

No. 860,191.

PATENTED JULY 16, 1907.

B. CLARKE.  
HYDROCARBON BURNER.  
APPLICATION FILED FEB. 5, 1906.

3 SHEETS—SHEET 1.

FIG. I.

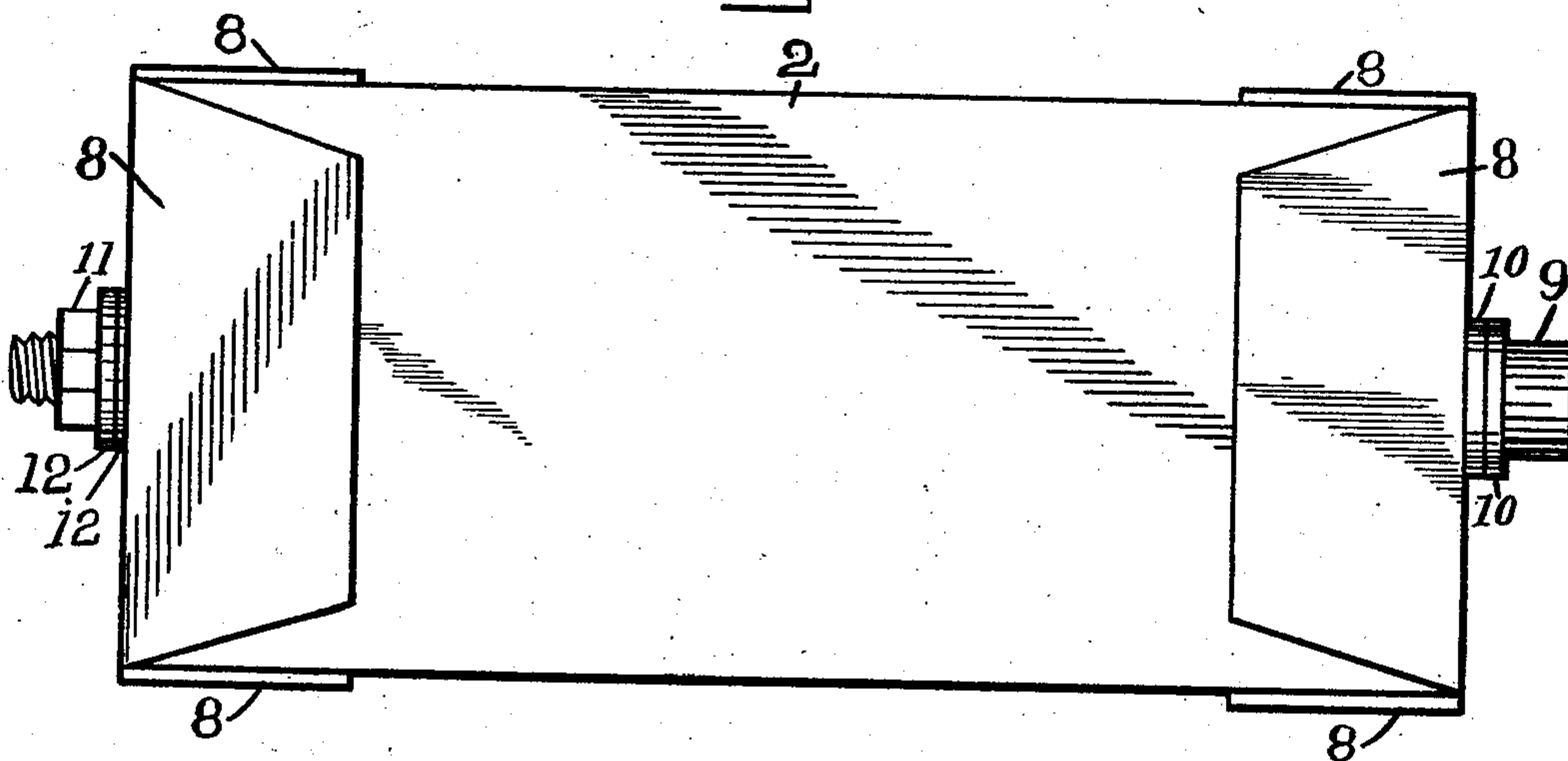


FIG. II.

