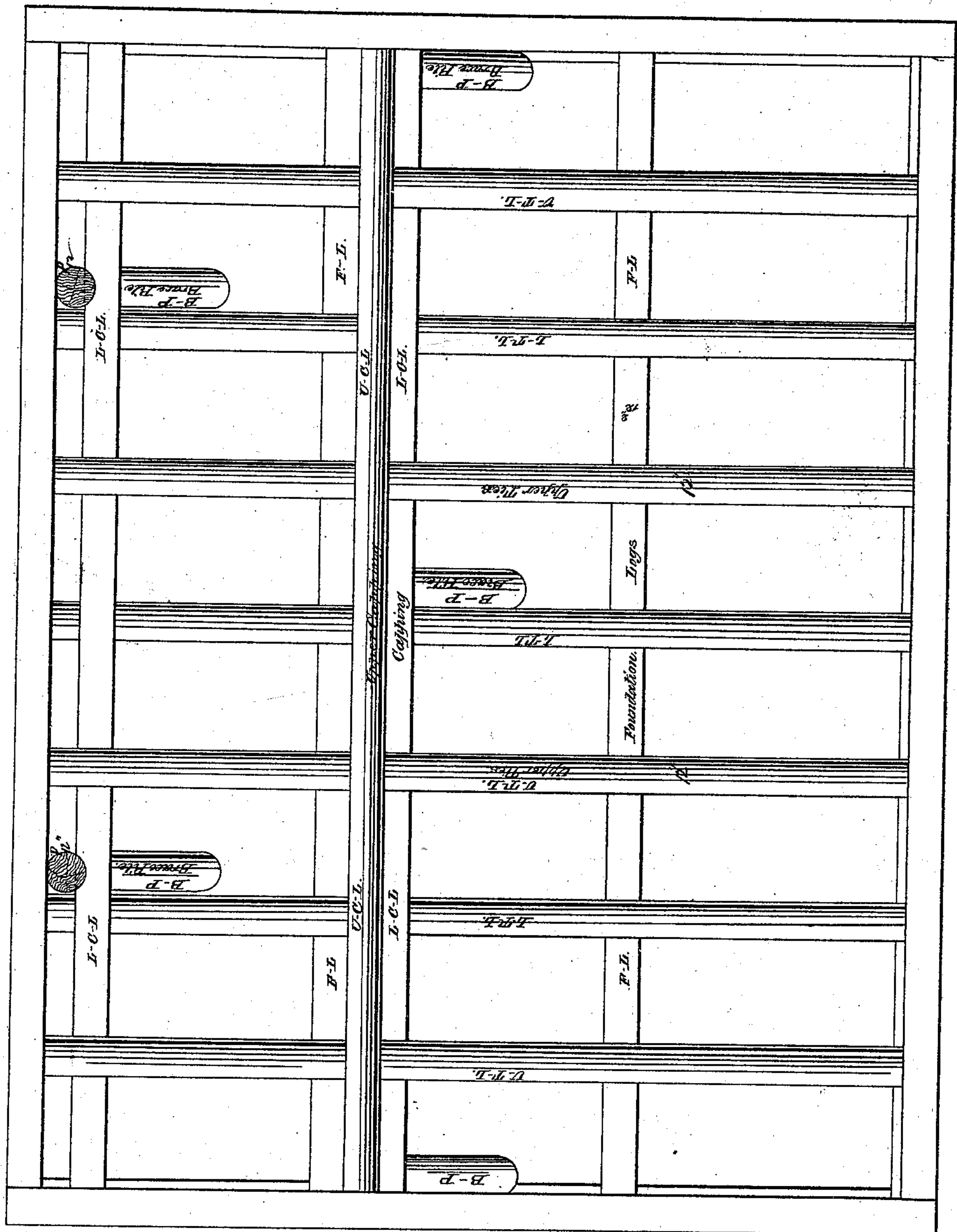


A. Stephens.

Pier

N^o 23,122.

Patented Mar. 1, 1859.



PLAN

Witnesses.

R. Snowden Andrews -
James S. ^{my} Foster.

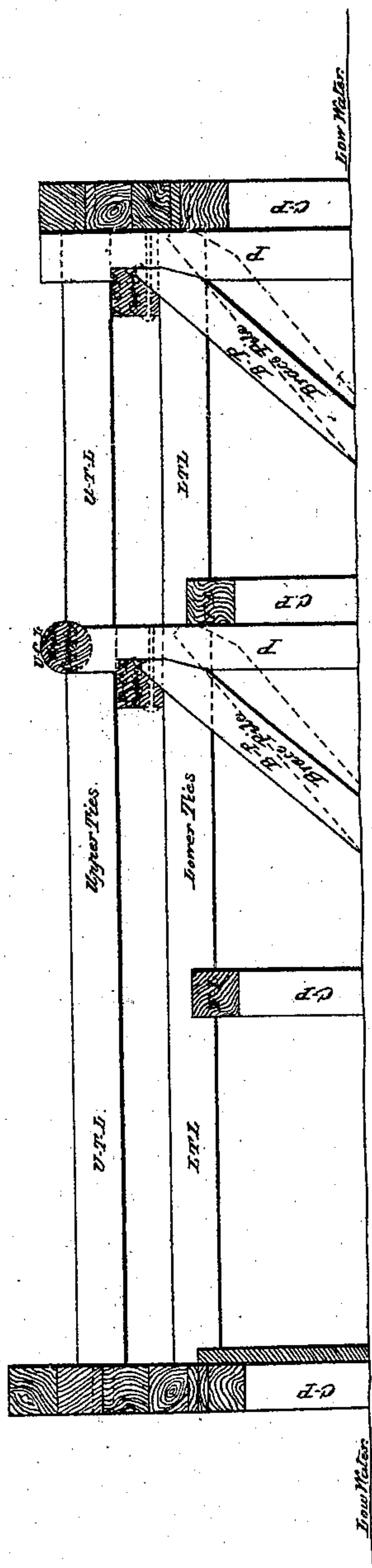
Inventor.

