

M. J. BRAUN.
BOILER FLUE CLEANER.
APPLICATION FILED APR. 23, 1910.

996,609.

Patented July 4, 1911.

Fig. 1.

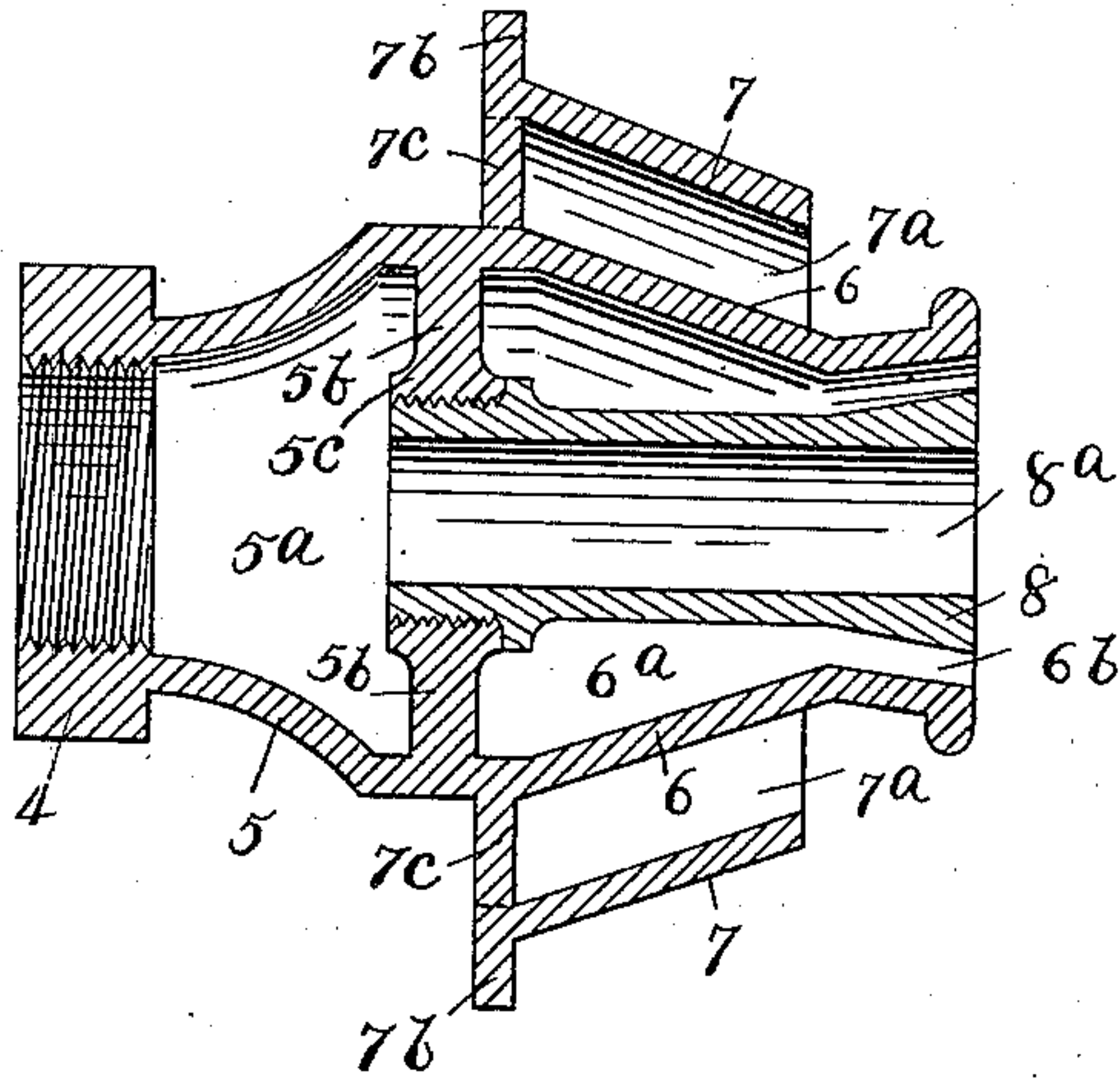


Fig. 2.

