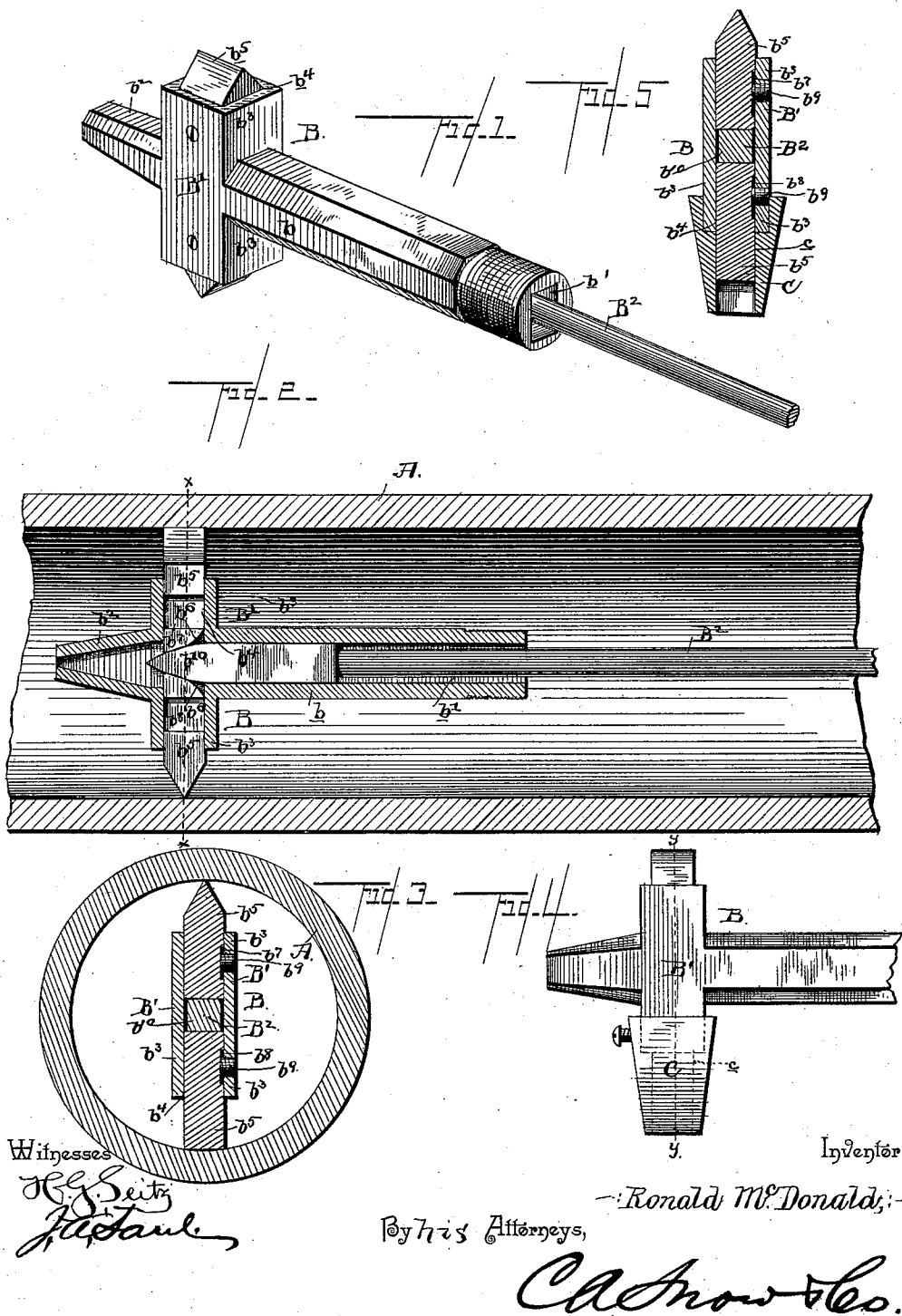


(No Model.)

R. McDONALD.
BOILER FLUE CLEANER.

No. 466,359.

Patented Jan. 5, 1892.



UNITED STATES PATENT OFFICE.

RONALD McDONALD, OF PICTOU, CANADA, ASSIGNOR OF ONE-HALF TO
THOMAS TANNER, OF SAME PLACE.

BOILER-FLUE CLEANER.

SPECIFICATION forming part of Letters Patent No. 466,359, dated January 5, 1892.

Application filed April 15, 1891. Serial No. 389,062. (No model.)

To all whom it may concern:

Be it known that I, RONALD McDONALD, a citizen of the United States, residing at Pictou, in the county of Pictou and Province of Nova Scotia, Canada, have invented a new and useful Boiler-Tube Cleaner, of which the following is a specification.

This invention is an improvement in tools for cleaning boiler-tubes, water-spaces in boilers which are comparatively inaccessible, and the like.

The object of the invention is to produce a simple, cheap, and effective device whereby the scales which ordinarily collect in boilers, their tubes, and other inaccessible places where water is heated may be removed from such places with little labor in the quickest possible time and without injury to the metal of which the boiler is made.