Alex^r Stephens.

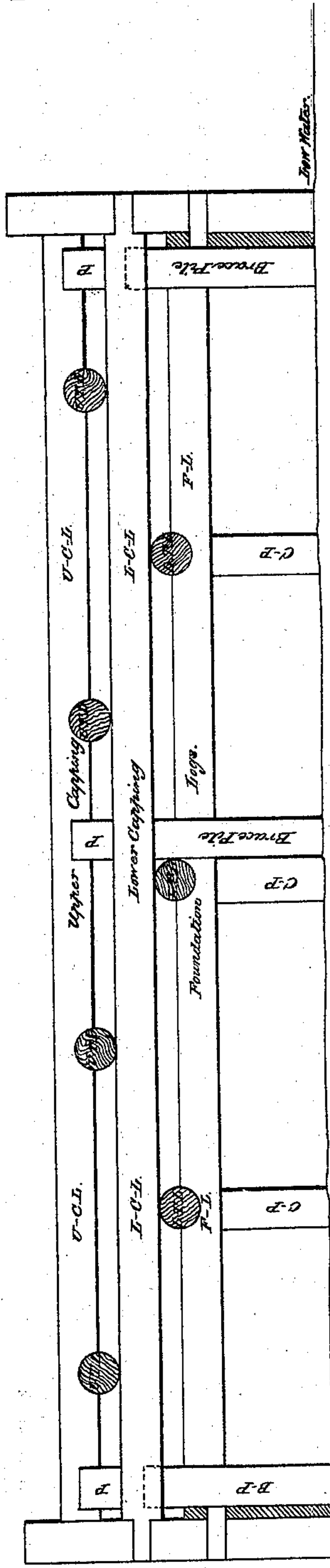
A. Stephens.
Pier.

No. 23,122.

Patented Mar. 1, 1859.



VERTICAL SECTION.



LONGITUDINAL SECTION.

Witnesses.

R. Snowden Andrews -
James S. Forbes.

Inventor.

Alexr Stephens.

UNITED STATES PATENT OFFICE.

ALEXANDER STEPHENS, OF BALTIMORE, MARYLAND.

CONSTRUCTING WHARVES.

Specification of Letters Patent No. 23,122, dated March 1, 1859.

To all whom it may concern:

Be it known that I, ALEXANDER STEPHENS, of Baltimore, in the State of Maryland, have invented a new and Improved Mode of Constructing Wharfing; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, whereof—

10 No. 1 represents a plan. No. 2 represents a longitudinal section. No. 3 represents a vertical section—and to the letters of reference marked thereon.

15 The nature of my invention consists in providing a series of brace piles, peculiarly driven and placed, in combination with vertical piles and upper and lower capping logs, in such a manner as to effectually resist the pressure of earth or land slides, and 20 cause wharves or bridges to continue true and perfect and free from bulging or yielding.

To enable others to construct and use my invention I will proceed to describe it.

25 I construct my wharf or bridge in any of the known methods as for instance by driving piles *c*, *p*, and capping them with foundation logs *F*, *L*, running parallel to the face of the wharf upon which lower tie logs *S*, *t*, *l*, are secured, at right angles to the face of wharf, and a second set of tie logs (upper), also at right angles to the face of wharf, marked *U*, *z*, *l*, after the usual manner—but to prevent the yielding of the 35 foundation logs *F*—*L* with their piles *C* *P* beneath them, and as a consequence the bulging of the face of the wharf from the pressure of the earth I drive a series of piles *P* adjacent to and against the water face of the 40 foundation logs *F* *L* allowing the heads of these piles *P* to project above the foundation logs *F* *L* and on a level with the upper tie logs *U* *T* *L*. The heads of the piles *P* are then secured or connected one to the other 45 by upper capping logs *u*—*c* *l*, which capping logs also are secured to the upper tie

logs *U* *T* *L*. I next proceed to drive at an angle from 20° to 45° brace piles *B*, *P* as shown by the dotted lines about *B*, *P*, with the head of the brace piles lower than when 50 brought to their final position,—then, by means of a purchase, the heads of the brace piles *B*, *P* are drawn back and upwardly (the footing or hold of the brace piles being undisturbed a great resistance is offered to the purchase) and placed against 55 the water-face, or front, of vertical piles *P* and the purchase then released, allowing the thrust of the head of the brace pile to bear against the vertical pile *P*. Upon the portion of the head of the brace pile a lower capping piece is secured to the brace pile as well as the vertical pile (as shown at *F* on vertical section); and the three viz,—the 60 lower capping logs *L* *C* *L*— the heads of brace piles *B* *P*— and the vertical piles *P* are securely fastened by scoring and bolting. When therefore the foundation logs are disposed by reason of the long continued pressure of the earth against them, or by 70 reason of some unusual or sudden thrust, to yield—the upright piles *P* by being thus braced by the brace piles, and prevented from lateral movement, by the lower and upper cappings, do effectually resist the 75 thrust and prevent them (the foundation logs) from bulging or giving way.

I do not claim brace piles, nor the springing of piles into position as new or novel—but 80

I do claim as my invention and desire to secure by Letters Patent—

Brace piles driven at a suitable angle and having their heads so drawn back as to secure a purchase from the footing of the 85 pile, when combined with vertical piles and capping logs substantially as before described.

ALEXANDER STEPHENS.

Witnesses:

R. SNOWDEN ANDREWS,
W. M. WOOLRIDGE.