

No. 667,513.

Patented Feb. 5, 1901.

W. D. FORSYTH & E. T. BELL.

BOILER TUBE CLEANER.

(Application filed Mar. 21, 1899.)

(No Model.)

Fig. 1.

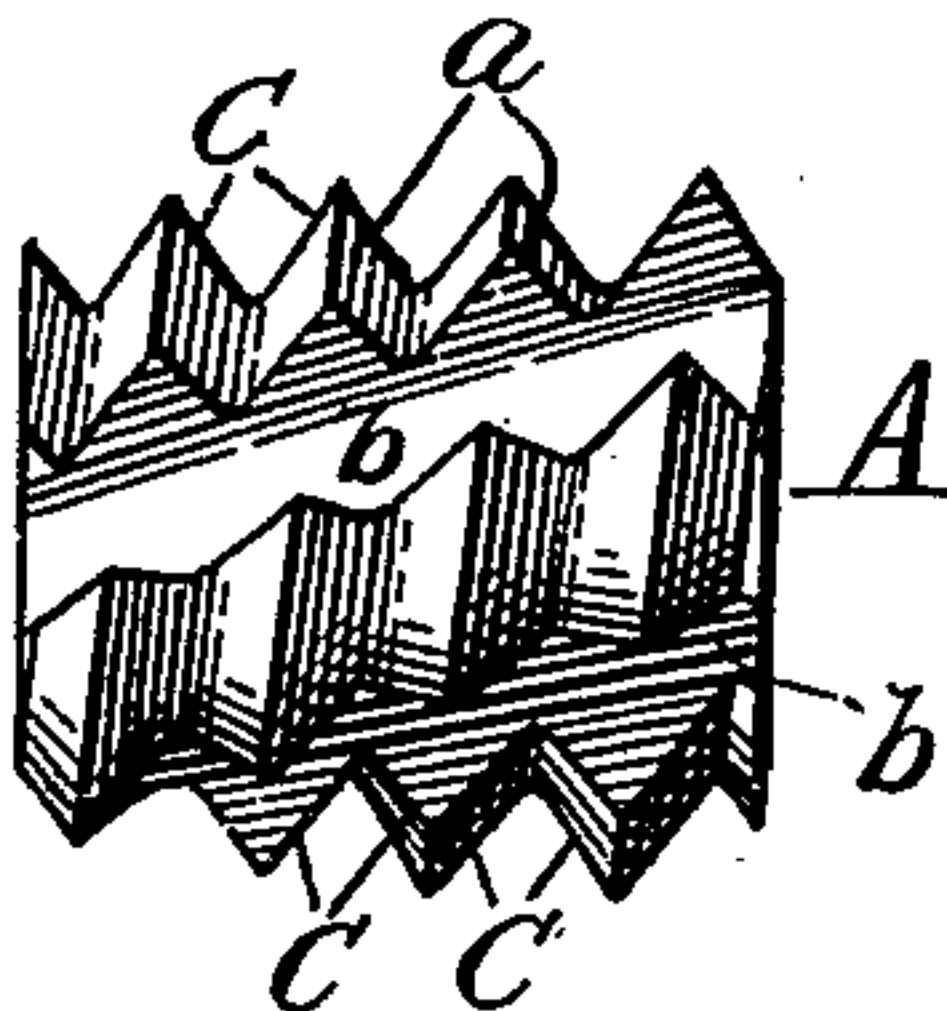


Fig. 2.

