

Nov. 7, 1944.

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2,362,316

DETACHABLE HEAT CIRCULATING ATTACHMENT

Filed Sept. 5, 1942

4 Sheets-Sheet 1

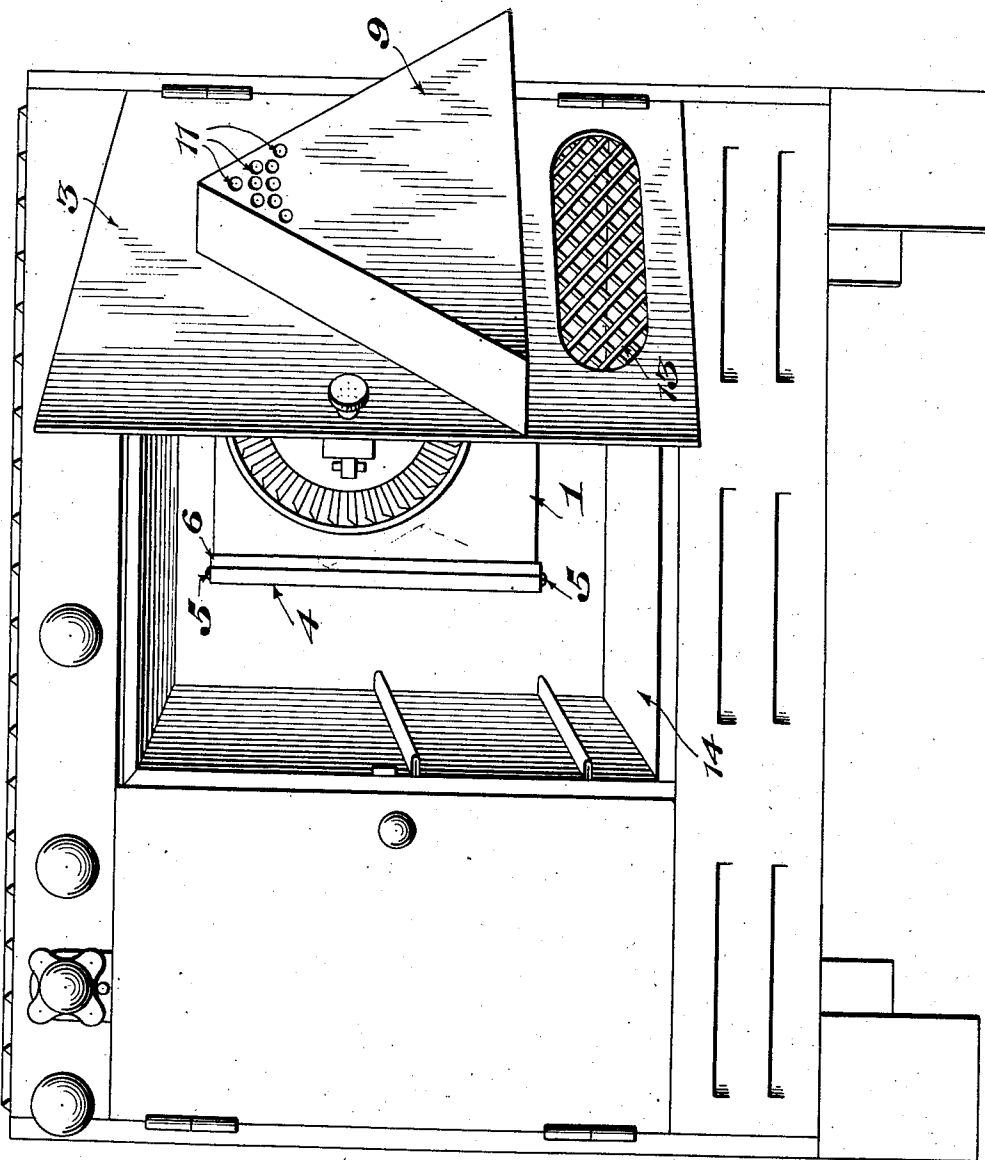


*Fig. 1.*

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4 Sheets-Sheet 2

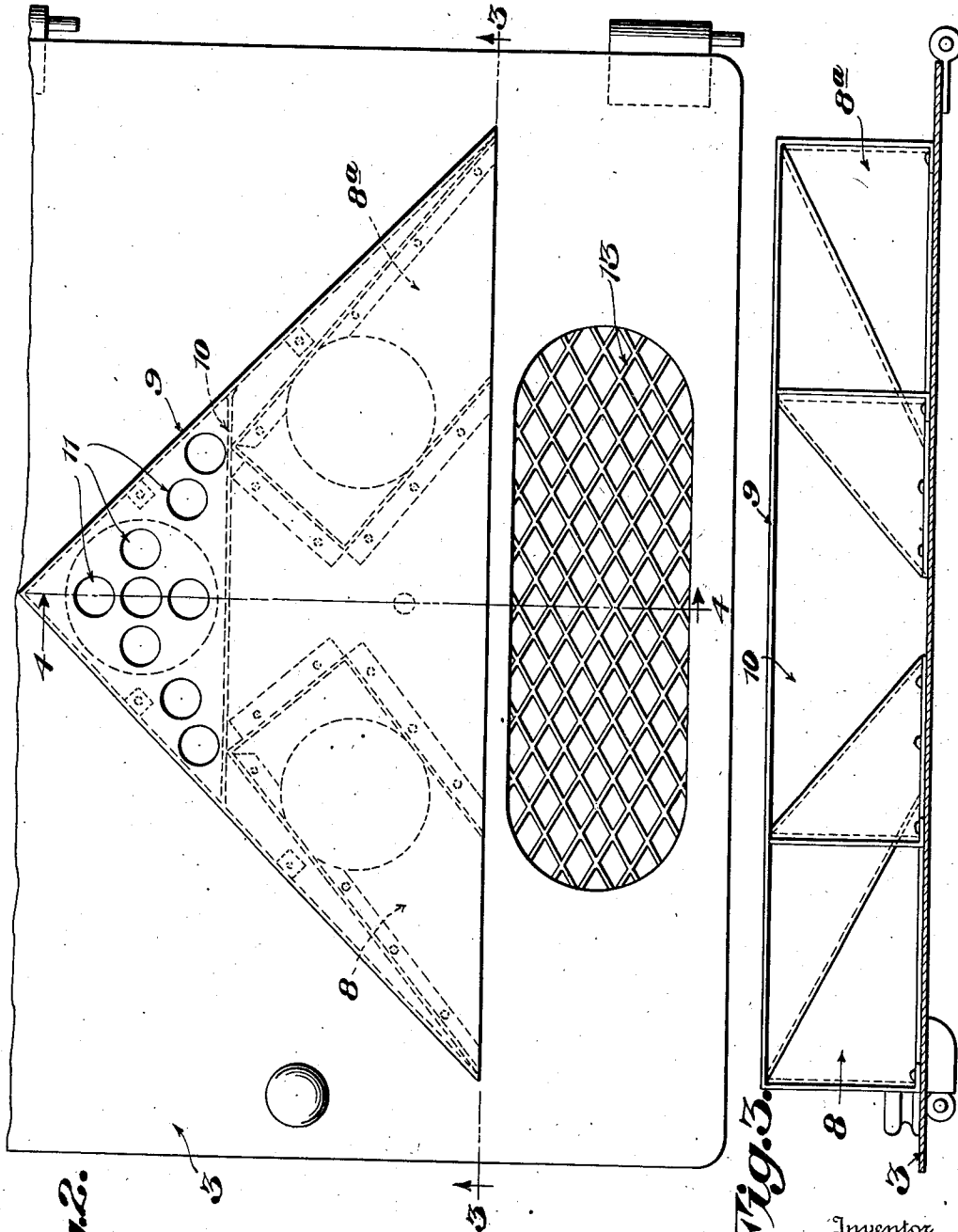


Fig. 2.

