

(No Model.)

J. MERRIMAN.

METHOD OF CONSTRUCTING LEAD LINED CONVERTERS.

No. 406,927.

Patented July 16, 1889.

Fig. 1.

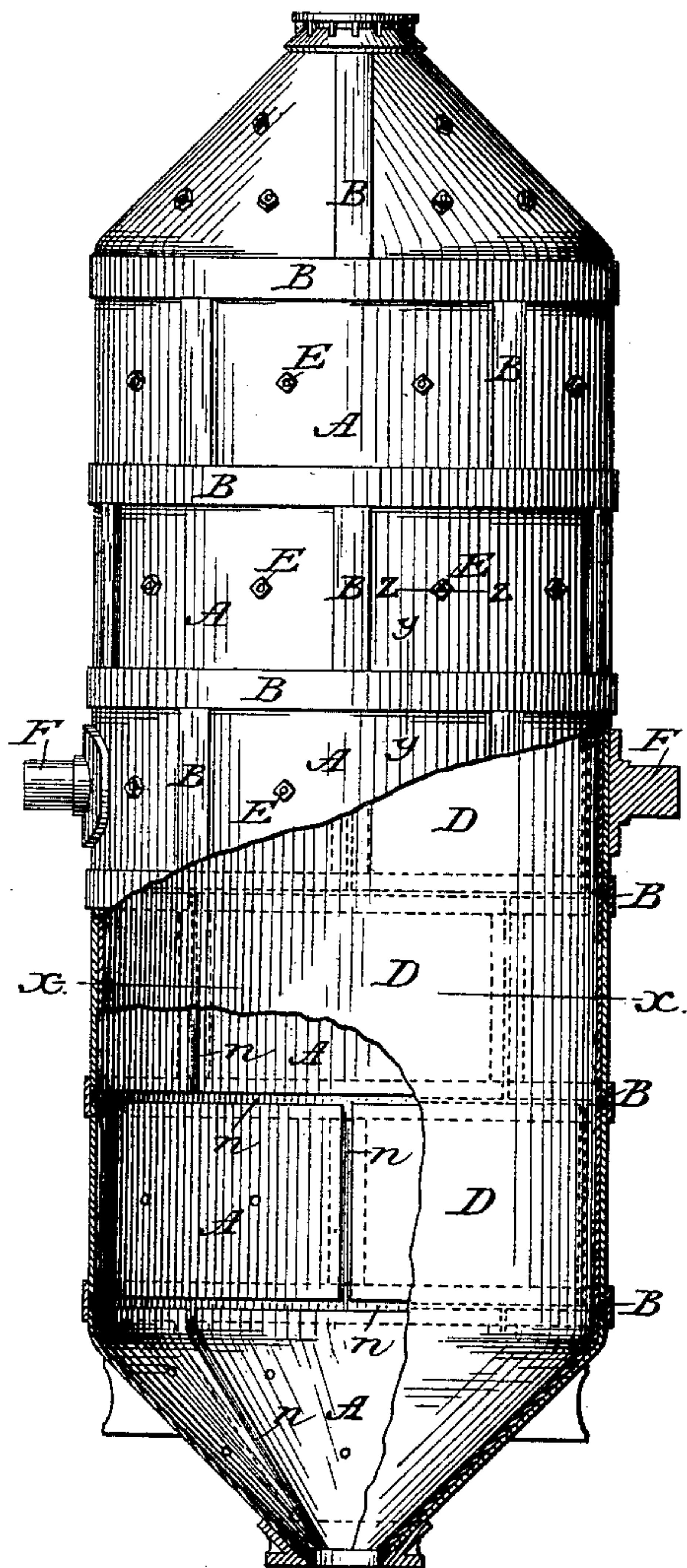


Fig. 2.

