

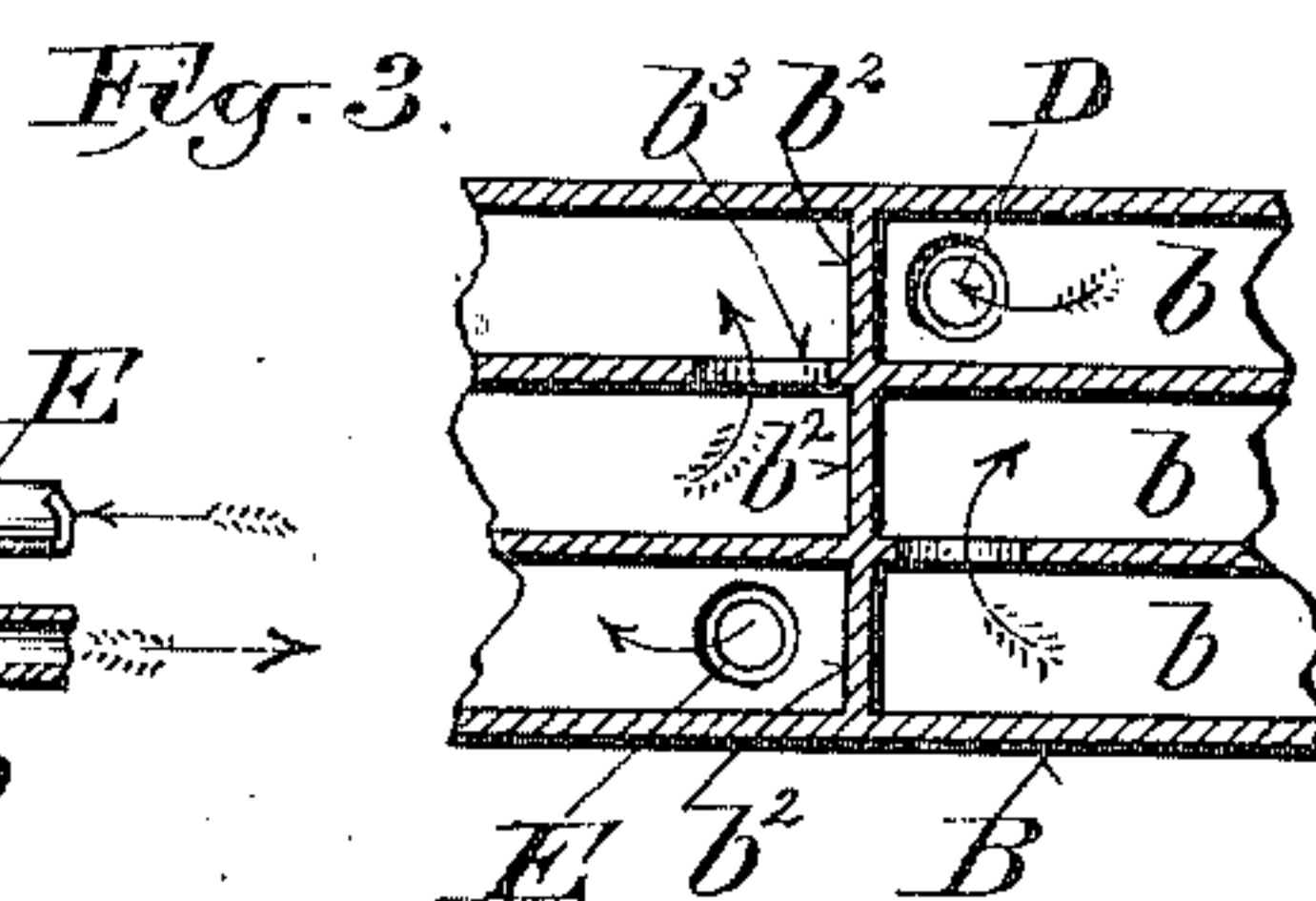
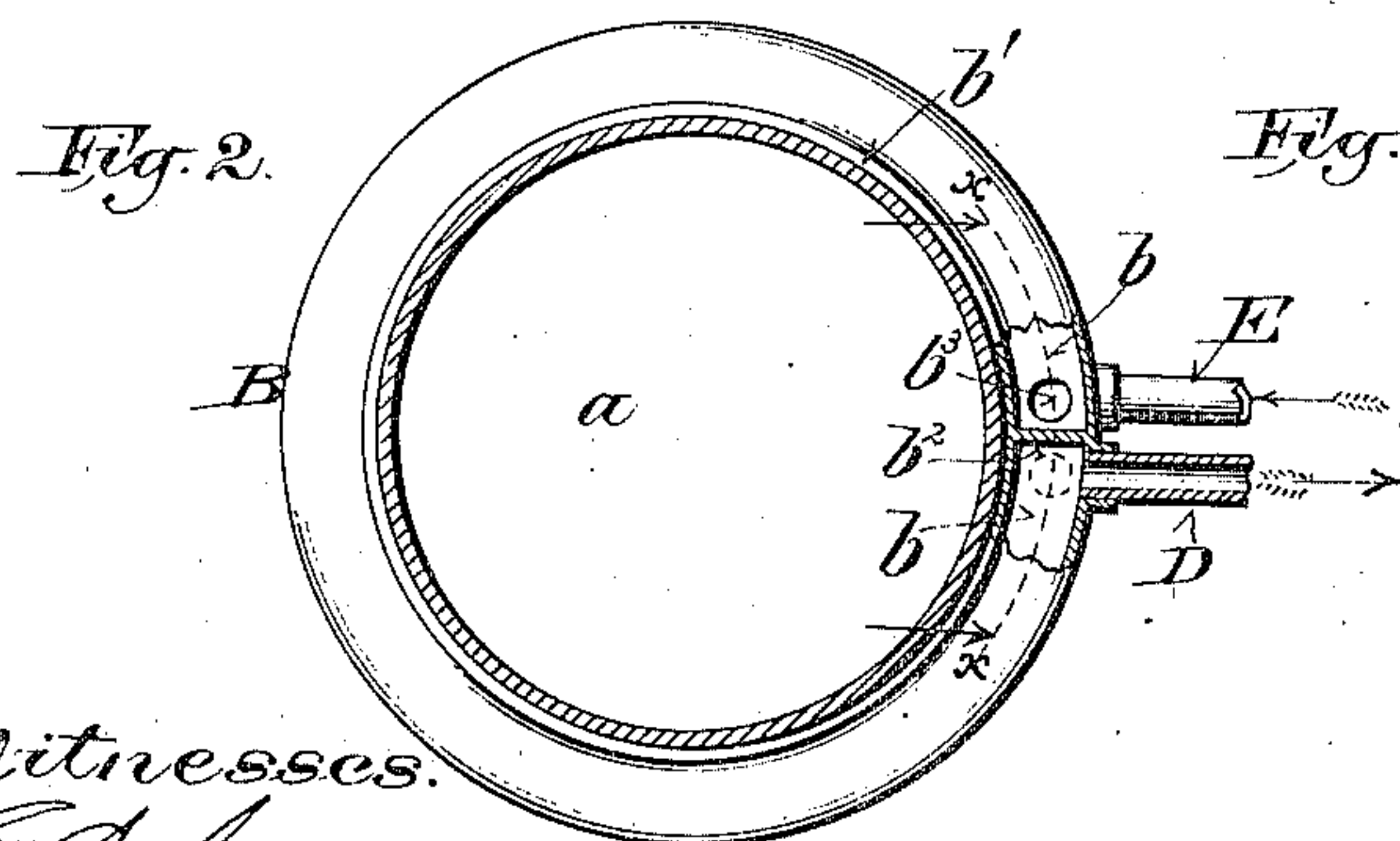
