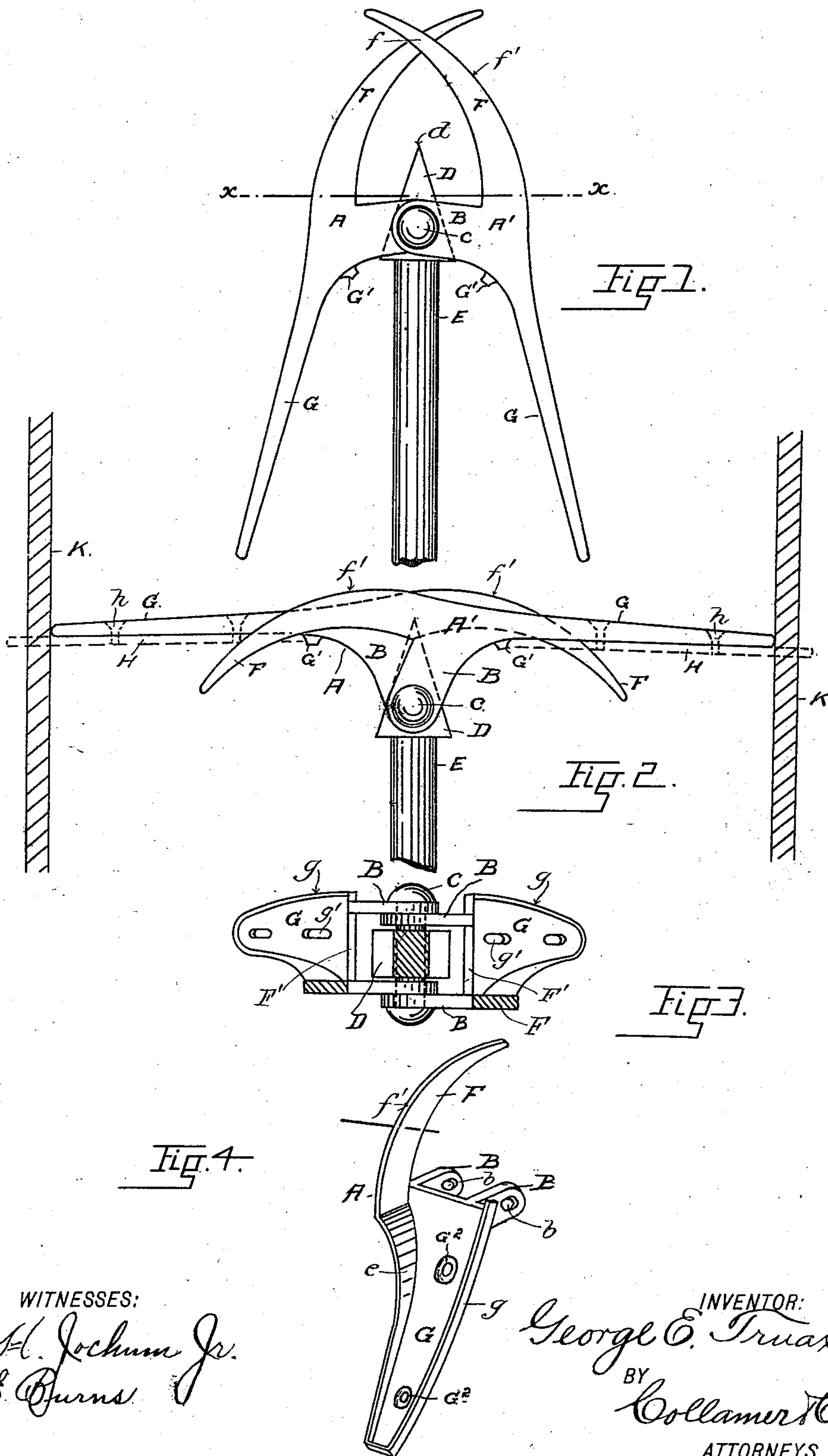


(No Model.)

G. E. TRUAX.  
BOILER CLEANER.

No. 504,426.

Patented Sept. 5, 1893.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

GEORGE E. TRUAX, OF DENVER, COLORADO.

## BOILER-CLEANER.

SPECIFICATION forming part of Letters Patent No. 504,426, dated September 5, 1893.

Application filed January 4, 1893. Serial No. 457,238. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE E. TRUAX, a citizen of the United States, and a resident of Denver, Arapahoe county, State of Colorado, have invented certain new and useful Improvements in Boiler-Cleaners, (Case C;) and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with the claims particularly specifying the novelty.

This invention relates to steam boilers, and more especially to the cleaners therefor which scrape the interior of the boilers: and the object of the present invention is to provide means whereby the scraping wings may be thrown out from the head by a positive force when desired.

In United States Patent No. 487,651 granted to me December 6, 1892, (Case A,) I showed and described two wings each having ears pivoted to opposite sides of a solid head, which wings were adapted to fold to a closed position as the device was pushed into a boiler and to open automatically as the device was drawn toward the operator. In an application filed by me September 12, 1892, Serial No. 445,637 (Case B) I employed the same construction with the addition of a pair of levers crossed between their ends and there pivoted on a bolt within a slot in the head forward of the bolt on which the ears were pivoted—the object of this construction being that the levers would cause the positive opening of the wings when the device reached the farther end of the boiler and the tips of the levers were pressed against such end.

The present invention (Case C) contemplates the use of the solid head of Case A, which I find much cheaper and easier to make, in connection with the levers of Case B, which I now form integral with the wings, also for the sake of greater cheapness and simplicity; and the invention consists in a boiler cleaner possessing the characteristics of construction which are necessitated in the combining of the two previous cases in one, together with the certain details of parts, as set forth below and illustrated in the drawings, wherein—

Figure 1 is a plan view of this device in nearly its closed position. Fig. 2 is a similar view of the device in its opened position. Fig. 3 is a section on the line  $x$  of Fig. 1.

