

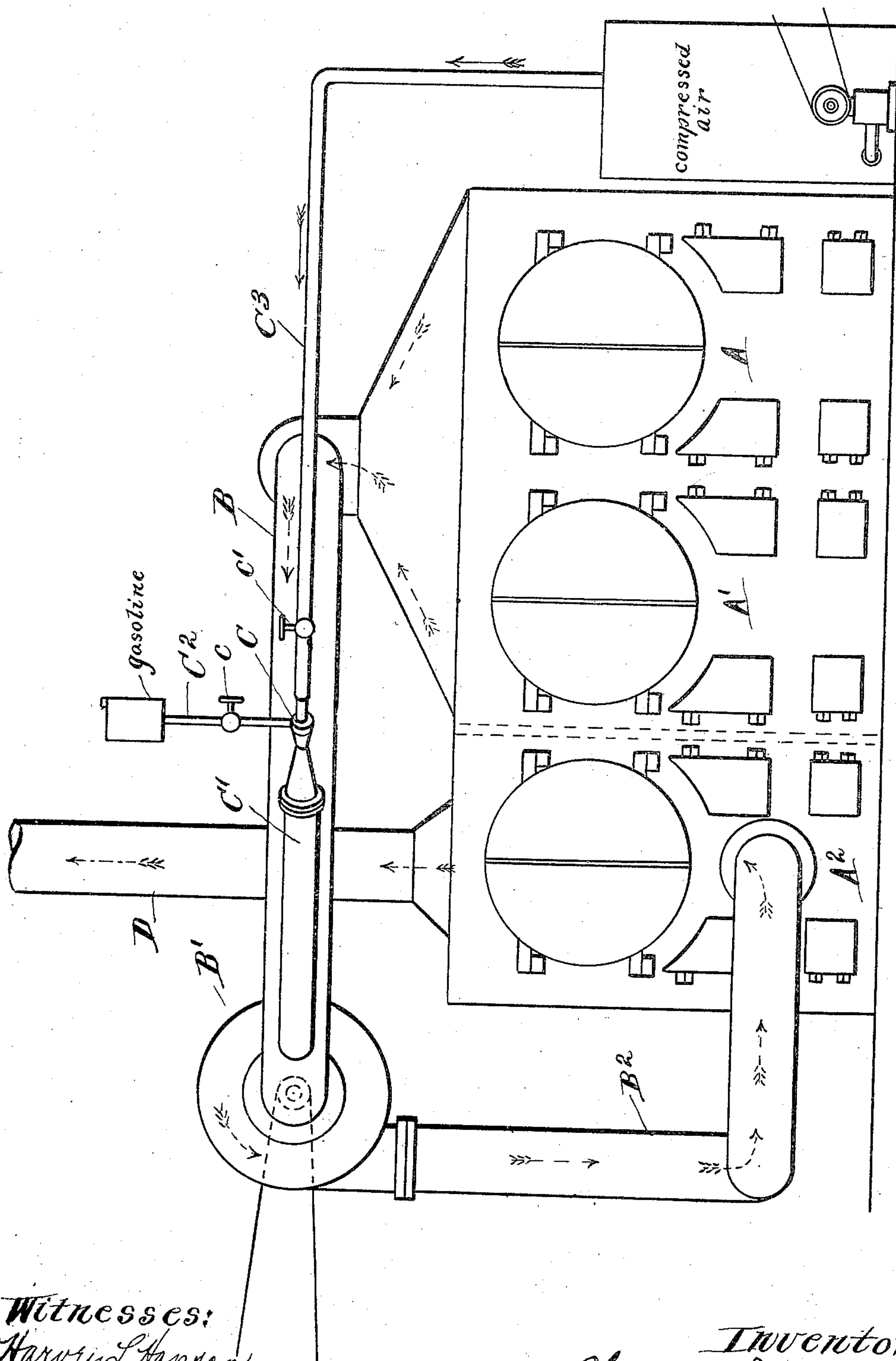
No. 688,596.

Patented Dec. 10, 1901.

A. S. COOK.
SMOKE CONSUMER.

(Application filed Oct. 20, 1900.)

(No Model.)



Witnesses:
Harvey L. Hanson.
John Stahr.

Inventor:
Almerin Samuel Cook
by Arthur F. Leonard
Att'y.

UNITED STATES PATENT OFFICE.

ALMERIN SEWELL COOK, OF CHICAGO, ILLINOIS.

SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 688,596, dated December 10, 1901.

Application filed October 20, 1900. Serial No. 33,790. (No model.)

To all whom it may concern:

Be it known that I, ALMERIN SEWELL COOK, a citizen of the United States of America, and a resident of Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Smoke-Consumers, of which the following is a specification.

My invention relates to means for burning products of combustion, and has for its object the prevention of smoke and the utilization of waste energy.

