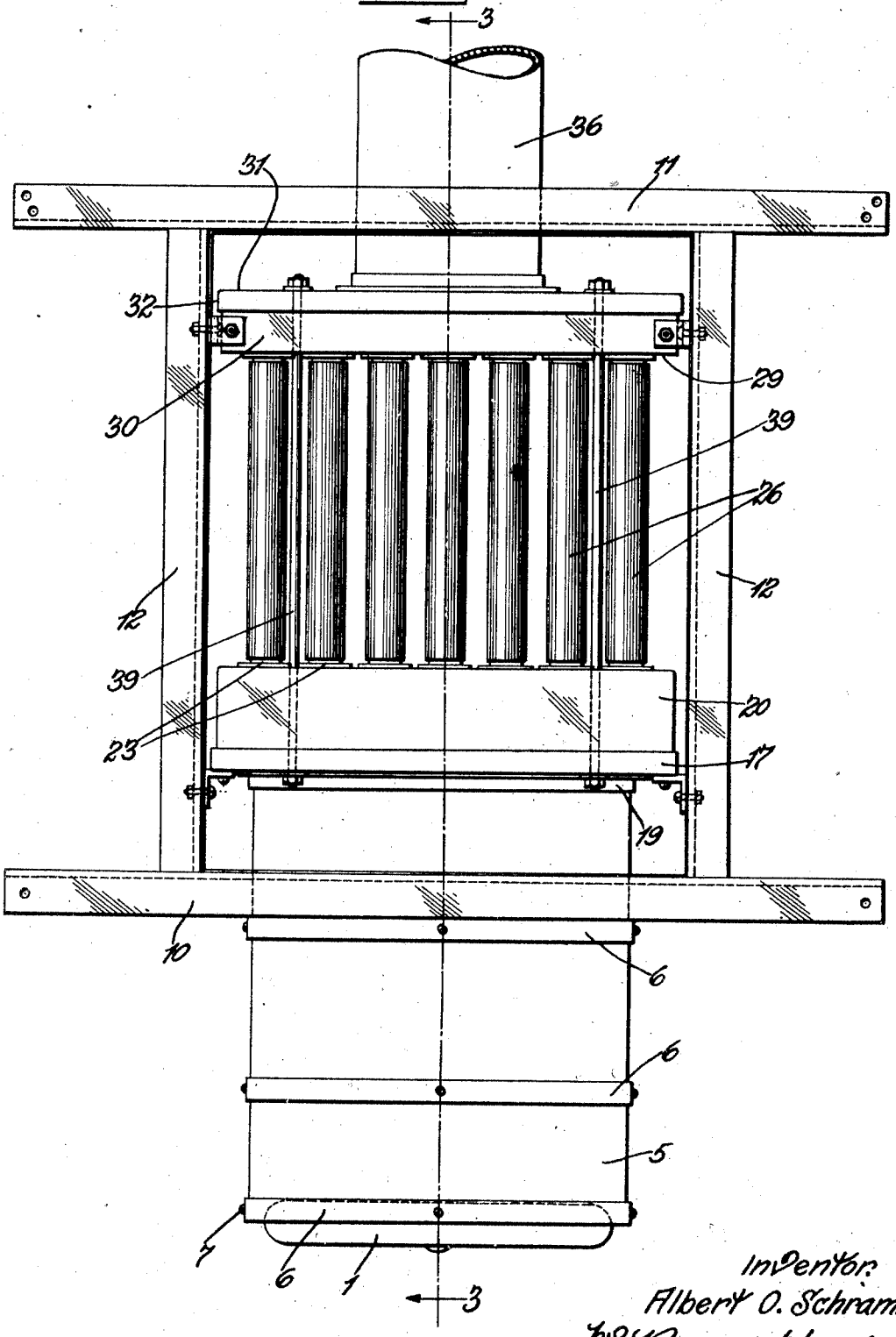
July 2, 1929. A. O. SCHRAMM 1,718,984

AIR HEATER FOR DRYING CABINETS

Filed March 3, 1928 3 Sheets-Sheet 1

Fig. 1.