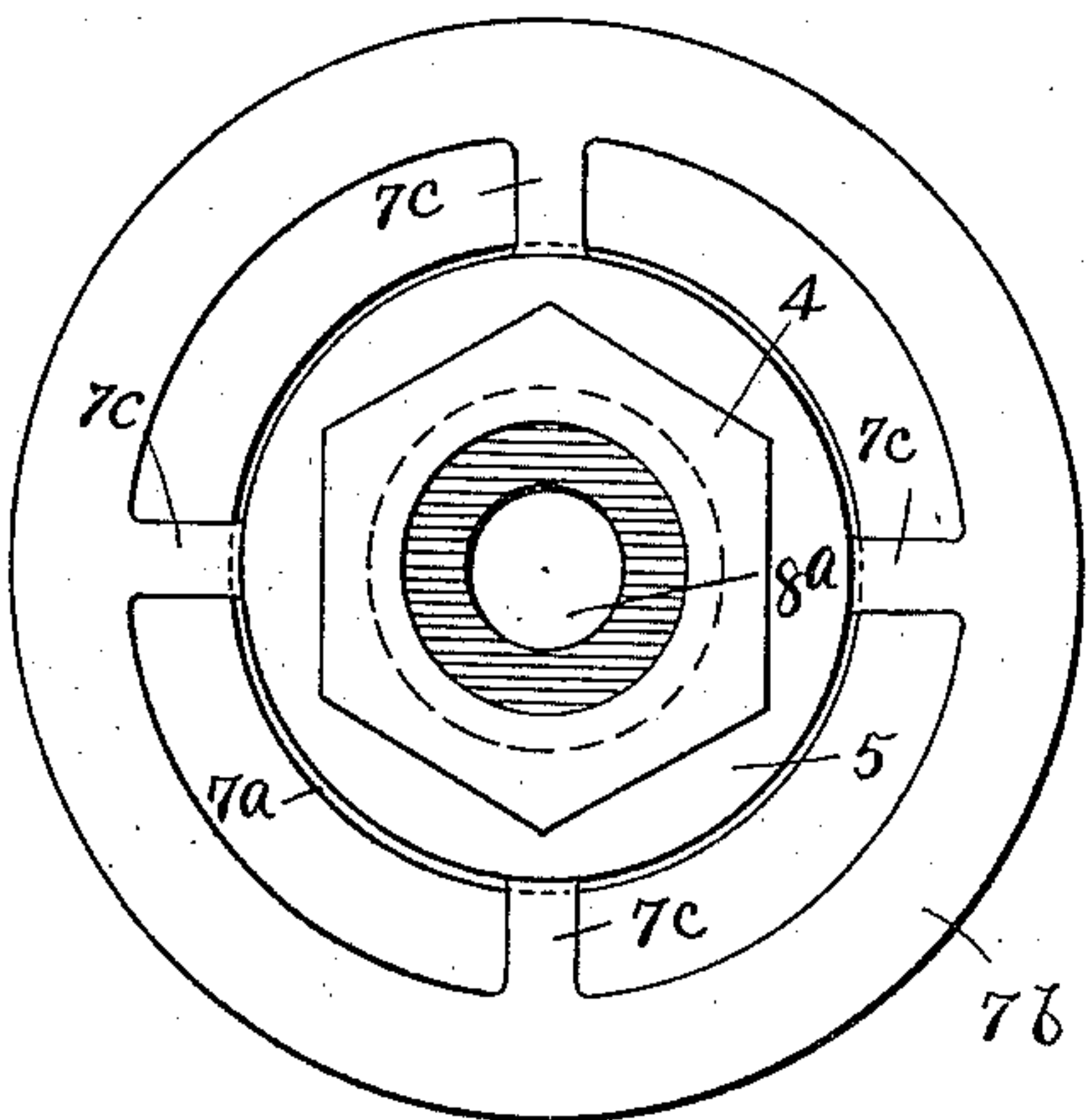
