J. DE GRAFF.

REGISTER.

APPLICATION FILED MAY 12, 1919.

1,359,360. **Patented Nov. 16, 1920.**

2 SHEETS—SHEET 1.

Fig. 1.

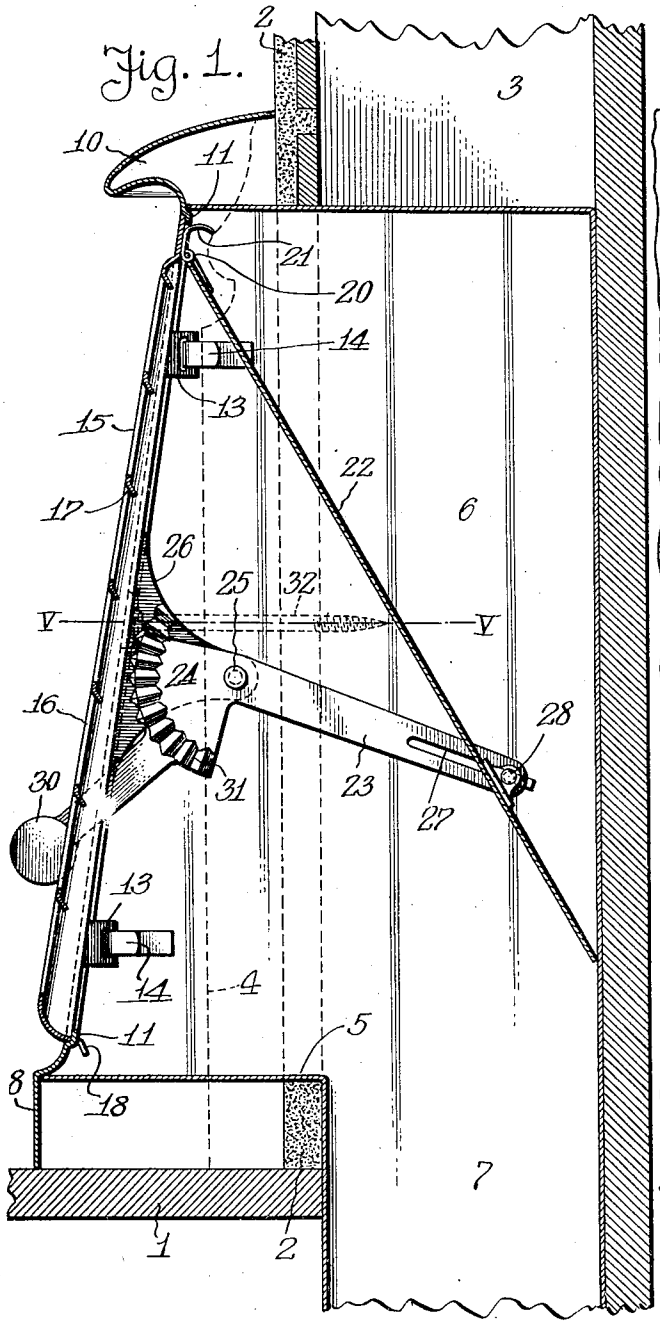
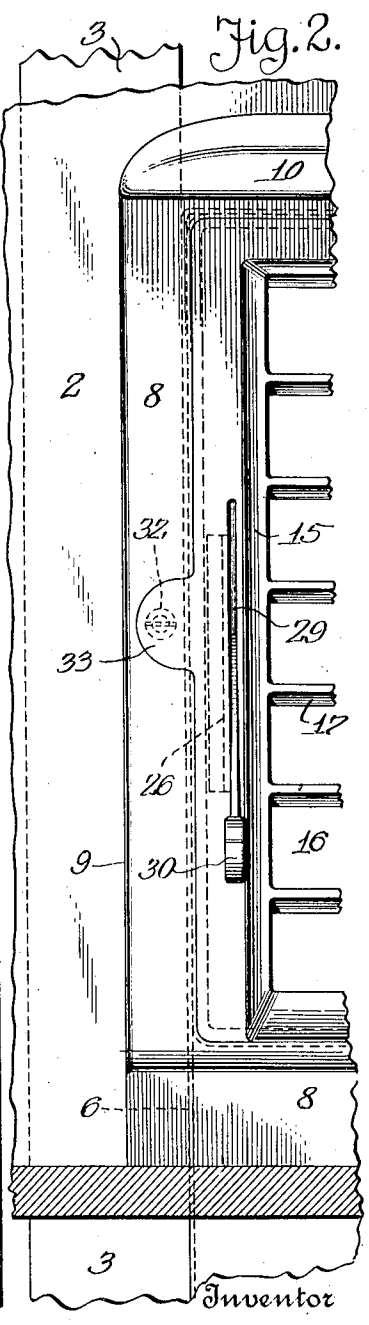


Fig. 2.



