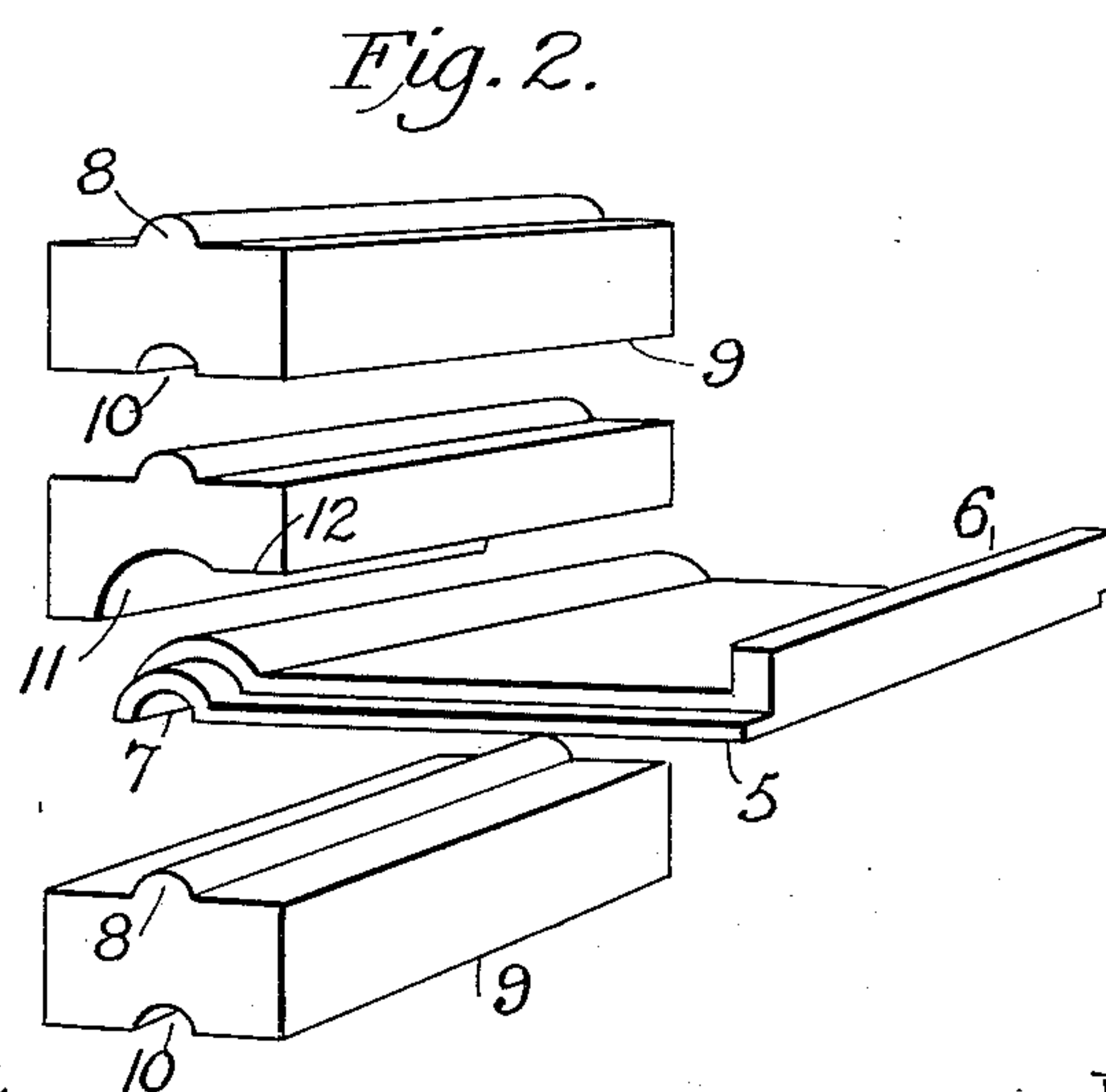
