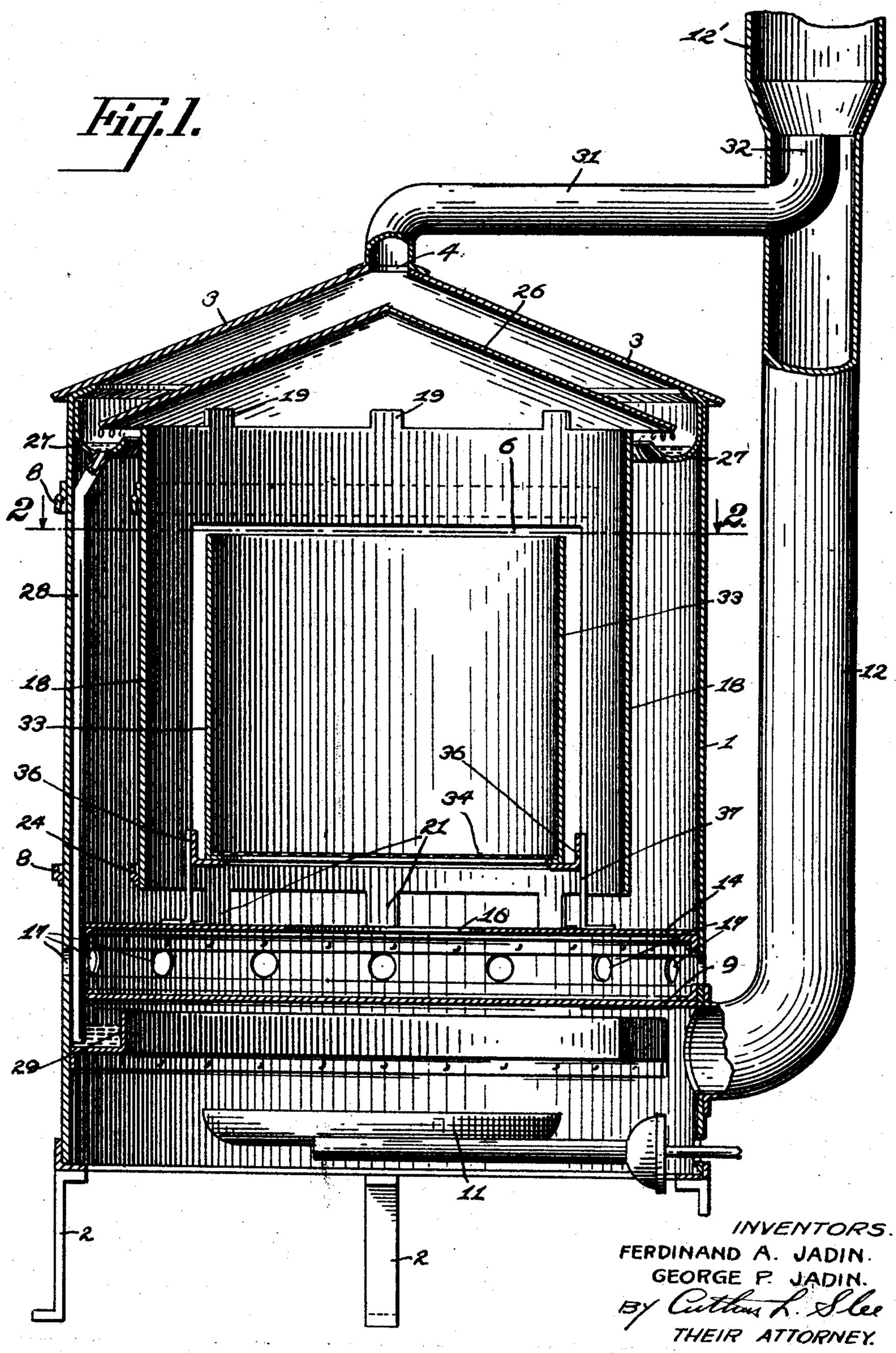
Oct. 7, 1930. F. A. JADIN ET AL 1,777,493

DRIER

Filed Feb. 10, 1930 2 Sheets-Sheet 1

Fig. 1.