The invention has for further objects the simplification of tools of the class specified and reduction in the cost of their manufacture.

With these objects in view the invention resides in the various novel details of construction and in the combination of parts hereinafter fully described, and particularly pointed out in the claims.

In the drawings in which I have illustrated my invention and in which like letters of reference indicate corresponding parts, Figure 1 is a perspective view of the device. Fig. 2 is a sectional view of a boiler-tube, showing the device applied therein, the line of section passing longitudinally and vertically through the cleaning device. Fig. 3 is a vertical sectional view taken on the line *xx* of Fig. 2. Fig. 4 shows my device provided with an extension attachment. Fig. 5 is a cross-section on the line *yy* of Fig. 4.

In the drawings, the letter A designates a boiler-tube, and B the improved cleaning-tool. The tool B is composed of a casing B', which is approximately of the shape of a Roman cross, and a rammer B². The casing B' is provided with an opening extending along the axis of its longer arm *b*, which opening is rectangular in cross-section and is designated by the letter *b'*. The upper portion *b*² of the cross is reduced from a base corresponding in size with the cross-section of the longer arm

b to form a truncated pyramid. The opening *b'*, which is extended forward into the said upper portion *b*², is likewise reduced correspondingly. The cross-arms *b*³ have an opening *b*⁴ extending through them from end to end, the said opening communicating with the opening *b'*. Within the opening *b*⁴, at either end thereof, are placed the cutters *b*⁵. These cutters have their inner ends beveled or rounded, as shown at *b*⁶, and their upper surfaces are provided with elongated recesses *b*⁷ *b*⁸, for a purpose to be described. Through the body of the cross-arms extend screws *b*⁹, which are adapted to extend into the recesses *b*⁷ *b*⁸, and by impinging against the sides of said recesses act as stops to control the outward and inward movements of the cutters *b*⁵, and thus retain them within the opening *b*⁴. The rammer B² consists of a rod, which has upon its end the wedge-shaped head *b*¹⁰, which is of a shape and size to fit easily within the opening *b'*.

In using this device the casing *b'* is inserted within the boiler-tube or within any narrow portion of the boiler where the outer edges of the cutters *b*⁵ will nearly touch or touch the sides of said tube or of the boiler and the rammer thrust forward with some force between the inner beveled ends *b*⁶ of the cutters *b*⁵, thrusting the said cutters outward with force sufficient to break and loosen any scales or incrustation which may be upon the part of the boiler operated on. As the rammer B² is thrust forward its end may extend beyond the upper portion *b*² of the casing; and if such end of the rammer be sharpened it may be used beyond such point as a cutter, if necessary. It will be obvious that a series of short sharp blows may be given by means of my improved cutter to any contracted or small space within the boiler.

In case it is necessary to clean a portion of the boiler which is wider than the distance of the edges of the cutters *b*⁵ when thrust out to their greatest extent, an extension-piece C is secured upon one of the arms *b*³ to afford a bearing on one side, while the cutter *b*⁵ on the other side may break the scales. This extension-piece C is made to conform to the arms *b*³ and has an opening *c* extending through it likewise, in order to afford passage

for a cutter of sufficient length if it be desired to use one. Extension-pieces C may be secured by means of set-screws or other similar devices on both of the cross-arms b^3 , if necessary.

It is to be observed that the arm b of the casing may be provided with screw-threads upon its end for the purpose of connecting it with a tube in order to increase its length when necessary, and the length of the rammer-rod b^9 may be likewise lengthened when desirable.

It is to be observed that the tool may be made of any length and having cross-arms b^3 and cutters b^5 extending from said cross-arms, the edges of said cutters being of any suitable distance apart in order to accommodate the tool to the varying sizes of boilers and boiler-tubes.

The cross-arms b^3 may be provided with any other suitable extension device besides the particular form shown in the drawings and marked by the letter C.

I prefer to make the casing B' of brass or other similar metal and the rammer B^2 and the cutters b^5 of steel suitably sharpened at the ends and hardened.

It is to be understood that I may use equivalent structures, devices, and materials for those which have been pointed out and described.

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

1. In a boiler-cleaner, the combination of a casing having a longitudinal arm and oppositely-located cross-arms extending integrally therefrom, the interior bore of the longitudinal arm communicating with the axial bore of said cross-arms, reciprocating and sliding cutters located within said cross-arms and provided with elongated recesses in one side thereof and with oppositely-beveled ends, set-screws secured in said cross-arms and projecting within said elongated recesses of the cutters to limit the movement of the same, and a rammer having a wedge-shaped head adapted to pass between the beveled ends of said cutters and operate the same, substantially as set forth.

2. In a boiler-cleaner, the combination, with a casing B' having cross-arms b^3 provided with the cutters, of an extension-piece C, adapted to be secured to the said cross-arms, as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

RONALD McDONALD.

Witnesses:

CHAS. E. TANNER,
J. M. G. STEWART.