Nov. 18, 1924.

A. P. GROHENS

1,516,184

COOLING APPARATUS

Filed Sept. 28, 1923

2 Sheets-Sheet 1

Fig. 1.

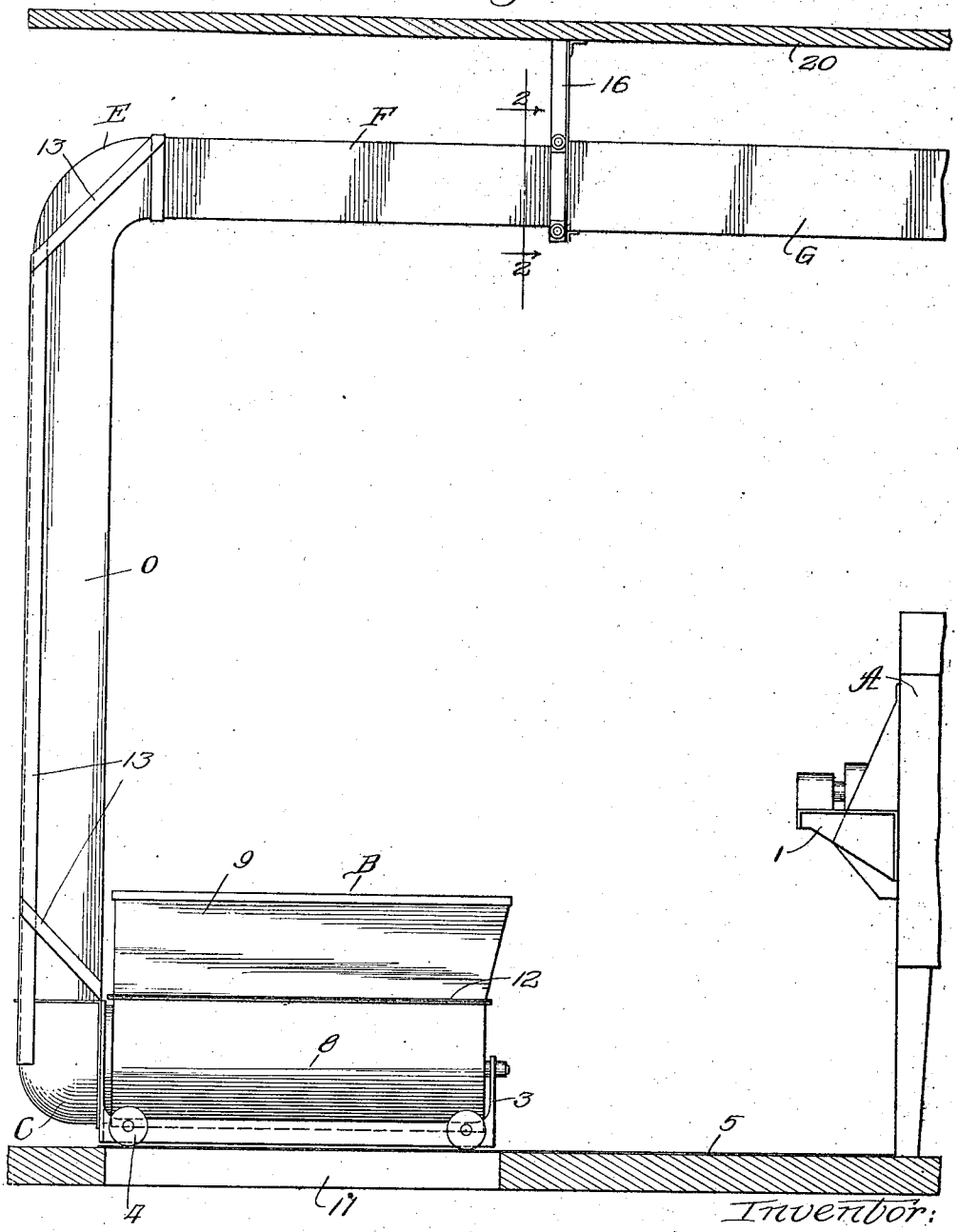

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Fig. 2.

