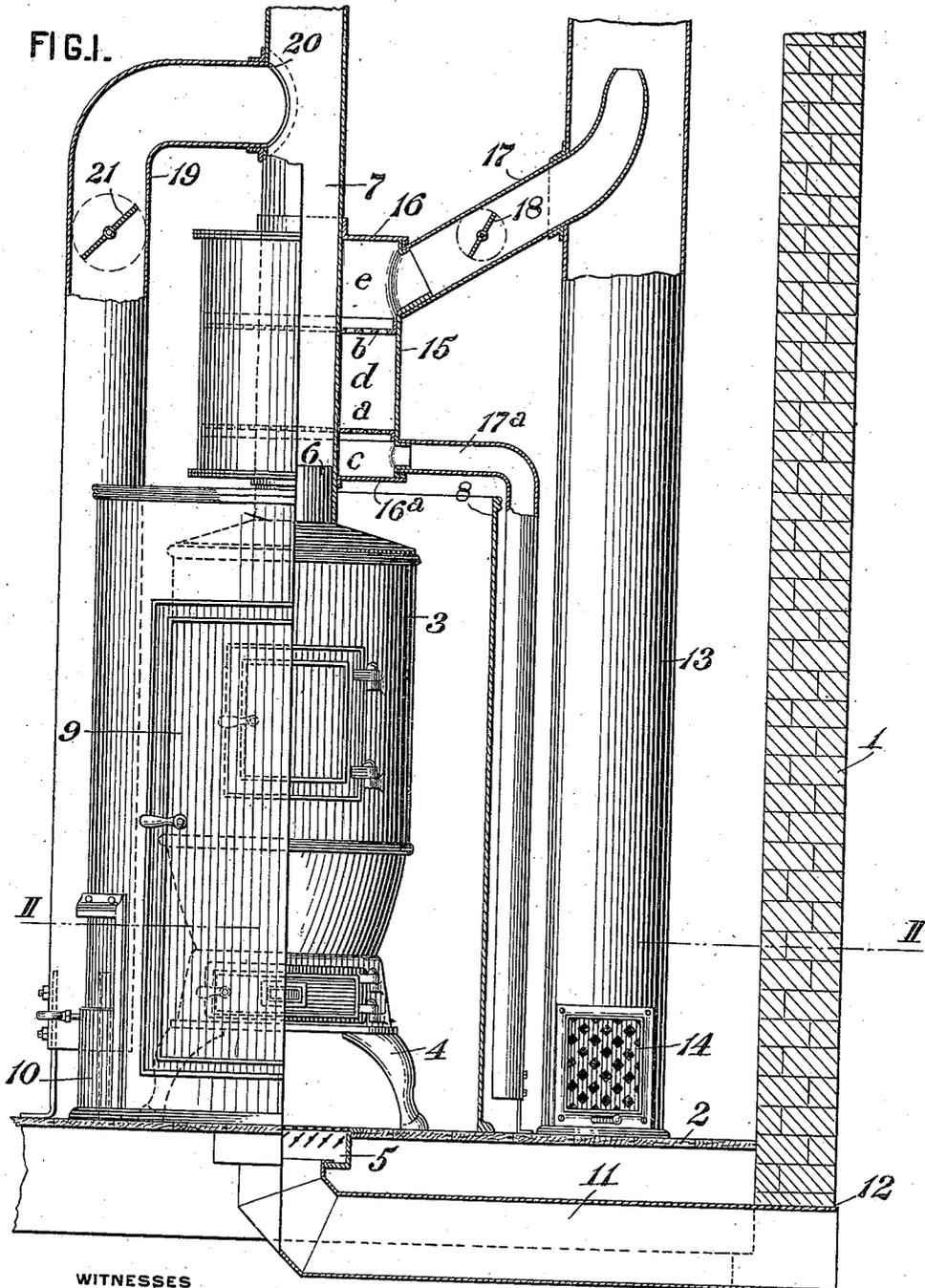


E. Y. BRECK & C. T. KURTZ.
 HEATING AND VENTILATING SYSTEM.
 APPLICATION FILED JUNE 14, 1910.

987,792.

Patented Mar. 28, 1911.

2 SHEETS—SHEET 1.



WITNESSES

A. E. Gaither.
Ellis M. Cornell

INVENTORS

Edward Y. Breck
Charles T. Kurtz
 by *W. G. Doolittle*
Attorney.

FIG. 2.