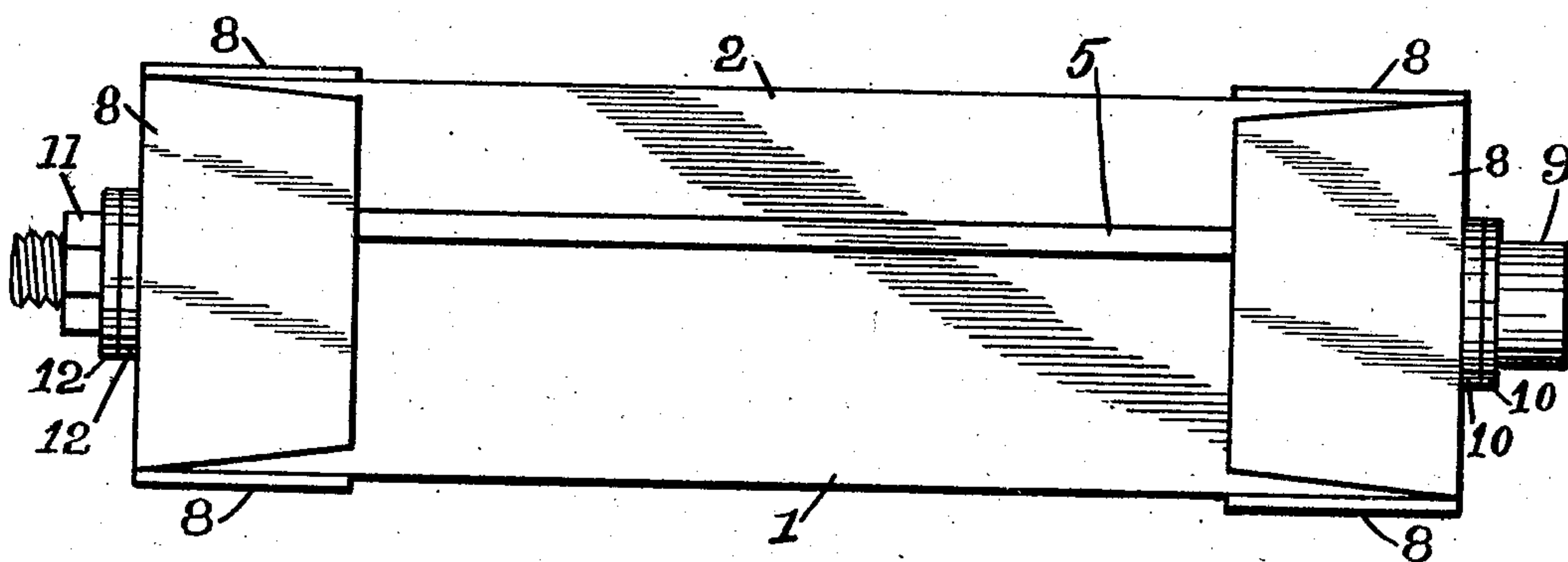


FIG. III.