Fig. 3.

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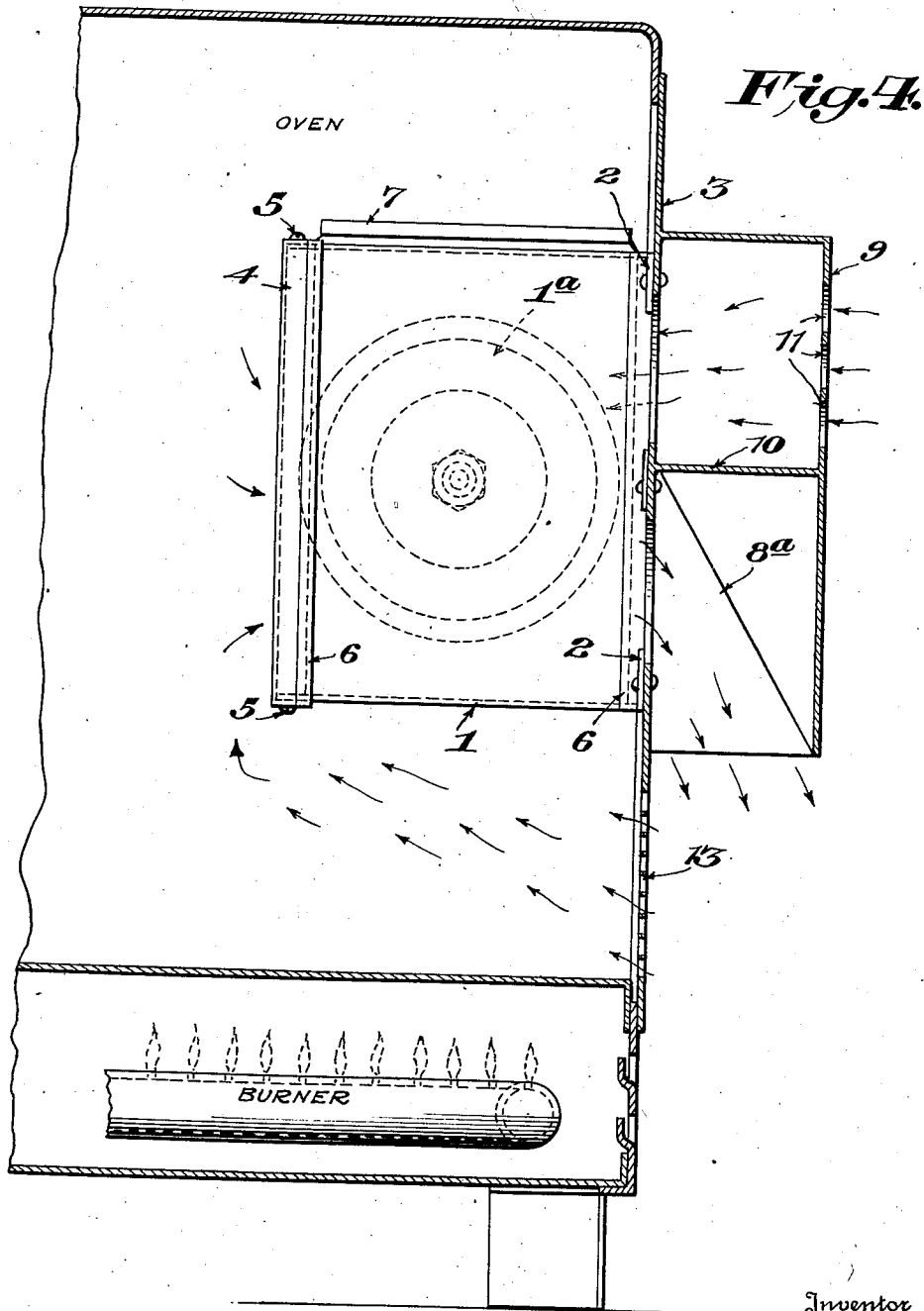
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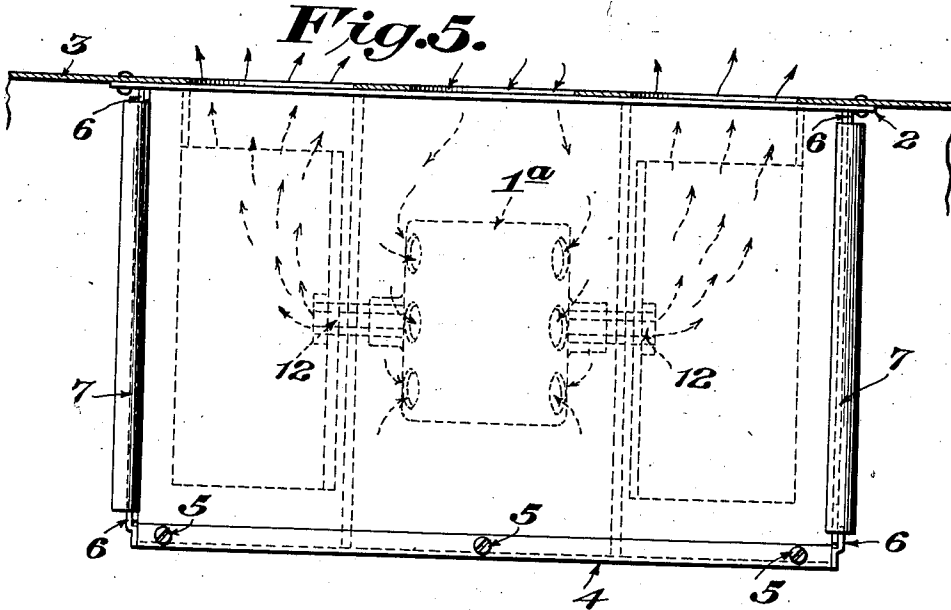
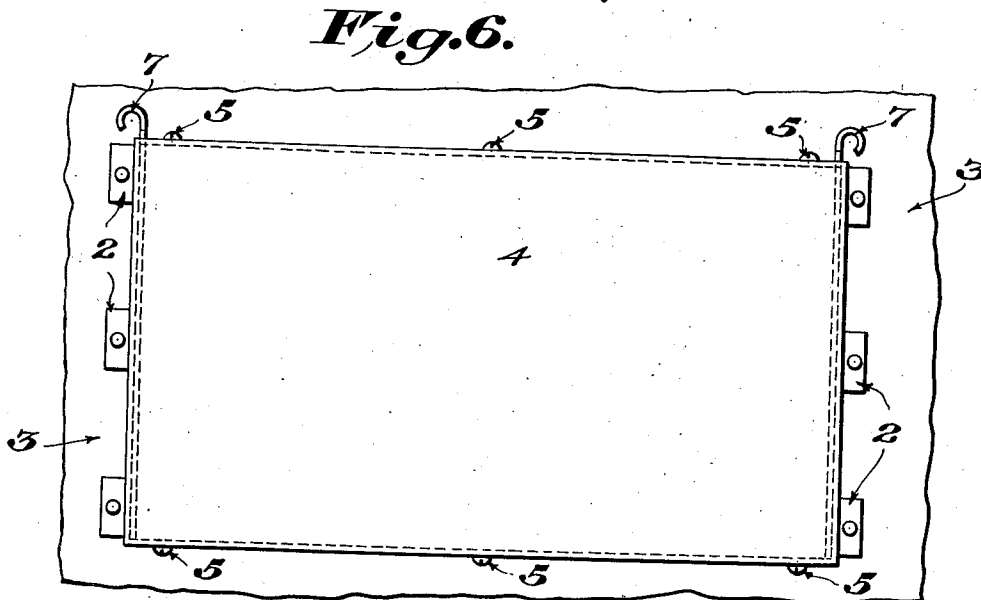
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4 Sheets-Sheet 4



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## UNITED STATES PATENT OFFICE

2,362,316

DETACHABLE HEAT CIRCULATING  
ATTACHMENT

Clarence R. Sims, Elkhart, Ind.

