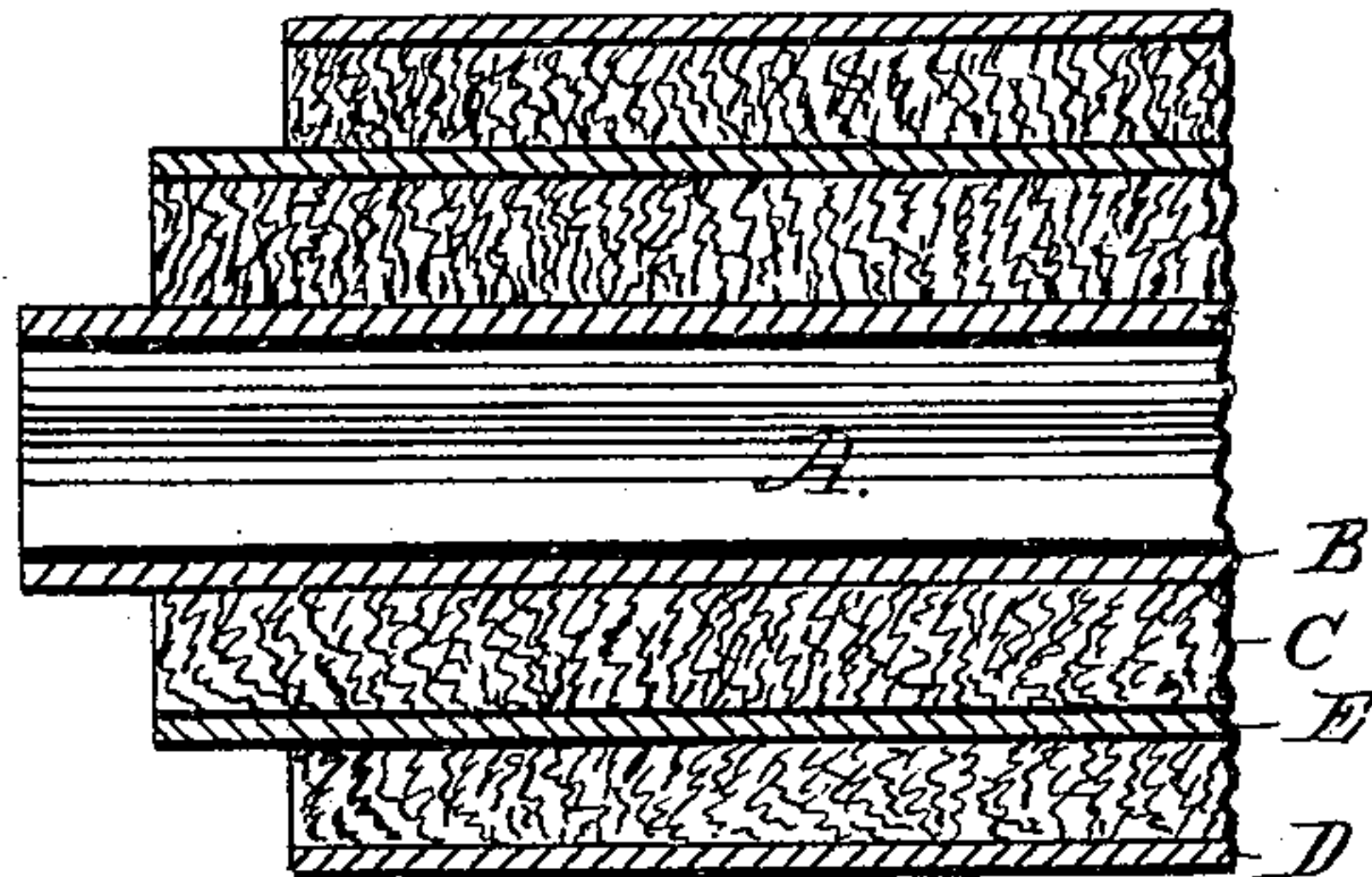


H. W. JOHNS.  
BOILER COVERING.

