

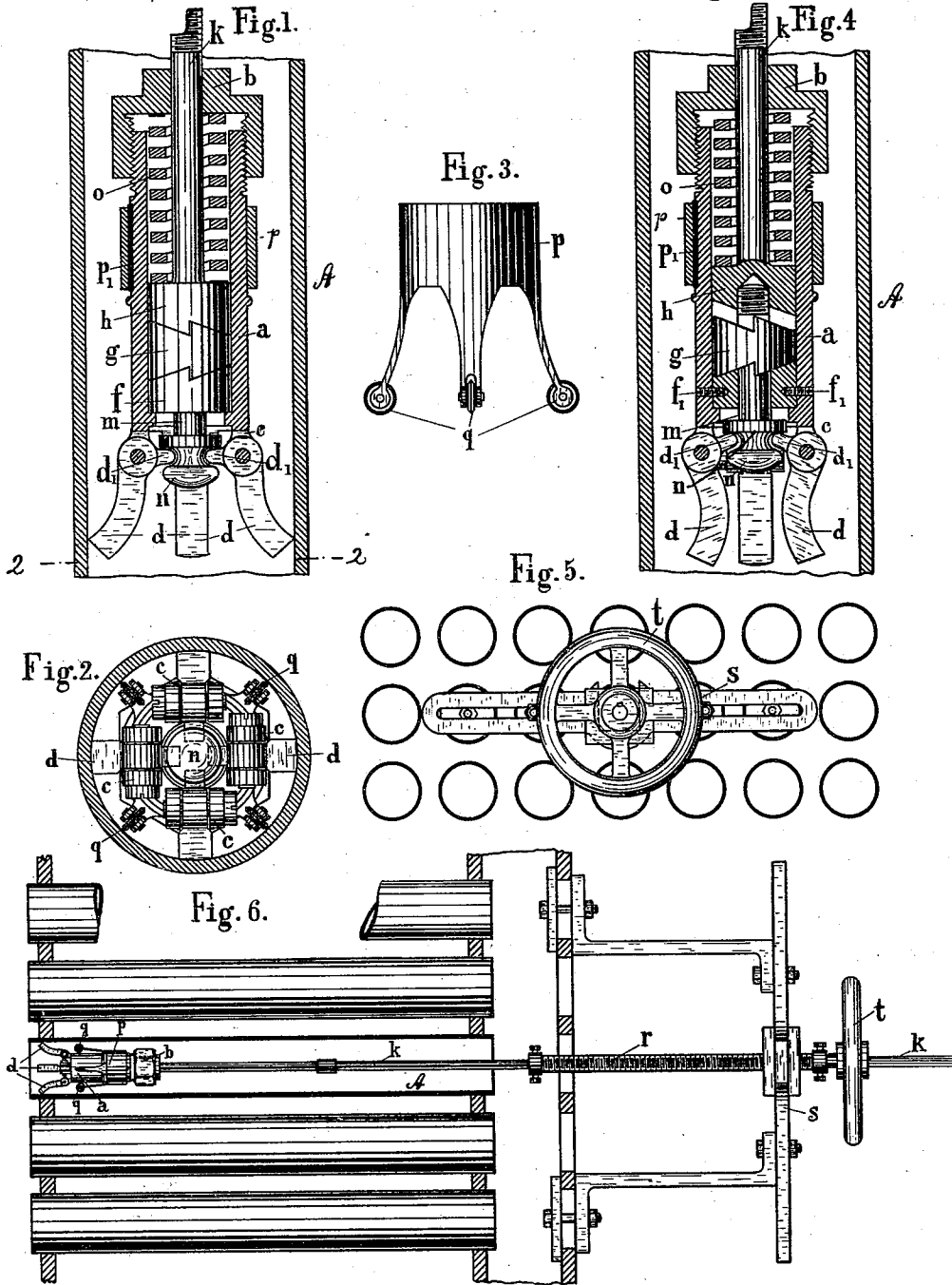
(No Model.)

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APPARATUS FOR REMOVING INCRUSTATION, &c., FROM BOILER TUBES.

No. 546,804.

Patented Sept. 24, 1895.



Witnesses:

William Schulz.
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UNITED STATES PATENT OFFICE.

HENRI BASCHY, OF HAMBURG, GERMANY.

APPARATUS FOR REMOVING INCRUSTATION, &c., FROM BOILER-TUBES.

SPECIFICATION forming part of Letters Patent No. 546,804, dated September 24, 1895.

Application filed July 13, 1895. Serial No. 555,823. (No model.)

To all whom it may concern:

Be it known that I, HENRI BASCHY, residing at Hamburg, Germany, have invented new and useful Improvements in Apparatus for Removing Incrustation and the Like from Boiler-Tubes, of which the following is a specification.

In water-tube boilers, especially if stationary, the incrustation or other deposit formed in the tubes by the feed-water is a very tangible drawback which is often productive of danger, and which has not hitherto been obviated, even by means of the most efficient purification of the feed-water. Suitable tools for removing the incrustation from such narrow tubes as are used in water-tube boilers have hitherto not been obtainable, so that the reliable cleaning of the boilers has involved great trouble and expense.

Apparatus according to this invention, which is represented about full size in Figures 1, 2, 3, and 4 and to a reduced scale in Figs. 5 and 6 of the drawings, enables the cleaning of such boiler-tubes to be effected in a simple and reliable manner.