Fig. 4 is a perspective detail of one of the wings and its lever.

It has been heretofore common to cause the wings of a device of this character to be thrown out from the handle or head by springs, or by lever-mechanism leading from said wings back along the handle to within reach of the operator; but my idea is to cause the wings to fold or close automatically as the device is pushed into the boiler, to open automatically and yet positively when the device reaches the farther head of the boiler, and to remain open to a certain extent as the device is drawn out of the boiler—whereby the dirt and scales are drawn by the device toward the operator and out of the boiler. In Case B above mentioned I employed crossed levers which were independent of the wings, and a head having a slot within which said levers were pivoted on a pin forward of the pivot for the ears of the wings; but experience has taught me that the dirt and scales within the boiler may sometimes clog that device and prevent or at least retard its successful operation; and I have also discovered that a certain element of expense attaches to the manufacture of that device which is not at all times desirable. The present invention seeks to overcome these objectionable features.

Referring to the accompanying drawings, the letter D designates a head, preferably sharpened at its front end to a chisel point  $d$ , and E is the handle which may be solid and integral with the head as shown—or could be tubular and connected by any suitable means with a rearward extension of the head as will be understood. The said head is preferably rectangular in any cross section as best seen in Fig. 3.

A A' are two wings which are practical duplicates, and hence a description for one will suffice for both. The blade G of each wing is curved laterally as shown, and preferably tapered slightly to its outer end, and its front or working edge  $g$  is struck on the arc of a circle corresponding with the interior curvature of a boiler of ordinary size. For the purpose, however, of adapting the device to boilers of different diameters, the blades are provided with holes  $g'$  preferably countersunk as at G<sup>2</sup>, and through these holes are passed



screws *h* which take into iron, rubber, or other strips, usually of leather *H*—the latter being struck on the arc desired, and, being detachable, thus adapting the device to a boiler whose size is not too much larger than that which the working edges *g* would fit; for if the boiler were much too large, the leathers would yield undesirably as they would then project so far beyond the blade.

At the inner end of each blade *G* is a pair of ears *B* which extend to the rear from the wing and are arranged to break joints with the corresponding ears of the other wing and to stand astride the head *D*, and a rivet or bolt *C* is passed through eyes *b* in the four ears as shown. By this means the wings are pivoted to the head so that they may fold back against the handle *E*, and if desired studs or pins *G'* may be formed on the rear faces of the wings and of sufficient length to strike the handle when the wings are folded, so that they cannot fold back too far; whereas, when the wings are opened to their greatest extent their front ends *F'* will strike each other so that they will be prevented from opening farther than about into alignment with each other.

Coming now more particularly to the present invention, the letter *F* designates a lever which in this instance I cast or form integral with the blade of the wing as best seen in Fig. 4. As a whole each wing comprises a blade at one extremity, a pair of ears at about its center, and a lever at its other extremity; and the lever preferably continues the rear raised edge *e* of the blade (that edge opposite the working edge *g*), and is curved and tapered throughout its length. Standing as the levers do (Fig. 3) in alignment with one ear *B* of each wing, the two levers stand in different planes, and hence they cross or pass each other as seen at *f* in Fig. 1, or are adapted to move over or by each other in the operation of the device. The whole is of casting or malleable iron, or of any other suitable material, properly finished and of the desired size and proportion of parts.

In operation, the parts being properly assembled, the device in the position shown in Fig. 1 is inserted into and pushed down within the boiler, and the impact of the boiler against the working edges *g* of the blades (or the leathers if they are used and project beyond such edges) causes the blades to fold automatically toward or against the sides of

the handle. On reaching the farther head of the boiler the crossed ends of the levers strike such head, and further pressure on the handle causes the wings to turn bodily on their pivot *C* in the head *D*, the levers rocking on their curved front edges *f'* against the boiler head and obviously causing the blades to be thrown outward to the position shown in Fig. 2. After this has been accomplished the device is drawn toward the operator and the working edges *g* of the blades (or the leathers) scrape the scales and sediment from the interior of the boiler. The resistance afforded in the act of scraping will, of course, press the wings outward, which motion is resisted by the contact of the ends *F'*.

The letter *K* in Fig. 2 indicates in section a boiler of a size to be accurately fitted by the wings, whereas *H H* designate in dotted lines the leathers which could be used to make the device fit a larger boiler.

What is claimed as new is—

1. In a boiler cleaner, the combination with a solid head mounted on a handle and having a chisel point; of two wings each comprising a blade at the rear end of the wing having its working edge struck on the arc of a circle, a pair of ears at about the center of the wing, and a lever at the front end of the wing standing in the plane of one of the ears, the levers crossing each other forward of said chisel point, and the four ears passing astride said head and breaking joint with each other and a single pivot bolt passing through said ears and head, as and for the purpose set forth.

2. In a boiler cleaner, the combination with a handle, and a solid head of rectangular cross section mounted thereon; of two wings each pivoted between its ends to said head and comprising at one extremity a lever with a curved front edge, the levers moving in different planes and crossing each other in rear of their front ends, and a blade at the rear extremity of the wing, the blade having one working edge *g* curved in a plane at right angles to that of the lever and its other edge *e* raised and continued into said lever, as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my signature on this the 31st day of December, A. D. 1892.

GEORGE E. TRUAX.

Witnesses:

JAMES A. KILTON,  
W. N. MCBIRD.