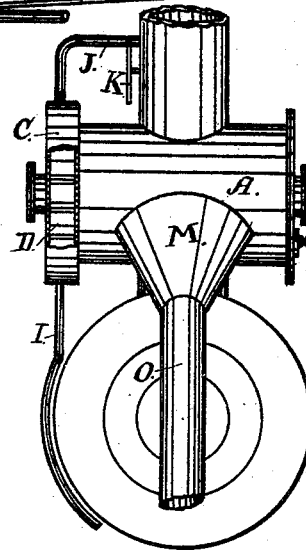
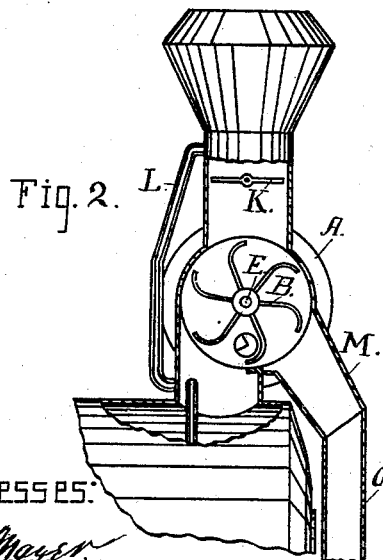
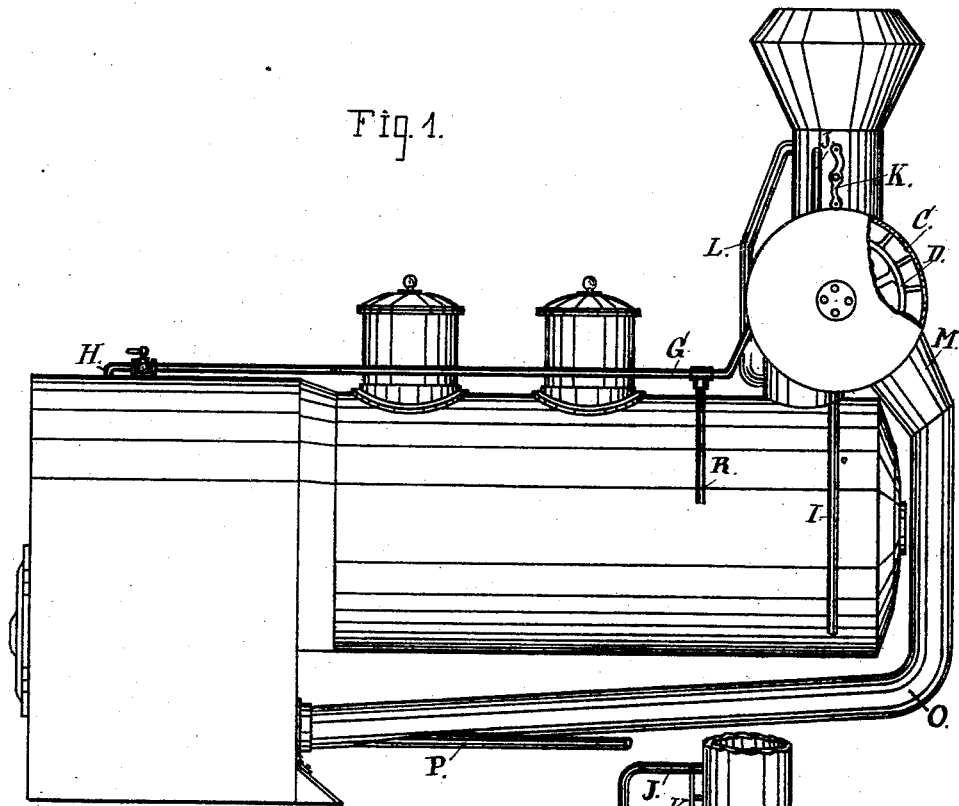


J. KEANE.
SMOKE CONSUMER.

No. 347,615.

Patented Aug. 17, 1886.



Witnesses:

Wm. Meyer
Joseph E. Ford

Inventor:
John Keane
By *Wm. Smith*
Att'y.

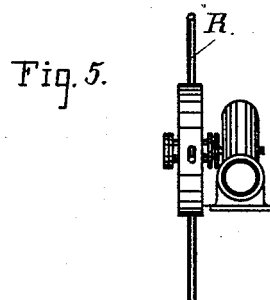
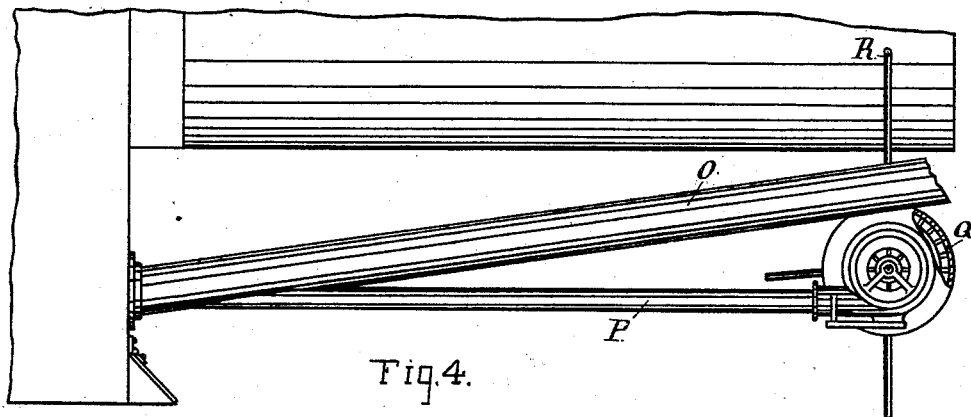
(No Model.)