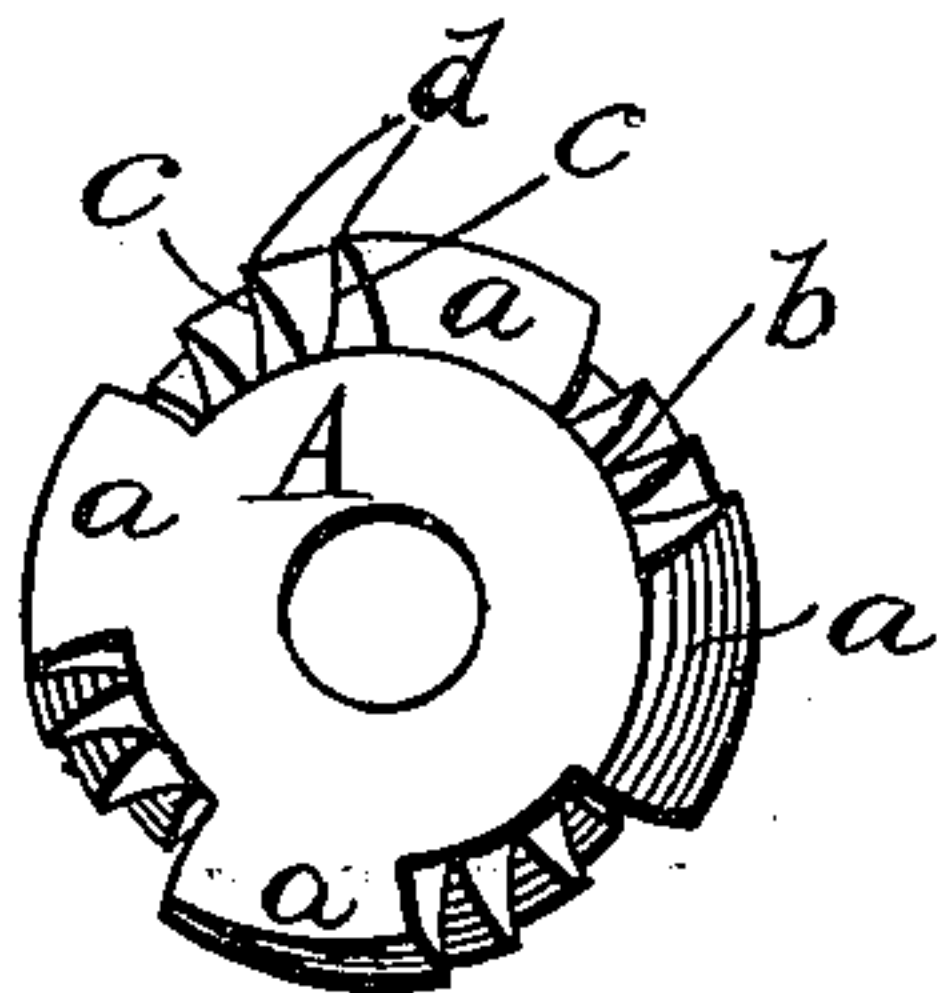


Fig. 3.

