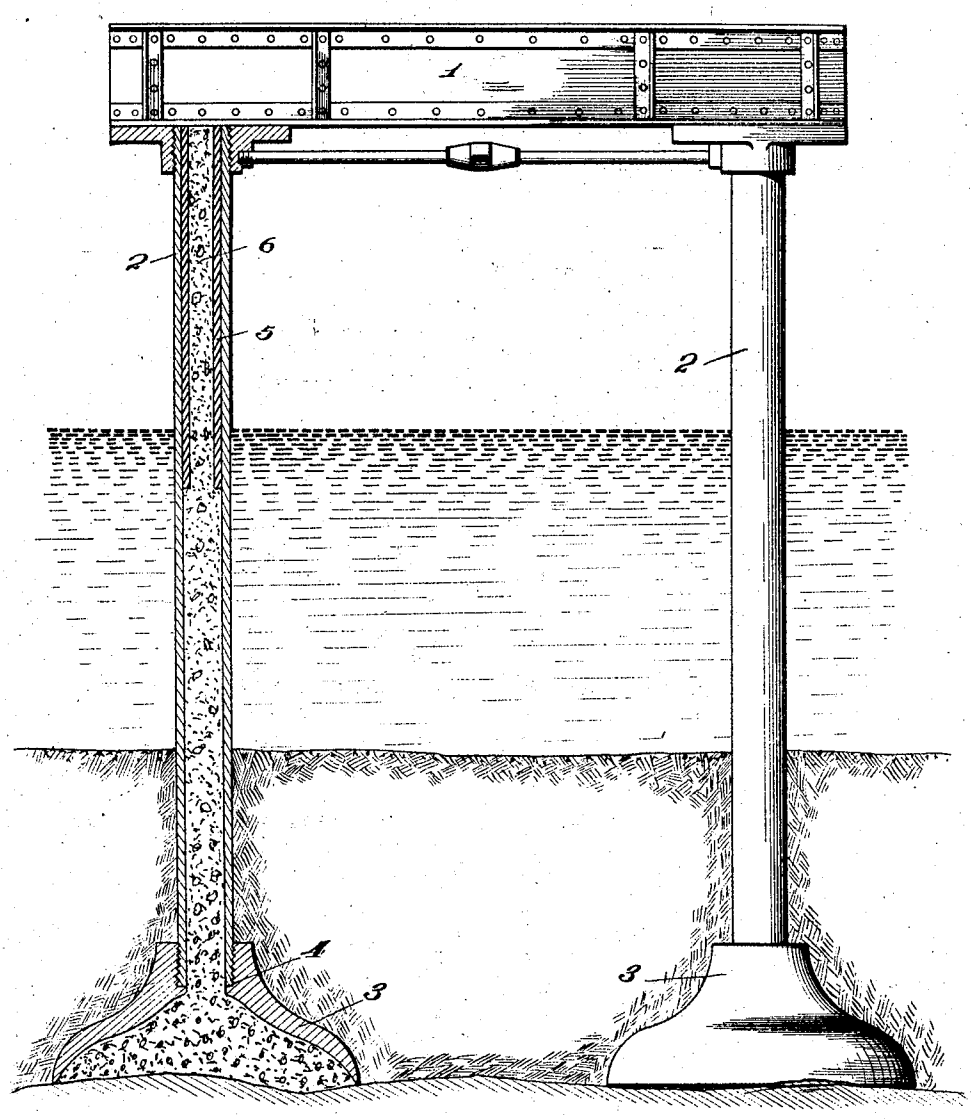
No. 772,615. PATENTED OCT. 18, 1904.

B. F. HUDSON.

BRIDGE PIER.

APPLICATION FILED AUG. 27, 1903.

NO MODEL.



WITNESSES:

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No. 772,615. Patented October 18, 1904.

UNITED STATES PATENT OFFICE.

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BRIDGE-PIER.

SPECIFICATION forming part of Letters Patent No. 772,615, dated October 18, 1904.

Application filed August 27, 1903. Serial No. 170,981. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. HUDSON, a citizen of the United States, residing at Oklahoma city, in the county of Oklahoma and Territory of Oklahoma, have invented certain new and useful Improvements in Bridge-Piers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in bridges, and particularly to composite piers therefor.

The object in view is the production of a pier which shall be susceptible of being positioned with facility and not liable to be injured by climatic conditions.

With this and further objects in view the invention consists in combination with a bridge superstructure of hollow piers supporting the same and a bell-shaped base for the lower end of said pier.