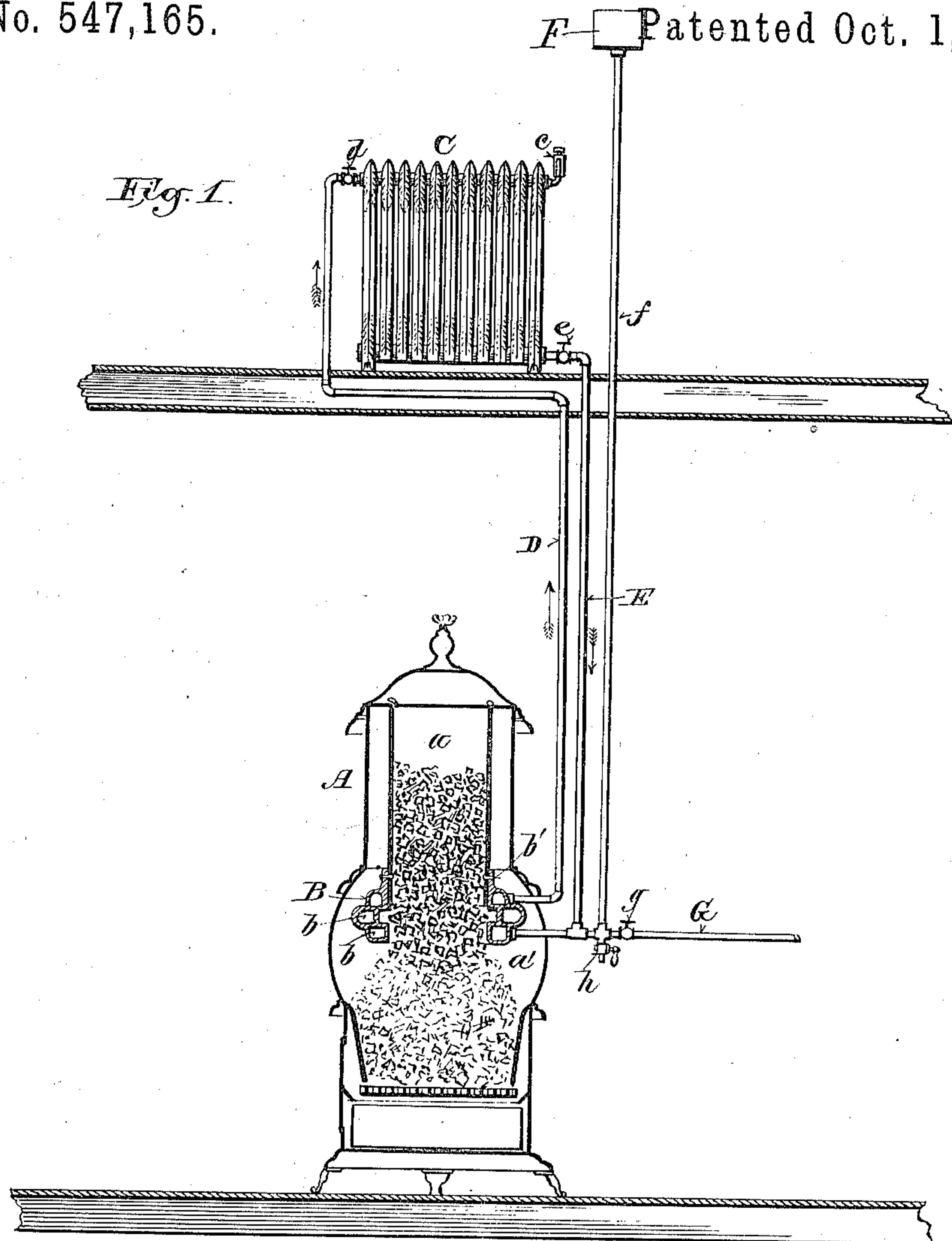
(No Model.)

