L. E. HANKISON & W. E. STUMM.

DEVICE FOR STEAM BOILERS.

APPLICATION FILED JULY 8, 1911.

1,021,597.

Patented Mar. 26, 1912.

2 SHEETS—SHEET 1.

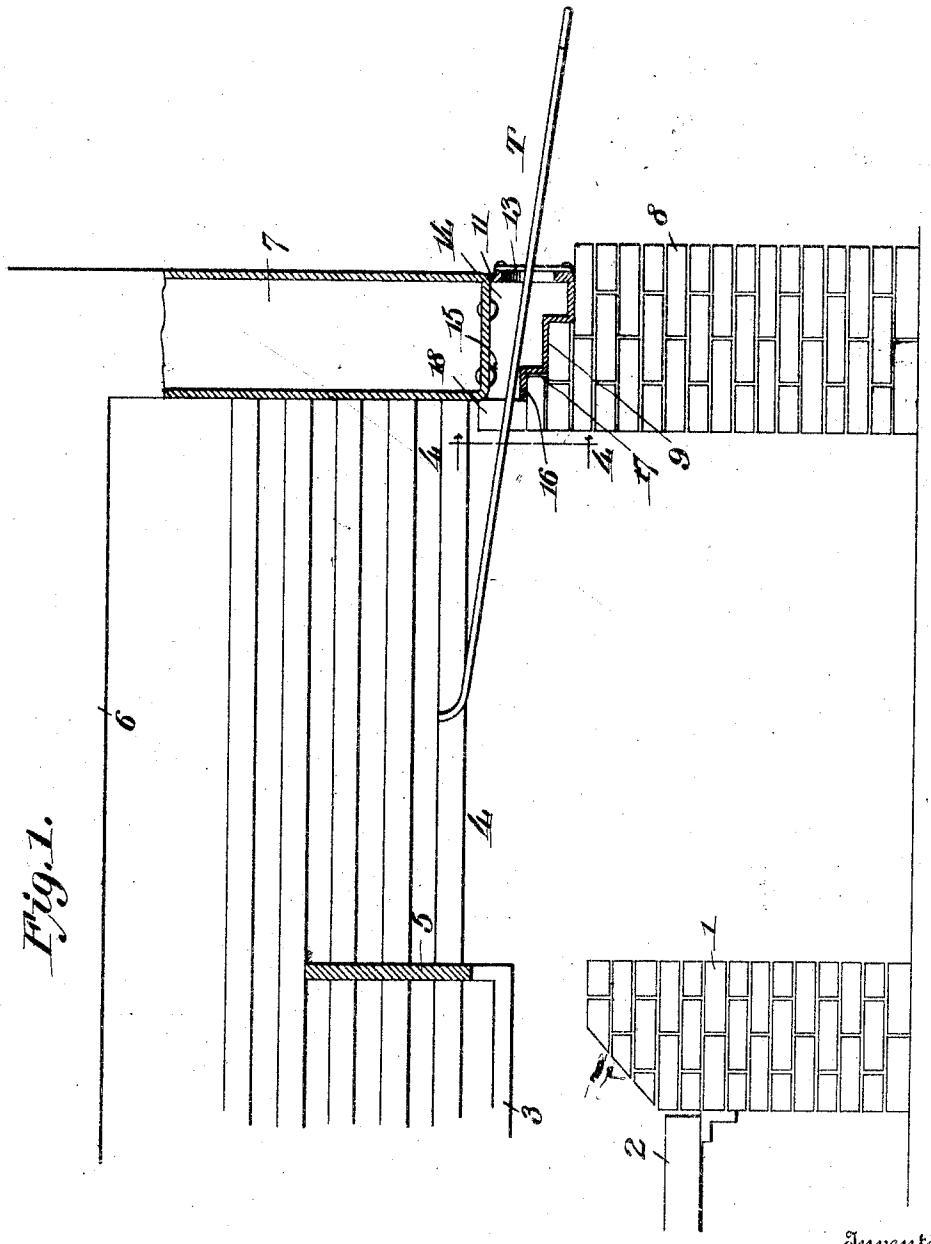

Fig. 1.

Witnesses

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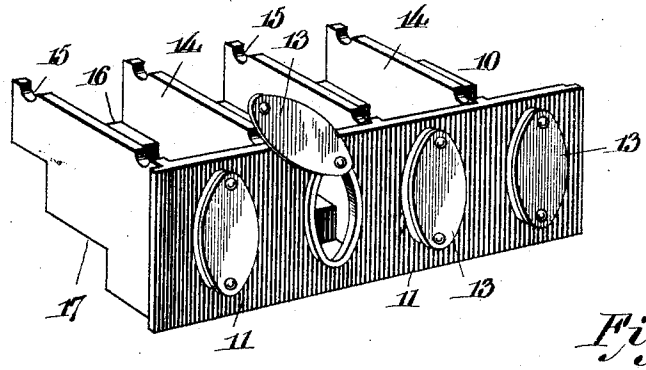

Fig. 2.

