Truss Bridge

Nº 36,006.

Patented Oct. 7, 1862.

Fig. 1.



Witnesses
Gustave Ditzlerich
Edwin S. Davis

Inventor,
John DuBois
by
Mason, Hamrick & Lawrence
attys.

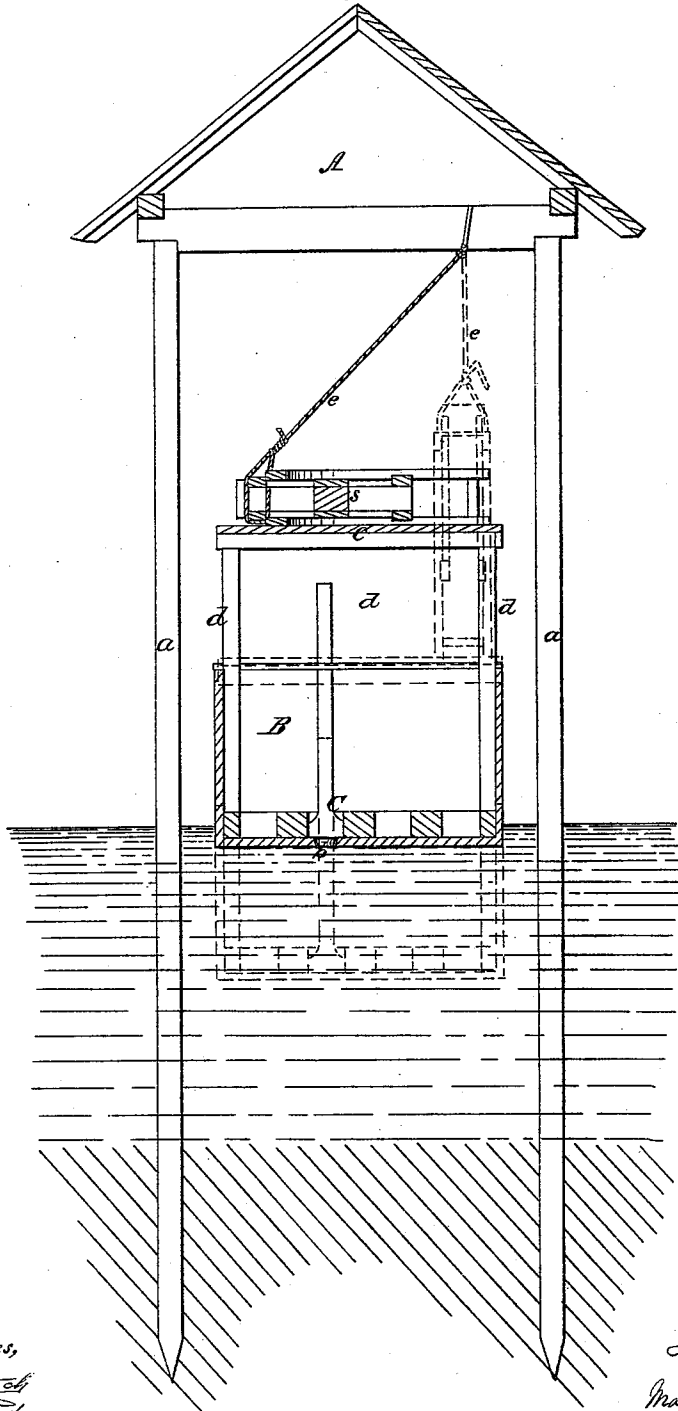
Street 2, 3, Street 2.

J. Du Bois
Truss Bridge.

Nº 36,606.

Patented Oct. 7, 1862.

Fig. 2.



Witnesses,
Austin O. Brown
Colman B. Brown

Inventor,
John D. W. Boie
by
Marrin H. Smith & Co.
attys.

