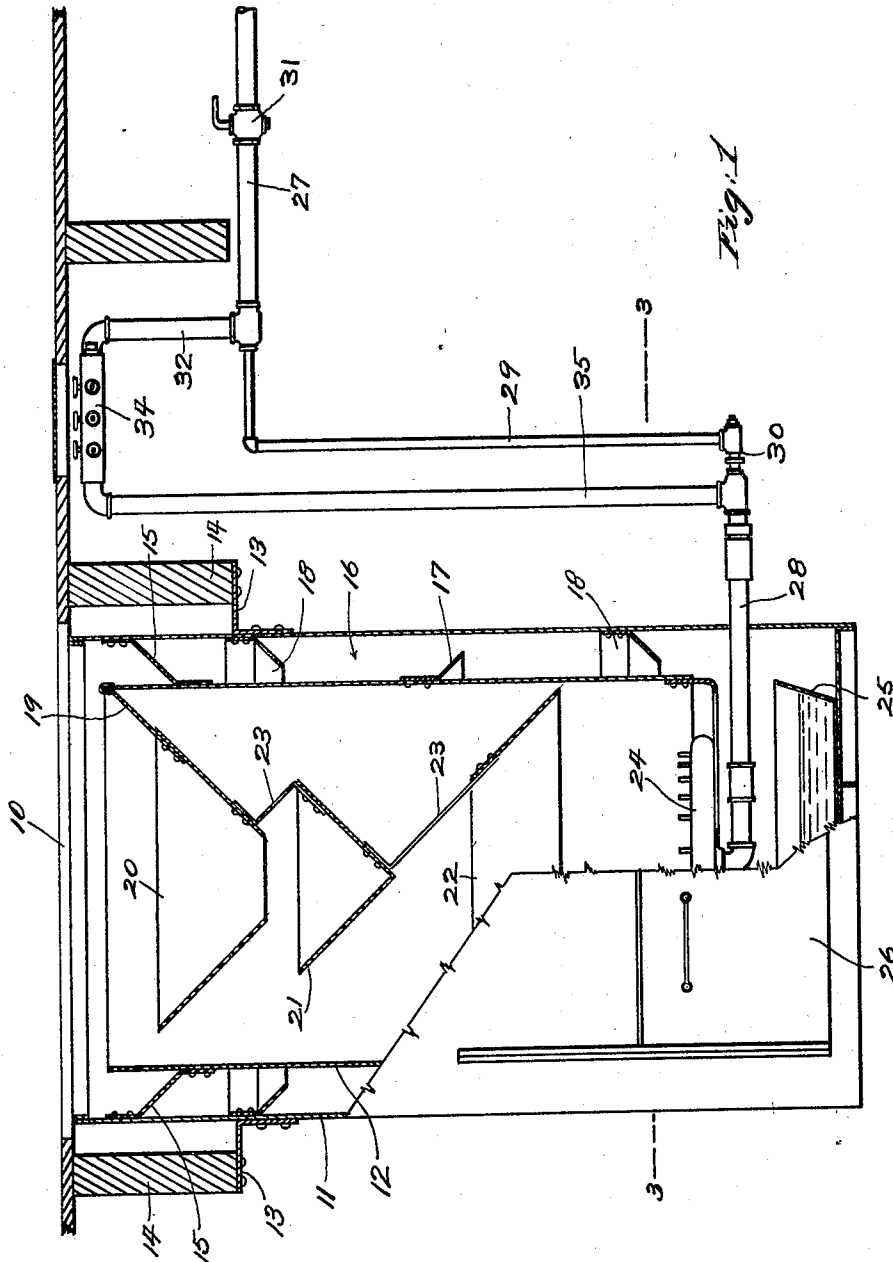


A. P. POST.  
FLOOR FURNACE.  
APPLICATION FILED JULY 17, 1919.

1,383,852.

Patented July 5, 1921.  
2 SHEETS—SHEET 1.



