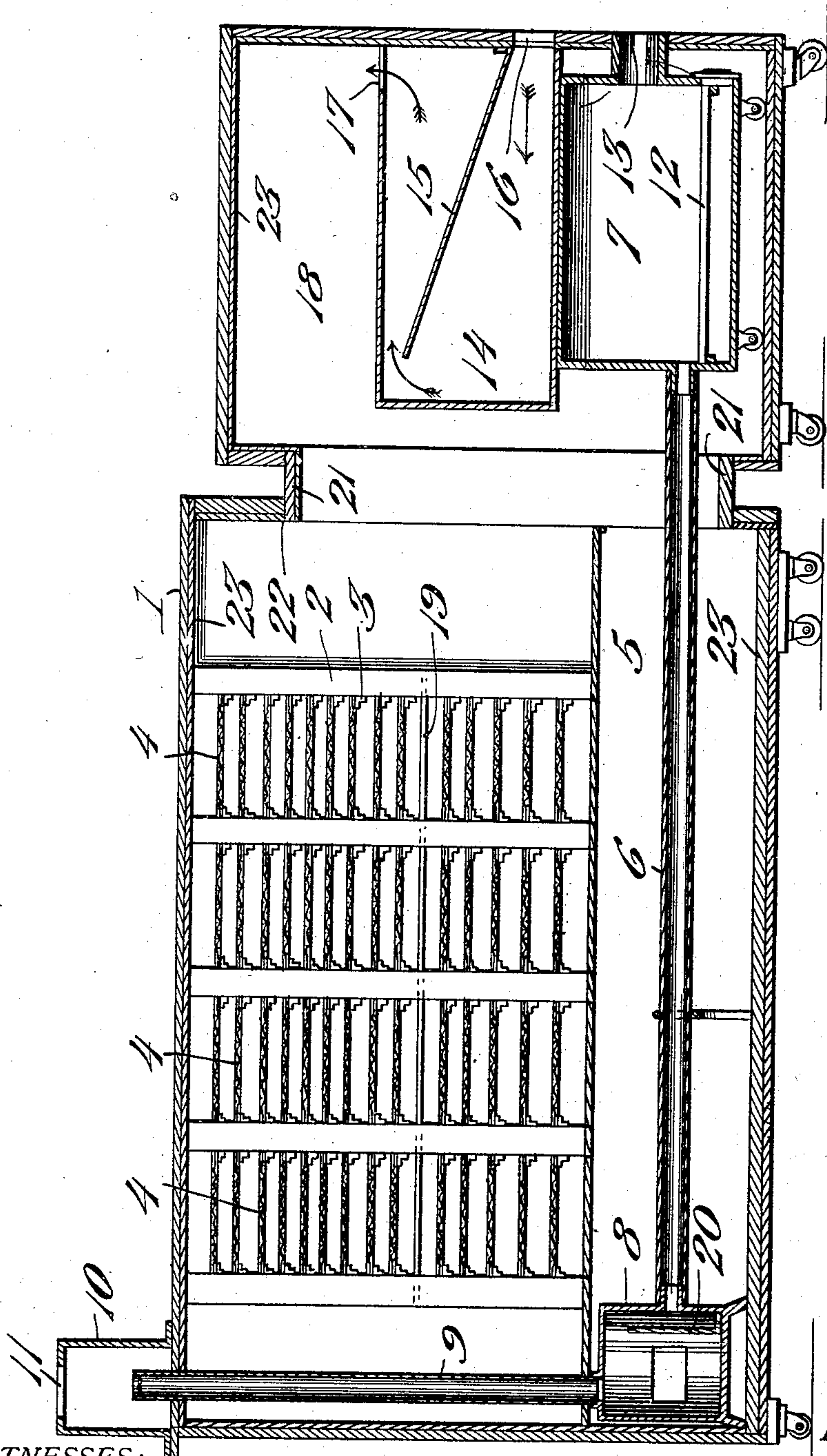


No. 842,769.

PATENTED JAN. 29, 1907.

A. COLEMAN.  
DRYING APPARATUS.  
APPLICATION FILED MAY 19, 1906.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

ABNER COLEMAN, OF KERBY, OREGON.

## DRYING APPARATUS.

No. 842,769.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed May 19, 1906. Serial No. 317,793.

*To all whom it may concern:*

Be it known that I, ABNER COLEMAN, a citizen of the United States, residing at Kerby, in the county of Josephine and State of Oregon, have invented new and useful Improvements in Drying Apparatus, of which the following is a specification.

This invention relates to drying apparatus or, in other words, a drier or evaporator for treating fruit, &c., the main object of the invention being to provide means whereby the drying or evaporating capacity of the apparatus may be materially increased as compared with the drying apparatus now in common use.

Most of the driers now in use are lacking in a very important particular—namely, the limit as to size beyond which the machine will fail to work successfully, in view of the fact that an improper draft is obtained and moisture thereby allowed to condense within the drying-chamber.

Another defect with the ordinary construction of drying apparatus is that if the furnace or heater becomes excessively hot there is a direct radiation of hot air from the top of the heater among the trays nearest said heater, thereby rendering a frequent shifting or transposition of the trays absolutely necessary in order to properly treat the material contained in the tray.

By means of the construction hereinafter described the difficulties referred to are overcome, enabling the size and capacity of the drying apparatus to be materially increased.

With the above and other objects in view the invention consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

The accompanying drawing represents a vertical longitudinal section of a drying apparatus embodying the present invention.

