

J. B. NIRASCOU.
 SCALE SCRAPER FOR BOILER TUBES.
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1,058,091.

Patented Apr. 8, 1913.

Fig. 3

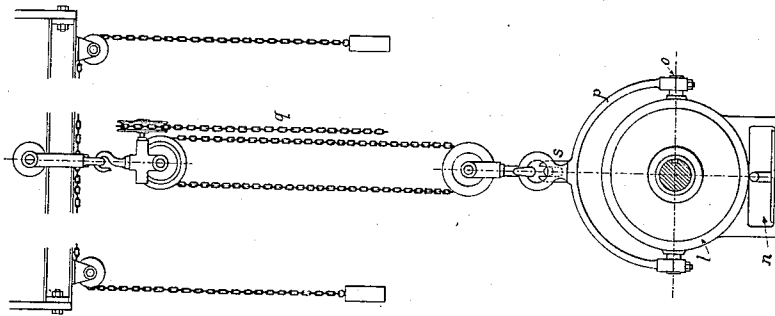


Fig. 1

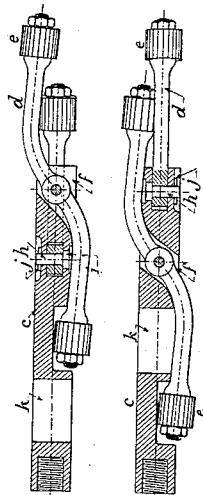
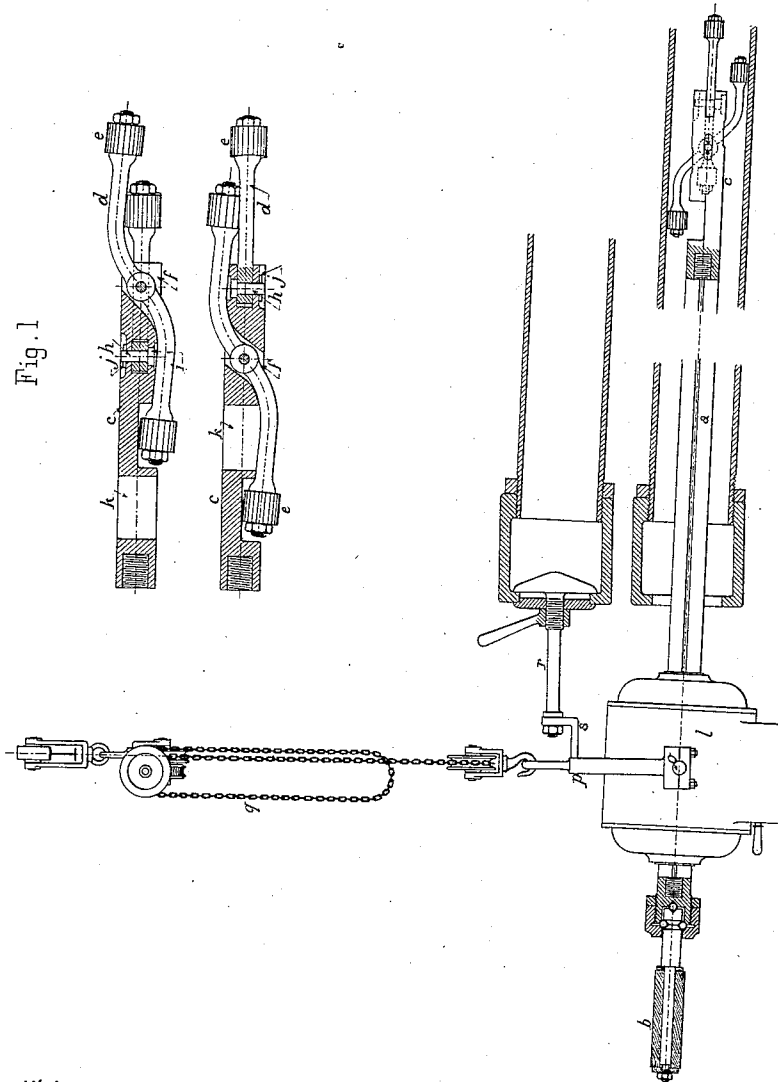


Fig. 2



Witnesses
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UNITED STATES PATENT OFFICE.

JEAN BAPTISTE NIRASCOU, OF PARIS, FRANCE.

SCALE-SCRAPER FOR BOILER-TUBES.

1,058,091.

Specification of Letters Patent.

Patented Apr. 8, 1913.

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To all whom it may concern:

Be it known that I, JEAN BAPTISTE NIRASCOU, a citizen of the French Republic, and resident of Paris, France, have invented certain new and useful Improvements in Scale-Scrapers for Boiler-Tubes, of which the following is a specification.

