

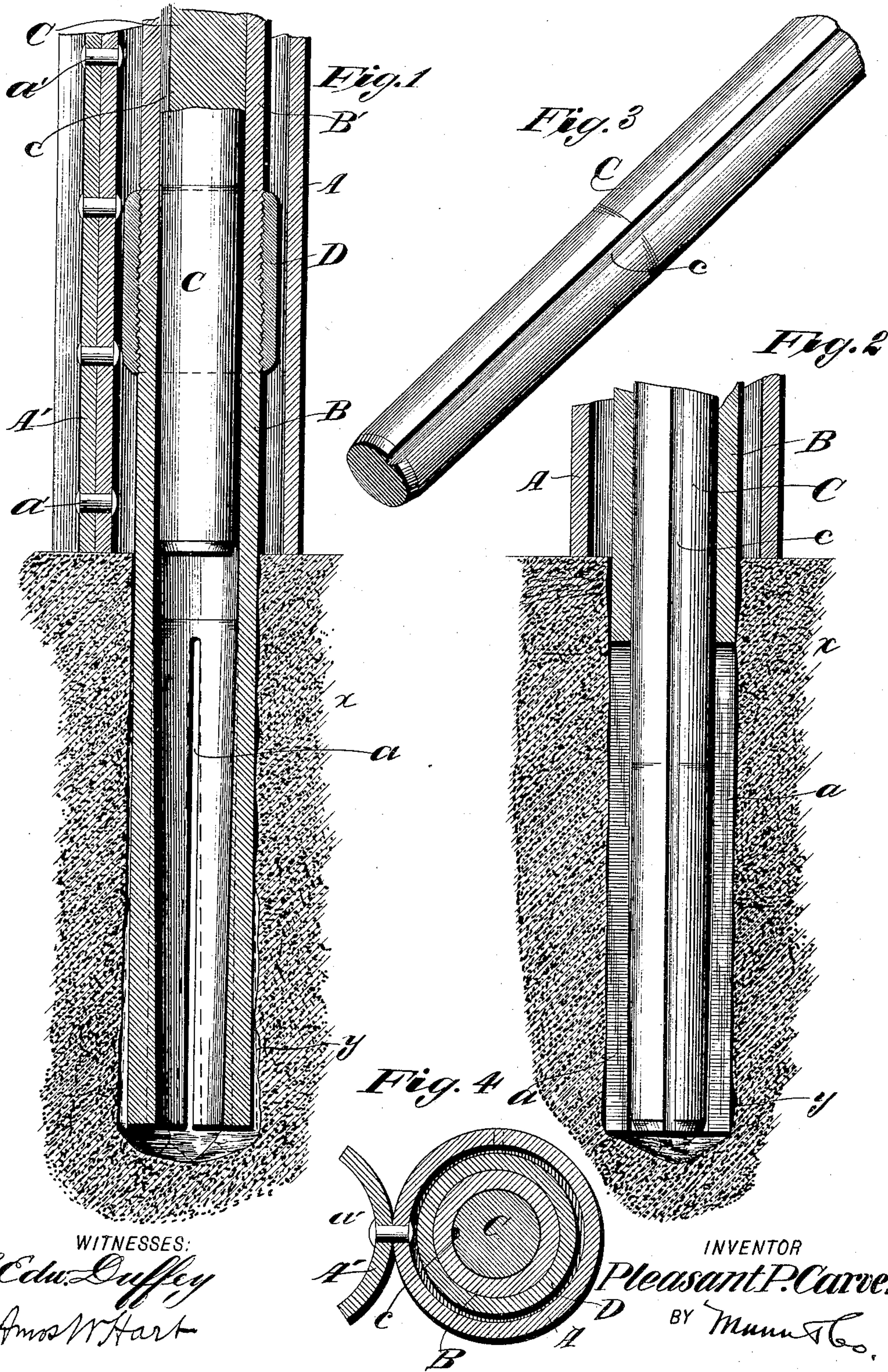
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P. P. CARVER.
FOUNDATION ANCHOR FOR BRIDGES.

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NO MODEL.



WITNESSES:

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FOUNDATION-ANCHOR FOR BRIDGES.

SPECIFICATION forming part of Letters Patent No. 770,674, dated September 20, 1904.

Application filed December 29, 1903. Serial No. 187,001. (No model.)

To all whom it may concern:

Be it known that I, PLEASANT PEYTON CARVER, a citizen of the United States, residing at Estill Springs, in the county of Franklin and State of Tennessee, have made certain new and useful Improvements in Fastening Bridge and other Columns in Stone Foundations, of which the following is a specification.

It is the object of my invention to provide an improved means for fastening hollow bridge columns or pipes used for other purposes in stone or rock foundations. To this end I have adopted and successfully employed the means hereinafter described, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of a rock foundation and my improved apparatus applied as required in practice, the fastening device proper being in position to be driven to complete the fastening. Fig. 2 is a similar section showing the fastening device driven and the fastening thereby completed. Fig. 3 is a perspective view of the pin or fastening device proper. Fig. 4 is a cross-section on the line 4 4 of Fig. 1.

