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PATENTED JAN. 21, 1908.

S. G. BLADH.
BOILER FLUE CLEANER.
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Fig. 5.

Fig. 4.

Fig. 1.

Fig. 3.

Fig. 6.

Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

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BOILER-FLUE CLEANER.

No. 877,395.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, the undersigned, SVEN GUSTAF BLADH, naval engineer, 10 Borgmästarebron, Carlskrona, Sweden, have invented certain new and useful Improvements in Boiler-Flue Cleaners; 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 ap-
10 pertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

15 This invention relates to and has for an object to, provide an improved boiler flue scraper.

The object sought to be obtained by the invention is to provide means for removing
20 from boiler tubes or flues such soot as is collected on or between the same; and to remove it in a more expeditious and thorough manner than has been possible with the implements now in use. By the thorough removal of the soot the efficiency of the boiler
25 will be enhanced.

This invention is particularly applicable to boilers of the Yarrow and Bellville pattern.

30 The improved scraper will be made out of elastic material, which may be steel wires or threads held in proper position for engaging the sides and top and bottom of the tubes.

The improved scraper is illustrated in the accompanying drawings, wherein

35 Figure 1 is an edge view of the scraper showing this in position between a series of tubes. Fig. 2 is a face view of a portion of the scraper illustrated in Fig. 1. Fig. 3 is an end view of Fig. 2. Figs. 1, 2 and 3 are projections one from the other. Fig. 4 is a
40 broken away face view of the plates or strips constituting the body portion of the scraper. Fig. 5 is an edge view of the parts shown in Fig. 4; and Fig. 6 is a cross section of the
45 parts shown in Fig. 4. Figs. 4, 5 and 6 are projections one of the other and in these figures the elastic threads are not illustrated. These latter views Figs. 4, 5 and 6, are on
50 a larger scale than are the former views Figs. 1, 2 and 3.

Between the two longitudinal strips 1 and 2, preferably made of sheet metal and which constitute the body portion of the scraper, are secured elastic threads 3, which may be
55 of some suitable material, as for instance,

steel wires arranged parallel to each other and normally all lying in the same plane; and disposed in a direction transverse to, and in the present instance substantially at right angles to the longitudinal direction of the
60 strips 1 and 2. These threads 3 may be made of very fine wire, the diameter being preferably about 0.5 mm., and of a length adapted to the size of the scraper and the distance between the tubes or flues with which
65 it is to be employed. The threads 3 can be fastened to one of the strips or between these in some suitable manner, for instance by soldering or by bowing the strips, etc.; sometimes it will even be sufficient to use merely one
70 strip, the one to which the threads are affixed in a suitable way. In case two strips are used then such strips are secured together so that the adjacent edges of the strips will not lie in the same plane. The strips are shifted
75 transversely about 2 mm. one from the other. That is to say the said strips are preferably of equal width and are placed in such relation that their edges are substantially parallel and one edge of each strip ex-
80 tends beyond the adjacent edge of the other strip. The strips may be held together by riveting and the rivets may be placed at certain fixed distances one from the other. A row of rivets is illustrated along each edge
85 and arranged so that longitudinally of the strip a rivet of one row will be disposed midway between two rivets of the other row.

At suitable portions, preferably between the rivets adjacent to such edge the over-
90 hanging or projecting edge of each strip is bent against the threads and a little over the edge of the other strip. This bending may preferably take place so that the deflection of the threads upon the respective sides does
95 not occur in the same transverse plane. By these means the threads are bent out to the side at these places so that they will conform to the shape and arrangement of the tubes of the boiler, see Fig. 1. Of course this bend-
100 ing of the threads may be effected in some other manner without departing from the spirit of my invention. It will be seen that the threads are so bent out to the sides at their outer parts so as to reach over half of
105 the diameter of the flue at both sides when the scraper is inserted between the flues. By this means the scraping and cleaning action will be very efficient.

Having now particularly described and as- 110

certained the nature of this said invention and in what manner the same is to be performed I declare that what I claim is:

1. In a boiler tube scraper, the combination of a pair of strips of sheet metal of substantially equal width, the edges being disposed in parallel relation, and one edge of each strip extending beyond the adjacent edge of the other strip, and elastic threads between said strips and extending beyond the edges of the same, the extending edge of each strip being bent over the adjacent edge of the other strip at each of a number of places, the said elastic threads at said places being bent out of their normal plane.

2. In a boiler tube scraper, the combination with a pair of strips of sheet metal of equal width, the edges being substantially parallel and one edge of each strip extending beyond the adjacent edge of the other strip,

and elastic threads between said strips and extending beyond the edges of the same, a row of rivets along each edge and passing through said strips, for holding these together upon said threads, said rivets being arranged so that longitudinally of the strip a rivet of one row will be disposed midway between two rivets of the other row, each of the said extending strip edges being bent over the adjacent edge of the other strip at positions between the rivets along such edge and thereby bending the said elastic threads out of their normal plane.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

SVEN GUSTAF BLADH.

Witnesses:

C. M. LAWDIN,
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