

(No Model.)

H. J. LAWRENCE & A. E. G. BROMELL.
BOILER TUBE OR PIPE CLEANER.

No. 529,798.

Patented Nov. 27, 1894.

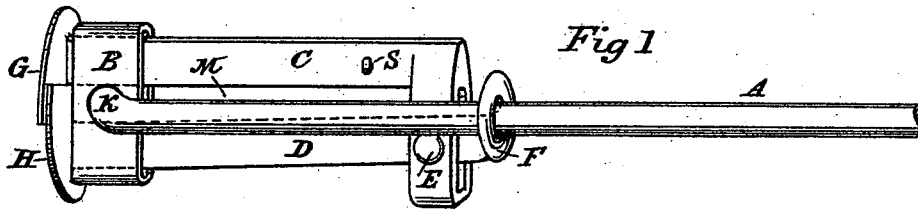


Fig 1

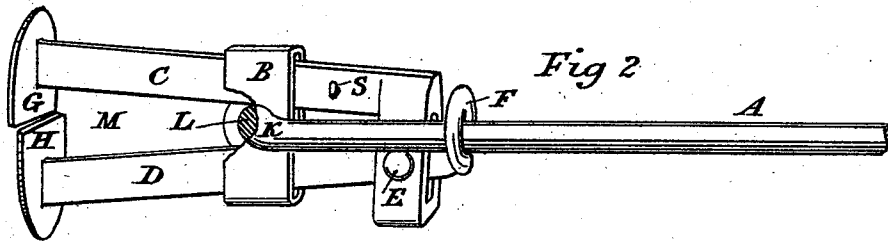


Fig 2

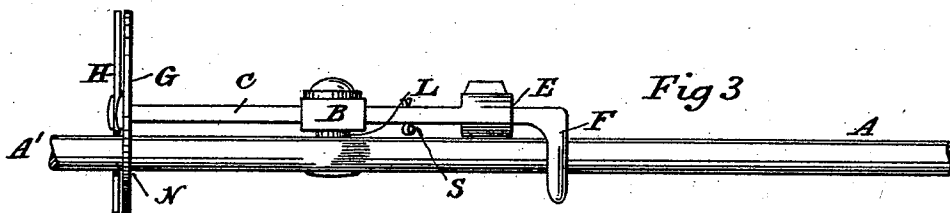


Fig 3

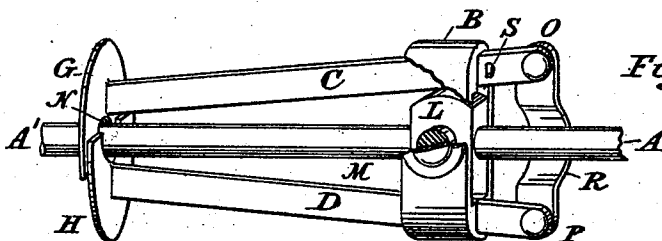


Fig 4

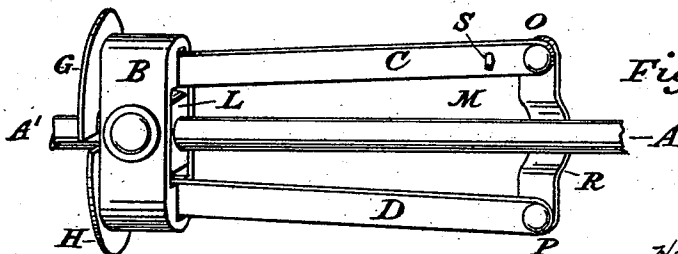


Fig 5

Witness:
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UNITED STATES PATENT OFFICE.

HENRY J. LAWRENCE AND ALFRED E. G. BROMELL, OF GEELONG, VICTORIA.

BOILER-TUBE OR PIPE CLEANER.

SPECIFICATION forming part of Letters Patent No. 529,798, dated November 27, 1894.

Application filed August 11, 1894. Serial No. 520,082. (No model.)

To all whom it may concern:

Be it known that we, HENRY JOHN LAWRENCE and ALFRED E. G. BROMELL, subjects of the Queen of Great Britain and Ireland, residing at Yarra Street, Geelong, in the Colony of Victoria, Australia, have invented a certain new and useful Improved Boiler-Tube or Pipe Cleaner, of which the following is a specification.

