

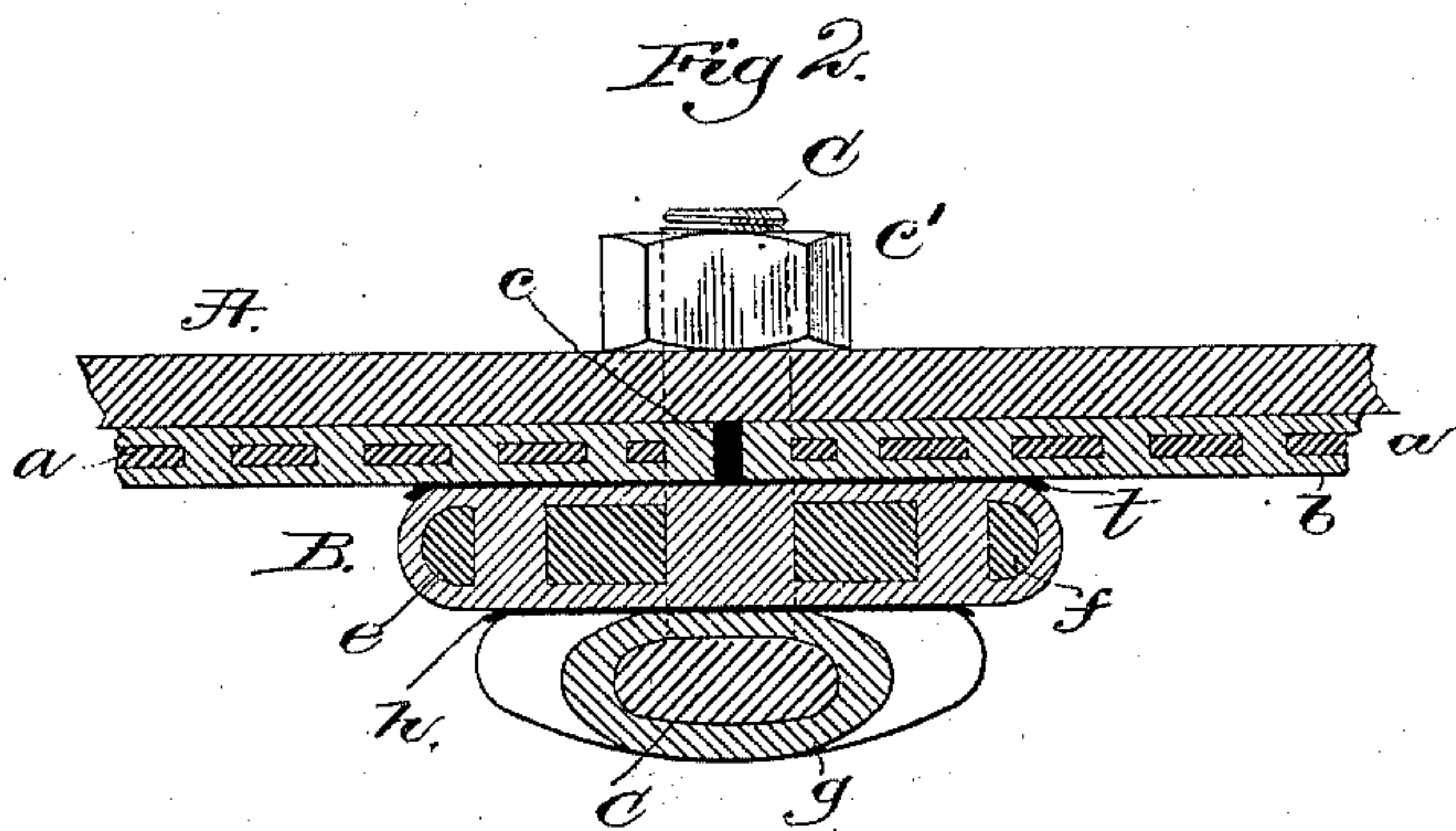
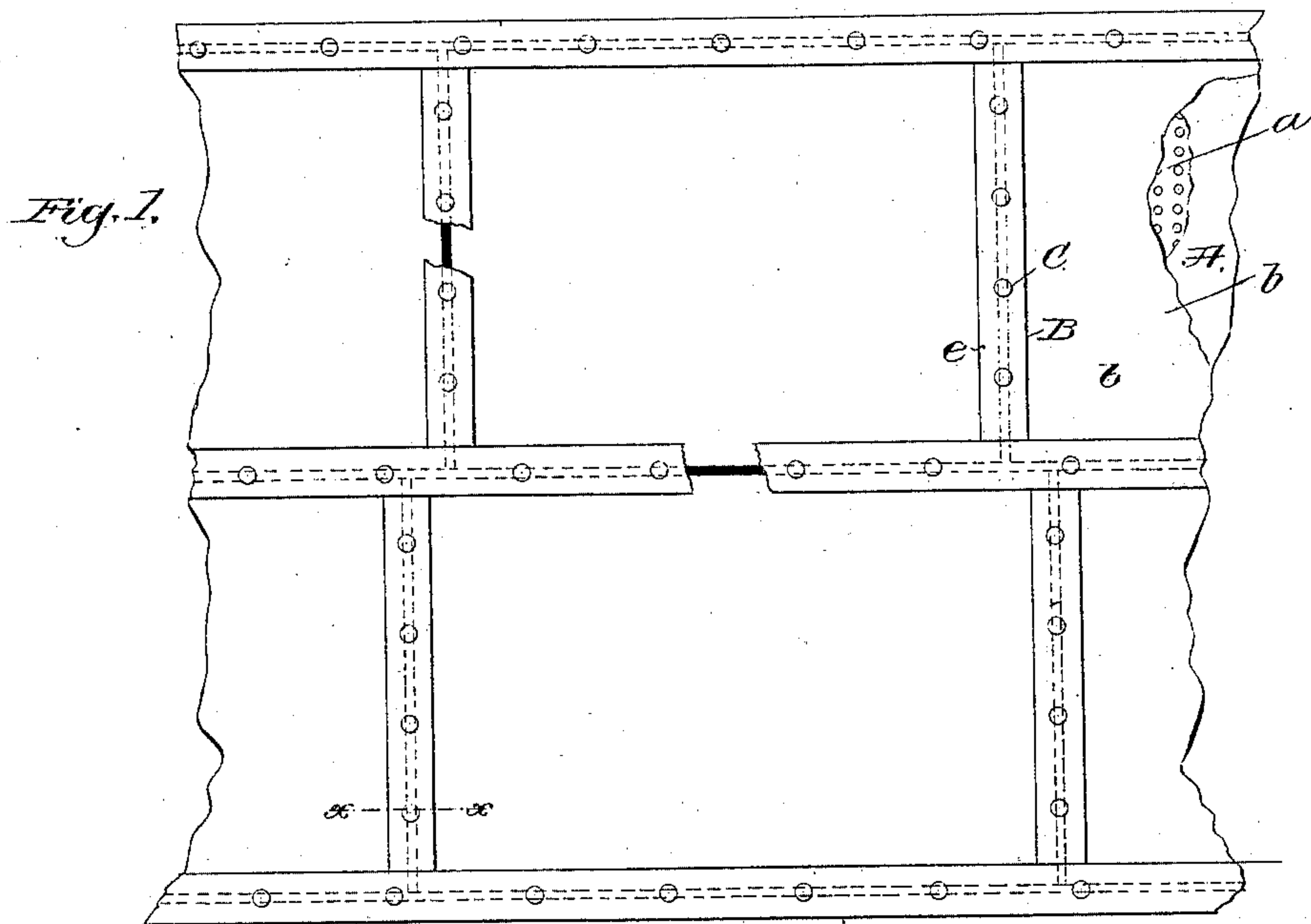
(No Model.)