INVENTORS.
FERDINAND A. JADIN.
GEORGE P. JADIN.
By Curtis L. Lee
THEIR ATTORNEY.

Oct. 7, 1930. F. A. JADIN ET AL 1,777,493

DRIER

Filed Feb. 10, 1930 2 Sheets-Sheet 2

Fig. 2.

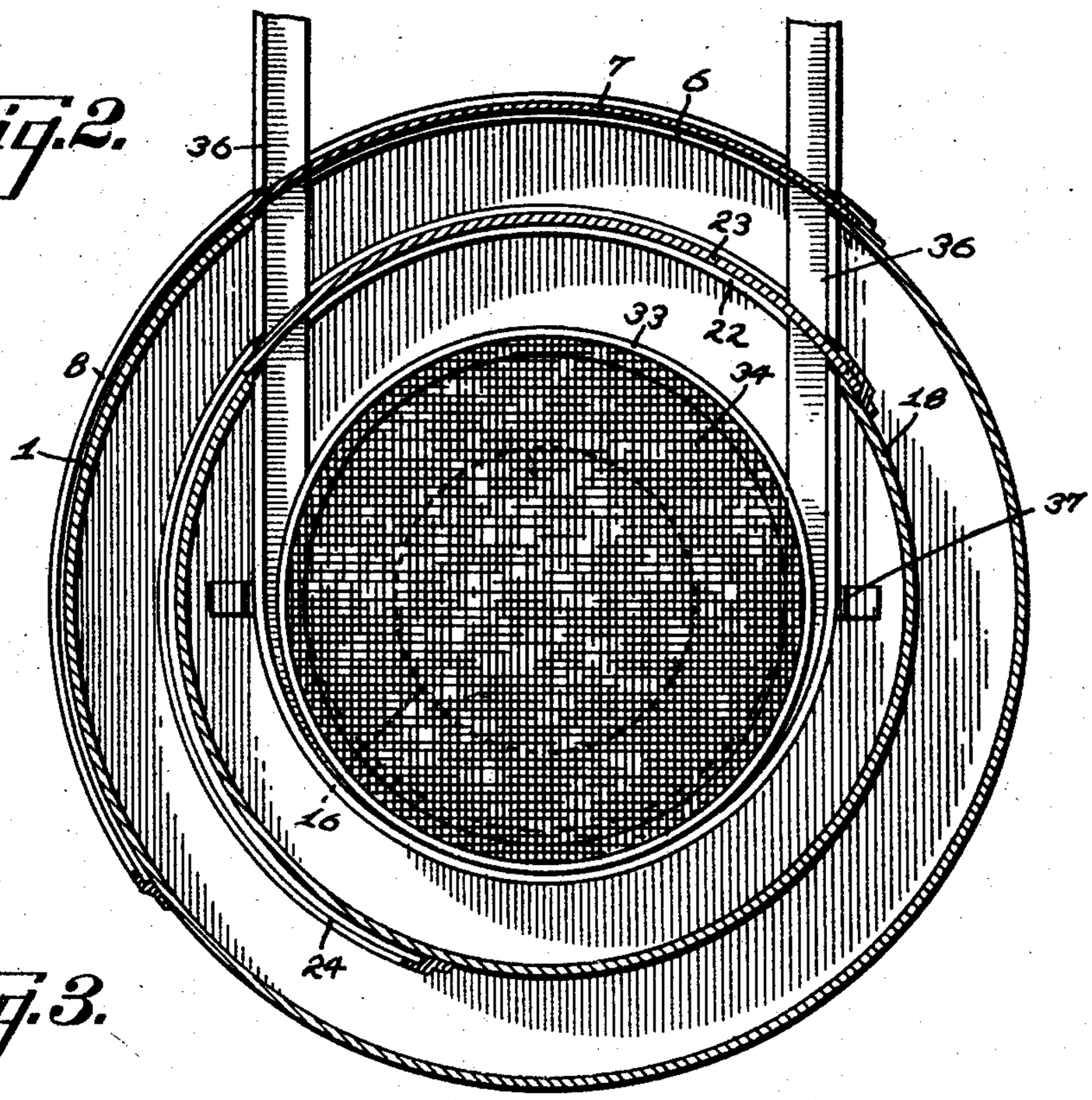
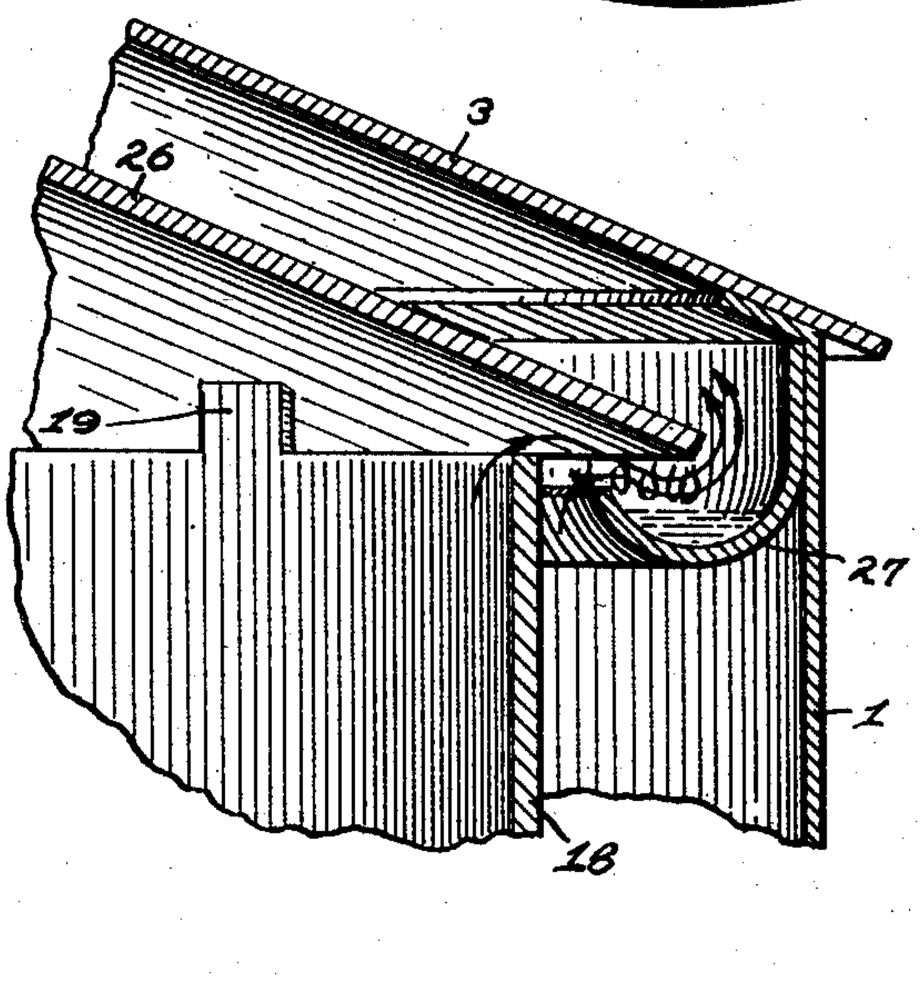