Our invention consists of improvements in appliances for cleaning or scraping the interior of boiler tubes, or other pipes. Such appliances operate usually by spring expansion, and are often used while the pipes are hot. This destroys their efficacy as the great heat encountered has the effect of taking out the spring temper so that the scraper then fails to press firmly upon the tube surfaces and does not effectually clean the same. A further objection to ordinary tube cleaners in use, is, that they push the soot before them when being inserted so that a large amount is thrown into the furnace or fire, instead of being drawn out of the other end of the tubes. In our invention the expansion of the head or scraping surface to bring it into firm contact with the tube interior is effected without the use of springs and in one form of our invention the expansion is effected after the cleaner has been inserted, thus avoiding to a large extent the second objection above mentioned. In other words our scraper in its preferred form pulls the soot instead of pushing it. In consequence of the means for expansion we employ, our appliance can be made more inexpensively than ordinary kinds, will wear longer, and will do its work more thoroughly.

Having described some of the merits, we will now point out the construction of our appliance, which is illustrated in the accompanying sheet of drawings, in which—

Figure 1 shows one of our cleaners in side view, closed. Fig. 2 shows the same cleaner in side view, open as it would be when scraping a tube. Fig. 3 shows the aforesaid cleaner as seen in plan view from above, and with an extended stem. Fig. 4 shows a modified form of our cleaner in side view closed, and Fig. 5 shows the latter cleaner in side view, opened for scraping.

The same letters of reference indicate like parts in all the figures.

A is the stem which may be as in other cleaners and extend in one direction as in Figs. 1 and 2 or in both directions, A, A' Figs. 3 to 5, or in the direction A' alone, this invention merely concerning itself with the stem at and near that part at which are the scrapers. Referring to Figs. 1 and 2, the stem is secured to a collar B which serves to hold or inclose loosely a pair of arms C, D which are more or less fixed at one end as by pivoting or hinging them together at the rear end E and preferably one of the arms at its rear as at F is loosely connected around the stem to prevent sagging strain on the collar. Thus the arms may slide simultaneously along the stem. The fore-ends of the arms C, D are attached to or carry each a scraper, G H which may be a more or less semi-circular plate of sheet metal, or any other suitable form of scraper, such as an arrangement of wire bristles and these scrapers together we call the head of the appliance. The stem A is fixed to the collar B as at K, and the collar is divided centrally by means of an attachment, block or part which we call the expander L and which divides one arm from the other. This might be formed by bending the end of A at right angles, passing the short leg through the collar; or A is fixed to L as well as L to B. In either case all three parts are fixed together and move simultaneously. When the collar B is pushed up to the head (the position during insertion) the scrapers and the arms are in their closest position, to one another, and in making the appliance shown by Figs. 1 and 2 the joint at E (the rear end of the arms) is so placed that when the part L is in place, the arms are not parallel but incline together so as to have a somewhat V-shaped space M between them, the end of the space remote from the head being narrower than the other. This appliance is operated simply by pushing or pulling the handle or stem. When the stem or handle is jerked or pulled back sharply for a short distance, the handle A draws or slides the collar B back toward the rear of the arms. The expander L is thus carried toward the narrow end of the space M and reaches a part where

it presses the arms outwardly. The collar B is large enough to permit of any required degree of expansion of the arms and thus the head of the appliance may be spread apart
 5 and made to firmly press the tube interior, equally as well when the head has been worn down to a considerable extent as when the scraper is new. Once the head is opened, it is only necessary to pull the handle and also
 10 if requisite turn the scraper round for all parts of the tube to be effectually and rapidly cleaned. Conversely, pushing the handle closes the scrapers together by the pressure of the collar against the arms, as it slides
 15 along them. As in Figs. 3 to 5 an aperture may be made in the head at N to allow the stem being continued through, and in each of such cases pulling at the end of A' will have the same effect as pushing at the end of A.
 20 By arranging the arms as in the modified form of Figs. 4 and 5 our above device for expansion and contraction of said arms by means of an expander and a collar attached to the stem may still be employed. In this
 25 modification we have so fixed the extremities O, P of the arms which are remote from the head that the wider end of the space M is at that end. When the expander is advanced to the head it therefore opens the scraper and
 30 when the collar is drawn away from the head it presses the arms together and closes the

head. Both of the arms are shown hinged at O, P respectively to a connecting piece R but if one only were hinged substantially the required motion would be produced. A pin or
 35 stop as S may be used on one of the arms to prevent jamming or excessive friction of B against said arms.

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

In a tube or flue scraper, an arm C having an angular extension at one end provided with an opening, an arm D pivotally supported in
 45 said opening and having a rearwardly extended end provided with an eye offset to one side thereof, scraper plates attached to the forward ends of the arms, and a stem or handle sliding freely in the eye and an expander
 50 for the arms carried by the stem, substantially as described.

In witness whereof we have hereunto set our hands in the presence of two subscribing witnesses.

HENRY J. LAWRENCE.
 ALFRED E. G. BROMELL.

Witnesses:

GEORGE G. TURIS,
Patent Solicitor, Melbourne.
 E. F. NICHOLLS,
Clerk to the above.