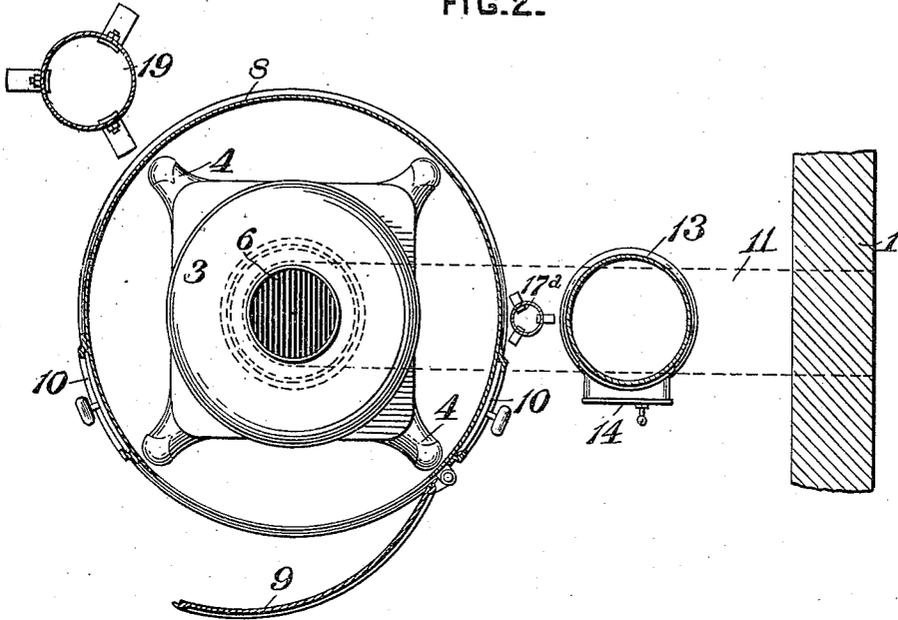
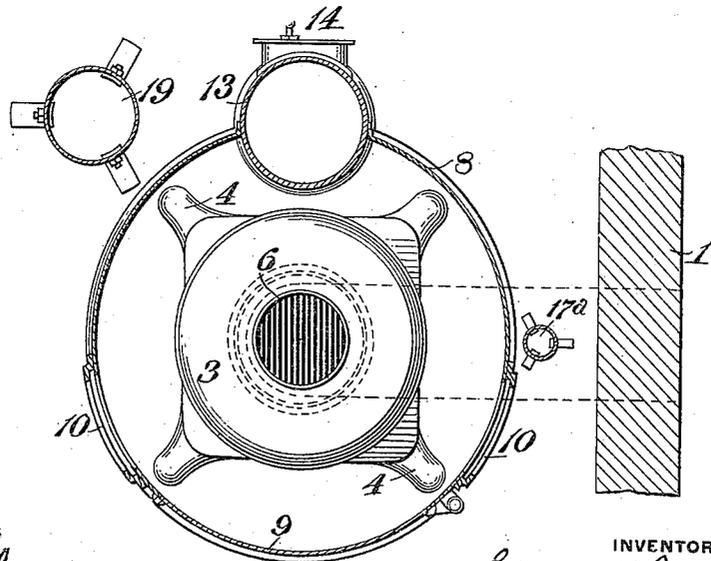


FIG. 3.



WITNESSES

F. E. Gainer.
Ellam Cornell

INVENTORS

Edward Y. Breck
Charles C. Kurtz
by W. G. Doolittle
Attorney.

UNITED STATES PATENT OFFICE.

EDWARD Y. BRECK, OF PITTSBURG, AND CHARLES T. KURTZ, OF CLEARFIELD,
PENNSYLVANIA.

HEATING AND VENTILATING SYSTEM.

987,792.

Specification of Letters Patent. Patented Mar. 28, 1911.

Application filed June 14, 1910. Serial No. 566,766.

To all whom it may concern:

Be it known that we, EDWARD Y. BRECK and CHARLES T. KURTZ, citizens of the United States, and residents, respectively, of Pittsburg, in the county of Allegheny and State of Pennsylvania, and of Clearfield, in the county of Clearfield and State of Pennsylvania, have jointly invented certain new and useful Improvements in Heating and Ventilating Systems, of which the following is a specification.

An object of our invention is to provide a new and improved heating and ventilating system particularly designed for use in school-rooms, halls, stores, and the like, although the system may be employed in connection with residences, or other structures.