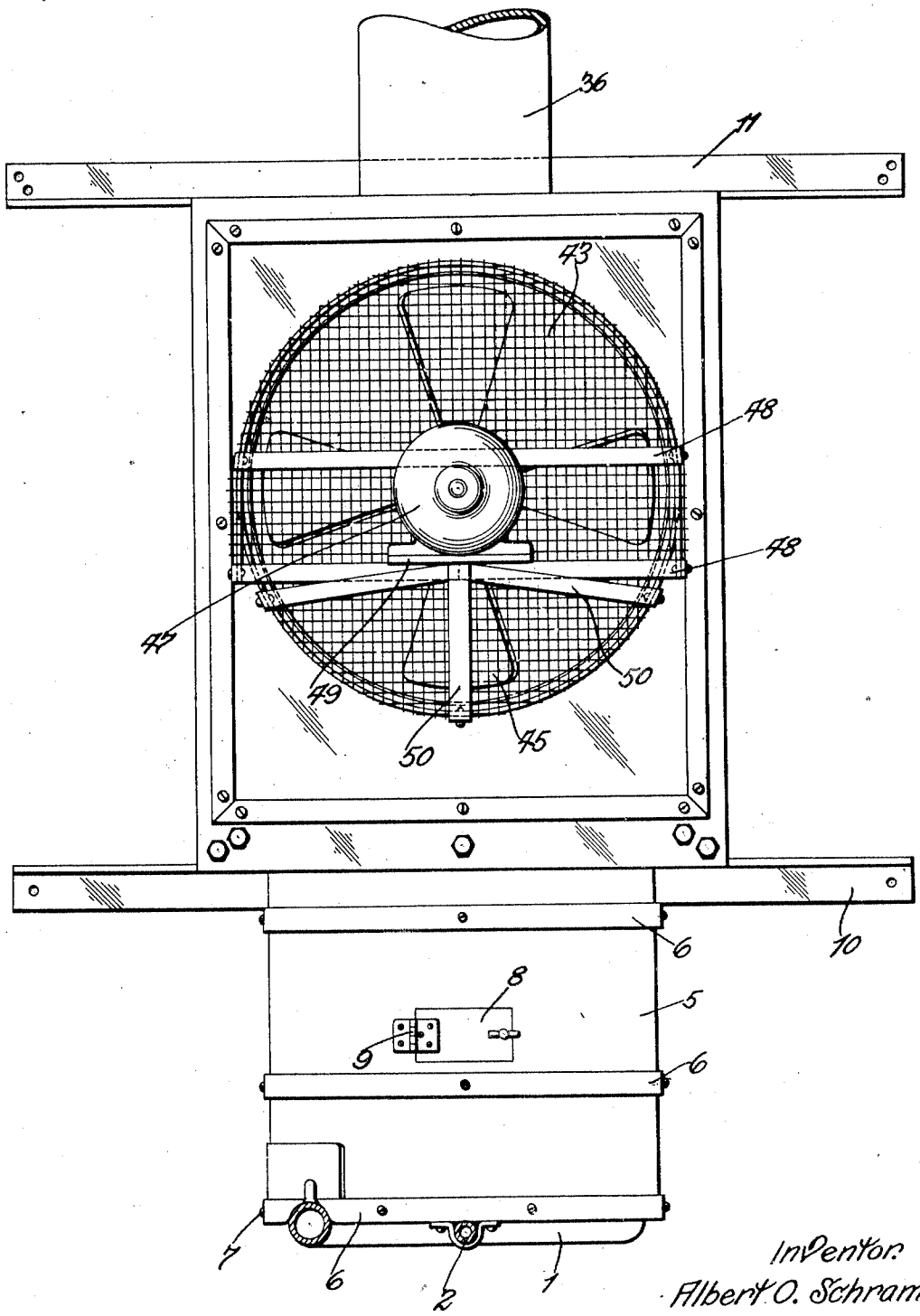
Inventor:
Albert O. Schramm,
by Kippey & Kingsland.
His Attorneys.

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Fig. 2.