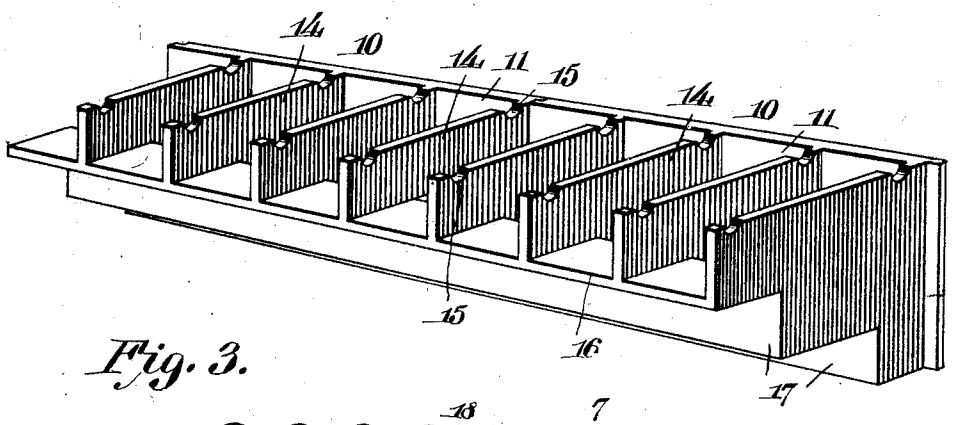

Fig. 3.

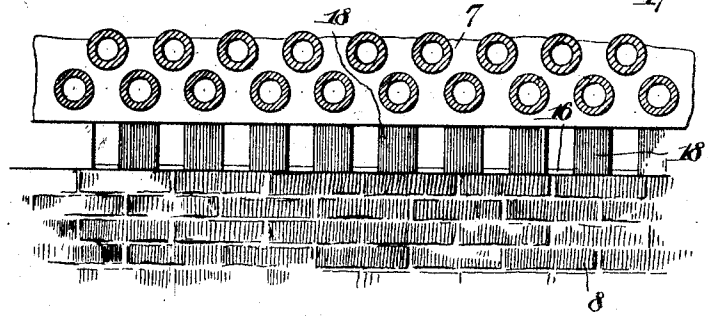

Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

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DEVICE FOR STEAM-BOILERS.

1,021,597. Specification of Letters Patent. Patented Mar. 26, 1912.

Application filed July 8, 1911. Serial No. 637,50

To all whom it may concern:

Be it known that we, LEWIS E. HANKISON and WILLIAM E. STUMM, citizens of the United States, residing at Connellsville, in the county of Fayette and State of Pennsylvania, have invented new and useful Improvements in Devices for Steam-Boilers, of which the following is a specification.

This invention relates to steam boiler furnaces, and has particular application to a structure of the class described wherein provision is made for the protection of the water legs of water tube boilers, and for cleaning deposits of combustion from the lower bank of tubes.

As is well-known to those acquainted with the art, the lower row of tubing in a water tube boiler when in use, becomes coated with the products of combustion so that the efficiency of the boiler is greatly reduced because the heat of the furnace passes up through the tubes without coming into contact therewith and by failing to properly heat the water within the tubes causes a deficiency in the steaming capacity of the boiler. Furthermore, this deposit upon the lower tubes has a tendency to retain or confine the heat at the walls of the furnace, thus causing a portion of the heat to radiate through said walls, burning out or destroying the latter.

In the present instance, it is our purpose to provide means which may be installed between the water leg of the boiler and back wall of the boiler setting, whereby access may be had to the bank of tubing, through doors or openings, so that such tubing may be scraped or cleaned through the medium of a tool designed for this purpose, the cleaning being done while the boiler is in service, thus attaining economy in time, labor and boiler use.

It is also our intention to provide a device to protect the water leg from corrosion, inasmuch, as by means of our invention the water leg is supported some distance above the boiler setting, thus keeping moisture from the bottom of the legs, and thereby avoiding corrosion of the latter.

Furthermore, by means of our invention, the boiler setting, furnace castings and the furnace itself are preserved from injury, inasmuch, as by allowing of the ready and frequent cleaning of the tubes, the heat will follow its natural course through the bank of tubing to its outlet, instead of being confined in the lower portion of the furnace by tubes clogged or packed with the deposit of soot and other products of combustion.

While we have in the present instance shown and described by way of illustration, one application of our invention to an ordinary type of water tube boiler, we wish it to be understood that we do not limit the invention to this useful application, as it will be equally applicable to other types of water tube boilers, for instance, those employing sectional headers.

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

In the accompanying drawings:—Figure 1 is a longitudinal sectional view of a portion of a water tube steam boiler and furnace, having our invention applied thereto. Fig. 2 is a perspective view of one of the sections or castings employed to make up our invention. Fig. 3 is a perspective view of the assembled device. Fig. 4 is a vertical cross sectional view, taken on the line 4—4 of Fig. 1, looking in the direction of the arrows, the cleaning rod being omitted.

