

No. 749,206.

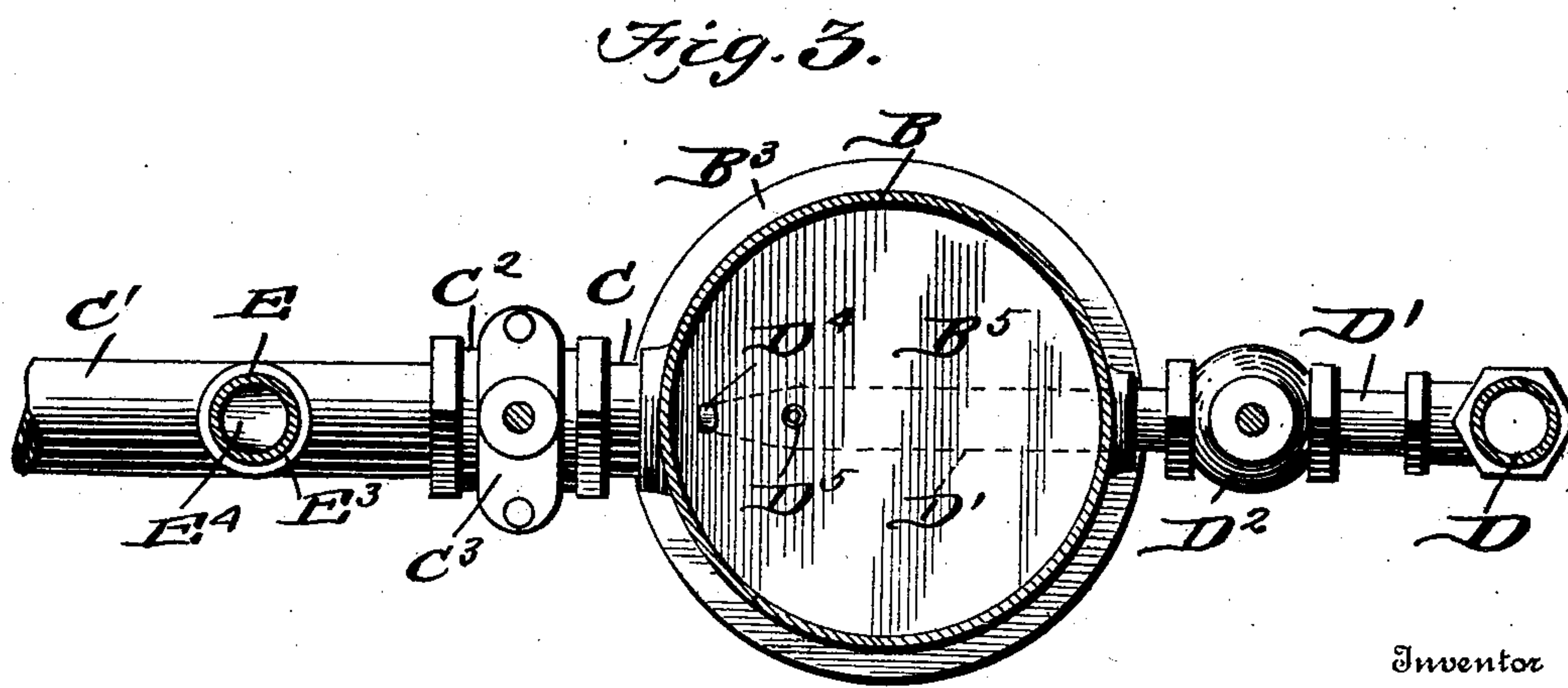
