W. J. GROSS.

HEATER.

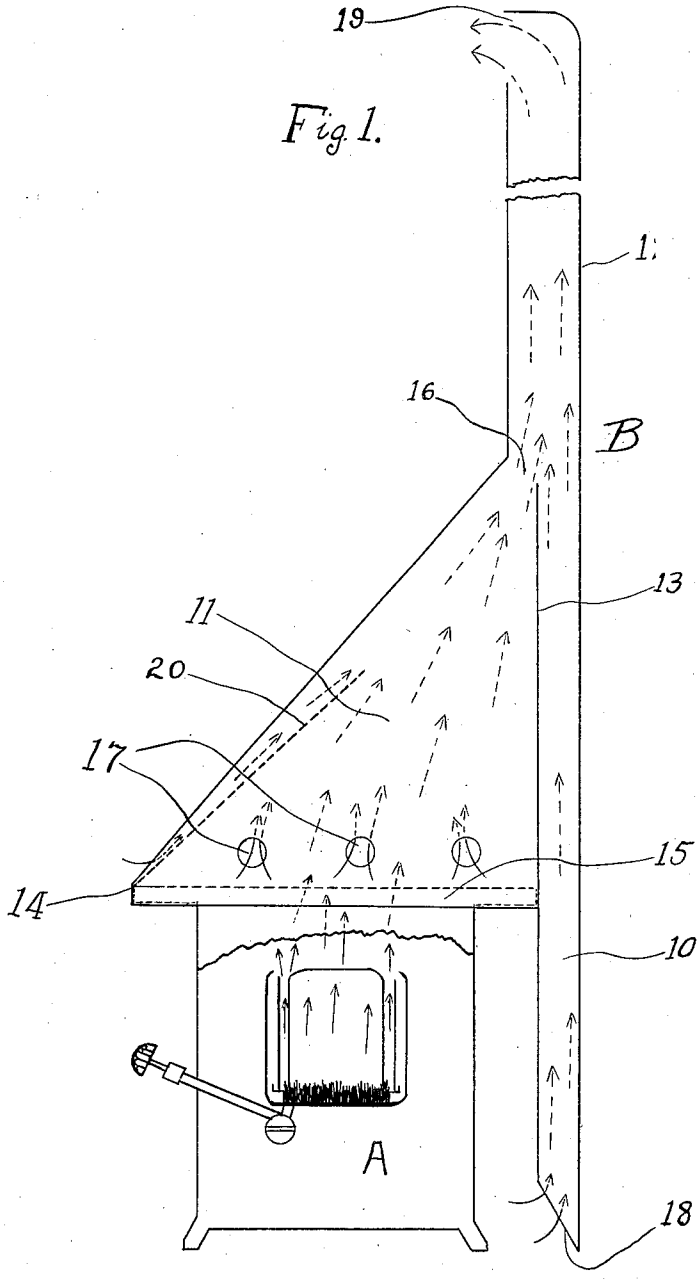
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1,360,934.

Patented Nov. 30, 1920.

2 SHEETS—SHEET 1.

Fig. 1.



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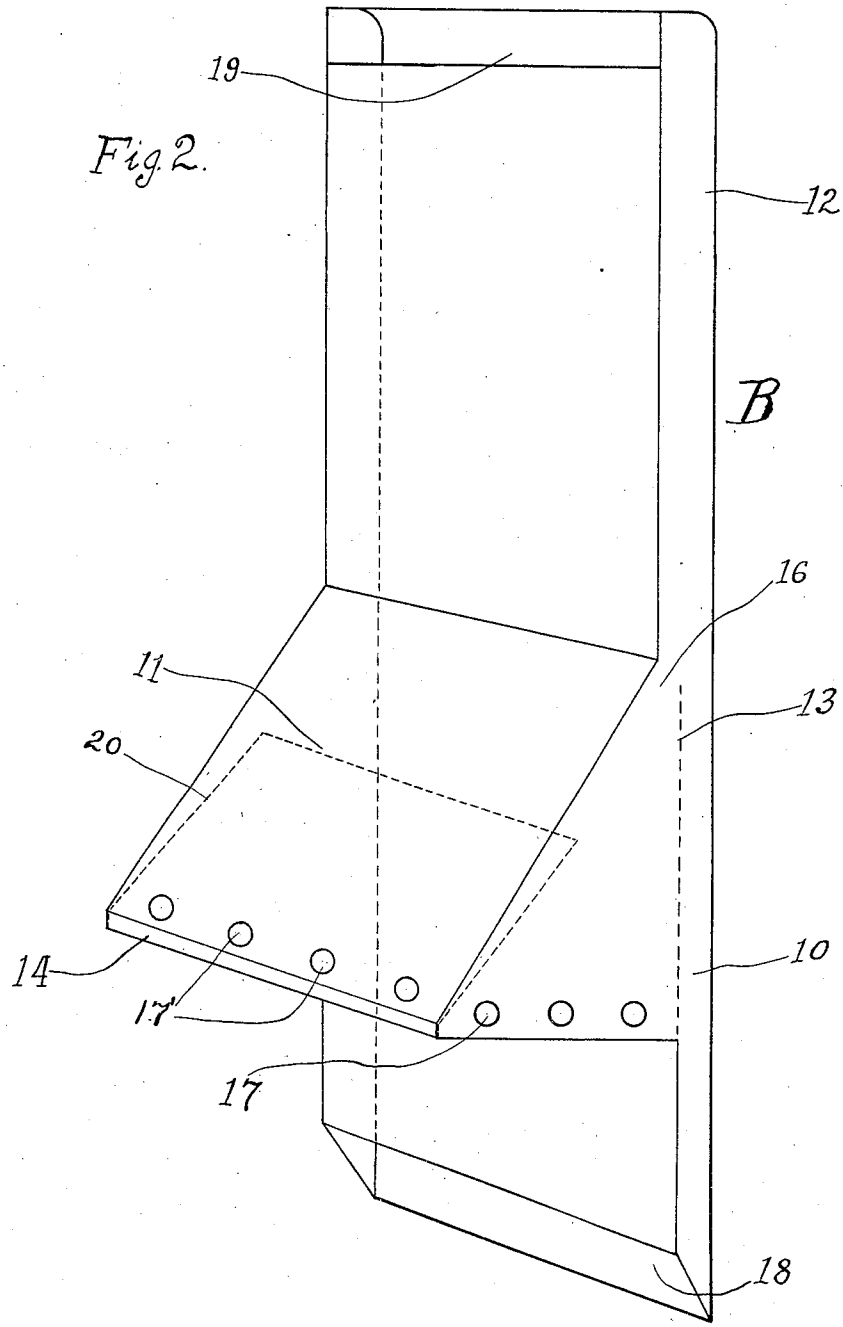
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM J. GROSS, OF ST. PAUL, MINNESOTA.

