

(No Model.)

S. ABRAHAM.

TUBE BRUSH.

No. 306,455.

Patented Oct. 14, 1884.

Fig. 1.

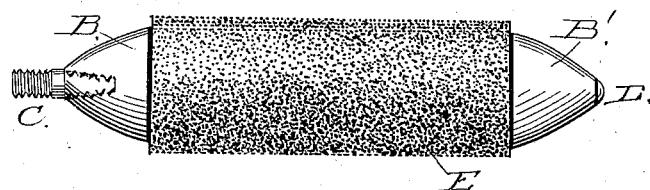


Fig. 2.

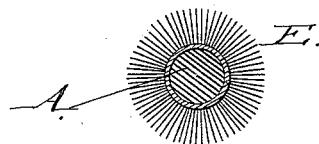


Fig. 3.

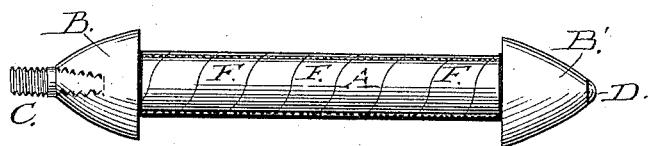
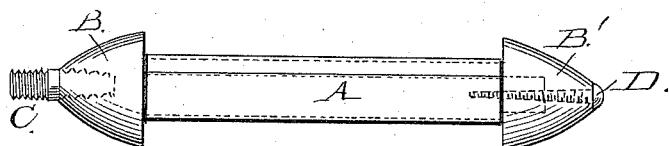


Fig. 4.



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# UNITED STATES PATENT OFFICE.

SAMUEL ABRAHAM, OF BRUSSELS, BELGIUM.

## TUBE-BRUSH.

### SPECIFICATION forming part of Letters Patent No. 306,455, dated October 14, 1884.

Application filed December 13, 1883. (No model.) Patented in England April 19, 1881, No. 3,604; in France March 13, 1882, No. 147,859; in Germany March 15, 1882, No. 20,878, and in Belgium March 15, 1882, No. 57,365.

*To all whom it may concern:*

Be it known that I, SAMUEL ABRAHAM, a citizen of the United States, residing at Brussels, Belgium, have invented a new and useful Improvement in Brushes for Cleaning Tubes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

10 Figure 1 is an elevation of my improved brush. Fig. 2 is a cross-section of the same. Figs. 3 and 4 are views illustrating the modes of manufacture.

The object of my invention is to improve 15 on the manufacture of round brushes—such as are used principally for cleaning out boiler-tubes; and it consists of the combination of devices, as hereinafter explained and claimed.

In order to enable others skilled in the art 20 to make and use my invention, I will proceed to describe the exact manner in which I have carried it out.

In the said drawings, A is the round central stock or core of the brush provided with 25 the conical ends B B'. The cone B is permanently attached to the core, and has secured in its apex a screw-threaded metal plug, C, for the attachment of a handle or rod. The cone B' is removable, and is secured in position 30 on the core by the screw D, the head of which forms the apex of the cone, to protect the cone from injury when coming in contact with obstructions in the tubes. The active portion of the brush is formed of iron, steel, 35 brass, or other suitable wire, E, secured in the

ordinary way to a backing of asbestos cloth cut in strips, F, and wound spirally around the core, as shown in Fig. 3; or the material may be cut in rectangular pieces and sewed together on their edges, so as to form a tube or 40 jacket fitting over the core A, as shown in Fig. 4. When this mode of manufacture is adopted, the cone B' is unscrewed and removed while the tube or jacket is slipped over the core, when the cone B' is again secured in 45 position.

The core and conical heads, when made of wood, should be rendered fire-proof, or approximately so, by any of the well-known means, or they may be covered with sheet-iron, tin, or 50 other metal, as a protection.

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

1. In a brush, the central stock or core, A, 55 provided with the conical head B, having the threaded metal plug C, and the conical head B', provided with an attaching-screw, D, in combination with the strips F, carrying the wire E, all constructed to operate substan- 60 tially as and for the purpose set forth.

2. In a brush for cleaning boiler-tubes, an asbestos-cloth backing, in combination with the wire E, as and for the purpose herein described.

SAMUEL ABRAHAM.

Witnesses:

R. J. LICHTENSTEIN,  
EVE WEBER.