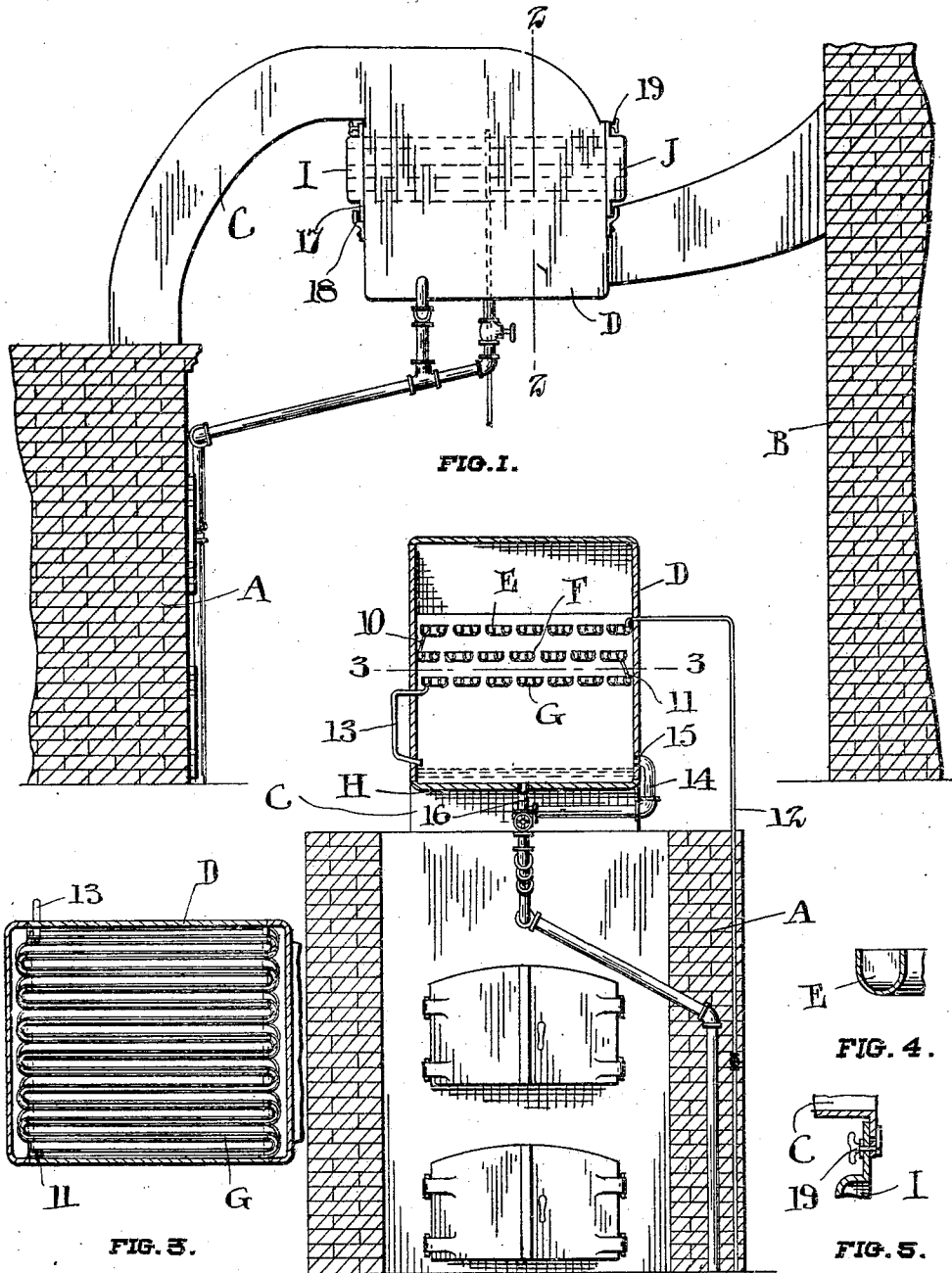


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 MEANS FOR REMOVING SOOT AND SPARKS FROM SMOKE PASSING THROUGH FLUES.
 APPLICATION FILED MAY 9, 1908.

931,788.

Patented Aug. 24, 1909.



WITNESSES

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FIG. 2.

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MEANS FOR REMOVING SOOT AND SPARKS FROM SMOKE PASSING THROUGH FLUES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN McLAUGHLIN, of the city of Ottawa, in the county of Carleton, Province of Ontario, Canada, have invented certain new and useful Improvements in Means for Removing Soot and Sparks from Smoke Passing Through Flues, of which the following is a specification.