C. C. SPRINGER.

PULP DIGESTER FOR PAPER MAKING.

No. 335,046.

Patented Jan. 26, 1886.



Witnesses:

J. A. Rennie.

F. Lemery

Inventor;

Charles C. Springer

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UNITED STATES PATENT OFFICE.

CHARLES C. SPRINGER, OF YARMOUTH, ASSIGNOR TO THE AMERICAN
SULPHITE PULP COMPANY, OF PORTLAND, MAINE.

PULP-DIGESTER FOR PAPER-MAKING.

SPECIFICATION forming part of Letters Patent No. 335,046, dated January 26, 1886.

Application filed July 22, 1885. Serial No. 172,308. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CHESLEY SPRINGER, of Yarmouth, county of Cumberland, State of Maine, have invented an Improvement in Pulp-Digesters for Paper-Making, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 In the treatment of wood and other fiber-yielding material for the production of fiber for paper-pulp and other purposes the wood or other material to be disintegrated is placed in a metal boiler, and for rapidity of action and cheapness the wood or other material is subjected to the action of an acid. In this class of apparatus, to avoid the destruction of the boiler and discoloration of the fiber or pulp, the boiler has to be lined with lead or other acid-resisting metal, which, as now used, is applied in sheets, plates, or sections, and when placed in the boiler the edges of the sheets, plates, or sections used are united by solder or by fusing together the metal at the meeting edges, such operation requiring the employment of a blow-pipe within the boiler, which is slow and laborious, and consequently expensive, and so also the removal of a plate or section for repair, as is frequently necessary, requires very considerable time.