INVENTOR,

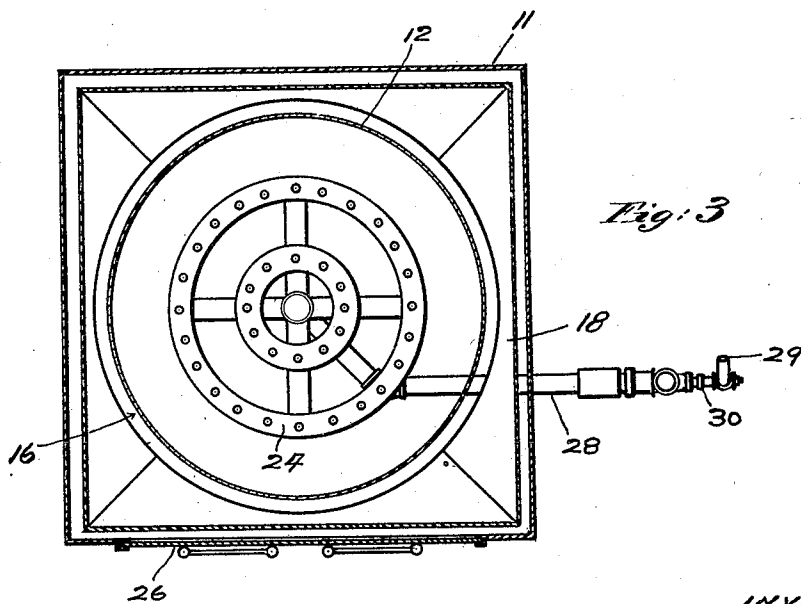
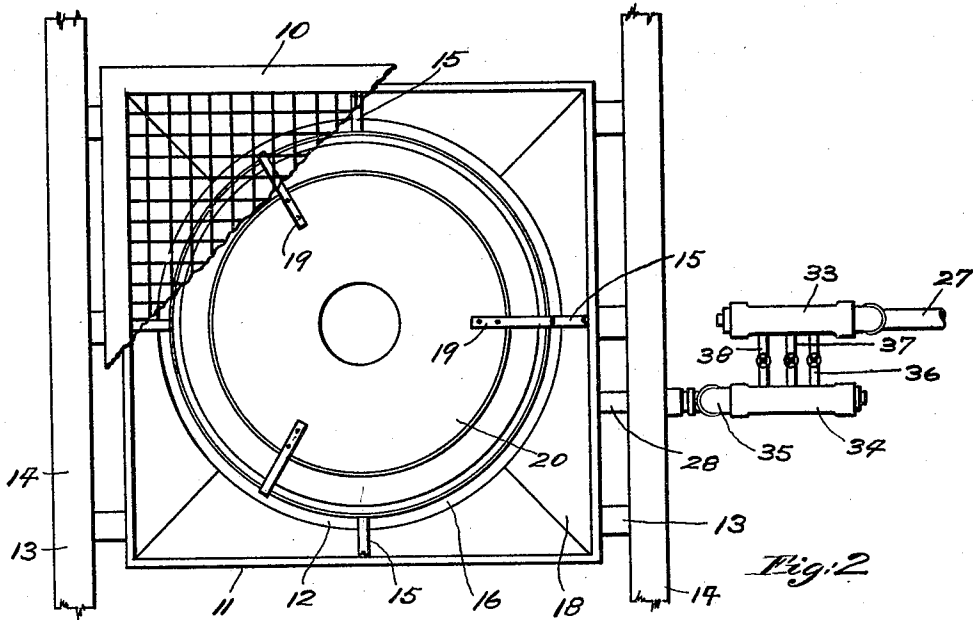
Alfred P. Post.

BY *William J. Jackson*  
ATTORNEY.

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ATTORNEY.

# UNITED STATES PATENT OFFICE.

ALFRED P. POST, OF PHILADELPHIA, PENNSYLVANIA.

## FLOOR-FURNACE.

1,383,852.

Specification of Letters Patent.

Patented July 5, 1921.

Application filed July 17, 1919. Serial No. 311,643.

