(No Model.)

J. F. MARSHALL.

BOILER FOR PAPER PULP.

No. 312,875. Patented Feb. 24, 1885.

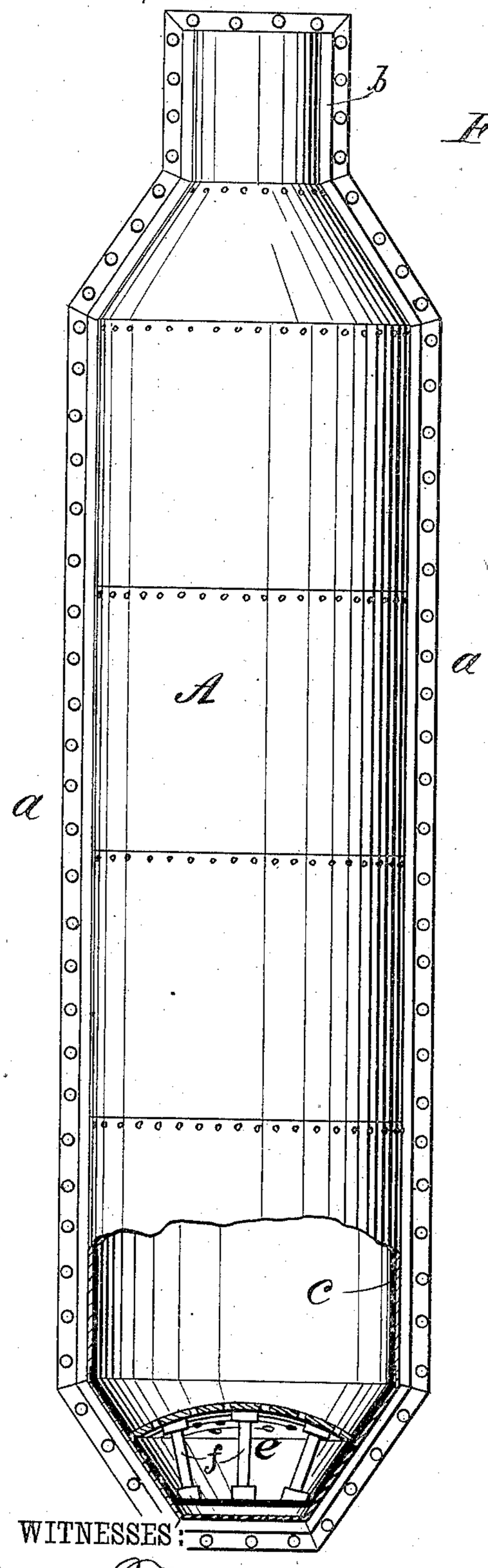

Fig. 1.

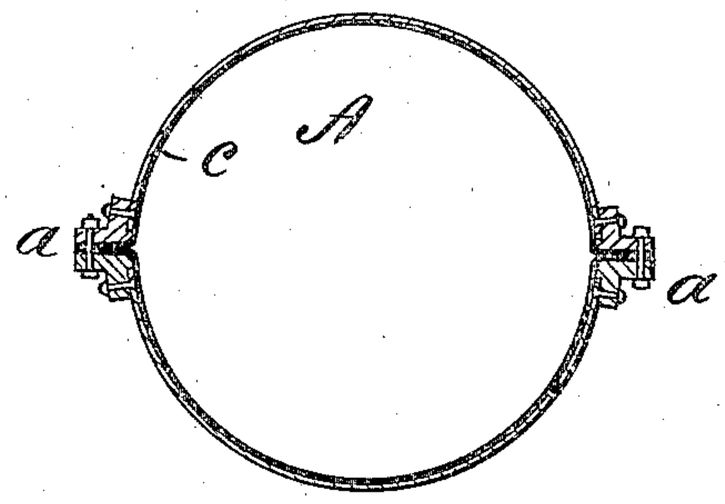

Fig. 2.

