

L. CAMPBELL.

APPARATUS FOR LIGHTING THE FIRES OF STEAM FIRE ENGINES.
No. 315,721. Patented Apr. 14, 1885.

Fig. 1.

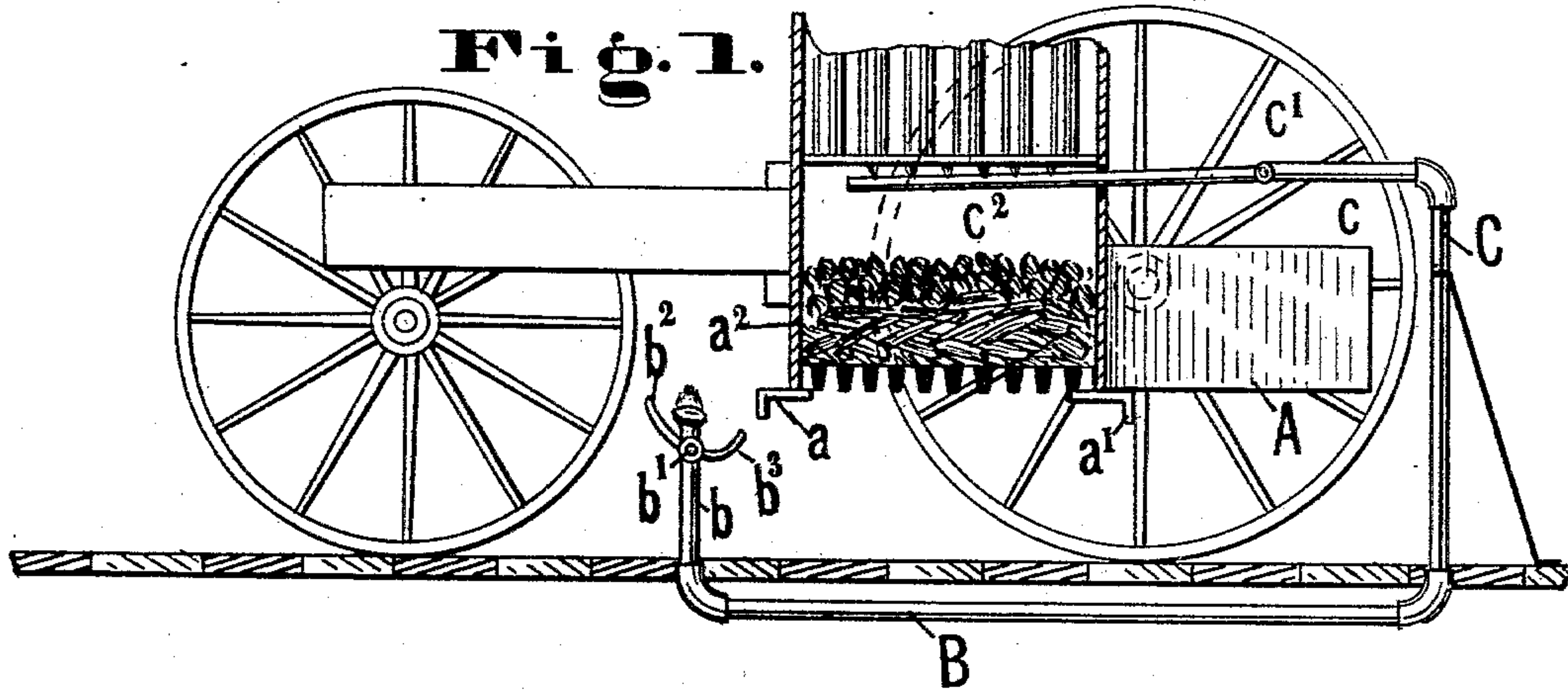


Fig. 2.