HEATER.

1,360,934. Specification of Letters Patent. Patented Nov. 30, 1920.

Application filed December 22, 1919. Serial No. 346,451.

To all whom it may concern:

Be it known that I, WILLIAM J. GROSS, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented new and useful Improvements in Heaters, of which the following is a specification.

My invention relates to improvements in heaters.

The object of my invention is to provide an economical and efficient heating device for compartments, such as storerooms and garages, and particularly to keep the temperature of such compartments above freezing at a small expense.

A further object is to quickly distribute the hot air from the heater throughout a compartment and cause it to mingle with the colder air.

In the drawings Figure 1 is a side elevation of my heater with a portion of the casing of the stove broken away to show diagrammatically the internal construction, and Fig. 2 is a perspective view of the air heating and mixing attachment.

Referring to the drawings the letter A indicates the stove and B the air heating and mixing attachment used in my heater. The stove A may be of any suitable form, preferably one in which liquid or gaseous fuel is used, the particular stove illustrated in the drawing being a kerosene stove of the vapor burning type. The air heating and mixing attachment B comprises a cold air flue 10, a hood 11 and a hot air stack 12. The flue 10 opens at its upper end into the stack 12 and at its lower end near the floor of the compartment to be heated, and is divided from the hood 11 by a transverse partition 13 extending from the top of the stove to a point slightly below the top of the hood 11. The sides of the hood 11 are vertical, while the front thereof slopes outward from its line of union with the stack 12 to a line slightly above the top of the stove, where it is provided with a vertical flange 14, which in conjunction with the lower portions of the sides of the hood and the front wall of the flue 10 form a substantially air-tight union with the top 15 of the stove. The apex of the hood 11 opens into the stack 12, forming the throat 16 of the stack. Air to supply proper combustion is furnished through a series of perforations 17 in the side walls of the hood. The stack 12 opens into the compartment to be heated near its ceiling.

A baffle plate 20 is suitably attached to the flange 14 and extends diagonally into the hood to separate the current of air entering the perforations 17′ from that entering the perforations 17, and the air between the baffle and front of the hood, after being warmed, is drawn through the throat 16 with the hot air from the stove.

In operation, air heated by the stove A rises through the hood 11, and, mingling with the warm air drawn through the perforations 17′, produces at the throat 16 a strong draft, which draws cold air from near the floor of the compartment into the flue 10 through the opening 18, and this cold air mixes with the hot air passing from the throat 16 into the stack 12, whence the warm air produced by the mixture is discharged through the opening 19 into the upper portion of the compartment to be heated.

I prefer to make the cross sectional area of the cold air flue about four-fifths ($\frac{4}{5}$) that of the throat 16, and about four-sevenths ($\frac{4}{7}$) that of the stack 12, but good results may be obtained within the limits of considerable variation from these proportions.

Having described my invention what I claim as new and desire to protect by Letters Patent is:

1. In a heater, a stove, a hood fitting the top of said stove, a cold air flue extending below said hood and opening at its base into the compartment to be heated, and a stack opening at its lower extremity into said flue and hood and at its upper end into the compartment to be heated.

2. In a heater, a stove, a hood tapering upward and formed at its top with a narrow throat, a cold air flue open at its base and separated from said hood by a vertical partition, and a stack provided with an outlet at its top and at its base opening into said throat and flue.

3. In a heater a stove, a hood adapted to fit snugly over the top thereof and formed at its top with a throat, a cold air flue separated from said hood by a vertical partition and a stack provided with an outlet at its top into the compartment to be heated and at its base merging into said throat and flue.

4. In a heater, a stove, an upwardly diminishing hood formed at its base with a

plurality of perforations and at its top with a narrow throat, a cold air flue separated from said hood by a vertical partition and opening at its base into the compartment to be heated, and a stack provided with an outlet at its top into the compartment to be heated and at its base opening into said throat and flue.

5. In a heater, a stove, an upwardly diminishing hood formed at its base with a plurality of perforations for the admission of air, a diagonally arranged baffle plate separating the air entering certain of said perforations from that entering the others, a cold air flue separated from said hood by a vertical partition and opening at its base into the compartment to be heated, and a stack provided with an outlet at its top into the compartment to be heated and at its base opening into said hood and flue.

In testimony whereof I have hereunto signed my name to this specification.

WILLIAM J. GROSS.