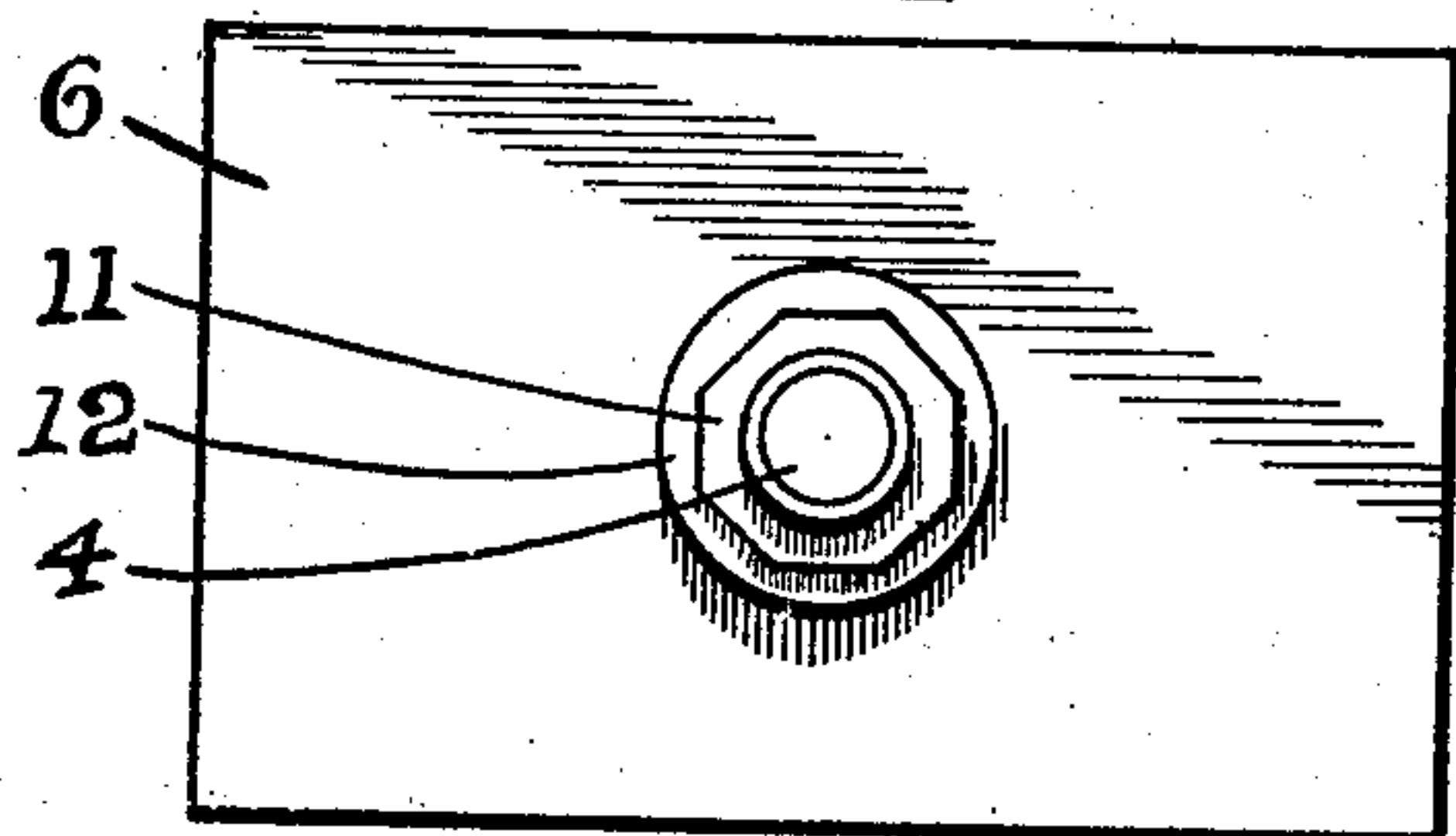
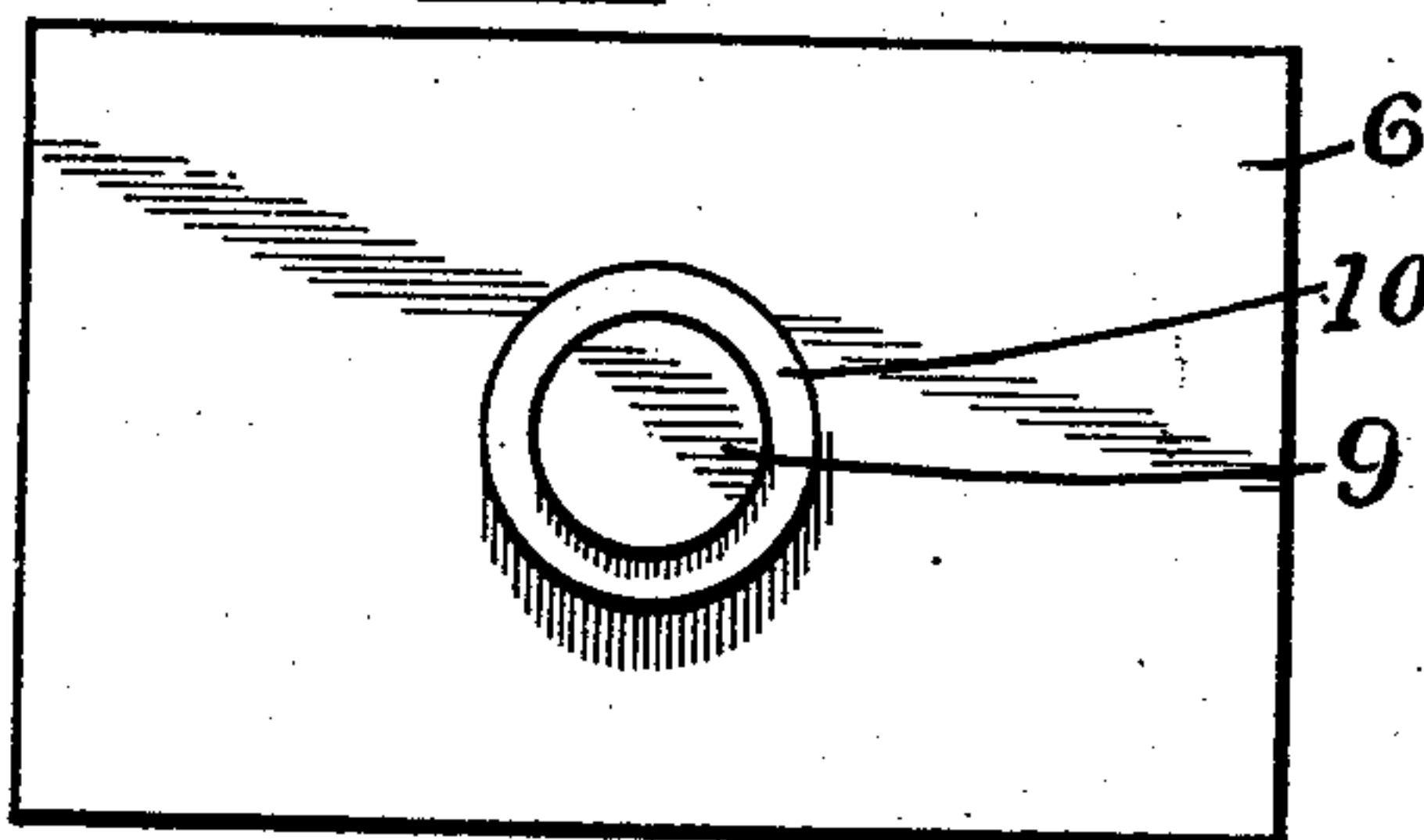


FIG. IV.



WITNESSES.

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3 SHEETS—SHEET 2.

Fig. V.