Fig. 3.



INVENTORS.
FERDINAND A. JADIN.
GEORGE P. JADIN.
BY Arthur L. Shee
THEIR ATTORNEY.

Patented Oct. 7, 1930 1,777,493

UNITED STATES PATENT OFFICE

FERDINAND A. JADIN AND GEORGE P. JADIN, OF SAUSALITO, CALIFORNIA

DRIER

Application filed February 10, 1930. Serial No. 427,200.

Our invention relates to improvements in driers wherein materials to be dried, such as laundry and the like, are placed in a basket supported within a casing and exposed to a current of air circulated upwardly through and past the materials to evaporate moisture therefrom and to deliver the evaporated moisture into a stack arranged to carry off the products of combustion from a heating means mounted within the bottom of the casing.

The primary object of our invention is to provide an improved drying device.

Another object is to provide an improved drying machine which will expedite the drying of laundry or similar materials to be dried.

A further object is to provide an improved device of the character described wherein evaporated moisture is delivered into a stack to be carried out with the products of combustion of the heating means.

Another object is to provide an improved device having means for catching condensed moisture and exposing the same to a maximum heat to insure re-evaporation and delivery to the stack.

A further object is to provide an improved machine adapted to produce an effective current of heated air for drying.

A still further object is to provide an improved machine of simple and economical construction and which is simple and efficient in operation.

We accomplish these and other objects by means of the improved device disclosed in the drawings forming a part of the present application wherein like characters of reference are used to designate similar parts throughout the specification and drawings, and in which—

Fig. 1 is a broken vertical mid-section of our improved drier;

Fig. 2 is a transverse horizontal section taken upon the line 2—2 of Fig. 1 in the direction indicated; and

Fig. 3 is a broken sectional detail drawn upon a larger scale and showing the manner in which the upper baffle delivers condensed moisture to the upper draining trough.

Referring to the drawings, the numeral 1 is used to designate in general a casing, preferably of cylindrical form, formed from suitable sheet metal. The casing 1 is supported by suitable legs 2 and is provided with a cover 3, preferably of conical form and having a vent opening 4 at the apex of the cone. The casing 1 has a door opening 6 formed in one side thereof. A door 7 is mounted upon the casing to cover and uncover the opening 6, said door preferably being shaped to conform to the curvature of the cylindrical casing and being slidably movable upon runways 8 mounted upon the outer surface of the casing above and below the door opening.

A crown plate 9 is mounted within the lower portion of the casing 1 in spaced relation to the bottom of the casing. Suitable heating means 11, preferably a gas burner, is mounted below the crown plate 9. A stack 12 is connected at its lower end into the space immediately below the crown plate 9 to carry off products of combustion from the heating means.

A baffle 14 is mounted within the casing 1. The baffle 14 is spaced above the crown plate 9 and has a relatively large aperture 16 formed through the center thereof. A plurality of air inlet apertures 17 are formed in the wall of the casing 1 to open into the space between the plate 9 and the baffle 14.

An inner casing 18 is mounted within the casing 1 above the baffle 14. The casing 18 preferably consists of a cylindrical body open at top and bottom and provided with extensions 19 and 21 projecting longitudinally from the top and bottom of the casing. A door opening 22 is formed in the casing 18 to register with the door opening 6 of the outer casing 1. A door 23 similar to the door 7 is mounted upon runways 24 above and be-

low the door opening. The lower extensions 21 rest upon the top of the baffle 14 and support the casing 18 with its walls in spaced relation to the walls of the casing 1, and with the lower end of said casing 18 spaced above the baffle 14.

A baffle 26 is mounted over the top of the inner casing 18. The baffle 26 is preferably conical in shape and is supported upon the upper extensions 19 in spaced relation to the cover 3 and with its edges spaced above and overhanging the upper edge of the casing 18.

An upper drain trough 27 is mounted within the top of the casing 1. The trough 27 extends entirely around the casing and is overhung by the edge of the baffle 26 whereby moisture draining from said baffle will be caught within the trough 27. The trough is preferably provided with a drain pipe 28 extending downwardly through the baffle 14 and crown plate 9 to deliver collected moisture from the trough to a trough 29 mounted within the lower portion of the casing 1 below the crown plate 9 and adjacent the heating means 11.

A vent pipe 31 is connected at one end to the vent opening 4 and extended into the stack 12 at a point above the top of the casing. The pipe 31 is preferably provided with an upwardly turned end portion 32 within the stack. The stack 12 is provided with an enlarged section 12′ adjacent the end of the vent pipe to obtain an expansion of the gaseous products of combustion adjacent the opening of the pipe 31 within the stack.