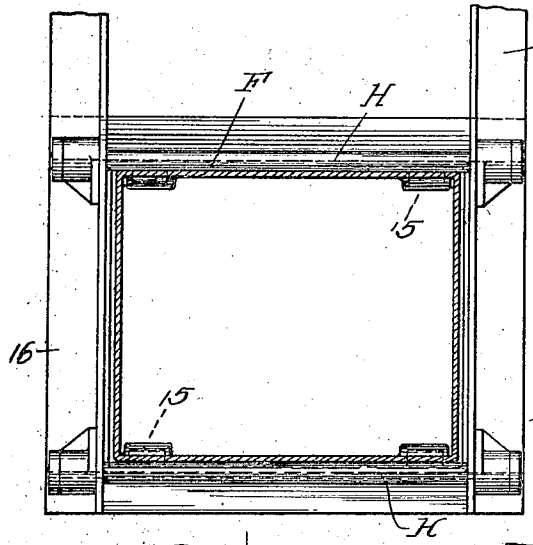
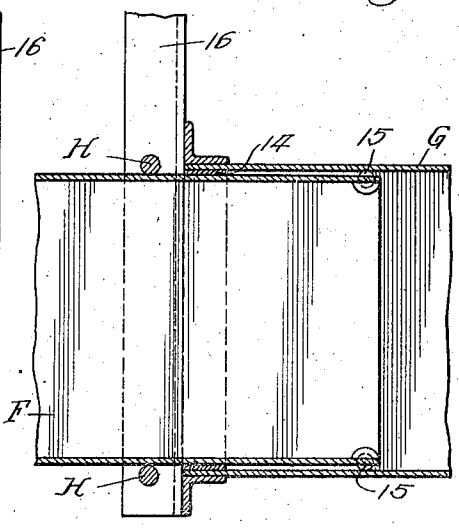


Fig. 3.



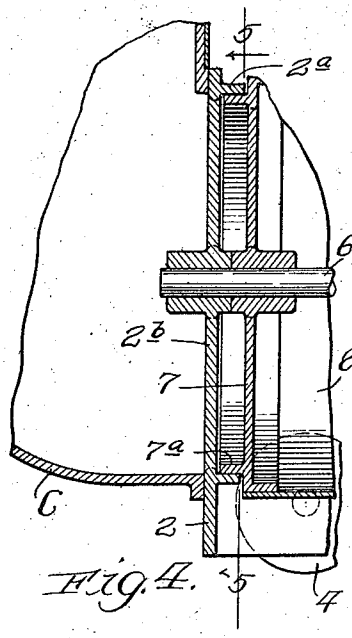


Fig. 4.

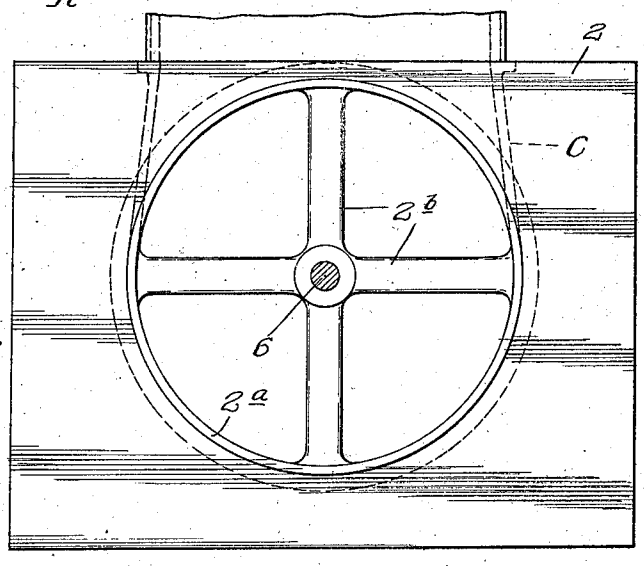
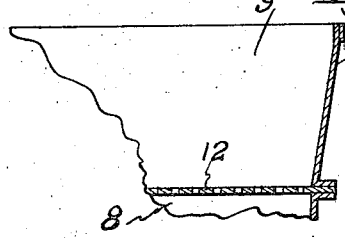


Fig. 5.