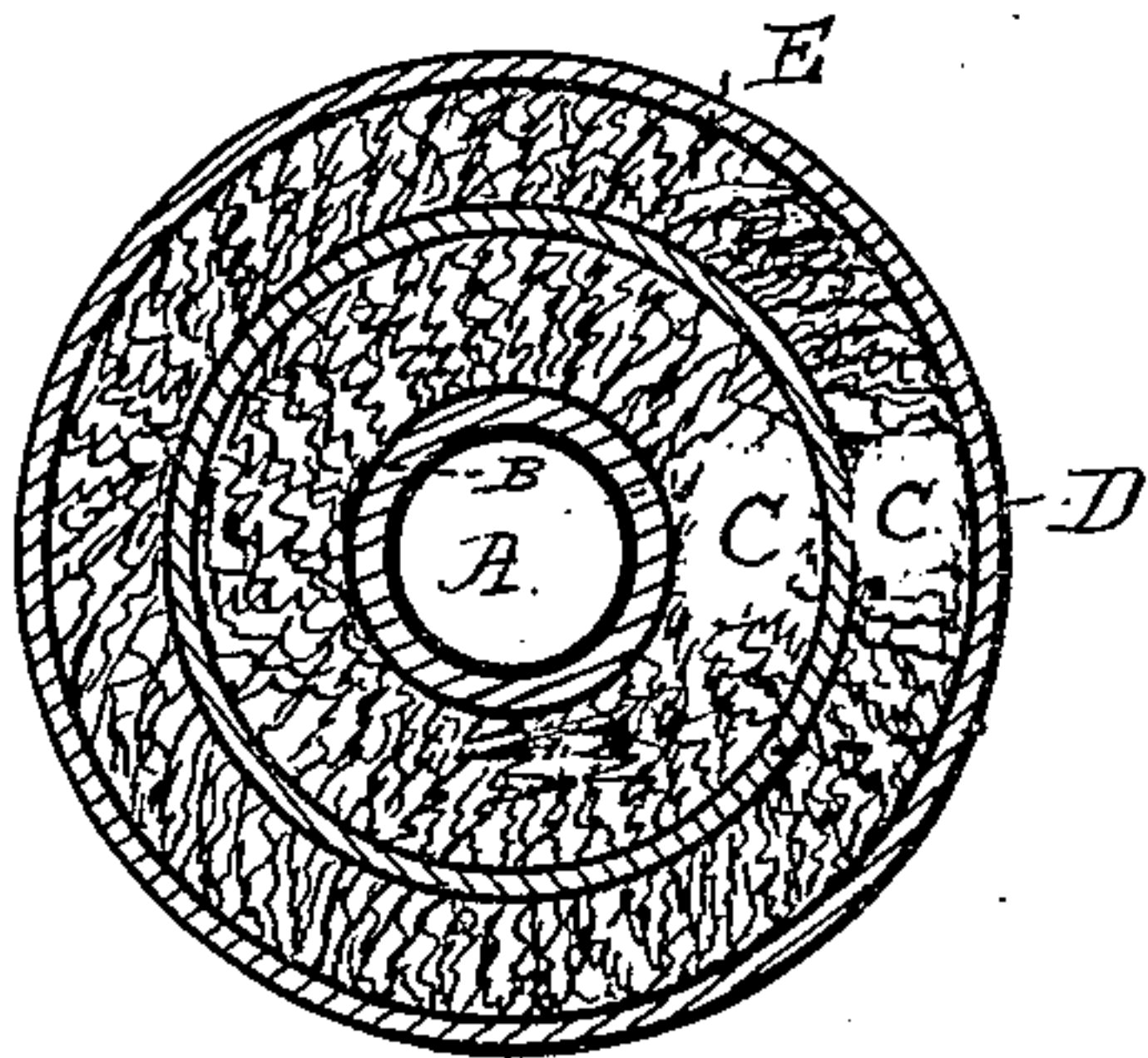
No. 262,429.

Patented Aug. 8, 1882.

