J. G. KNAPP.

KITCHEN-BOILER.

No. 183,010. Patented Oct. 10, 1876.

Fig. 1

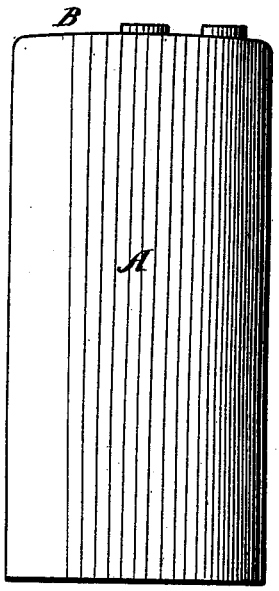


Fig. 2

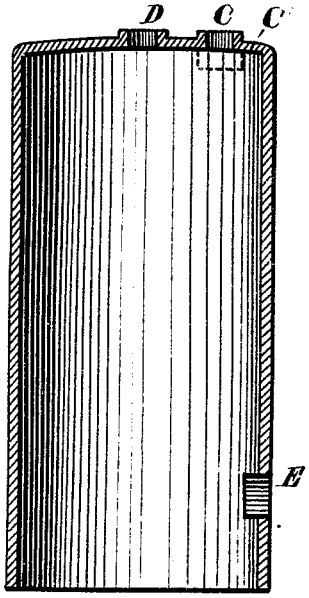
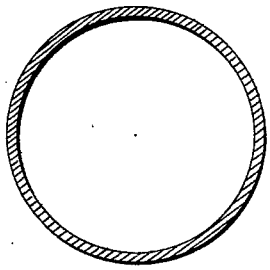


Fig. 3



WITNESSES

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JOHAN G. KNAPP, OF NEW YORK, N. Y.

IMPROVEMENT IN KITCHEN-BOILERS.

Specification forming part of Letters Patent No. **183,010**, dated October 10, 1876; application filed February 19, 1876.

To all whom it may concern:

Be it known that I, JOHAN G. KNAPP, of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Sheet-Metal Kitchen-Boilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Heretofore sheet-metal kitchen-boilers have been made with longitudinally-riveted or brazed cylinders, and their heads soldered or riveted to the cylinder ends.

A boiler constructed as above set forth may be manufactured as follows: Take a circular blank of copper of the same thickness as is required at the head of the boiler, and place the same on a die. Upon the edge of the blank is secured a pressure-plate or ring, which holds the blank while a punch operates to upset the central portion of the same. The shell is then taken out of the die and annealed, and placed in another die having an opening in its upper side of sufficient diameter to admit and hold the shell. A pressure-ring is then inserted in the shell, and holds the same, while a punch passes through the pressure-ring and forces the shell through the contracted portion of the die. The shell is then annealed, and the operation is repeated until the shell has been drawn to the desired length. After the last drawing the metal should not be annealed. Instead of using a large blank, one of double thickness may be employed. In this case the blank is placed on a spinning-lathe, and the central portion spun into the form to be given the boiler-head, when the incomplete shell is subjected to the stamping process above described.

Owing to the corrosion of the rivets, and the expansion and contraction of the cylinder due to the action of frost, and the variable temperature of the water in the boiler, the seams or joints in riveted or brazed boilers gradually open and cause the boiler to leak.

The object of my invention is to obviate the defects above set forth; and to that end my invention consists, first, in a sheet-metal kitchen-boiler having a cylinder formed without joint or seam; second, a sheet-metal kitchen-boiler having its head and cylinder formed of a single piece of sheet metal without joint or seam; third, in providing the head of a sheet-metal kitchen-boiler, wherein the head and cylinder are formed without seam or joint, with inwardly or outwardly turned sockets for the reception and attachment of suitable pipe-couplings.

In the accompanying drawings, Figure 1 represents a side elevation of my invention. Fig. 2 is a vertical section, and Fig. 3 a transverse section, of the same.

A and B represent the cylinder and head of a sheet-metal boiler; and said parts are formed, as shown, of a single piece of sheet metal, without seam or joint, by upsetting, stamping, or spinning, as may be found most expedient in practice. The head of the boiler is made heavier or thicker than the cylinder, thereby allowing of increased thickness of metal for the pipe-sockets. C D are sockets formed in the boiler-head B either by turning the metal inwardly, as at C′, or outwardly, as at D¹. Within the socket C the inlet-pipe is secured, while the service-pipe is attached to the socket D. Ordinarily, the head of the boiler is simply perforated for the reception and attachment of the several pipes, and hence the joint is limited in width and extent of bearing to the thickness of the boiler-head. By means of the lengthened bearings for the pipe-couplings afforded by the sockets constructed as described, a very durable, tight, and reliable joint is secured between the pipes and the boiler-head. A similar socket, E, is formed in the cylinder for the attachment of the pipe-coupling leading to the range. If desired, the lower head may be formed as a part of the cylinder, and the upper head secured by rivets or otherwise.

Boilers constructed in accordance with my invention are, by far, more durable, efficient, and of less initial cost than those of ordinary manufacture.

I do not claim a wrought-iron kitchen-boiler the cylinder of which is joined by a lap or butt weld, as such construction is not my invention.

Having fully described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. The cylinder of a sheet-metal kitchen-boiler, formed of ductile metal by drawing or spinning, without seam or joint, substantially as set forth.

2. The cylinder and head of a sheet-metal kitchen-boiler formed without seam or joint, substantially as set forth.

3. In a sheet-metal kitchen-boiler, wherein the cylinder and head are formed without seam or joint, the pipe-sockets formed by turning the metal inwardly or outwardly, to afford an increased bearing for the pipe-couplings, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of February, 1876.

J. G. KNAPP.

Witnesses:
OSCAR KNAPP,
JAMES SPENCE.