

No. 739,957.

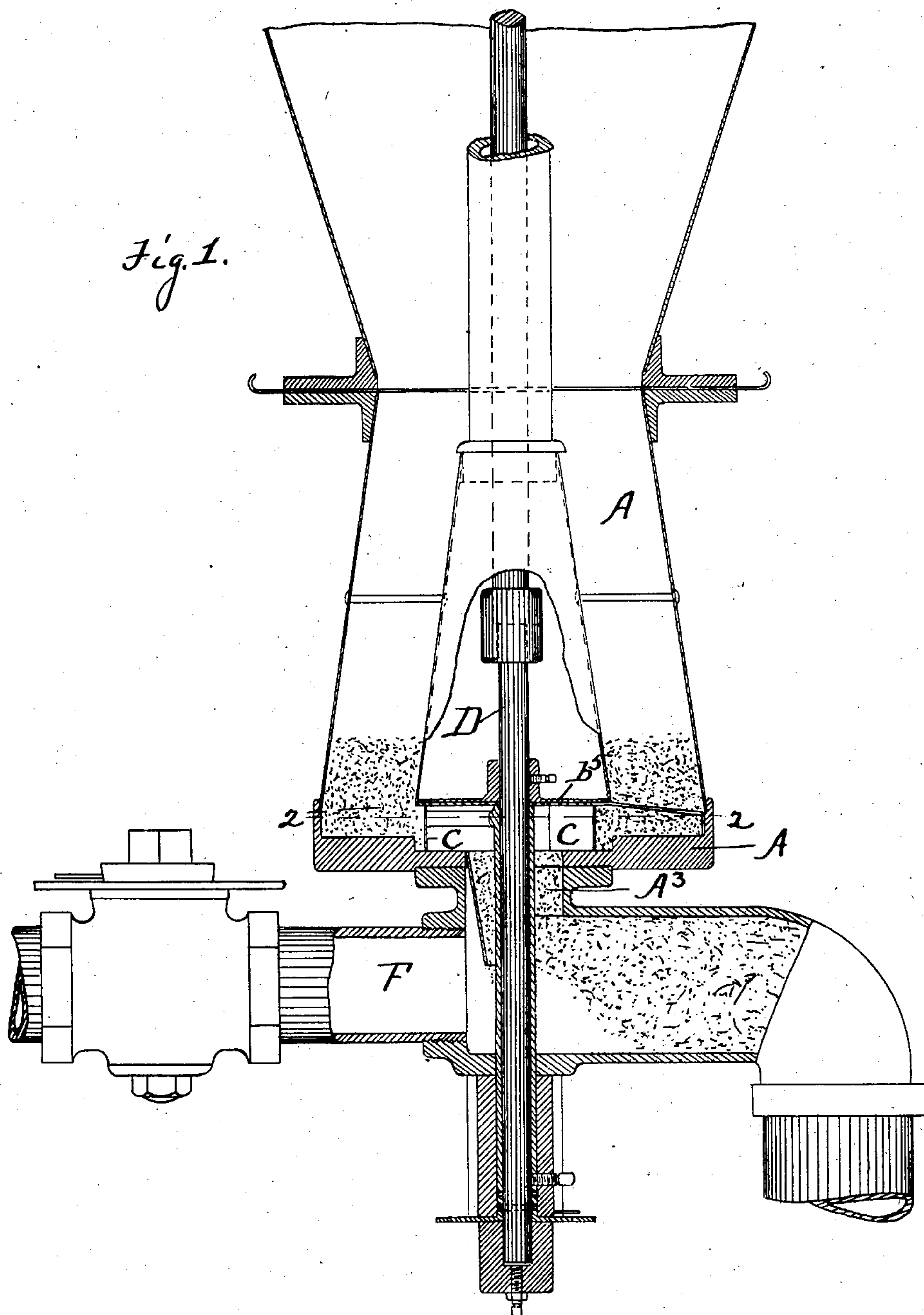
PATENTED SEPT. 29, 1903.