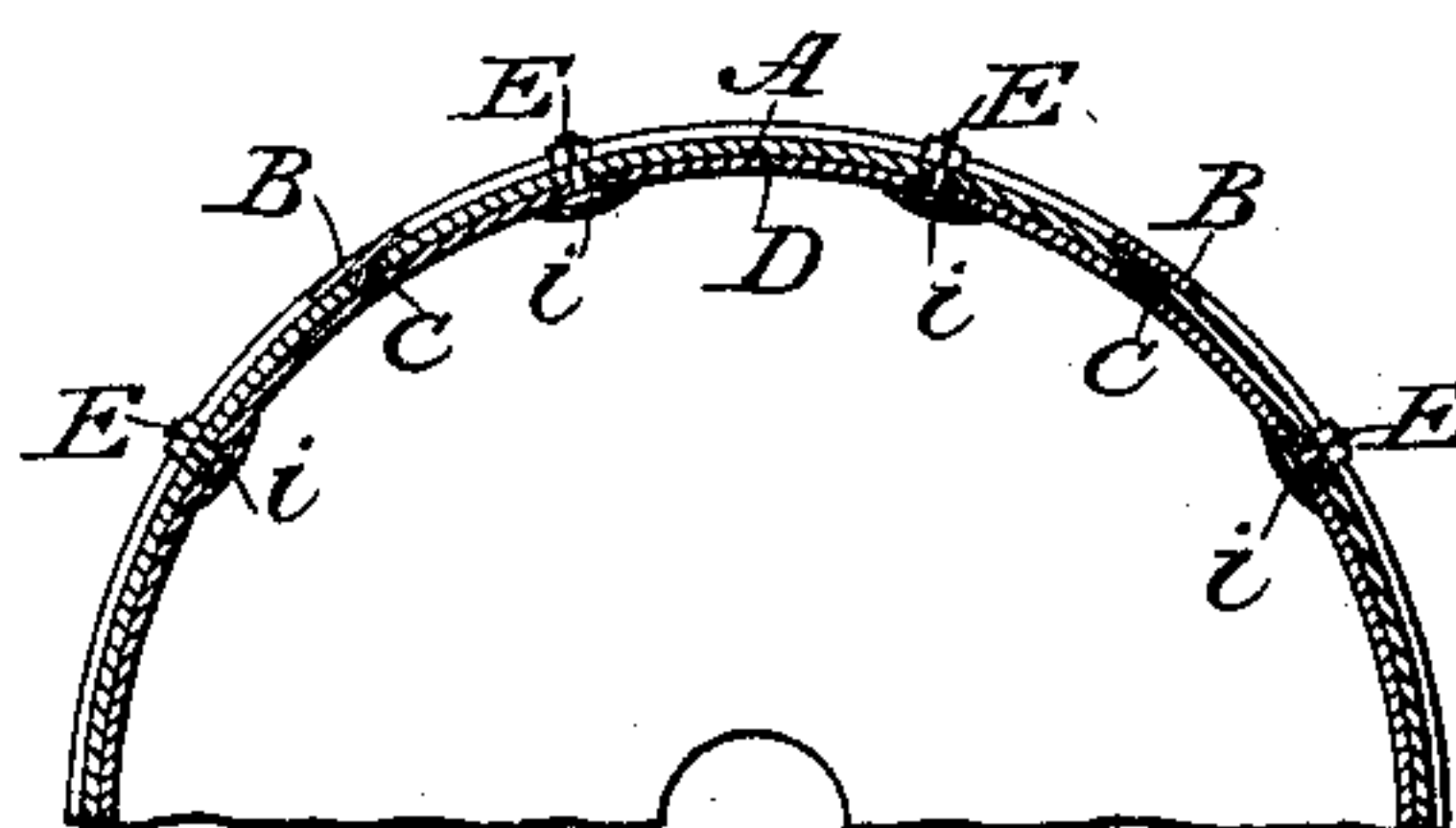


Fig. 3.

