J. C. STUART.

Furnace and Stove.

No. 216,539. Patented June 17, 1879.

Fig. 1.

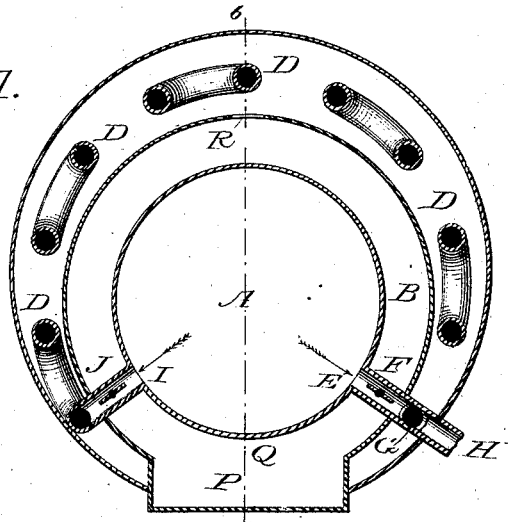


Fig. 2.

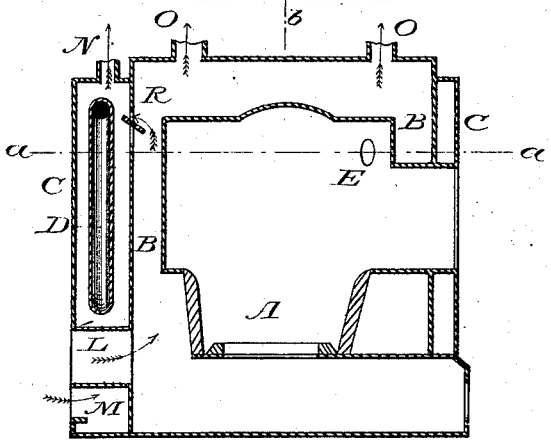
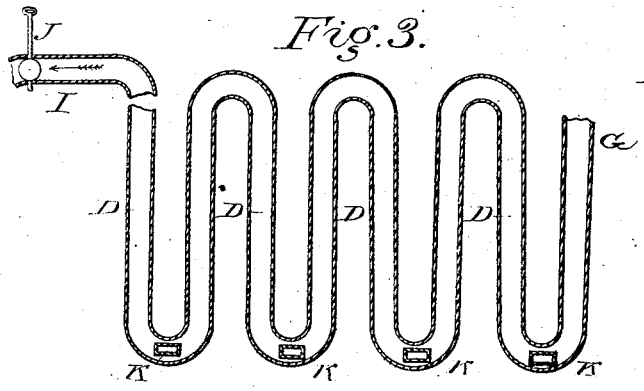
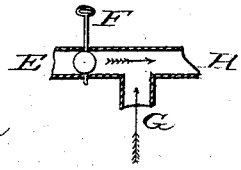


Fig. 3.





Witnesses:

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JAMES C. STUART, OF LAWRENCE, MASSACHUSETTS.

IMPROVEMENT IN FURNACES AND STOVES.

Specification forming part of Letters Patent No. **216,539**, dated June 17, 1879; application filed April 13, 1877.

To all whom it may concern:

Be it known that I, JAMES C. STUART, of Lawrence, in the county of Essex and Commonwealth of Massachusetts, have made certain new and useful Improvements in Furnaces and Stoves, which improvements are fully and clearly described in the following specification, and drawings made part of this specification.

In furnaces and stoves as constructed and in use, it is contended that a large percentage of heat is conveyed directly from the fire and out of the chimney and lost, and a sufficient amount of heat is radiated by the casing of most portable furnaces to warm the cellar or room in which the same is placed.

The object of my invention is to so construct an attachment for furnaces and stoves that the lost heat will nearly all be utilized for heating purposes. This I accomplish by constructing an outer casing for a furnace, and inserting within the space formed between the first casing and the outer casing a coil or series of pipes, through which the draft from the fire to chimney is directed.

The result of passing the gases, smoke, and heat through the coil is to radiate a large amount of heat which is conducted from the secondary chamber (cold air being introduced as in first or direct chamber) to a room or rooms, the effect being, as shown by actual test, to save and utilize for heating purposes a large amount of heat that would be otherwise lost.

My experiments show that the gases, smoke, and heat from the fire enter the chimney, after passing the coil, nearly cool, showing that the heat has been utilized and in no part lost.

In the drawings, Figure 1 represents a section of a furnace with my improvement attached, taken at *a a*, Fig. 2; Fig. 2, a section taken at *b b*, and Fig. 3 the coils or series of pipes, with their dampers, as arranged within the outer casement, like letters representing the same parts in each of the figures.

The letter A represents a furnace of any desired pattern; B, the casing of same as applied to all portable furnaces; C, a casement placed about the casement B, and designed to form a chamber, within which is arranged a coil or series of smoke-conductors; D D D, &c., the coiled pipe, designed to form a passage for the smoke from fire to chimney, and at the same time to radiate heat within the air-chamber; E, a pipe leading direct from the furnace fire to a chimney, and designed to give a direct draft; F, a damper designed to open and close the pipe E; G, an opening or entrance to which is attached the end of coil, and designed to admit the smoke to chimney when passed through the coil; H, a pipe leading to chimney; I, pipe leading from furnace to coil; J, a damper designed to open or close the same; K K K, &c., openings at the lower extremity or bend of the coil designed to clean the pipes of soot and ashes which may collect therein; L, a cold-air box designed to admit cold air directly to inner chamber; M, a cold-air box designed to admit air to the outer chamber; N, a pipe leading from outer chamber to any room which it may be desired to heat, (using air from outer chamber;) O O, pipes leading from inner chamber to any room or rooms; P Q, door through which fuel is introduced, and R a damper designed to connect the outer and inner chambers.

To use my improved furnace attachment, (fire first being started through the direct draft E,) open the damper J and close the damper F, which throws the draft through the coil D D D, &c., radiating heat within the outer chamber, and sending the same through the pipe N to a room intended to be warmed by the same; or, should more heat be desired than that furnished by the outer chamber, both the inner and outer chambers may be connected by opening the damper R.

Having thus described my said invention, I claim as new, and desire to secure by Letters Patent, the following:

1. The combination of the pipe E, the damper F, the coil D D D, &c., the openings K K K, &c., the pipe I, the damper J, the damper R, and air-box M, in a manner and for the purpose substantially as set forth.

2. The combination of the casing B, the covering C, the coil D D, &c., the pipe E, the damper F, the opening G, the pipe I, the damper J, the openings K K K, &c., the air-box M, the pipe N, and damper R, each with each, in a manner substantially as set forth.

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Witnesses:

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CHAS. D. MOORE.