

C. E. HILL.  
Composite Columns.

No. 154,393.

Patented Aug. 25, 1874.

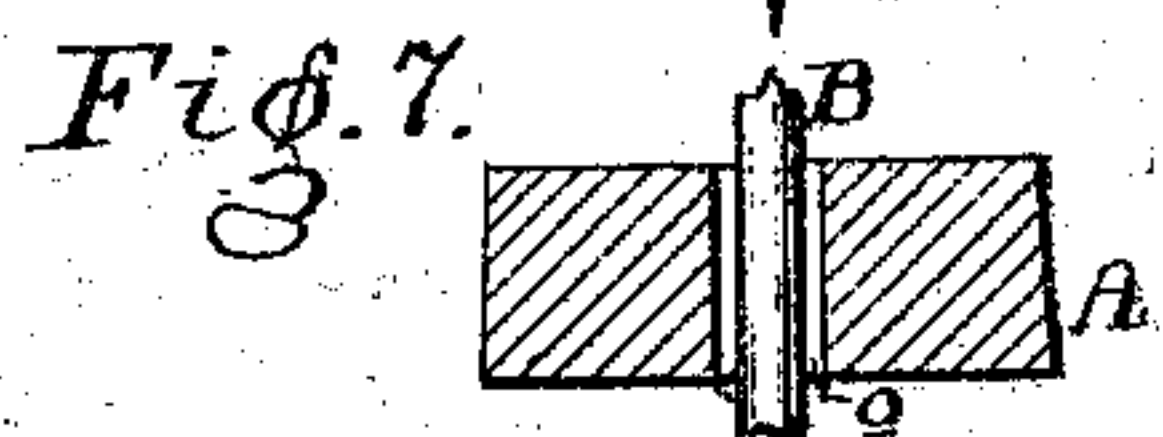
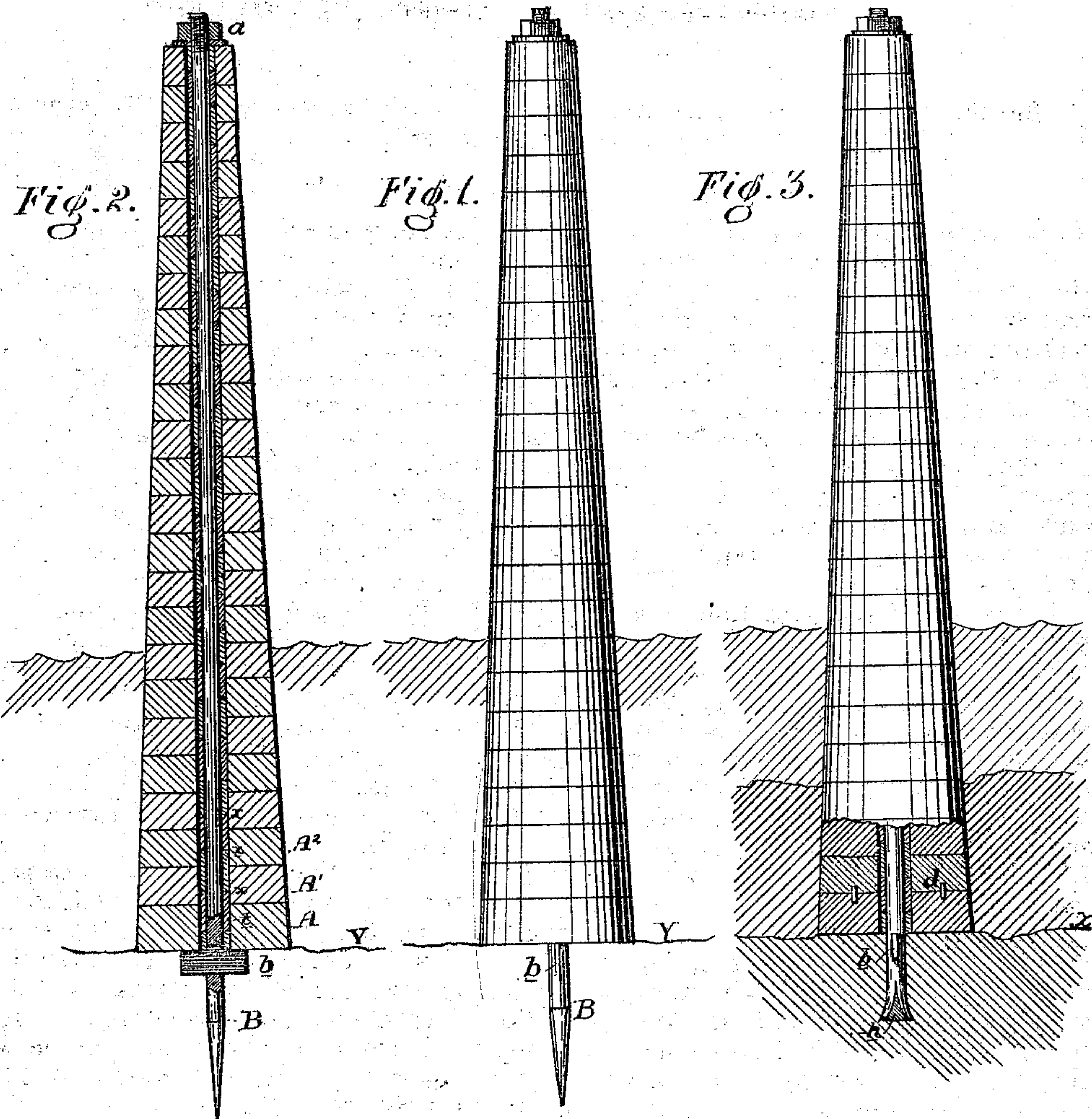


