Feb. 11, 1936. DE LOS E. HIBNER, JR 2,030,830

SOOT BLOWING TUBE

Filed July 5, 1934

Fig. 1.

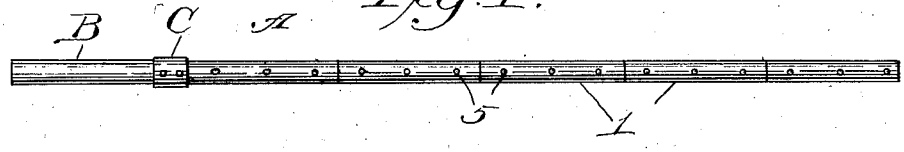


Fig. 2.

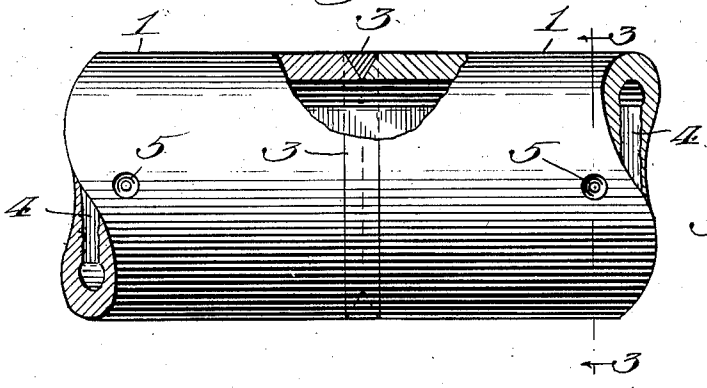


Fig. 3.

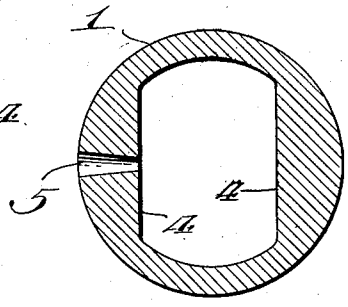


Fig. 4.

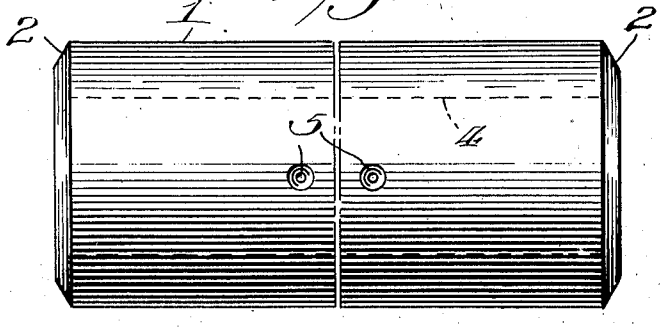
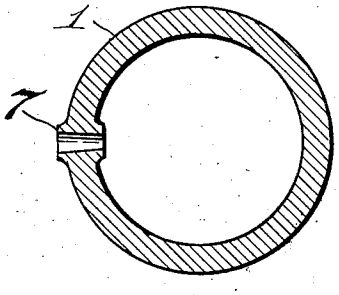


Fig. 5.



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2,030,830

SOOT BLOWING TUBE

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Application July 5, 1934, Serial No. 733,716

4 Claims. (Cl. 122—392)

The tubular cleaning elements of modern soot blowing or cleaning apparatuses are made from steel alloys capable of resisting the high temperatures and of standing up under the temperature variations to which they are subjected. These cleaning elements are costly; not only because of their composition, but also because of the manner in which they have been manufactured; it having heretofore been deemed essential that the tubes be wrought either by drawing them from solid billets or by rolling metal sheets or plates into tubular shape and welding or riveting them.

The object of the present invention is to produce an improved tubular blowing or cleaning element and, furthermore, to make possible a reduction in the cost of manufacture of such elements.

It will also be seen that where the cleaning elements are of wrought metal the manufacturer usually cannot have a very wide range of alloys from which to choose, but must select such billets or sheets as are readily available to him. However, if the element be a casting, any one of almost an infinite number of formulæ may be selected. Therefore, viewed in one of its aspects, the present invention may be said to have for its object the production of efficient, long-lived tubular cleaning elements that may be composed of any desired steel alloys, regardless of quantity.