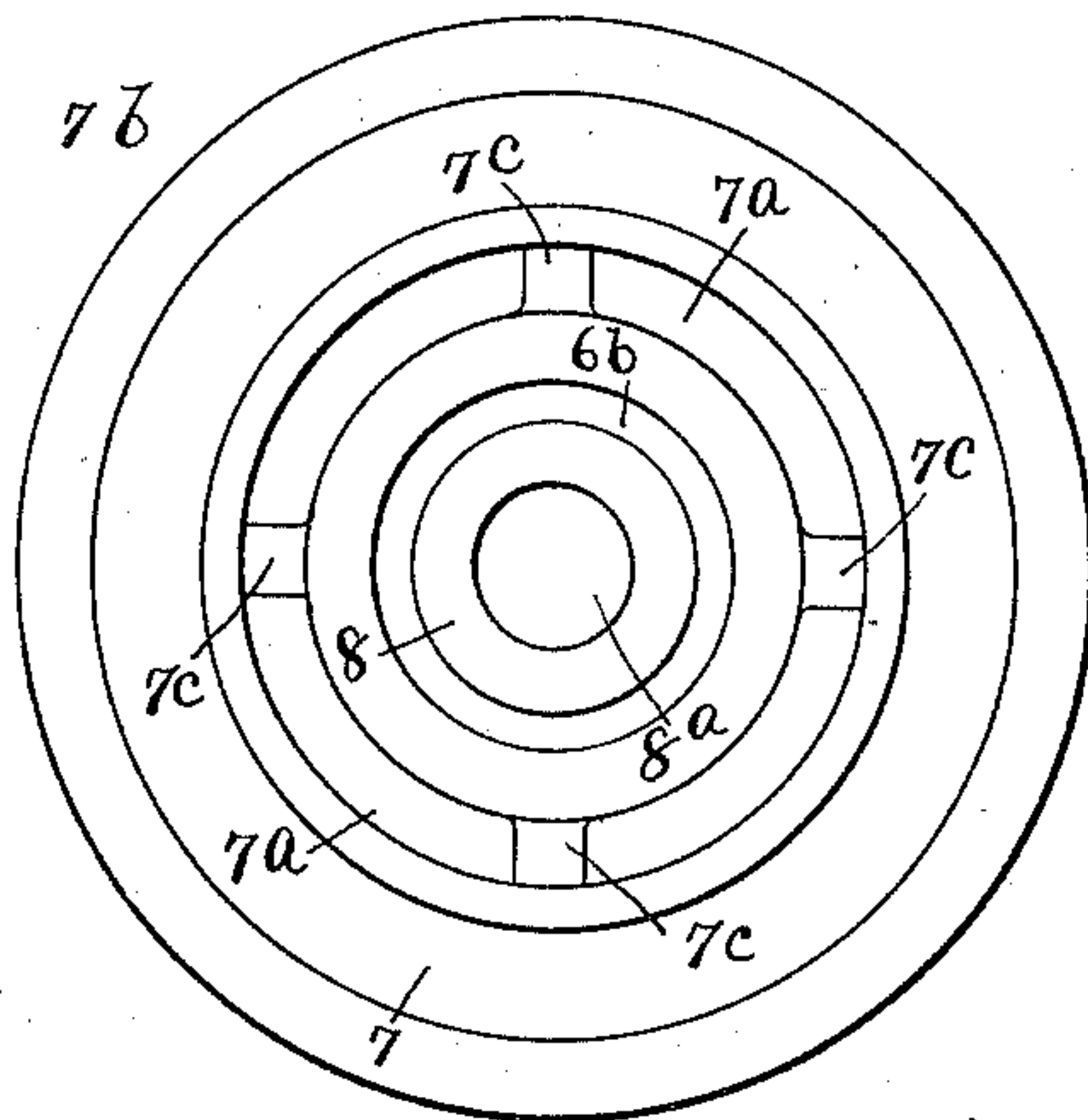


