E. H. MONTGOMERY.

BOILER FURNACE.

APPLICATION FILED APR. 22, 1908.

936,651.

Patented Oct. 12, 1909.

2 SHEETS—SHEET 1.

Fig. 1

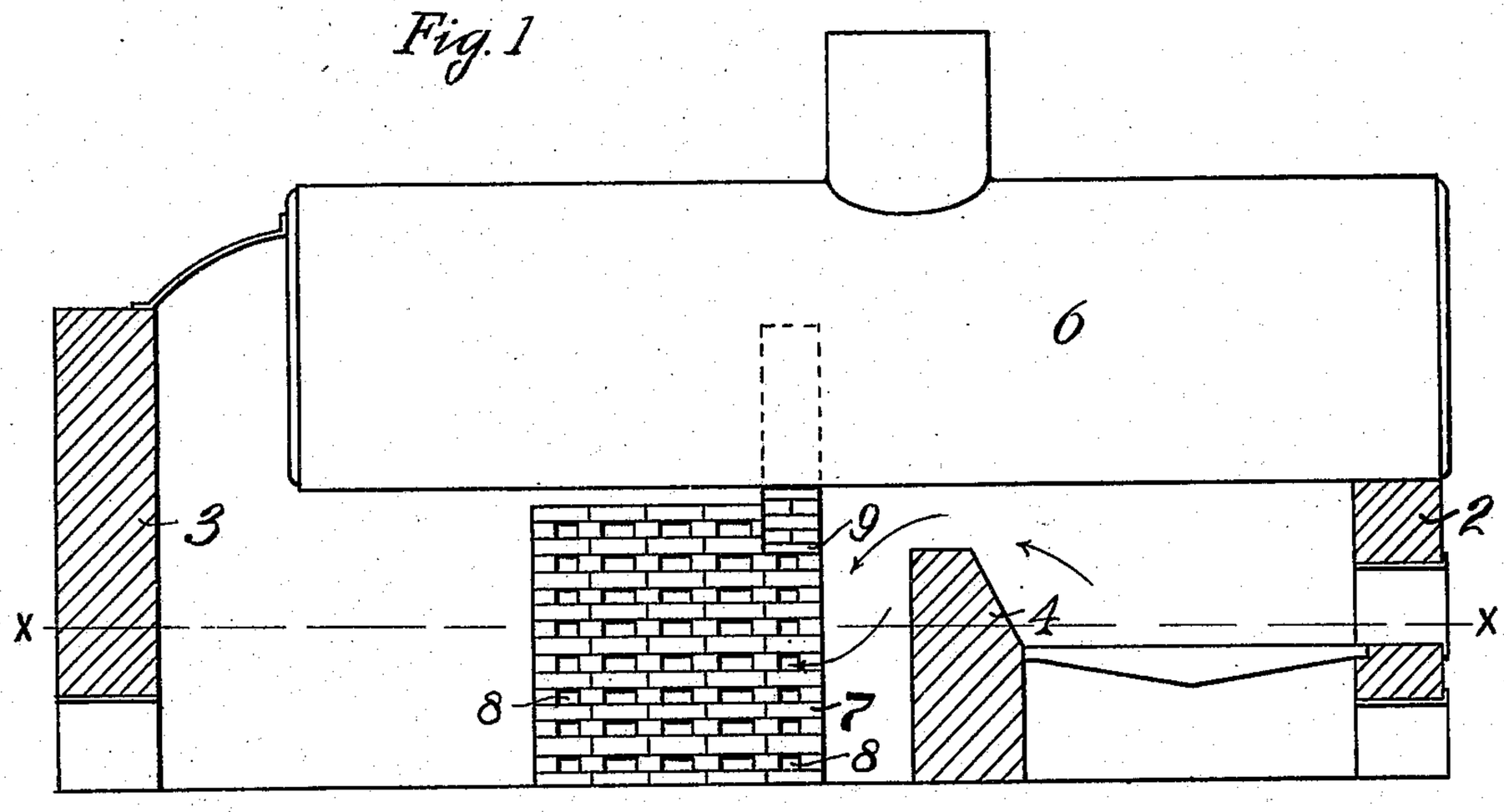
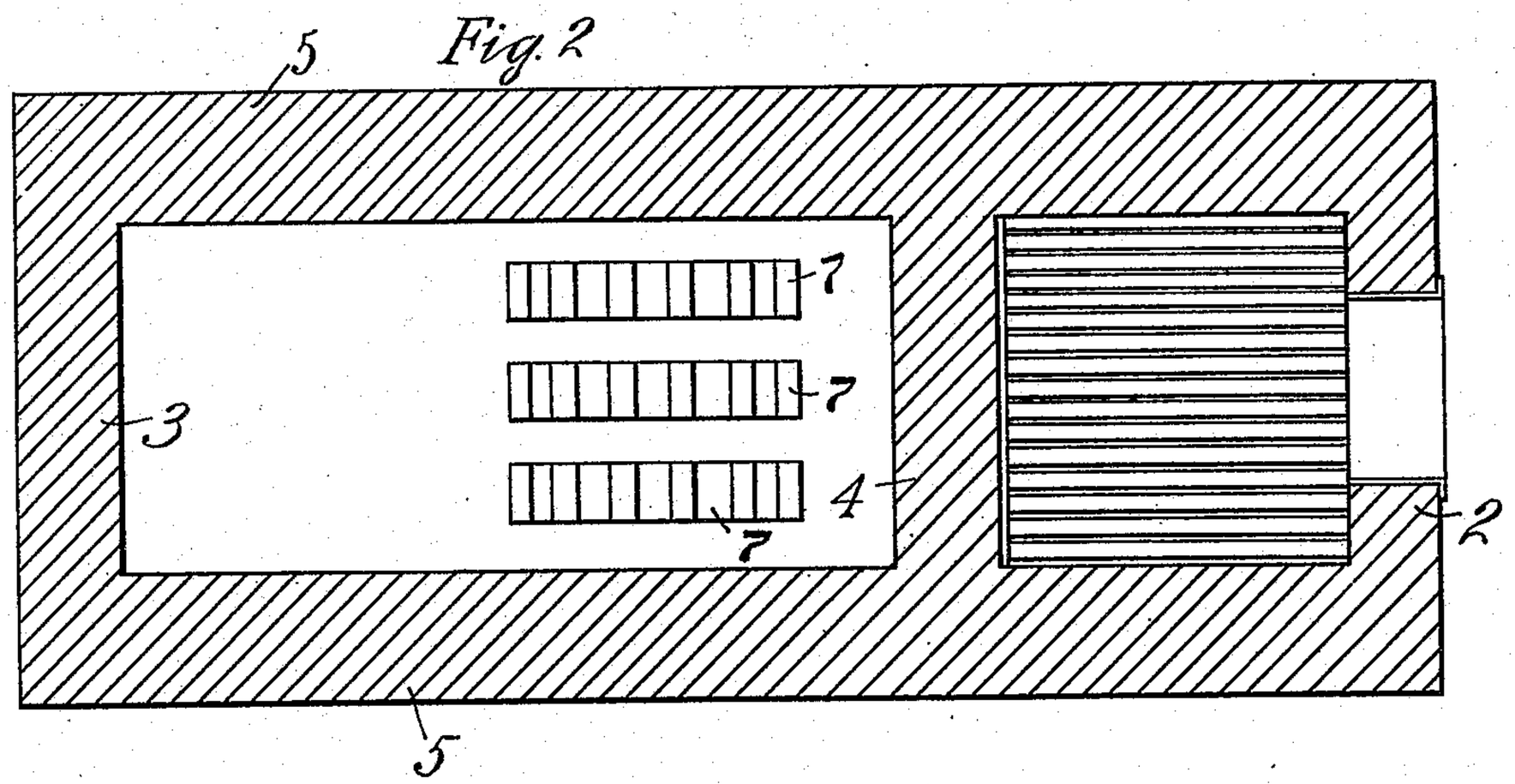