This invention relates to a scale scraper for boiler-tubes having scraping tools which consist of rollers mounted at the ends of pivoted levers. Said levers are pivoted at their middle upon the front end of the pushing rod or handle, whose movement communicates a rapid revolving motion to the rollers, wherefrom results, under the action of the centrifugal force and owing to the fact, that the rollers are poised in equilibrium with regard to their pivots, so that the rollers move away from the center of the tube and produce a strong friction and scraping upon the scales which coat the inner wall of the tube. Further, the shocks which are produced by the rollers knocking against the wall of the tubes, serve at the same time for loosening also the scales which are settled outside the tube upon the outer surfaces of the same, the cleaning of which is thus greatly facilitated.

In the accompanying drawings the improved scale scraper is shown in its preferred form.

Figure 1 represents the scale scraper in two different views, being sections at right angles to each other. Fig. 2 shows partly in section the complete apparatus in side elevation inserted in a boiler tube. Fig. 3 shows in front view the scale scraping apparatus suspended from a pulley block.

The apparatus consists of a longitudinally slotted cylindrical rod *a* having at one end the handle *b*. At the other or front end the rod *a* carries the scraper head *c* which is screwed onto the rod and on which two levers *d* having the scraping rollers *e* are pivoted. The levers *d* are located in two slots *f* of the head and the levers are maintained by means of pivots *h* on which they rock or oscillate. Said pivots *h* which traverse the support *c* and the central eye of the levers *d*, have at one of their ends a countersunk head *i* and said pivots are secured in place by means of cotter pins *j* which pass through openings in the pivots and are located in recesses in the head *c*. The levers *d* have their arms curved in opposite directions so that said arms, if the

levers are in normal position, bear each against one side of the support. The levers carry at their ends the scraper rollers *e* revolvably mounted on threaded axles carried at the ends of said levers and are secured in place by nuts on said axles. The cylindrical rollers are made of steel and they have in their outer surface grooves of trapezoidal or circular cross section. If the apparatus is not in use or while it is being inserted into the boiler tube the lower rollers *e* are located in recesses *k* which are provided in the support *c*.

Upon the rod *a* a motor is mounted which may be an electro-motor *l*, whose shaft is hollow and traversed by said rod *a*, a connecting pin fixed upon said shaft transmitting to the scraper a quick revolving motion without impeding its movement in longitudinal direction. If an electro-motor is used, the rheostat *n* could be fixed at its lower part. The casing of the motor presents two outer studs *o* which are situated in a horizontal line passing through its center of gravity and which serve for fixing the motor upon a bearing *p* so that it can freely work. Said bearing could for example be suspended from a pulley block *q* which is mounted before the boiler to be scraped, an arm *r* which is fixed to the envelop of the boiler tubes by clamps or in any other suitable manner securing the bearing in its position. A forkshaped arm *s* of the shackle which carries the bearing, engages with said arm *r*.

When the apparatus has been placed in the boiler tube to be scraped, the motor *l* is started whereby a rapid revolving motion is communicated to the levers *d* which carry the scraper rollers *e*. Said levers *d* being freely pivoted at their middle on the rod *a* and poised in equilibrium at this point, the scraper rollers *e* swing out under the centrifugal force and knock against the inner wall of the tube whereby a very energetic scraping on said walls is produced which removes the scale without damaging the metal of the tube wall. The repeated shocks further loosen the scales which adhere to the outer surface of the tube.

Owing to the particular arrangement of the levers which carry the scraper rollers the axle of the tool always coincides with the axis of the tube to be cleaned whereby a regular and uniform working is insured and any damage to the tube walls prevented. This central disposition of the scale scraper

greatly diminishes the vibrations which are fatiguing for the hand of the workman.

The particular arrangement of the scraper rollers poised in equilibrium permits to insert and to remove the apparatus without any special effort. The scraper rollers must strike the tube wall at right angles so that there will never be produced any scratches as is easily the case when the tool strikes the wall at an acute angle. The motor being mounted directly upon the rod or shaft of the tool, no transmission gear is required, and further, the suspension of said motor at its center of gravity permits a greater mobility of the same and permits further to incline the same in every direction, automatically, under the action of the centrifugal force communicated to the levers which carry the scraper rollers.

I claim:

A scale scraper for a boiler tube consisting of a driving rod and head, the latter having slots therein and recesses in its sides in rear of said slots, a two armed curved lever pivoted in each of said slots and having its arms extending along opposite sides of said head, the pivots of said levers being at right angles to each other, and rotatable scraping rollers on the outer ends of said levers; the inner rollers being adapted to be located in said recesses, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JEAN BAPTISTE NIRASCOU.

Witnesses:

HENRI BLOUIN,
H. C. COXE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."