In the accompanying drawings, Fig. 1 is a longitudinal section of the apparatus showing the scrapers distended. Fig. 2 is a cross-section on line 2-2, Fig. 1; Fig. 3, an elevation of sleeve *p*; Fig. 4, a longitudinal section showing the scrapers contracted; Fig. 5, an end view showing the apparatus in use; and Fig. 6 a longitudinal section of part of a boiler, showing the apparatus in use.

The apparatus comprises a casing *a*, on one end of which a cap *b* is adjustably screwed, and at the other end of which are four forks *c*, in which are pivoted four striking-chisels *d*. Within the casing *a* there rests, near the forks *c* and bearing against a shoulder, the part *f* of a double tooth-clutch, said part being prevented from rotating by screw-pins *f'* or in any other suitable way. Against the part *f* there lies the correspondingly-toothed face of the loose part *g* of the clutch, the oppositely-toothed other side of which is in engagement with the toothed face of the part *h* of the clutch, which is permanently connected with the operating-rod *k*. *m* is a tappet-bar, which is screwed in the part *h*, so as to be separable therefrom. The tappet-bar *m* passes through

the parts *f* and *g*, and carries at its outer end a head formed with two flanges *n*, between which are received tappets *d'*, projecting from the chisels *d*. Between the part *h* and the nut *b* there is inclosed a powerful coiled spring *o*, the force of which can be regulated by means of the adjustable nut *b*. If the rod *k* be rotated to the right or in a right-handed direction, the part *h* of the clutch will move on the part *g* in the way indicated in Fig. 4, whereby the spring *o* will be compressed and the chisels *d* drawn in. On further rotation the teeth of the clutch will pass one another, and the part *h*, with the bar *m* and flanged head *n*, will be caused by the spring *o* to rapidly move forward and impel the chisels *d* into the position shown in Fig. 1. As the result of this rotation, therefore, when effected with sufficient force, blows will be struck at short intervals by the chisels *d* that will knock off the incrustation or other deposit. On the rod *k* being rotated to the left or in a left-handed direction, the loose part *g* of the clutch will be carried round by the rod *k* and part *h* and shifted on the part *f*, whereby the spring *o* is compressed and the chisels *d* caused to strike against the incrustation in the manner just described. The arrangement of the clutch *f g h* thus enables the rod *k* to be rotated either to the right or to the left, as desired or as required by circumstances, the result in each case being to operate the striking-chisels *d*.

On the casing *a* there is adjustably mounted, with a certain amount of longitudinal play, a sleeve *p*, which is prevented from rotating by a feather *p'*, Figs. 1, 3, and 4. On the sleeve *p* there are arranged four spring-arms, provided with rotary or fixed cutters *q*, which press into and score the incrustation, and which also serve, reliably, to guide the entire apparatus in the tube, either straight or helically, according to the position of the said roller-cutters. The adjustability of the sleeve *p* on the casing *a* is for the purpose of facilitating the work of expansion of the spring *o*, as will be hereinafter pointed out.

The apparatus is placed in the tube *A* to be cleaned from the rear end and the operating-rod *k* or an extension thereof, is advantageously fastened in a hollow screw-

spindle *r*, which is capable of being rotated in a frame *s* or in a bracket by means of a hand-wheel *t*. The frame *s* is fastened on the front of the boiler or of the water-chamber, Figs. 5 and 6. On the rotation of the hand-wheel *t* the operating-rod *k* is also rotated and the cleaning apparatus caused to work and travel endwise by the spindle. During this movement and the expansion of the spring *o* there would, but for the above-mentioned faculty of the apparatus to move in the sleeve *p*, be an amount of work to do against friction which would vary with the hardness and the thickness of the incrustation, but would always be considerable. In the case of very hard incrustation the hand-wheel is turned backward and forward several times, whereby any desired place in the tube can be treated to the required extent. In lieu of arranging the operating-rod *k* or its extension in engagement with the spindle *r*, the casing *a* or the sleeve *p* may be so arranged, the rod *k* being then held stationary.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination of a casing with a set of pivoted chisels, and with a divided toothed and revoluble clutch connected to the chisels, substantially as specified.

2. The combination of a casing with a set of pivoted chisels, a triplex divided toothed clutch connected to the chisels, and a spring-

actuated rod for revolving the clutch, substantially as specified.

3. The combination of a casing with a set of pivoted chisels, a divided toothed clutch connected to the chisels, an outer sliding sleeve and cutters pivoted to said sleeve, substantially as specified.

4. The combination of a casing with a set of pivoted chisels, a divided toothed clutch connected to the chisels, a hollow revoluble spindle connected to the clutch, and a frame that engages the spindle, substantially as specified.

5. The combination of a casing with an inclosed spring-actuated clutch, a rod engaged by said clutch and having an outwardly projecting flanged head and with scrapers pivoted to the casing and having tappets that engage said head, substantially as specified.

6. The combination of a casing with an inclosed spring-actuated clutch, a rod engaged by said clutch and having an outwardly projecting flanged head, scrapers pivoted to the casing and engaging said head, a longitudinally movable sleeve surrounding the casing and having spring arms, and with cutters secured to said arms, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRI BASCHY.

Witnesses:

W. T. E. KOCH,
H. EGGERS.