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2 SHEETS—SHEET 2.

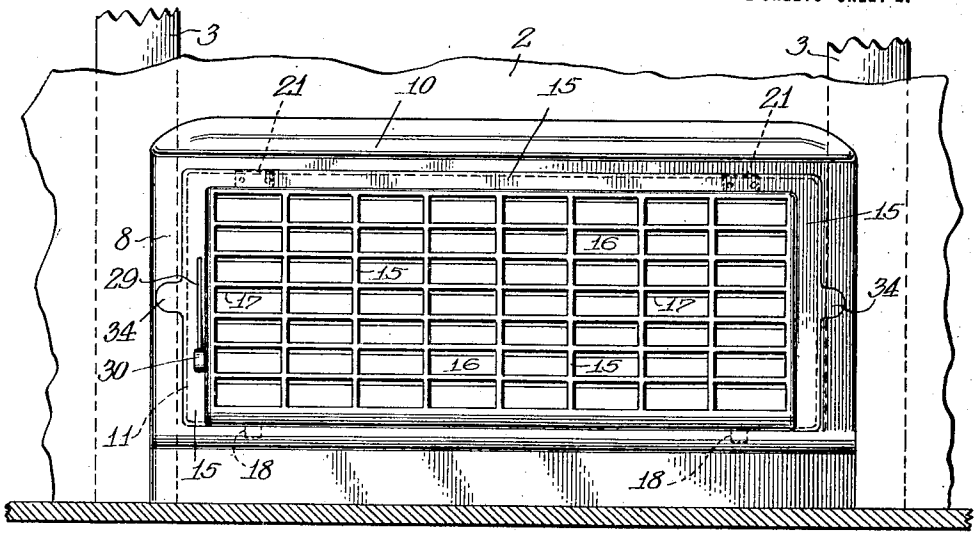


Fig. 3.

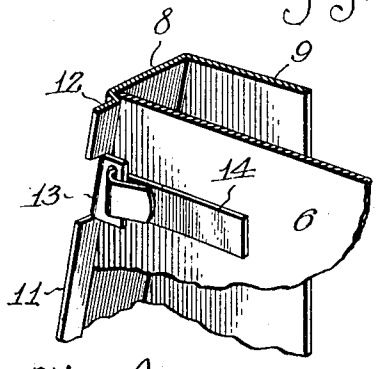


Fig. 4.

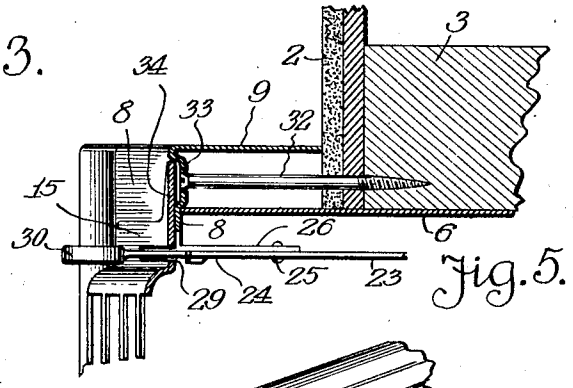


Fig. 5.

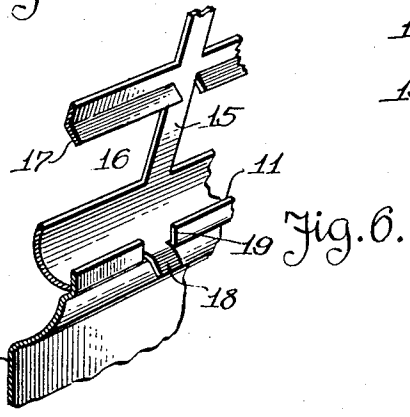


Fig. 6.

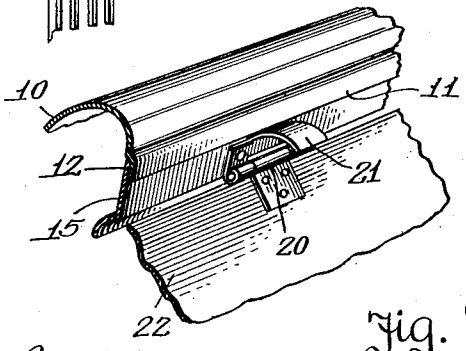


Fig. 7.

