

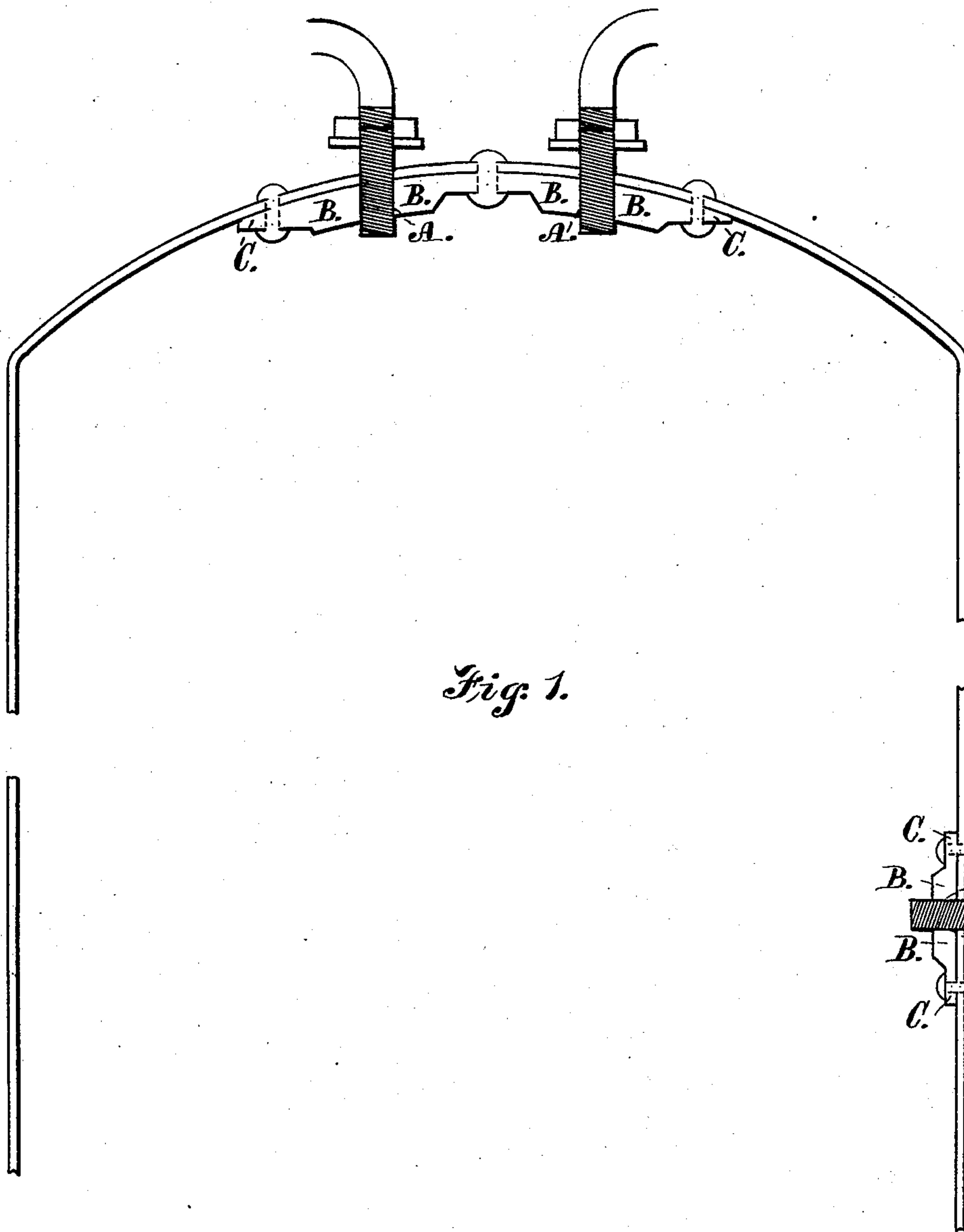
(No Model.)

2 Sheets—Sheet 1.

A. P. CREQUE.
BOILER.

No. 255,493.

Patented Mar. 28, 1882.



Witnesses;
Joseph Martin
Thomas Hunt.

Inventor;
Allen P. Creque,
by
J. M. Hindon
att'y

(No Model.)

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Fig. 3.

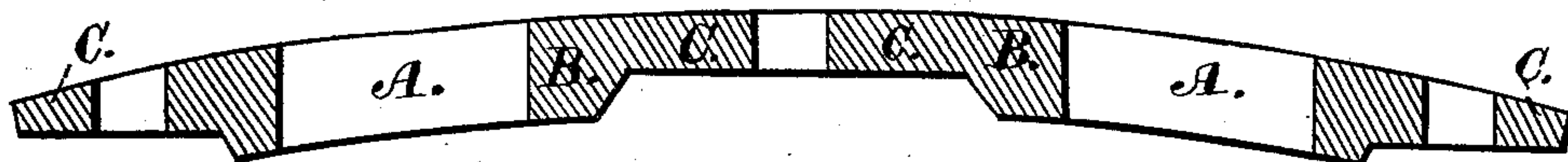


Fig. 2.