Heretofore the requisite nozzles have been welded to the thin walls of the cleaner elements. When the cleaner elements are cast, instead of being wrought, the cross-sectional shapes thereof may be such as to permit discharge passages to be formed therein and thus do away with separate nozzles. Consequently, viewed in another of its aspects, the present invention may be said to have for its object to produce a tubular cleaner element of novel cross-sectional shape.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but, for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawing, wherein:

Figure 1 is an elevation of a tubular cleaning element with its coupling and end nipple; Fig. 2 is an elevation of a fragment of the cleaning element, on a much larger scale than Fig. 1, a fragment being broken away; Fig. 3 is a section on line 3—3 of Fig. 2; Fig. 4 is an elevation of a single section of the cleaning element, before it is joined to other sections, the middle portion thereof being broken away; and Fig. 5 is a view similar to Fig. 3, showing a modification.

Referring to Fig. 1 of the drawing, A represents a tubular blowing or cleaning element, proper; B is a nipple; and C a coupling between the cleaning element and the nipple. The present invention is, however, concerned with only the blowing or cleaning element regardless of the combination in which it may be used.

In the arrangement shown, the blowing or cleaning element is formed of a series of short cast tube sections 1 arranged end to end and united into a single structure by welding. The ends of each tubular section are beveled so as to take frusto-conical shapes, as indicated at 2. Consequently, when two of these sections are placed end to end, there is formed an external V-shaped groove or trough extending completely around the assembly at the juncture of the two sections. This groove is filled with metal, as indicated at 3, in the process of making a welded joint between two meeting sections.

Regarding the present invention in certain of its aspects, it may be said that the blowing or cleaning element may be formed from any suitable heat-resisting material. I prefer, however, to employ a steel allow containing chromium, in making the castings. For some purposes it is advisable to provide other heat-resisting materials in addition to chromium. Alloys containing both chromium and nickel are very good, the nickel being present in lesser quantity than the chromium. The chromium may run as high as thirty percent and the nickel as high as ten percent.

The tubular sections may be of any desired length, equalling or less than that of the cleaning element to be produced, which will make it possible to secure sound castings at a reasonable cost. Obviously, the longer the sections are the smaller will be the number of welded joints required.

The blowing or cleaning element must be provided with discharge ports for the steam or other cleaning fluid. These ports may be created in various ways. Thus, as shown in Figs. 2, 3 and 4, I have provided a longitudinal internal rib 4 to cause a strip of the wall of the tube, extending throughout the length thereof, to be thickened. The ports or discharge outlets 5 are simply drilled or bored through this thickened part. In order to equalize the strains in the casings, I prefer to place directly opposite each of the ribs 4 a similar internal rib 6.

While I believe the embodiment of my invention

just described to be the preferred one, the tubes may be cast with walls of uniform thickness, as indicated in Fig. 5; the outlet ports being produced by welding in place suitable nozzles 7 as is now the practice in connection with wrought tubes. Also, if desired, the nozzles 7 may be cast as part of the tubular element, although this makes it necessary to provide a separate pattern for each different spacing of the nozzles, thus adding to the cost.

While I have illustrated and described with particularity only two embodiments of my invention and a simple method of producing each of these embodiments, I do not desire to be limited to the details there illustrated and described; but intend to cover all forms and methods coming within the definitions of my invention constituting the appended claims.

I claim:

1. A soot blowing tube or the like of steel alloy having oppositely-disposed longitudinal ribs and there being discharge ports extending through the wall of the tube, each port being located in a part of the wall that is thickened by a rib.

2. A soot blowing tube or the like of steel alloy having a wide internal rib extending lengthwise thereof, and there being outlet ports extending through that part of the wall of the tube that is thickened by the rib.

3. A soot blowing tube or the like of cast steel alloy having oppositely-disposed internal longitudinal ribs, and there being discharge ports extending through the wall of the tube, each port being located in a part of the wall that is thickened by a rib.

4. A soot blowing tube or the like of cast steel having a wide internal rib extending lengthwise thereof, and there being outlet ports extending through that part of the wall of the tube that is thickened by the rib.

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