

(No Model.)

E. L. BRADY.

SMOKE CONSUMING FURNACE FOR LOCOMOTIVES.

No. 271,027.

Patented Jan. 23, 1883.

Fig. 1.

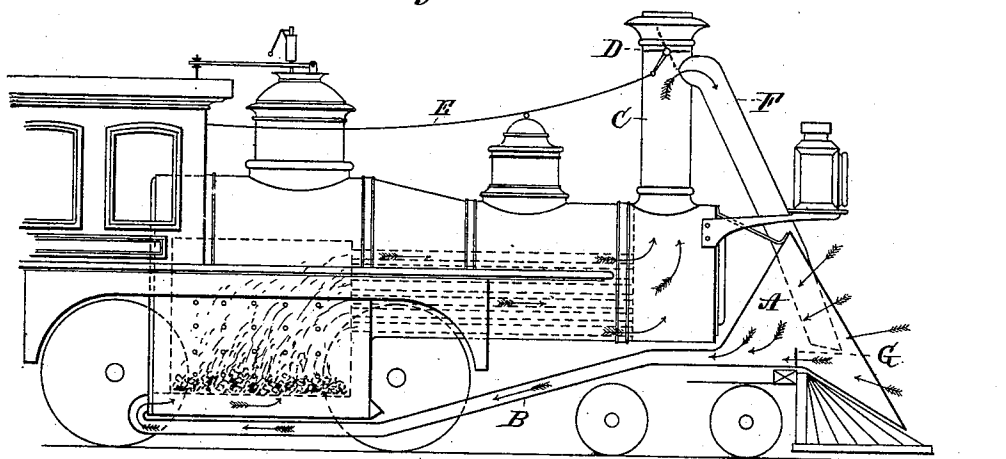
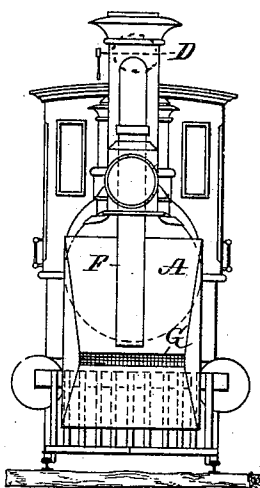


Fig. 2.



WITNESSES:

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SMOKE-CONSUMING FURNACE FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 271,027, dated January 23, 1883.

Application filed February 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, EDWIN L. BRADY, of the city, county, and State of New York, have invented a Smoke-Consuming Furnace for Locomotives, of which the following is a specification.

The object of my invention is to provide a simple apparatus applicable to locomotive-engines, whereby the objectionable use of the exhaust-steam jets for producing an artificial draft may be avoided, the waste products of combustion hitherto dispersed and lost may be returned to the fire and consumed, the cinders carried through the smoke-flues may be deposited on the road-bed instead of being scattered about, and whereby other and additional advantages may be attained, the nature of which will be readily understood from the annexed description, and which will be herein subsequently specified.

To these ends my invention consists of a novel combination of a collecting air-funnel placed upon the front of the locomotive, a closed pipe leading from the contracted end of the funnel to the fire, a smoke or draft funnel, flue, or tube opening into the air-funnel in the enlarged portion thereof, and a damper placed in the smoke-flue and arranged to open and close at pleasure an orifice allowing free escape of the smoke in the ordinary way through the mouth of the ordinary smoke stack or funnel or its equivalent.

Referring to the accompanying drawings, Figure 1 is a side view of a locomotive fitted with my invention, and Fig. 2 is a front view of the same.

A represents an air-collecting funnel, made of sheet-iron or other suitable material, having a flaring mouth, and supported upon the pilot or other suitable part of the locomotive. The inner end of this funnel is contracted, as indicated, and is in free communication with a flattened tube, B, which leads to an inclosed space beneath the fire-grate or to the point where air is admitted to the fire for the purpose of creating the draft. In either case the space beneath the fire-grate is tightly inclosed, so as to allow access of air to the fire only through the tube.

The ash-pan and other appliances for removing and depositing ashes may be of any desired construction.

C represents the smoke stack or chimney of the locomotive, which is in free communication with the smoke-box and with the tubes through which the flame, smoke, and unconsumed products of combustion are conveyed, as ordinarily.

Connected to the smoke-stack at or near its top is a pipe, F, the lower end of which opens into the air-collector A at a point considerably in front of the contracted or inner portion thereof, so that the heated air, smoke, and other unconsumed products of combustion escaping from the end of the same may be carried back to the fire by the current of air collected by A and forced into the pipe B as the locomotive moves. The end of the pipe F is cut off at an angle, as shown, so that the air-current rushing past the mouth of the pipe may not be carried upward into the pipe, so as to create a back draft, but by passing quickly by the opening may tend to exhaust the air and gases from said pipe.

G represents a wire screen rising nearly as high as the mouth of the pipe F, and serving to catch the cinders dropping from F, which would otherwise be carried into the pipe B and finally clog the same. The cinders, after being caught by the screen, fall back upon the bottom of A, and are finally deposited upon the road-bed.

D represents a damper placed in the smoke-stack C at a point above the pipe F, and operated by a cord, E, leading to the engineer's cab. When said damper is closed, which is its condition while the locomotive is running, the smoke, &c., passing from the fire can pass only through the pipe F. When the damper is open, which is its position when the locomotive is stationary, a free draft-passage through the top of the smoke-stack is formed, and the fire then burns with a natural draft.

The operation will be readily understood. When the locomotive is running the damper D is closed and the air collected by the funnel A is forced into the tube B, carrying with it the heated air and the waste products of combustion discharged from F or drawn therefrom by the rapid passage of the current of air forced past its opening by the rapid motion of the locomotive. The arrows show the direction of the currents.

In order to provide a draft when the locomotive is at rest, the damper D is opened, thus

giving free exit through the top of the smoke-stack in the ordinary way, air being admitted to the fire through the tube B or in any other manner.

5 By the above arrangement I am enabled to secure an abundant, positive, and controllable draft under any and all circumstances, and at the same time I am enabled to dispense with the use of the exhaust-steam for producing an
10 artificial draft, the use of the latter for this purpose being objectionable because of its corroding action, while, moreover, the heat of the steam is dissipated and lost. By my plan, the steam being no longer required to create an
15 artificial draft, it can be employed in warming the water in the feed-water tank, which is the proper and economical disposition of it. I am also enabled to return to the fire the large percentage of unconsumed products of combustion
20 in the shape of gases and smoke, re-enforced with the fresh oxygen necessary to their ignition and complete combustion. Moreover, under my plan there will be entire freedom from smoke, cinders, and smells on passenger-trains
25 whose engines are fitted with this appliance, while at the same time there is no danger of setting fire to anything along the line of road,

as all cinders, after striking the wire screen, are deposited by their own gravity on the road-bed.

It will be observed that when at rest at a station the engine obtains draft just as the engines now in use do.

What I claim as my invention is—

1. The combination, with the smoke-stack C, 35 of the flaring air-collector A, the pipe F, connected directly to the smoke-stack near its top, and extending downward in front of the same through the walls of the air-collector to a point near its center, said pipe being cut off at an angle to the line of motion of the air-current, and the damper D, placed in the smoke-stack near its top above the point at which the pipe F is connected. 40

2. The combination of the pipe F, the air- 45 collector, and the screen G, placed in the air-collector in front of the pipe connected thereto at its contracted end, and behind the pipe F, as and for the purpose described.

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Witnesses:

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