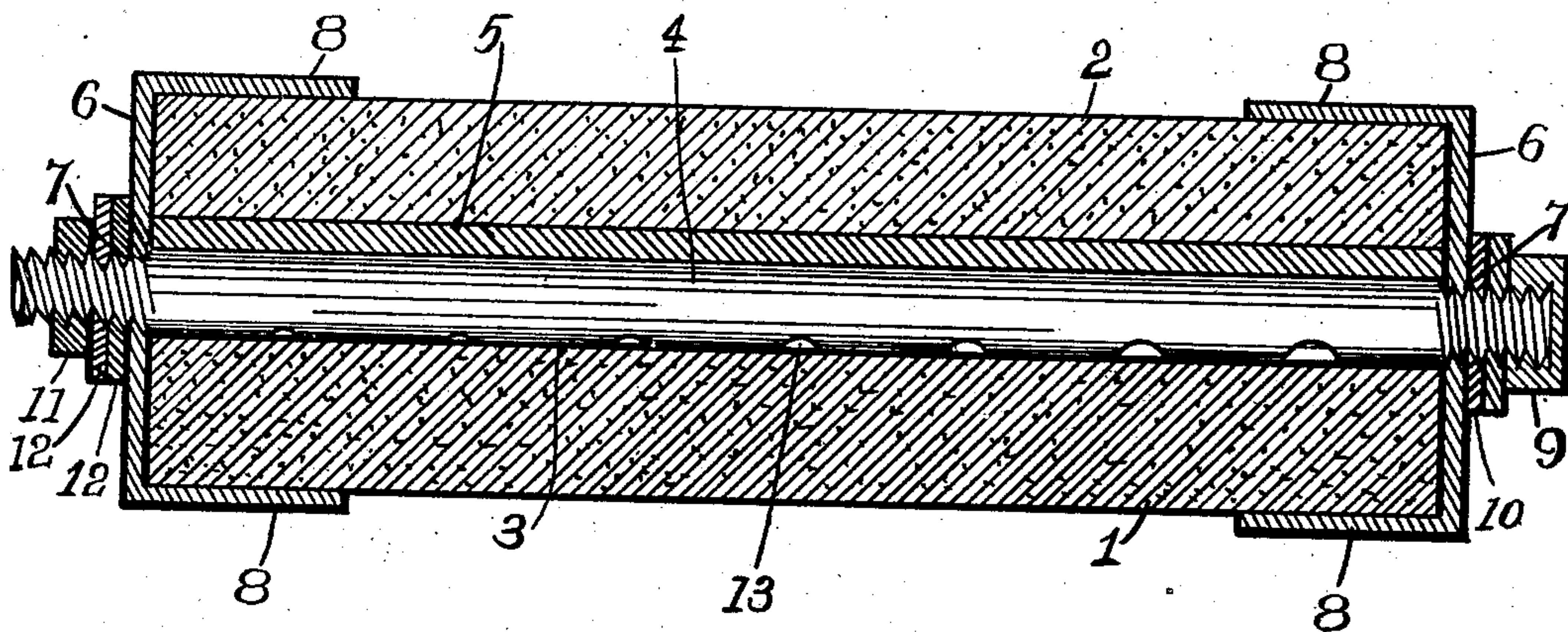


Fig. VI.