B. J. WALKER.  
DEVICE FOR BURNING PULVERIZED COAL.

APPLICATION FILED OCT. 17, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses  
C. G. L. McCord  
Margaret Sullivan

Inventor  
Benjamin J. Walker  
by W. C. Lord  
Attorney

B. J. WALKER.

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3 SHEETS—SHEET 2.

Fig. 2.

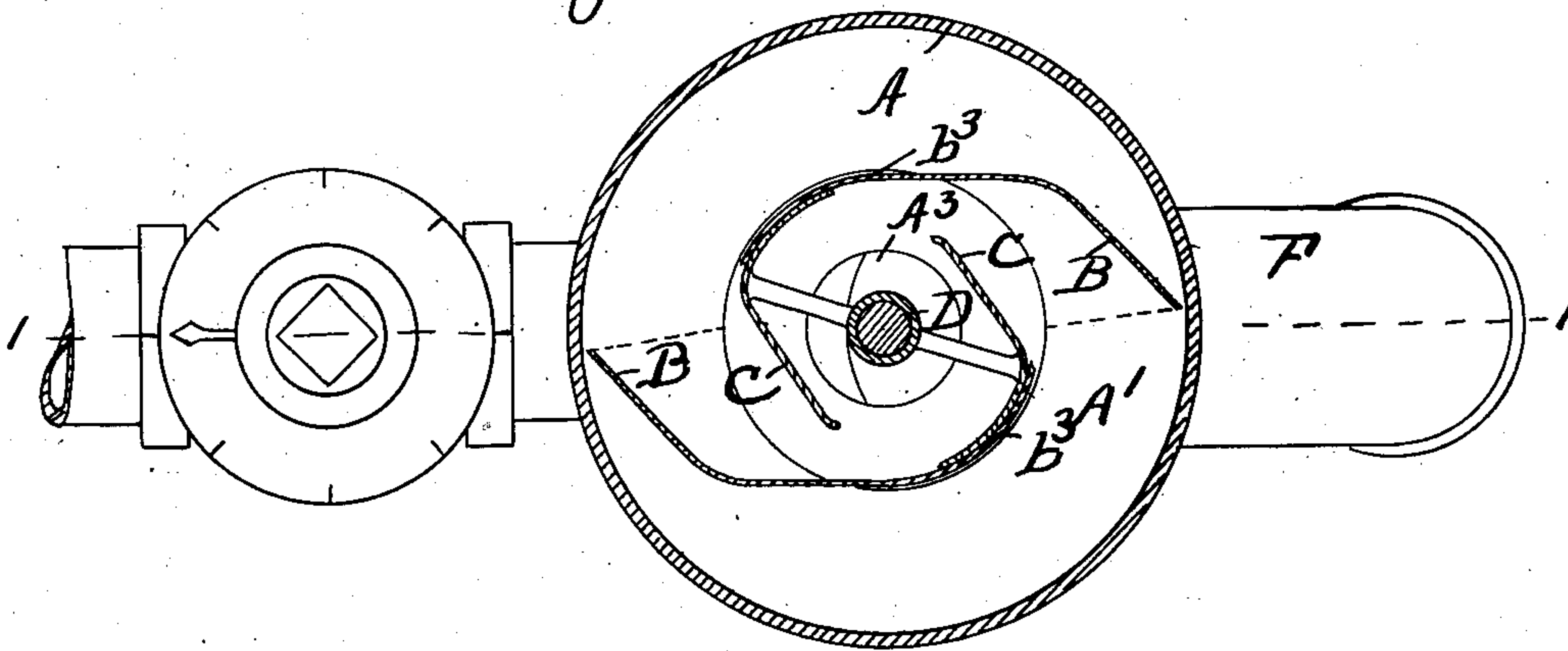
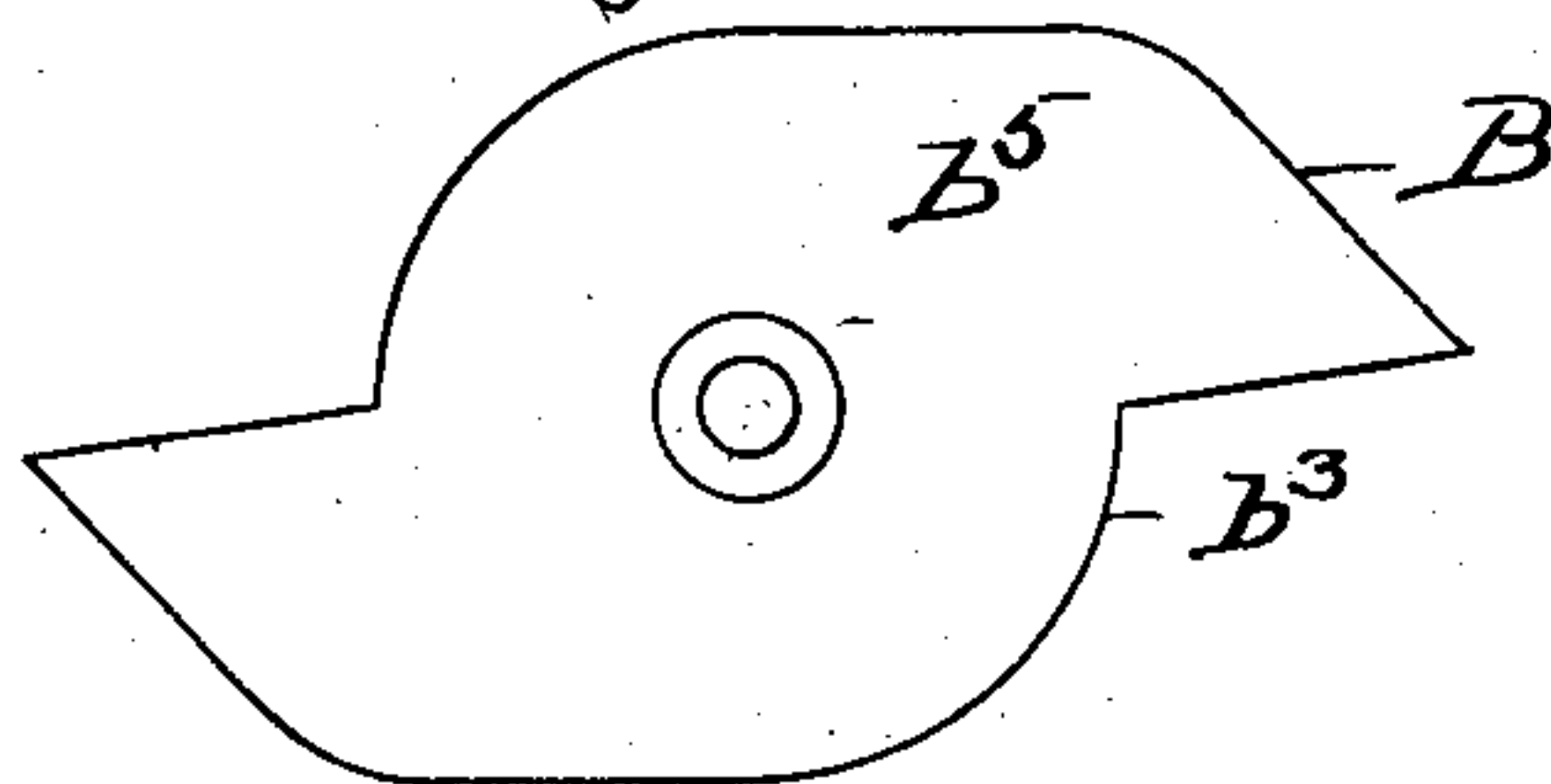


