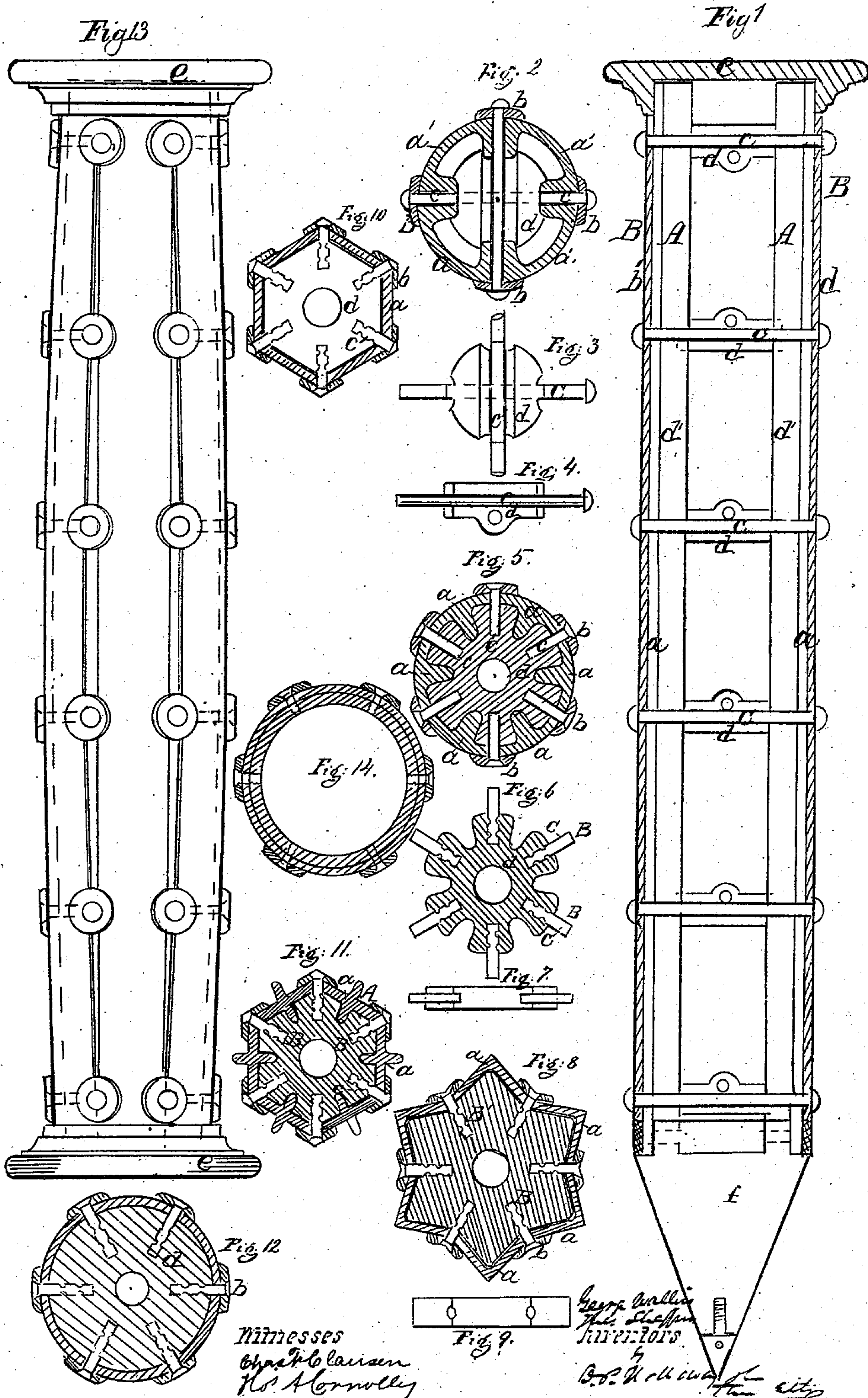


Walters & Shaffer, Girder.

No. 82,663.

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UNITED STATES PATENT OFFICE.

GEORGE WALTERS AND THOMAS SHAFFER, OF PHOENIXVILLE, PA.

IMPROVED METHODS OF CONSTRUCTING COLUMNS, &c.