Application September 5, 1942, Serial No. 457,496

## 4 Claims. (Cl. 126—6)

My invention is a detachable heat circulating attachment for ovens, particularly household ovens heated by any conventional means. The device is primarily designed for house trailer use but may be used in homes or any other place to advantage as well.

The regular oven door is removed and another similar door carrying applicant's invention is attached in its place. This arrangement permits the user to employ the oven for baking or cooking with the regular door in use and when not so employed, the door with the heat circulating attachment may be attached to force the hot air from the oven downward to and along the floor (the coldest area) and thereby heat the compartment wherein the unit is installed.

During the present emergency, restrictions on the use of iron for the manufacture of heating stoves of various types, especially those constructed of iron castings, has created a demand for a light weight, economical heating device for house trailers, boats and other applications.

This invention is designed to not only meet that demand, but also to eliminate the necessity of employing heavy oil-burning stoves for such purposes, by utilizing the oven of the gasoline or electric cooking stove commonly employed in trailers, boats and also many small homes.

This result is accomplished by means of the device herein illustrated and described, in which—

Figure 1 is a front view of a conventional gasoline cooking range with my specially designed oven door, partly open and shown in perspective, the blower case being shown detached from the oven door in this view in order that a portion of it may be visible;

Fig. 2 is a front elevation of the special door, provided with bayonet hinges for easy removal or emplacement and showing the heat deflectors in broken lines;

Fig. 3 is a bottom, part sectional view of Fig. 2 on the line 3—3 showing the heat deflecting members;

Fig. 4 is a vertical sectional view of the oven and door on line 4—4 of Fig. 2, showing the heat circulating unit in operating position the direction of air currents being indicated by arrows;

Fig. 5 is a top view of the blower unit and case showing the motor driven fans in broken lines; and

Fig. 6 is a rear view of the blower case, showing the removable back cover of same and a portion of the oven door to which it is detachably secured, providing easy access to the motor and fans for

oilng or the removal of the entire blower assembly.

Like numerals designate like parts in each of the several views.

The blower unit employed is similar to that illustrated and described in applicant's Patent No. 2,272,356, issued February 10, 1942, on Trailer heat and air conditioning device, used in connection with a conventional oil-burning heating stove.

On the front side of the blower case 1 and blower unit 1a in said case there is provided lugs or tabs 2 which may be riveted or welded directly to the oven door 3. A removable cover 4 is provided which fits snugly over the back of the case and is affixed thereto with screws 5. The end edges of this cover are off-set, as are also portions of the end edge of the front plate 2, as shown at 6 (Fig. 5), to provide a guide-way for the removable panels 7, (Figs. 4, 5 and 6).

The heat deflector members 8 and 8a (Figs. 2, 3, and 4) are riveted or spot-welded in position to the front side of the door 3, so as to communicate with the outlet openings of the blower fans, as shown.

A triangular shaped cover 9 (Figs. 1, 2 and 3), is provided to cover the members 8 and 8a, and may be rigidly attached to the oven door by means of clips, screws or rivets, as shown. This triangular shaped cover is provided with a baffle plate 10, extending horizontally across the upper portion of same immediately above the members 8 and 8a, thus separating the latter from the cool air inlets 11. Cool air entering the ports 11 passes around and through the motor, thence through holes in the motor shaft 12 (Figs. 4 and 5), and thence out through the heat deflectors 8 and 8a as shown. This cooling air circulates through the motor even though the hot air intake side of the fans are closed by the panels 7, when fans are running.