Heating and ventilating systems of the same general character of the present invention, as heretofore constructed and used, have many objectionable features and an object of the present invention is to provide a system that will not only eliminate the disadvantages heretofore encountered in the use of such systems, but one that provides simple, effective, and positive means for thoroughly heating and ventilating, requiring little care or attention.

Further objects of the present invention are, to provide means whereby the cold or fresh air introduced through the cold air inlet conduit is not brought directly in contact with a hot portion of the heater or stove, as has heretofore been the practice, thereby enabling the full capacity of said cold air conduit to be utilized in furnishing the desired volume of cold fresh air as required; to provide a separate and independent main ventilating or foul-air pipe or conduit not connected with the chimney flue and not dependent upon the draft created by the chimney for operating the foul air pipe; positive valve controlled means for introducing a hot air blast to the foul air pipe; and to provide new and improved combined draft regulating and auxiliary ventilating means.

In the accompanying drawings, which illustrate applications of our invention, Figure 1 is a part elevational view and a part sectional view of a heating and ventilating system embodying our invention; Fig. 2, a part plan and a part sectional view, the section being taken on line II—II of Fig. 1;

and Fig. 3, a view similar to Fig. 2 showing a different arrangement of the foul air pipe.

We have illustrated our invention in connection with a portion of a house or other structure in which 1 designates an outer wall and 2 a floor thereof.

The heater or stove employed in combination with the other parts of the system may be of any desired form, as shown, we employ a well known style of stove 3 mounted on legs 4 and placed directly over a register 5 secured to the floor 2. Stove 3 in addition to the usual doors is provided at its top with an opening 6 in communication with a stove-pipe 7. Stove-pipe 7 leads from the stove to the chimney-flue, not shown. Surrounding the stove is a shield or casing 8 and this casing as preferred is open at its top and extends down below the stove proper to the floor 2 thus inclosing the bottom of the stove. Casing or shield 8 is provided with a door 9 designed to be opened to permit access to the inclosed stove, and is further provided with sliding doors or dampers 10 to control the admission of air to the lower portion of the interior of the casing and to the stove as required.

11 designates a cold or fresh air duct or passage leading through an opening 12 in the wall 1 to the register 5 and is designed to supply fresh air to the interior of the casing or shield 8 and against the bottom or coolest portion of the stove. In cases where the cold air is introduced directly against the hot stove or a hot portion thereof, the heat of the stove reduces the inflow of fresh air from one-third to one-half the capacity of the fresh air pipe, and another disadvantage is, that considerable oxygen of the air is at once consumed. By causing the inflowing fresh air to enter against the central portion of the bottom of the stove, where it is comparatively cool, and from whence it is evenly distributed up and around the stove, we avoid the objectionable features above mentioned and obtain an inflow of air of higher velocity than has heretofore been possible.

Arranged, either as shown in the form of Fig. 1, or in the form of Fig. 3, is a main foul air conduit or pipe 13. As illustrated, pipe 13 extends downwardly to the floor level and at its lower end is provided with a register 14. Pipe 13 may project up-

wardly through the roof, not shown, of the building in which our system is installed, or may terminate short of the roof and discharge the foul air into a space below the roof. A characteristic and important feature of our invention is, that the foul air pipe 13 is independent of the chimney-flue and is not dependent for its operation on the draft of the chimney-flue or the draft of any pipe in communication with the chimney-flue. In the form of Fig. 3 the pipe 13 is arranged partly within the casing 8 and partly outside of the casing, otherwise the construction shown by this form is similar to the form of Fig. 1.

Surrounding the stove-pipe 7, we provide a heating drum 15 having an apertured top member 16 and an apertured lower member 16^a through which the pipe 7 projects. As illustrated, drum 15 is provided with two perforated diaphragms *a* and *b* dividing the interior of the drum into three spaces or chambers *c*, *d* and *e*. The upper portion of the drum or chamber *e*, is in communication with the foul air pipe 13 by means of a pipe 17, having a damper 18 therein, and the lower portion or chamber *c*, is in open communication with a pipe 17^a leading therefrom to a short distance above the floor 2. In practice we preferably form the perforations in the diaphragm *a* smaller than the perforations in the diaphragm *b*, and with the total area of the perforations of diaphragm *a* greater than the cross-sectional area of pipe 17^a. We also prefer, that the total area of the perforations in diaphragm *b* be in excess of the cross-sectional area of pipe 17. As illustrated, air from the room is passed up pipe 17^a into the drum where the air is heated and stored until discharged by opening the damper in pipe 17. By this arrangement we provide simple and efficient means for supplying at will a hot air blast to the foul air pipe 13 for the purpose of starting a sufficient draft therein to draw the foul air up through pipe 13.

