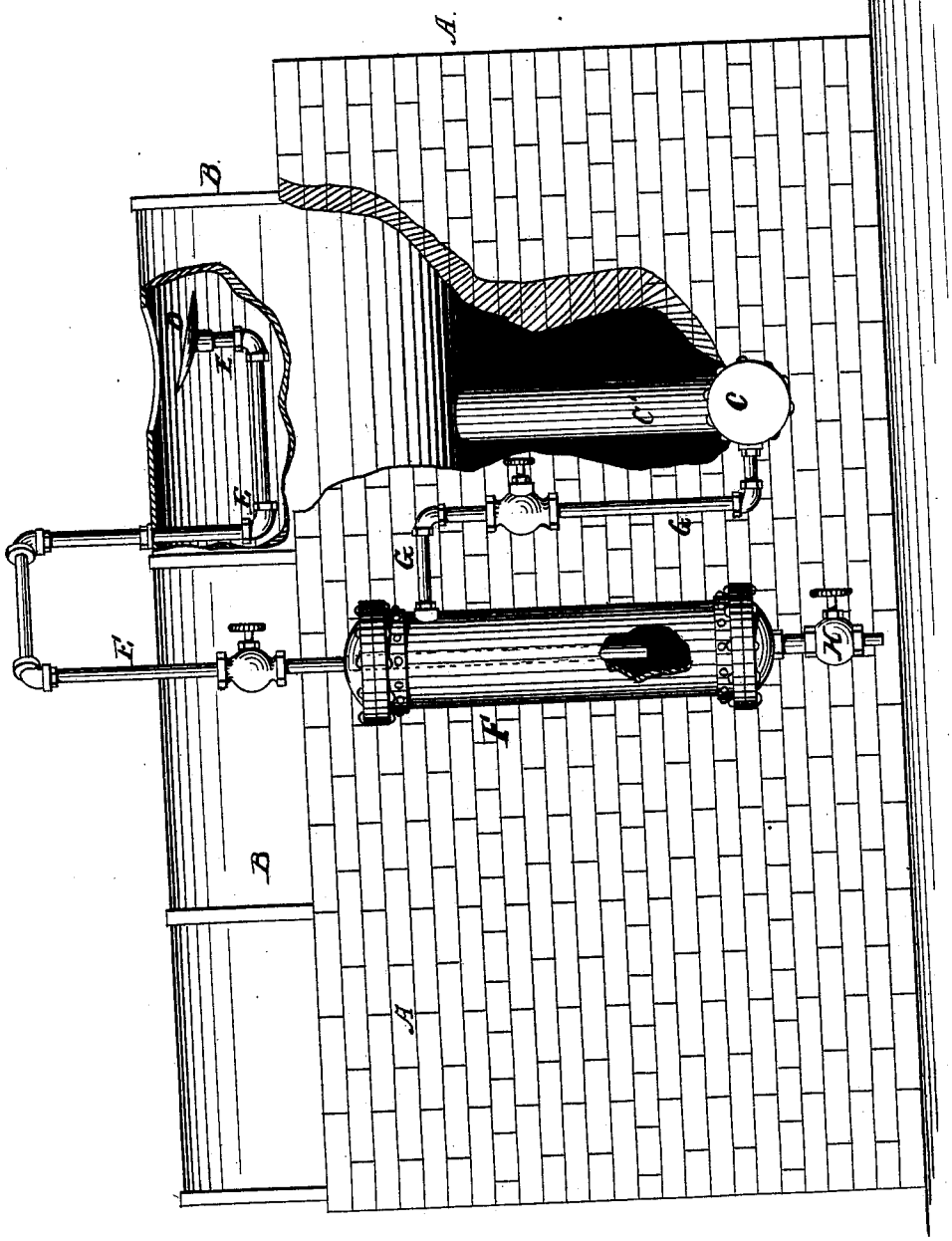
A. COLLINS.

Devices for Removing Dirt, &c., from Steam-Boilers.