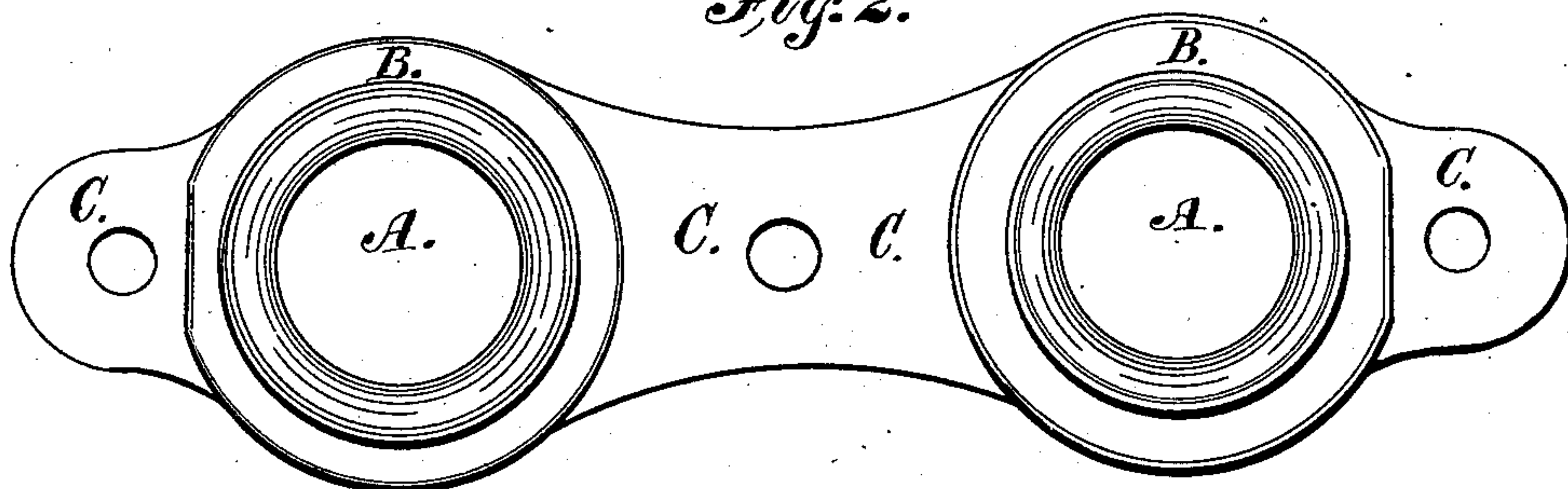


Fig. 4.