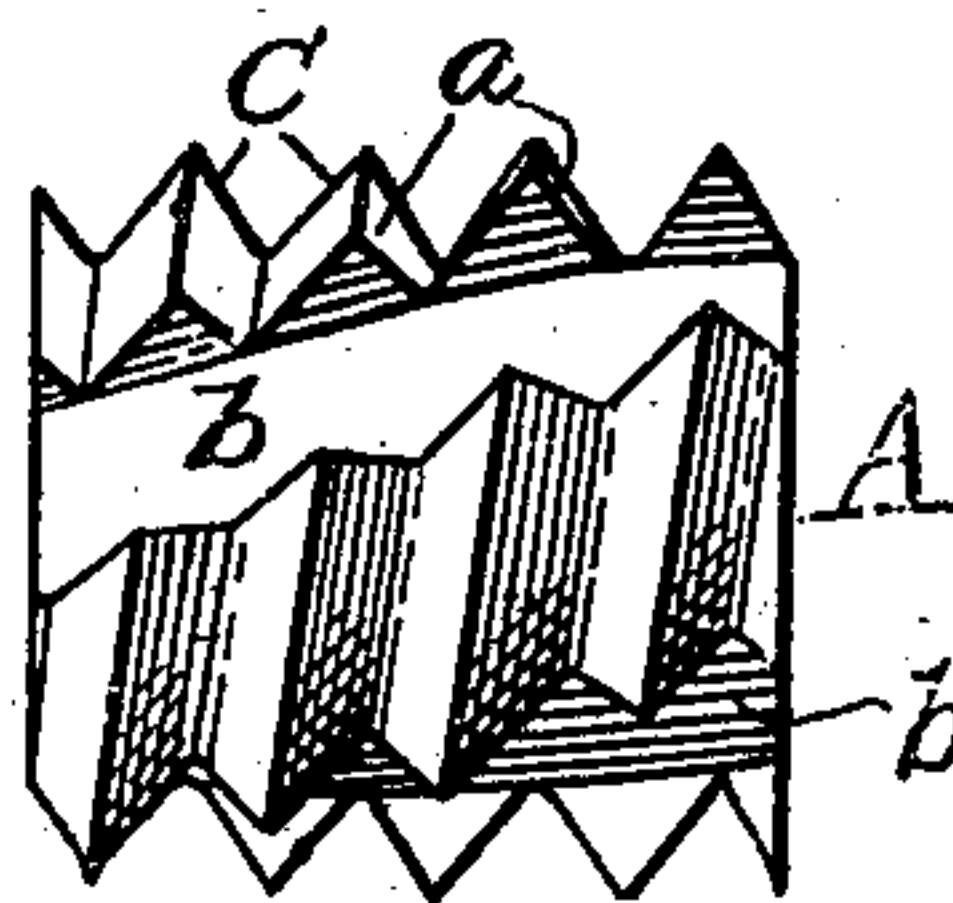


Fig. 4.