A basket 33 provided with a mesh bottom 34 is insertable through the door openings 6 and 22 into the inner casing 18. A pair of tracks 36 extend through the doors into said casing, said tracks preferably consisting of angle iron members supported upon legs 37 resting upon the top of the apertured baffle 14. The flanges of the track member 36 are interrupted to permit sliding movement of the doors 7 and 23 therepast. The tracks 36 are extended outwardly past the outer casing 1 to provide supports upon which the basket 33 may be rested to facilitate the introduction and removal of the basket.

In operation, the basket 33 is filled with laundry or other wet materials to be dried and inserted into the inner casing 18. The doors 7 and 23 are then closed. The heating means 11 heats the crown plate 9, thereby causing the air immediately above the crown plate to be heated and caused to rise upwardly through the apertures 16, cool dry air from outside the casing 1 being drawn into the casing through the apertures 17. As the heated air passes through the apertures 16 it circulates upwardly through the casing, part of said air passing upwardly through the mesh bottom of the basket and part of the air passing upon both sides of the walls of the inner casing 18, and causing the walls of the basket and of said casing to become heated.

At the top of the inner casing 18, the upwardly rising air passes between the edge of the casing and the overhanging edge of the baffle 26. The air then moves between the baffle 26 and cover 3 and through the opening 4 into the vent pipe 31. The products of combustion from the heating means 11 pass upwardly through the stack 12, the upward draft of said gases causing the air to be drawn from the vent pipe 31 into the stack and thence outwardly to the atmosphere. The enlarged portion 12′ of the stack causes an expansion of the gases to occur adjacent the outlet of the pipe 31, thereby creating a suction whereby the draft upwardly through the pipe 31 is increased, and an increased circulation of air upwardly through the casing is obtained.

The heat of the chamber formed by the casings 1 and 18, together with the upward circulation of heated air through and around the basket 33 causes the moisture to be rapidly evaporated from the materials to be dried. The evaporated moisture is carried upwardly and out of the casing with the upward current of heated air. There is a tendency of the moisture carried by the air to condense upon the cover and upon the baffle 26. Such condensed moisture drains from the upper surface of the baffle 26 and drips from the edge thereof into the trough 27. The moisture thus draining from the baffle 26 must pass directly through the path of the upwardly moving current of air passing through both the inner and outer casing, thereby causing such moisture to be again evaporated and carried out with the air. Should the condensation exceed the quantity which the passing current of air can re-evaporate, the surplus drains through the pipe 28 to the lower trough 29. The lower trough is in close proximity to the heating means and the surplus moisture is thus exposed to the direct heat of the heating means and is quickly evaporated and carried through the stack 12 with the products of combustion from the heating means.

In this manner, the moisture contained in the products being dried is quickly evaporated and entirely carried off through the stack 12. When the material has been sufficiently dried, the basket 33 is removed and the dried materials replaced by additional quantities of wet materials as desired.

The specific details of construction and arrangement are, of course, subject to modification without departing from the spirit of our invention. We therefore desire to avail ourselves of such modifications as may fall within the scope of the appended claims.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A drier comprising an outer casing provided with a cover having a vent opening; heating means mounted within the lower portion of the casing; a crown plate mounted within the casing above the heating means; an apertured baffle mounted within the casing, said baffle being spaced above the crown plate and said casing having air inlet openings between said crown plate and baffle; an inner casing mounted within the outer casing, the walls of said inner casing being spaced from the walls of the outer casing and the ends of said inner casing being spaced from the baffle and from the top of the outer casing respectively; doors mounted to cover and uncover registering openings formed in the inner and outer casings; a basket to receive materials to be dried, said basket being insertable into the inner casing through the doors; means for supporting the basket above the apertured baffle; a top baffle mounted above the inner casing in spaced relation to the upper edge of said casing and also spaced from the cover to form an outlet passage around the top of the inner casing and between said top baffle and the cover; a stack connected into the outer casing below the crown plate; and a vent pipe connected to the vent opening of the cover and opening into the stack to conduct moisture from the casings to said stack.