In some installations of our system it may be desirable to employ in connection with the apparatus above described, a combined draft checking and auxiliary ventilating means and these means, as illustrated, comprise a pipe 19 extending from an opening 20 in pipe 7 to within a short distance of the floor 2. Said pipe 19 being provided with a damper 21.

What we claim is:—

1. In a heating and ventilating system, the combination with a heater, of a pipe in communication therewith and adapted to extend therefrom to a chimney-flue, a foul-air duct independent of the pipe and chimney-flue, a drum on the pipe located outside of the path of travel of the foul-air in the foul-air duct having an air inlet and adapted for heating and storing air, and valve controlled means

located between the drum and the foul-air duct for conveying heated air from the drum to the foul-air duct.

2. In a heating and ventilating system, the combination with a heater, of a pipe in communication therewith and adapted to extend therefrom to a chimney-flue, a casing surrounding the heater, means for supplying cold air to the heater below its bottom, a foul-air duct independent of the pipe and chimney-flue, a drum on the pipe located outside of the path of travel of the foul-air in the foul-air duct having an air inlet and adapted for heating and storing air, and valve controlled means located between the drum and the foul-air duct for conveying heated air from the drum to the foul-air duct.

3. In a heating and ventilating system, the combination with a stove, of a pipe in communication therewith and adapted to extend therefrom to a chimney flue, a foul-air duct extending upwardly from the stove floor level spaced away from and independent of the pipe and chimney flue, means, independent of the said foul-air duct, for storing air coacting with the stove for heating the stored air, and valve-controlled means for introducing heated air at will from the heating and storing means to the said foul-air duct.

4. In a heating and ventilating system the combination with a stove, of a smoke-pipe, a casing surrounding the stove and extending downwardly below the bottom of the stove and to the floor level, a pipe for supplying cold air to the interior of the casing below the bottom of the stove, an independent main foul-air duct, a drum having an air inlet, said drum surrounding the smoke-pipe and adapted for storing air therein, a connecting-pipe leading from the drum to the foul-air duct, and a damper in the connecting-pipe.

5. In a heating and ventilating system the combination with a stove, of a smoke-pipe leading therefrom, means for supplying cold-air to the stove below its bottom, an independent main foul-air pipe, a drum surrounding the smoke-pipe adapted for storing air therein, a pipe for admitting air to the drum, a pipe connecting the main foul-air pipe and the drum, and a damper in the connecting-pipe.

6. In a heating and ventilating system, the combination with a stove, of a pipe in communication therewith and adapted to extend therefrom to a chimney-flue, a casing surrounding the heater and extending to the floor level, a cold-air pipe extending under the floor level and arranged to discharge cold-air against the bottom of the stove, a foul-air duct extending upwardly from the floor level independent of the pipe and chimney-flue, a drum on the pipe located out-

side of the path of travel of the foul-air in the foul-air duct and adapted for heating and storing air, a pipe for admitting air to the drum, and a valve controlled conduit
 5 located between the drum and the foul-air duct for conveying heated air at will from the drum to the foul-air duct.

7. In a heating and ventilating system, the combination with a stove, of a pipe in communication therewith and adapted to extend therefrom to a chimney-flue, a casing surrounding the heater and extending to the floor level, a cold-air pipe extending under the floor level and arranged to discharge
 10 cold air against the bottom of the stove, a foul-air duct extending upwardly from the floor level independent of the pipe and chimney-flue, a drum on the pipe located outside of the path of travel of the foul-air in the
 15 foul-air duct and adapted for heating and

storing air, horizontal apertured partitions in said drum dividing the interior thereof into a plurality of chambers, a pipe for admitting air to a chamber of the drum, and a valve controlled conduit located between the
 25 drum and the foul-air duct for conveying heated air at will from the drum to the foul-air duct.

In testimony whereof we affix our signatures in presence of two witnesses.

EDWARD Y. BRECK.

CHARLES T. KURTZ.

Witnesses as to the signature of Edward Y. Breck:

W. G. DOOLITTLE,

F. E. GAITHER.

Witnesses as to the signature of Charles T. Kurtz:

HARRY F. WALLACE,

BESS M. TUCKER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