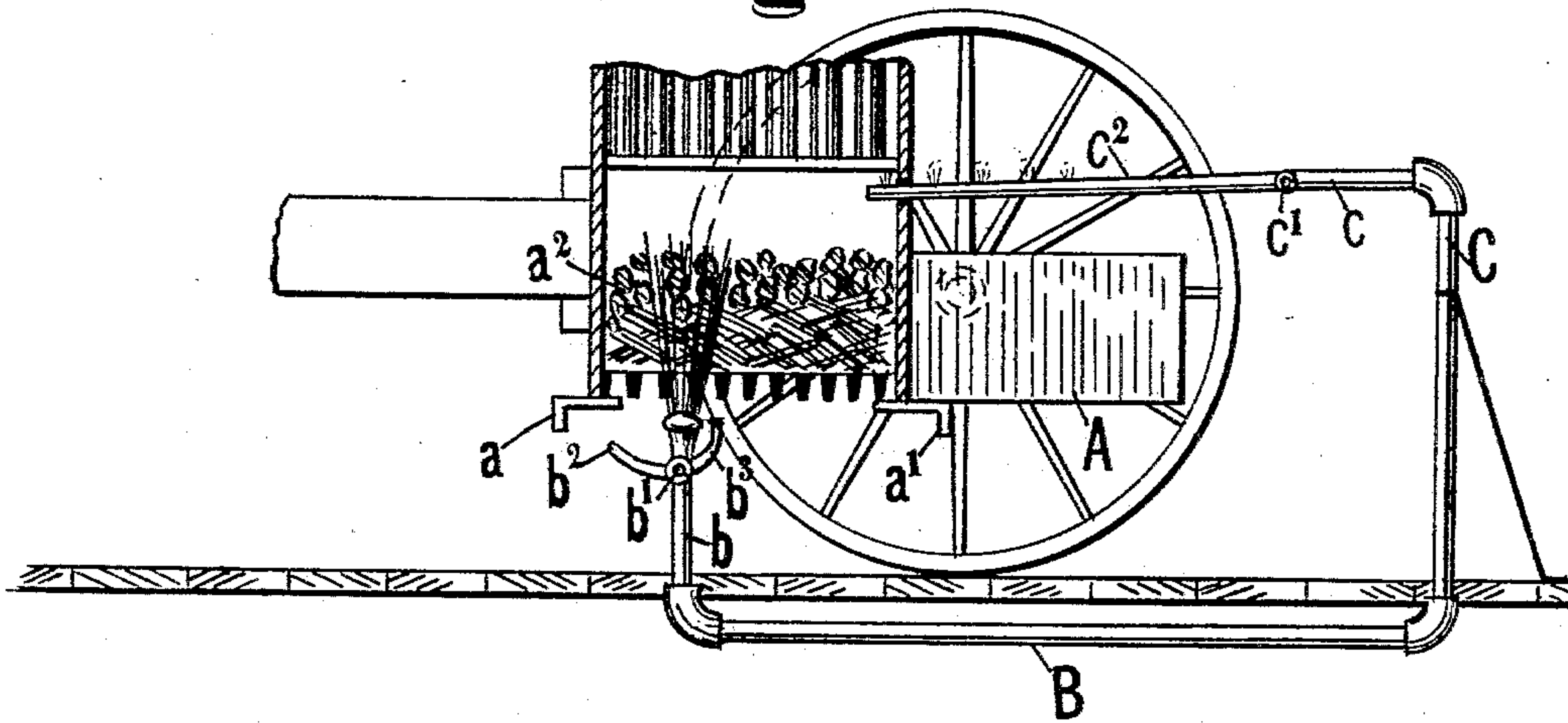