Referring to the drawings, 1 designates the drying-chamber, provided with a series of parallel uprights 2, carrying cleats 3, upon which the sliding and removable trays 4 are mounted. Beneath the drying-chamber 1 is arranged a heating-chamber 5, through which extends a smoke-pipe 6, which leads from the main heater or furnace 7 lengthwise of the heating-chamber 5 and beneath the drying-chamber 1, where it communicates with an auxiliary heater 8, arranged in the farther end of the heating-chamber and provided with an outlet pipe or stack 9, which

leads upward through the top of the drying-chamber and enters a dome or cap 10, having an outlet 11 in the top thereof, said dome or cap being adapted to receive the smoke and moisture and conduct the same outward from the drying apparatus.

The primary heater or furnace 7 is provided with the usual grate 12 and fuel-opening 13. Arranged immediately over the furnace 7 is a drum 14. This drum is open on the under side, so as to fit the top of the heater snugly and utilize all of the heat generated by the furnace. Extending obliquely within the drum 14 is an inclined wall or baffle 15, while at the lower front end the drum is provided with a cold-air inlet 16 and at the top with a hot-air outlet 17. The baffle 15 extends from a point above the inlet-opening 6 rearwardly and upwardly, so that the current of air passing in at the entrance 16 is caused to traverse the entire length of the drum back and forth before passing out through the exit 17, the air becoming thoroughly heated in transit. The heated air passes from the exit 17 into the hot-air space or chamber 18 above the drum and thence directly into the drying-chamber, where it circulates among the trays 4.

In order to divide the current of hot air into two or more currents, imperforate metal cut-off plates 19 are arranged at suitable heights in the tiers of trays, as shown in the drawing, said cut-offs extending between the uprights or partitions 2.

If desired, doors may be hung on the partitions or uprights 2 to close in the several compartments in which the trays are held.

20 designates a vertical partition arranged in the auxiliary heater 8 just in front of the entrance-opening of the pipe 6 to prevent ashes, &c., from passing from said pipe into the body of the auxiliary heater.

The casing of the drying apparatus as a whole is preferably composed of two separable sections, one section containing the trays and the other section containing the primary or main heater 7 and the drum 14, and said last-named section is preferably flanged or extended, as shown at 21, and the corresponding end of the other section apertured, as shown at 22, so that the flanged portion of the drum-section may be inserted in the apertured end of the tray-section and removed therefrom, both of the sections being mounted on rollers or casters, as shown, to facilitate connecting the same in the man-



ner shown and described. The arrangement just described also provides access to both sections of the apparatus when taken apart.

By locating the auxiliary heater in the rear end of the machine at the extreme opposite point from where the air-currents enter the air becomes thoroughly heated, and by said arrangement a powerful and continuous draft is produced through the entire length of the machine, and even should the fire from the primary or main heater go out every particle of moisture is irresistably drawn to the steam or moisture escape and passed outward to the atmosphere.

A further advantage is obtained by starting a fire in the auxiliary heater first, thereby establishing a draft in the front heater at once, so that no time is lost in starting a fire in the primary heater and producing hot-air currents.

The greatest advantage of the invention, however, resides in providing the auxiliary heater in addition to the main or primary heater and locating the same at the point described, as by such arrangement if the body of the machine is made practically air-tight a vacuum is created by the auxiliary heater, thus insuring a perfect draft in a machine fifty feet in length as easily as one ten feet in length. In case there is an excessively-hot fire in the primary heater the horizontally-disposed drum arranged over said heater, in connection with the diaphragm or baffle therein, prevents the excessive heat from passing directly to the nearest trays and effects a more thorough radiation and distribution of the hot air all through the drying-chamber without subjecting any particular series of trays to an excess of heat as compared with other trays.

To secure the best results, the several chambers hereinabove described may be lined upon the inside with asbestos, as shown at 23, said lining serving the double function of retaining heat and rendering the casing as a whole air-tight, so that the auxiliary heater tends to produce a vacuum within the several

chambers of the drying apparatus, which induces a more thorough draft and circulation of the hot air.

I claim—

1. A drying apparatus comprising a drying-chamber, a primary heater arranged at one end thereof, an auxiliary heater arranged at the opposite end thereof and connected with the primary heater by a smoke-flue, and a smoke-stack leading outward from the auxiliary heater.

2. A drying apparatus comprising a drying-chamber, a primary heater arranged at one end thereof, an auxiliary heater arranged at the opposite end thereof, a flue connecting said heaters, a flue extending from the auxiliary heater outward, and a heating-drum arranged over the primary heater and discharging into a chamber which communicates with the drying-chamber.

3. A drying apparatus comprising a drying-chamber, a primary heater at one end thereof, an auxiliary heater located at the other end thereof, a flue connecting said heaters, another flue extending outward from the auxiliary heater, a drum arranged over the primary heater and comprising inlet and outlet openings, and a baffle extending across the interior of the drum and located between the inlet and outlet openings thereof, substantially as described.

4. A drying apparatus comprising a drying-chamber, a heating-chamber located beneath the same and separated therefrom by a division-wall, a primary heater located at one end of the heating-chamber, an auxiliary heater located at the opposite end of said chamber, a flue connecting said heaters and passing through the heating-chamber, and a second flue extending outward from the auxiliary heater.

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

ABNER COLEMAN.

Witnesses:

T. O. NAUCKE,  
CHARLES HANSEN.