

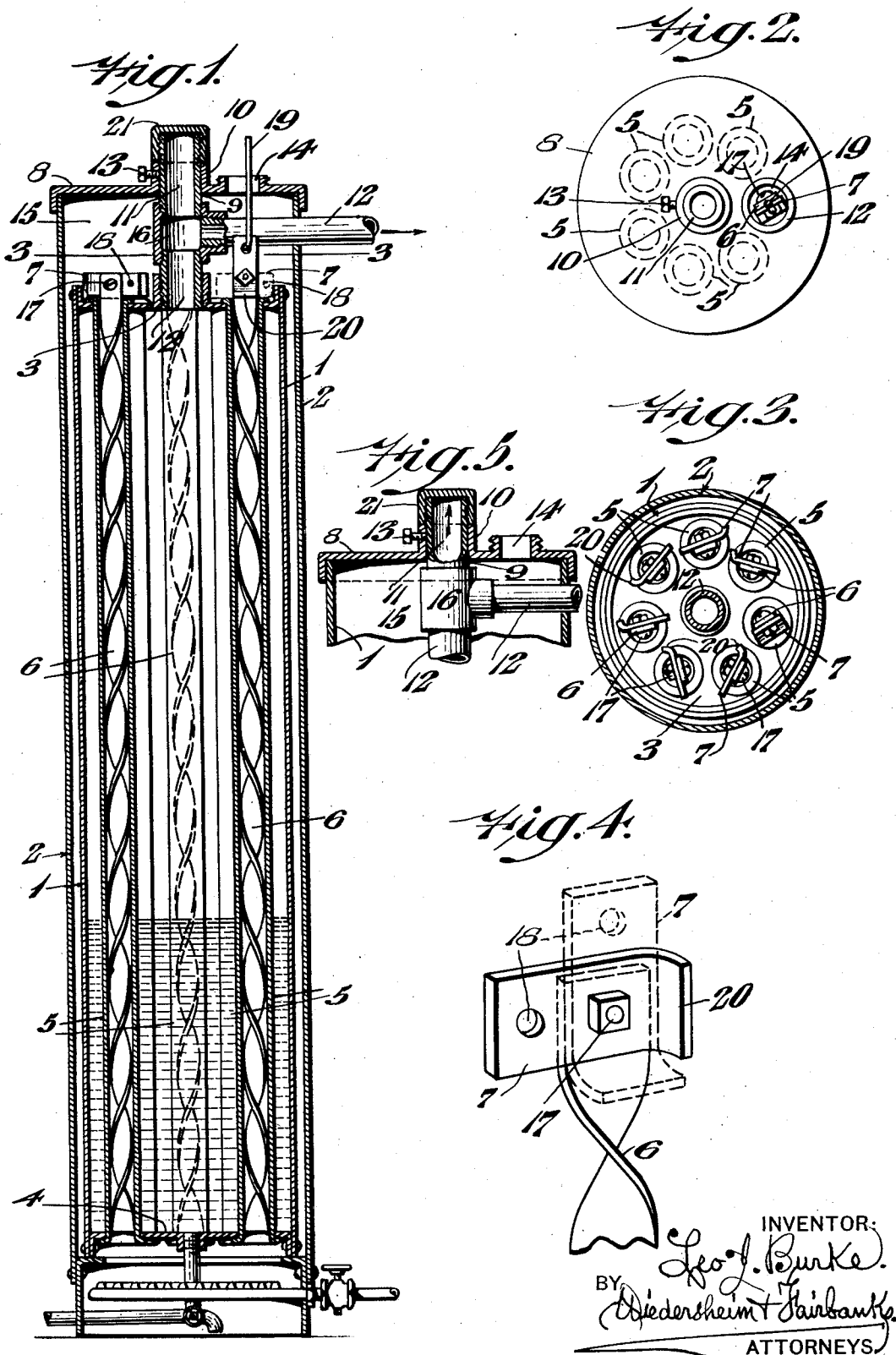
June 2, 1925.

1,540,535

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HEAT SAVER AND HEAT INCREASING ACTION FOR BOILER FLUES

Filed April 7, 1923



UNITED STATES PATENT OFFICE.

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HEAT SAVER AND HEAT-INCREASING ACTION FOR BOILER FLUES.

Application filed April 7, 1923. Serial No. 630,448.

To all whom it may concern:

Be it known that I, LEO J. BURKE, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Heat Saver and Heat-Increasing Action for Boiler Flues, of which the following is a specification.

My invention relates to a device for saving heat and increasing its effect in boiler flues, and consists of spiral members in the flues adapted to retard the ascending heat in said flues and impact it laterally against the latter, novel means being provided for assembling and supporting said members in the flues, and permitting the removal of the same and reapplying them while said members are subjected to the products of combustion, as will be hereinafter fully set forth.

The invention is satisfactorily illustrated in the accompanying drawing, but the important instrumentalities thereof may be varied, and so it is to be understood that the invention is not limited to the specific details shown and described, as long as they are within the spirit or scope of the claims.

Figure 1 represents a vertical section of a heat-saver and increaser for boiler flues embodying my invention.