The object of my invention is to avoid this soldering, yet make liquid-tight joints, and this I have accomplished.

This invention has for its object to confine a lead or acid-resisting lining in place in a metal boiler used for treatment of material in the manufacture of fiber for wood-pulp and other purposes, and this without the use of a blow-pipe. To accomplish this, I have placed between or at the edges of the plates, sheets, or sections of the lead lining, or so as to overlap the edges of the sections or plates of lead used, an acid-resisting packing, preferably composed of asbestos or kindred material, and over this packing which covers the meeting or adjacent edges of the lead lining I have applied stay-strips coated or covered with lead or other equivalent acid-resisting compound, and I have secured these stay-strips firmly in place by means of bolts composed of or covered with an acid-resisting metal, the said bolts being ex-

tended through the said stay-strips and the lining, and also through the shell of the boiler.

Figure 1 represents a portion of the interior of a boiler for the treatment of wood or other material in the manufacture of fiber for paper-pulp or other purpose, the stay-strips being partially broken out to show the packing below; and Fig. 2 is a partial section in the line *xx*.

Referring to the drawings, A represents part of the metallic shell of a boiler, which may be of any shape commonly used in the manufacture of paper-pulp or for the treatment of fiber, the said boiler being composed in practice of sheets or plates of metal riveted together into cylindrical or into somewhat spherical shape.

The lead lining herein shown is of that form known as "compound lining," it being the invention of one John Maken, the said lining being composed of a perforated foundation-plate, *a*—such as iron coated on both sides, or it may be coated on but one side with lead or an acid-resisting compound, *b*, containing lead, which is united to the said foundation-plate by casting in a mold.

In practice the edges of the plates or sections of the lead lining or the acid-resisting lining have been soldered or burned together after placing the plates or sections within the boiler-shell. To obviate this and cheapen the construction of the apparatus and improve its operation, I apply an acid-resisting packing, *c*, preferably asbestos, between or at the contiguous edges of the sheets, plates, or sections of the lead lining, the said packing being shown in Fig. 2 by heavy black lines, it filling the spaces left between the opposed or adjacent edges of the separate plates or sections of the lining, and preferably the said packing will be made to more or less overlap the said plates from the edges backward, as shown in Fig. 2 by the heavy black line *t*.

The lead lining applied to the boiler in sections or squares is secured therein after the introduction of the packing, as described, by means of stay-strips B, composed, preferably, of a perforated metal band or bar, *e*, connected or covered with lead or other acid-resisting metal, *f*, the same being applied, preferably, by casting in a mold.

The boiler-shell and the lead lining in the line of its meeting edges and the packing are

provided with a series of coinciding bolt-holes, and the said strips are also provided with a series of bolt-holes at corresponding distances apart, that when the stay-strips are put in place, as described, the said holes may be entered by the shanks of the bolts C, the shank of each bolt receiving a nut, C', as in Fig. 2, by which to draw the head of the bolt firmly down upon the stay-strip and cause it to firmly clamp the contiguous edges of the lining to the inner wall of the boiler-shell. This bolt C will in practice be made either of an acid-resisting metal or of other metal covered with lead wherever the bolt is liable to come in contact with the acid, the lead being shown by the letter g. Preferably I shall introduce packing of asbestos or other acid-resisting material between the under sides of the heads of the bolts and the stay-strips, as shown at h, Fig. 2. Instead of the particular lead lining herein shown and denominated in the market as a "compound lining," and not specifically of my invention, I may employ sheet-lead or sheets or plates of lead or other acid-resisting metal, and instead of the particular stay-strip I may employ a strip of metal having sheet-lead folded about it and lapped at the inner side of the strip.

The use of a packing such as described obviates soldering the edges of the lining plates or sections in place in the boiler, and enables the lining to be readily repaired, when desired, by simply removing the nuts and withdrawing the bolts.

I claim—

1. The boiler-shell and sheets, plates, or sections of lining placed therein, and an acid-resisting packing placed at the joints of the lining, combined with the acid-resisting stay-strips B, to overlap the joints of the lining, substantially as described.

2. The boiler-shell and sheets, plates, or sections of lining placed therein, and an acid-resisting packing, placed at the joints of the lining, combined with the acid-resisting stay-strips to overlap the joints of the lining, and with the bolts to clamp the stay-strips, lining, and sheets together, substantially as described.

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

CHARLES C. SPRINGER.

Witnesses:

G. W. GREGORY,
W. H. SIGSTON.