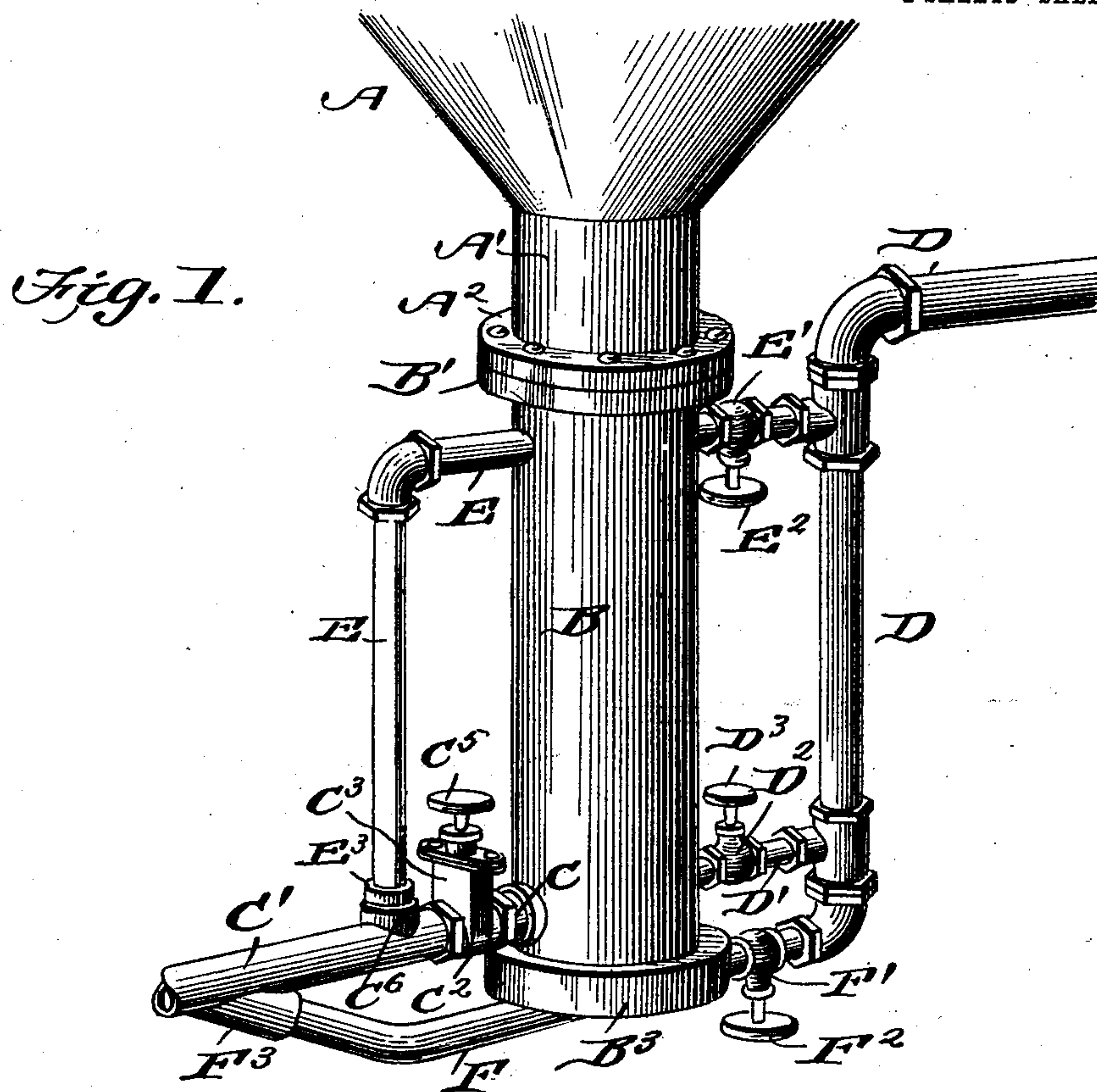
PATENTED JAN. 12, 1904.