Figure 2 represents a top or plan view thereof.

Figure 3 represents a horizontal section on line 3—3 Figure 1.

Figure 4 represents a perspective view of a detached portion of the device.

Figure 5 represents a view of the upper portion of the boiler similar to what is shown in Figure 1.

Similar numerals of reference indicate corresponding parts in the figures. Referring to the drawings,

1 designates the water receiving casing or shell within the exterior casing 2, the former having on the upper and lower portions thereof the crown sheets 3 and 4 respectively to which are secured the terminals of the boiler flues 5 which latter are within the casing 2 and adapted to receive the products of combustion from the furnace of the boiler.

Within said flues 5 are members 6 which are formed of pieces of metal or other suitable material bent or twisted throughout their lengths in spiral form, thus producing within the flues spiral passages through

which the products of combustion flow, thus serving to retard the products and prevent rapid ascent and escape thereof through the flues and so deflecting said products spirally against the inner sides of the flues whereby the latter receive the impact of heat to a greater extent than they would were the spiral members omitted from the flues, thus effectively heating the flues from within and saving heat to accomplish the same.

In order to suspend the members 6 in position within the flues, the upper ends of said members have connected with them the cross bars 7 which are of greater length than the diameters of the flues 5, so that when they are in normal horizontal positions, as more particularly shown in Figures 4 and 1, they rest transversely on the top edges of said flues and so support the latter without liability to drop through the flues.

The exterior casing 2 has on the top thereof the cap 8 at its centre of which is the tubular collar 10 whose opening 9 receives the plug 11 which rises from and is secured to the T-coupling 16 of the angular steam discharging pipe 12 of the boiler, said pipe 12 having its lower limb connected with the top crown sheet 3 and being in communication with the interior of the inner casing 1 whereby the steam generated in the latter may enter said pipe 12 and so be directed by its upper limb to a place of service.

The cap 8 is rotatable on the plug 11 and the top of the casing 2 and is adapted to be held in stationary condition by means of the bolt or screw 13 which passes through the collar 10 and is adapted to be tightened on said plug 11.

In said cap is also the opening 14 which is located between the centre and periphery of said cap and adapted to register with either of the flues 5 at the top of the latter, it being noticed also that the diameter of said opening 14 is comparatively of the diameter of the spiral members 6 whereby either or all of the latter may be removed from the flues through the opening 14, as shown in Figure 1, as will be hereinafter further described.

The products of combustion leaving the flues enter the chamber 15 in the upper portion of the casing 2 and are discharged therefrom through the opening 14.

The cross bars 7 are connected with the upper portions of the flues by the pivots 17 whereby said cross bars may be turned from

their horizontal positions when supporting the members 6 in the flues as has been stated to a vertical position as shown at the upper right hand portion of Figure 1, so that said cross bars may be passed through the opening 14 in the cap.

In the cross bars are openings 18 in which may be engaged a hook-like or other implement 19 whereby said bars may be manipulated to permit the primary insertion of the spiral members through the opening 14 into the flues and their subsequent removal from the latter when so required.

When a spiral member is to be removed for any purpose requiring the same, the implement 19 is inserted through the opening 14 and fitted in the opening 18 of the cross bar 7 to engage the latter. Then the implement is raised and the cross bar turns on its axis or pivot, fulcruming on the top of the flue, and so the cross bar assumes a vertical position as shown dotted in Figure 4, and in full lines in upper right hand portion of Figure 1. As the cross bar is now folded vertically on the spiral member and so in the longitudinal direction of the latter, the cross bar may be drawn through the opening 14 above the cap, the spiral member then following said bar and so emerging from the flue and the cap 8 through the opening 14.

All of the other spiral members may be so removed if desired in a manner as above described.

Owing to the spiral nature of the members 6 in order to permit each cross bar to be folded against the same, one side of said cross bar is formed as an elbow making the limb 20 which extends angularly from the adjacent portion of the cross bar, thus foreshortening said side and adapting said limb to be placed close between adjacent convolu-

tions of the spiral member thereof, all as best shown in Figure 4.

The plug 11 is shown hollow and in communication with the steam discharging pipe 12 so that when desired the steam may be passed out through said plug, now being a pipe therefor, to the place of service. When use of said plug for the above purpose is not desired it may be covered and so closed by the cap 21 which is screwed or otherwise fastened to said plug, but the plug may be solid when not required to discharge the steam therethrough, the plug in either case forming a bearing for the cap 8 to rotate thereon.

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

In a heat saver and a heat increasing action for the flue of a boiler, a spiral heat retarder adapted to occupy the flue, and an apertured bar-like member of substantially rectangular form mounted pivotally on said retarder, said bar being adapted to be turned crosswise to support the retarder in the flue and to be placed in the longitudinal direction of the retarder to permit the insertion of the latter and the removal of the same, both through the top of the boiler, said bar-like member having on an end thereof an elbow 20 which when the bar is in the longitudinal direction of the conveyor may rest close to the latter between adjacent convolutions thereof, the removal and insertion of said bar being accomplished by a suitable implement insertable through said aperture.

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Witnesses:

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