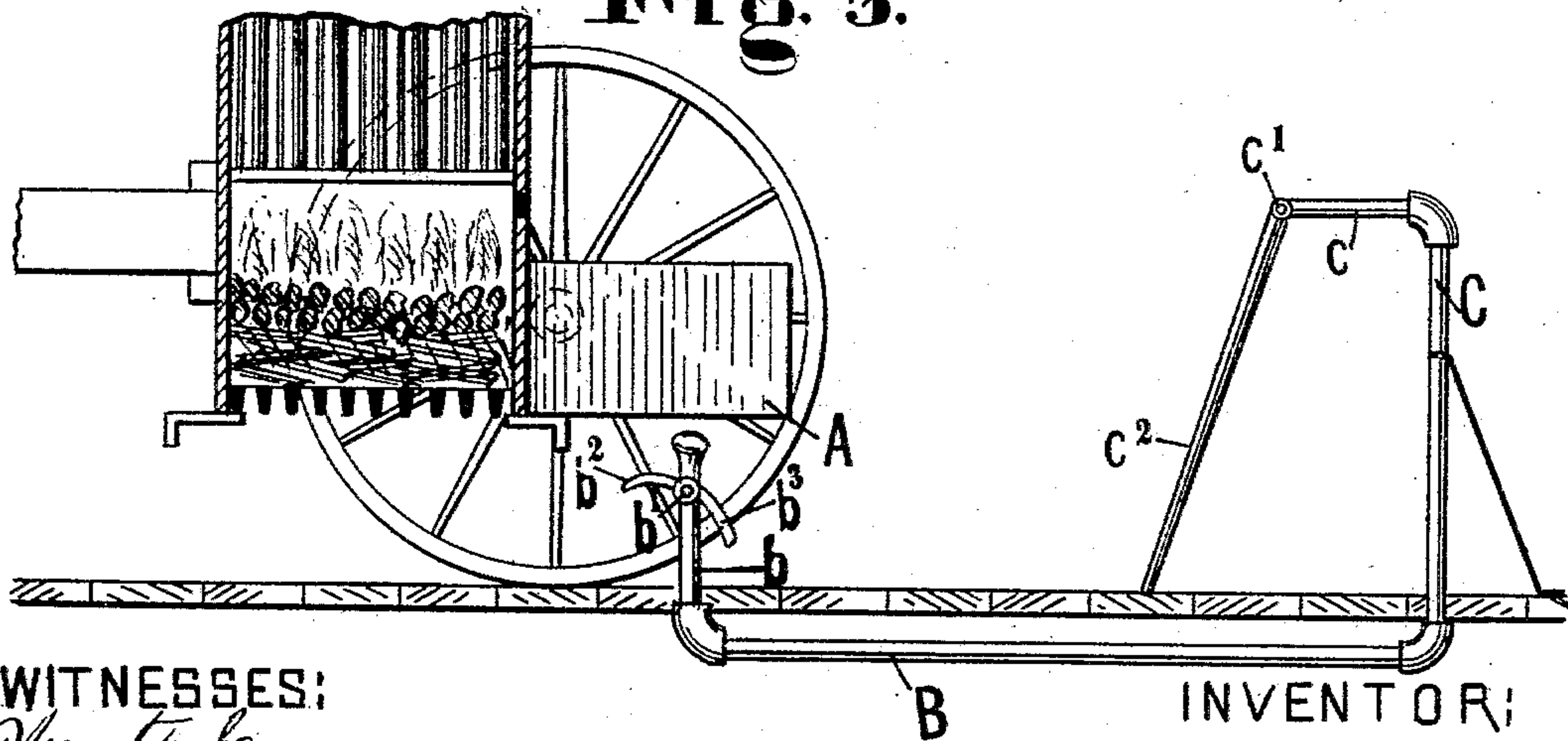


