

(No Model.)

G. H. POND.  
STEAM BOILER.

No. 245,557.

Patented Aug. 9, 1881.

FIG. 1

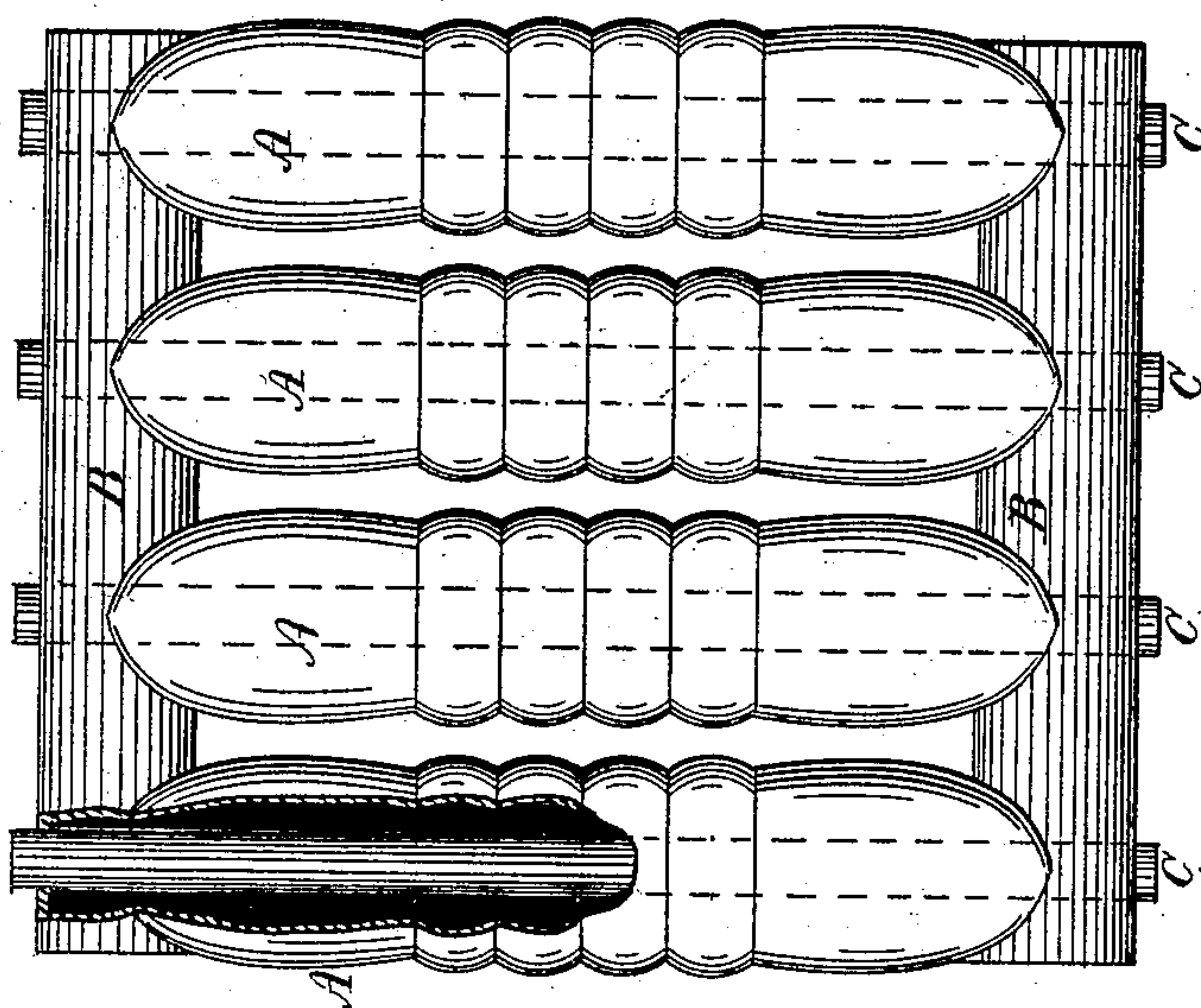
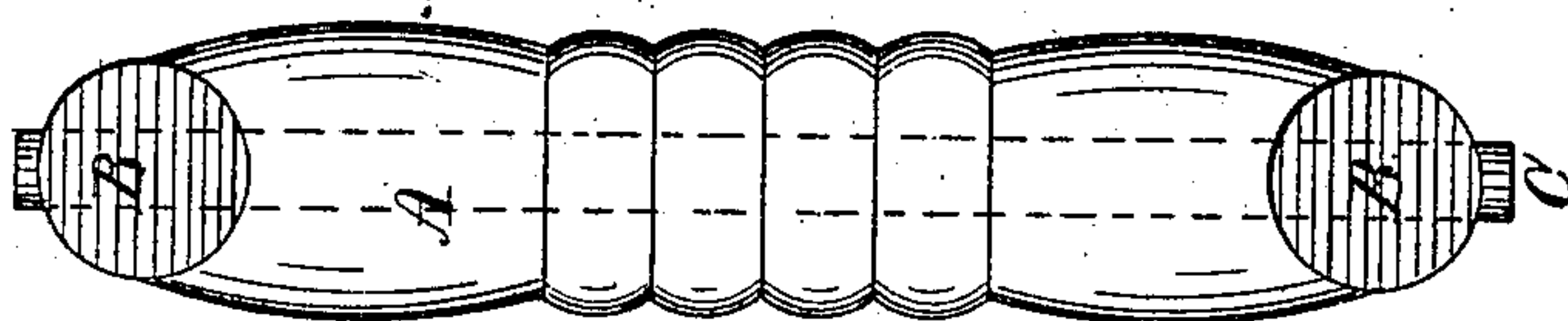