J. EHNE.

WATER HEATING ATTACHMENT AND APPARATUS FOR STOVES OR FURNACES.

No. 547,165.

Patented Oct. 1, 1895.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN EHNE, OF MILWAUKEE, WISCONSIN.

WATER-HEATING ATTACHMENT AND APPARATUS FOR STOVES OR FURNACES.

SPECIFICATION forming part of Letters Patent No. 547,165, dated October 1, 1895.

Application filed January 8, 1894. Serial No. 496,042. (No model.)

To all whom it may concern:

Be it known that I, JOHN EHNE, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Water-Heating Attachments and Apparatus for Stoves or Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of my invention is to provide ordinary heating stoves and furnaces with an attachment for heating water or other suitable fluid-heat-conveying medium for warming other apartments or for other purposes.

It consists of certain peculiarities in the construction and arrangement of the heating attachment and its connections hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same or similar parts in the several figures.

Figure 1 is a vertical medial section of an ordinary self-feeding coal-stove provided with my improved heating attachment, together with a radiator and connections arranged for warming a room above that in which the stove is placed. Fig. 2 is a plan view, on an enlarged scale, of a modified form of the heating attachment; and Fig. 3 is a vertical section on the line xx , Fig. 2, showing the arrangement of the inlet and outlet connections and the connections between the several passages of said heating attachment.

A designates an ordinary self-feeding coal-stove provided in the usual manner with a magazine a , which overhangs and opens at its lower end into the combustion-chamber a' above the fire-pot of the stove.

B represents a casting constituting the main part of my improved heating attachment and formed with a number of passages $b b$, one above another. For use with a stove of the kind represented in the drawings this casting is preferably made of annular form to fit over the lower end of the magazine a , to which it is attached and by which it is supported a

short distance above the fire-bed. By the term "annular" I mean to include any open form, square as well as circular, adapted to fit over magazines of various shapes in cross-section. For attachment to the magazine the casting may be formed on the upper side with ears or a flange b' to be riveted or bolted to said magazine, as shown.

Where the construction of the stove or furnace will admit of it, I prefer to form the heating attachment so that one or each of a number of passages will project outwardly over the passage next below it, as shown in Fig. 1; so as to expose more surface to the fire and thereby increase the efficiency of the apparatus; but several passages may be formed, one directly above another, as shown in Fig. 2.

The shape of the casting and the number of passages may be varied according to the size, shape, and construction of the stove or furnace to which the attachment is applied and the amount of heating to be done; but I do not contemplate the use of less than two passages in any event, since two passages at least are necessary to secure the desired circulation and effect the best results.