Specification forming part of Letters Patent No. 82,663, dated September 29, 1868.

To all whom it may concern:

Be it known that we, GEORGE WALTERS and THOMAS SHAFFER, of Phoenixville, in the county of Chester and State of Pennsylvania, have invented a new and useful Improvement in the Mode of Constructing Wrought-Iron Columns or Shafts; 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, in which—

Figure 1 is a longitudinal section; Fig. 2 is a transverse section; Fig. 3 is a plan of one of the disks; Fig. 4 is an elevation of the same; Fig. 5 is a transverse section, showing segments formed of T-bars curved to the required form; Fig. 6 is a plan of a disk with rivets cast in it; Fig. 7 is an elevation of the same; Fig. 8 is a transverse section, showing the segments formed of bars of angle-iron; Fig. 9 is an elevation of a disk for same; Fig. 10 is a similar section of a column formed of flat bars beveled on the edges; Fig. 11 is a similar section of a column formed of cruciform bars; Fig. 12 is a similar section of a column formed of rounded segments; and Fig. 13 is an elevation of a column in which the bars are bent outwardly to create a swell in the middle.

The same letters are employed in the designation of corresponding parts in the various figures.

Our invention relates to the method of connecting iron bars of various forms, so as to form a column of great strength, using for the purpose various forms of iron bars, but employing in all the same general principles of construction, as hereinafter set forth.

In the annexed drawings, *a a* are iron bars or wrought plates, placed parallel with one another, and joined edge to edge, at least three being necessary for the purpose. The edges, when necessary, should be beveled so as to fit against one another. At intervals cast or wrought iron disks, *d*, are placed across the space inclosed by the segmental plates.

The external form of these disks will, of course, be varied according to circumstances, so as to form bearings for the external segments by which they shall be held in position.

When the disks have been introduced at proper intervals, as shown, the bars being

temporarily confined in their proper relative positions, rivets *c* are passed through the disks or into them, and their heads formed on plates *b b'*, which are placed on the outside of the column and over the joints. These plates may be either properly perforated wrought-iron bars, as shown in Fig. 1, extending the entire length of the column, or they may be washers, as shown in Fig. 13. We prefer to use the bars for general purposes as presenting a neater finish; but where stay-rods (as in bridges) are to be passed through the columns between the plates, it will be more convenient to use washers. One of these rivets or stay rods, as seen in Fig. 2, may pass entirely through the column, and be used in conjunction with short ones driven into the disk, which is properly constructed to receive them. The rivets may be cast into the disks, as shown in Figs. 6, 8, 10, 11, and 12, in which case they should be grooved, as shown. When the rivets are inserted in the column they should be heated, so that when the head has been formed in countersinks in the plate or washer, the iron, by shrinking in cooling, shall draw the parts very rigidly together.

We have shown in Fig. 13 a mode of constructing the columns by bending the segments to form a swell in the middle of the column. This may be done with any form of bars whenever desired.

The column when completed has a pedestal or cap, *e*, set upon either end. When it is used as a shaft for a pile to be driven into the ground, it is to be terminated by a point, *f*, which may be a conical point of wrought-iron tipped with steel, or the body of the point may be cast with a steel tip.

We are aware that wrought-iron shafts have been constructed by placing bars parallel with each other and securing them by hoops. We are also aware that wooden columns have been constructed by fastening the boards to a center by means of nails or screws. We do not, therefore, claim, broadly, for wrought-iron columns formed by bars fastened together, nor for merely securing the plates or bars to a central disk. Our improved columns are distinguished from all others by their being constructed of longitudinal metallic bars or plates fastened to internal disks by bolts or rivets

passing through external cramping-bars or washers, and also through the plates into the internal disks.

We make no claim, broadly, to wrought-metal columns or shafts, nor to columns or shafts 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—

1. In the construction of metallic columns and shafts, confining wrought iron or steel plates between external cramping bars or washers *b b* and internal metallic disks *d d* by rivets, upon or around which said disks have

been cast, or which are attached thereto, and headed down upon the plate while hot, so that the same, in shrinking, shall closely draw the plates to the disk, in the manner substantially as described.

2. In combination with the shaft constructed in the manner set forth, the pointed tip *f*, for the purpose 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:

P. G. CAREY,
E. L. CASWELL.