Briefly stated, the preferred form of our invention is made in the form of a box-like member, comprising a series of sections adapted to be assembled as is shown in Fig. 3 of the drawings, and to be installed between the wall of the boiler setting and the adjacent water leg, as is shown in Fig. 1, it being understood that the device, which is made of metal may be attached as a new part of a boiler when manufactured or may be manufactured and installed after the

boiler is in place. This member is preferably formed of sections or castings in order to accommodate the rivets and blow-off pipes on the bottom of the water legs, this construction enabling the device to be installed beneath the water legs without removing the blow-off pipes. Furthermore, the structure is preferably formed with a series of doors which may be opened to permit the insertion of a scraper rod or other tool for removing a deposit from the boiler, as is shown in Fig. 1.

Referring now to the accompanying drawings in detail, and particularly to Fig. 1, the numeral 1 designates the bridge wall of the furnace and 2 the grate thereof. Above the grate and bridge wall is the usual arch 3 while the bank of water tubes is shown at 4, the baffles thereof being indicated at 5—5, while 6 indicates a portion of the drum of the boiler. In the present instance, we have shown the invention as applied beneath the rear water leg of the boiler, which is shown at 7, the back wall setting being indicated at 8, the top of said wall being stepped as is shown at 9.

Our invention comprises in its preferred form a number of block-like castings 10—10 adapted to be placed end-to-end, as is shown in Figs. 2 and 3, although we wish it to be understood that the device may be cast or otherwise made in one piece, if desired. As all of the sections are similar in construction, a description of one will suffice for all. Each section comprises a front plate 11 having elongated openings therein designed to be covered by small end doors 13. Extending rearwardly from the front plate are the vertical side walls 14, curved or recessed as at 15 for the reception of the rivets and blow-off devices on the bottom of the water legs. The numeral 16 indicates the base of the section of the casting which is stepped as at 17 to fit into the corresponding steps 9 at the top of the back wall of the boiler setting, as is shown in Fig. 1. It will be understood that the vertical walls or partitions 14 of the block-like castings are suitably spaced apart to permit the free entry of the cleaning tool T. The sections or castings are shown as assembled in Fig. 3, and as will be seen, are placed in contact end-to-end to form a relatively long box or block-like member, the bottom wall of the water leg resting upon the top of the casting. At the rear or reduced end of the device, we provide fireproof protecting brick 18 which rest upon the top of the back wall and abut against the rear of the walls 14, spaces being left between said protecting bricks in alinement with the walls between the casting, so that the cleaning tool T may have free entry to the lower row of boiler tubes.

From the above description, taken in connection with the accompanying drawings, the construction and purpose of our invention will be readily apparent to those acquainted with the construction of steam boilers and steam boiler furnaces. By forming the bottom of the device of step-up construction, it acts as a stay for strengthening the supporting partition.

In the case of new boilers our invention may be formed as a part of the same, while in boilers that have been already installed, it may be employed by removing a portion of the wall and inserting the device.

Furthermore, we wish it to be understood that we do not limit ourselves to applying the invention between the water leg and the setting as such a device may be applied under any conditions where it is desired to protect from corrosion a part of a boiler that receives its support from a setting.

As before stated, in addition to affording a means to attaining access to a tube to clean the same, our invention forms a very efficient device for protecting the water legs or other parts of a boiler from contact with the leakage water and the like, and we regard this as an important feature of our invention.

Furthermore, we wish it to be understood that we do not limit ourselves to all the precise details of construction herein set forth, as modification and variation may be made without departing from the spirit of the invention or exceeding the scope of the claims.

We claim:—

1. The combination with a furnace and a tubular boiler, of means interposed between the boiler and the boiler setting for permitting the cleaning of said tubes, said means comprising a box-like casting having an opening in the front wall thereof, and a plurality of walls or partitions spaced apart to form a passage for the insertion of a cleaning tube.

2. The combination with a furnace, a boiler setting, and a boiler, of means interposed between said boiler and boiler setting, comprising a body portion having a series of openings therethrough, means for closing said openings, and blocks or bricks of protecting material at the inner end of the body portion.

3. The combination with a furnace, of a water tube boiler, a setting therefor, and means interposed between the leg of the boiler and the setting, said means comprising a box-like member having a series of walls or partitions forming openings therethrough.

4. The combination with a steam boiler furnace, of a water tube boiler, and a boiler setting, of a body portion interposed between the leg of the boiler and the boiler

setting, said body portion comprising a series of box-like sections placed end-to-end and having passages extending therethrough, the base of said sections being stepped to conform to steps formed in the boiler setting.

5. A device of the class described comprising a metallic body portion having an opening in the top wall thereof, and a base with vertically extending side walls forming passages, the top of said side walls being curved or recessed.

In testimony whereof we affix our signatures in presence of two witnesses.

LEWIS E. HANKISON.
WILLIAM E. STUMM.

Witnesses:
FRANK H. KRUM,
J. B. KURTZ.