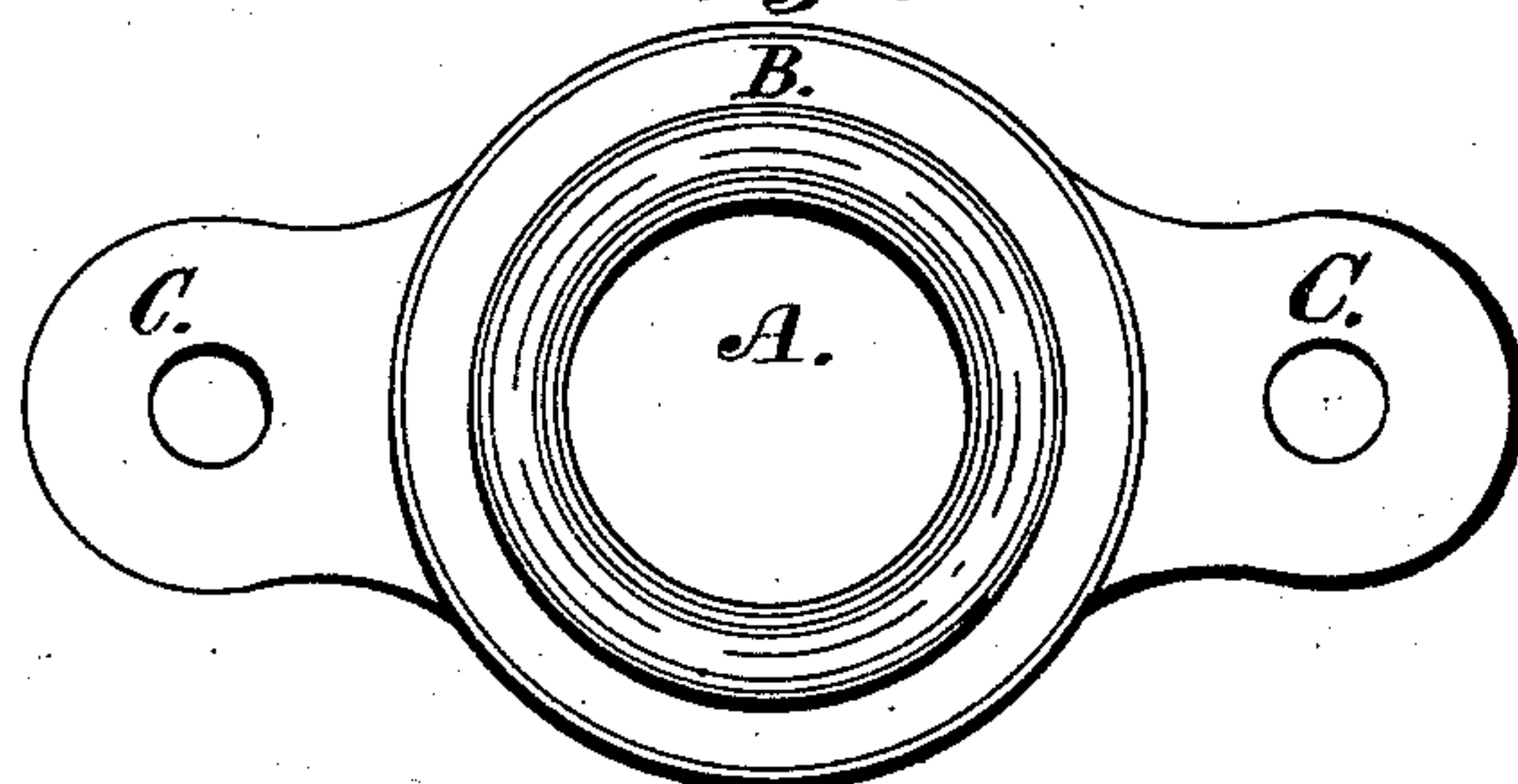


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALLEN P. CREQUE, OF NEW YORK, N. Y.

BOILER.

SPECIFICATION forming part of Letters Patent No. 255,493, dated March 28, 1882.

Application filed February 3, 1882. (No model.)

To all whom it may concern:

Be it known that I, ALLEN P. CREQUE, a citizen of the United States, and residing in the city, county, and State of New York, have
5 invented a certain new and useful Improvement in Boilers; and I do hereby declare that the following is a true and correct description of my said improvement and of the manner of constructing and using the same.

10 In the accompanying drawings similar letters indicate corresponding parts in the different figures.

In said drawings, Figure 1 is a sectional view of a boiler, showing my improvements applied in the head and at the side thereof. Fig.
15 2 is a top view of my improved strengthening-plate in the form in which it is applied to the head of the boiler. Fig. 3 is a sectional view of the same. Fig. 4 is a top view of one of my
20 said strengthening-plates in the form in which it is applied to the side of the boiler. Fig. 5 is a sectional view of the same.

Prior to my invention it has been customary to apply to the heads and other portions of
25 boilers, at the points where the same are pierced for pipe-connections, a heavy piece of cast-iron, which has been riveted to the boiler-plate on the inside, and which operates to strengthen the part weakened by the opening, and also
30 forms a bearing in which is cut a screw-thread, and to which the pipe-coupling is attached. This mode of strengthening boilers at the points weakened by the openings and of providing for coupling-connections is objectionable, for the reason that cast-iron, in order to be made
35 sufficiently strong, has to be of considerable thickness and weight. This adds to the weight and expense of the boiler and increases the cost in many particulars. For instance, the cost of
40 galvanizing such boilers is unnecessarily increased, because the galvanizing of all such boilers is paid for by weight. Again, the surface of cast-iron is so rough that it does not make a good joint with the inner surface of the boiler, and if the boiler or cast iron strengthening-plate be hammered to make it fit accurately to the inner surface of the boiler such
45 plate is apt to crack. Again, it is difficult to cast such plates in the heavy form necessary, so as to conform accurately to the shape of the inner surface of the boiler, and hence a tight joint for support is rendered difficult of accom-

plishment, or there is danger of cracking the cast plate, as before stated, if it is attempted to hammer the support to a proper bearing or
55 force to such bearing by riveting. An attempt has been made to overcome these difficulties by the device described in the patent of John Trageser, dated December 3, 1878, No. 210,476. In said patent is described a screw coupling, 60 which may be formed of malleable iron, and which has a neck, (which is inserted through the shell of the boiler at the opening which is pierced,) and has a small flange on the inside of the shell. This device has been fastened to 65 the boiler by brazing or soldering, the device not being of a shape or construction which permits riveting. The objection to this has been that it necessitates a large opening in the boiler-shell to admit the neck, and when applied it does not materially strengthen the 70 boiler, owing to the smallness of its flange, and, being brazed or soldered only, it is easily detached or loosened by springing of the pipe connected to it. 75

I have succeeded in overcoming all of the defects in question by the improved form of strengthening-plate herein described by me.

