(Model.)

C. G. DAVISON.

FLUE CLEANER FOR STEAM BOILERS.

No. 379,564. Patented Mar. 20, 1888.

Fig. 1.

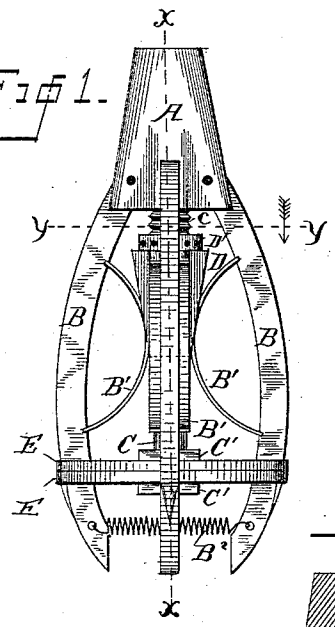


Fig. 2.

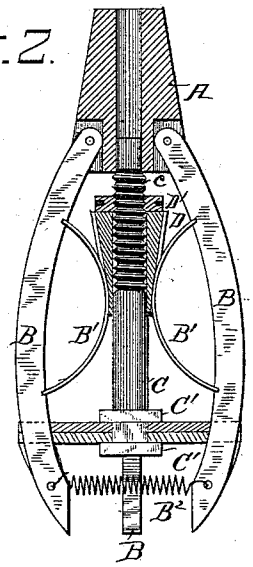


Fig. 3.

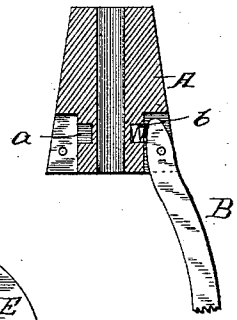


Fig. 4.

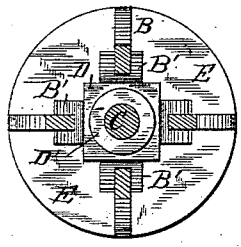


Fig. 5.

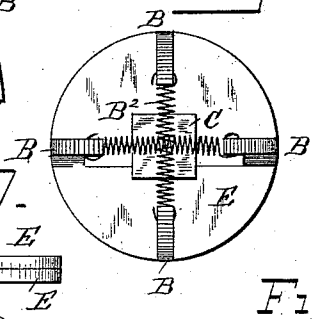


Fig. 7.

Fig. 6.

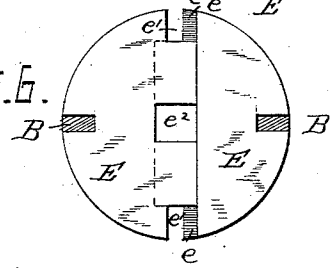
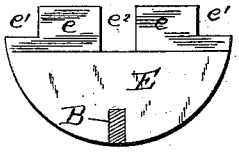


Fig. 8.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES G. DAVISON, OF UNION CITY, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO D. W. CAMP, OF SAME PLACE.

FLUE-CLEANER FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 379,564, dated March 20, 1888.

Application filed May 3, 1887. Serial No. 236,946. (Model.)

To all whom it may concern:

Be it known that I, CHARLES G. DAVISON, a citizen of the United States, residing at Union City, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Flue-Cleaners for Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to devices for cleaning out the tubular flues of steam-boilers; and it consists in certain improvements in the construction thereof, as will be hereinafter fully set forth, and pointed out in the claims.

My device is illustrated in the accompanying drawings, as follows:

Figure 1 is a side elevation of the device. Fig. 2 is a longitudinal section on the line *x x* in Fig. 1, with the arms, stem, and springs in elevation. Fig. 3 is a section of the head A, as in Fig. 2, and shows an alternative construction. Fig. 4 is a transverse section on the line *y y* in Fig. 1, looking in the direction indicated by the arrow. Fig. 5 is a front or end elevation. Fig. 6 is a view similar to Fig. 5, but shows only the scrapers, two of the arms B being in section and two removed to show the construction. Fig. 7 is a view of the edges of the scrapers with the arms omitted. Fig. 8 is an end view of one of the scrapers with its arms in section.

Letters of reference indicate parts as follows: A marks the head; B, the arms; B′, the springs which extend the arms; B^2, the springs which contract the arms; C, the stem; C′, the head of the stem; D, an adjusting-wedge; D′, an adjusting-nut; E E, the scrapers.

The construction is as follows: The head A is made of cast metal and is provided with mortises to receive the arms B, and a central opening for the insertion of a handle and the stem C. The stem C is screw-threaded, as at *c*, and has a square recessed head, C′. On each of the arms B are fixed scrapers, which are semicircular in form, as shown in Fig. 8. Each of these scrapers on their straight side have notches *e′ e′*, in which are secured the arms of the adjoining scraper, and a notch, e^2, which embraces the square head C′, and also a rabbet, *e*, for allowing the opposite scraper to overlap it. Fig. 6 shows two scrapers thus overlapped. Fig. 7 is an edge view of the scrapers as they set upon each other.

It will be seen that the scrapers form a disk which will draw or push from the flue the matter the edges of the scrapers dislodge from the wall of the flue. It will also be seen that the notch e^2 of each scraper fits over the small square part of the head C′ of the stem like a wrench on a nut, and that while the scrapers can move toward and from the stem they cannot be twisted or turned by any torsional action of the cleaner when in the flue. The springs B′, which serve to spread the arms and keep the scrapers against the wall of the flue, are flat bow springs with the backs seated on the wedge D, and their ends in engagement with the arms. The wedge D is moved so as to spread the arms B more or less by a nut, D′, which screws onto the screw-thread *c* on the stem. The springs B^2 hold the arms down against the springs B′. In Fig. 3 I show a substitute in the spring *b* in the recess *a* for the springs B^2.

I am aware that flue-cleaners have heretofore been made having a head, a stem, arms, and scrapers on said arms, and springs to hold said arms out, and that a conical wedge has been used to spread the arms of a flue-cleaner. For example, see Patents Nos. 92,790, 138,465, 144,046, 146,178, 187,255, and 243,574; but none of these constructions embody my invention, and I do not wish to be understood as claiming any of the features shown in said patents.

What I claim as new is—

1. In a flue-cleaner for steam-boilers, the combination, with the head A, and stem C, having screw-thread *c* thereon and the recessed head C′ at its outer end, of the pivoted arms B, having semicircular scrapers E thereon, with notches e^2, which embrace the recessed part of the stem-head C′, the bow springs B′, the expanding wedge D, adjusting-nut D′, for moving said wedge, and springs for holding the arms B inwardly.

2. In a flue-cleaner for steam-boilers, the combination, with the head A, and stem C, hav-

ing a screw-thread, *c*, thereon, of the pivoted arms B, carrying scrapers, the expanding springs B′, the expanding wedge D, acting against the said expanding springs, the adjusting-nut D′, and springs for holding the arms inwardly.

3. In a flue-cleaner for steam-boilers, the combination, with the head A, and stem C, having at its outer end the square head C′, of the pivoted arms B, having scrapers thereon which overlap each other, substantially as described, and embrace the square head C′ on the stem C, and the expanding springs B′.

In testimony whereof I affix my signature in presence of two witnesses.

C. G. DAVISON.

Witnesses:
JNO. K. HALLOCK,
WM. A. JONES.