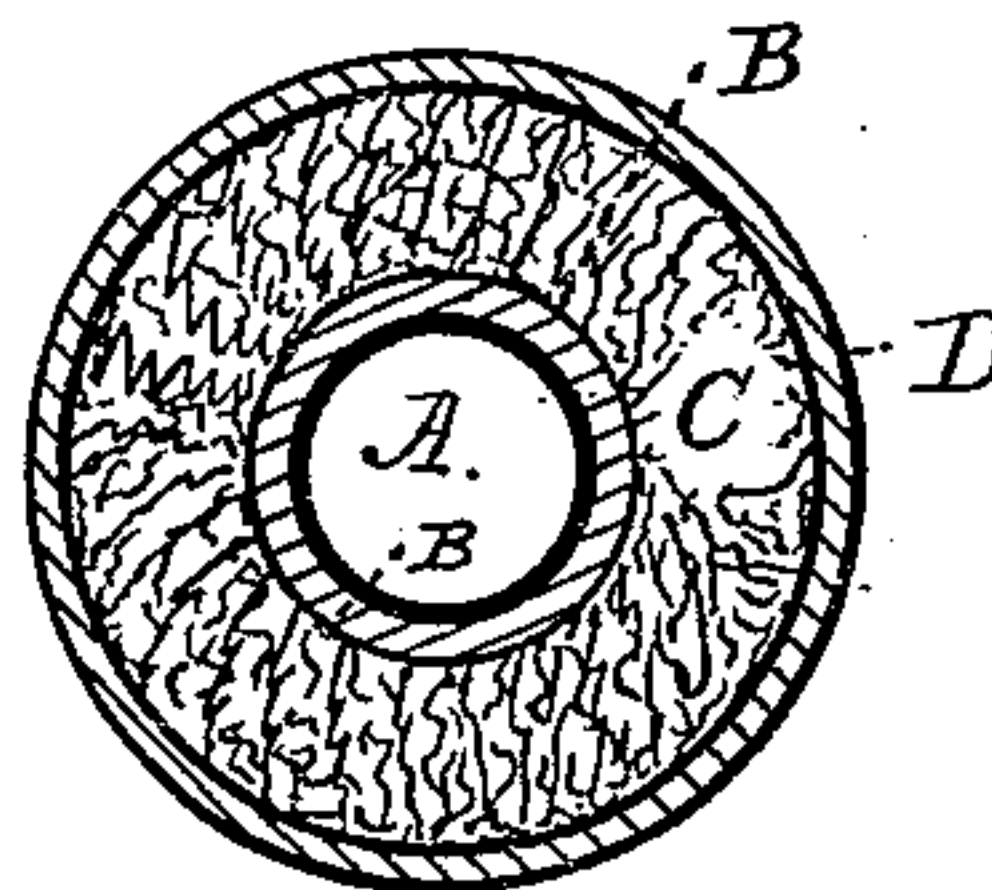
*Fig. 1.*



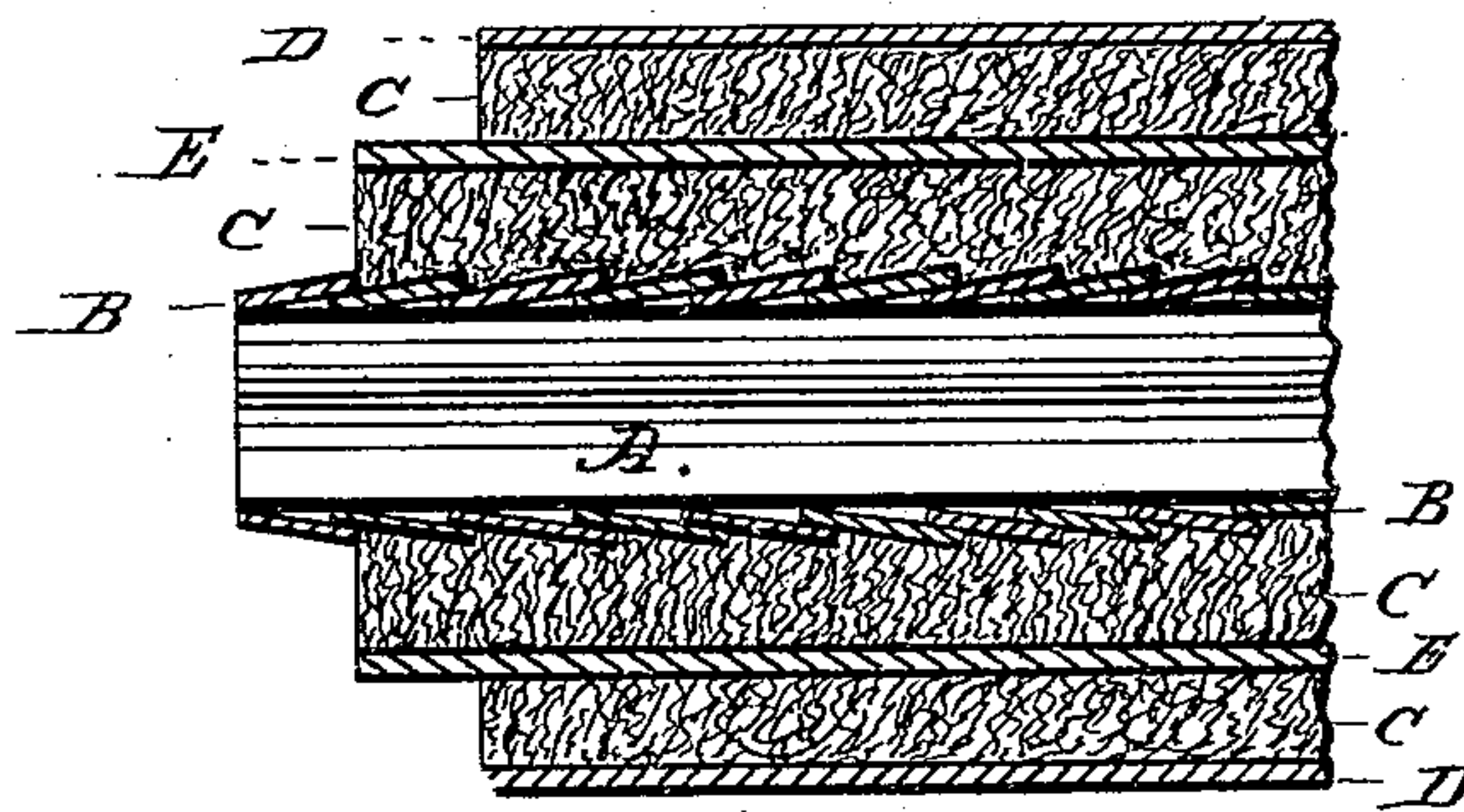
*Fig. 3.*



*Fig. 2.*



*Fig. 4.*



*Witnesses*  
Jacob Kellbel  
John Tyler

*Inventor.*  
Henry W. Johns  
By atty *Wm. C. Squire*



# UNITED STATES PATENT OFFICE.

HENRY W. JOHNS, OF NEW YORK, N. Y.

## BOILER-COVERING.

SPECIFICATION forming part of Letters Patent No. 262,429, dated August 8, 1882.

Application filed March 17, 1877.

*To all whom it may concern:*

Be it known that I, HENRY W. JOHNS, of the city, county, and State of New York, have made a new and useful Improvement in Non-Conducting Coverings for Heated Surfaces, of which the following is a specification.

My invention consists, first, in arranging next to the surface to be protected a fire-proof insulator or cushion composed wholly or in part of asbestos and surrounding said pipe, thus insulated with a porous or fibrous covering protected on the outside by a suitable shell or envelope.

My invention consists, secondly, in dividing the porous covering surrounding the insulator into compartments or chambers by interposed shells of paper or other practically air-tight material.