I form my strengthening-plates out of malleable iron, wrought-iron, steel, or other similar ductile metal of sufficient strength for the purpose indicated. Such plates are formed on their under side to conform as nearly as possible to the curve of the inner surface of the boiler, and said plates are of sufficient size 85 to surround the openings pierced in the boiler and form a substantial reinforcement with the boiler-shell at that point, and are provided with ears or projections sufficiently large to allow of the plates being securely riveted to 90 the boiler-shell, and yet not so large as to use an unnecessary amount of material. These plates have formed in them openings corresponding in size and shape to the piercings of the boiler, and may be cut with a thread to 95 attach the pipe, or may have the pipe otherwise fastened to them.

In the drawings, A represents the openings corresponding to the boiler-piercings; B, the portions of the plate surrounding the boiler- 100 openings and re-enforcing the same, and C the ears or projections for riveting the plates to the boiler.

I have found that when malleable iron is

used, and when the apertures in the boiler are of the usual size of one and three thirty-seconds inch in diameter it is sufficient to make the flanges which surround said openings of the diameter fourteen thirty-seconds inch on all sides, and the ears of such size that the distance between the rivet-holes in the center thereof shall be three inches from the center of the rivet-hole on one side of the opening in the plate to the center of the rivet-hole on the other.

By constructing my strengthening-plates in the manner shown and described, and out of the materials indicated, I secure the necessary strength and re-enforcing effect with the least possible waste of material, and, owing to the materials used by me, I am enabled to rivet or hammer the strengthening-plate to a true seat on the inner side of the boiler-plate without danger of cracking the plate, and the surface of the plate then makes a more even contact than would be the case if the plate were made of cast-iron.

Further improvements in the form of my strengthening-plates which I prefer to adopt are as follows: The plate is formed with its inner surface curved to fit as accurately as possible to the curve of the portion of the boiler to which it is to be applied, and the upper side of said plate—to wit, the side which is to be away from the inner surface of the boiler—is formed flat at those portions where the rivets are to be inserted, so that if the plate be laid with its center on a horizontal surface the portions of the strengthening-plate where the rivets are to be inserted will be each horizontal. This mode of forming the plate is of considerable advantage and economy, because it facilitates the drilling of the rivet-holes and the countersinking of the spaces of their heads by gangs of tools.

A further improvement of detail consists in making the plates thicker around the apertures than at the ears, for by this means the greatest strength is given where it is most required, waste of material is prevented, and shorter rivets may be used in securing the plates to the boiler.

A further improvement consists in the mode of applying said plates to the heads of boilers. It has been usual in piercing boiler-heads to pierce the same at their center for one of the pipes or connections, and at another point at some distance from the center for another pipe or connection. This renders the boiler-head of unequal strength and weight in its different parts. I secure a better result and more symmetry to the boiler by piercing the

boiler-head with holes which are equidistant from the center of the head, as shown in Fig. 60 1. The mere location of the piercings I do not, however, claim. By piercing the boiler and applying the plate in the position there shown the central rivet of the strengthening-plate marks the center of the boiler, and upon each side of it, at equal distances, are the couplings or connections and the rivets which fasten the strengthening-plate. This mode of constructing heads of boilers is found to be of advantage, especially in places where boilers are subjected to unequal pressure, as in cases where they are used in connection with the Holly system, and where the boilers are subject to the throbbing action of an engine.

By forming my plates of malleable iron or other equivalent material I am enabled to secure a joint between such plates and the inner surface of the boiler by hammering and riveting which is so close that the junction between the parts is almost indistinguishable.

What I claim, and desire to secure by Letters Patent, is as follows:

1. A boiler provided at its aperture or apertures with strengthening-plates made of malleable iron or other equivalent ductile material riveted to the boiler-shell, substantially as shown and described.

2. Strengthening-plates for boilers, made of malleable iron or other equivalent ductile material, and consisting of a flange surrounding the aperture, and ears or projections provided with riveting-holes, substantially as described.

3. A strengthening plate for the apertures of boilers, of malleable iron or other equivalent ductile material, having flanges surrounding the apertures, and ears or projections provided with rivet-holes, said ears or projections being of less thickness than the strengthening-flanges.

4. A strengthening-plate for the apertures of boilers, formed of malleable iron or other equivalent ductile material, and provided with ears or projections for rivet-holes, said ears or projections having a horizontal surface on one of their sides, the other side of the plate being curved to conform to the boiler.

5. A boiler-head having the holes for pipe-connections pierced at equal distances from the center thereof and strengthened by a plate of malleable iron or other equivalent ductile material riveted thereto, substantially as described.

ALLEN P. CREQUE.

Witnesses:

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