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UNITED STATES PATENT OFFICE.

JAN DE GRAFF, OF DETROIT, MICHIGAN.

REGISTER.

1,359,360. Specification of Letters Patent. Patented Nov. 16, 1920.

Application filed May 12, 1919. Serial No. 296,456.

To all whom it may concern:

Be it known that I, JAN DE GRAFF, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Registers, of which the following is a specification, reference being had therein to the accompanying drawings.

In order that a register may have the prerequisite air exhaust into a room or compartment, it is the present practice to make the air exhaust boxes as large as possible, and as far as I am aware the air exhaust boxes placed on the market extend above the base board of a wall and necessitate cutting away the plaster and that portion of the wall bordering on the base board. This destroys the finishing effect of the base board and presents an unsightly appearance, particularly in the room of a residence. Again, an ordinary register in a wall permits heated air to contact with those portions of the wall bordering on the register, and consequently the wall is discolored, coated with dust and further contributes to anything but a neat appearance about the register. Furthermore, the present method of installing registers prohibits repairs being made thereto without completely dismantling the register.

The primary object of my invention is to provide a wall register of maximum area that may be installed in the base board of a wall, without cutting away the plaster or that portion of the wall bearing on the exhaust box, and this is accomplished by making the register of sufficient width to occupy the entire space between the studding of the wall. By increasing the width of the register it is not necessary to make the same the usual height, therefore the wall and base board can be finished off and present a neat and attractive appearance.

Another object of my invention is to provide a register frame that may be easily and quickly attached to an exhaust box or the outer end of a flue, and the register frame has the upper edge thereof provided with a hood or deflector which will prevent hot air from being directed against the wall and the marginal edges of the register frame. The register frame deflects the hot air outwardly and away from the wall, and consequently there can be no demarcation which would detract from the general appearance of the register.

A further object of my invention is to furnish a register frame with a detachable grate or apertured front member that may be easily and quickly removed for cleaning or repair purposes, and even the front member is constructed so as to direct air outwardly from the register and away from the wall in which the register is mounted.

A still further object of my invention is to provide an air register wherein the parts are constructed with a view of reducing the cost of manufacture and at the same time retain those features by which durability, compactness for shipment, and ease of assembling are secured. With such ends in view, my invention resides in the novel construction to be hereinafter specifically described and then claimed, and reference will now be had to the drawings, wherein—

Figure 1 is a vertical sectional view of the register;

Fig. 2 is a front elevation of the same, partly broken away;

Fig. 3 is a complete front elevation of the register;

Fig. 4 is a detail perspective view of a portion of the register, illustrating the manner of connecting the register frame, to the exhaust box or outlet flue;

Fig. 5 is a horizontal sectional view taken on the line V—V of Fig. 1;

Fig. 6 is a perspective view of a portion of the register frame, illustrating a lower connection between said frame, and the front member of the register, and

Fig. 7 is a similar view illustrating a shutter or damper connection with the front member of the register.

In the drawings, the reference numeral 1, denotes a floor with a wall 2 adjoining said floor and supported by spaced joists 3, said wall having a base board 4 which together with said wall are provided with an opening 5 for the exhaust box 6 of a hot or cold air flue 7 that extends upwardly through the floor 1 and is adapted to furnish hot and cold air to a room or compartment having the floor 1 and the wall 2. The exhaust box 6 is made of a less depth than the base board 4 so that it will be unnecessary to cut away the wall 2 above said base board, and in order that the exhaust box may be firmly held and afford sufficient exhaust area for

air, said exhaust box is made of a width corresponding to the space between the joists 3, thus permitting of the exhaust box being firmly anchored between said joists and properly held in the opening 5 of the wall 2. The exhaust box 6 has its outlet end disposed at an angle relative to the wall 2, and said exhaust box protrudes sufficiently from the wall 2 to permit of the register frame and grate being mounted over the inclined end of the box, so that the exposed portion of the box may be finished to present a neat appearan e and permit of the exhaust of the air from the box being regulated and absolutely controlled.

Set against the wall 2 in the cut away portion of the base board 4 is a register frame having an inclined front wall 8 and end walls 9, said walls supporting an overhanging hood or deflector 10 which not only finishes the upper end of the frame, but deflects hot air away from the wall 2 and prevents demarcation of said wall. The lower edges of the walls 8 and 9 set on the floor 1 and the open end of the exhaust box 6 cooperates with the wall in correctly positioning the register frame. The front wall 8 is provided with a passage, generally designated 11 and the wall material bordering on said passage is inset, as at 12, and the end walls of said passage provided with inwardly projecting slotted lugs 13, as best shown in Figs. 1 and 4. The slotted lugs 13 are preferably formed adjacent the upper and lower edges of the passage 11 and said lugs may be conveniently formed by cutting and stamping the inset edges of the passage 11, so that the lugs may be bent inwardly parallel to the side walls of the box 6. On the side walls of the box 6 are placed straps 14 having the ends thereof extending through the slotted lugs 13 and bent or clenched so that the register frame cannot become accidentally displaced.