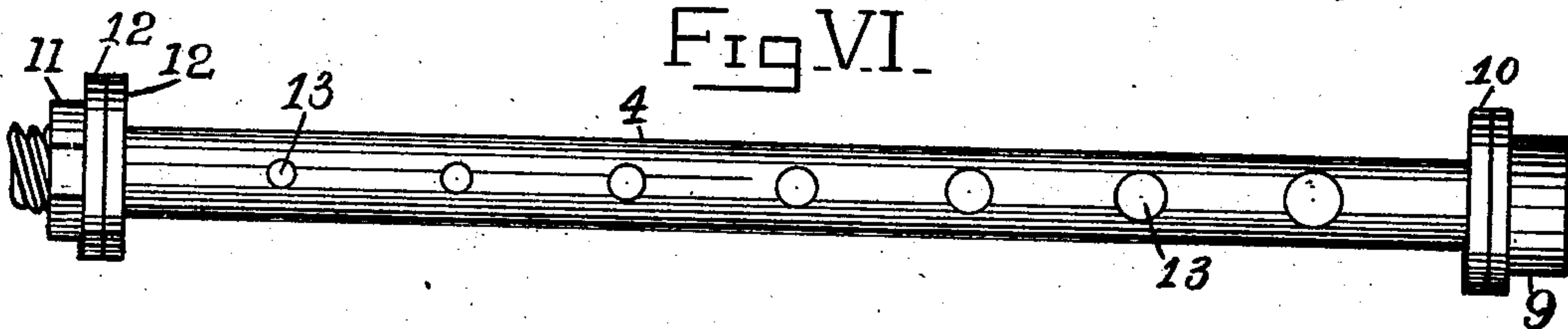
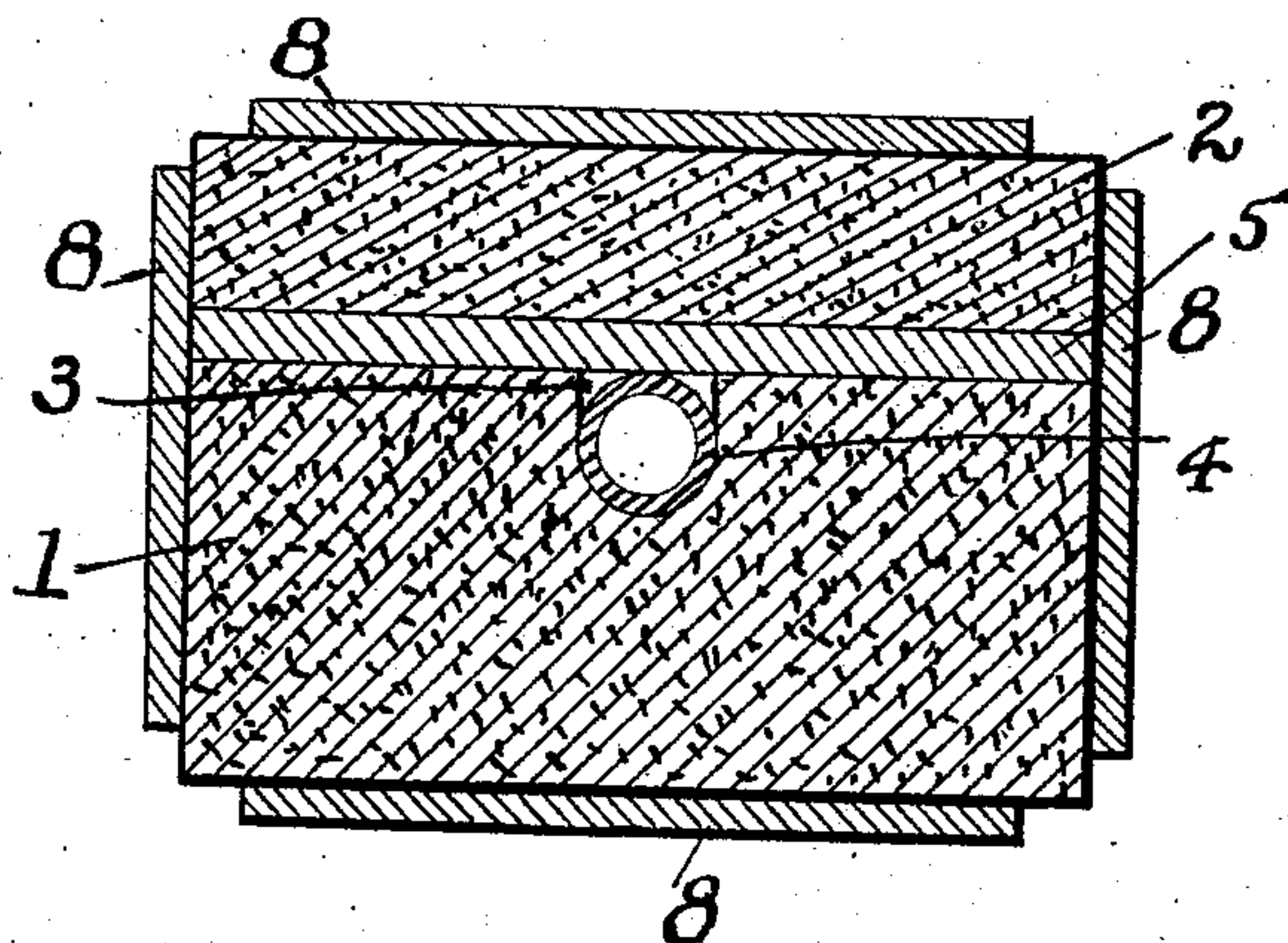


Fig. VII.



Witnesses.

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3 SHEETS—SHEET 3.

FIG. VIII.