Fig. 3.



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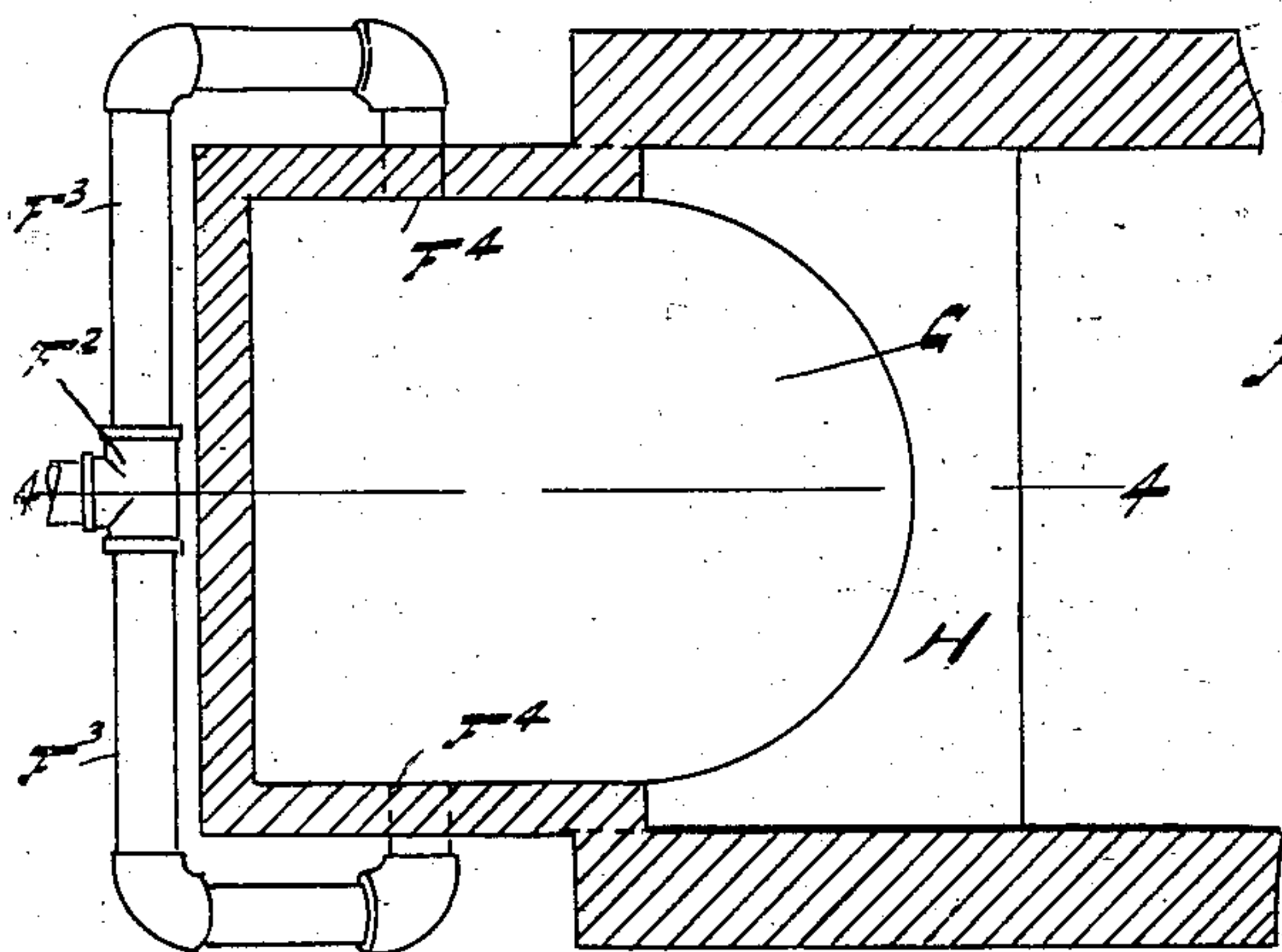