2 Sheets—Sheet 2.

J. KEANE.
SMOKE CONSUMER.

No. 347,615.

Patented Aug. 17, 1886.



Witnesses:

Wm. Magar
Joseph E. Ford

Inventor:

John Keane
By *L. M. Smith*
Att'y.

UNITED STATES PATENT OFFICE.

JOHN KEANE, OF SAN FRANCISCO, CALIFORNIA.

SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 347,615, dated August 17, 1886.

Application filed September 22, 1885. Serial No. 177,871. (No model.)

To all whom it may concern:

Be it known that I, JOHN KEANE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented a new and useful Smoke-Consumer for Locomotives, Stoves, Ranges, &c., of which the following is a specification.

My invention relates to certain new and useful improvements in that class of smoke-consumers in which the smoke from the combustion of the fuel is taken from the chimney-flue or smoke-stack and returned to the furnace, to be consumed.

It consists in constructing a drum in the smoke-stack of the locomotive, just above the boiler, in which is placed a fan-wheel and a driving-wheel, which draws the smoke from the furnace and conveys it back again through a conduit or pipe connected to the front of the drum into the furnace, to be consumed, and to a suction and forcing fan-wheel and pipe-connection for supplying oxygen or atmospheric air to the furnace.

It also consists in certain steam and other pipe connections with the drum, driving-wheel, and smoke-stack, all of which will be hereinafter fully described.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of my smoke-consumer, showing its attachment to a locomotive. Fig. 2 is a section in elevation of the same. Fig. 3 is a front end view. Fig. 4 is a side elevation of the suction and forcing fan-wheel and pipe-connections for conveying atmospheric air to the furnace. Fig. 5 is a view in detail.

Similar letters refer to similar parts throughout the several views.

In carrying out my invention, to the smoke-stack, just above the shell of the boiler, I connect a drum, A, which is placed transversely, or so that the divided portions of the stack will be in a true vertical line with the center of the drum. Within the drum I place a fan-wheel, B, having its bearings in the heads thereof, and so that it will work freely and with as little friction as possible. At one end of the drum (the right-hand side thereof is preferable) I construct an annular chamber, C, in which is placed a small driving-wheel,

D, driven by the spindle or shaft E, which drives the fan-wheel, and this shaft or spindle extends through the annular casing or division end plate of the drum and the annular chamber C, and forms a bearing in the head of the chamber. A steam-pipe, G, connects with the annular chamber C and enters the boiler at H, and by this means steam is admitted to the annular chamber to operate the driving-wheel and fan-wheel. A drip-pipe, I, is connected to the lower end of the annular chamber to carry off the condensed water which may accumulate from the condensation of the steam in operation, and an exhaust-pipe, J, is connected to the top of the annular chamber and enters the smoke-stack above the damper K, as shown. The front end of the drum is pierced to receive and connect the smoke-conductor, which consists of an enlarged funnel, M, which is bolted to the shell of the drum, to the lower end of which is connected the pipe O, which passes down the front end of the boiler and is bent inwardly, and, passing under the boiler, enters the rear of the furnace or fire-box below the grate. A cold-air pipe, P, is connected to the exhaust or smoke conduit O near the point where it enters the furnace, and extends backward to near the front end of the machine or boiler, at which point I connect a suction and forcing fan-wheel, Q, similar to the wheel B. This wheel Q is driven by steam from a branch pipe, R, received from the steam-pipe G, hereinbefore described, and by this means atmospheric air is forced into the fuel-chamber or furnace to supply the oxygen to the flame or fire. The connecting-pipes are all provided with suitable cocks within control of the engineer of the machine or locomotive.

In operation, the damper in the smoke-stack being closed, a fire is kindled in the furnace of the locomotive, and as soon as sufficient steam has been generated in the boiler it will be conveyed through the steam-pipe G upon the driving-wheel in the annular chamber C, and cause the wheel to revolve and carry with it the revolving fan-wheel, which will draw the smoke from the furnace into the fan-wheel drum, and from thence the fan-wheel will force the smoke back to the furnace in a continuous manner, promoting combustion and adding atmos-

pheric air or oxygen to the flame through the medium of fan-wheel Q and air-induction pipe P. It should here be observed that the exhaust-steam from the chamber of the driving-wheel will be conducted up into the smoke-stack above the damper by the pipe J, and only vapor will appear as issuing from the top of the smoke-stack.

I do not desire to confine myself to locomotives or other engines, as substantially the same device may be applied to stoves and ranges by a steam-connection with a tea-kettle or other steam-generating vessel.

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

1. The combination of the interposed double-chambered drum A, containing a drive-wheel actuated by steam coming direct from the boiler, and a fan-wheel on the same shaft therewith, the smoke-consumer having enlarged funnel M and pipe O, the cold-air pipe P, and

the suction-fan Q driven by steam coming direct from the boiler, substantially as shown and described.

2. The combination of the smoke-chimney, the interposed drum A, divided into a larger and a smaller chamber, the former containing a fan-wheel, B, and the latter a driving-wheel, D, said wheels being carried by the same shaft, the pipe G, passing from the boiler to the smaller chamber for supplying steam to operate the drive-wheel, the drip-pipe I, the smoke-conductor consisting of the enlarged funnel M, connecting with the drum, and the pipe O, entering the furnace, the cold-air pipe D, and the suction-fan Q, all arranged substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

JOHN KEANE. [L. S.]

Witnesses:

C. W. M. SMITH,
CHAS. E. KELLY.