In carrying out my invention I atomize and volatilize gasoline by means of a jet of air supplied at considerable pressure and mix the air thus carbureted with the products of combustion. The smoke, air, and gasoline-vapor combine to form a highly-combustible gas, which can be consumed in any suitable manner—as, for example, by conducting it to the combustion-chamber of an ordinary furnace. The nature and working of my invention will, however, hereinafter more fully appear.

The accompanying drawing illustrates apparatus for practicing my invention.

In the drawing the arrangement involves a couple of furnaces A and A' and a third furnace A². The products of combustion are conducted from the first two furnaces to the third by way of an offtake-flue B, a fan or blower B', and a pipe or flue B². The atomizer C, which can be of any suitable form, is connected by a pipe C' with the flue B. Gasoline is supplied to said atomizer through a pipe C², and compressed air is supplied through a pipe C³. These pipes are preferably provided with valves c and c'. It will be understood that the oil can be supplied from a suitable tank or reservoir and that the compressed air can be supplied in any suitable manner—as, for example, from the reservoir and compressor shown at the right of furnace A. Any suitable means can be employed for driving the fan or blower B', which can be of any known or approved form. With this arrangement the products of combustion from furnaces A and A' are first treated with gasoline-vapor, and the gases are then thoroughly mixed and driven forward by the blower B'. The air, vapor, and smoke combine to form a highly-inflammable gas, which, passing into the combustion-chamber of furnace A², burns with an intense heat. In this way it will be

readily seen that I utilize the energy contained in the products of combustion which pass from the first two furnaces and which would ordinarily be lost and that I also prevent an objectionable escape of smoke into the atmosphere. The gases, &c., resulting from the burning of the smoke can pass off by way of a stack or flue D. This arrangement is, however, intended to be merely illustrative of one of the many applications of my invention, and I do not therefore limit myself to any particular arrangement for practicing my invention and for effecting a combustion of the smoke and vapor.

With further reference to the general arrangement as illustrated by the drawing it will be seen that the air and hydrocarbon are preferably injected into the smoke at a point more or less remote from the combustion-chamber of furnaces A and A'. It will also be seen that the fan or blower creates a strong draft in the direction indicated by the arrows and that it also serves to mix the smoke, air, and oil. In this way the air is thoroughly carbureted and then driven forward to the combustion-chamber of furnace A².

The compressed air is preferably supplied at considerable pressure—say about eighty pounds, more or less—and this pressure when used with a volatile oil, such as gasoline, results in the production of a rich and highly-inflammable mixture. For this reason I prefer to use gasoline or some equally volatile oil, although I do not wish to be limited thereto, and, as stated, I prefer to atomize and volatilize the gasoline by means of a strong jet of compressed air. In this way the fumes of combustion are economically converted into a gaseous and readily-combustible fuel without gumming or clogging the pipes, and, furthermore, by employing a jet of air supplied at high pressure the force of the jet can be readily increased without materially or objectionably increasing the draft in the smoke-passage. Also it will be seen that by thus making the draft-producing means independent of the atomizing means the draft can be regulated without disturbing the proportion of air and oil and without varying the force of the jet. A volatile oil, such as gasoline, when atomized by a strong jet of compressed air volatilizes rapidly and becomes practi-

cally gasified. Gasolene when thus reduced to vapor mixes readily with the products of combustion, and the gaseous fuel thereby produced burns readily and practically without smoke. The best results are obtained with a moderate draft and a large amount of oxygen. With my method this is possible, as with a strong jet of compressed air the supply of oxygen can be increased to quite an extent without increasing the draft.

What I claim as my invention is—

1. Apparatus for consuming smoke, comprising means for burning fuel, an offtake flue or pipe, an atomizer for injecting air and oil into the products of combustion passing through said offtake-flue, means for supplying oil and compressed air to said atomizer, the compressed air being employed in the form of a jet for atomizing the oil, and means for burning the mixture of smoke, air and oil issuing from said offtake flue or pipe, substantially as described.

2. Apparatus for consuming smoke, com-

prising means for burning fuel, an offtake flue or pipe, an atomizer having suitable connection with said offtake-flue, means for supplying oil to said atomizer, means for supplying compressed air to said atomizer, the compressed air being employed in the form of a jet for atomizing the oil, a valve for regulating the force of said jet of air, a valve for regulating the supply of oil, the air and oil mixing with the smoke in the offtake flue or pipe to form a combustible gas, means for causing a draft in said offtake-flue, the said draft and air-jet being regulatable independently of each other, and means for burning the mixture of smoke, air and oil, substantially as described.

Signed by me at Chicago, Illinois, this 10th day of October, 1900.

ALMERIN SEWELL COOK.

Witnesses:

ARTHUR F. DURAND,
A. MILLER BELFIELD.