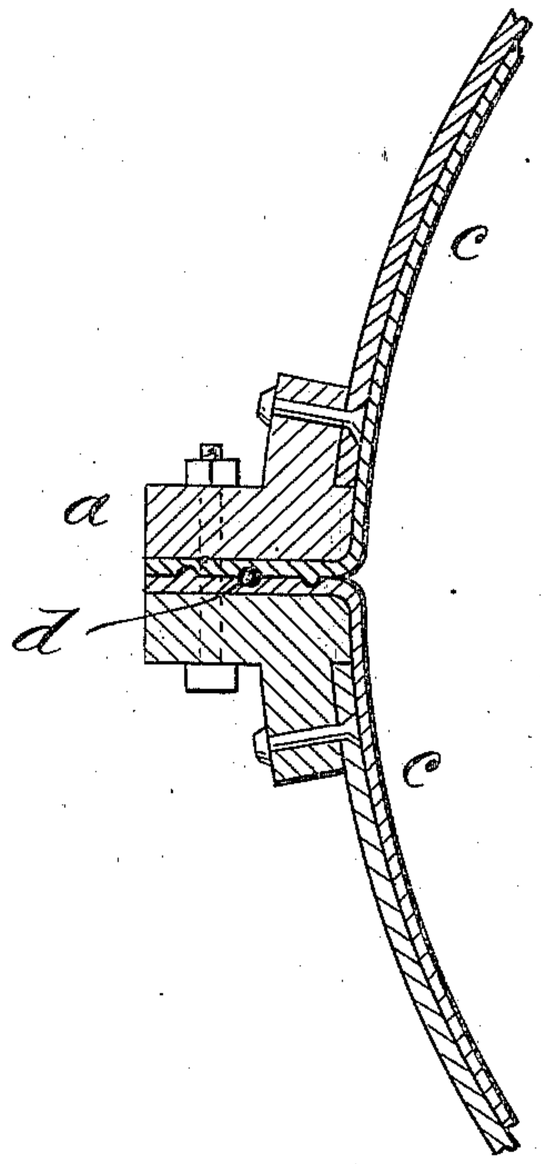

Fig. 3.

WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES F. MARSHALL, OF RUMFORD, RHODE ISLAND.

BOILER FOR PAPER-PULP.

SPECIFICATION forming part of Letters Patent No. 312,875, dated February 24, 1885.

Application filed September 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. MARSHALL, of Rumford, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Boilers for Paper-Pulp, of which the following is a full, clear, and exact description.

My invention relates to boilers in which wood and other materials are boiled with acids and other agents for separating the fibers of the wood. Such boilers require to be lined with lead or other material able to resist the action of the acids, in order to protect the iron from the action of the acid, and as usually made the sections are transverse and united by horizontal flanges, so that there are about five joints to each boiler.

The object of my invention is to reduce the jointed surfaces and consequently lessen the liability of leakage, and to that end I form the boiler with vertical flanges, and further pack the joints, all as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation, partly sectional, of a boiler of the improved construction. Fig. 2 is a cross section of the same; and Fig. 3 is a detail section in larger size of the flange-joint.

The two sections of the boiler A are connected together by means of their flanges *a*, which extend lengthwise of the boiler. The upper part of the boiler is drawn inward to form a steam-dome, *b*, and the bottom is also drawn inward to give support to the lining and also reduce the area of the false bottom, specified hereinafter.

c is the lead lining of the boiler, attached and held in place by its edges, that are bent out to pass between the flanges *a*. The turned edges of the lead are corrugated, and in the joint between the surfaces is a packing, *d*, of asbestus, lead, or other suitable material, so that when the flanges are drawn together by the bolts the joint is rendered perfectly tight. The lining *c* terminates a short distance from the bottom of the boiler, so as to leave a clear space below. The object of this is that in case the lining leaks the steam and acid escaping through the leaks will condense when the boiler cools down and work down behind the lining to the space below and escape by small holes bored in the bottom of the boiler. Without this opportunity to escape the water of condensation would be converted to steam when the boiler is reheated, and the pressure would bulge the lining.

e is a perforated false bottom supported by brackets *f*. The object of this is to prevent the steam from acting directly on the wood or other material.

By uniting the boiler-sections by longitudinal flanges the extent of joint-surface is largely reduced, and there is consequently less liability of leakage, which is liable to weaken, if not break, the lining. The boiler is also less expensive to manufacture and line.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The boiler A, provided with lining *c*, and formed of two sections united by flanges *a* lengthwise of the boiler, as shown and described.

2. The packing *d*, combined with boiler-flanges *a*, and lining *c*, having corrugated edges, as specified.

3. The boiler having its lower end drawn inward and with a space formed between its bottom and lining, as and for the purpose specified.

JAMES F. MARSHALL.

Witnesses:
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