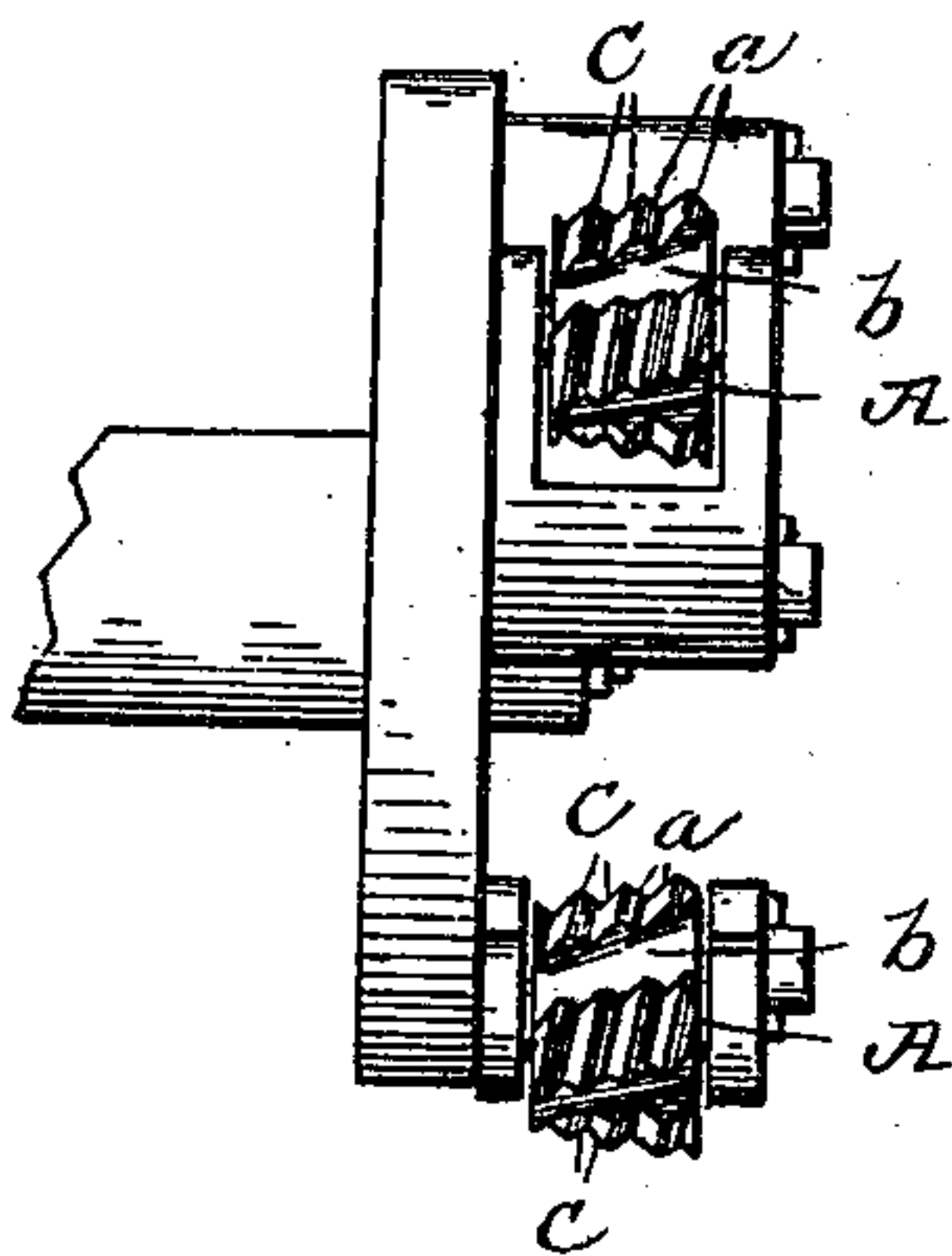
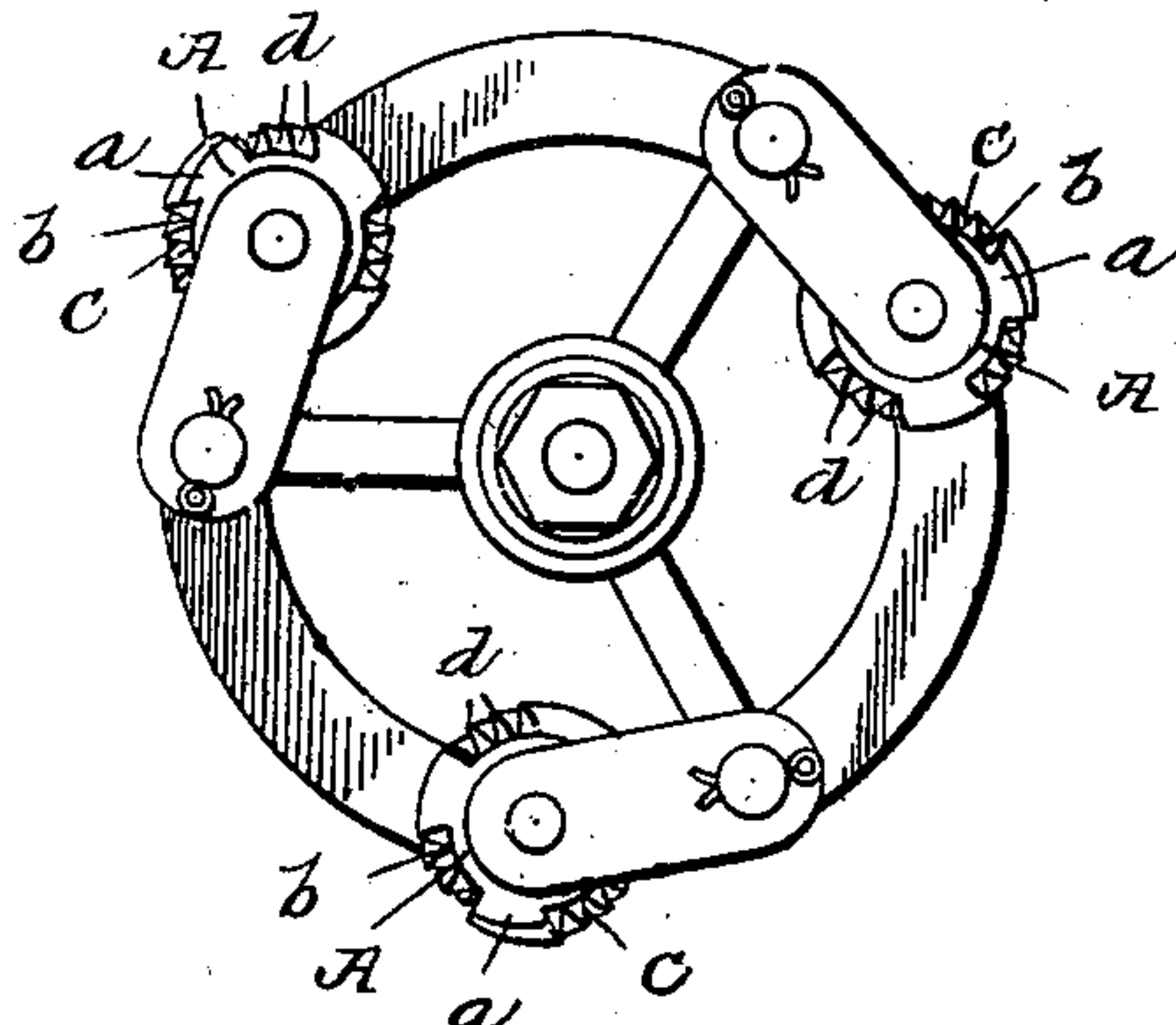


Fig. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILBER D. FORSYTH AND ENOS T. BELL, OF PITTSBURG, PENNSYLVANIA,
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PLACE.

