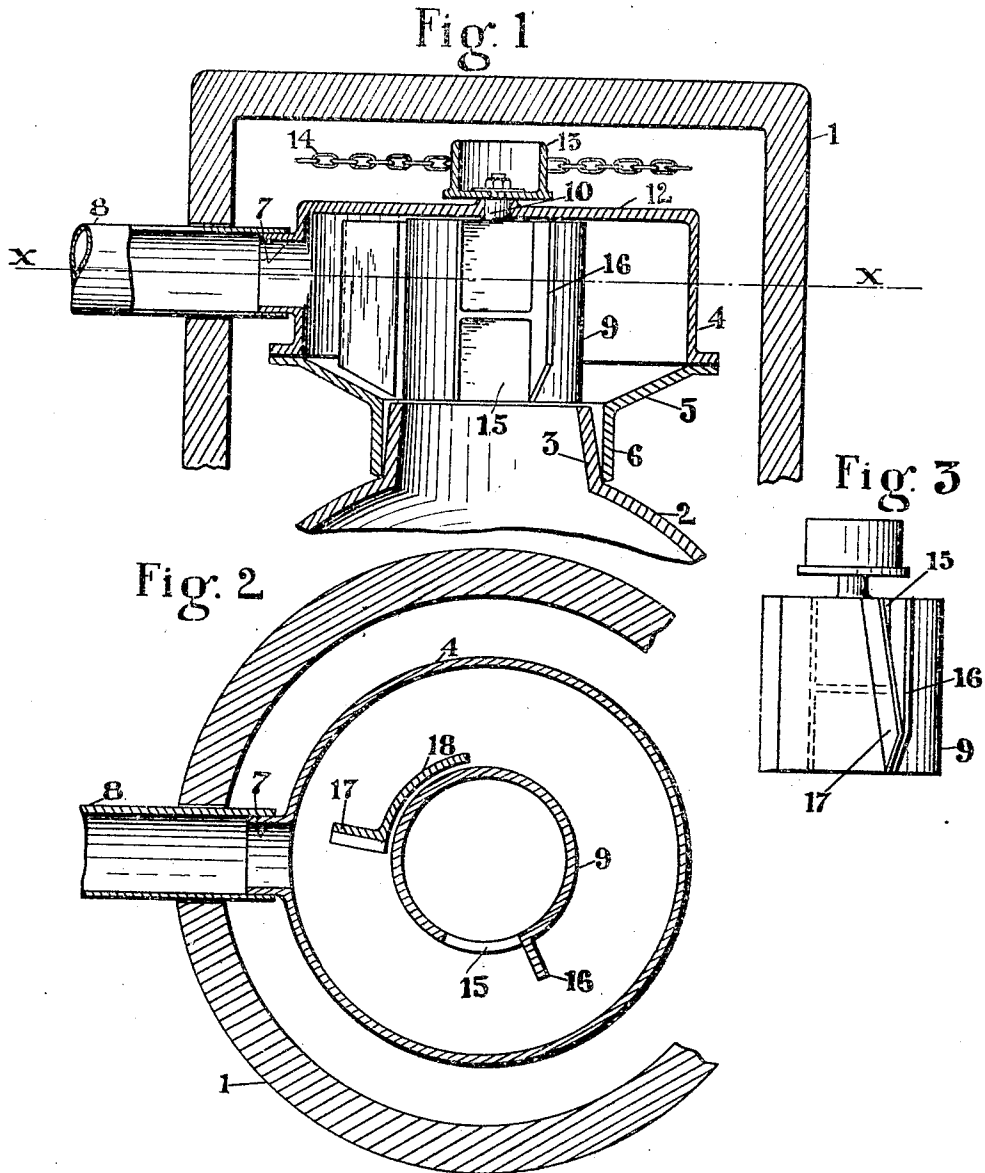


F. S. HARMON.
 COMBINED REGULATOR AND RADIATOR FOR FURNACES.
 APPLICATION FILED JAN. 29, 1909.

927,792.

Patented July 13, 1909.



WITNESSES:

C. L. Weer.
A. M. Dow.

INVENTOR

FRANK S. HARMON

BY

Barthelme
 ATTORNEYS

UNITED STATES PATENT OFFICE.

FRANK S. HARMON, OF NORTHVILLE, MICHIGAN.

COMBINED REGULATOR AND RADIATOR FOR FURNACES.

No. 927,792.

Specification of Letters Patent.

Patented July 13, 1909.

Application filed January 29, 1909. Serial No. 474,941.