Mounted in the inset edges of the passage 11 is a grate or apertured front member 15 preferably formed with rows of slots 16, with the upper edge of each slot provided with a deflector 17. The deflectors 17 are positioned so that air passing out of the slots 16 will be deflected upwardly and away from the wall 1, thus coöperating with the hood 10 in preventing the wall from being injured.

To hold the grate or front member in engagement with the frame, the lower edge of the grate is provided with lugs 18 engaging in notches 19 provided therefor in the lower wall of the passage 11, and the upper edge of said grate has hinges 20 providing resilient lugs 21 which are adapted to engage under the upper wall of the passage 11 somewhat similar to snap fasteners, the resilient lugs 21 coöperating with the lugs 18 in positively holding the grate or front member seated in the inset marginal edges of the passage.

The hinges 20 connect the upper edge of a shutter or damper 22 to the grate or front member 15, and said shutter is disposed as best shown in Fig. 1, so that it may be swung into parallelism with the grate to close the same or inwardly against the rear wall of the box 6, thereby serving as a deflector for air emitted from the flue 7. With the shutter 22 closed or in parallelism with the grate 15 the entire register structure, exclusive of the exhaust box 6, will occupy a comparatively small space during shipment.

To adjust the shutter 22 within the exhaust box 6, a novel device is employed, which similar to the register, is preferably made of sheet metal. The device comprises a bell crank 23 having a sector portion 24 pivotally connected, as at 25, to a bracket 26 carried by the front wall 8 of the register frame, at one end of the passage 11. The inner end or arm of the bell crank 23 is slotted, as at 27, and connected, as at 28, to one end of the shutter or damper 22. The opposite or outer end of the bell crank 23 extends through a slot 29 in the grate or front member 15, and has a suitable knob or handle 30 which permits of the bell crank being rocked to adjust the angularity of the shutter 22. The sector shaped portion 24 of the bell crank 23 and the bracket 26 are pressed or formed to provide a series of contacting teeth or protuberances 31 and the frictional contact between these teeth is sufficient to hold the bell crank 23 and the shutter 22 in adjusted positions, it being necessary to somewhat spring the sector shaped portion 24 of the bell crank so that the teeth of the bell crank will ride over the teeth of the bracket 26 when the shutter is being adjusted.

Additional means may be employed for holding the register frame relative to the wall 2 and by reference to Figs. 1 and 5, it will be noted that long screws 32 extend between the side walls of the exhaust box 6 and the end walls 9 of the register frame, said screws having the heads thereof in countersunk portions 33 of the front wall 8 of the register frame, and to render these screws invisible, the grate or front member 15 has side lugs 34 extending into the countersunk portions 33 of the frame and flush with the greater part of the front wall 8 of said frame. The frame will therefore present a neat appearance, as shown in Fig. 3, and the screws 32 will positively prevent the register, in its entirety, from becoming accidentally displaced relative to the end of the exhaust box 6.

It is thought that the utility of my improved register will be apparent without further description, and while in the drawings there is illustrated a preferred embodi-

ment of my invention, it is to be understood that the structural elements are susceptible to such variations and modifications as fall within the scope of the appended claims.

What I claim is:—

1. The combination with an exhaust box, of a wall frame, at the outer end of said box and connected to the side walls thereof, a detachable grate set in said frame, a shutter at the upper edge of said grate and adapted to be swung into said exhaust box, means connecting said shutter to said grate and constituting means for holding said grate in said frame, and means at one end of said frame adapted for adjusting said shutter.

2. The combination of an exhaust box, straps carried by said box, a wall frame, at the outer end of said box, slotted lugs carried by said frame to receive said straps so that said frame may be fixed relative to said box, a hood at the upper edge of said wall frame, a grate detachably mounted in said wall frame, an adjustable shutter carried by said grate and adapted to be swung into said exhaust box, means connecting said wall frame to said exhaust box, and means adapted for connecting said frame to a wall independent of said exhaust box.

In testimony whereof I affix my signature in the presence of two witnesses.

JAN DE GRAFF.

Witnesses:
ANNA M. DORR,
KARL H. BUTLER.