F. A. MARTOCCIO.

DRIER.

APPLICATION FILED AUG. 2, 1920.

1,418,010.

Patented May 30, 1922.

2 SHEETS—SHEET 1.

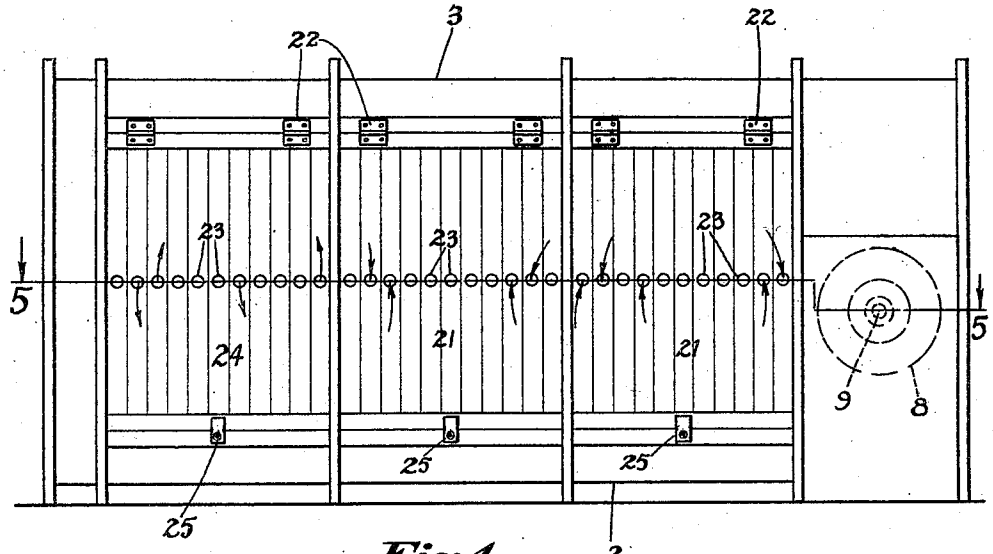


Fig. 1

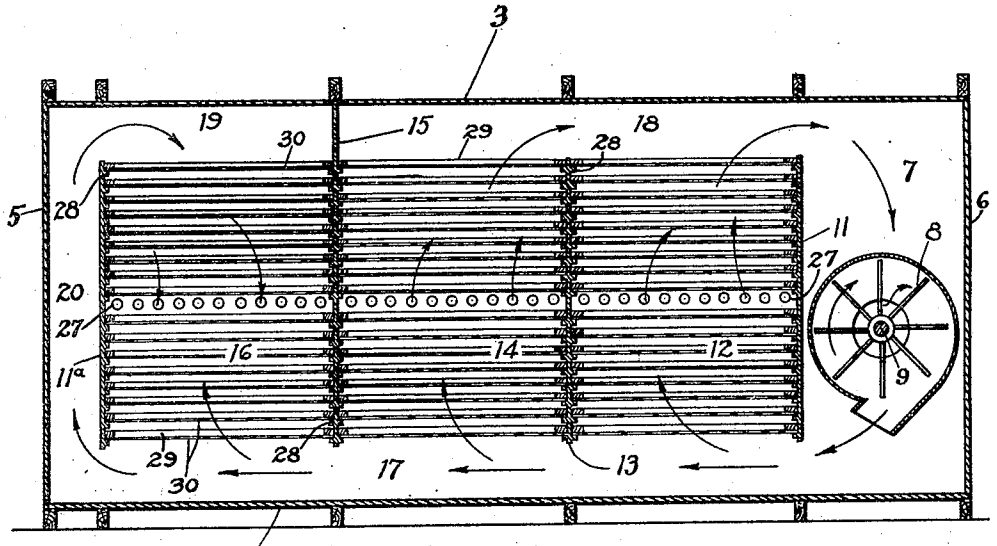


Fig. 2

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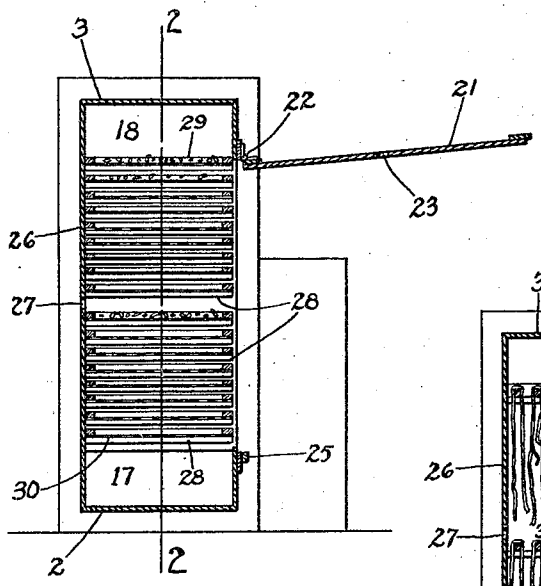


Fig. 3

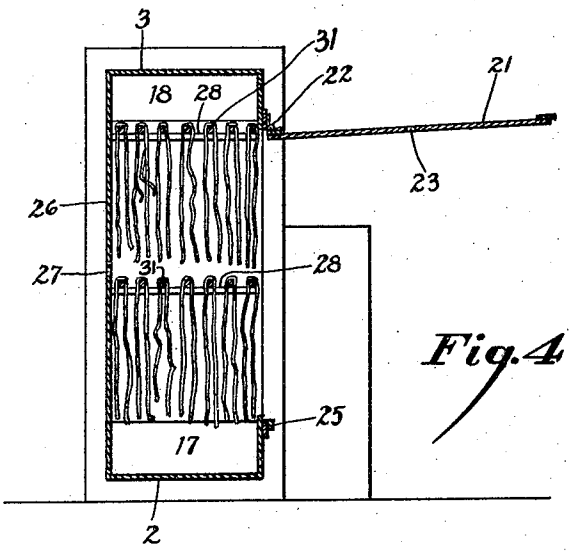


Fig. 4

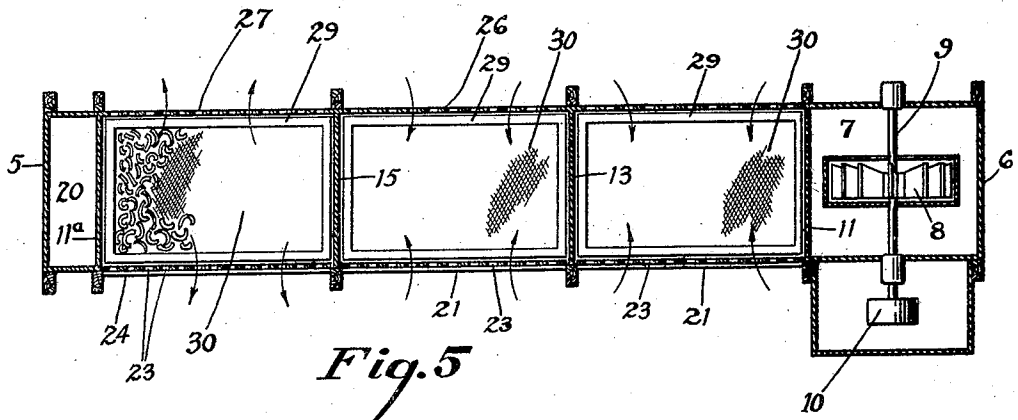


Fig. 5

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UNITED STATES PATENT OFFICE.

FRANK A. MARTOCCIO, OF MINNEAPOLIS, MINNESOTA.

DRIER.

1,418,010. Specification of Letters Patent. **Patented May 30, 1922.**

Application filed August 2, 1920. Serial No. 400,727.

To all whom it may concern:

Be it known that I, FRANK A. MARTOCCIO, a citizen of the United States, resident of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Driers, of which the following is a specification.