Fig. 4.

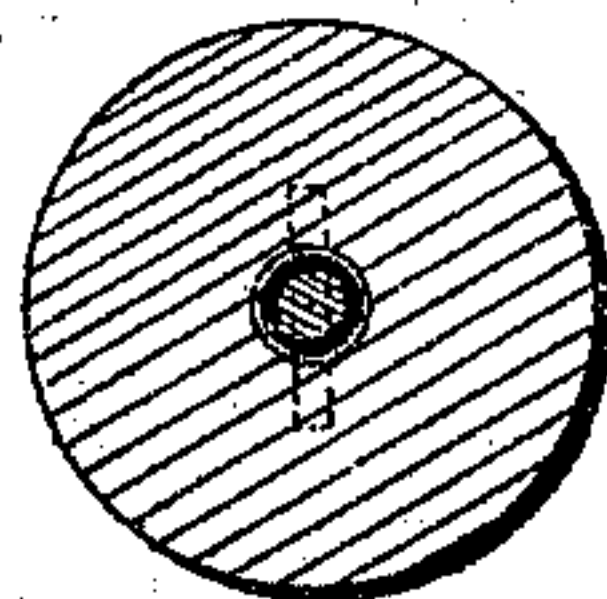


Fig. 5.

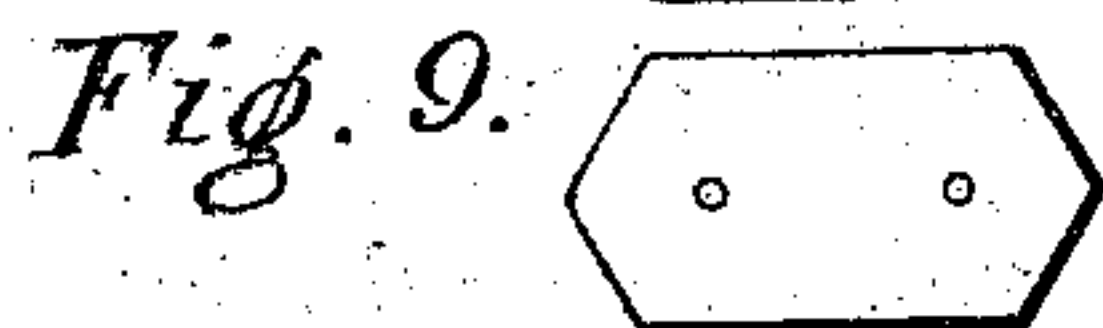
