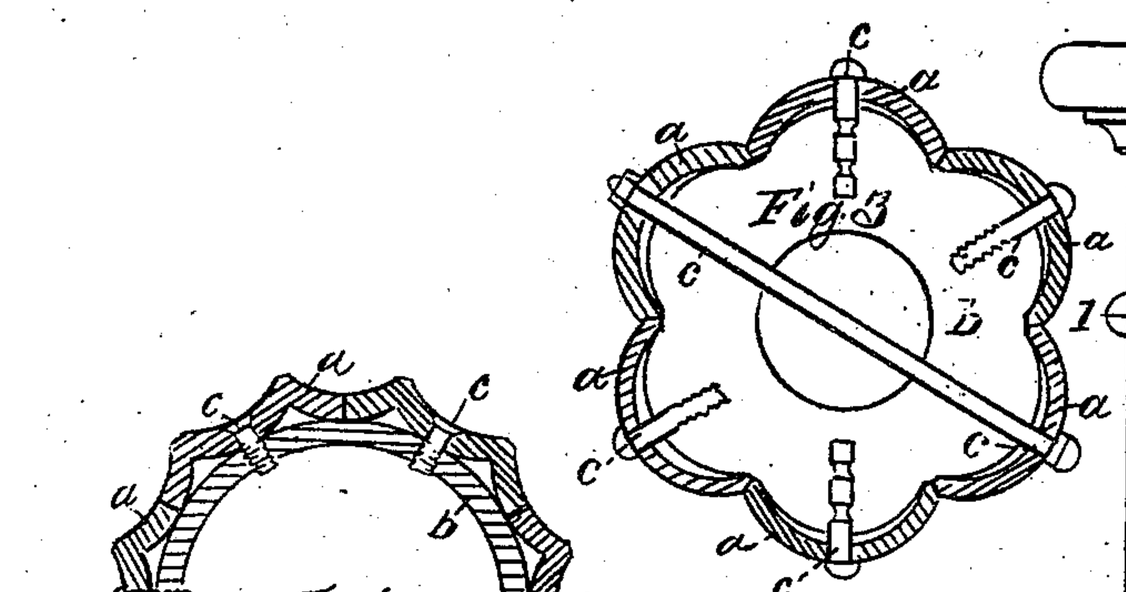
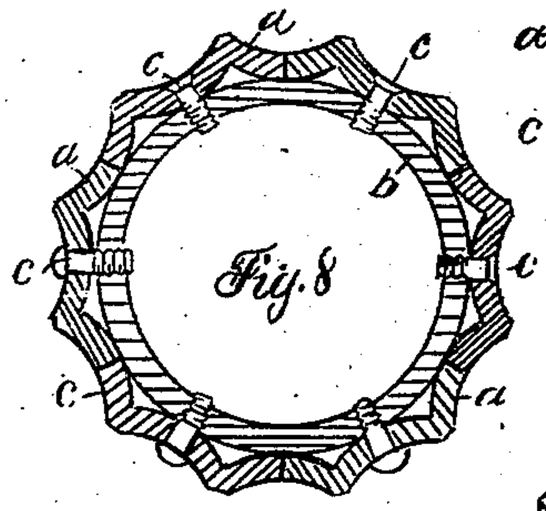
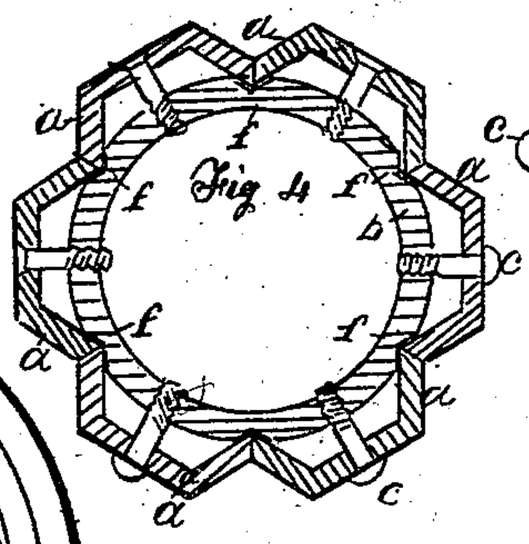
Walters & Shaffer.