Fig. 3.



WITNESSES:

Wm. T. Emerson.
E. P. Rider

INVENTOR:

London Campbell
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(No Model.)

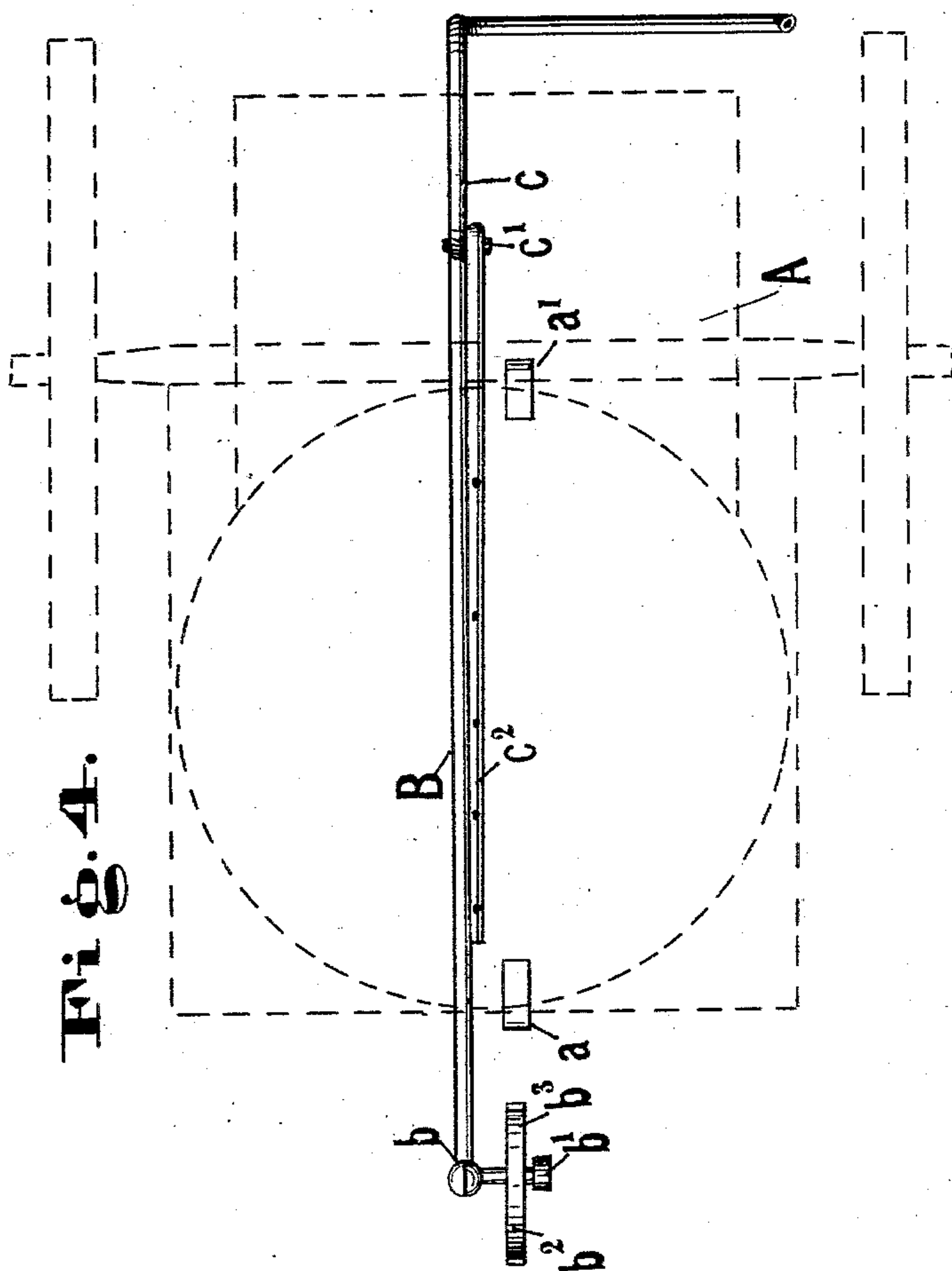
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APPARATUS FOR LIGHTING THE FIRES OF STEAM FIRE ENGINES.

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WITNESSES:

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UNITED STATES PATENT OFFICE.

LOUDON CAMPBELL, OF ALEXANDRIA, VIRGINIA.

APPARATUS FOR LIGHTING THE FIRES OF STEAM FIRE-ENGINES.

SPECIFICATION forming part of Letters Patent No 315,721, dated April 14, 1885.

Application filed March 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, LOUDON CAMPBELL, of Alexandria, county of Alexandria, and State of Virginia, have invented new and useful Improvements in Apparatus for Lighting the Fires of Steam Fire-Engines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention has for its main object the automatic lighting of the fire in a steam fire-engine as it leaves the house on the sounding of an alarm; and it consists, mainly, in the combination of one fixed arm or tappet on the front end of the body of the engine with one lever-arm of a gas-cock, which is adapted to permit always the burning of a small flame, and another fixed arm or tappet upon the central or rear portion of the engine with another lever-arm of the gas-cock, the construction being such that when the engine is moved forward to leave the house the first tappet-arm is caused to strike one lever-arm of the gas-cock to enlarge the flame and light the fire as the engine passes over it, and the second tappet-arm is caused to strike the other lever-arm of the gas-cock after the fire has been lighted to turn off the gas.

The invention has for a subordinate object the employment, in connection with the automatic apparatus for lighting the fire, of a special apparatus for heating the water in the boiler, the gas in this apparatus also being automatically shut off as the engine leaves the house.

In the drawings, Figure 1 represents a partial side view of a steam fire-engine with some portions in section, the engine and apparatus being represented in their normal stationary positions; Fig. 2, a similar view with the engine moved into position to enlarge the flame and light the fire; Fig. 3, a similar view with the engine moved into position to shut off the gas entirely; Fig. 4, a plan view illustrating the parts when in their normal stationary positions as shown in Fig. 1.