A grill 13 (Fig. 4) provides for the intake of cold air from near the floor, to enter the oven over the hot plate 14 and upwardly into the suction side of the fans from whence it is forced through the heat deflector members 8 and 8a, downwardly in an angular direction toward the floor. Thus, the hot air is forced to each end of the trailer, or space to be heated and, by reason of this circulation, the entire space becomes nearly evenly heated. The arrow lines indicate the directional flow of hot and cool air when the blower unit is running. No combustion gases are circulated by the blower unit, as these gases are exhausted externally through a special vent.

As will be seen, the entire oven door with applicant's deflector and blower, may be easily and quickly attached to the stove, by removing the conventional oven door supplied with the stove, as both doors are equipped with bayonet hinges, as shown.

If the oven is to be used for baking, then the regulator oven door is emplaced, but when the oven is to be used for heating, the regular oven door is removed and applicant's special door emplaced. It will be seen, however, that there is sufficient space below the blower unit to bake a pan of biscuits, pies, etc., without removing the heat circulating unit, in which case, the blower is shut off and the intake side of each fan is closed with a pair of removable panels, as shown. No cold air will enter the oven through the grill 13 when the blower is not running, or when the panels 7 are in position, as shown in Fig. 4.

Applicant's forced circulation space heating device may be manufactured to fit any kind or type of oven, requires no skill to install and operate, is fool-proof and efficient, and will cost less to manufacture than any other present known type of heater for trailers.

As practically all house trailers are equipped with a gasoline cooking range and because priorities prohibit manufacturers of conventional heating stoves for trailers, this invention solves the problem of trailer heating by employing the gasoline range oven for the purpose and with a minimum of strategic materials entering into its production.

What I claim is:

1. In a detachable heat circulating attachment for ovens, the combination of an oven door having openings in its lower portion for the intake of air, a blower case detachably connected to said oven door, a blower unit in said case, passages through the oven door for ingress of air into the oven and to the blower, a cover mounted in the oven door, a baffle plate in said cover, and deflecting members in the lower portion of the cover for directing heated air driven out by the blower downwardly toward the floor of the space to be heated.

2. In a detachable heat circulating attachment for ovens, the combination of an oven door having a grill in its lower portion for the intake of

cold air, a triangularly shaped cover affixed to the oven door, said cover being open at the bottom, an approximately central horizontal baffle plate within the cover, the upper portion of the cover having cold air inlets disposed above the baffle plate, a blower case attached to the inside of the oven door, a blower in said case for circulating the air, and slanting heat deflector members mounted in the cover below the baffle plate for deflecting the air downwardly.

3. In a space heating device of the type described, adapted to replace a conventional oven door, the combination of an oven door having perforations in its lower portion, a blower case mounted on the inside of the oven door, a blower in said case, a removable cover fitting over the back of the case to completely close the blower case when the blower is not in use and when it is desired to use the lower portion of the oven for baking without replacing the oven door carrying the blower case with a conventional oven door, opposite edge portions of the blower case cover being offset to provide a support for the removable blower case cover; an outer cover affixed to the exterior of the oven door and having its bottom portion open, said outer cover having openings in its upper portion, a horizontally disposed baffle plate at about the central portion of said outer cover, and air deflecting members in the lower portion of said cover for directing air from the oven downwardly toward the floor of the space to be heated.

4. In a detachable air circulating attachment of the type described, the combination of a detachable oven door, a perforated cover attached to the outside of said door, the oven door also having suitable openings for the admission of air received through the cover, a horizontal baffle plate in said cover, a blower case detachably connected to the inside of said oven door, a blower in said case, and means for directing and discharging heated air driven out by the blower downwardly toward the floor of the space to be heated, panels on the blower case, and means for removably attaching said panels to the blower case to close it and allow normal use of the oven when desired.

CLARENCE R. SIMS.