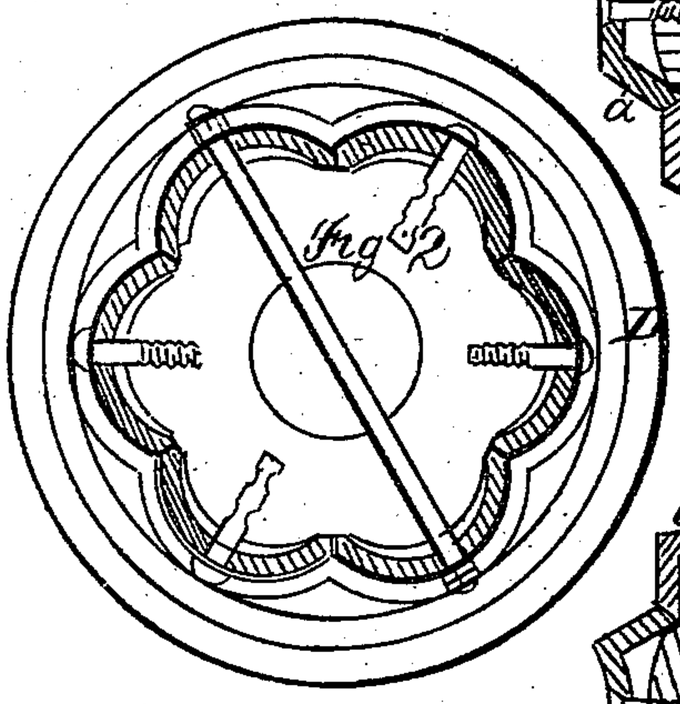
Girder

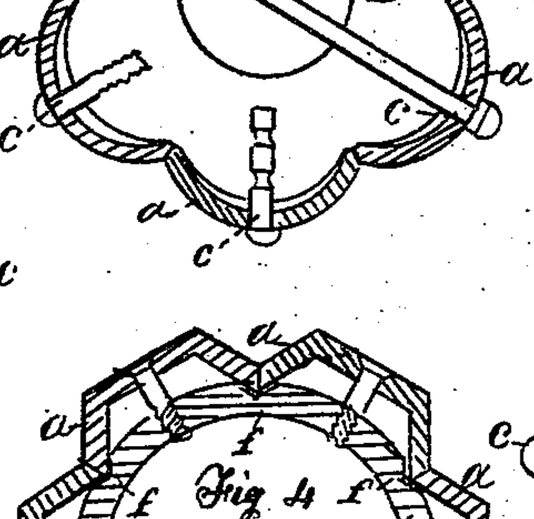
No. 82,664. Patented Sept. 29. 1868.