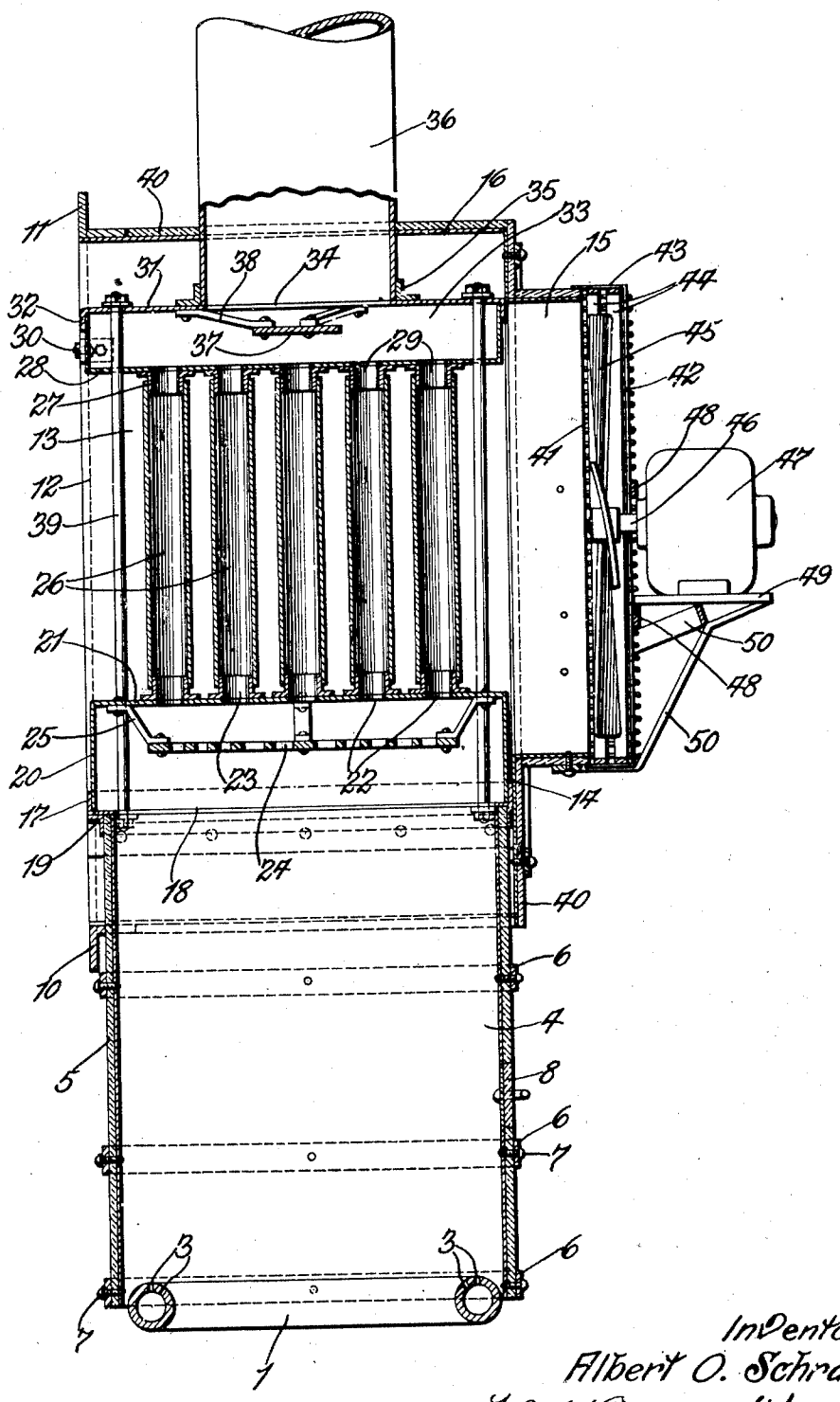
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Fig. 3.



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Patented July 2, 1929. 1,718,984

UNITED STATES PATENT OFFICE.

ALBERT O. SCHRAMM, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE AMERICAN LAUNDRY MACHINERY COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

AIR HEATER FOR DRYING CABINETS.

Application filed March 3, 1928. Serial No. 258,767.

This invention relates to air heaters for drying cabinets.

It is known that laundered and other moist or wet fabrics are often supported and stretched on suitable machines or frames and that the machines or frames with the stretched fabrics thereon are moved into drying cabinets wherein the stretched fabrics are dried by the passage or circulation of heated air through the cabinets. It is desirable to pass and circulate the heated air into and through the drying cabinets free from fumes and products of combustion so that the fabrics will be subjected only to the action of clear heated air.

An object of the present invention is to provide an air heater for supplying heated air to drying cabinets and the like, which heater is constructed and arranged so that the admission of fumes and products of combustion to the drying cabinet or into contact with the fabrics therein is prevented and to equip the heater with mechanism for forcing the heated air into and through the cabinet.

Another object of the invention is to provide an improved air heater of the character and for the purpose mentioned constructed and arranged so that it may be easily assembled and mounted in position for use and so that any of the parts thereof may be easily removed or dismantled for purposes of repair or replacement.

Another object of the invention is to provide an improved air heater of the character and for the purpose mentioned having a burner shielded from the draft of air passing into the drying cabinet so that the burner will operate uniformly and without interference by the air draft.

Another object of the invention is to provide an improved air heater of the character and for the purpose mentioned possessing the advantages of the invention herein described, reference being made to the accompanying drawings, in which

Fig. 1 is a view looking toward the side of the heater that opens into the drying cabinet.