Fig. 6.



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Patented Nov. 18, 1924.

1,516,184

UNITED STATES PATENT OFFICE.

ALBERT P. GROHENS, OF MARSHALL, MICHIGAN.

COOLING APPARATUS.

Application filed September 28, 1923. Serial No. 665,510.

To all whom it may concern:

Be it known that I, ALBERT P. GROHENS, a citizen of the United States, residing at Marshall, in the county of Calhoun and State of Michigan, have invented a new and useful Improvement in Cooling Apparatus, of which the following is a specification.

This invention relates to cooling apparatus and is here shown embodied in a device especially adapted for cooling coffee or other materials, which are first heated or roasted to a certain degree, and then require rapid cooling to prevent further chemical change. The cooling is effected by drawing air through the coffee and discharging it at a distant point, and this serves also to remove the smoke and fumes from the coffee which otherwise might be objectionable.

The invention is not only applicable to the roasting of coffee, but also to the treatment of various other products, such as peanuts and cereals, and even materials not intended for foods, wherever rapid cooling is desired to stop or control the action of the material, or for other purposes, or wherever it is desired to remove smoke, fumes, or odors.

For example, when coffee is completely roasted, it is at a relatively high temperature, in the neighborhood of 400° F., and when discharged in mass from the roaster, must be quickly cooled to atmospheric temperature, or it will continue to roast, becoming uneven in color and quality, and the like. It is therefore customary to place the roasted coffee in a cooler car, having sides, a perforated bottom, and a suction chamber below the bottom connected to an air main distant from the roaster.

One of the objects of my invention is to provide a permanent connection between the cooling car and the exhauster which will be rigid and substantially air tight at all times, but which will permit movement of the car back and forth between the roaster and the place where the car is dumped, and also permit tipping of the car to dump it. By the use of my invention, this connection may be made so that it may be maintained at all times while the car is moving back and forth, and while it is tipping. My connection is also simple in construction, having few moving parts, solid in structure, and will withstand severe usage. It is also so arranged that it will require a minimum amount of floor and over head space and is always neat and tidy in appearance. It is so arranged that the pipes forming the connection are at all times vertical or horizontal in position and never slanting. A slanting pipe ordinarily does not look as neat and trim as a vertical or horizontal pipe. Vertical and horizontal pipes also may be arranged so that they are not so much in the way. The horizontal pipe may be arranged high enough so that there is head room to walk underneath, and the vertical pipe obviously obstructs a floor space equal only to its cross sectional area. A slanting pipe, however, obstructs a greater floor space. My improved cooler connection is also so built that it will be free from wear and binding, thus making it free in operation. The cooler connection may be used with any kind of car, either the tipping or the non-tipping kind.

In that form of device embodying the features of my invention shown in the accompanying drawings, Fig. 1 is a view in side elevation of a tipping, cooling car, showing my improved cooler connection in use, Fig. 2 is a view taken as indicated by the line 2—2 of Fig. 1, Fig. 3 is a vertical, sectional view, showing the telescoping joint at the end of the air main arranged near the ceiling, Fig. 4 is a vertical, sectional view, showing the air connection to the suction chamber of the car, Fig. 5 is a view taken as indicated by the line 5—5 of Fig. 4, and Fig. 6 is a fragmentary view showing a part of the plate 12 in vertical section.

As shown in the drawings, A indicates a roaster of any desired form with a discharge spout 1 adapted to discharge roasted coffee into the cooler car B. The car B is adapted to run on tracks 5 from a position under the spout 1 to receive the roasted coffee to a position adjacent the floor opening 11 through which the coffee is dropped when the car is dumped. In Fig. 1, the car is shown adjacent this opening 11, but the car, as shown in this view has not yet been tipped.

