T. Durden.

Truss Bridge.

No. 20,414. Patented Jun. 1, 1858.

Fig. 2.

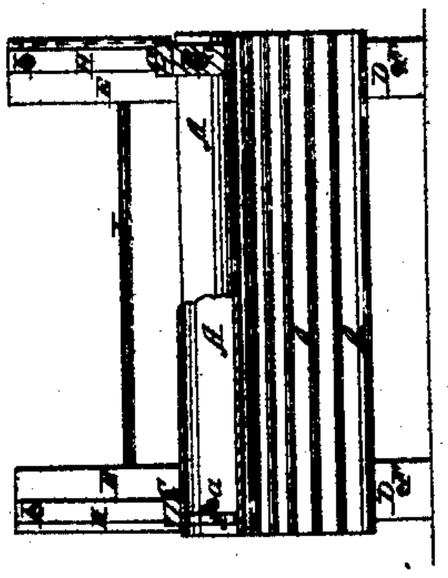


Fig. 1.

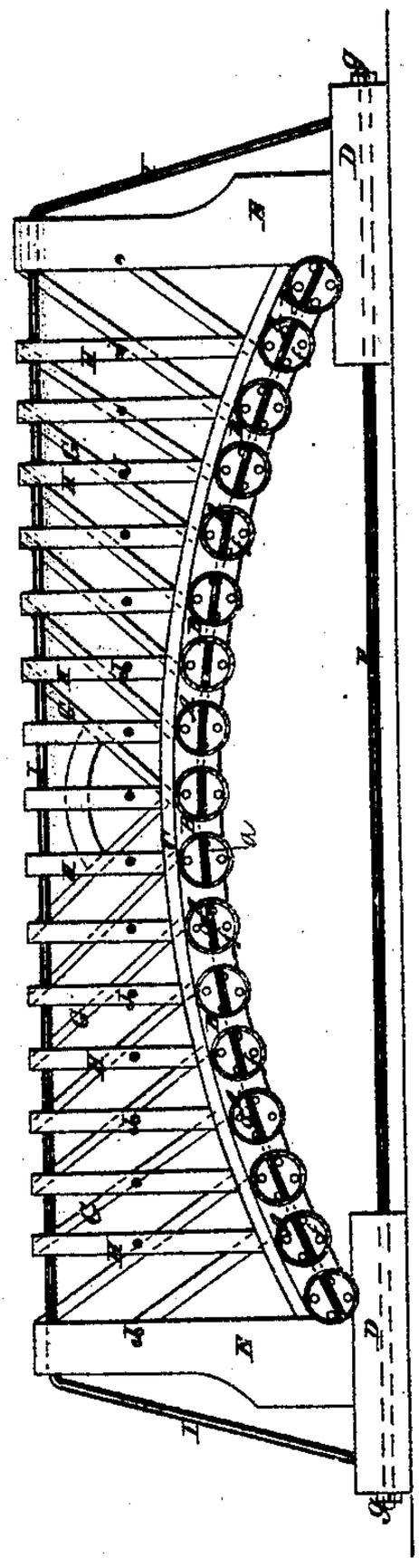


Fig. 4.

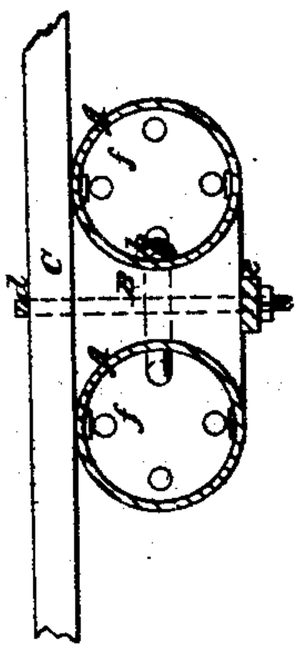
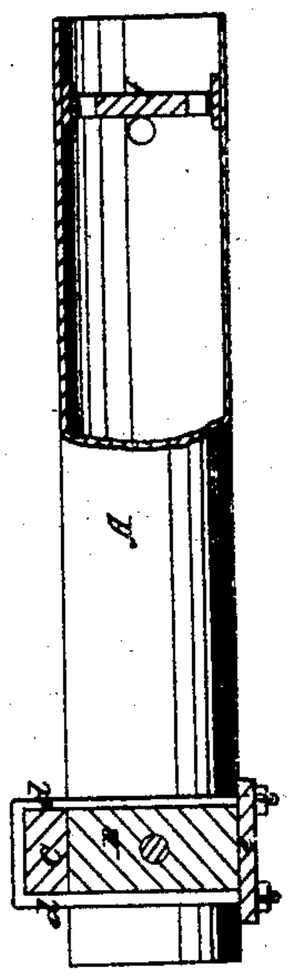


Fig. 3.



