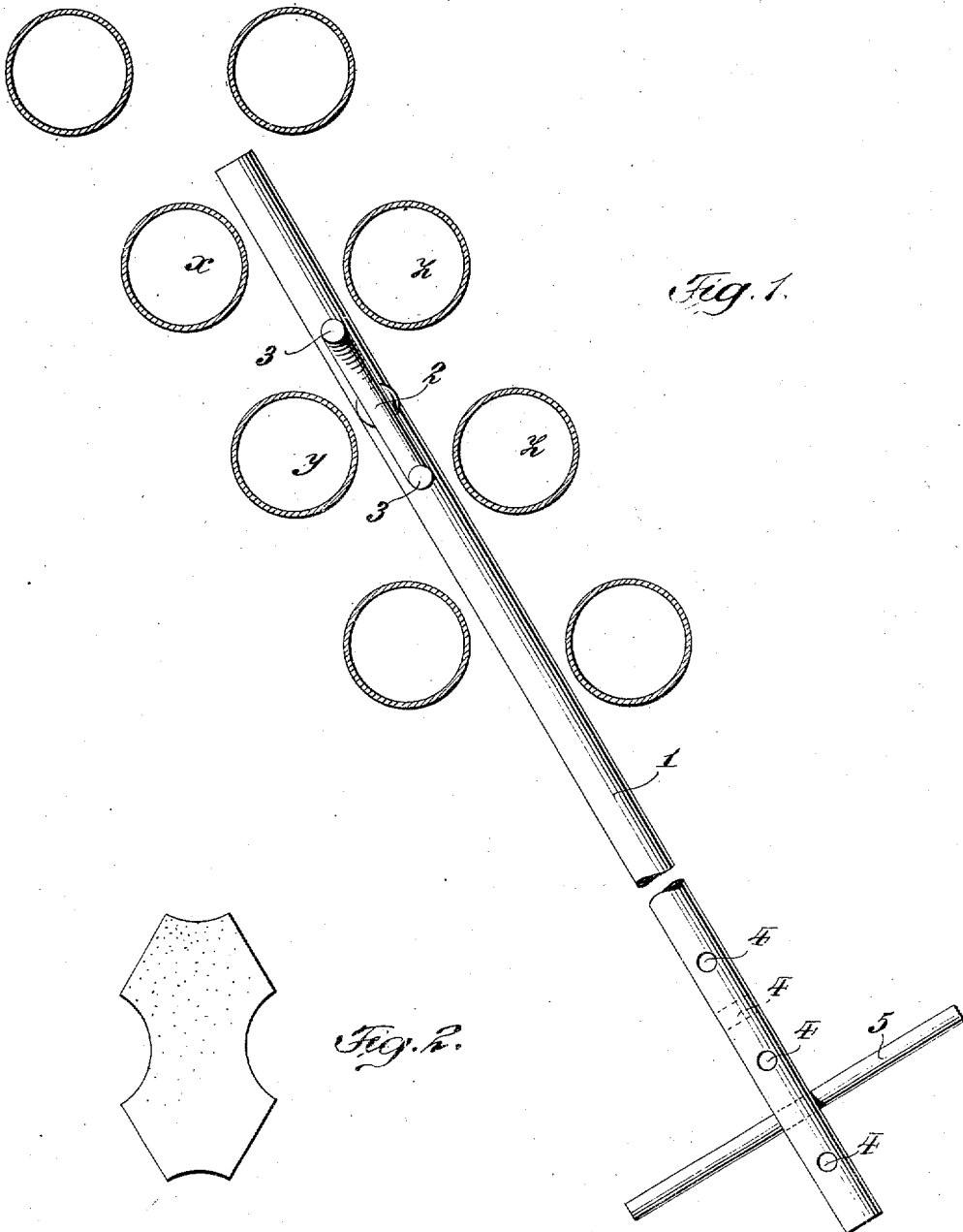


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BOILER TUBE SPREADER.
APPLICATION FILED NOV. 16, 1908.

956,986.

Patented May 3, 1910.
2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 3.

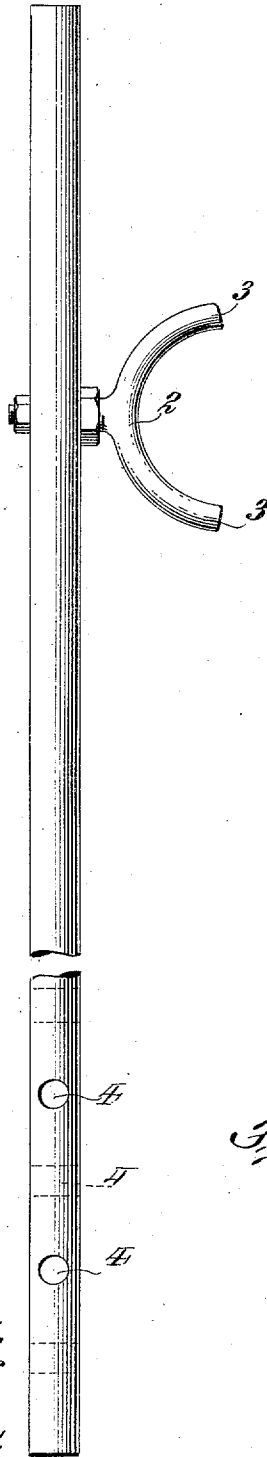


Fig. 4.

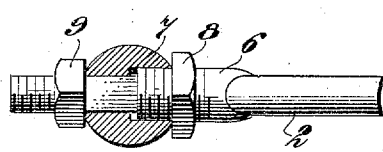


Fig. 5.