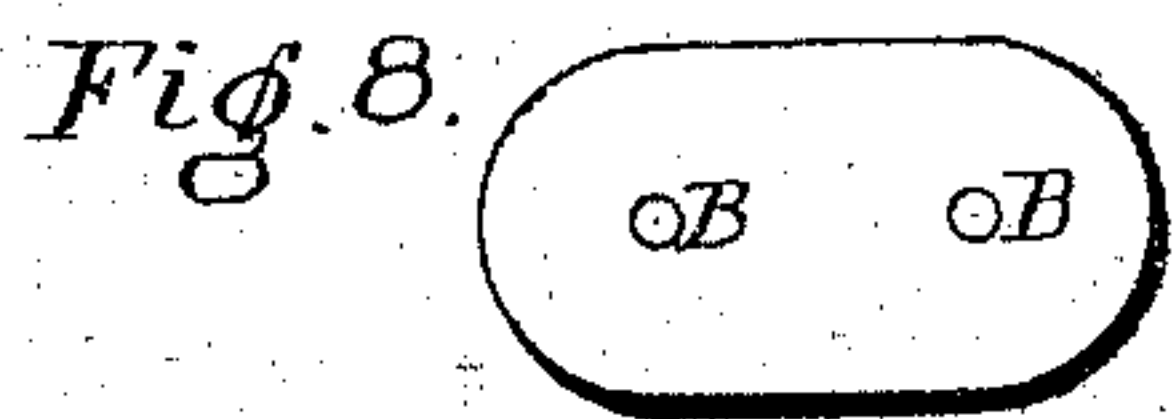
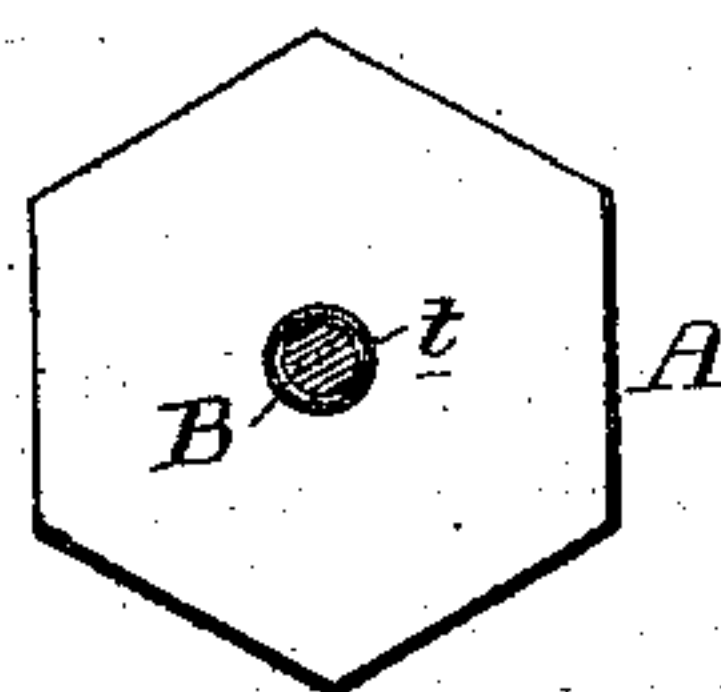
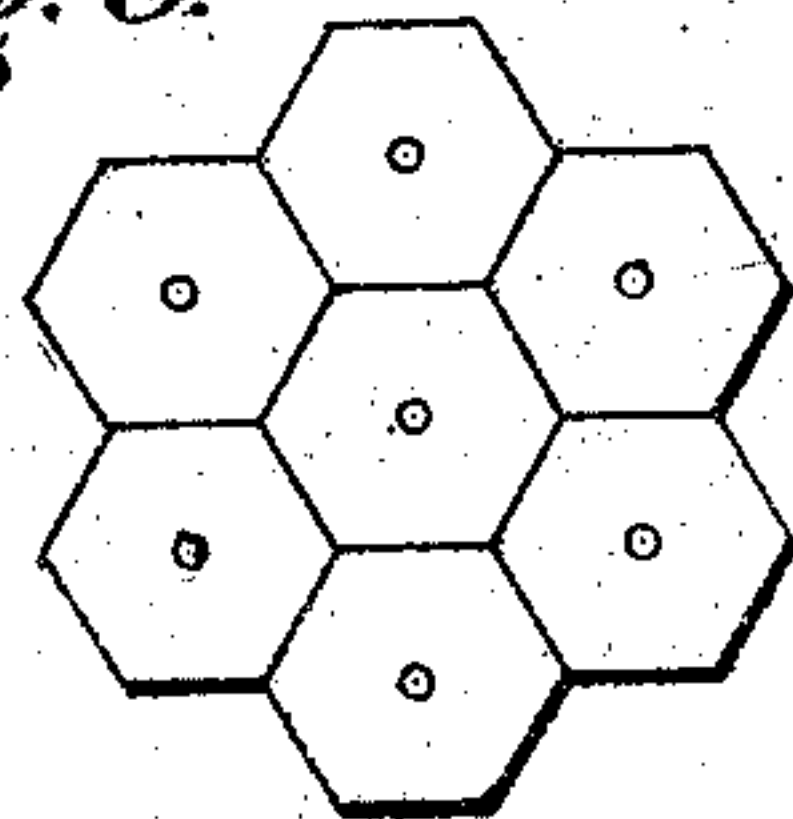


Fig. 6.