My invention relates to improvements in means for removing soot and sparks from smoke passing through flues, and the objects of my invention are to provide simple and effective means, which will extinguish the sparks passing through a boiler or other flue, and which will also separate and withdraw the majority of the soot particles, thereby eliminating the issuing of the heavy black smoke from the chimney, and preventing any danger to surrounding buildings by live sparks carried in the smoke. These objects are accomplished by providing a plurality of open conduits in the flue, through which water circulates, the said water being adapted to catch and carry away the sparks and soot particles. The water also operates further to produce a small quantity of steam, which changes the color of the smoke.

The construction of the invention is described more fully hereinafter in the accompanying specification and drawings.

In the drawings, Figure 1 is an elevation of the apparatus. Fig. 2 is a section on the line 2—2, Fig. 1. Fig. 3 is a section on the line 3—3, Fig. 2. Fig. 4 is an enlarged sectional detail through one of the water carrying conduits. Fig. 5 is a sectional detail of a locking dog on a door on the flue.

Referring to the drawings, A represents a boiler of any suitable construction, B the chimney thereof and C a flue extending between. This flue, in accordance with my invention, is provided with a single enlarged chamber D, medially within which, a plurality of series of open conduits E, F and G are provided, the conduits in each series being serpentine in form, and being staggered with reference to the conduits in the other series. The tops of the conduits are open in order to enable the smoke to contact with the surface of the water therein, and in the embodiment illustrated, these conduits are made substantially U-shaped in form, as shown more particularly in Fig. 4. Each of the series are connected together by conducting pipes 10 and 11, and the uppermost series is connected to a suitable supply pipe 12.

On the bottom of the chamber D, a basin H is formed, into which a conducting pipe 13 leading from the lowest series of conduits, is adapted to discharge. The outlet or drainage pipe 14 for this basin has its inlet 15 a determined distance above the bottom, whereby the water will always remain at a determined height in the basin. To enable the basin to be entirely cleaned out, however, a valved drainage pipe 16 is placed in communication with the bottom.

For convenience in cleaning the conduits within the chamber D, side doors I and J may be provided retained in position in any suitable manner, those illustrated having flanges 17 on their edges which extend along the bottoms into flanged plates 18 on the side of the chamber D, and have pivoted dogs 19 journaled in their tops and adapted to lock against the underside of the chamber.

In operation, water is continuously introduced through the inlet 12, and it will thence pass successively through the series of conduits, and discharge into the basin, and then pass out through the outlet pipe 14 into the drain. At the same time, the smoke from the boiler A, will be passing through the chamber, and will contact with the surface of the moving water and will also be drawn downwardly and along the surface of the water in the basin H. The smoke will thus be sufficiently in contact with the water to remove all the sparks therefrom and substantially all the soot particles. It is, of course, evident that the chamber D must be made considerably larger in cross-section than the ordinary flue, in order not to interfere with the draft of the boiler.

As many changes could be made in the above construction, and many apparently widely different embodiments of my invention could be made, without departing from the spirit or scope thereof, it is intended that all matter contained in the specification and drawings, shall be interpreted as illustrative and not in a limiting sense. It is also to be understood that the language of the following claims is intended to cover such generic and specific features of the invention herein described, which, as a matter of language, might be said to be included thereby.

It may be observed that the flowing water passing through the U-shaped conduits as well as absorbing the soot particles and ex-

tinguishing the sparks, operates to cool the smoke, thereby condensing the same slightly and this causes it to more easily descend to the lower part of the chamber and so pass downwardly without interfering with the draft.

What I claim as my invention is:

1. The combination with a suitable boiler and stack of a smoke flue leading from the boiler to the stack and having a downwardly turned enlargement through which the gases are adapted to pass from the top to the bottom thereof, a plurality of rows of open topped conduits in the enlargement, the conduits in one row being under the openings between the conduits in the row above, the conduits in successive rows being connected together, whereby the liquid will pass from one row of conduits to the next without flowing over the edges of the conduits, and a liquid containing basin at the bottom of the enlargement.
2. The combination with a suitable boiler and stack, of a smoke flue leading from the boiler to the stack having a downwardly turned enlargement through which the gases are adapted to pass from the top to bottom

thereof, a plurality of rows of open topped conduits in the enlargement, the conduits in each row extending zig-zag back and forth from one side to the other, the conduits in the successive rows being beneath the open spaces in the rows above, and being connected together, whereby the liquid may pass from one row to the other without flowing over the edges of the conduits, and a liquid containing basin at the bottom of the enlargement.

3. The combination with a boiler and a stack of a flue leading from the boiler to the stack and having an enlargement therein, a continuous series of open-topped conduits in the enlargement, arranged in rows, the different rows being connected by short conduits, whereby the liquid circulating in the conduits will not flow over the edges thereof in passing from one row to the next.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JOHN McLAUGHLIN.

Witnesses:

RUSSEL S. SMART,
J. H. GLEN.