2. A drier comprising an outer casing provided with a cover having a vent opening; heating means mounted within the lower portion of the casing; a crown plate mounted within the casing above the heating means; an apertured baffle mounted within the casing, said baffle being spaced above the crown plate and said casing having air inlet openings between said crown plate and baffle; an inner casing mounted within the outer casing, the walls of said inner casing being spaced from the walls of the outer casing and the ends of said inner casing being spaced from the baffle and from the top of the outer casing respectively; doors mounted to cover and uncover registering openings formed in the inner and outer casings; a basket to receive materials to be dried, said basket being insertable into the inner casing through the doors; means for supporting the basket above the apertured baffle; a top baffle mounted above the inner casing in spaced relation to the upper edge of said casing and also spaced from the cover to form an outlet passage around the top of the inner casing and between said top baffle and the cover; a stack connected into the outer casing below the crown plate; a vent pipe connected to the vent opening of the cover and opening into the stack to conduct moisture from the casings to said stack; and an enlarged section of the stack formed adjacent the outlet of the vent pipe therein to cause a suction increasing the draft through the vent.

3. A drier comprising an outer casing provided with a cover having a vent opening; heating means mounted within the lower portion of the casing; a crown plate mounted within the casing above the heating means; an apertured baffle mounted within the casing, said baffle being spaced above the crown plate and said casing having air inlet openings between said crown plate and baffle; an inner casing mounted within the outer casing, the walls of said inner casing being spaced from the walls of the outer casing and the ends of said inner casing being spaced from the baffle and from the top of the outer casing respectively; doors mounted to cover and uncover registering openings formed in the inner and outer casings; a basket to receive materials to be dried, said basket being insertable into the inner casing through the doors; means for supporting the basket above the apertured baffle; a top baffle mounted above the inner casing in spaced relation to the upper edge of said casing and also spaced from the cover to form an outlet passage around the top of the inner casing and between said top baffle and the cover; a stack connected into the outer casing below the crown plate; a vent pipe connected to the vent opening of the cover and opening into the stack to conduct moisture from the casings to said stack; and a drain trough mounted within the top of the outer casing, the edges of the upper baffle overhanging the trough to drain moisture condensing upon said baffle into said trough.

4. A drier comprising an outer casing provided with a cover having a vent opening; heating means mounted within the lower portion of the casing; a crown plate mounted within the casing above the heating means; an apertured baffle mounted within the casing, said baffle being spaced above the crown plate and said casing having air inlet openings between said crown plate and baffle; an inner casing mounted within the outer casing, the walls of said inner casing being spaced from the walls of the outer casing and the ends of said inner casing being spaced from the baffle and from the top of the outer casing respectively; doors mounted to cover and uncover registering openings formed in the inner and outer casings; a basket to receive materials to be dried, said basket being insertable into the inner casing through the doors; means for supporting the basket above the apertured baffle; a top baffle mounted above the inner casing in spaced relation to the upper edge of said casing and also spaced from the cover to form an outlet passage around the top of the inner casing and between said top baffle and the cover; a stack connected into the outer casing below the crown plate; a vent pipe connected to the vent opening of the cover and opening into the stack to conduct moisture from the casing

to said stack; a drain trough mounted within the top of the outer casing, the edges of the upper baffle overhanging the trough to drain moisture condensing upon said baffle into said trough; a moisture receiving trough mounted within the lower portion of the outer casing adjacent the heating means; and means for delivering moisture from the drain trough to the receiving trough whereby said moisture may be evaporated by heat from the heating means.