Fig. 2 is an outer side elevation.

Fig. 3 is a vertical sectional view on the line 3—3 of Fig. 1.

The burner 1 is supplied with gas through a pipe 2 and has numerous gas outlets 3 through its upper side. This burner has its upper portion enclosed within the lower end of a combustion drum 4 encased within a cover 5 of asbestos. The asbestos cover 5 is secured to the drum 4 by a number of bands or hoops 6 held in position by fasteners 7 passing therethrough and through the cover 5 and the wall of the drum 4. An opening through one side of the drum may be opened and closed by means of a door 8 supported in position by a hinge 9 and capable of outward and inward swinging movement to open and to close the opening. The door may be opened to any desired extent to obtain additional draft or to afford access to the inside of the combustion drum and may be closed entirely as desired.

This combustion drum is supported by a frame comprising a lower horizontal angular bar 10, an upper horizontal angular bar 11 and two vertical angle bars 12 having their lower and upper ends rigid with the bars 10 and 11, respectively. A pair of vertical sheet metal side walls 13 have their inner edges rigid with the upright frame member 12 and their outer edges in connection with an outer wall 14 having a large opening therethrough surrounded by an outwardly extending annular flange 15 (Fig. 3). A top wall 16 closes the upper end of the enclosure formed by said side walls 13 and outer end wall 14.

A ring, the band of which is angular in cross section and comprising a vertical flange 17 and a horizontal flange 18, is seated upon the upper end of the combustion drum 4, being rigidly attached to an angular ring 19 rigid with said combustion drum. A drum 20 has its lower end enclosed within the flange 17 and seated upon the flange 18 and is thereby held from lateral displacement. The upper end wall 21 of the drum 20 has numerous flue openings 22 each surrounded by an upwardly extending tubular fitting or joint element 23. A baffle grid 24 is supported within the drum 20 and some distance below the flue openings 22 by a number of straps 25 having their upper ends attached to the end wall 21 of the drum 20 and their lower ends attached to said baffle grid (Fig. 3).

A number of aluminum tubular flues 26 have their lower ends enclosing the joint elements 23 and their upper ends enclosing similar joint elements 27 attached to a wall 28 having numerous flue openings 29 therethrough. The wall 28 is in connection with an upward-

ly extended annular wall 30 which supports a wall 31 having an annular flange 32 enclosing the wall 30. A chamber 33 is thus formed between the walls 28 and 31, the side of said chamber being enclosed by the wall 30. A large flue opening 34 through the upper wall 31 is surrounded by a flange or fitting 35 into which fits the lower end of a flue 36 for conducting to the outside the fumes and the products of combustion. A baffle disc 37 is supported below the lower open end of the flue 36 by a number of arms 38, the upper ends of which are attached to the wall 31 and the lower ends of which are attached to said disc.

It will be noted in this connection that an important feature of the invention resides in the relationship of the flues 26 to their connected parts. That is to say, these flues 26 are preferably constructed of aluminum and are of considerably less length than the vertical distance between the end flanges of the flue connections 23 and 27, respectively. This affords sufficient room for expansion and contraction without subjecting the structure to strains that would result if the ends of said tubes abutted directly against the opposite parts.

The parts above described forming the chamber 33 are rigidly maintained in position by a number of tie rods 39 passing through the walls 31, 28 and 21 and through the flange 18 and the ring 19 (Figs. 1 and 3) and having nuts screwed on their opposite ends to clamp the parts together.

The enclosure formed by the walls 13, 14 and 16 as well as the tubular extension 15 are enclosed by a covering 40 of asbestos.

A screen 41 is attached to the outer end of the tubular extension 15. A similar screen 42 has its edge 43 bent to enclose a pair of reinforced rings 44 and secured rigidly to the end of the tubular extension 15. Thus, the two screens 41 and 42 are spaced apart and in the space between them a fan 45 is operatively supported by the shaft 46 of a motor 47. Additional rigidity of the screen 42 is obtained by a number of straps 48 extending across the outer side thereof and having their opposite ends in rigid connection with the adjacent structure. The motor 47 is mounted on a shelf 49 supported by a number of rigid bracket arms 50.