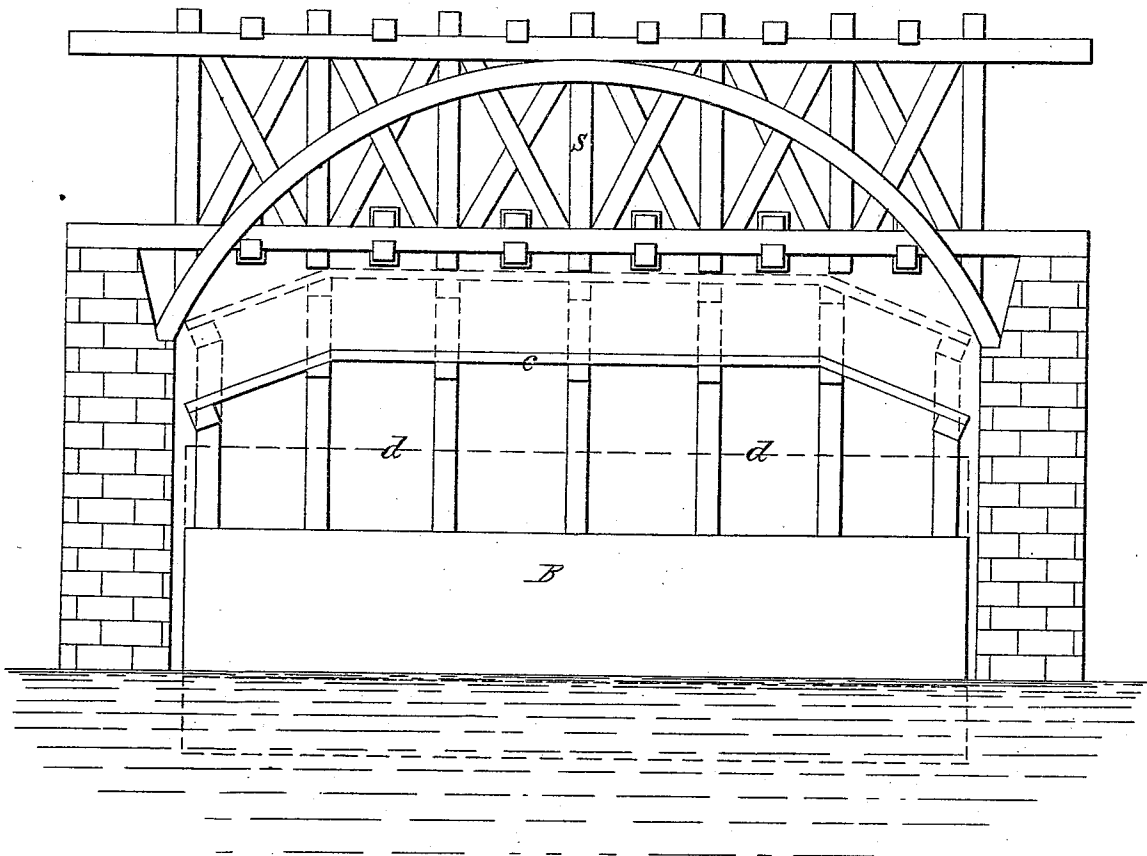
Sheet 3, of 5 Sheets

J. Du Bois.
Truss Bridge.

No. 30,600.

Patented Oct. 7, 1862.

Fig. 3.



Witnesses,

Gustav Dietrich
Edwin S. Freely

Inventor,

John Du Bois
by
Mason, Fenwick Lawrence
Attys.

UNITED STATES PATENT OFFICE.

JOHN DUBOIS, OF WILLIAMSPORT, PENNSYLVANIA.

IMPROVED MODE OF CONSTRUCTING, SETTING, AND REMOVING BRIDGES.

Specification forming part of Letters Patent No. 36,606, dated October 7, 1862.

To all whom it may concern:

Be it known that I, JOHN DUBOIS, of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and Improved Mode of Constructing, Setting, Removing, and Replacing Bridges; 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, forming part of this specification, in which—

Figure 1 is a vertical longitudinal section of my invention as employed in the construction of a bridge on a sheet of water or river. Fig. 2 is a vertical transverse section of the same as employed in adjusting one side frame of a bridge from a horizontal to a vertical position after it has been constructed on a floating foundation. Fig. 3 is a side elevation of my invention as employed in setting a bridge on its piers or removing it therefrom.

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

In the ordinary way of building and setting bridges the frames, flooring, and other parts require to be erected on the spot where the bridge is to be located. This practice subjects the bridge to great danger of being carried away with sudden freshets, or from other causes, before it is finished, or but partly erected. There is also much inconvenience experienced in the removal and replacement of any section of the bridge by the ordinary methods, it being necessary to take down and remove the heavy portions piece by piece, and in replacing or renewing the portions thus removed the same slow process must be pursued.