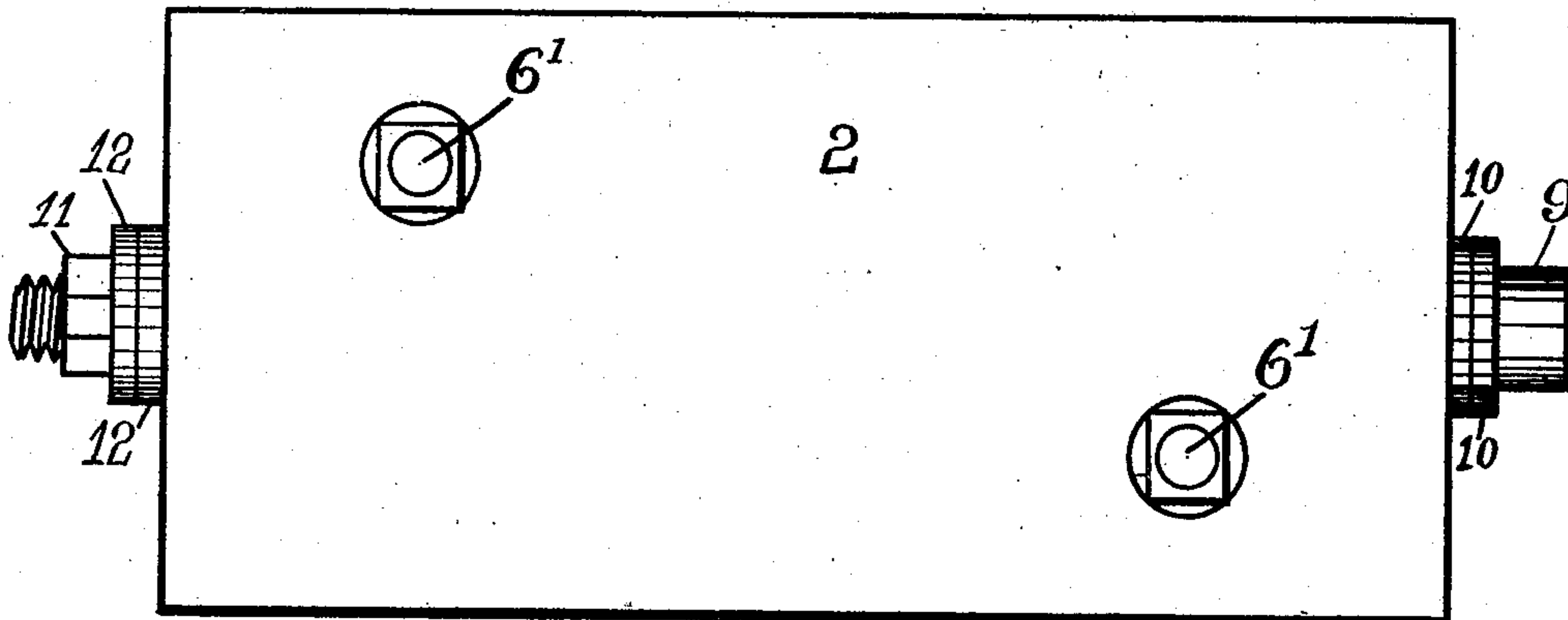


FIG. IX.

