G. H. NOYES.

BOILER-FLUE SCRAPER.

No. 192,786. Patented July 3, 1877.

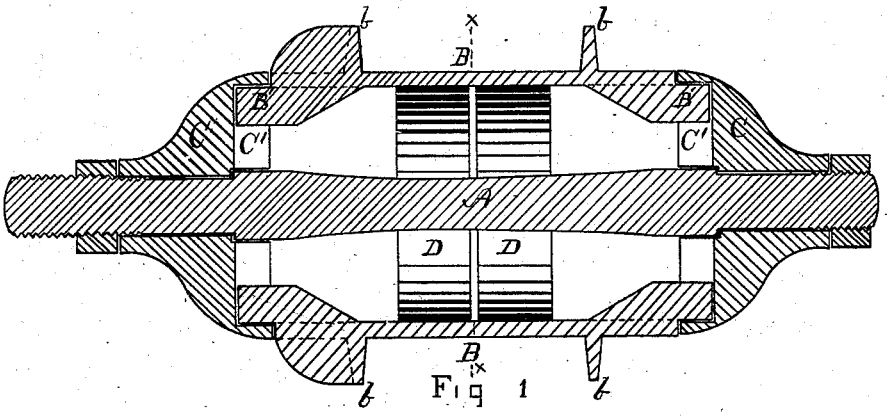

Fig 1

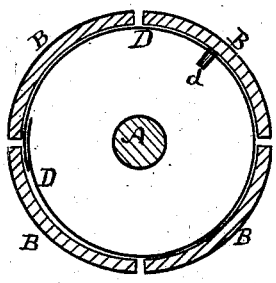

Fig 2

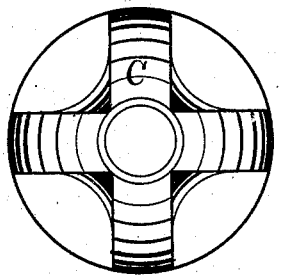

Fig 4

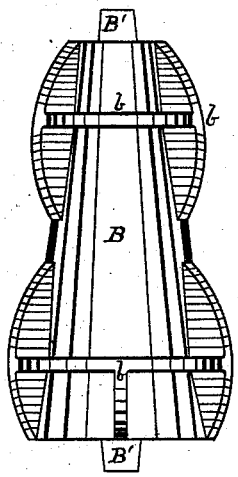

Fig 3

Witnesses

Geo. A. Strathearn

W. H. Burgess

Inventor

George H. Noyes

by Simpson & Hallock

attys.

UNITED STATES PATENT OFFICE.

GEORGE H. NOYES, OF ERIE, PENNSYLVANIA.

IMPROVEMENT IN BOILER-FLUE SCRAPERS.

Specification forming part of Letters Patent No. **192,786**, dated July 3, 1877; application filed June 4, 1877.

To all whom it may concern:

Be it known that I, GEORGE H. NOYES, of Erie, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Steam-Boiler-Flue Scrapers; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the construction of devices known as flue-scrapers, which are used in removing the deposits made in the flues of steam-boilers.

The object of my invention is to so construct a flue-scraper as to have its sides flexible, so as to adjust it to various-sized flues; also to so form it that it shall present a continuous scraping-surface. Another object aimed at by me is cheapness of construction, also durability, and facility of repair.

The accompanying drawing shows my invention as follows:

Figure 1 is a longitudinal section of my device. Fig. 2 is a transverse section taken on the line *x x*, Fig. 1. Fig. 3 is a top view of one of the rib-pieces detached. Fig. 4 is an end view of one of the end pieces or caps.

The construction of my device is as follows:

A is the central rod or shaft. B B B B are rib-pieces, which together form the outer shell of the body. These ribs are provided at their ends with tenons B′, and on their outer faces they have fin-like lugs *b b b*, so arranged as to present a sharp surface for scraping. These ribs B, with their lugs and tenons and fins, are cast in one solid piece.

Each rib-piece is narrower at one end than the other, and when in place the narrow end of one piece is next to the broad end of the other. This arrangement causes the scraping-fins *b* to break joint, so that, while the shell is composed of ribs which have wide spaces between them, there is still a continuous scraping-surface presented to the inner surface of the flue.

The ribs are held in place by caps C at each end, which have mortises C′, which receive the tenons B′. The mortises are sufficiently long to allow the ribs to be able to recede toward the bar A. The ribs are kept distended and made flexible in their action by means of springs D D. These springs are made of thin bars of steel, bent into a coil or circle. In Fig. 1 an elevation is shown of half of the springs, and in Fig. 2 a side view of the spring is shown, showing its construction. To prevent these springs getting out of place each spring is perforated at some point, and two of the four ribs are provided with lugs *d*, which enter the perforation of the spring, and keep the spring in place. The caps C cover the whole end of the shell, and prevent dislodged matter in the flue from working through the scraper. The caps being thus formed, the scrapers push all dislodged matter before them out of the flue.

I am aware that flue-scrapers have been heretofore made in which there were the ribs and caps and center-shaft; but the ribs were not made narrower at one end than the other, and placed in the scraper as I place them. The caps, I believe, were not complete disks, closing the end of the shell, as set forth above. The springs used heretofore, I believe, have been set lengthwise of the rib, and each rib has been provided with its own spring, while my springs act alike on all the ribs. Therefore,

What I claim as new is—

1. The shell of a boiler-flue scraper, made of ribs B, which are narrower at one end than the other, as and for the purposes mentioned.

2. In combination with the tapering ribs B B B B the disk-shaped caps C, as shown, and for the purposes mentioned.

3. The springs D, in combination with the ribs B, said springs having a bearing upon each of said ribs, as shown, and for the purposes mentioned.

4. The combination, within a boiler-flue scraper, of the shaft A, ribs B B B B, made tapering, and arranged as described, the disk-shaped caps C C, and springs D D, said parts being arranged and operating together as shown, and for the purposes mentioned.

In testimony whereof I, the said GEORGE H. NOYES, have hereunto set my hand.

GEORGE H. NOYES.

Witnesses:

JNO. K. HALLOCK,

ADDISON HILLS.