No. 738,340. PATENTED SEPT. 8, 1903.

O. W. MAPES.

HEATING SYSTEM.

APPLICATION FILED NOV. 18, 1902.

NO MODEL.

Fig. 1.

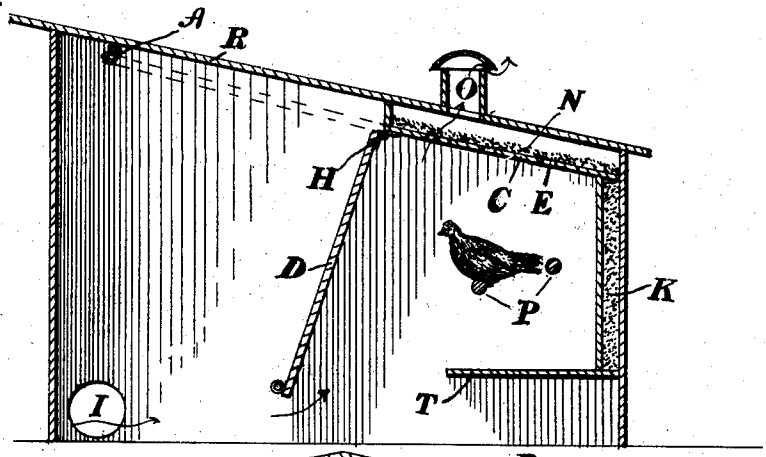


Fig. 2.

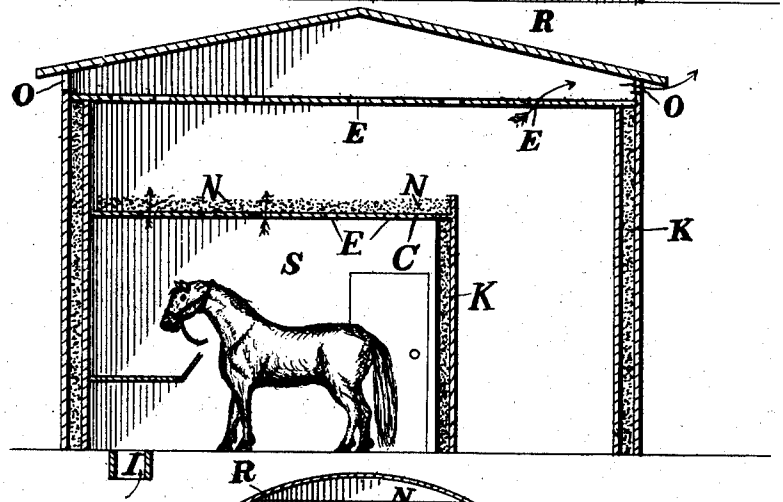
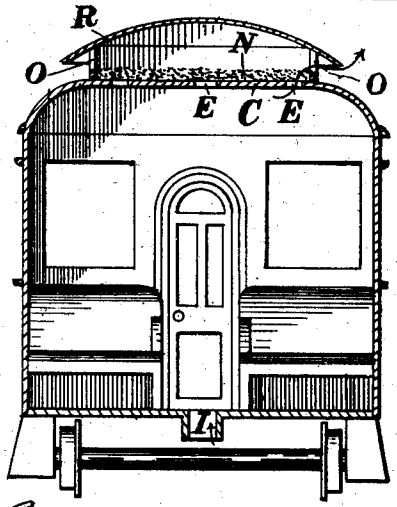


Fig. 3.



Witnesses:

Berlin G. Brann.

V. F. Brandenburg

Inventor:

Oscar W. Mapes.

By

Collamer & Co., Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 738,340. Patented September 8, 1903.

UNITED STATES PATENT OFFICE.

OSCAR W. MAPES, OF MIDDLETOWN, NEW YORK.

HEATING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 738,340, dated September 8, 1903.

Application filed November 18, 1902. Serial No. 131,842. (No model.)

To all whom it may concern:

Be it known that I, OSCAR W. MAPES, a citizen of the United States, and a resident of Middletown, Orange county, State of New York, have invented certain new and useful Improvements in Heating Systems; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention relates to heating systems employing air as the heating medium; and the object of the same is to retain and utilize the natural animal heat for the purpose of raising the temperature of the air within a certain apartment, while yet permitting sufficient ventilation, so that the air will not become vitiated.

To this end the invention consists, broadly, in the admission to an apartment of fresh cool air through an inlet so low that the warmed air will never pass out of it, with which is combined a high outlet for the warmed air, and over the inner end of this outlet is arranged a heat-retaining agent. Certain adaptations of this idea are set forth below, with details sufficient to explain the invention, though forming no essential part of it, and in this connection reference is made to the accompanying drawings, which are merely diagrams illustrating several adaptations of the idea, wherein—

Figure 1 shows a hen-house embodying my invention. Fig. 2 shows a stable. Fig. 3 shows a railway-car.

In all views of the drawings the letter I designates an inlet for cool fresh air, which inlet is through the floor or so near the floor of the apartment that the warmed air which rises therein will never escape through the inlet. In Figs. 2 and 3 the inlet is a tube leading downward through the floor for a short distance, and in Fig. 1 it is the entrance-door for the fowls and is in the front part of the hen-house remote from the roosting-quarters, which are at the rear. In order to cause the inlet to the roosting-quarters to be low, I may employ a door or deflector D, which can be hinged, as at H, so that it may be raised in the summer-time, as indicated in dotted lines, and sustained by a hook or other suitable catch A. This door when lowered causes the inlet to the roosting-quarters to be low with respect to the perches P, even below the table T, which may be employed for catching the droppings.

K in Figs. 1 and 2 designates packing or double walls, which may be employed in any construction where the outside temperature is severe.