From the foregoing it will be apparent that in operation the gas passing from the burner 1 through the outlets 3 is ignited. The heated air within the combustion drum 4 rises through the baffle grid 24 and passes through the flues 26 into the chamber 33. The flues 26 are highly efficient heat transfer devices so that the air being forced between said flues and into the drying cabinet (not shown) becomes heated to the proper degree to obtain the desired drying effects. The products of combustion pass from the chamber 33 through the flue 36 to the outside, too rapid circulation being retarded by the baffle disc 37. The air in the compartment formed by the walls 16 and 31 is thereby heated and since said compartment opens into the drying cabinet such heated air is utilized.

When the fan is in operation a forced circulation of air is obtained, the burner being shielded and protected by the wall 21 so that the burner continues to burn uniformly and properly.

The construction of the device may be varied within equivalent limits without departure from the nature and principle thereof. I do not restrict myself unessentially, but what I claim and desire to secure by Letters Patent is:

1. An air heater of the character described comprising a burner, an enclosure rising above said burner and having openings through the top wall thereof, flues extending from said openings, means forming an enclosed chamber opening into the upper ends of said flues, a flue for conducting the products of combustion from said chamber, a baffle grid below the openings to said flues from said enclosure, and a baffle device in said chamber below the opening to said second flue.

2. An air heater of the character described comprising a burner, an enclosure rising above said burner and having openings through the top wall thereof, flues extending from said openings, means forming an enclosed chamber opening into the upper ends of said flues, a flue for conducting the products of combustion from said chamber, a baffle grid below the openings to said flues from said enclosure, a baffle device in said chamber below the opening to said second flue, walls enclosing said first flues between them, and means for forcing air between said first flues.

3. An air heater of the character described comprising a burner, an enclosure rising above said burner and having openings through the top wall thereof, flues extending upwardly from said openings, means forming an enclosed chamber opening into the upper ends of said flues, walls forming an enclosure for said flues, which said second enclosure has an outlet opening at one side and an inlet opening at the opposite side, the full vertical width of which openings is approximately equal to the length of said flues, means forming an enclosure above said chamber and having a lateral opening in the same direction as said outlet opening, and a flue extending from said chamber through said last named enclosure for conducting the products of combustion from said chamber.

4. An air heater of the character described comprising a burner, an enclosure rising above said burner and having openings through the top wall thereof, flues extending upwardly from said openings, means forming an enclosed chamber opening into the upper

ends of said flues, walls forming an enclosure for said flues, which said second enclosure has an outlet opening at one side and an inlet opening at the opposite side, the full vertical width of which openings is approximately equal to the length of said flues, means forming an enclosure above said chamber and having a lateral opening in the same direction as said outlet opening, a flue extending from said chamber through said last named enclosure for conducting the products of combustion from said chamber, a baffle element in said chamber, and means permanently supporting said baffle element in a location between the lower wall of said chamber and the opening into said last named flue.

5. An air heater of the character described comprising a burner, a wall forming an enclosure for the heated air passing from said burner, an upper end wall for said enclosure having flue openings, walls forming a chamber above said upper end wall, flues forming a communication from said flue openings into said chamber, walls forming an enclosure about said flues, which said enclosure has a lateral outlet opening at one side and an inlet opening at the opposite side, means forcing air through said inlet opening and through said enclosure and from said enclosure through said outlet opening, means forming an enclosure above said chamber, which said last enclosure opens laterally in the same direction as said outlet opening, and a flue for the products of combustion opening from said chamber and extending vertically entirely across and from said last enclosure.

6. An air heater of the character described comprising a burner, a wall forming an enclosure for the heated air passing from said burner, an upper end wall for said enclosure having flue openings, walls forming a chamber above said upper end wall, flues forming a communication from said flue openings into said chamber, walls forming an enclosure about said flues, which said enclosure has a lateral outlet opening at one side and an inlet opening at the opposite side, means forcing air through said inlet opening and through said enclosure and from said enclosure through said outlet opening, means forming an enclosure above said chamber, which said last enclosure opens laterally in the same direction as said outlet opening, a flue for the products of combustion opening from said chamber and extending vertically entirely across and from said last enclosure, and a baffle device in said chamber below the opening to said last named flue.

7. An air heater of the character described comprising a burner, an enclosure rising above said burner and having openings through the top wall thereof, flues extending from said openings, means forming an enclosure chamber opening into the upper ends of said flues, a flue for conducting the products of combustion from said chamber, means forming an enclosure above said chamber about said second flue, a baffle grid below the openings to said first flues from said first enclosure, a baffle device in said chamber below the opening to said second flue, walls forming an enclosure for said first flues, which said enclosure has an outlet opening at one side and an inlet opening at the opposite side, and means for forcing air through said last enclosure.

ALBERT O. SCHRAMM.