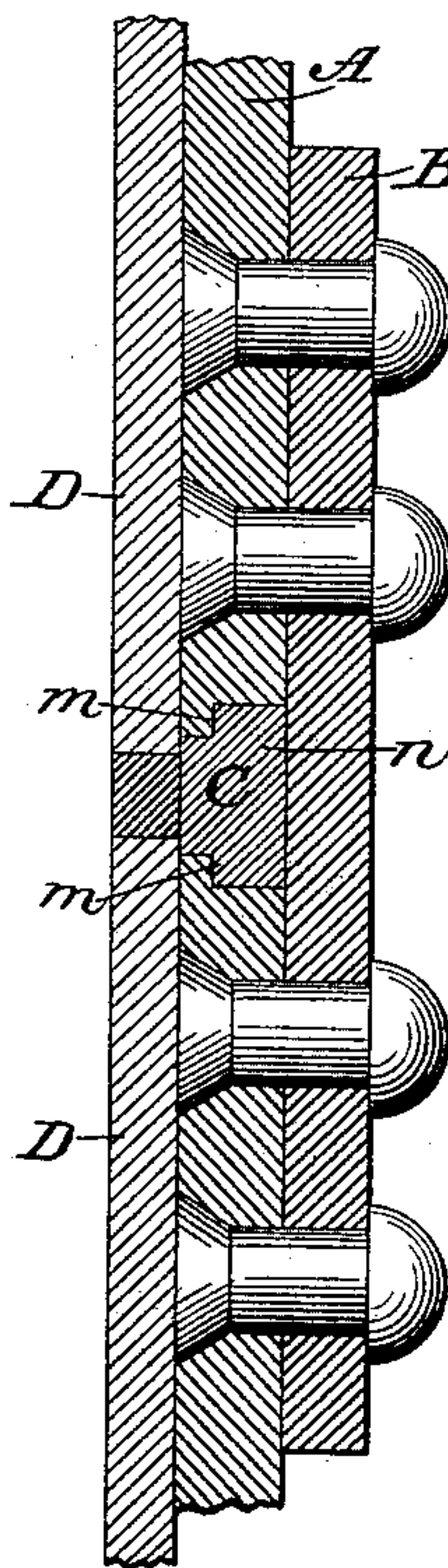
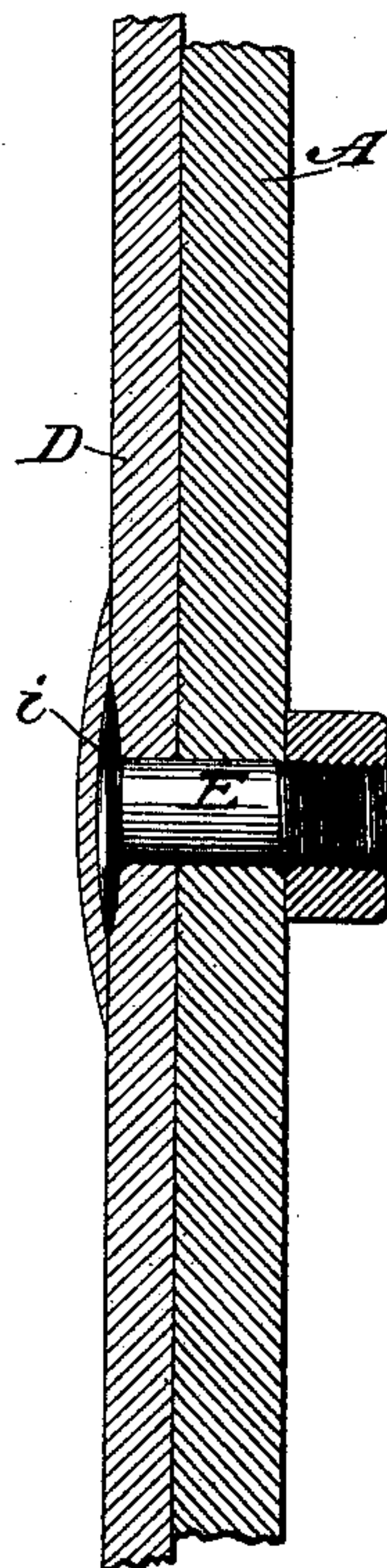


Fig. 4.



Attest:

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UNITED STATES PATENT OFFICE.

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METHOD OF CONSTRUCTING LEAD-LINED CONVERTERS.

SPECIFICATION forming part of Letters Patent No. 406,927, dated July 16, 1889.

Application filed April 24, 1889. Serial No. 308,382. (No model.)

To all whom it may concern:

Be it known that I, JOHN MERRIMAN, of Saugerties, in the county of Ulster and State of New York, have invented certain new and useful Improvements in the Method of Constructing Lead-Lined Converters or Digesters used in the Manufacture of Wood Pulp or Cellulose, and for other purposes; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates to an improvement in the method of lining with lead the iron converters or digesters employed in the conversion of wood fiber into cellulose.

