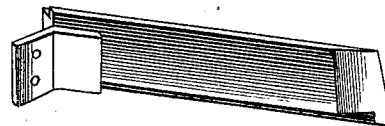
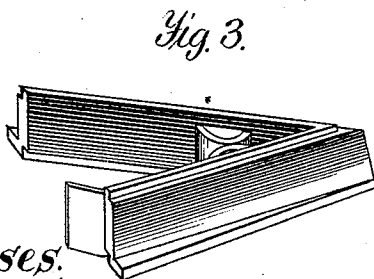
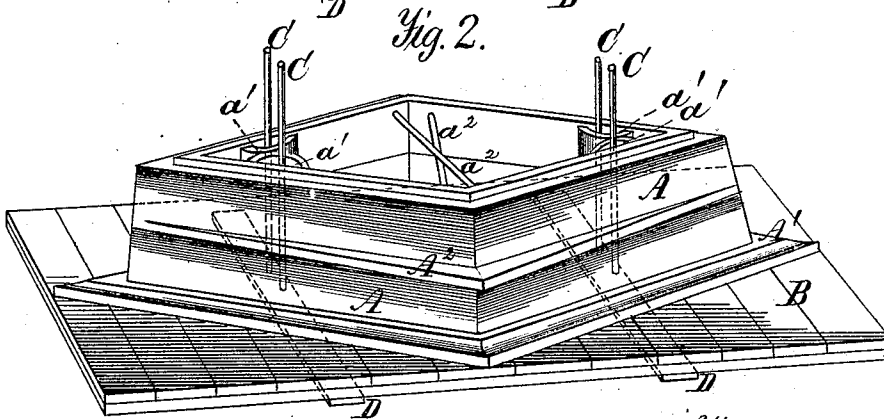
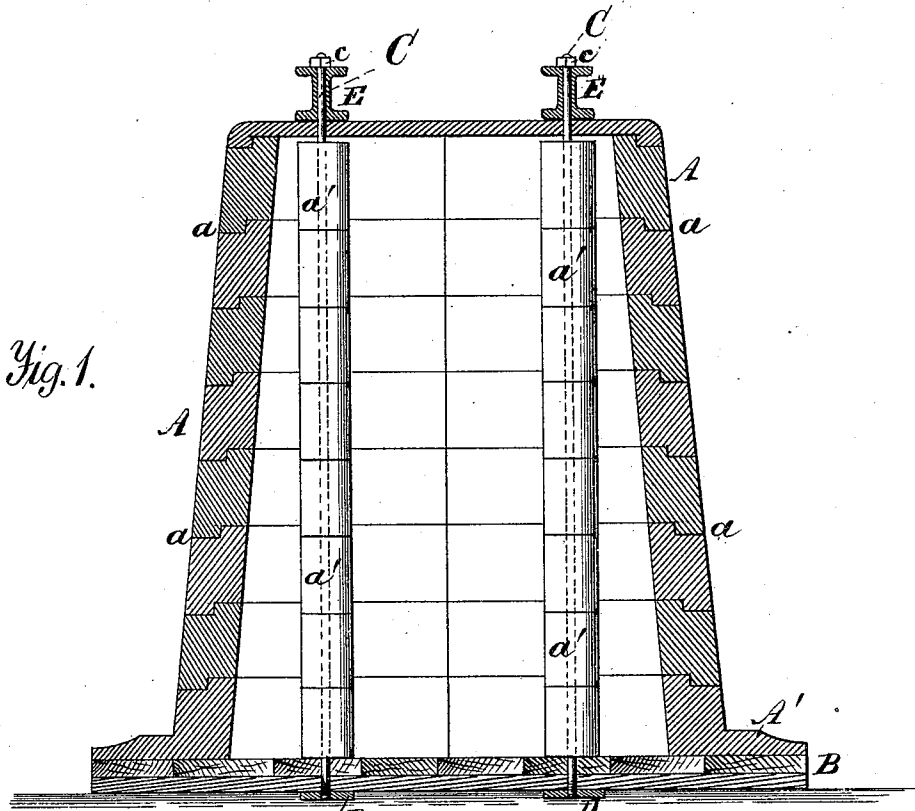


S. MILLS.
BRIDGE PIER.

No. 174,554.

Patented March 7, 1876.