To all whom it may concern:

Be it known that I, FRANK S. HARMON, a citizen of the United States of America, residing at Northville, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Combined Regulators and Radiators for Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a combined regulator and radiator for hot air furnaces, and more especially to an arrangement thereof whereby the heat of the smoke and gases of combustion is utilized to increase the efficiency of the furnaces, and whereby the draft may be readily controlled to meet various conditions of service.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

Referring to the drawings, Figure 1 is a view partially in elevation and partly in section of the upper portion of a furnace of conventional type, provided with a draft regulator embodying features of the invention. Fig. 2 is a view in section on line $x-x$ of Fig. 1. Fig. 3 is a view in side elevation, in detail, of a damper and deflector in closed position.

In the drawings, 1 indicates the upper part of an outer casing of a hot air furnace over the top of a smoke chamber 2 which has a flange 3 around the smoke outlet for attachment of the smoke breeching or flue in the usual manner. A circular radiator 4 having a conical dished or other suitable base 5 with collar 6 around a central aperture in engagement with the flange 3, rests on the chamber, and has a lateral outlet 7 to which a smoke pipe 8 extending through the casing 1 is secured.

A damper in the form of a cylinder 9 is rotatably secured in the radiator with its open lower end in register with the flange 3. As one convenient means of supporting and manipulating the damper, a boss 10 on a spider or cross bar at its upper end, is journaled in the head 12 of the drum 4, its upper extremity being secured in a drum 13 which may be rotated by chains 14 or other suitable means, extending to any convenient point. The damper has a longitudinal opening 15, with a vertically disposed wing 16 extending therefrom. When turned into register squarely with the pipe, this wing abuts the

flanged rib or deflector stop 17 extending from a segmental plate 18 secured in the radiator 4 concentric to the damper cylinder. The edge of the deflector stop against which the radiator wing 16 abuts, is oblique, contacting with the wing at its lower end only so that it is impossible to completely close the smoke passage. The damper and its wing are preferably formed integrally of suitable metal. By proper manipulation of the drum chains the damper may be turned to give direct or indirect draft, and the waste gases when the damper is turned away from the smoke pipe, heat the radiator and thereby increase the efficiency of the furnace.

Obviously, changes in the details of construction may be made without departing from the spirit of the invention, and I do not care to limit myself to any particular form or arrangement of parts.

What I claim as my invention is:—

1. A combined draft regulator and radiator for a furnace comprising a hollow radiator provided with a smoke inlet in its lower end and a lateral smoke outlet, a cylindrical damper rotatably secured in the radiator and spaced from the sides thereof and provided with a lower open end opposing the radiator inlet and a lateral opening always in communication with the annular space between the damper and radiator adapted to be turned into alinement with the radiator outlet, a marginal flange extending from one side of the damper opening, a segmental deflector stop secured in the radiator adjacent the smoke outlet adapted to engage the damper flange when the damper is rotated, and means outside the radiator for manipulating the damper whereby the length of the path of communication between the damper opening and radiator outlet may be lengthened or shortened.

2. A combined draft regulator and radiator for a furnace comprising a hollow radiator provided with a smoke inlet in its lower end and a lateral smoke outlet, a cylindrical damper rotatably secured in the radiator and spaced from the sides thereof and provided with a lower open end opposing the radiator inlet and a lateral opening always in communication with the annular space between the damper and radiator adapted to be turned into alinement with the radiator outlet, a marginal flange extending from one side of the damper opening, a segmental deflector stop secured in the radiator adjacent

the smoke outlet adapted to engage the damper flange when the damper is rotated, and means outside the radiator for manipulating the damper whereby the length of the path of communication between the damper opening and radiator outlet may be lengthened or shortened, the stop contacting with the damper flange near one end thereof only.

3. A combined draft regulator and radiator for a furnace comprising a hollow radiator provided with a smoke inlet in its lower end and a lateral smoke outlet, a cylindrical damper spaced from the sides of the radiator and provided with a lower open end opposing the radiator inlet and a lateral opening always in communication with the annular space between the damper and radiator adapted to be turned into alinement with the radiator outlet, a marginal flange extending

from one side of the opening, a segmental deflector stop secured in the radiator adjacent the smoke outlet adapted to engage the damper flange when the damper is rotated, a boss on the upper end of the damper rotatable in a bearing in the radiator top, a drum non-rotatably secured on the boss above the radiator and flexible means manipulating the drum whereby the length of the path of communication between the damper opening and radiator outlet may be lengthened or shortened.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK S. HARMON.

Witnesses:

THEODORE E. A. BARTHEL,
ADOLPH BARTHEL.