In the manufacture of macaroni and like products, it is desirable to provide a drying apparatus in which the goods in long or short form can be placed on suitable racks or other supports and subjected to blasts of air until thoroughly dried. It is essential for a successful drying operation that checking or splitting of the goods be prevented and the object of my invention is to provide an apparatus in which the moist and dry air can be so accurately mixed and mingled that all danger of checking or splitting the goods on the racks will be eliminated and the drying operation can be rapidly and thoroughly performed.

A further object is to provide a drying apparatus of large capacity and one which can be readily adapted for handling long or short goods.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification,

Figure 1 is a front elevation of a drying apparatus embodying my invention,

Figure 2 is a vertical sectional view on the line 2—2 of Figure 3, looking at the front of the apparatus,

Figure 3 is a vertical transverse section of the apparatus,

Figure 4 is a similar view, showing the device adapted for drying long goods,

Figure 5 is a horizontal sectional view on the line 5—5 of Figure 1,

In the drawing, 2 represents the base of the drier, 3 the top thereof and 5 and 6 the end walls. 7 is a chamber adjacent the end wall 6 and containing a blast fan 8 mounted on a shaft 9 and driven from a pulley 10. A partition 11 separates this fan chamber from a drying compartment 12 and a similar partition 13 separates the compartment 12 from a similar compartment 14. A partition 15 is arranged parallel with the partition 13 and extends from a point opposite the lower end thereof to the top of the drier 3, as shown in Figure 2. A partition 11^a is spaced from the wall 5 and co-operates with the partition 15 to form a drying compartment 16. The lower ends of all these partitions are above the bottom of the drier to form an unobstructed air passage or trunk 17 leading from the chamber 7 to the opposite end of the drier. A passage or trunk 18 is also provided above the drying chambers 12 and 14 and between the partition 15 and the chamber 7 and a passage 19 is provided above the chamber 16 on the other side of the partition 15 and communicating with a vertical passage 20 between the partition 11^a and the end wall 5. The drier is provided with doors 21 for the chambers 12 and 14 hinged at 22 and said doors are provided with a series of openings 23 through which air may flow into the chambers. A door 24 is provided for the compartment 16 having ports corresponding to those described with reference to the doors 21. All these doors are held in their closed position by suitable buttons 25.

The rear walls 26 of the compartments are provided with ports 27 (see Figure 5) through which air may enter and escape, as indicated by the arrows in said figure. The partitions separating the compartments are provided with bars 28 arranged in parallel relation and spaced apart and on these bars trays 29 are removably supported. Each tray has a screen 30 preferably of wire mesh, upon which the short goods are placed in a moist condition preliminary to the drying operation.

The fan is adapted to create a powerful air current which, as shown in Figure 2, will flow along the passage 17 and up the passage 20 to the top of the drier. The partition 15 will prevent the air current from flowing back to the fan and will force it down through the trays to the openings in the door 24 where it will flow out through these ports or openings to the open air.

Some of the air current will be forced through the lower trays in the chamber 16. A portion of the air current entering the chambers 12 and 14 will flow up through the trays therein to the passage 18 and thence back to the fan chamber and the suction in the chambers 12 and 14 will draw air through the ports in the doors 21 and also through the ports in the rear walls, thereby establishing a circuit through the chambers 12 and 14 and the fan chamber 7. The air in the drier will be moist through the moist

condition of the goods on the trays while the air drawn in from the outside will be dry and the mixture of the currents will cause the gradual absorption of the moisture and the rapid, uniform drying of the goods on the trays.

I have found that with a circulation of air as herein shown and described the goods may be thoroughly dried without danger of checking or cracking, it being desirable, of course, in goods of this kind to avoid breakage and have the material delivered to the packers in an unbroken uniform condition.

In Figure 4 I have shown the trays provided with bars 31 on which the long goods may be hung the screens being removed. The manner of circulating the air, however, is substantially the same as described with reference to the other figures.

I claim as my invention:

1. A drier comprising a casing having a fan chamber at one end thereof, and a blast fan mounted in said fan chamber, a series of vertical partitions dividing the interior of said casing into a plurality of drying chambers, the partitions adjacent said fan chamber being spaced from the top and bottom of said casing to form air circulating trunks, and the chamber remote from said fan chamber having a trunk between one of its partitions and the end wall of the casing communicating with the upper and lower air trunks, the upper air trunk having means for obstructing the flow of air therethrough and compelling it to pass downwardly in said remote drying chamber, the wall of said remote chamber having exhaust air ports and a plurality of drying screens mounted in said remote chamber.