S in Fig. 2 is a stall, and R in all the views is a roof of any approved pattern, while C is the ceiling of the apartment or of the quarters containing the animal.

In the ceiling beneath the roof are formed openings which constitute exits E, while O designates the outlet, which may be either through the roof or under its eaves. Immediately above the ceiling and over the exit-openings is disposed a layer of sawdust, chaff, sponge, machine-shavings, cotton, or other comminuted material which is a good non-conductor of heat, but which is so porous in its nature that it will permit the passage of air through it, and will thus constitute a heating agent, which I will refer to herein by the term "non-conductor" N. This layer covers substantially the entire top of the apartment to be heated and certainly the top of the quarters containing the animal. The material of which the non-conductor is composed is not important, so long as it will retain the heat while permitting the passage through it of the vitiated properties of air, and the manner of holding it in place and of keeping it fresh (possibly by occasionally renewing it) all form no part of the present invention.

With substantially the above construction and arrangement the operation of my invention is as follows, it being understood that this heater will only be used in cold weather:

An animal (human or otherwise, including fowls, insects, and anything that breathes) or a number of animals enter the apartment and its doors and windows are closed tightly. The inlet and the outlet are opened, and I may provide dampers for regulating them. The animal performs his usual avocations, and the presence of water or even the presence of artificial heat—such as a lamp, stove, or fire in the apartment—will not interrupt the successful operation of my invention. The heat exuding from the animal's body and the heated air from its lungs gradually raise

the temperature of the air within the apartment, and the act of breathing charges the air with carbonic-acid gas, as is well known. By the law of nature the heated air rises. The air within the apartment as it is warmed rises past the level of the animal's mouth to the ceiling, where it escapes through exits E, passes thence through the non-conductor N, and finally passes out the outlet O. It is essential that said non-conducting material be of such nature and so supported and arranged that the upper strata of air which has been vitiated by breathing shall escape from all portions of the top of the apartment through the exits E, and it is highly essential that the non-conducting material shall permit the exit of the air, while yet retaining the heat, which latter is thrown down onto the ceiling and thence downward onto the animal.

In recent experiments made by me where the outside temperature was −7° Fahrenheit at five a. m. the temperature at the level of the perches within a hen-house provided with this invention was +43° Fahrenheit, and no evidence of any excess of carbonic-acid gas was evident to the senses, while a candle burned with a perfect flame. It is thus apparent that the natural body heat may be confined within an apartment by an overhead layer of non-conducting material which will retain the heat and reflect it downward, while yet permitting the escape of all the impurities in the air which has been vitiated. As heretofore intimated I do not confine myself to the details of construction nor to the particular use of this invention, and it is quite evident such a natural heating system may be, though not necessarily need be, used in conjunction with artificial heating means. Theoretically the cold pure air enters the low inlet, is heated by the body and breathed by the animal, is thereby caused to rise within the apartment, continues to rise within until there is some pressure on the upper strata which is warmest and most impure, and when this pressure becomes sufficient the air is forced out through the comminuted layer of non-conducting material, thus effecting the escape of the impurities, while yet retaining the heat which is reflecteddownward onto the animals.

What is claimed as new is—

1. A heating system for an apartment containing a source of heat, comprising the provision in an otherwise air-tight apartment, of an air-inlet leading from a point below the lowest portion of said apartment, a high outlet, and means adjacent the outlet adapted to allow the passage of air while retaining its heat.

2. A heating system for an apartment in which animal heat is being generated, comprising the provision in an otherwise air-tight apartment of an air-inlet leading from a point below the lowest portion of said apartment, a high air-outlet therefrom, and a comminuted heat-retaining agent interposed at a point between the apartment and the outlet.

3. A heating system for an apartment containing an animal, comprising the provision in an otherwise substantially air-tight apartment of an air-inlet leading from a point below the lowest portion of said apartment, a high air-outlet, an exit-opening through the ceiling, and a layer of a comminuted heat-retaining agent located over said exit.

4. A heating system for an apartment containing an animal, comprising the provision in an otherwise substantially air-tight apartment of an air-inlet leading from a point below the lowest portion of said apartment, a high air-oulet, a series of exit-openings through the entire ceiling, and a layer of a comminuted heat-retaining agent spread over the entire ceiling above said exits.

5. A heating system for an apartment containing an animal, comprising the provision of a low air-inlet to said apartment, a series of exit-openings through the entire ceiling, a layer of heat-retaining agent spread over the entire ceiling above said exits, and an outlet through the roof at a point above said layer.

6. A heating system for a house containing a fowl, comprising the provision of a low inlet in one portion of said house, exit-openings through the ceiling of another portion constituting the roosting-quarters, elevated perches within such quarters, a heat-retaining agent spread over the ceiling above said exits, an outlet above the agent, and a deflector removably located between the two portions of the house so as to cause the fresh air to pass into the bottom of the roosting-quarters, substantially as described.

7. A heating system for an apartment containing an animal, comprising the provision of a low air-inlet to said apartment, a high air-outlet, exit-openings through the top of the apartment, a layer of a comminuted heat-retaining agent spread over the openings, and packing in the side walls of the apartment.

8. A heating system for an apartment containing an animal, human or otherwise, comprising the provision of a low air-inlet to the apartment, a series of exits through its ceiling, a layer of a comminuted heat-retaining agent located over said exits, and an outlet above the latter; combined with an artificial source of heat for said apartment.

In testimony whereof I have hereunto subscribed my signature this 16th day of October, A. D. 1902.

OSCAR W. MAPES.

Witnesses:
JESSE E. MAPES,
WM. E. ZIMMERMAN, Jr.