(No Model.)

N. BLANCHARD.

BOILER TUBE CLEANER.

No. 390,060. Patented Sept. 25, 1888.

Fig. 1.

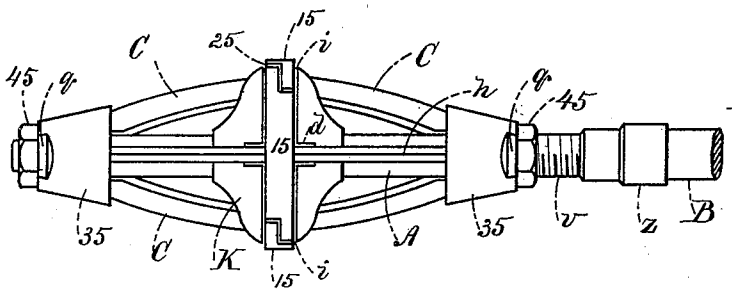


Fig. 2.

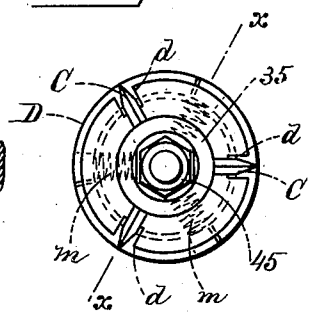


Fig. 3.

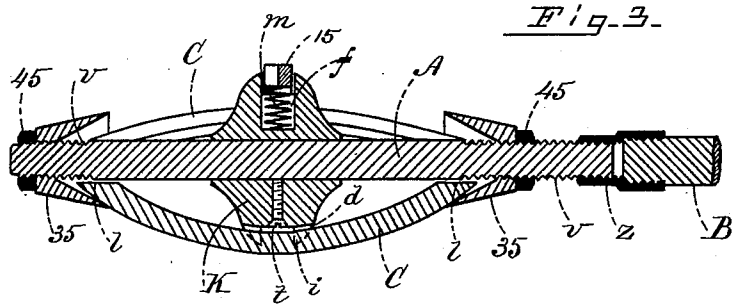
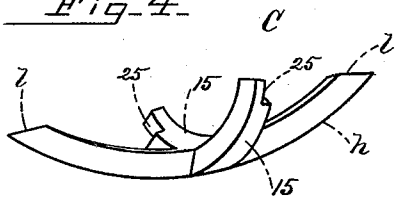


Fig. 4.



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UNITED STATES PATENT OFFICE.

NAPOLEON BLANCHARD, OF ADAMS, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND ARTHUR B. DANIELS, OF SAME PLACE.

BOILER-TUBE CLEANER.

SPECIFICATION forming part of Letters Patent No. 390,060, dated September 25, 1888.

Application filed July 27, 1888. Serial No. 281,201. (No model.)

To all whom it may concern:

Be it known that I, NAPOLEON BLANCHARD, of Adams, in the county of Berkshire, State of Massachusetts, have invented a certain new and useful Improvement in Boiler-Tube Cleaners, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of my improved tube-cleaner, the handle being represented as broken off; Fig. 2, an end elevation of the same represented as in use in a tube; Fig. 3, a vertical longitudinal section taken on line *x x* in Fig. 2, and Fig. 4 a perspective view of one of the knives or scrapers detached.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to that class of boiler-tube cleaners which are provided with adjustable scrapers or knives; and it consists in certain novel features, as hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation:

In the drawings, A represents the body of the cleaner, B the rod, and C the scrapers.

The body A consists of a metallic rod screw-threaded at *v* on each end, a handle, B, being secured to one end thereof by a sleeve, *z*. A collet, K, is centrally secured to the bar A by means of a screw, *t*, (see Fig. 3,) said collet being provided with three radially-arranged chambers, *f*, equidistant from each other, and an annular groove, *i*, on its periphery connecting said chambers at the top, as shown in Fig. 3. A coiled spring, *m*, is secured in each chamber *f*, a transverse groove, *d*, being formed in the periphery of said collet midway between each two of said chambers. The scrapers C have a curved blade, *h*, (see Fig. 4,) and flat ends 1, adapted to rest on the rod A when in position. Projecting centrally from each blade *h* and at right angles thereto there are two arms or scrapers proper, 15, (see Fig. 4,) adapted to enter the annular groove *i* in the collet K, said arms being provided with rabbets 25, so that the ends of adjacent arms on different scrapers will overlap each other when in position on said groove.