2. A drier comprising a casing having a fan chamber at one end thereof, and a blast fan mounted in said fan chamber, a series of vertical partitions dividing the interior of said casing into a plurality of drying chambers, the partitions adjacent said fan chamber being spaced from the top and bottom of said casing to form air circulating trunks, and the chamber remote from said fan chamber having a trunk between one of its partitions and the end wall of the casing communicating with the upper and lower air trunks, the upper air trunk having means for obstructing the flow of air therethrough and compelling it to pass downwardly in said remote drying chamber, the wall of said remote chamber having exhaust air ports and a plurality of drying screens mounted in said remote chamber, said drying chambers adjacent said fan chamber having air intake ports in its walls and a series of drying screens mounted in said adjacent chambers through which the air circulates from said fan chamber.

3. A drying apparatus comprising a casing, a blast fan mounted therein, partitions dividing the interior of said casing into a plurality of drying chambers, each having a series of drying screens therein, the walls of said chambers having air exhaust and intake opening therein and means for compelling the air currents from said fan chamber to flow downwardly through the screens and out through the exhaust ports of the chamber remote from the fan and inwardly through the intake ports of the other chambers and upwardly through the screens therein.

4. A drying apparatus comprising a casing, a series of drying chambers within said casing, each having a series of screens therein, a blast fan at one end of said casing, an air circulating trunk communicating with said blast fan and with said drying chambers, the front and rear walls of said chambers having air ports therein and the chambers remote from said blast fan having means for directing the air currents from said trunk downwardly through the screens therein and outwardly through the air ports, the air in the other drying chamber circulating upwardly through the screens therein and being drawn inwardly through the air ports communicating with said drying chambers.

5. A drying apparatus comprising a casing having a plurality of drying chambers therein and a fan chamber and air trunks communicating with said drying chambers and said fan chamber, means for supporting the material to be dried in said chambers, means for directing the air currents downwardly in some of the chambers and upwardly through others of the chambers and said chambers having doors in the front thereof and air ports provided in the doors, the air passing outwardly through the ports in one of the doors and flowing inwardly through the ports in the other doors.

6. A drying apparatus comprising a casing having a plurality of drying chambers and a fan chamber and a blast fan mounted therein, and air trunks leading from said fan chamber to said drying chamber, means for supporting the material to be dried in said chambers, means for directing the air currents from said blast fan through said chambers and the material to be dried, and means for introducing dry outside air into said chambers and expelling the moisture laden air from said chambers, whereby the moisture in the goods to be dried is rapidly absorbed.

7. A drying apparatus comprising a casing having a plurality of drying chambers therein and a fan chamber and blast fan therein, and air trunks communicating with said drying chambers and said fan chambers, means for supporting the material to be dried in said chambers, the air from said

blast fan circulating through said chambers and absorbing the moisture from the goods therein, the walls of said chambers having ports therein and means for creating a suction in one of said chambers to draw the dry outside air therein and expelling the moisture laden air from the other chambers, for the purpose specified.

8. A drying apparatus comprising a casing having air inlet and outlet ports in its walls and a drying chamber provided with means for supporting the material to be dried therein, means for creating a circulation of air through said chamber and the material to be dried, and means for interrupting the circulation of air through said chamber and expelling a portion of the moisture laden air through the outlet ports in said casing.

9. A drying apparatus comprising a casing having a drying chamber and provided with air intake and exhaust openings in its walls, means for circulating the air in said chamber through the material to be dried and introducing dry outside air into said chamber through said inlet openings, and means for expelling moisture laden air from said chamber through said outlet openings, whereby the moisture in the material to be dried is more rapidly absorbed.

In witness whereof, I have hereunto set my hand this 29″ day of July, 1920.

FRANK A. MARTOCCIO.