After long experience I have found that although fibrous materials—such as hair felt, loose hair, or equivalent materials—form very good non-conductors, yet, if applied directly to the surface to be protected, they become charred or burned, lose vitality, and soon disintegrate and fall to pieces, and that they are also deteriorated by dampness, &c. It has been suggested to overcome this difficulty by quilting or otherwise treating the fibrous material, such as mixing with cements, &c.; but these only partially overcome the difficulties named, and in the use of cements with the fibrous materials the product cannot be removed after being once placed in position without destroying it and rendering it unfit for reuse.

My invention has for its object to dispense with the expense involved in an extravagant use of asbestos and to secure the non-conducting properties of the other fibrous materials at the same time, avoiding the charring of such materials and preserving them in a condition for reuse; and in order that those skilled in the art to which my invention appertains may fully understand the same, I will describe it in detail, referring to the accompanying drawings, in which—

Figure 1 is a longitudinal section of one side of a pipe covered according to my invention, and illustrating two layers of fibrous or porous material with an interposed shell practically air-tight. Fig. 2 is a transverse section of a pipe covered according to my invention and having only one layer of fibrous or porous

material enveloped by an outside covering or shell. Fig. 3 is a transverse section of a pipe covered according to my invention, and in which the insulator is applied in the form of a cement; and Fig. 4 is a transverse section of a pipe covered according to my invention, having the space occupied by the fibrous or porous material divided into two chambers by non-porous or practically air-tight walls.

Similar letters indicate like parts in the several figures of the drawings.

A is the pipe to be covered, around and in contact with which I place a layer or cushion, B, of pure asbestos or asbestos combined with other suitable material, thus forming an insulator. Next to and surrounding this insulator or cushion B, I place a layer of hair felt or other equivalent material, C, (sometimes using asbestos fiber,) and I surround and bind the whole together and in place by a practically air-tight envelope or jacket, D.

In carrying out my invention I propose to take advantage of the fact that confined air is a well-known non-conductor, and hence I propose dividing the space occupied by the hair felt or other fibrous or porous substance into two or more chambers by interposing cylindrical walls or jackets E, as shown at Figs. 1 and 4, similar to the jacket D shown at Figs. 2 and 3. From this arrangement, as is most clearly illustrated at Fig. 4 of the drawings, it will be observed that the insulating-cushion B is interposed between the surface to be protected and the covering of hair felt, hair, or equivalent material, and that two separate and distinct air-chambers filled with hair or other fibrous material are formed by the arrangement of the jackets or walls D and E.

In carrying out my invention I may use, as the insulator B, asbestos in the form of a cement, or, as shown in Fig. 1, in the form of a sheathing composed wholly or in part of asbestos, and when used in this form I prefer to apply the same in a narrow strip or strips wound helically around the pipe, as clearly illustrated at Fig. 4, overlapping to such an extent that the successive coils will overlie the preceding ones about centrally, so that a close joint is made and a continuous body formed.

It will be apparent that I may make as many air-chambers as I choose by alternating hair felt or its equivalent and non-porous or

practically air-tight jackets, though I have found that a pipe covered as shown at Fig. 4 will, when inclosing steam under a pressure of seventy pounds to the square inch, be a little warmer than the surrounding air.

I do not wish to confine myself in the use of my improvement to covering steam boilers or pipes, as it may be advantageously used on any other heated surfaces, and may also be used for the protection of ice-houses, refrigerators, &c.

What I claim as new, and desire to secure by Letters Patent, is—

1. A non-conducting covering composed of a layer or cushion of asbestos surrounded and covered by a layer of hair felt, loose hair, or other fibrous or porous material, the whole surrounded and protected by a wall or jacket, substantially as hereinbefore set forth.

2. A non-conducting covering composed of a fire-proof lining or cushion next to the surface to be protected surrounded by hair felt, hair, or other porous or fibrous material, the space occupied by the fibrous or porous material being divided into practically air-tight chambers, substantially as and for the purposes set forth.

3. A non-conducting covering composed of a layer or cushion of asbestos surrounded and covered by a layer or mass of binding material, substantially as described.

HENRY W. JOHNS.

Witnesses:

PHILLIPS ABBOTT,  
CHARLES H. PATRICK.