(No Model.)

H. P. JUDSON.

HOT AIR HEATING APPARATUS.

No. 518,250. Patented Apr. 17, 1894.

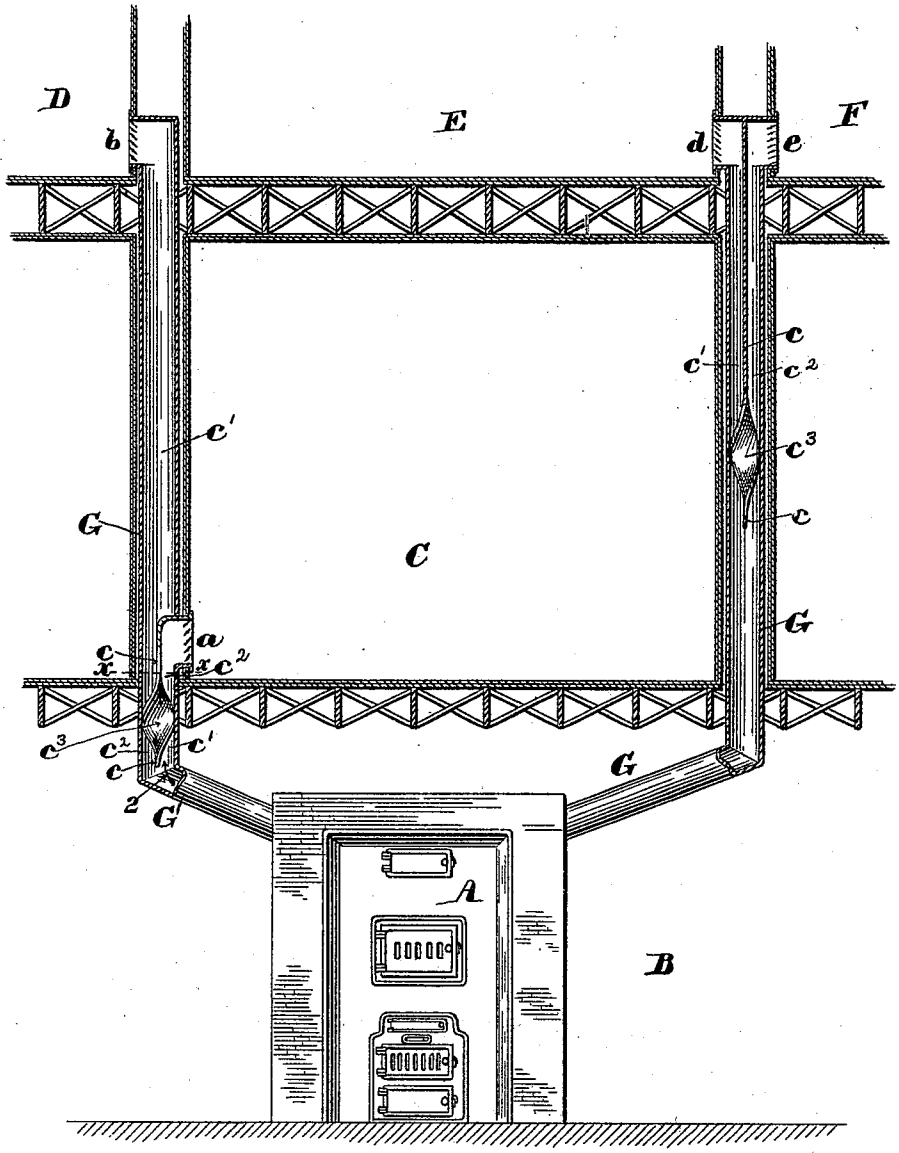

Fig. 1.

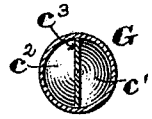

Fig. 2.

Witnesses:
Walter E. Lombard
Marshall Underwood

Inventor:
Henry P. Judson,
by N. G. Lombard
Attorney.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY P. JUDSON, OF CAMBRIDGE, MASSACHUSETTS.