The blades *h* of the scrapers C are respectively disposed in a transverse groove, *d*, in the collet K in such a manner that the scrapers proper, 15, rest in the groove *i*, their rabbeted ends 25 at the same time resting on a spring, *m*, and the flat ends 1 of said blades on the rod A. A hollow cone-shaped screw-cap, 35, is disposed on each end of the rod A and incloses the ends of the blades *h*, said caps being held in position on the rod by lock-nuts 45. The body of the caps 35 is flattened at *q* to bring it into alignment with the face of the contiguous nut 45, so that said nut and cap may be conjointly turned onto the rod by means of a wrench or similar implement.

In the use of my improvement the handle B is secured to the bar A by the sleeve *z*, and the cleaner inserted in the tube D and worked backward and forward by means of said handle in the usual manner. The scrapers proper, 15, are forced outward against the inner face of the tube (see Fig. 2) by the springs *m* and cut or scrape the slag therefrom as they are moved. By turning up the caps 35 against the blades *h* of the scrapers, and thereby forcing the scrapers proper, 15, inward, the pressure of the springs *m* may be overcome or regulated, thereby adjusting the cleaner for use in tubes of different sizes. The blades *h* serve to cut or loosen the slag or scale in the tube D, thus enabling the scrapers proper to readily remove it. Furthermore, said blades, being curved and equidistant from each other, as described, guide the cleaner in and out the ends of the tube. As it is sometimes desirable to revolve the cleaner instead of working it back and forward, it will readily be seen that the blades *h* will in that event serve the purpose of scrapers. It will also be seen that by the use of the springs *m* for forcing out the scrapers proper

all slag or scale is prevented from passing them and the cleaner readily adapts itself to different sizes of tubes.

Having thus explained my invention, what I claim is—

1. In a boiler-tube cleaner, the combination of a body comprising a screw-threaded rod, a collet disposed on said rod and provided with radially-arranged chambers, an annular peripheral groove in said collet connecting said chambers, equidistant transverse grooves in said collet between said chambers, coiled springs disposed in said chambers, scrapers consisting of curved blades adapted to enter said transverse grooves, so that their ends rest upon said bar and provided with lateral arms or scrapers proper disposed in said peripheral groove, said arms having rabbeted ends which rest upon said springs, and adjunctive mechanism for actuating said scrapers, substantially as set forth.

2. In a boiler-tube cleaner, the combination of a body comprising a screw-threaded rod, a collet disposed on said rod and provided with radially-arranged chambers, an annular peripheral groove in said collet connecting said chambers, equidistant transverse grooves in said collet between said chambers, coiled springs disposed in said chambers, scrapers having curved blades adapted to enter said transverse grooves, so that their ends rest upon said rod, and lateral arms or scrapers proper on said blades disposed in said peripheral groove, said arms being provided with rabbeted ends which rest upon said springs, and a screw-cap and lock-nut on said rod for engaging the ends of the blades and overcoming the pressure of the springs, substantially as described.

3. In a boiler-tube cleaner, the combination of the rod A, screw-threaded at *v*, the collet K, having the chambers *f*, annular groove *i* and transverse grooves *d*, the springs *m*, disposed in said chambers, the scrapers C, having the blades *h*, and rabbeted arms or scrapers proper, 15, adapted to enter said grooves and engage on said springs, and the cap 35, and lock-nut 45, adapted to engage said blades and hold said arms against the pressure of said springs, substantially as set forth.

4. In a boiler-tube cleaner, the combination of the rod A, screw-threaded at *v*, the collet K, having the chambers *f*, annular groove *i* and transverse grooves *d*, the springs *m*, disposed in said chambers, the scrapers C, having the blades *h*, and rabbeted arms or scrapers proper, 15, adapted to enter said grooves and engage on said springs, the cap 35, and lock-nut 45, adapted to engage said blades and hold said arms against the pressure of said springs, and the handle B, secured to the rod A by the sleeve *z*, all being arranged to operate substantially as described.

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