BOILER-TUBE CLEANER.

SPECIFICATION forming part of Letters Patent No. 667,513, dated February 5, 1901.

Application filed March 21, 1899. Serial No. 709,914. (No model.)

To all whom it may concern:

Be it known that we, WILBER D. FORSYTH and ENOS T. BELL, citizens of the United States, and residents of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Cutters for Boiler-Tube Cleaners; and we do 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a side elevation of cutter. Fig. 2 is a rear elevation of same. Fig. 3 is a side elevation of modified form of cutter. Figs. 4 and 5 are respectively side and front elevations of a cleaner-head and its centrifugally-acting arms having our invention applied thereto.

This invention is designed to provide a rolling cutter of novel and effective character for use in connection with implements for disintegrating and removing scale from boiler-tubes; and to this end the invention consists in a cutter of the novel construction hereinafter described, and pointed out in the appended claims.

Referring to the accompanying drawings, the letter A designates the body of the cutter, which in the construction shown in Fig. 1 is of slightly tapered or conoidal form and is provided with an angular spiral thread or ridge running therearound and interrupted at regular intervals by spirally directed or oblique grooves or channels *b* to form successive approximately triangular prismatic cutting-teeth extending in longitudinally-raking lines around the cutter. The forward faces of said teeth are acute with relation to the peripheral edges thereof to form the acute triangular wedge-form points *d*, and said faces are also acute with relation to adjacent sides thereof to form the advanced cutting edges *c*.

In Fig. 3 we have shown a modification wherein the cutter-body is of non-tapered or cylindrical form. The teeth or projections

are arranged thereon as in the form first described. In both forms the cutter-body is formed with an axial opening *h*, by means of which it may be loosely mounted on a suitable spindle.

The cutters above described form very effective devices for the purpose for which they have been devised. The spiral arrangement of the lines of teeth or cutting projections not only assists materially the passage or feed of the implement through the tube, but the consequent "raking" position of the teeth, combined with their wedging side faces, enabling them to enter the scale readily and to exert a double wedging or prying action thereon, which is found in practice to be very effective. The acute or undercut cutting-points *d* and edges *c* also enable the cutter to enter, cut, and break the scale more effectively. The spirally-directed grooves which separate the teeth enable the escape of the disintegrated scale and the passage of water to and around the teeth, it being usual to keep a small stream of water flowing in the boiler-tube while the operation is in progress.

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

1. A rolling cutter for the purpose described, having a spiral thread running therearound in one direction, and interrupted at intervals by oblique grooves or channels to form raking lines of approximately triangular prismatic cutting-teeth, the forward face of each of said teeth being acute with relation to its peripheral edge, substantially as specified.

2. A rolling cutter for the purpose described, having a thread running in one direction therearound, and interrupted at intervals by oblique grooves or channels to form successive raking lines of substantially triangular prismatic cutting-teeth, the triangular forward face of each of said teeth being acute with relation to its peripheral edge, and one of its adjacent sides and oblique with relation to the axis of the body of the cutter to form an acute wedge-form point, and an advanced cutting edge, substantially as specified.

3. A rolling cutter for the purpose described, comprising a body of convex superficies pro-

vided with approximately triangular prismatic cutting-teeth arranged in successive longitudinally-raking lines around its entire periphery, said teeth being of a length short
5 in comparison to the circumference of said periphery, and the triangular forward face of each of said teeth being acute with relation to its peripheral edge, and terminating at the convex superficies of said body, the spaces
10 separating said teeth being of a width about

equal to the length of said teeth, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

WILBER D. FORSYTH.
ENOS T. BELL.

Witnesses:

JOS. G. ORMSBY,
JOHN M. SHEAFER.