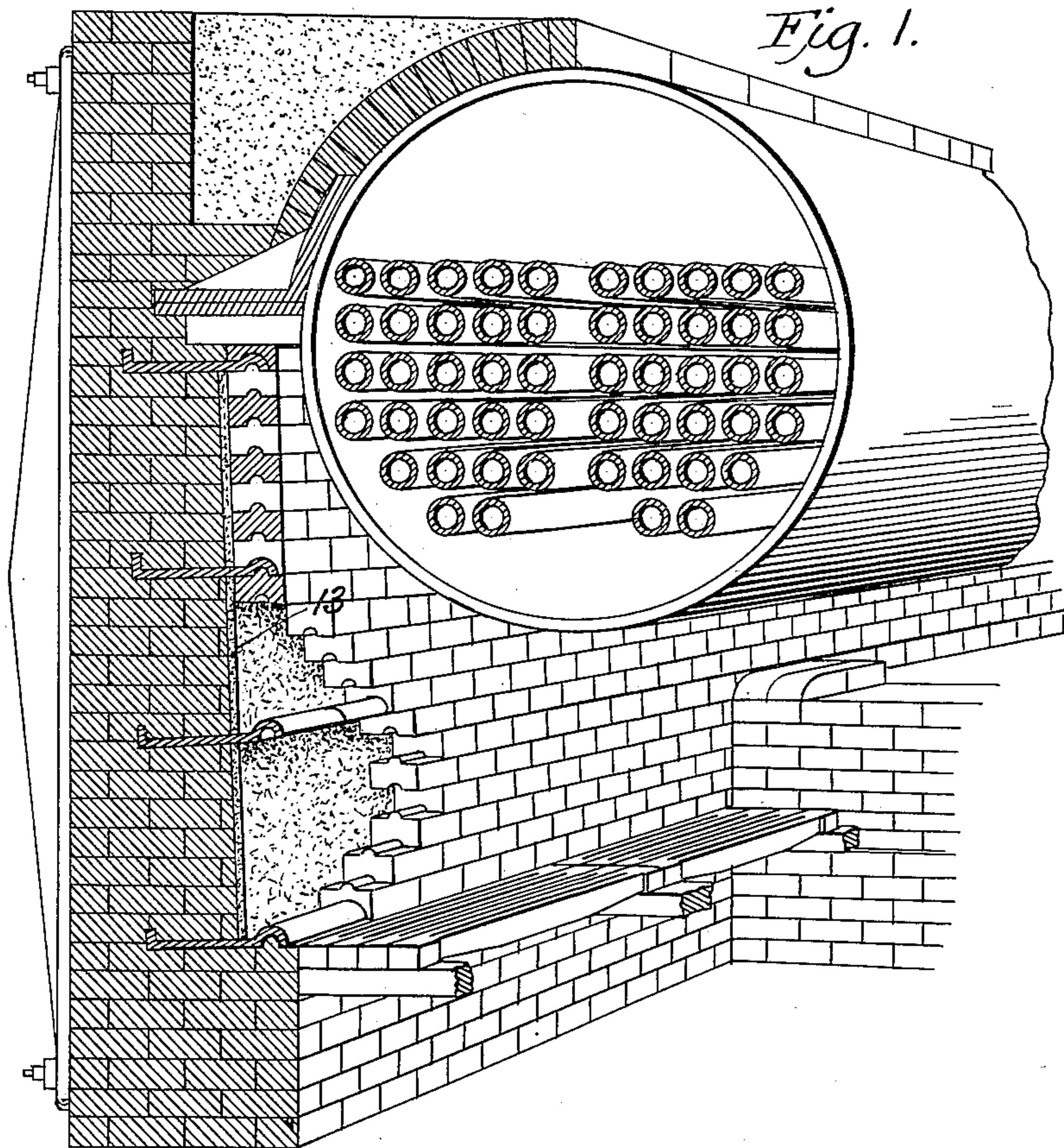