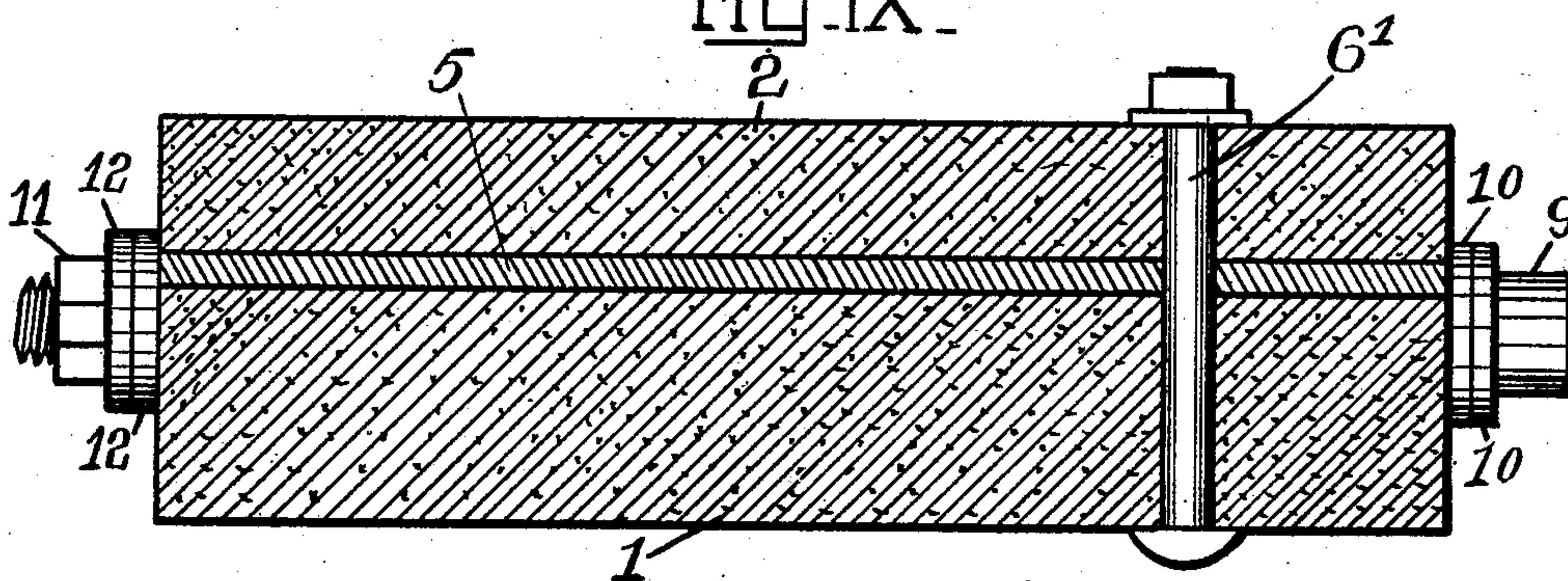
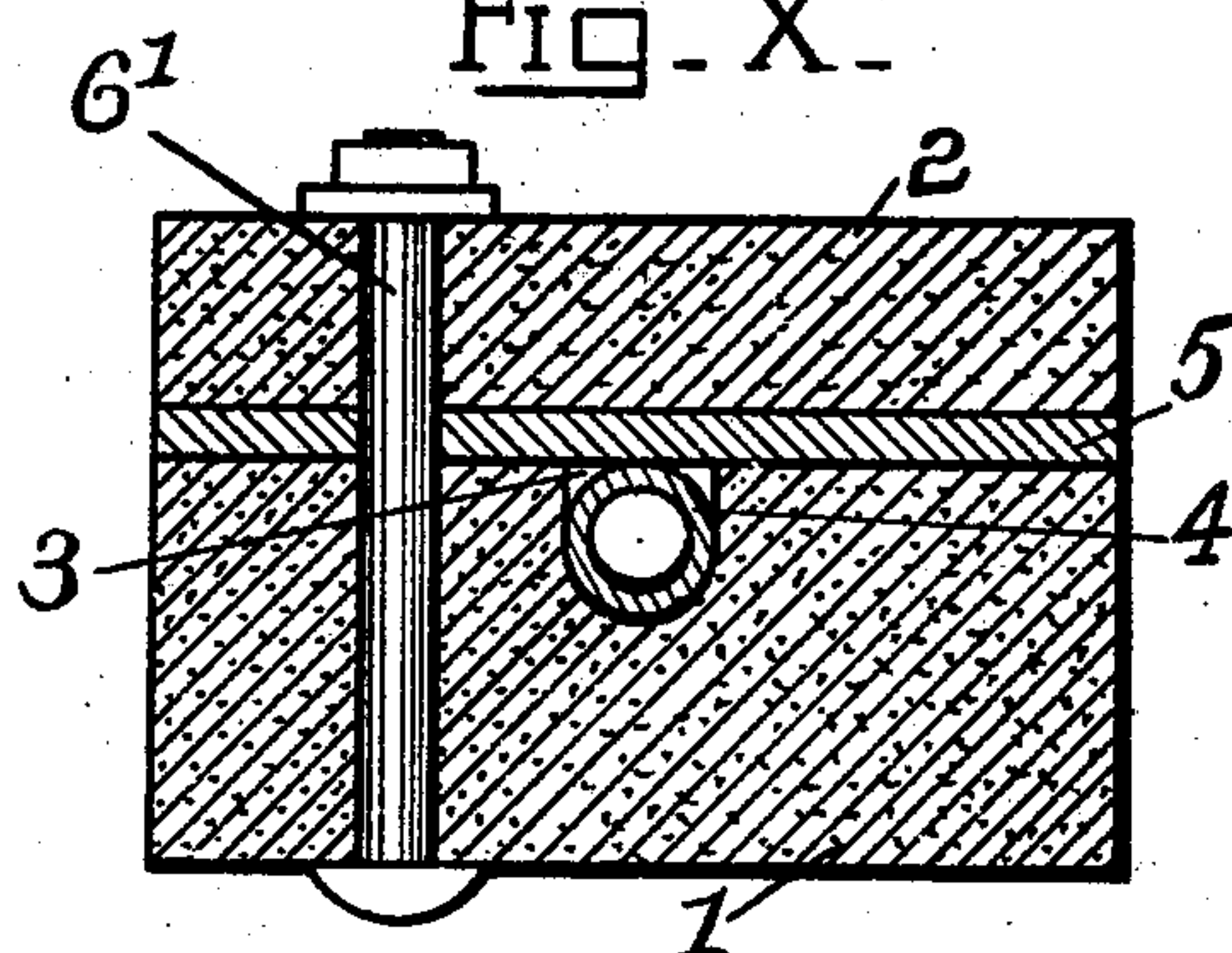


FIG. X.



WITNESSES

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# UNITED STATES PATENT OFFICE.

BRENT CLARKE, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO INDUSTRIAL ALCOHOL HEAT AND LIGHT COMPANY, A CORPORATION OF SOUTH DAKOTA.

## HYDROCARBON-BURNER.

No. 860,191.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed February 5, 1906. Serial No. 299,482.

*To all whom it may concern:*

Be it known that I, BRENT CLARKE, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

This invention has relation to hydro-carbon burners, and it consists in the novel construction and arrangement of its parts as hereinafter shown and described.

10 The object of the invention is to provide a hydro-carbon burner in which a brick or other porous body is used as a means for gasifying the oil and burning the resultant gas. The said brick, however, is so constructed and provided with such attachments that it converts the oil into gas at a very rapid rate, and the major portion of the said gas is burned at the lower portion of the brick. The heat rising from the flame envelops the brick and heats the same to an intense degree. The oil is led into the brick by means of a pipe which is provided with a series of perforations which are graduated in size of diameter. The smallest said perforation being located nearest the oil inlet end of the brick, and the remaining perforations gradually increasing in diameter.

25 In the accompanying drawings:—Figure 1, is a top plan view of the burner. Fig. 2, is a side elevation of the burner. Fig. 3, is a view of one end of the burner. Fig. 4, is a view of the other end of the burner. Fig. 5, is a longitudinal sectional view of the burner. Fig. 6, is a side view of the pipe used in the burner. Fig. 7, is a transverse sectional view of the burner. Fig. 8, is a top plan view showing a modified form of the burner. Fig. 9, is a longitudinal sectional view of the burner as shown in Fig. 8, and Fig. 10, is a transverse sectional view of the burner as shown in Fig. 8.