The construction of the heater in annular form, together with its arrangement, as shown and described, in the space between the lower end of the magazine and the walls of the combustion-chamber, is of special advantage in that it affords a conduit for the heating medium of considerable length and surface directly exposed to the hot gases and products of combustion, which are compelled to pass upwardly around it on their way to the exit-flue.

C represents a radiator, which may be of any well-known form and construction. It is for the purpose of illustration represented on the floor above the stove and is connected with the casting B by pipes D and E, which are provided adjacent to the radiator with valves d and e for controlling and regulating the circulation of the heating medium through the radiator. The eduction-pipe D, through which the heating medium is conducted to the radiator, is connected with the uppermost passage of the heating attachment, while pipe E, through which the heating medium is conducted back from the radiator to the heating attachment, is connected with the lowermost passage.

The several passages *b b* of the heating attachment are divided on one side by partitions *b² b²*, placed one above another, as shown in Fig. 3, and each passage communicates on
 5 one side of its dividing-partition through an opening *b³* with the passage next above it, the inlet and outlet connections of each passage being on opposite sides of said partition, and when there are an odd number of passages
 10 the main inlet and outlet connections of the heating attachment being on opposite sides, as shown, but when there are an even number on the same side of the partitions.

To provide for expansion when water is employed as the heat-conveying medium and to
 15 avoid danger and injury to the apparatus, I connect a tank *F*, which is located above the highest point of the heating system, in this case above the radiator *C*, with some convenient part of the apparatus.

To avoid heating the water in tank *F* and consequent loss of heat, I prefer to connect said tank by a separate pipe *f* with the return-pipe *E* at or near its connection with the heating attachment. I have found by experience
 25 that such a connection of the tank produces the most satisfactory results.

It is obvious that with a small apparatus containing a small volume of water the tank
 30 may be dispensed with altogether by extending pipe *f* up far enough to prevent the overflow of water when raised to the highest temperature.

The tank *F* serves not only to receive the overflow from the apparatus, due to the expansion of the water contained therein, but also to fill and keep the apparatus supplied with water where a water-works connection is not feasible or convenient. In cases where a
 40 water-supply pipe is accessible it may be connected by a pipe *G* with the return-pipe *E* or the inlet end of the lower passage of the heating attachment *B*. This supply-pipe should be provided with a valve *g*, as shown, for
 45 shutting off the water when the apparatus is filled.

It is obvious that a single heating attachment may be connected, as hereinbefore explained, with a number of radiators.

50 As an additional safeguard in connection with the expansion-pipe *f* and tank *F*, I prefer to provide each radiator with a safety-valve *c*, which may be of any well-known construction and set to open at any given pressure.
 55 ure.

The course of circulation of the heat-conveying medium through the casting *B* and its connections is indicated by arrows on the several figures of the drawings, and the operation of the apparatus will be clearly understood by those skilled in the art to which my invention pertains from an inspection of the drawings, in connection with the foregoing explanation thereof.

65 For the purpose of emptying the apparatus

when necessary or desirable it is provided at some convenient point in its connections with a waste-cock *h*.

Various changes in minor details of construction and arrangement of the component
 70 parts of the apparatus may be made within the spirit and intended scope of my invention.

I claim—

1. In a self feeding stove or furnace the combination with the fuel magazine projecting at its lower end into and inclosed in the combustion chamber, of an annular heating attachment surrounding said magazine and comprising a passage divided on one side by
 75 a partition, and inlet and outlet connections on opposite sides of said partition, substantially as and for the purposes set forth.

2. In a self feeding stove or furnace, the combination with the fuel magazine projecting at its lower end into the combustion
 85 chamber, of a separate heating attachment surrounding said magazine and comprising a number of passages one above another, each having a partition on one side, and inlet and outlet connections on opposite sides of said
 90 partition, a main inlet connection with the lower passage and a main outlet connection with the upper passage, the several passages being connected with each other so as to
 95 cause a continuous circulation back and forth through them from the main inlet to the main outlet, substantially as and for the purposes set forth.

3. In a self feeding stove or furnace, the combination with the fuel magazine, of a
 100 heating attachment inclosed in the combustion chamber around said magazine and comprising a number of passages one above another, one or more of the upper passages projecting laterally over the passage next below
 105 it so as to expose greater surface to the fire, each of said passages being divided on one side by a partition and having on opposite sides of said partition, inlet and outlet connections, substantially as and for the purposes set forth.
 110

4. The combination with a stove or furnace provided with a fuel magazine opening at its lower end into the fire pot, of an annular heating attachment secured to and supported
 115 by the lower end of said magazine and comprising one or more passages, each having a transverse partition on one side and inlet and outlet connections on opposite sides of said partition and inlet and outlet pipes connected
 120 respectively with the lower and upper passages of said attachment, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of
 125 two witnesses.

JOHN EHNE.

Witnesses:

CHAS. L. GOSS,
 FRED J. WERGIN.