Fig. 3.



Witnesses

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BOILER-FLUE CLEANER.

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To all whom it may concern:

Be it known that I, MATHIAS J. BRAUN, citizen of the United States, residing at Wahpeton, in the county of Richland and State of North Dakota, have invented certain new and useful Improvements in Boiler-Flue Cleaners, of which the following is a specification.

This invention relates to boiler flue cleaners of the type in which a jet of steam under pressure is used for removing accumulations from the inner walls of the flues.

The especial object of the improvements which form the subject matter of this application is to provide a device of the character stated which can be adapted to flues of different diameters and when applied will be centered so that the projected stream of steam or other fluid will be distributed on all surfaces of the flue walls.

A further object is to provide a device of this character that can be cheaply manufactured and which will draw in with the steam or other fluid a certain amount of air.

A further object of my improvements is to provide a form of nozzle which will provide a stream deflected outwardly and in a substantially annular form as well as a stream of considerable volume at the center of the nozzle.

In the accompanying drawing, forming a part of this application, I have illustrated my improved flue cleaner in a preferred form in the following views:—

Figure 1 is a longitudinal section taken through my improved flue cleaner in a vertical plane; Fig. 2 is an end view taken at the left hand side of Fig. 1, and Fig. 3 is an end view taken at the right hand of Fig. 1.

Referring to the details of the drawing, the reference character 4 represents the head of my improved flue cleaner nozzle which is interiorly threaded so that it may be readily screwed on the end of a pipe or hose through which the steam or other fluid is conducted to the nozzle.

5 represents the body portion of the nozzle in which is the main chamber 5^a and from the outer end of which extends the inwardly tapering walls of the outer nozzle 6, radial ribs 5^b extending inwardly at the point of junction between the body portion 5 and the nozzle 6, the inner ends of said ribs communicating with a ring 5^c which is interiorly threaded to receive the inner end of the cen-

tral nozzle 8. Between the outer walls of the central nozzle 8 and the inner walls of the nozzle 6 is an annular fluid passage 6^a which for a portion of its distance converges toward the outer end of the nozzle and then merges into an outwardly flaring annular passage 6^b. Surrounding the nozzle 6 is a trunco-conical shell 7 which is connected with the wall 6 by ribs 7^c and which is surrounded by an annular flange 7^d. Between the outer walls of the nozzle 6 and the inner walls of the shell 7 are passages 7^a through which the air is drawn when the nozzle is applied to a flue. Through the central passage 8^a of the nozzle 8 the solid stream is projected into the flue and through the annular passage 6^b a cylindrical jet of steam flows and by reason of the outward flare of the passage 6^b the stream is given a like direction and is thus caused to impinge upon the walls of the flue into which the nozzle is inserted.

It will be seen that my improved nozzle is made in but two parts the portion 8 being screwed into place and the shell 7 and the nozzle 6 and body 5 being integrally formed by suitable mold and casting operations. The air passage 7^a prevents the creation of a vacuum in the flue when the cleaner is in operation and the central jet projected from the passage 8^a will tend to force the cylindrical jet against the walls of the flue with some degree of the pressure in the central jet, thus effectively removing the deposit on the walls of the flue.

It will be seen from the above that my improved cleaner provides two passageways for the cleaning fluid and one passageway for air and that all of said passageways are concentric. It will also be seen that the peripheral annular flange 7^b by bearing against the outer end of the flue, centers the nozzle and should the diameter of the flue be less than the greatest diameter of the shell 7 the tapering walls of said shell will tend to center the nozzle in the flue and will adapt themselves to any diameter of flues from the smallest diameter of the shell 7 to the largest diameter of same thus avoiding the necessity of having a multiplicity of nozzles where there are slight variations in the diameters of the tubes of a boiler.

Having thus described my invention what I claim is new, is:—

1. A flue cleaner, comprising a hollow cylindrical body having its walls contracted

from the middle toward the opposite ends and adapted to be attached to a pipe, an internally threaded ring arranged within the body intermediate the ends, radial arms
5 supporting said ring, a nozzle having threaded connection with said ring, an outer trunco-conical shell surrounding said body and spaced therefrom, and integral radial arms supporting said shell from the said
10 body.

2. A flue cleaner, comprising a hollow cylindrical body having its walls contracted in opposite directions from the middle portion and adapted to be attached to a supply
15 pipe, a threaded ring suspended by integral arms within the body and concentric therewith, a nozzle removably engaging said ring and spaced from the walls of said body, and an outer shell supported upon and spaced

from the said body and connected therewith 20 by radial arms integral with both shell and body.

3. A flue cleaner having a main body portion, a frusto-conical nozzle communicating with said body portion and having its walls 25 tapering inwardly for a portion of their length, and then flaring outwardly to the outer end of said nozzle, a tubular nozzle arranged within the conical nozzle and a frusto-conical shell surrounding the frusto- 30 conical nozzle and having an annular passageway therethrough.

In testimony whereof I affix my signature in the presence of two witnesses.

MATHIAS J. BRAUN.

Witnesses:

EUGENA SCHULER,
R. H. SNYDER.

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