The car B comprises a truck having an

open, fixed square head 2, and a closed, fixed head 3, and carries wheels 4 adapted to run on the track 5. A longitudinally arranged shaft 6 is rotatably supported by bearings in the heads 2 and 3, and this shaft forms the axis for and supports the tilting body of the car. The body of the car comprises the body proper 9 adapted to contain the material, with the air chamber 8 arranged below it. The air chamber 8 and the body 9 are separated by a perforated bottom 12. An open tilting head 7 is mounted on the shaft 6 at the exhaust end of the air chamber 8. This tilting head has an open spider surrounded by a flange 7^a which turns inside of another flange 2^a on a corresponding open spider 2^b arranged in the square head 2. The body 9 is supported by the open tilting head 7 at one end and by a corresponding closed tilting head at the opposite end, both being carried by the shaft 6.

A solid elbow C is rigidly fastened to the open fixed head 2 through which the air is drawn from the suction chamber 8 of the car. To this elbow the upright pipe D is solidly connected. The pipe D carries at its upper end an elbow E and a horizontal pipe F. Angle irons and braces 13 are used to hold elbow C, pipe D, elbow E, and sliding head F absolutely rigid and in alignment.

G indicates an air main arranged near the ceiling 20. This main may be supported in any suitable manner such as by the hangers 16. Any suitable means, not shown, is provided for withdrawing the air from pipe G in order to maintain a suitable suction.

The sliding head or main telescoping pipe F slides on rollers H carried by the hanger 16 adjacent the end of the main G. A band or packing 14 of any suitable material is arranged at the end of the main G to provide a substantially air tight joint between the telescoping members F and G. Rollers 15 are mounted at the end of the sliding head F to lessen friction and to prevent binding. The sliding head F is made smaller than the pipe G to provide space between to allow for any slight misalignment caused by possible unevenness of the floor, and the like. The pipes D, F, and G are here shown as square in cross section. The elbow C where connected to the air chamber 8 is circular in cross section and its upper end is square to make the connection with the pipe D.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims, in which it is my intention to claim all novelty inherent in my invention as broadly as possible in view of the prior art.

What I claim as new and desire to secure by Letters Patent, is:

1. The combination with a relatively stationary main, of a movable car separated from said main, an elbow connected to said car, a pipe rigidly connected to said elbow, and a second elbow rigidly connected to said pipe, said second elbow also rigidly connected to a pipe in alignment with said main and adapted to telescope therewith to permit movement of the car.

2. The combination with an elevated relatively stationary main, of a movable car below said main, an elbow connected to said car, a vertical pipe rigidly connected to said elbow, and a second elbow rigidly connected to the upper end of said vertical pipe, said second elbow also rigidly connected to a pipe in alignment with the main and adapted to telescope therewith to permit movement of the car.

3. The combination with a relatively stationary main, of a movable car separated from said main, an elbow connected to said car, a pipe rigidly connected to said elbow, a second elbow rigidly connected to said pipe, said second elbow also rigidly connected to a pipe in alignment with said main and adapted to telescope therewith to permit movement of the car, and means for lessening the friction between said telescoping members.

4. The combination with a relatively stationary main, of a movable car separated from said main, an elbow connected to said car, a pipe rigidly connected to said elbow, a second elbow rigidly connected to said pipe, said second elbow also rigidly connected to a pipe in alignment with said main and adapted to telescope therewith to permit movement of the car, and means for maintaining a substantially air tight joint between said telescoping members.

5. The combination with a relatively stationary main, of a movable car separated from said main, an elbow connected to said car, a pipe rigidly connected to said elbow, a second elbow rigidly connected to said pipe, said second elbow also rigidly connected to a pipe in alignment with said main and adapted to telescope therewith to permit movement of the car, means for lessening the friction between said telescoping members, and means for maintaining a substantially air tight joint between said telescoping members.

6. The combination with a relatively stationary main, of a movable car having a tilting body with a perforated bottom and an air chamber arranged beneath, an air connection axially arranged between the truck

of said car and said air chamber to permit tipping of the body while maintaining the air connection, an elbow rigidly attached to said truck at said air connection, a pipe rigidly connected to said elbow, a second elbow rigidly connected to said pipe and also rigidly carrying a pipe in alignment with said main, said last mentioned pipe adapted to telescope with the main to permit movement of the car.

In witness whereof, I have hereunto set my hand this 25th day of September, A. D. 1923.

ALBERT P. GROHENS.