Fig. 2



Witnesses,
George Voelker
Hattie Smith

Inventor,
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2 SHEETS—SHEET 2.

Fig. 3

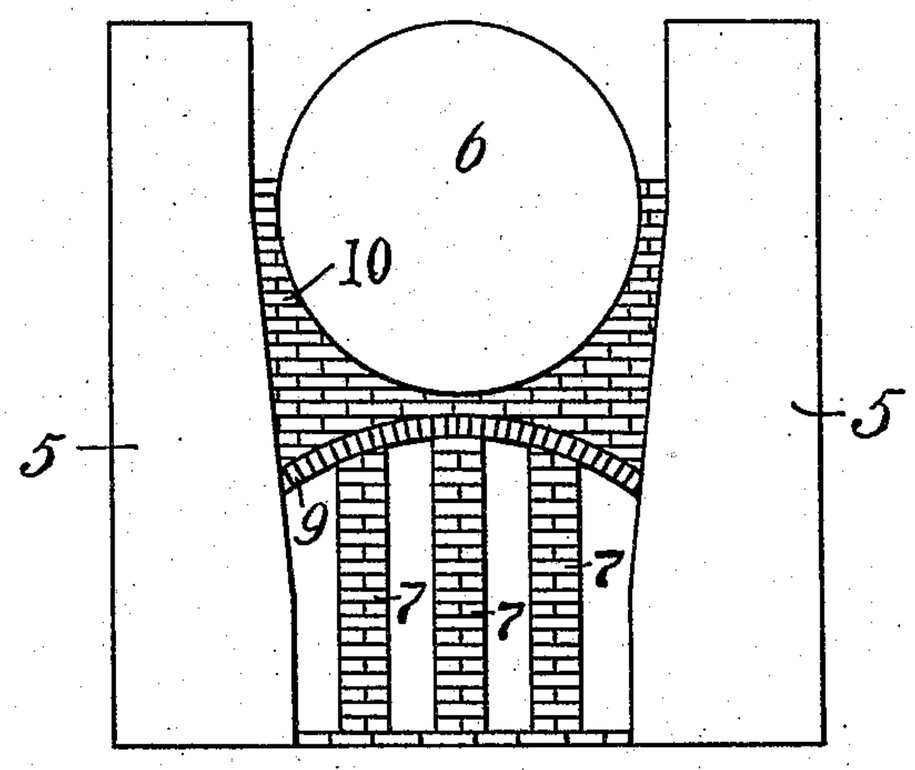
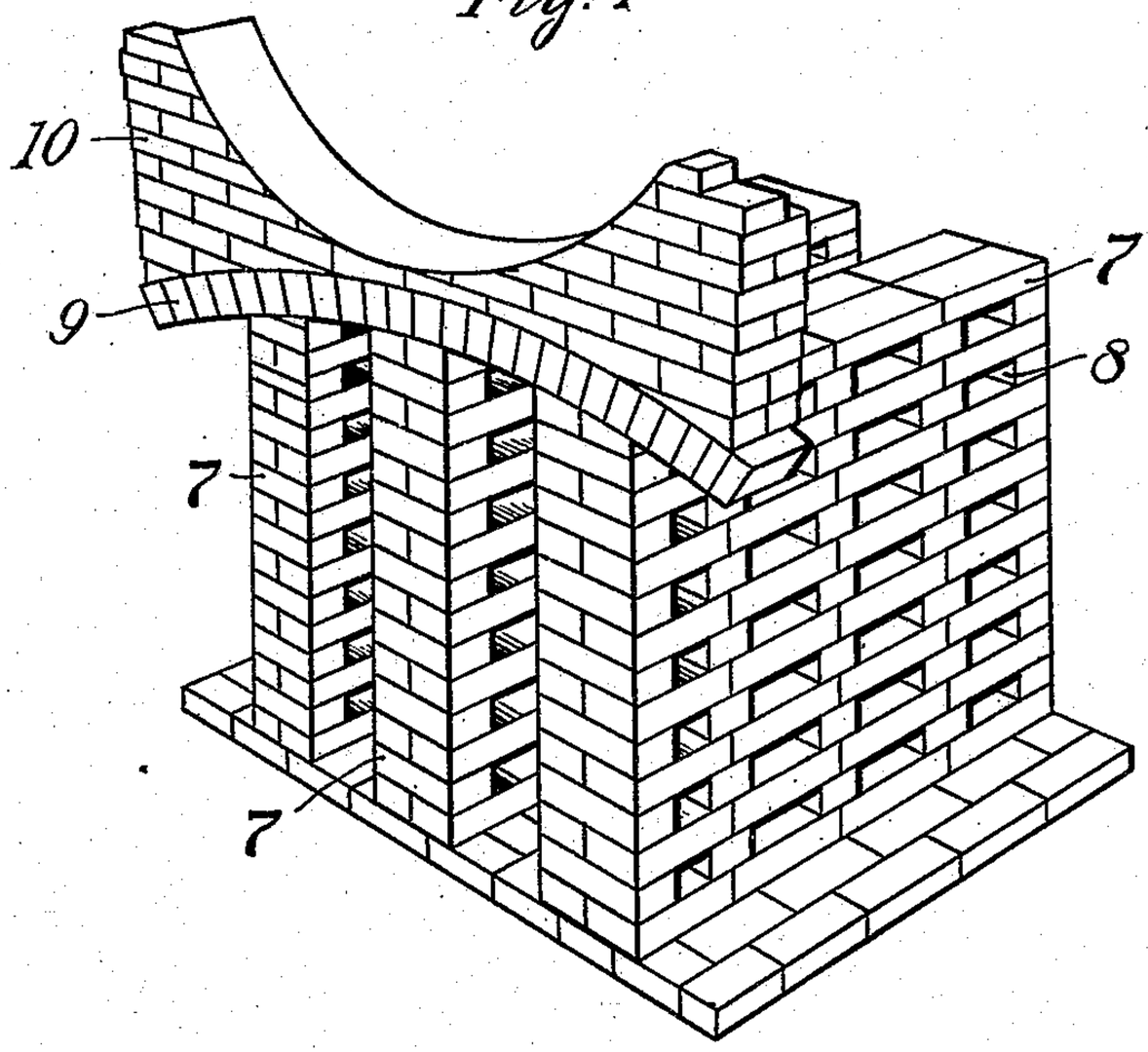