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2 SHEETS—SHEET 1.



WITNESSES
James F. Duhamel
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William Lemb.
BY
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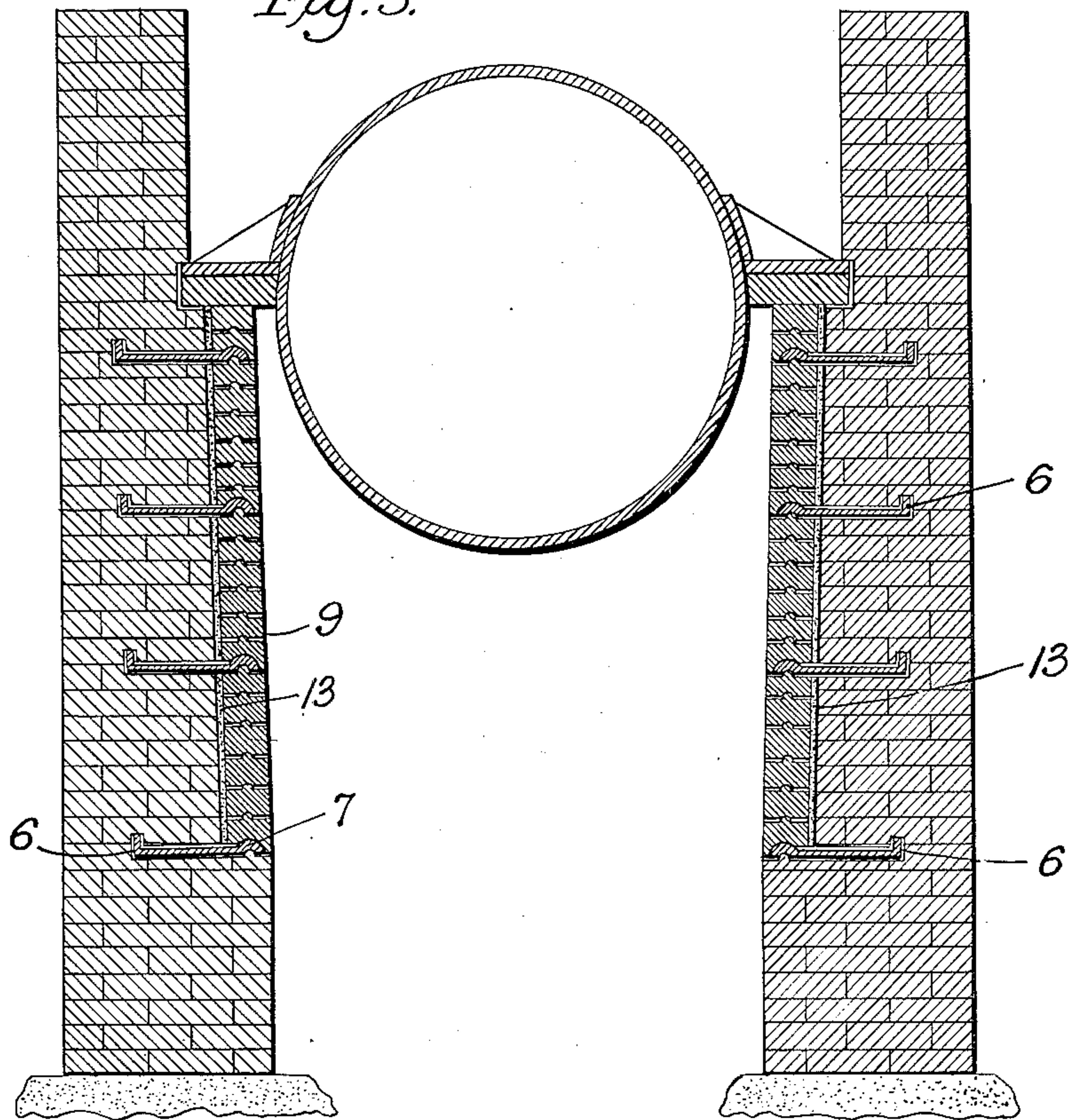
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Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM LEMB, OF BROOKLYN, NEW YORK.

LINING FOR WALLS.

No. 915,195.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed April 13, 1907. Serial No. 367,990.

To all whom it may concern:

Be it known that I, WILLIAM LEMB, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Linings for Walls, of which the following is a specification.

This invention relates to linings for walls and more particularly for walls of furnaces and similar structures and has for its object the providing of a lining which is not liable to bulge in consequence of the action of heat or otherwise but which is adapted to be retained in its original position and prevent the destruction of the outer bricks of the wall as will be more fully explained in the following specification set forth in the claims and illustrated in the drawings where it will be seen that like reference characters are used to designate the same parts in the various figures.

Figure 1 is a perspective view of a horizontal tubular boiler having the improved lining applied to the furnace thereof. Fig. 2 is a perspective view of the bricks and binder in detail. Fig. 3 is a cross sectional view of the boiler and the walls of the furnace.