In carrying out my invention a pipe A is first placed in position upon the rock X—that is to say, the said pipe A is inserted through any obstruction, such as loose stone, gravel, sand, or mud, which may form a stratum upon the foundation X. The next step is to insert a drill through the pipe A and by duly operating the same bore a hole Y of due depth and diameter in the foundation X. The lower section B (see Figs. 1 and 2) of the hollow column or pipe which is to be fastened in the rock X is then inserted or dropped through the protecting-pipe A and into the hole Y, drilled in the rock. As shown in Fig. 1, this pipe is not only slotted at *a*, but also tapered from the top of the slots to the bottom. In practice I prefer to provide two such slots *a*, and they are preferably made of the length of the hole Y drilled in the rock. When the column or pipe section B has been duly driven, as shown in Fig. 1, the next step is to insert the expanding and fastening pin or rod C. This may be made of greater or less length, and it

is tapered for about the same distance as the taper and slots of the column or pipe B extend. It is also grooved longitudinally at *c* for about the same distance. The taper of the pin or rod C is, however, considerably less than the taper of the column or pipe B, so that when the said pin or rod C has been forced down into the position shown in Fig. 2 the lower and slotted portion of the part B will be expanded as there shown, so as to firmly wedge the column or pipe in the hole Y. It will be understood that the normal diameter of the part B is but a fraction less than the diameter of the drill by which the hole Y is formed, so that when the part B is expanded the same is held firmly fastened in the rock. B', Fig. 1, indicates a second column or pipe section which may be attached to the driven section B by means of a screw-coupling D. Thus the height of the column or pipe may be extended as required.

It will be understood that the pipe A subserves several functions—that is to say, it serves in the first place as a protection for the drill while boring the hole Y in the rock foundation by keeping from it loose stone, gravel, sand, &c., and it also serves the same purpose while the column or pipe section B is being introduced. It may be left in position after the column B has been fastened by the expanding pin or rod C, and thus constitute a permanent portion of the structure, or it may be removed after column B has been duly driven and fastened. The function of the groove *c* in the pin C is to allow the upward passage or escape of water which may fill the hole drilled in the rock. It will be understood, however, that my invention is applicable in cases where no water exists, and of course in such case groove *c* will not be necessary.

In case I desire to drill a series of holes and insert a corresponding series of columns I may provide the first protecting-pipe A with a guide A', which is illustrated in Figs. 1 and 4. The same is a longitudinal section of a second protecting-pipe and is secured by rivets *a* to the column or pipe A. The curved inner side of such part A' serves as a guide for another column or pipe section while be-

ing lowered into place. It will be understood that the pipe-columns may be arranged in a straight line or in a curved line, which may be a part of a circle or otherwise, as conditions require.

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

1. The improved apparatus for the purpose specified, comprising a column or pipe having its lower end slotted lengthwise, a pin or rod adapted to be driven into such column and of such relative diameter that when forced into the slotted portion of the column it expands the latter, and a protecting-pipe adapted to surround and inclose the column, the same resting in practice upon the top of the foundation, substantially as described.

2. The improved apparatus for the purpose specified, comprising a hollow column or pipe having its lower end slotted and tapered, a pin or rod whose lower portion is tapered and grooved, the same being adapted to be driven in the column or pipe and to expand the lower contracted portion of the same, substantially as described.

3. The improved apparatus for the purpose specified, comprising a hollow column or pipe having its lower end slotted and tapered, a pin or rod adapted to be driven in said pipe and made of such relative diameter that it expands the slotted portion of the same when forced to its lowest position, and a protecting-pipe adapted to inclose the driven column or pipe and to rest in practice upon the top of the stone foundation, substantially as described.

4. The improved apparatus for the purpose specified, comprising a hollow column or a pipe having its lower end slotted longitudinally and also tapered, a pin or rod adapted to be driven into such column and having its lower portion slightly tapered but to a less degree than the column, and also grooved, and a protecting-

pipe which incloses the portion of the column projecting above the stone foundation, substantially as described.

5. In an apparatus for the purpose specified, the combination with a hollow column or pipe adapted to be driven in a hole in a stone foundation, of a protecting-pipe inclosing the portion of the column or pipe which projects above the foundation, and a column or pipe guide consisting of a longitudinal section, of a pipe, the same being rigidly secured to the protecting-pipe and arranged parallel therewith, and its concave side being outward, substantially as described.

6. The combination with a stone foundation, having a hole drilled perpendicularly therein, of a bridge or other hollow supporting-column, whose lower portion is slotted longitudinally and also tapered, for about the length of the drill-hole, a pin or rod having nearly the inner diameter of the column or pipe, and tapered and grooved longitudinally in its lower portion, the same being driven as described, whereby the lower portion of the column is expanded and thereby fastened in the drill-hole, substantially as described.

7. The combination with a stone foundation, having a drill-hole perpendicular to the surface, of a hollow column or a pipe whose lower portion is slotted longitudinally and also tapered, preferably for about the length of the drill-hole, an expanding rod or pin adapted to be driven in said column and to expand the lower portion of the same, and a protecting-pipe which rests upon the foundation and surrounds a portion of the column or pipe that projects above the foundation, substantially as described.

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Witnesses:

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