(No Model.)

G. R. FORD.

BOILER FLUE SCRAPER.

No. 458,892. Patented Sept. 1, 1891.

Fig. 1.

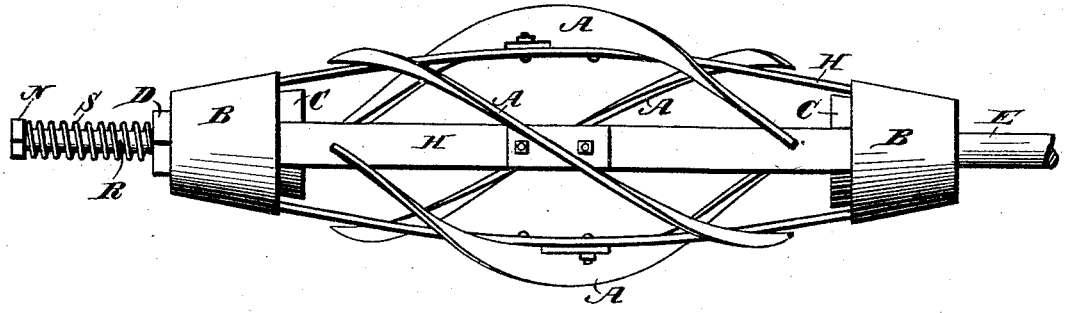
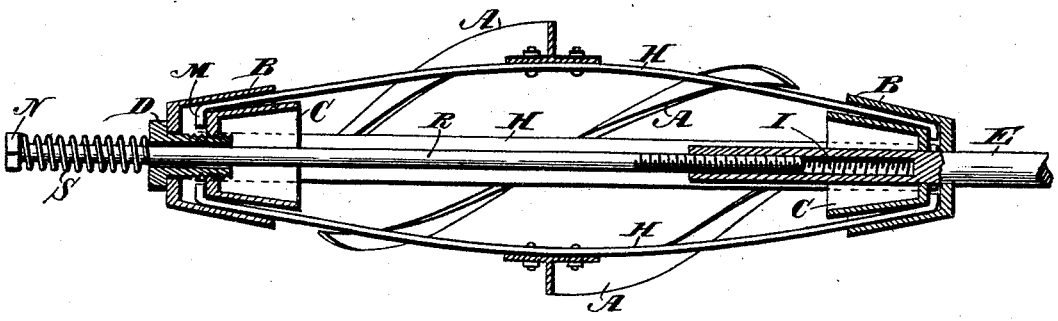


Fig. 2.



Witnesses.
Robt Ernett.
Albert W. Brown.

Inventor.
George R. Ford.
By
Edward Taggart.
Atty.

UNITED STATES PATENT OFFICE.

GEORGE R. FORD, OF GRAND RAPIDS, MICHIGAN.

BOILER-FLUE SCRAPER.

SPECIFICATION forming part of Letters Patent No. 458,892, dated September 1, 1891.

Application filed March 12, 1891. Serial No. 384,773. (No model.)

To all whom it may concern:

Be it known that I, GEORGE R. FORD, a citizen of the United States, residing at the city of Grand Rapids, in the county of Kent and State of Michigan, have invented a certain new and useful Boiler-Flue Scraper, of which the following is a specification.

My invention relates to that class of flue-scrapers having a series of semi-elliptical springs bearing curved scrapers, the whole supported on a shank.

The object of my invention is to improve the prior devices of this character; and to this end it consists in the features of construction and the combination or arrangement of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 shows a side view of a flue-scraper constructed in accordance with my invention, and Fig. 2 shows a sectional view of the same.

Similar letters refer to similar parts throughout both views.

The scraper when constructed is supported on a shank which may be attached to a handle or pole. This shank is shown by E and extends through the ferrule and thimble and extends into the open space between the semi-elliptical springs, as shown in Fig. 2, and is provided at its inner end with a female screw. (Shown by I.) H H, &c., show the semi-elliptical springs, each spring being bent at an angle, as shown by M, so as to fit between the ferrule and thimble. B shows the ferrule, and C thimble. The position of the springs H with reference to the ferrule and thimble is shown in Fig. 2, and each of the springs H bears a scraper, which scrapers are shown by A A, &c. The scrapers may be attached to the springs by means of bolts, rivets, or any suitable means, they being attached near the center of the scraper to a point near the center of the spring and the ends of the scrapers being left free.

D is a hollow bolt, which engages with a screw-thread in the thimble, drawing the thimble into the ferrule B and securely clasping the ends of the semi-elliptical springs. This screw-bolt is provided with a head, in order to form a bearing against the outer surface of the ferrule B. The screw-bolt D is provided with an opening, through which passes the rod R, which rod R is provided with a screw-thread engaging with the thread on the shank. This rod R is provided with a head N, which is preferably made square or hexagonal in order to adapt it to engage with a wrench.

S is a spiral spring surrounding the rod R, adapted to be compressed between the head N of the rod R and the hollow bolt D. The object of the rod R is to compress or draw toward each other the ends of the semi-elliptical springs, thereby separating the same at their central portions in order to adapt them to fit flues of different sizes. By the use of the rod R there is never any point extending out beyond the head N of the rod. The spring S prevents the scraper from having too great rigidity, and allows the scrapers to properly adjust themselves whenever they are driven in contact with obstructions within the flues.

Instead of using the bolt D at the opposite end of the scraper, the shank E may be provided with a screw-thread and adapted to compress the ends of the semi-elliptical springs between the outer ferrule and the inner thimble.

By means of my invention the flue-scraper can be adapted to flues of different sizes and can be used for the purpose of compensating for any wear which may be occasioned upon the outer surface of the scrapers proper by use. In the drawings I have shown a flue-scraper provided with four semi-elliptical springs. It is evident that the number may be varied; but I consider four sufficient for all ordinary purposes.

Having thus described my invention, what I claim to have invented, and desire to secure by Letters Patent, is—

1. In a boiler-flue scraper, the combination of a shank, semi-elliptical springs held in position by means of an outer ferrule and an inner thimble at both ends, a hollow bolt adapted to secure the outer ferrule to the inner thimble at one end of the boiler-flue scraper, a screw bolt or rod extending through said hollow attaching-bolt and engaging with the shank for the purpose of expanding the semi-elliptical springs, substantially as described.

2. The combination, in a flue-scraper, of a shank, a hollow bolt, an outer ferrule and an

inner thimble supported by the shank, an outer ferrule and an inner thimble engaged with the hollow bolt, the semi-elliptical springs having their extremities secured between the thimbles and ferrules, and a screw-bolt passing through the hollow bolt, exerting a pressure thereupon and in screw-threaded engagement with the shank for the purpose of expanding the semi-elliptical springs between their supported extremities, substantially as described.

3. The combination, in a flue-scraper, of a shank, a hollow bolt, an outer ferrule and an inner thimble supported by the shank, an outer ferrule and an inner thimble engaged with the hollow bolt, the semi-elliptical springs having their extremities secured between the ferrules and thimbles, a screw-bolt having a head and extending through the hollow bolt into screw-threaded engagement with the shank, and a spring interposed between the head of the screw-bolt and the head of the hollow bolt, substantially as described.

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

GEORGE R. FORD. [L. S.]

Witnesses:

EDWARD TAGGART,

CLINTON L. DAYTON.