35 The body portion of the burner is composed of two sections, 1 and 2, which are made of brick or other porous material. The lower section 1, is provided in its upper side with a longitudinally extending groove 3, which receives the perforated pipe 4. The metal plate 5, extends over the pipe 4, and the upper surface of the section 1; while the upper section 2, rests upon the upper surface of the plate 5.

45 The plates 6, 6, are made of sheet metal, and are located at the ends of the burner. Said plates have the central perforations 7, 7, through which the pipe 4, passes, and said plates are provided at their edges with the flanges 8, 8, which extend along the outer surfaces of the sections 1 and 2, and along the edges of the same.

50 At one end the pipe 4, is closed by a cap 9, which bears against the jam nuts 10, 10, (also located upon said pipe 4) and at the other end said pipe is provided with the nut 11, which bears against the washers 12, 12.

This arrangement prevents longitudinal play of the pipe with relation to the body of the burner, and also serves to securely hold the plates 6 in position over the end of the body of the burner. The under side of the pipe 4, is provided with the perforations 13. The said perforations increase in diameter from the oil inlet end thereof toward the closed end. The end of the pipe 4, upon which the nut 11, is located is adapted to be connected in any suitable manner with an oil supply pipe (not shown).

65 In the form of the invention as shown in Figs. 8, 9, and 10, the end plates 6, 6, are dispensed with, and the upper and lower brick sections 1 and 2 are held together by the bolts 6', 6', which extend vertically through the said brick sections and the plate 5. The said brick sections may be held together by any other suitable means.

75 The operation of the burner is as follows:—The oil is led into the pipe 4. It then passes through the perforations 13, and percolates through the pores of the lower brick section 1. At the surface of the said lower brick section 1, the oil is ignited and the flame rises and envelops the entire burner. Thus the burner is heated and eventually the heat becomes so intense as to gasify the oil as soon as it enters the pipe 4, when the gas passes through the perforations 13, and the pores of the lower brick section 1, and is burned in a manner similar as that above described for the oil. The metal plate 5, prevents the oil or gas from going through the upper brick section 2, but deflects them both down through the lower section 1. Thus the entire flame is produced at the lower portion of the burner, and the upper portion of the burner is heated by using the heat therefrom, which facilitates and quickens the process of gasification of the oil.

85 The object in varying the sizes in diameter of the perforations 13, is to get an even distribution of the oil and gas through the pipe, and to assure a uniform flow of the oil and gas through the lower section 1, at all points. As the oil enters the pipe 4, a greater portion of the gas would pass through the section 1, near the point of oil inlet than at other points of the perforation 13, were all of the same size. Consequently, the perforations vary in size in order to acquire the result above explained.

90 Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A hydrocarbon burner comprising a burner body formed of two rectangular sections of porous material resting one upon the other, metallic plates located at each end of the burner body and provided with flanges projecting over the side faces of said sections, a hydrocarbon pipe interposed between the contiguous faces of said sections, and means for locking said pipe in position and also preventing the displacement of said end plates.



2. A hydrocarbon burner comprising a burner body formed of two rectangular sections of porous material resting one upon the other, one of said sections having its top face provided with a longitudinal recess, metallic plates  
5 located at each end of the burner body and provided with flanges projecting over the side faces of said sections to unite them, and means for introducing hydrocarbon into said recess.

3. A hydrocarbon burner comprising a porous body  
10 formed of two sections resting one upon the other, a metallic plate interposed between said sections, end plates embracing the ends of said sections and plate to unite them, and means for introducing hydrocarbon between the contiguous faces of one of said sections and said plate.

4. A hydrocarbon burner comprising a porous body  
15 formed of two sections resting one upon the other, a metallic plate interposed between said sections, end plates embracing the ends of said sections and plate to unite them, a hydrocarbon pipe interposed between the contiguous faces  
20 of said plate and the lower section, and means for preventing longitudinal movement of said pipe.

5. A hydrocarbon burner comprising a burner body formed of two sections of porous material resting one upon the other, a metallic plate interposed between said sections,  
25 end plates provided with flanges embracing the ends of said

sections and plate to unite them, a hydrocarbon pipe interposed between the contiguous faces of said plate and the lower section, and means carried by said pipe to prevent displacement of said end plates.

6. A hydrocarbon burner comprising a porous body  
30 formed of two sections resting one upon the other, the lower section being chambered, means for uniting said sections, a hydrocarbon pipe located in the chambered portion of the lower section and interposed between the contiguous  
35 faces of said sections, and means for preventing longitudinal displacement of said pipe.

7. A hydrocarbon burner comprising a porous body formed of two sections resting one upon the other, a metallic plate interposed between the contiguous faces of said  
40 sections, means for uniting said sections and plate, a hydrocarbon pipe interposed between said plate and one of said sections, and means for preventing longitudinal displacement of said pipe.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.  
45

BRENT CLARKE.

Witnesses:

CHAS. H. ROESCH,  
THEO. A. HARDING.