*To all whom it may concern:*

Be it known that I, ALFRED P. POST, a citizen of the United States, residing at the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a certain new and useful Improved Floor-Furnace, of which the following is a specification.

Heretofore, it has been customary in the floor furnaces utilizing gaseous fuel as a heating medium to introduce cold air adjacent the burners for supporting combustion. As a result thereof practice has dictated that, not only is the atmospheric air contents of a room or rooms being heated materially increased but that the heating effect of a furnace is much depreciated in value in consequence of which the cost of operation thereof when utilizing manufactured gas as a fuel is prohibitive. I have discovered that by substantially sealing a furnace to the admission of cold air and by employing air at room or greater temperature for supporting combustion, substantially all of the heat units in the fuel consumed are utilized, whereby, maximum efficiency as to heating purposes is maintained and whereby, commercially considered, the operating cost is reduced to a minimum.

The invention consists of the improvements hereinafter described and finally claimed.

The nature, characteristic features and scope of the invention will be more fully understood from the following description taken in connection with the accompanying drawings forming part hereof, and in which:

Figure 1, is a vertical sectional view of a furnace constructed in accordance with the present invention.

Fig. 2, is a top or plan view thereof, and

Fig. 3, is a view in transverse section taken upon the line 3—3 of Fig. 1.

For the purpose of illustrating my invention I have shown in the accompanying drawings one form thereof which is at present preferred by me since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

The furnace of the present invention is of the type designed to be mounted below an opening formed in the floor of a room to be heated which opening is provided with a register or open work plate 10. The furnace is primarily made up of outer and inner spaced shells designated 11 and 12 respectively which may be of any desired configuration. For illustrative purposes the outer shell is shown as being of rectangular form and the inner shell of cylindrical form. The outer shell is preferably supported by brackets 13 from floor rafters 14 and is substantially sealed to the admission of cold air by having a closed bottom and closed side walls, the top however being open. The side walls abut against the underside of the register 10. Within the shell 11 and secured thereto as by brackets 15 is the shell 12 which is open top and bottom, its side walls being intact. The inner shell is spaced from the outer shell to provide a chamber entirely therearound which forms a duct 16 to receive air at room temperature. The inner shell which forms a heat drum terminates short of the register 10 and short of the closed bottom of the outer shell. The inner shell has secured to its outer wall a baffle 17 and the inner wall of the outer shell has secured thereto baffles 18, which baffles 17 and 18 lie in the path of travel of air currents through said duct 16. Detachably suspended from the upper rim of the inner shell 12 by means of brackets 13 are a plurality of interconnected baffles 20, 21 and 22 of any desired shape. For illustrative purposes the uppermost baffle is of inverted cone-frustum configuration, the lowermost baffle of cone-frustum shape and the intermediate baffle of inverted conical contour. Brackets 23 connect together the upper, lower and intermediate baffles said brackets being free of the side walls of shell 12 so that the baffles may be readily removed as an entirety. Located in a plane below the inner shell or else within the inner shell adjacent the lower portion thereof, as shown in the drawings is a burner 24 to which may be fed for consumption artificial gas, natural gas, oil or oil vapor as desired. Obviously additional burners may be employed if desired. Beneath such burner, which may be of any appropriate type, is located a removable receptacle 25 for containing water the evaporation of which water is utilized for maintaining a supply of moist air to a

room or rooms being heated. In order to gain access to the furnace interior the outer shell is provided with a door 26 which is preferably of the sliding type to insure a tight fit for the exclusion of air, the door being closed when the furnace is in operation.

In operation air as heated by the burner ascends through shell 12 to a room or rooms to be heated, whereupon circulation of air currents takes place and air at room temperature is returned to the furnace, in a well understood manner, through register 10 to the duct 16 and passes beneath the burner for supporting combustion. Such returned air is thoroughly mixed with the products of combustion by the baffles 20—21—22 which baffles also serve the purpose of breaking up the products of combustion, and tend to conceal from above the source of heat and to reduce luminosity. The baffles 17 and 18 also function as luminosity reducing mediums.