In the construction of furnaces, ovens and similar structures serious inconvenience is experienced in consequence of the fire-brick not being able to withstand the heat given out by the fire and deteriorating in consequence so that the brick binders known as headers employed become weakened and break off allowing the brick to bulge toward the fire and eventually to fall, thereby necessitating the reconstruction of the walls. This bulging and falling toward the fire usually occurs when the fire bricks in contact with the hot coal just above the grate, burn out. Generally four or five layers of brick burn out or melt away and thus the brick headers usually employed are too greatly strained with the weight of the rest of the lining above same and break off. It is to overcome this inconvenience that this invention is designed and instead of using brick-binders to retain the fire-brick in place against the surface of the common brick a metal binder is employed such as clearly illustrated in Fig. 2 and consists of a plate of metal about the length of the fire-brick that may have offset ends 5 which are adapted to overlap each other, although the said binders are adapted to overlap each other they may also be placed at intervals. Each binder has a

flange such as an upturned side 6 to be built into the wall and anchor the same. The outer parts of these binders are provided with bent portions 7, the groove side of which is adapted to receive a tongue 8 formed on one side of the fire brick 9. The fire-brick also has in its opposite side a groove 10 of about the same size as the tongue 8 and adapted to receive it to hold these bricks solidly when built up one on top of the other. The brick which is laid upon the binder has a larger groove 11 to conform with the upper surface of the binder above the groove 7 and there is also a portion cut away as illustrated at 12 to provide for the thickness when it is built into the wall as clearly shown in Fig. 3, the binders are placed at intervals, several layers of bricks intervening and extended into the wall and are built in the common brick while interposed between the latter and the fire-brick is a layer of asbestos or similar nonconductive material 13 to further protect the wall of the furnace. Although the inner wall is shown as sloping inward this construction is not essential, likewise, any other arrangement for the boiler may be provided for. It will be clearly seen that this binder firmly anchors a fire-wall in place and is in no danger of breaking off and permitting the wall to fall or sag and if one binder should prove faulty the balance may be depended upon to retain the fire-brick in position.

It is obvious that the shape and position of the concave convex portion formed on the opposite side of the binder may be altered and the same give an angular shape. Likewise the flange on the side of the binder which anchors into the main wall may project from both sides of the binder in order to do its work more effectually. These binders may be constructed of greater length which would relieve it of danger of being broken away unless the whole piece was faulty. A very desirable feature of this construction is that the bricks can be set without the use of clay, mortar or cement and it is found that the lining is readily retained in its place by the above described means. When the fire bricks in furnaces just above the grate burn out and have to be replaced the services of a mason is not necessary as the new brick can be put in place by any one. Another desirable feature is that only the brick below a binder need be removed as the said binder will uphold those above. It will be readily seen that such a construction could be easily adapted

for outside facings and in the use of tiling which when provided with the tongue and groove or other locking means might be secured to the main structure by means of the above described binders.

In case of a division or party wall, the binders may project from each side of the wall and have interlocking means for the lining on each side.

The metal binders are at all times completely protected from the fire and are thus protected from the intense heat and will last as long as the main wall stands but in case it is necessary to replace any of them they may be dug out of the wall and replaced one at a time without destroying the same.

It is not the desire of the applicant to confine himself to the exact construction above described as many changes and modifications may suggest themselves in actual use and practice without departing from the essential features above described.

In the drawings while the binders are shown of the same width as the fire brick, they may be made of less width, leaving an intervening air space inside of the outer wall. But the meeting extensions of the two bricks that engage the channel portion of the plate, close this space at the outer face of the wall.

What I claim as new and desire to secure by Letters Patent is:

1. In a device of the character described, the combination with a supporting wall, of

fire bricks each provided with a tongue on one face, and a similar groove on an opposite face, of binders each consisting of a metal plate having a flange on its inner side anchored in the supporting wall, the plate having at its outer part a tongue on one side extending into the grooved portion of one of said bricks, and having on the opposite side a groove receiving the tongue portions of the adjacent bricks, said binders having reduced offset meeting edges that overlap.

2. In a device of the character described, the combination with a supporting wall, of fire bricks each provided with a tongue on one face, and a similar groove on the opposite face, binders consisting of a metal plate having a flange on its inner side anchored in the supporting wall, the plate having at its outer part a tongue on one side extending into the grooved portion of one of said bricks, and also having on the opposite side a groove receiving the tongue portions of the adjacent bricks, one of the said bricks being extended adjacent the grooved end portion of the plate into engagement with the other brick to thereby form a continuous outer face of the wall.

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

WILLIAM LEMB.

Witnesses:

JAMES F. DUHAMEL,
MAE W. CLINTON.