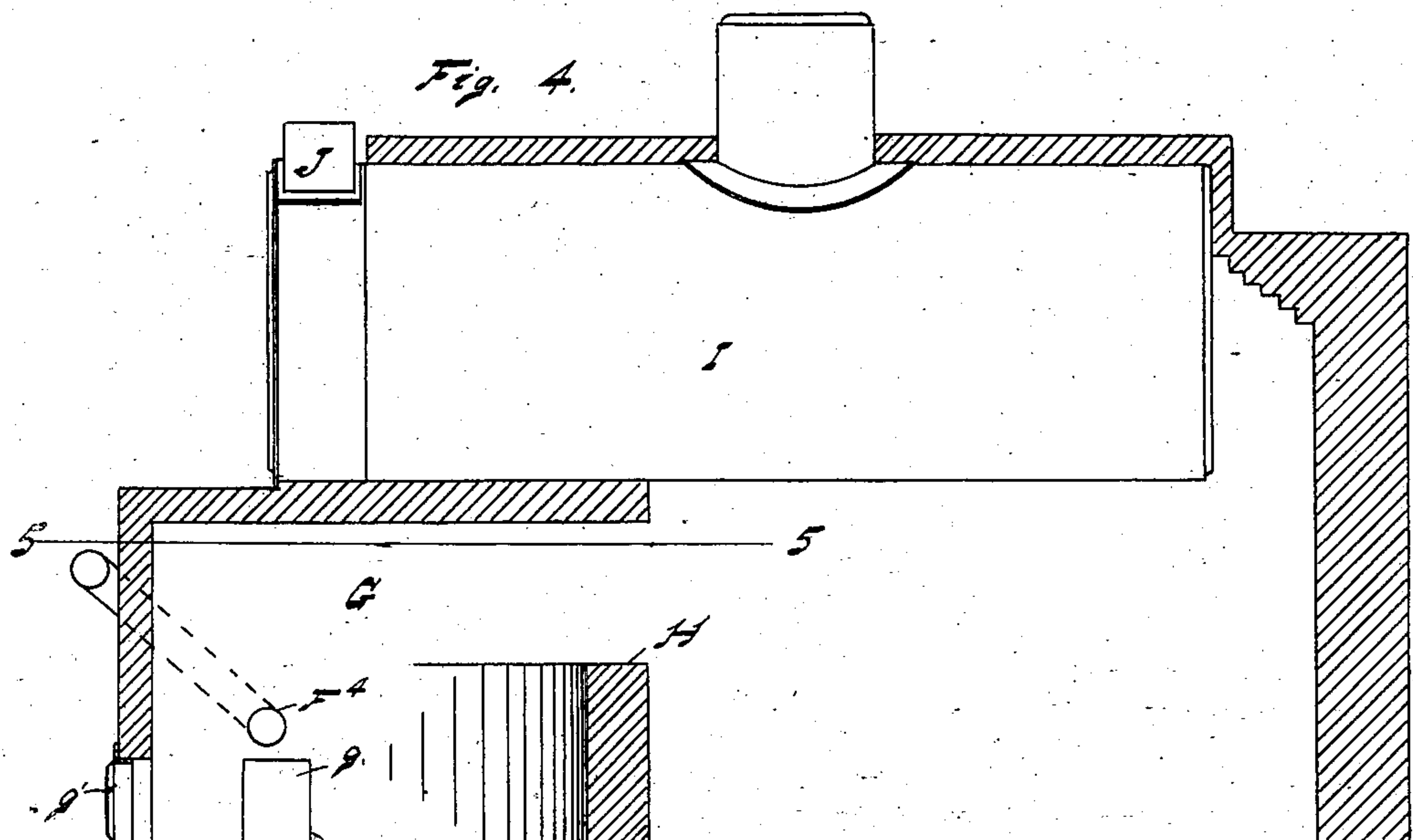
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3 SHEETS—SHEET 3.