Fig. 4



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UNITED STATES PATENT OFFICE.

EDWIN H. MONTGOMERY, OF DULUTH, MINNESOTA.

BOILER-FURNACE.

936,651. Specification of Letters Patent. **Patented Oct. 12, 1909.**

Application filed April 22, 1908. Serial No. 428,648.

To all whom it may concern:

Be it known that I, EDWIN H. MONTGOMERY, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Boiler-Furnaces, of which the following is a specification.

My invention relates to improvements in boiler furnaces its object being to provide improved means for consuming smoke and gases generated from the freshly supplied fuel and conserving and making more effective the heat from such smoke and gases.

To this end my invention consists in the features of construction and combination hereinafter particularly described and claimed.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of the furnace, Fig. 2 is a section on line *x*—*x* of Fig. 1, Fig. 3 is a front elevation of the super-heating baffles, and Fig. 4 is a perspective view of the super-heating baffles partly broken away.

In the drawings 2 represents the front wall, 3 the rear wall, 4 the bridge wall, and 5 the side walls of a boiler furnace. Between the side walls is supported in any appropriate manner a boiler 6.

At the rear of the bridge wall is my improved construction of super-heating baffles consisting of a plurality of parallel longitudinally extending walls 7 formed with transverse openings 8. Supported upon the front ends of the walls 7 is an arch 9 carrying a transverse wall 10 encircling the boiler and constituting a deflecting or secondary back wall for the smoke and gases passing over the bridge wall.

In operation the smoke and gases passing over the bridge wall will be stopped and deflected downward by the wall 10 causing them to pass through the openwork heat baffles 7. The arrangement and openwork construction of the walls 7 impede the passage of the smoke and gases causing them to become thoroughly super-heated and consuming the smoke.

The perforated baffle walls being kept at a white heat and thoroughly consuming the gases cause the least possible expansion and contraction of the boiler thereby prolonging its life. In the ordinary construction the contact of the incoming cold air with the hot tubes in cleaning the fires causes loosening and leakage of the tubes at the back end of the boiler which is prevented in my construction by the heated baffle walls.

I claim:

1. In a furnace of the class described, the combination with side walls, a bridge wall and a boiler supported between the side walls, of a plurality of independent longitudinally extending openwork superheating walls arranged at the rear of said bridge wall the lower ends of said superheating walls being substantially on a level with the bottom of said bridge wall and said walls being separated to form intermediate unobstructed passages for smoke and gases, and a transverse division wall supported upon the front ends of said superheating walls and encircling said boiler for the purpose set forth.

2. In a steam boiler furnace, the combination of a fire-box, a bridge-wall, and a plurality of parallel heat absorbing and retaining walls in the rear of said bridge-wall and spaced therefrom, said parallel walls being spaced from one another and from the sides of the furnace, forming unobstructed longitudinal passages for the products of combustion, and each provided with a plurality of transverse openings.

3. In a steam boiler furnace, the combination of a boiler, a fire-box, a bridge-wall, and a plurality of parallel heat absorbing and retaining walls in the rear of said bridge-wall and spaced therefrom, said parallel walls being spaced from one another and from the sides of the furnace, forming unobstructed longitudinal passages for the products of combustion, and each provided with a plurality of transverse openings, an arch extending from the under surface of the boiler downward and adapted to cause the products of combustion after passing over the bridge-wall to be directed downward into said passages.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN H. MONTGOMERY.

Witnesses:

H. H. HOYT,

ALEX MCDONALD.