

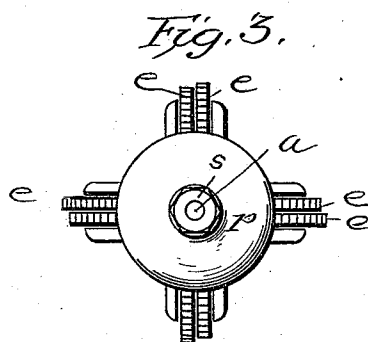
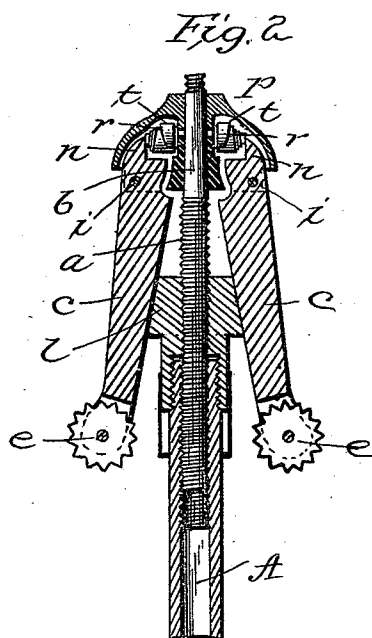
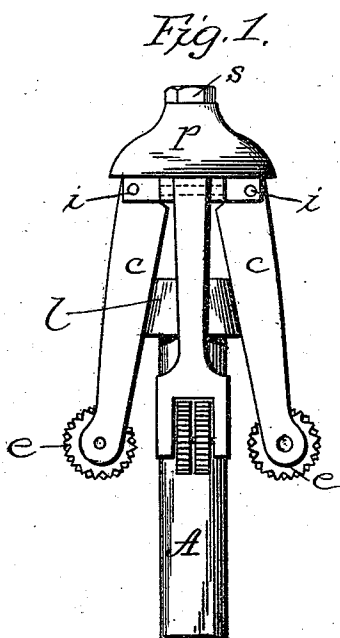
(No Model.)

S. & L. C. ABRAHAM.

RAKE OR SCRAPER FOR CLEANING BOILER TUBES.

No. 514,111.

Patented Feb. 6, 1894.



Attest
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UNITED STATES PATENT OFFICE.

SAMUEL ABRAHAM AND LEWIS C. ABRAHAM, OF BRUSSELS, BELGIUM.

RAKE OR SCRAPER FOR CLEANING BOILER-TUBES.

SPECIFICATION forming part of Letters Patent No. 514,111, dated February 6, 1894.

Application filed November 30, 1892. Serial No. 453,572. (No model.) Patented in Belgium September 23, 1892, No. 101,492; in France September 23, 1892, No. 224,511, and in England September 24, 1892, No. 17,069.

To all whom it may concern:

Be it known that we, SAMUEL ABRAHAM and LEWIS CRAWFORD ABRAHAM, citizens of the United States, both residing at Brussels, Belgium, have invented new and useful Improvements in Rakes or Scrapers for Cleaning Boiler-Tubes, (for which we have applied for patents in Belgium, No. 101,492, bearing date September 23, 1892; in France, No. 224,511, bearing date September 23, 1892, and in Great Britain, No. 17,069, bearing date September 24, 1892,) of which the following is a specification.

This invention relates to an adjustable rake or scraper designed for cleaning boiler tubes and especially for removing sediment or calcareous deposits therefrom.

It comprises essentially a series of levers pivoted at one end to a circular boss and carrying at their other end small wheels having teeth. The circular boss is mounted on one end of a central stem the other end of which is screw-threaded to fit into a screw-threaded handle having an external conical sleeve or enlarged part against which the pivoted levers are constantly pressed by the action of springs located in the circular boss. By simply turning the handle of the scraper in one or the other direction so as to screw it farther on or unscrew it more or less from the central screw-threaded stem, the knives or toothed wheels on the free ends of the levers are made to move away from or to move nearer to, the axis of the scraper thus increasing or reducing at will the diameter of the acting part of the rake or scraper. By this means the scraper can be used for cleaning tubes or pipes of different internal diameters and furthermore while cleaning a tube the diameter of the scraper can be increased in proportion as the internal diameter of the tube becomes enlarged in consequence of the removal of the sediment. The knives or toothed wheels carried by the levers can easily be removed and replaced.

In the accompanying drawings:—Figures 1, 2 and 3 show respectively an elevation, a central vertical section and a plan view of our invention.

The boss *b* is fixed in place on the end of the screw-threaded stem *a*, which latter is

screwed into the handle *A* of the scraper. The end of the handle *A* in which is inserted the screw-threaded stem is furnished with a conical sleeve or with an enlarged part *l* 55 which becomes gradually thinner toward the end in which the screw-threaded stem *a* is inserted. The levers *c c* are fixed and pivoted in the grooves of the boss *b* by means of pins *i* passing through the heads of the same and 60 the inner ends of the said levers bear against the sleeve or conical part *l* at the end of the handle *A*.

At the top of the head of the levers *c* there is a projecting part *n* against the inner face 65 of which there presses the end of a spiral spring *r* located in the upper part of the groove of the boss *b*. These springs *r* have a constant tendency to press outwardly that part of the head of the levers situated above 70 their pivot *i* and thus press the inner side of the levers against the sleeve or conical part *l* of the handle. A cap *p* maintained in place by a nut *s* screwed on the end of the central stem *a* covers the top of the boss and of the 75 head of the levers and is furnished with small internal cavities *t, t* for the reception of the upper part of the springs which are thus held in place in small chambers formed by the boss, the interior of the cap and the project- 80 ing part on the head of the levers. When the handle *A* is turned in the requisite direction so as to give it a screwing movement on the screw-threaded central stem *a* the latter penetrates still farther into the handle *A*, and the 85 sleeve or conical part *l* moves toward the boss *b* and presses outwardly the lower part of the levers *c* against the action of the springs *r* of the boss thus moving the knives or toothed wheels *e* of the levers away from the axis of 90 the scraper and increasing the diameter of the acting portion of the scraper.

In order to diminish the diameter of the acting portion of the scraper the handle *A* is turned in the other direction, that is to say 95 in the direction for unscrewing the same from the central stem *a*; the sleeve or conical part *l* of the handle will then move away from the boss *b* and the knives *d* or toothed wheels *e* of the levers *c* will be moved nearer to the axis 100 of the scraper by the pressure of the springs *r* of the boss *b*.

We do not claim or limit ourselves to any particular form of knife.

What we claim as our invention, and desire to secure by Letters Patent, is—

- 5 In a rake or scraper for cleaning boiler tubes, the combination with the internally screw-threaded handle A having an external conical sleeve or enlarged part *l* and with the boss *b* fixed on the stem *a* screwed freely into
10 the handle A, of the levers *c* pivoted to the

boss *b* and carrying renewable scrapers, and springs *r*, located in the boss *b* and pressing the levers *c* against the sleeve or enlarged part *l* of the handle A as described.

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Witnesses:

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