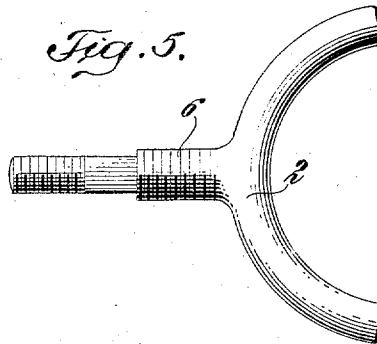
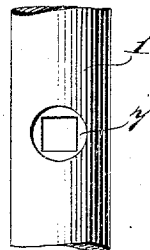


Fig. 6.



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BOILER-TUBE SPREADER.

956,986.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN J. MAHER, a citizen of the United States, and a resident of the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful form of Boiler-Tube Spreader, of which the following is a specification.

It is customary in the construction of water tube boilers to place baffle plates at desired positions in the bank or banks of tubes in order that there may be an effective distribution of the heat throughout the entire extent of the same; the tubes are passed through the baffle plates and in order to protect the latter from action of the heat, fire-bricks of suitable material are inserted between the tubes to cover the plates. Each brick is designed to fill a substantially diamond-shaped space between four adjacent tubes and when in position lies in close contact with adjacent fire-bricks, filling other similar spaces. In order that the baffle plates may be effectually protected it is necessary that the fire-bricks be securely positioned and completely fill the space between tubes. When it becomes necessary to replace these fire-bricks in making repairs, the insertion or removal of the bricks without breaking or other injury is exceedingly difficult while the tubes are in a normal or unspread position. To overcome the difficulty above set forth it is necessary to spread apart the water tubes at a point somewhat in advance of the position occupied or to be occupied by the fire-brick, and to place the brick in position by entering it between the tubes at the point where the same are spread apart, and then to move the brick along to a position against the baffle plate, or to remove it by a reverse operation.

It has heretofore been proposed to spread apart the water tubes of a boiler by means of a tool bearing shoulders adapted to be moved in opposite directions along the length of the tool, after insertion between the tubes, by means of various screw mechanisms. Such tools are at a disadvantage by reason of their cost, number of parts involved, time required for operation, and the liability of breakage or derangement of adjustable parts under the severe strain imposed thereon. It is the purpose of my invention to provide a tube spreading tool exceedingly simple in design and construction, of few and fixed

parts, capable of efficient and rapid operation and of low cost.

My invention consists in the design, construction, and combination of parts set forth in and falling within the scope of the appended claims.

Like characters of reference denote like parts in all the figures of the drawings herewith.

Figure 1 represents a view in elevation of my tool inserted edgewise in a bank of tubes, the latter being shown in section and a portion of the tool being broken away; Fig. 2 represents a fire-brick of the usual form of construction used in baffles of the type referred to; Fig. 3 represents a detail, enlarged view in front elevation of the tool; Fig. 4 represents a detail edge view of the spreader member, the tool bar at the point of connection between it and the member being shown in section; Fig. 5 represents a detail view of the spreader member; Fig. 6 represents a detail view of the socket for the spreader member in the tool bar.

The construction of my novel form of spreading tool is as follows: A metal bar or rod 1, is provided adjacent one end with a spreader member 2, formed with oppositely extending curved arms 3. Adjacent the opposite end of the bar or rod 1 are provided apertures 4 for the insertion of a handle 5, or a plurality of handles, for operating the tool in various positions. The spreader member is secured to the bar 1 in the following manner: An enlarged socket 7 is formed in the bar and the threaded head 6 of the spreader member is of a size suitable for insertion in such socket, the spreader member being adjustable to and from the bar by means of the bolt 8 on the enlarged head portion and being secured in position by the bolt 9 on the opposite side of the bar. It may also be rigidly welded to or formed integral with the bar.

When used for the purpose of spreading apart the water tubes of a boiler, the tool is inserted edgewise between two adjacent rows of water tubes and when in the desired position is turned in such a manner that the oppositely extending arms 3 project on opposite sides of a tube which it is desired to force out, or spread; the tool is then turned, the bar resting against the tubes in the adjacent row and the tube which is in contact with the arms 3 being

forced out. For example, as shown in Fig. 1, it is desired to insert a fire-brick in the substantially diamond-shaped space between the water tubes *x*, *y*, *z*, *z*, and the tool has been inserted in such a manner that when turned, the arms 3 will extend on opposite sides of the tube *y* and said tube will be forced out, the bar 1 resting against tubes *z*, *z*, of the adjacent row, the latter tubes being also forced out or spread apart to a certain limited extent; the fire-brick may then be inserted in an edgewise position and readily turned into its desired position between the tubes *x*, *y*, *z*, *z*, and thereupon moved along the tubes to its position until located against the baffle plate.

In practice, it has been found that the spreading apart or forcing out of one tube in one of two rows of tubes with or without the limited movement of other tubes in an adjacent row is sufficient to render possible the ready insertion of a fire-brick between a group of four tubes comprising the tube so spread.

Having thus described my invention, what I claim is:

1. A boiler tube spreader comprising a bar having adjacent one end thereof a

spreader member formed of oppositely-extending curved arms rigidly secured to the bar.

2. A boiler tube spreader comprising a bar having adjacent one end thereof a spreader member formed of oppositely-extending arms rigidly secured to the bar, and means for adjusting said spreader member toward and from the bar.

3. A boiler tube spreader comprising a bar and a spreader member formed of oppositely-extending arms, said arms being rigidly secured to said bar and projecting laterally therefrom on the same side of the bar.

4. A boiler tube spreader comprising a bar having a socket formed therein, a spreader member having a threaded head engaging said socket, and a bolt on said head to adjust the spreader member toward and from the bar.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

JOHN J. MAHER.

Witnesses:

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RICHARD B. CAVANAGH.