G. W. LIMBERT.  
FUEL FEEDING DEVICE.

APPLICATION FILED APR. 20, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Inventor

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Witnesses

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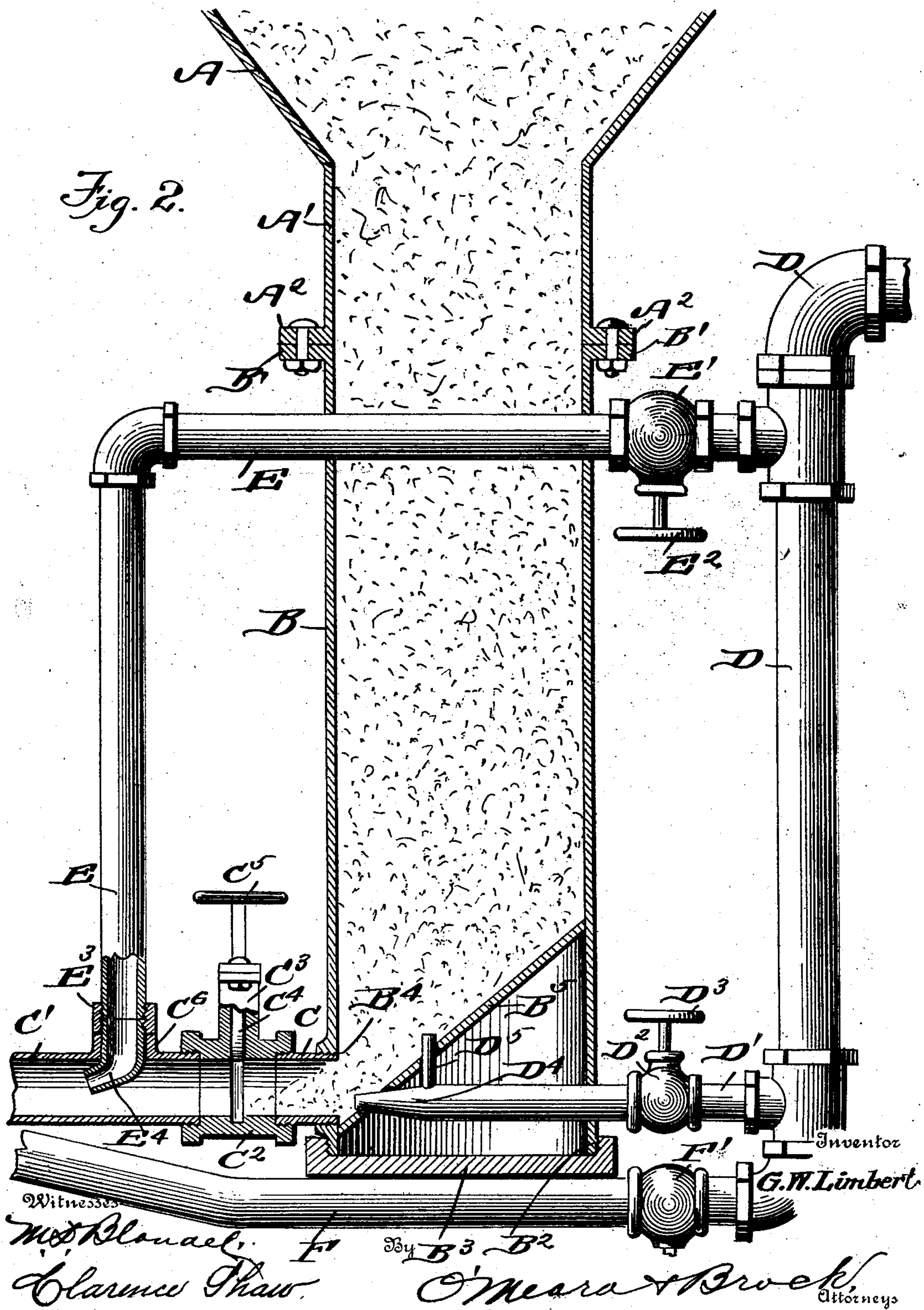
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## UNITED STATES PATENT OFFICE.

GEORGE WASHINGTON LIMBERT, OF SASPAMCO, TEXAS.

## FUEL-FEEDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 749,206, dated January 12, 1904.

Application filed April 20, 1903; Serial No. 153,523. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE WASHINGTON LIMBERT, a citizen of the United States, residing at Saspamco, in the county of Wilson and State of Texas, have invented a new and useful Fuel-Feeding Device, of which the following is a specification.

My invention is an improvement in means for feeding pulverized fuel to a kiln, furnace, or to any combustion-chamber adapted to burn such fuel.

The object of my invention is to provide a device by which such fuel will be fed to the fire-box by means of air-blasts without requiring mechanical appliances to aid the passage of the fuel from a suitable hopper to the place of combustion.

Briefly, my invention comprises a hopper adapted to receive the fuel to be burned, pipes to convey the fuel to the fire-box, and means for injecting air into said pipes, and in the novelties of combination and arrangement hereinafter described, particularly pointed out in the claims, and shown in the accompanying drawings, in which—

Figure 1 is a perspective view. Fig. 2 is a vertical section through the fuel-pipes, the air-pipes being in elevation. Fig. 3 is a section about on the line 3 3 of Fig. 2.

In the drawings, A represents a hopper having a central downwardly-open discharge-spout A', having at its lower end an outwardly-turned flange A<sup>2</sup>. Below this is a straight vertical fuel-pipe B, having at its upper end an outwardly-extending flange B', which is bolted or riveted to the flange A<sup>2</sup>. The lower end of the pipe is threaded, as at B<sup>2</sup>, and closed by a threaded cap B<sup>3</sup>. Adjacent the bottom of the pipe is an opening B<sup>4</sup>, threaded on the edges, into which is threaded one end of the pipe C. Arranged in the pipe B and opposite to the opening B<sup>4</sup> is an inclined bottom or partition B<sup>5</sup>, its lower end being immediately below the opening B<sup>4</sup>.