The object of my invention is to reduce the cost of producing a lead-lined metallic vessel; and it consists in a novel mode of constructing the same, substantially as is hereinafter described and claimed.

In the accompanying drawings, Figure 1 is an elevation of my improved lead-lined digester with the lower portion cut away in vertical section to illustrate the interior thereof, a portion of the lead lining being removed to show the lead-filled joints between the iron plates; Fig. 2, a cross-section in line $x x$ of Fig. 1; Fig. 3, an enlarged sectional detail in line $y y$, and Fig. 4 a similar sectional detail in line $z z$ of Fig. 1.

A A A represent the iron plates of which the outer shell of my improved digester is constructed. The edges of each of said plates are rabbeted in manner substantially as shown at $m m$, so that when the plates are assembled to form the wall of the vessel there shall be an enlargement of the opening in the joints between the several plates along the outer face thereof to form a longitudinal recess having, preferably, in cross-section a T shape or configuration resembling that of a bolt-head. These plates A A, formed with rabbeted or longitudinally-recessed edges, are united to form the outer wall of the digester by means of bands or strips B B of iron, known as "butt-straps," placed on the outside of the plates to overlap the joints between them, the two adjacent plates under each strap being severally riveted firmly to the strap in manner to leave an open space n between

their proximate edges, said open space being interiorly enlarged in cross-section, as shown in Fig. 3, by reason of the rabbet m on the edges of the plates. This inwardly-enlarged T-shaped space left in all of the seams between the plates A A is filled in with lead C, (see Fig. 3,) which may be run into said spaces in a molten state, so as to completely fill the same flush with the inner surface of the iron wall or shell and solidly close every joint. The shell of the digester being thus made solid and complete, the interior leaden lining therefor is formed and secured in place by superimposing upon each iron plate a sheet D of lead cut somewhat larger than the iron plate, so as to project uniformly beyond its edges, as shown in Fig. 3, and thereby partially overlap the surrounding lead-filled seam or joint. These lead sheets D D are made fast to the iron plates A A by transverse bolts E, (see Fig. 4,) carried through the plates and secured by nuts on their outer ends or by equivalent rivets, the heads of said bolts or rivets being tinned or coated with lead and formed with flat wide heads i to bear firmly against the lead sheet. When the sheets of lead are thus made fast, the flat head i of each bolt E is overlaid with a cover of lead, as shown in Fig. 4, melted and flowed over it by means of a blow-pipe or soldering-iron, and thereby intimately united to the underlying lead sheet D, so that the head of the bolt is completely embedded in the lead lining. The edges of the lead sheets are in like manner intimately united to the leaden seams C C in the joints between the iron plates by fusing them with a blow-pipe and preferably filling in the recess between their proximate edges with molten lead, so as to make the surface of the seams flush with the inner surface of the lead lining, which, when the lining-sheets are united, as described, becomes unbroken over the entire inner periphery of the digester.

The lead-lined digester is provided, as usual, with trunnions F F, to admit of its being over-turned and supported in the customary manner, which need not herein be described.

I claim as my invention—

1. The method, substantially as described, of constructing a lead-lined iron vessel, which consists in forming inwardly-enlarged recesses in the inner face of the wall thereof,

filling said recesses with lead, fixing to the inner face of the wall sheets of lead whose joints coincide with and partly overlap said lead-filled recesses, and finally uniting by fusion 5 the edges of the lead lining-plates to the lead in the seams overlapped thereby.

2. The method, substantially as described, of constructing a lead-lined iron vessel, which consists in rabbeting the edges of the iron 10 plates to constitute its walls, uniting said plates by riveting the same upon bands or straps of iron made to overlap the seams in such manner as that the rabbeted edges shall form an inwardly-enlarged recess along each 15 seam, filling said inwardly-enlarged recesses

with lead, bolting upon the inner face of each iron plate a sheet of lead of like configuration, but so enlarged as to partially overlap the lead-filled seams, covering the heads of the bolts with lead joined by fusion to the under- 20 lying sheet, and, finally, uniting the edges of each sheet of lead to the lead in the seams by fusion.

In testimony whereof I have signed my name to this specification in the presence of two sub- 25 scribing witnesses.

JOHN MERRIMAN.

Witnesses:

JAS. H. TAYLOR, Jr.,

JAMES R. MARTIN.