Witnesses.
A. Ruppert.
Alonso Hughes

Samuel Mills
Inventor.
by *P. E. J. Bils*
his atty

UNITED STATES PATENT OFFICE.

SAMUEL MILLS, OF NEW CASTLE, OHIO.

IMPROVEMENT IN BRIDGE-PIERS.

Specification forming part of Letters Patent No. 174,554, dated March 7, 1876; application filed August 20, 1875.

To all whom it may concern:

Be it known that I, SAMUEL MILLS, of New Castle, in the county of Coshocton and State of Ohio, have invented a certain Improvement in Bridge-Piers, of which the following is a specification:

This invention relates to that class of piers for bridges which are composed of an iron jacket built up from a number of sections and filled solidly with masonry.

My improvement consists, first, in interlocking the several cast-iron sections together, either by rabbet-joints or an equivalent joint, so that horizontal strain exerted against any one of the sections shall be diffused through the entire structure. Second, in forming tubular bosses, which may be termed "pockets," on the interior sides of the iron boxes near the ends, which, on the completion of the pier, form continuous tubes from the top to the bottom of the pier for the reception of vertical tie-rods. The distinguishing feature of this part of my invention consists in having the tubes form part of the iron boxes—that is to say, they are also sectional, and built up gradually with the pier, as box after box is added. Third, in certain details of construction, to be hereinafter so fully explained that a general statement thereof at this point is not necessary.

In the annexed drawings, Figure 1 is a vertical longitudinal section of my improved pier. Fig. 2 is a perspective view of the foundation and two sections of the cast-iron jacket, showing also the lower ends of the tie-rods. Figs. 3 and 4 illustrate the construction of parts, by the joining of several of which a single section or box of the cast-iron jacket can be made when the boxes are so large that they cannot be conveniently cast and shipped in single pieces.

The same letters of reference are used in all the figures in the designation of identical parts.

The pier shown (the masonry having been omitted) has the form of a diamond in horizontal section; but it may have the shape of an equilateral prism, if preferred. The several sections A of the iron jacket, gradually decreasing in size from the bottom to the top, may consist either of single castings, or of two or more pieces properly secured together,

they being provided with lapping flanges for the purpose of bolting them together. The sections are snugly fitted on one another, and connected by rabbet-joints *a*, in lieu of which a tongue-and-groove joint might be used, though I prefer the former. The lowermost section has a wide flange, A¹, at the bottom to give it a wide bearing on the flooring B, which constitutes the foundation, and is composed of longitudinal and cross timbers. Horizontally-projecting ribs A² are formed on the sections, which constitute fenders. Pockets *a'* are formed on the interior sides at the ends of the sections, so that in building up a pier continuous apertures will reach from the uppermost one down to the foundation-flooring. In filling the sections with masonry care must be taken not to clog up these apertures in any way. When the pier has reached its full height iron tie-rods C are passed through these apertures, through holes previously formed in the foundation-flooring, and screwed with their screw-threaded ends into taps in iron bars D, secured to the bottom of the foundation-flooring. These tie-rods are made to pass through the coping of the top section and the girders E of the bridge, on top of which they are provided with nuts *c*. Thus all the sections of the pier and its foundation-flooring and the girders of the bridge will be firmly bound together. The walls of the pockets touch or merge into each other, as shown, thereby greatly strengthening the sections at the points. The sections may also be tied in the middle by rods *a*² for the purpose of giving additional strength to them.

In building a pier of the kind described the cast-iron sections or boxes are successively laid and filled solidly with masonry. The same mode of construction may be employed for the abutments of bridges, and for other structures analogous to bridge-piers.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The sections or boxes of an iron jacket of a bridge-pier connected together by rabbet-joints, substantially as and for the purpose specified.

2. The combination of the foundation-flooring, the rabbet-jointed sections of the iron jacket of the bridge-pier, separately provided

with registering tubular bosses, and the tie-rods, which are applied through said tubular bosses, and bind the whole structure together in a vertical direction, substantially as specified.

3. The sections or boxes of the iron jacket of a bridge-pier, having fenders formed on them, substantially as specified.

In testimony whereof I have signed my name to the foregoing specification in the presence of two subscribing witnesses.

SAMUEL MILLS.

Witnesses:

THOMAS C. CONNOLLY,
B. EDW. J. EILS.