

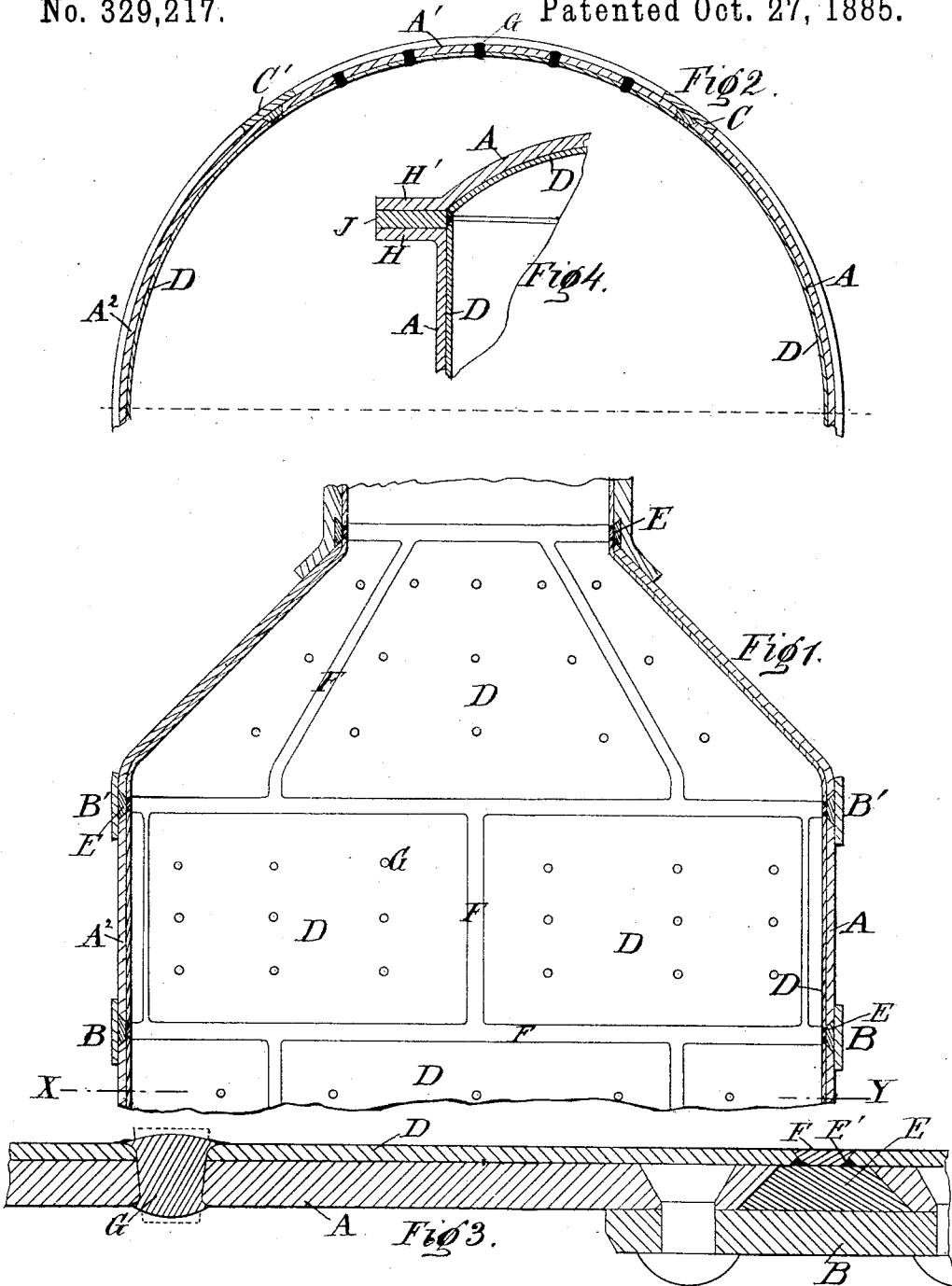
(No Model.)

EUGEN BARON RITTER & CHARLES KELLNER.

PULP DIGESTER FOR PAPER MAKING.

No. 329,217.

Patented Oct. 27, 1885.



Witnesses

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UNITED STATES PATENT OFFICE.

EUGEN BARON RITTER AND CHARLES KELLNER, OF GOERZ, AUSTRIA-HUNGARY, ASSIGNORS TO WILLIAM A. RUSSELL, TRUSTEE, OF LAWRENCE, MASSACHUSETTS.

PULP-DIGESTER FOR PAPER-MAKING.

SPECIFICATION forming part of Letters Patent No. 329,217, dated October 27, 1885.

