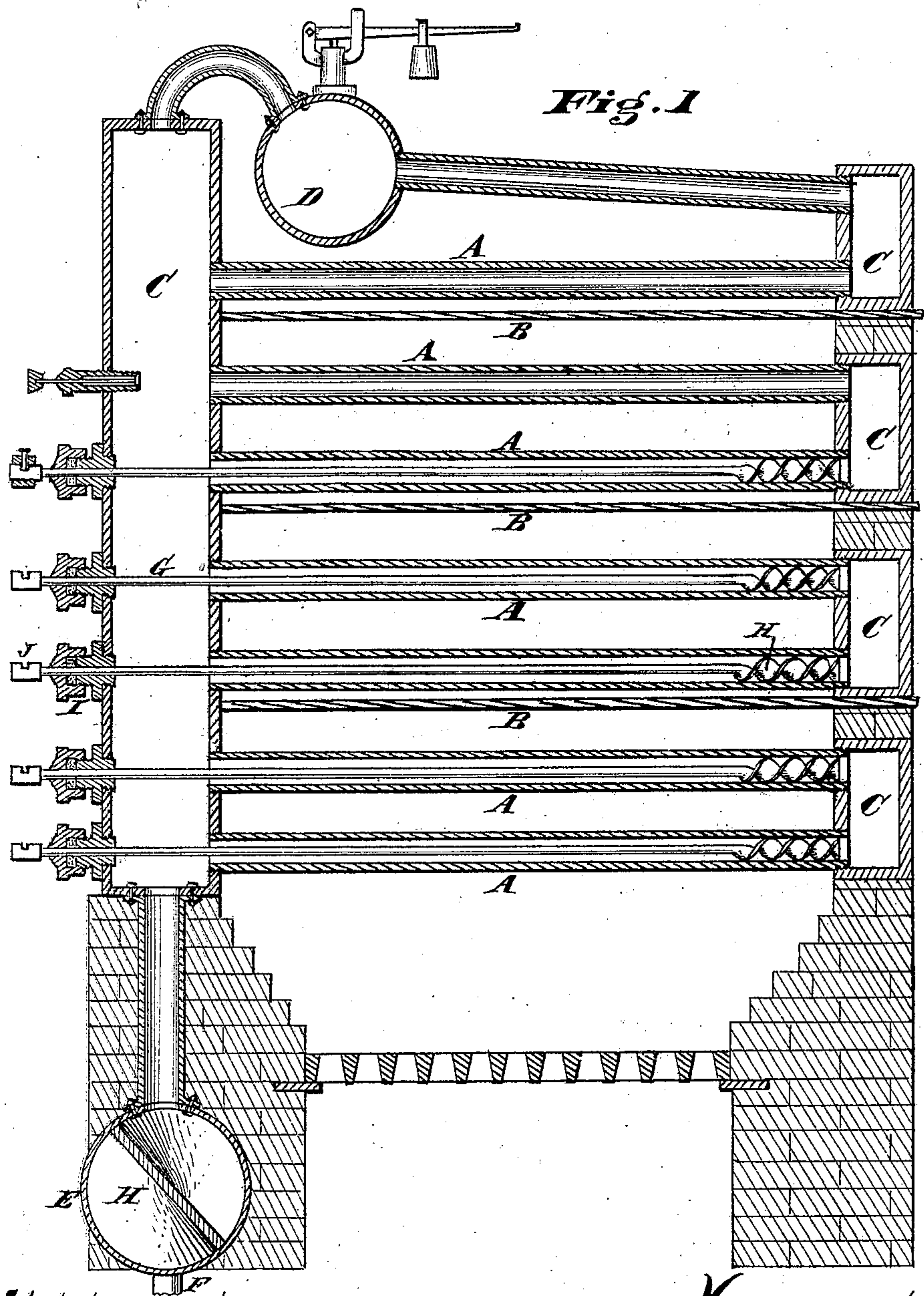


G. HICKS.  
Boiler-Cleaners.

No. 150,038.

Patented April 21, 1874.