Witnesses

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# UNITED STATES PATENT OFFICE.

BENJAMIN J. WALKER, OF ERIE, PENNSYLVANIA.

## DEVICE FOR BURNING PULVERIZED COAL.

SPECIFICATION forming part of Letters Patent No. 739,957, dated September 29, 1903.

Application filed October 17, 1902. Serial No. 127,684. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN J. WALKER, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Devices for Burning Pulverized Coal, of which the following is a specification.

This invention relates to devices for burning pulverized coal; and it consists in certain improvements in the construction thereof, as will be hereinafter fully described, and pointed out in the claims.

More especially, the invention relates to a means for so introducing pulverized coal to a furnace in a scattered condition as to induce proper combustion. Heretofore great difficulty has been experienced in devising means whereby fuel of this character might be completely burned, and any failure in producing perfect combustion results in the formation of coke. This clogs the furnace and flues and produces smoke. For this reason apparatuses for burning this class of fuel have had a limited use.

I have found that an apparatus which will sustain the fuel in suspension during combustion will accomplish perfect results. I provide an apparatus which will accomplish this by opposing the blasts which carry the fuel. This may be done by introducing the blasts at directly opposite sides of the furnace. By this means particles are thoroughly scattered and the blast is prevented from acting upon any of the walls of the furnace so as to cool it sufficiently to form coke. Where single blasts have been used as heretofore, the action of the blast upon the wall opposite it has been such as to produce coke, beginning at the wall and extending out toward the blast. My apparatus entirely obviates this difficulty and is perfectly feasible under boilers and in devices having extensive flues. It also operates successfully on fuel in which the particles are much larger than has been heretofore accomplished.

The invention is illustrated in the accompanying drawings, as follows:

Figure 1 shows a central section of a feeding device on the line 1 1 in Fig. 2. Fig. 2 shows a section on the line 2 2 in Fig. 1. Fig. 3 shows a plan view of the flight mechanism.

Fig. 4 shows a section on the line 4 4 in Fig. 5 of a furnace to which the apparatus is attached; Fig. 5, a section on the line 5 5 in Fig. 4.

Any blast mechanism may be used; but I prefer that shown in the application of John F. Hay, of this date, which may be described as follows:

A marks the receptacle in which the fuel is placed. The platform A' is at the bottom. A shaft D rotates in said receptacle. A web b<sup>5</sup> is secured to this shaft and carries flights B B and C C, flights B B being arranged to move the material initially into the path of the flights C C and the flights C C being arranged to move the material into the discharge-opening A<sup>3</sup>. The web covers the flights, and this, with the wall b<sup>3</sup>, prevents the direct flow of the material into the discharge-opening. A blast-pipe F is arranged across the discharge-opening, a deflector being arranged to prevent the flow of the blast into the receptacle A. The blast F is provided with a T F<sup>2</sup>, and the pipes F<sup>3</sup> extend from this T to the entering points F<sup>4</sup> at the opposite sides of the furnace G. The furnace is provided with a draft-opening g, just below the points F<sup>4</sup> and the door g', from which the slag may be removed. A bridge-wall H is arranged at the rear of the furnace, and, as shown, the boiler I is arranged over the furnace, with a smoke-stack J.

In operation the fuel is fed by the feeding device described into the blast-pipe and by the blast through the pipes F<sup>3</sup> and into the furnace from opposite sides. The meeting of the blasts at the center prevents either blast from impinging directly against any of the walls of the furnace. Therefore there is no point in the furnace which is cooled sufficiently to prevent proper combustion, and as a result a furnace so constructed will burn properly-pulverized coal containing much larger particles than has heretofore been used in this class of apparatuses.

By the term "fire-box" I wish to include any furnace or chamber in which the combustion takes place.

What I claim as new is—

1. The combination with a fire-box; and a feeding and blast mechanism; of a means for delivering pulverized coal to the fire-box

under blast in directly-opposed confined jets of sufficient force to spread the fuel by the impact of the jets.

2. The combination with a fire-box; and a  
5 feeding and blast mechanism; of a means for delivering pulverized coal to the fire-box under blast in directly-opposed jets having in cross-section two substantially equal dimensions and of sufficient force to spread the  
10 fuel by the impact of the jets.

3. The combination with a fire-box; and a feeding and blast mechanism; of means for delivering pulverized coal to the fire-box un-

der blast in directly-opposed jets of sufficient force to spread the fuel by the impact 15 of the jets, said fire-box being provided with a draft-opening leading directly to the combustion part of said box.

In testimony whereof I have hereunto set my hand in the presence of two subscribing 20 witnesses.

BENJAMIN J. WALKER.

Witnesses:

H. C. LORD,  
J. F. HAY.