Witnesses:  
Fried. Benjamin.  
W. E. Schaffer.

C. E. Hill  
By his attys.  
Horison How



# UNITED STATES PATENT OFFICE.

CHARLES E. HILL, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN COMPOSITE COLUMNS.

Specification forming part of Letters Patent No. **154,393**, dated August 25, 1874; application filed April 24, 1874.

*To all whom it may concern:*

Be it known that I, CHARLES E. HILL, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Method of Constructing a Composite Column, applicable to the supporting of wharves, bridges, warehouses, arches, viaducts, monuments, and other structures having their foundations below the surface of the ground or beneath the surface of the water, and capable of resisting the force of the the waves of the sea, currents of the tides, or of rivers.

The object of my invention is a column or pillar consisting of a block or blocks of stone or baked ware, and one or more bolts, bars, or rods, B, extending through the blocks, secured thereto, and serving both to bind the blocks together, when more than one block is used, forming a self-contained structure, and to secure the column to its foundation, all as shown in the elevations, Figures 1, 2, 3, and 7, and plan views, 4 to 9, of the accompanying drawing.

Each bar B is slotted at a short distance from its lower end for the reception of a transverse key, *b*, between which and a nut, *a*, at the upper end of the rod, the block or blocks constituting the shaft of the column are firmly clamped. The opening *o* in each block for the passage of the rod B is larger in diameter than the latter, leaving an annular space around the rod for the reception of a filling or packing, *t*, of cement or soft metal, and the adjacent faces of the blocks may be pierced to receive dowels *d*, which prevent the blocks from turning on the bar when but one bar is used.

In erecting the pillar at the place where it is to be used, the rod B is, in the first instance, secured to the foundation. If the latter is soft, a pointed rod, as shown in Figs. 1 and 2, is driven downward to a sufficient depth; if the foundation is of stone, it is pierced to receive the rod B and its key *b*, the rod being anchored in the usual manner, as shown in Fig. 3. The rod being secured, the first block A' is brought with its opening *o* above the upper end of the rod, and is lowered until it

rests upon the foundation, on a level with the upper edge of the key *b*. The space in the block round the rod is then filled to half its depth with plastic or molten cement or packing. The upper face of the block A being coated with cement, a second block, A', is then lowered upon the first, the dowels *d* being inserted, if necessary, and the packing material *t* is filled in to about one-half the height of the block A', other blocks being added in like manner until a shaft of the desired height is obtained, when the nut *a* is applied to the upper end of the rod.

By arranging the packing or cement *t* around the shaft, as described, the joints *x* thereof are intermediate with those between the blocks, so that should water by any chance penetrate the shaft, it will be effectually prevented from reaching the rod, which, while thus protected from the corroding effects of moisture, will preserve its original strength.

As the blocks are firmly clamped between the nut *a* and wedge *b*, as well as cemented to each other and to the rod, the whole will form a self-contained structure, capable of as extensive and as varied uses, and, in many respects, superior to the ordinary monolith.

It will be apparent that the blocks may be quarried or cut and bound together and to the rod, as well at the quarry as at the point where the column is to be used.

The shaft may consist of one or more blocks, and may be of any desired sectional form, one, two, or more rods, B, being used, as shown in Figs. 5, 8, and 9, and several columns of proper form may be combined in the construction of a more extended structure, as shown in the diagram, Fig. 6.

A permanent offset or an adjustable sleeve, collar, or nut, may be substituted for the key *b*, and a key, collar, or other suitable device for the nut *a*, and the rod B may be of metal or wood, solid or tubular.

I do not desire to claim, broadly, a pier or column anchored to a foundation by means of a bolt passing through the said column, nor do I claim a column made self-contained and independent of the foundation by a cen-

tral bolt for securing the members of the column together; but,

I claim as my invention—

A column, or other analogous permanent structure, consisting of stone or baked ware, strengthened and rendered self-contained by means of a central bolt, which serves the two-fold purpose of clamping the column inde-

pendently of the foundation, and of anchoring the column to the latter, all as set forth.

Brooklyn, March 31, 1874.

CHARLES E. HILL.

Witnesses:

S. F. HILL,

GEORGE E. HILL.