HOT-AIR HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 518,250, dated April 17, 1894.

Application filed July 7, 1893. Serial No. 479,794. (No model.)

To all whom it may concern:

Be it known that I, HENRY P. JUDSON, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Hot-Air Heating Apparatus, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to hot air heating apparatus, and especially to the flues for conveying the air from the furnace to the rooms to be heated, and it consists in a certain novel feature of construction, arrangement and combination of parts which will be readily understood by reference to the description of the accompanying drawings and to the claim at the end of this specification, in which my invention is clearly pointed out.

Figure 1 of the drawings is a vertical section through portions of two floors of a building and showing a hot air furnace in elevation, and Fig. 2 is a transverse section through one of the hot air pipes on line *x x* on Fig. 1.

In arranging for heating buildings by hot air it often happens that two rooms have to be supplied with hot air from a single pipe because of lack of room to run two independent pipes, and in such a case almost always one room will be much better heated than the other owing to various causes among which may be mentioned greater or less distance from the furnace and differences in the situations of said rooms relative to the more exposed sides of the buiding.

The object of my present invention is to obviate to a great extent this objection and equalize as nearly as may be the temperature in the two rooms under the conditions named, and to this end I construct the hot air pipes which convey the air to said rooms as shown in the accompanying drawings, in which—

A represents a hot air furnace located in the cellar B of a building containing a series of rooms C, D, E and F to be heated under the conditions above named.

At the left of Fig. 1 is illustrated the construction and arrangement of the hot air pipe for heating two rooms located on different floors of the building, and at the right of said Fig. 1, is illustrated the construction and arrangement of the pipe for conveying the hot air to two rooms located opposite each other on the same floor.

G G are two pipes or flues leading from the furnace upward within the partition walls to the rooms to be heated. The pipe G at the left of Fig. 1 communicates through the register *a* with the room C on the first floor, and through the register *b* with the room D on the second floor, and said pipe has fitted thereto and secured therein a partition *c* extending from above the register *a* to a point below the first floor or to a considerable distance below said register and dividing that section of said pipe longitudinally into two equal passages c' and c^2, closed at their upper ends. The pipe G at the right of Fig. 1 communicates through the register *d* with the room E and through the register *e* with the room F, and is divided by a partition *c* from its upper end to a considerable distance below the second floor into two equal passages c' and c^2. The partitions *c* have their lower portions twisted one half of a revolution as shown at c^3 Fig. 1, to impart a spiral form to that portion of each of the passages c' and c^2. The natural tendency of heated air to rise to a higher level causes it to seek the shortest road to said higher level, so that heated air escaping from the furnace A through the oblique pipe at the left of Fig. 1, will seek to rise through the passage c' at the right of the lower end of the partition as indicated by the arrow 2, and if the partition *c* were straight, or without twist, to the upper side of the register *a*, and the passage at that side of said partition were closed above said register, the room C would receive the larger part of the heated air and be better heated than the room D. If on the other hand no partition were inserted in said pipe the bulk of the heated air escaping from the furnace on that side of the furnace would, on account of its tendency to rise to a higher level and to seek the most direct route to that end, other things being equal, pass to the room D which would be better heated than the room C. In the case of two rooms being opposite to each other on the same floor to be heated from the same pipe the column of air escaping from the furnace and ascending the pipe G at the right of Fig. 1 is evenly divided by the partition *c* and

each of the rooms E and F will receive substantially an equal amount of heated air, if the conditions of said rooms as to size and the condition of the openings therein are equal, and be equally well heated.

The operation of my invention will be readily understood from the foregoing without further explanation herein.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

In combination with a hot air furnace, and a pipe leading therefrom having two discharge openings communicating with two different rooms to be heated, a partition in said pipe dividing it, from a point above the lowest of said openings to a point some distance below the same, into two passages closed at their upper ends, a portion of said partition below said opening being twisted one half a revolution about the axis of said pipe substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 1st day of July, A. D. 1893.

HENRY P. JUDSON.

Witnesses:
N. C. LOMBARD,
F. E. JUDSON.