5. A drier comprising an outer casing provided with a cover having a vent opening; heating means mounted within the lower portion of the casing; a crown plate mounted within the casing above the heating means; an apertured baffle mounted within the casing above the crown plate, said casing having air inlet openings between said crown plate and the baffle; an inner casing mounted within the outer casing, the walls of said inner casing being spaced from the walls of the outer casing; means supporting said inner casing with its lower end spaced above the baffle whereby air heated by the crown plate may rise upwardly upon the inner and outer sides of said inner casing; doors mounted in connection with the inner and outer casings and movable to open and close registering door openings formed therein; a basket to receive materials to be dried, said basket being insertable into the inner casing through the doors; means for supporting the basket above the baffle to permit heated air to rise through and around the basket; a top baffle mounted above the inner casing and in spaced relation to the outer casing cover; means supporting said baffle in spaced relation to the top of the inner casing whereby air may pass from the inner casing past the edge of said baffle; drain means mounted within the casing to receive moisture condensing upon the upper baffle and draining therefrom; a stack connected into the lower portion of the outer casing below the crown plate and adjacent the heating means; and a vent pipe connected to the vent opening of the cover and opening into the stack whereby moisture evaporated by heated air passing upwardly through the casings and basket may be drawn into the stack.

6. A drier comprising an outer casing provided with a cover having a vent opening; heating means mounted within the lower portion of the casing; a crown plate mounted within the casing above the heating means; an apertured baffle mounted within the casing above the crown plate, said casing having air inlet openings between said crown plate and the baffle; an inner casing mounted within the outer casing, the walls of said inner casing being spaced from the walls of the outer casing; means supporting said inner casing with its lower end spaced above the baffle whereby air heated by the crown plate may rise upwardly upon the inner and outer sides of said inner casing; doors mounted in connection with the inner and outer casings and movable to open and close registering door openings formed therein; a basket to receive materials to be dried, said basket being insertable into the inner casing through the doors; means for supporting the basket above the baffle to permit heated air to rise through and around the basket; a top baffle mounted above the inner casing and in spaced relation to the outer casing cover; means supporting said baffle in spaced relation to the top of the inner casing whereby air may pass from the inner casing past the edge of said baffle; drain means mounted within the casing to receive moisture condensing upon the upper baffle and draining therefrom; a stack connected into the lower portion of the outer casing below the crown plate and adjacent the heating means; a vent pipe connected to the vent opening of the cover and opening into the stack whereby moisture evaporated by heated air passing upwardly through the casings and basket may be drawn into the stack; and an enlarged section formed in the stack adjacent the outlet of the vent pipe to cause a suction increasing the draft through the vent.

7. A drier comprising an outer casing provided with a cover having a vent opening; heating means mounted within the lower portion of the casing; a crown plate mounted within the casing above the heating means; an apertured baffle mounted within the casing above the crown plate, said casing having air inlet openings between said crown plate and the baffle; an inner casing mounted within the outer casing, the walls of said inner casing being spaced from the walls of the outer casing, said inner and outer casings having registering door openings formed therein; doors slidably mounted adjacent the door opening of each casing; legs upon the lower end of the inner casing supporting said casing above the apertured baffle whereby air may pass upwardly from the crown plate through and around the inner casing; a track mounted upon the baffle and extending into the inner casing; a basket slidably movable along said track into the inner casing, said basket being apertured to permit a circulation of air upwardly therethrough to dry materials therein; a baffle mounted above the inner casing in spaced relation to the cover, said baffle sloping downwardly toward its edges and forming a vent passage between the upper edge of the inner casing and said baffle and between the baffle and the cover; a drain trough mounted within the top of the outer casing, said trough being overhung by the edges of the baffle to receive moisture condensing and draining therefrom; a trough mounted within the bottom of the outer casing below the crown plate and adjacent the

burner; means for delivering drained moisture from the upper trough to the lower trough; a stack connected into the lower portion of the outer casing below the crown plate; and a vent pipe connected to the vent opening in the cover and opening into the stack whereby moisture evaporated by heated air passing upwardly through the casing and basket may be drawn into the stack.

In witness whereof, we hereunto set our signatures.

FERDINAND A. JADIN.

GEORGE P. JADIN.