No. 208,794. Patented Oct. 8, 1878



Witnesses:
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UNITED STATES PATENT OFFICE.

AID COLLINS, OF NEW VIENNA, OHIO.

IMPROVEMENT IN DEVICES FOR REMOVING DIRT, &c., FROM STEAM-BOILERS.

Specification forming part of Letters Patent No. **208,794**, dated October 8, 1878; application filed August 31, 1878.

To all whom it may concern:

Be it known that I, AID COLLINS, of New Vienna, Clinton county, Ohio, have invented certain new and useful Improvements in Devices for Removing Dirt and Sediment from Steam-Boilers; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms a part of this specification, and which represents a side view of a steam-boiler provided with my improvement.

In the said drawing, A represents the mason-work of the "setting," and B the boiler. These are of the usual form.

C is the ordinary mud-drum, extended below the boiler back of the grate, and consisting of the transverse horizontal drum or cylinder C, connected to the bottom of the boiler by the upright leg C′.

In the upper part of the boiler I place a shallow receptacle, D, which opens into a pipe, E, communicating with the upright settling-chamber F, located at any convenient point outside of the boiler, preferably as shown in the drawing.

The shallow receptacle or basin D, it will be noticed, is inclined at an angle to the horizon. It is thus inclined in order that the rise and fall of the water may not so readily submerge and denude it. The incline gives several inches play to the surface-line, as will be readily understood. This basin catches the loose scale, sediment, and dirt which the ebullition casts to the surface, and the pipe E carries the same outside of the boiler to the settling-chamber F, above mentioned.

The settling-chamber is made in the form of an upright cylinder. It may, however, be of other form, if desired, and is high enough to give ample time for its contents to settle tranquilly. The inflow-pipe E, carrying the dirt-charged hot water, enters this chamber at the top, and is carried down, as shown in the drawing, to near the bottom of the chamber.

An outflow-pipe, G, leads from the upper part of the settling-chamber to the lower part of the boiler, preferably to the mud-drum, where it assists in warming the feed-water. Both these pipes E and G are furnished with regulating and cut-off valves.

The operation is as follows: The surface-water, which is, of course, always the warmest, is forced by the pressure into the pipe E, being discharged into the settling-chamber near the bottom. This settling-chamber being solidly full of water, no agitation of any consequence exists within it, and hence the heavy particles of dirt, scale, &c., either remain at the bottom where deposited, or, if they rise with the current, fall back again to the bottom and remain there, while the water, freed from its heavy impurities, flows out at the pipe G to the coldest part of the boiler. This taking of the water from the hottest and returning it to the coldest part of the boiler serves to keep up an automatic circulation through the settling-chamber.

When a quantity of sediment has collected in the bottom of the settling-chamber the blow-off cock H may be opened, when the boiler-pressure will blow the dirt all out.

Of course, it will happen sometimes that foreign matter will be found in some kinds of water which will be lighter than the water, and, floating, will collect in the upper part of the settling-chamber. To provide for this, I sometimes insert a blow-off cock in the upper part of said chamber.

The pipe E, instead of passing down through the chamber, may pass outside and enter at the proper point through the side wall; but I prefer to have it pass through the chamber, because heat is thus saved and general convenience thus consulted, and I think it operates better thus.

I claim—

1. The upright settling-chamber having the inflow at the bottom and the outflow at the top, all constructed and arranged substantially as specified.

2. The upright settling-chamber having an inflow-pipe leading down through the water from the top to near the bottom, and an outflow-pipe near the top, constructed and arranged substantially as set forth.

3. The combination, with the settling-chamber, of the inflow-pipe leading down to near the bottom, the outflow-pipe near the top, and a blow-off cock at the bottom, constructed and arranged substantially as described and shown.

4. The combination, with the pipe E, of the shallow inclined basin or receptacle D, constructed and arranged substantially as specified.

Witnesses: AID COLLINS.

JOHN BELL,

H. BOLEMAN.