My invention is designed to obviate the above-mentioned difficulties, it allowing of the whole span of the bridge being constructed at once, then serving to carry it to the piers for its support, and answering as a means for setting it upon the piers; or in case of necessity of removal of the whole span of the bridge or a section thereof and a replacement of the portion removed, it answering those purposes, and that, too, without requiring the pieces of the bridge to be separated.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

To perform with my invention, I first erect a substantial work-shop, A, over a sheet of water or the surface of a river by driving long piles *a a* down into the bed of such waters, and erect a closed angular or other form of roofing on the top ends of the piles, as represented. I next construct a deep or high floating foundation, B, and provide it with a plug-valve, C, and fit the same to a vertical inlet-passage, *b*, formed in the bottom of the water-tight hollow floating foundation B, as represented. The foundation is boxed up from its bottom and corked tight to within a short distance of its closed or substantial top *c*, or it may be wholly boxed up, if deemed best. I however prefer to have it open, as at *d*, so as to offer less resistance to the atmosphere while in use for transporting the bridge-span to its piers. A pump of any approved construction should also be provided on the floating foundation—the same as on shipboard—so that it may be readily brought into use when required. The foundation or floating hollow floor of the work-shop is now floated in between the piles *a a* and lashed in a suitable manner thereto. I now commence to construct one frame, *s*, of the bridge-span on top of the foundation. This done, I fasten the loose ends of the strong ropes or chains *e e*, suspended from the joists of the work-shop, to the top chord or stringer of the side frame of the bridge and open the valve C, so as to let water flow into the hollow foundation until the foundation sinks as low as practicable. The valve is then closed and the side frame chocked in the inclined position to which it has been raised. The water is now pumped out and the foundation allowed to assume its original position. The ascent of the foundation slackens the cords *e*, and the slack must be taken up by the manager of the shop. The valve is now opened again and the water allowed to enter until the foundation and the side frame, *s*, assume the position shown in red outlines. Having thus made room for the erection of another side frame of the bridge-span, I proceed to construct the same on the foundation, as in the first instance; but before doing so the water which flowed into the foundation is pumped out in the same manner as ships are relieved of their water. The second side frame is adjusted to a vertical position in just the same manner as the first. The two

frames being adjusted to the proper distance apart, they are connected together by the floor-beams and cross-ties.

In practice it may be well to depend upon the rise and fall of the tides to a considerable extent in the adjustment of the side frames, and in such case the side frames should be blocked up the distance that they are left suspended after the first fall of the tide, and so on till they are vertical, or nearly so, when the valve may be opened to effect the full adjustment. The bridge-span being erected or built and the floating foundation unlashd from the piles, the foundation with the bridge-span upon it is towed by a steamboat or other means down or up to the piers.

In Fig. 1 the appearance of the bridge-span and the conformation of the top of the floating foundation to the ends of the arches are shown. When the foundation and the bridge-span arrive in proper position relatively to the piers, the valve C is opened, so as to lower the foundation and set the bridge-span upon and between the piers, as illustrated in Fig. 3. The valve is now closed and the foundation towed out and down to the work-shop for use in the erection of another span.

In the setting of the bridge-span upon its piers the rise and fall of the tides may also be depended upon to a considerable extent.

It is obvious that the floating foundation which sat the bridge-span upon its piers may be used for removing the same in case of damage, and for replacing the repaired span, it

being only necessary to lessen the ballast or quantity of water after the foundation has been towed under the span, in order to lift the span off the piers, and vice versa to replace it there again.

In the erection of a drawer or other part of a bridge which swings on one pier centrally, I shall make the foundation in two longitudinal sections, so that one section will pass on one side of the pier and the other section on the opposite side thereof.

My invention will effect an immense reduction in the cost of building bridges.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A floating foundation adapted in form and construction and operation, substantially as described, to the purposes herein set forth.
2. The combination of the piles *a a* and their attachments *e*, with the floating foundation, so that the side frames of the bridge may be adjusted to a vertical position, substantially as set forth.
3. The method, substantially as herein described, of constructing, setting, removing, and replacing a span of a bridge.

Witness my hand in the matter of my application for patent on improved mode of constructing, setting, removing, and replacing bridges.

JOHN DUBOIS.

Witnesses:

R. W. FENWICK,
DEWITT C. LAWRENCE.