Application filed May 27, 1885. Serial No. 166,836. (No model.)

To all whom it may concern:

Be it known that we, EUGEN BARON RITTER and CHARLES KELLNER, subjects of the Emperor of Austria-Hungary, and residents of Goerz, a city in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Linings of Pulp-Digesters for the Manufacture of Wood Pulp or Cellulose or other Fibrous Materials for Paper-Making, of which the following is a specification.

Our invention relates principally to boilers or vessels employed for the treatment of fibrous materials or the manufacture of pulp for paper-making, and which are lined with a soft metal or lead; but our said invention is also applicable to lead-lined vessels for other purposes. Considerable difficulty has hitherto been experienced in keeping the lead in its relative position to the casing of iron or steel when the digester is submitted to high temperatures. The repeated action of heat causes it to continually increase in area, and thus to gradually accumulate into ridges and creases, which become brittle and break, necessitating the relining of the digester.

The object of our invention is to render the lead lining of digesters or vessels durable by providing an arrangement for securing the lead lining to the casing of the boiler or vessel in such a manner that the creeping or sliding effect of the soft metal or lead lining is localized into sufficiently small portions to make the soft metal or lead lining much more durable for digesters. According to our invention we accomplish this by beveling off each sheet all around where they butt against each other, and are riveted to the outside covering-plates at an angle of about forty-five degrees (more or less) toward the outside of the shell, and instead of butting the sheets together leave them apart to an amount about double the thickness of the plate of which the outside shell is composed. This is done on all seams both longitudinal and circumferential, leaving in this manner between all the sheets a space with the shape of what is called a "dovetail." The boiler finished in this manner by the boiler-maker is now treated as follows: It is placed in a horizontal position and

the dovetail spaces covered with common soldering solution, chloride of zinc, or chloride-of-zinc ammonium; or said space is tinned. The space is now heated either by fire on the outside or the blow-pipe on the inside till the space is so hot that, touched with a lead stick, the latter will melt. Melted hard lead is now cast into the so prepared space, which on cooling slowly is found to be soldered to the iron or steel of the sheets. The rivets of the joints are by the soldering well protected. The lead is scraped or filed off level with the inside of the plates of the digester, and to this hard lead the lead or soft-metal plate forming the lining, cut in sheets a little larger than the hard-metal plates, is fastened by soldering and the spaces left between the several sheets are flowed full with lead solder. In this manner the whole of the inside of the boiler is lined, and, if found necessary, the lead plate may be fastened to the hard-metal shell by additional hard-lead rivets suitably spaced apart.

We will now proceed to describe our invention with the assistance of the accompanying drawings, which form part of this specification, in which—

Figure 1 is a longitudinal section of part of one end of a digester; Fig. 2, part of a transverse section on the line X Y, Fig. 1. Fig. 3 shows part of our invention on an enlarged scale. Fig. 4 shows our invention applied to a different form of digester to that shown in Fig. 1.

A A' A² are different sheets of the digester. B B' are cover-plates, to which the several sheets composing the shell are riveted. C C' are longitudinal cover-plates. D is the inside lead or soft-metal lining. E are the dovetail spaces left between the several sheets composing the digester on the one side, and the covering-straps to which the several sheets are riveted on the other side, filled with hard lead. E' E', Fig. 3, show the places of soldering the inside lead-lining sheets, D D, to the hard-lead filling in the space E. F is the lead solder filling the space left between the lead sheets. G shows hard-lead rivets.

Our invention may also be applied where flanged joints occur in digesters, as shown at

Fig. 4. Between the flanges H H is placed the hard-lead ring J, to which the adjoining sheets D D are joined by autogenous soldering, so called "burning."

5 Having now fully described our invention and the manner in which the same may be used or carried into effect, we would observe, in conclusion, that what we consider to be novel and original, and therefore claim as the
10 invention, is—

1. The combination, in a digester for treating fibrous materials, of the circumferential and longitudinal spaces E E E, left between the several plates composing the hard-metal
15 shell of same, the edges of which are beveled so as to form a dovetail groove, as shown, D D, the soft-metal lining-plates secured to E

by autogenous solder and filling strips E', substantially as and for the purpose herein set forth.

2. Interposing between the joining-flanges of a digester hard-lead rings to which the adjoining sheets are secured by autogenous soldering, substantially as and for the purpose
20 herein specified.

25 In testimony that we claim the foregoing as our invention we have signed our names in presence of two witnesses, this 20th day of January, 1885.

EUGEN BARON RITTER.
CHARLES KELLNER.

Witnesses:

GEORG MARTIN,
JOHANN LUTTMANN.