To recapitulate, air at room temperature is employed for combustion, heating and circulation purposes. It is drawn down within the substantially sealed outer shell where it is partially heated and caused to enter the inner shell where it is heated, expanded and forced upwardly through the register to the room or rooms being heated. It is to be noted that experience has dictated that the above operation results in the deliverance to a room or rooms being heated substantially 100% of heat units contained in fuel consumed and that the atmospheric contents of such room or rooms being heated is not increased by such operation.

For convenience and definite regulation of fuel supply I have designed a multiple controlling device which may be so positioned as to be operated immediately adjacent the furnace; so positioned as to be operated through an opening in the floor; positioned in a concealed or in an exposed manner above the floor so as to be operated in a room being heated; or so connected by a system of piping that its operation may be regulated from a distance.

For illustrative purposes I have shown such device as being operable through an opening in a floor. Connecting the main fuel supply pipe 27 and the burner pipe 28 is a by-pass connection 29. Interposed between pipe 28 and by-pass connection 29 is an orifice fitting 30 for maintaining a constant, minimum supply of fuel to a burner. This supply may be shut off when desired by cock 31. For increasing the flow of fuel to a burner, piped connections are made with the controlling device as follows:—Leading from that part of the main supply pipe 27 beyond the by-pass connection is a pipe 32 which connects with branch 33 of the controlling device. Leading from branch 34 of said device to that part of the burner

pipe 28 this side of the by-pass connection is a pipe 35. Connecting said branches 33—34 are short pipe sections 36—37—38 each provided with a valve.

It will now be apparent that I have devised a novel and useful construction which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description and while I have in the present instance shown and described the preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

What I claim is:—

1. In apparatus of the character stated, the combination of a permanently open register, a furnace having an outer shell the bottom and side walls of which are permanently closed to the admission of air other than from a room being heated, the open top of which shell is in direct communication with a room being heated through said register, an inner shell open at its top and bottom and located within the outer shell and spaced from the bottom and side walls thereof, a burner by means of which gaseous fuel is consumed without the premixture of air said burner being located adjacent the lower part of said inner shell and piped connections for delivering gaseous fuel to said burner, whereby all air as heated by said burner is caused to pass to a room being heated to start a circulation of air which air at room temperature is then caused to return to the outer shell through said register and thence caused to pass to the inner shell for re-heating and for passage in its entirety to a room being heated for re-circulation.

2. In combination, a floor furnace, a burner therefor, a main fuel supply pipe connecting with said burner, which pipe is provided with a fitting having a plurality of valves designed for use selectively in supplying gaseous fuel to said burner, each valve being further designed to permit of a definite and predetermined quantity of gaseous fuel to pass therethrough and a by-pass connection interposed in said main supply pipe for the independent supply of a definite and predetermined quantity of gaseous fuel to said burner.

3. In apparatus of the character stated, the combination of a register, a furnace having an outer shell the bottom and side walls of which are closed to the admission of air other than from a room being heated, the open top of which shell is in direct communication with a room being heated through said register, an inner shell open

at its top and bottom and located within the outer shell and spaced from the bottom and side walls thereof, a single burner by means of which gaseous fuel is consumed  
5 without the pre-mixture of air said burner being located adjacent the lower part of said inner shell, a main fuel supply pipe connecting with said burner, which pipe is provided with a fitting having a plurality  
10 of valves designed for use selectively in supplying gaseous fuel to said burner, each valve being further designed to permit of a definite and pre-determined quantity of gaseous fuel to pass therethrough and a  
15 by-pass connection interposed in said main supply pipe for the independent supply of a definite and pre-determined quantity of gaseous fuel to said burner, air as heated by said burner being caused to pass to a room being heated to start a circulation of 20 air which air at room temperature being then caused to return to the outer shell through said register and thence caused to pass to the inner shell for reheating and for passage in its entirety to a room being 25 heated for re-circulation.

In testimony whereof, I have hereunto signed my name.

ALFRED P. POST.