FIG. 2



WITNESSES:

*B. D. Hooke*  
*A. Hurd*

INVENTOR:

*Goldsbury H. Pond*  
*by his Atty G. Stackpole*

# UNITED STATES PATENT OFFICE.

GOLDSBURY H. POND, OF NEW YORK, N. Y., ASSIGNOR TO HATTIE M. POND, OF ASHBURNHAM, MASSACHUSETTS.

## STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 245,557, dated August 9, 1881.

Application filed June 30, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, GOLDSBURY H. POND, a citizen of the United States, residing at the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Steam-Boilers, of which the following is a specification.

My invention relates to that class of steam-generators known as the "sectional" type; and it consists in casting any desired number of tubes at any desired angle to each other and uniting them in a single piece or casting, but preferably rectangular in shape, and corrugating what will be described hereinafter as the "vertical tubes," and combining with the said corrugated portion wrought-iron tubes, utilizing what is known as "core-holes," through which the cores are withdrawn, as will hereinafter more fully appear.

The old practice is, when a series of tubes are cast in one piece, the core-hole is plugged up, permitting the flame to impinge upon the outside of the section only. With mine I insert a wrought-iron tube into the said core-holes, which passes entirely through it and also through what will be described as the "horizontal cross-tubes." This wrought-iron tube is designed to be a flame-tube, through which the products of combustion pass, utilizing it as enlarging the heating-surface, as well as breaking up the solid body of water that would otherwise center itself in the body of the cast-iron portion, thus forcing the water into constant agitation.

The purpose of corrugating the vertical or cast-iron tubes is twofold—*i. e.*, to first provide

for the irregular contraction and expansion well known to exist between cast and wrought metals; and, second, to cause an agitation of the water against the irregular surfaces formed by said corrugations on the inside of the tubes while in the process of circulation. I thus, in a measure, prevent the bulk of the solid body of water rising to the steam-space, and therefore practically avoid foaming. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved steam-boiler. Fig. 2 is an end view of a section of the same.

A represents the tubes, having the corrugated walls; B, the plain straight tubes. These tubes A and B are made in one casting.

C represents the wrought-metal tubes, which are fire-tubes, and are located concentrically within the tubes A.

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

In a sectional steam-boiler, the combination, with the plain cross portion and the corrugated vertical portion, with the wrought-iron tubes inserted through the core-holes of said cross portion, and each arranged to pass entirely through the diameter of the cross-tubes and longitudinally through the vertical tubes, all arranged for operation substantially as described.

GOLDSBURY H. POND.

Witnesses:

JAS. J. THORNLEY,  
A. HURD.