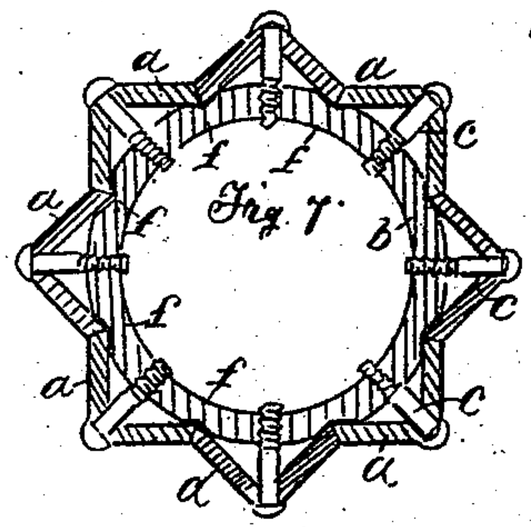


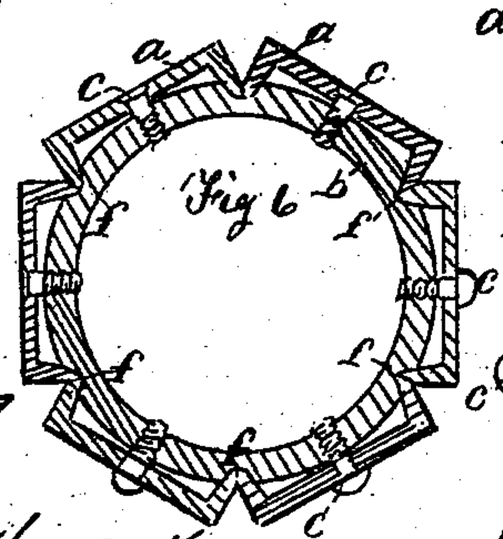


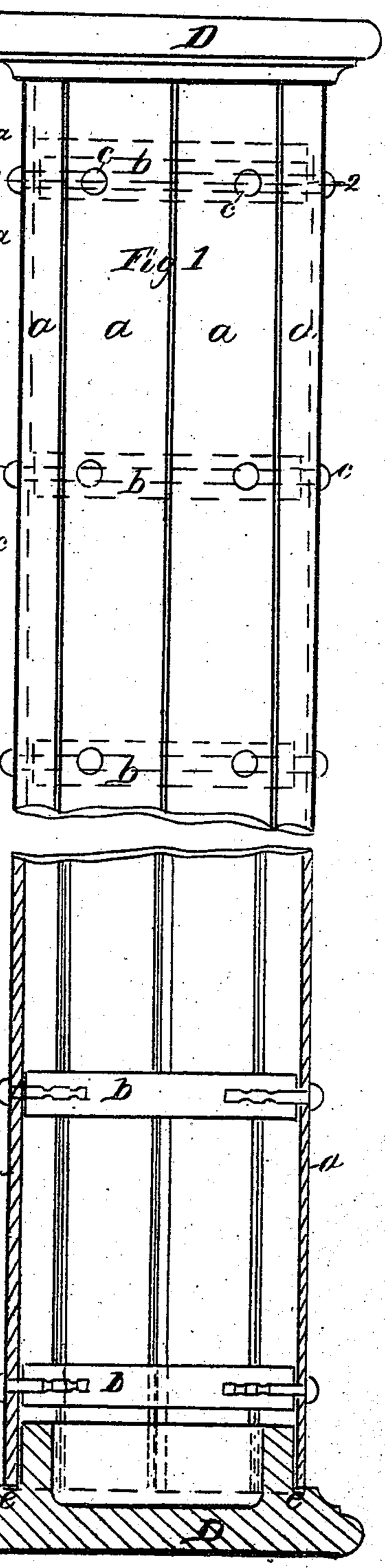












Witnesses
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Inventors

by their Attorneys
Munn & Co

UNITED STATES PATENT OFFICE.

GEORGE WALTERS AND THOMAS SHAFFER, OF PHŒNIXVILLE, PA.

IMPROVED METHOD OF CONSTRUCTING COLUMNS, &c.

Specification forming part of Letters Patent No. **82,664**, dated September 29, 1868.

To all whom it may concern:

Be it known that we, GEORGE WALTERS and THOMAS SHAFFER, of Phœnixville, in the county of Chester and State of Pennsylvania, have invented certain new and useful Improvements in the Mode of Constructing Columns or Shafts of Wrought-Iron or Steel; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings making part of this specification, in which—

Figure 1 is an elevation and section of a complete column; Fig. 2 is an inside view of base or cap and section of the column; Fig. 3 is a section through one of the disks; and Figs. 4, 5, 6, 7, and 8 are sections showing various forms of columns or shafts.

The same letters in all the figures are used to designate identical parts.

Our invention consists in the construction of columns or shafts of wrought-iron or steel plates of any desired form, said plates being curved or bent outward in the middle on the line of their width, and arranged around a central disk of wrought or cast iron, to which they are attached directly by bolts or rivets, and without the use of external cramping-bars, a space being left between said plates and rings or disks, so that the plates being drawn inward by the stems of the rivets or bolts their edges shall be forced closely together to give staunchness to the column.

We have illustrated in the drawings columns made of six plates of various forms. Different numbers may be made use of, but not less than three.

a a a are bars or plates of wrought-iron or steel, the latter being especially useful where, as in long spans for bridges, it is desirable to combine strength with lightness. These plates may be rolled to any desired form, according to the architectural design. These plates or bars must, however, be so rolled that, while their edges bear against the internal rings, the middle part shall project, so as to leave a space between it and the central rings. The plates or bars, being cut to the required length, are placed against one another and secured to rings *b b b* by bolts or rivets *c c c* passing through the plate into the rings. The long bolts shown in Figs. 2 and 3 pass entirely through the middle part of the column, uniting opposite plates. The column being thus constructed is turned off to the desired length to receive the cap and base D D. The base is shown in Fig. 1 as constructed with a flange, extending upward into the space inside of the plates forming the shell of the column. A groove is formed in the casting around the flange to receive the ends of the plates *a*. This groove must, of course, be adapted in outline to the form of the column. As in the case illustrated the groove is not round; it cannot be turned out to receive the square end of the tubular column; it is therefore necessary to fill the groove, or partly fill it, with a packing of metal suitable to resist the pressure.

In Figs. 4, 5, 6, 7, and 8 the disk-rings *b b* are formed of wrought-iron and grooved at the points *f f* to receive the segments and guide them into their proper places. The rivets may be secured to the rings by being first secured or cast into them and afterward riveted to the plates; or bolts with proper heads may be used; screwed into the rings through the plates. These columns may be made of any form and of any required strength. They are cheaply constructed and require but little machinery to manufacture them. They differ from the columns shown in another application made by us, in dispensing with the external cramping-bars, which are sometimes objectionable as marring the symmetry of the design. They are also distinguished from all others heretofore constructed in this, that no external hoops are used, and that the arched plates, as they are drawn down by the screws or rivets at the center, have their edges compressed against the rings. The same force, by pressing against the rings in the middle of the spaces between the edges of the plates, tends to force the rings outwardly against the edges of the plates, thus bracing the column and giving it increased rigidity.

We make no claim, broadly, to wrought-metal shafts or columns; nor to shafts or columns made of metallic plates and disks; nor to any particular shape, transversely or otherwise, of which such columns or shafts are susceptible; but

What we claim as our invention, and desire to secure by Letters Patent, is—

The manner of constructing columns or shafts of wrought-iron or steel plates, curved or bent on the line of their width, and attached by bolts or rivets to internal rings or disks so shaped in relation to said plates that a space shall be left between them in order that the plates may be drawn down and their edges brought into close contact by the compression of said rivets or bolts, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEORGE WALTERS.
THOMAS SHAFFER.

Witnesses:
V. N. SHAFFER,
P. G. CAREY.