Leading from the pipe B to the place of combustion are the pipes C C', these two pipes being separated and connected by the short intermediate section C<sup>2</sup>. This section has a casing C<sup>3</sup> formed on its upper side, and working in this casing and sliding vertically and

transversely to the pipe-section is a valve or damper C<sup>4</sup>, the stem projecting upward and being operated by a hand-wheel C<sup>5</sup>. The valve may be arranged so as to entirely or partially close the pipe, thereby regulating the amount of fuel passing through the pipe. An air-pipe D leads from a fan or blower of any kind, (not shown,) and a connecting-pipe D', having a globe-valve D<sup>2</sup>, operated by the usual hand-wheel D<sup>3</sup>, leads into the lower part of the pipe B in the plane of the pipe C, its forward tapering end D<sup>4</sup> extending through the partition B<sup>5</sup> in alinement with the pipe C. A short vertical pipe D<sup>5</sup> leads upward from the pipe D' through the partition B<sup>5</sup>, opening upwardly above same. A supplemental pipe E, having the globe E' and hand-wheel E<sup>2</sup>, runs from the pipe D and is bent downward, its lower threaded end terminating above and adjacent the pipe C'. This pipe has an opening surrounded by a flange C<sup>6</sup>, and fitting within same is a curved tapering nozzle E<sup>4</sup>, its upper end being threaded and resting against the lower end of the pipe E. A threaded collar E<sup>3</sup> connects the pipe E and nozzle E<sup>4</sup>.

The operation of the device heretofore described is as follows: The pulverized fuel feeds from the hopper into the pipe B, the inclined partition B<sup>5</sup> directing same to the pipe C, into and through which it is forced by the air-blast from the nozzle D<sup>4</sup>. An upward current of air is also directed into the pulverized fuel from the pipe D<sup>5</sup>, preventing same from caking and clogging up the pipe B above the nozzle D<sup>4</sup>. By opening the valve E' a supplemental draft is established through the pipe E and nozzle E<sup>4</sup>, this current entering the pipe C' to the rear of the damper, and is therefore not checked by a partial or entire closing of the damper, but will clear the pipe C' after the damper has been closed, and admittance of addition fuel prevented. Where the pipe C' is of considerable length, additional draft may be used to advantage, and a pipe F is connected to the lower end of the pipe D. The pipe has the valve F' and hand-wheel F<sup>2</sup> and communicates through an upwardly-inclined extension F<sup>3</sup> with the pipe C' between the combustion-chamber and the nozzle E<sup>4</sup> of the pipe E. It will be noted that no mechan-



ical stirrers or stokers are used in my device, and there are no movable parts to wear out by use or require machinery to drive.

It will of course be understood that while the term "air" is used to designate the fluid by which the fuel is forced into the combustion-chamber steam may be ejected from the nozzles D<sup>4</sup> and E<sup>4</sup> and will serve the same purpose as an air-blast, it being obvious that the fluid most suitable and convenient would be used and that this would be determined by the conditions under which the apparatus was being used.

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

1. The combination with a hopper, of a vertically-arranged pipe beneath and having communication with the hopper, a pipe leading horizontally from the lower portion of the vertical pipe, an inclined partition in the vertical pipe adapted to direct fuel toward the horizontal pipe and an air-pipe having a nozzle extending through the inclined partition into the vertical pipe in alinement with the horizontal pipe.

2. The combination with a vertical pipe, of a hopper arranged above and discharging into said vertical pipe, a horizontal pipe leading from and opening into the vertical pipe, an inclined partition arranged in the vertical pipe opposite the horizontal pipe, an air-pipe hav-

ing a tapering nozzle passing through said partition and opening above same in alinement with the horizontal pipe, and a vertical, upwardly open, branch of said air-pipe extending upwardly through the partition.

3. The combination with a vertical pipe, of a hopper arranged above and discharging into said vertical pipe, a horizontal pipe leading therefrom, an inclined partition arranged in the vertical pipe its lower edge resting below and adjacent the horizontal pipe, an air-pipe discharging into said vertical pipe by a nozzle in alinement with the horizontal pipe and by a branch at right angles to the horizontal pipe, and a sliding damper working in said horizontal pipe.

4. The combination with a hopper, of a vertical pipe opening upwardly into the lower portion of said hopper, an inclined partition arranged in the lower portion of the vertical pipe, a horizontal pipe leading from said vertical pipe at a point opposite the partition, a damper in said horizontal pipe, an air-pipe discharging into the vertical pipe in the plane of the horizontal pipe, and a supplemental pipe adapted to discharge air into the horizontal pipe on the opposite side of the damper from the vertical pipe.

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Witnesses:

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