Attest

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*George Hicks*

*By Y. Millward*

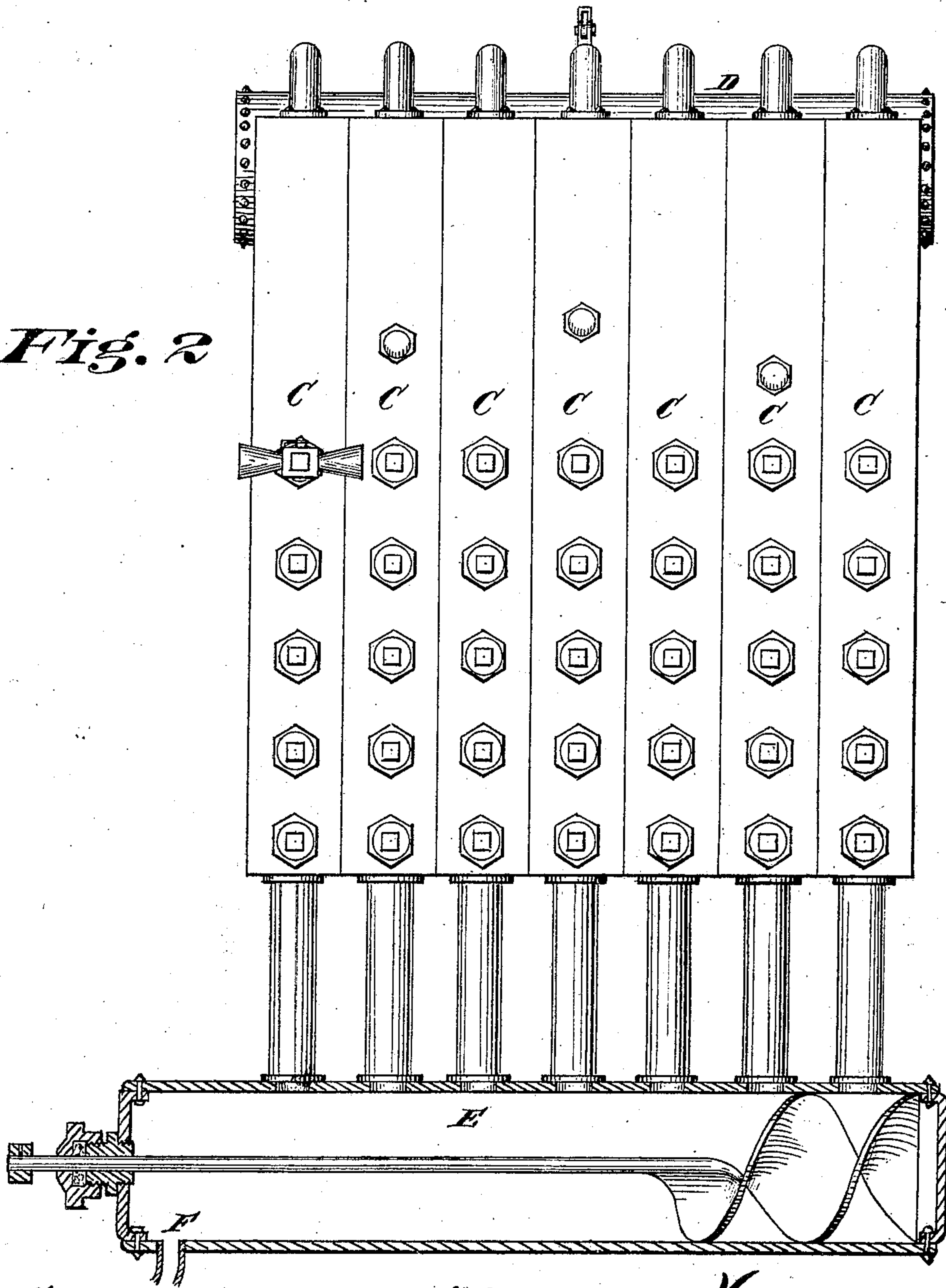
*Attorney*

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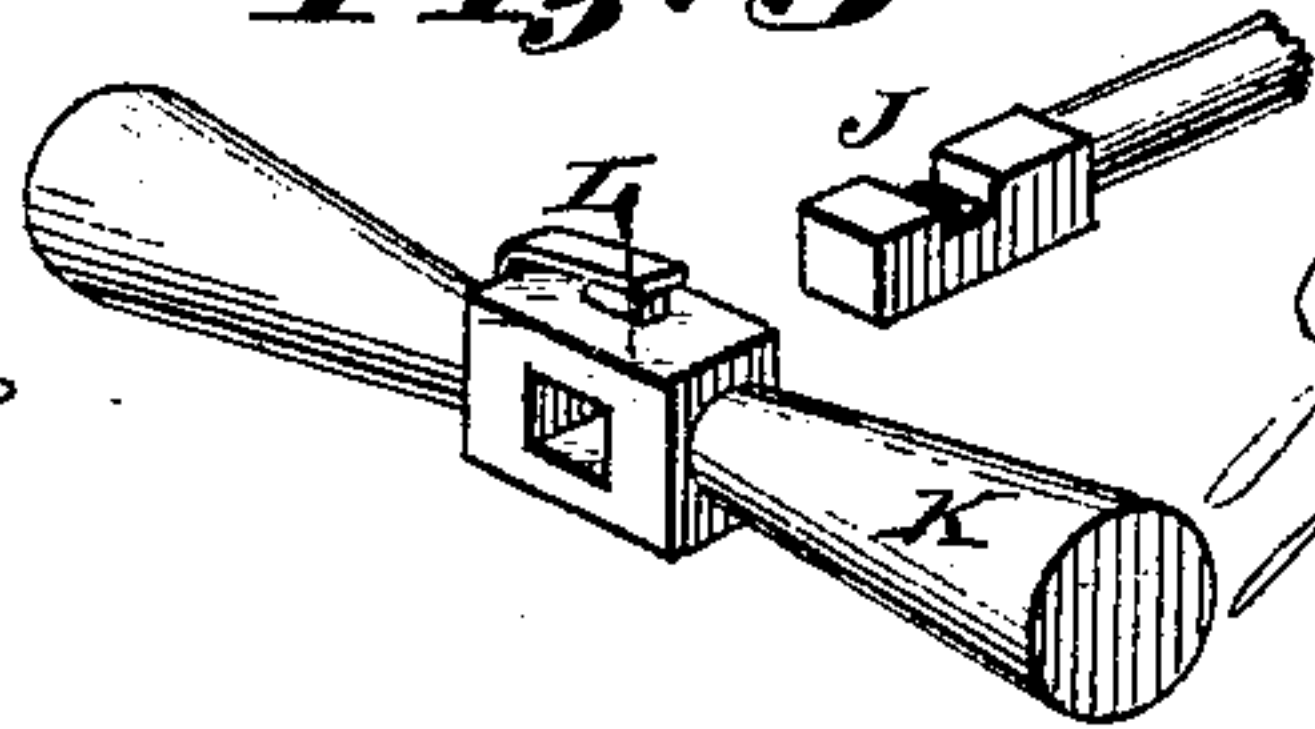
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*Fig. 2*