To enable others skilled in the art to understand my invention and to use the same practically, I will proceed to describe fully the construction and operation of the same.

For convenience the description will be

given under two divisions, as follows: first, the lighting apparatus; second, the heating apparatus.

First. The lighting apparatus.

A represents a steam fire-engine of any proper construction.

a represents a fixed arm or tappet located at or near the front end of the body portion of the engine, and *a'* a fixed arm or tappet located at the central or rear portion of the body of the engine, as shown, both of these tappets being preferably located on one side of a longitudinal central line, as shown in Fig. 4.

*a*² represents the fire-box of the engine, in which the fuel is laid in the ordinary manner, with inflammable kindling substances upon the grate to insure instant ignition when brought in contact with a flame.

B represents a gas-pipe having a standard, *b*, adapted in height to extend to a point just below the grate-bars of the engine when the latter passes over it, and adapted in position, preferably, to permit the center of the engine to pass over the same as it leaves the house.

b' represents a cock in the pipe, which is provided with one lever-arm, *b*², and another lever-arm, *b*³, these arms being arranged nearly at right angles to each other, as shown. These arms, it will be observed in Fig. 4, are located in line with the tappets of the engine, so as to be struck by them at the proper time, as will be hereinafter described.

The operation of these parts is substantially as follows: When the engine stands in the house, the parts are in their normal positions, as shown in Fig. 1. The arm *b*² of the gas-cock in this position, it will be observed, is elevated sufficiently to stand in line before the first tappet-arm, *a*, of the engine. In this position of the cock the gas-flame is only large enough to prevent accidental extinguishment. When an alarm is sounded and the engine starts to leave the house, the first tappet, *a*, almost instantaneously comes in contact with the arm *b*² of the gas-cock, and moves the same to enlarge the flame, as shown in Fig. 2. As the grate-bars of the engine pass directly over the mass of flame, it follows that the ignition of the inflammable substances in the fire-box must occur. By the depression of the arm *b*² of the gas-cock by the tappet *a* the arm *b*³ is elevated into line before the tappet *a'* of the

engine, as shown in Fig. 2, and when the engine in its continued movement strikes the same the arm b^3 is moved into position to shut the gas off, as shown in Fig. 3.

5 Second. The heating apparatus.

C, Figs. 1, 2, 3, represents a vertical portion of the gas-pipe, of proper height, and c a horizontal portion having a joint, c' , with cock therein, and an end portion, c^2 , having 10 perforations, as shown. The horizontal portion of the pipe, it will be observed, is adapted to extend into the fire-box of the engine below the boiler in such manner as to discharge the gas-flame from its perforated end 15 beneath the boiler, as shown in Figs. 1 and 4. The cock in the joint is of such construction that when the end portion, c^2 , of the pipe is in its horizontal position, as shown in Fig. 1, the cock is open to permit the flow of gas; but 20 when the end portion is in its inclined position shown in Fig. 3 the cock is closed to shut off the flame of gas.

The operation is substantially as follows: When the engine leaves the house, the end 25 portion, c^2 , of the pipe is left unsupported and falls into its inclined position, Fig. 3, and shuts off the gas.

Some of the advantages of the described construction are as follows: By means of the 30 automatic lighting apparatus the necessity for

the services of any person to light the fire in the engine is entirely avoided. The fire being lighted only as the engine is leaving the house, the products of combustion are not thrown off before it is outside of the same, and hence the 35 annoyance of smoking up the engine-house is avoided. By means of the automatic heating apparatus the water in the boiler is kept warm without requiring the slightest attention from any one, either when the engine is standing 40 in the house or leaving the same, the gas in the latter case being automatically shut off.

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

1. In combination with tappet-arms on the engine, a gas-cock on the floor, having a burner and lever-arms, as and for the purpose described. 45

2. In combination with an engine having 50 tappets $a a'$, the gas-pipe B, with vertical extension b , and cock b' , with lever-arms $b^2 b^3$, as described.

This specification signed and witnessed this 29th day of February, 1884.

LOUDON CAMPBELL.

Witnesses:

LEONARD MARBURY,
A. W. ARMSTRONG.