UNITED STATES PATENT OFFICE.

THOMAS DURDEN, OF MONTGOMERY, ALABAMA.

BRIDGE.

Specification of Letters Patent No. 20,414, dated June 1, 1858.

To all whom it may concern:

Be it known that I, THOMAS DURDEN, of Montgomery, in the county of Montgomery and State of Alabama, have invented a new and useful Improvement in Bridges; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of a bridge constructed according to my invention. Fig. 2 is a transverse vertical section of the same. Fig. 3 is a section of one side of the bridge, corresponding with Fig. 2, but on a larger scale. Fig. 4 is a section of two tubes, in a plane corresponding with Fig. 1, exhibiting a modification of part of the invention.

Similar letters of reference indicate corresponding parts in the figures.

A, A, are a series of tubes made of wrought iron plates riveted together or of cast iron, whose length are severally equal to the intended width of the bridge frame arranged side by side at a short distance apart as shown in Fig. 2 in the form of an arch.

B, B, are blocks of wood or metal but preferably of wood, fitted between the tubes at or near the ends thereof, and secured in place either by long bolts *a*, *a*, passing through the whole series of tubes and blocks (as shown in Fig. 1) and secured by nuts or keys at the ends or by short bolts *b*, passing each through one block and the adjacent sides of two tubes (as shown in Fig. 4) and secured by a head on one end of each bolt and a key *c*, or nut at the other end thereof or by two keys or two nuts. In addition to the two series of blocks B, B, near the ends of the tubes one or more additional series may be applied in the same manner at any distance from the ends.

C, C, are arched timbers or iron binders fitting over the tubes A, A, and each series of blocks B, B, and having the blocks secured to them for the purpose of securing the arched arrangement of the tubes. The best mode of securing the blocks to the arched timbers or binders is by stirrup bolts *d*, and plates *e*, as shown in Fig. 3. The tubes A, A, may be strengthened at the points where they are clamped between blocks B, B, by cores or disks *f*, *f*, which may be fitted and keyed in them or cast therein.

D, D, are sills at each end of the bridge and E, E, are very stout upright posts tenoned and secured into the said sills. The ends of the arch of tubes rest in the angle between the sills D, D, and posts E, E, and the ends of the arched timbers or binders C, C, are tenoned into the posts.

F, F, are tension rods of wrought iron connecting sills D, D, and extended by nuts *g*, *g*, at the ends, so as to confine the sills longitudinally, for the purpose of counteracting any thrust on the ends of the arch.

H, H, are upright posts tenoned into the arched timbers C, C.

G, G, are diagonal braces, notched and bolted at their lower ends to the arched timbers C, C, and at their upper ends to the upper parts of the posts H, H, and also notched and bolted to such of the posts as they pass.

I, I, are wrought iron tension rods passing through all the posts E, E, and H, H, and down to the sills D D, to which they are secured by nuts or keys.

J, J, are the roadway-bearers which may be of wood or iron having bearings at their ends in the posts E, E.

The most important feature in this bridge is the construction of the arch of the iron tubes, the interposed blocks and arched timbers or binders. It is the arch thus constructed which constitutes the entire support of the load; the duties of the other parts being to keep the arch in shape and to transmit to it the weight of a load passing over the bridge. The tension rods F, F, combine with the sills D and posts E, to prevent the depression and longitudinal extension of the arch, and the posts H, H, and braces G, G, combine to prevent the rising of the arch and to distribute the weight from any point along the whole arch.

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

Forming the arch of a series of metallic tubes A, arranged transversely and combined with blocks B, B, binders C, bolts (*a* or *b*) and cores (*f*) substantially as herein shown and described.

TH. DURDEN.

Witnesses:

F. BUGBEE,

E. WALTON.