*Fig. 3*



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# UNITED STATES PATENT OFFICE.

GEORGE HICKS, OF CINCINNATI, OHIO.

## IMPROVEMENT IN BOILER-CLEANERS.

Specification forming part of Letters Patent No. **150,038**, dated April 21, 1874; application filed March 19, 1874.

*To all whom it may concern:*

Be it known that I, GEORGE HICKS, of Cincinnati, Hamilton county, State of Ohio, have invented a certain new and useful Improvement in Tubular Steam-Boilers, of which the following is a specification:

My invention relates to devices for cleaning the incrustation and sediment from the interior of the tubes composing the well-known character of boiler in which the water occupies the interior of the tubes; and my invention consists of permanent cleaners, which occupy continuously the interior of the tubes, and are formed spirally, the edges of the spiral fitting snugly the bore of the tube, so that the longitudinal motion to be given to the cleaners shall operate to cause the edges of the spiral to scrape off the incrustation or sediment from the tubes, the sides of the spiral also serving to assist in the generation of the steam by giving a rotary motion to the water, so as to compel the heaviest and coldest to hug the outer part of the tube.

Figure 1 is a vertical section of a tubular steam-boiler in which my cleaners are attached. Fig. 2 is an end view of the same with the mud-drum in section, and Fig. 3 represents detached views of the handle and shank of the cleaner-rods.

The tubes A are connected so as to compose a steam-boiler in the ordinary way, diaphragms B being used to direct the gases backward and forward from front to rear of the boiler, space being left at the ends of the diaphragms, in the ordinary way, for the upward passage of the gases. The tubes are connected together by section-heads C, connecting with the steam-drum D at the upper end, and with the mud-drum E at the lower end. From this mud-drum all the material cleaned out from the tubes is blown off through pipe F, governed in the usual way by a valve. To those of the tubes A which

are exposed to the water, and to the mud-drum E, I fit my cleaners, the construction of which is as follows: G is a round rod, fitted or formed at the inner end with a spiral blade, H, the periphery of which is made to snugly fit the interior of the tube, as shown in Figs. 1 and 2. The outer end of each rod works through a stuffing-box, I, in the section-head C, and is formed at the end with a peculiar-shaped shank, for the attachment of the handle, by which the cleaners may be drawn backward and forward in the tubes. The shanks are preferably square, and have a notch, J, cut in them, as shown. One handle, K, is used to fit either of the shanks, the handle having a square socket to snugly fit the shank, and a spring-catch, L, to engage with the notch J.

It will be seen that in the operation of the boiler with these cleaners in place, the spiral wings H will give the water a rotary motion, which will assist in the generation of steam by throwing the coldest water in contact with the tube, and that at any time, when deposits in the tubes are suspected, the rods G can be drawn out by the handle K, so as to cause the outer edge of the spiral H to scrape off the deposit, the material thus cleaned off being forced to fall into the mud-drum E, from whence it may be scraped off by spiral H, and blown off at pipe F.

I claim—

In combination with the tubes of the boiler and the stuffing-boxes I, the rods G, fitted at the ends with spiral wings H, substantially in the manner and for the purpose specified.

In testimony of which invention I hereunto set my hand.

GEORGE HICKS.

Witnesses:

R. M. HUNTER,  
J. L. WARTMANN.