It further consists of a pier comprising a hollow shaft, means at the base supporting the same, a cement filling within said shaft, and a cushion between the filling and the walls of the shaft.

It still further consists in certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawing, the figure represents a vertical transverse sectional view through a bridge, illustrating two of my present improved piers, one in elevation and the other in longitudinal section.

In the present art it is common to provide hollow metal piers and to mount the same upon an artificial foundation, which in practice has been found inefficient in that such foundation is liable to permit lateral displacement of the base of the pier. I overcome this objection by employing an anchor fixed to a hollow pier designed to form a base therefor and constructed in such manner to facilitate the lowering of the pier itself below the soft substances of the bed supporting such pier.

I have illustrated the present improved structure in the accompanying drawing, in which—

1 indicates any bridge superstructure mounted upon piers 2 2, each consisting of a hollow metallic shaft threaded or otherwise suitably secured to the upper end of a bell-shaped base 3. The base is formed in its upper end with an annular internal shoulder 4 for receiving the end of the shaft 2, the outer edge of the shoulder 4 lying flush with the inner surface of said shaft and the opening of the bell 3 tapering gradually from the inner face of said shoulder to the outer or lower edge of the bell. The said shoulder 4 forms a seat upon which the column 2 is supported, thereby relieving the screw-threads in base 3 and pier 2 of shearing strain incident to the weight of said column. Said seat 4 likewise prevents the said column passing into the enlarged hollow base 3, as it might if the screw-threads should be stripped by superposed weight on or of the column. Within the shaft 2 is arranged a lining of strawboard or other suitable cushion 5, which extends from the upper end of the shaft to a point below the frost-line. The shaft 2 and hollow of the bell 3 are filled with cement or other suitable filling 6, which adds weight and rigidity to the structure, the cushion 5 expanding and contracting relative to the expansion and contraction of the metal shaft 2 for compensating for such movement of the particles of metal and preventing injury to the filling 6.

In positioning a pier embodying the features of the present invention the shaft 2, with the bell 3 connected therewith, is permitted to sink into the water until the lower edge of the bell strikes against the soft substance in the river-bed, and then a force-pump is connected with the upper end of the shaft 2 and water is forced out through pipe 2 and out beneath the annular edge of the bell 3. As the sand and other substances pass out beneath said bell the same, with the shaft 2, settles gradually until the bell comes in contact with a solid foundation, where the same may remain and serve as a base of the pier and being positioned beneath the softer substances will be prevented from liability of lateral dis-

placement. After the pier has been positioned the water within the shaft 2 and bell 3 is removed and the filling 6 is placed therein, the cushion 5 having been previously positioned within the shaft 2.

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

1. In a bridge, the combination with a superstructure of a hollow pier supporting the same, filling within said pier and cushion means between said filling and the inner walls of the pier.

2. A bridge-pier comprising a hollow shaft and cushion-lining within the same and an artificial-stone filling inside said lining.

3. In a bridge-pier the combination with a hollow shaft of a strawboard lining within the same and an artificial-stone filling therein.

4. A bridge-pier comprising a hollow shaft, a non-metallic lining therein, and a filler within said lining.

5. A bridge-pier, comprising a hollow shaft, a hollow bell-shaped anchoring-base connected with the lower end of the shaft for supporting it, and an annular internally-arranged shoulder for supporting the lower end of the shaft upon the bell, the flaring lower portion of the bell forming a broad anchoring-support for the pier.

6. A bridge-pier comprising a cylindrical hollow shaft, a cylindrical cushioning-lining within the same, and a filling within said shaft and lining.

7. A bridge-pier comprising a shaft, a removable base secured thereto, a cushion secured within the upper portion of said shaft, and a filling within said shaft and extending the entire length of the shaft and cushion.

8. A bridge-pier comprising a cylindrical shaft, a diverging removable base secured to said shaft, a cylindrical cushion retained within the upper portion of said shaft, and a filling retained within said cushion and shaft.

9. A bridge-pier comprising an inner and outer casing, a removable base secured to the outer casing, and a cement filling inside of said casings.

10. A pier comprising a base having an under cavity, or hollow portion, of relatively large sectional area, a supporting-shoulder therein, a hollow column supported on said shoulder, and a composition filler within said base and column.

11. A pier comprising a hollow base, a hollow column supported upon and secured thereto, and a filler within said base rising into said column.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

BENJAMIN F. HUDSON.

Witnesses:

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