J. N. HUMPHREYS.

APPARATUS FOR CHILLING AND WHITENING LARD COMPOUNDS.

APPLICATION FILED JUNE 28, 1909.

1,036,628. Patented Aug. 27, 1912.

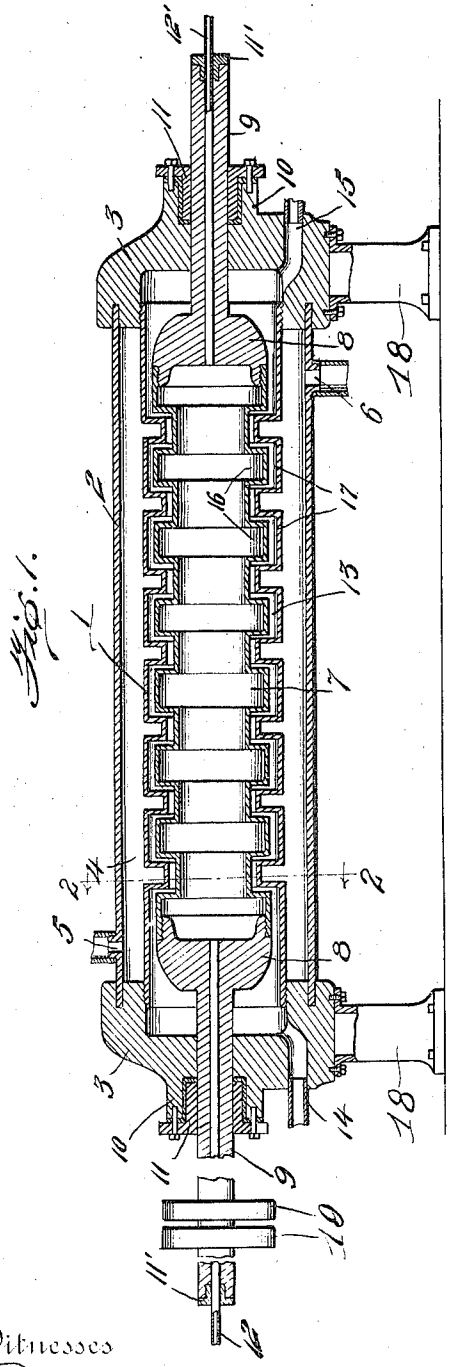

Fig. 1.

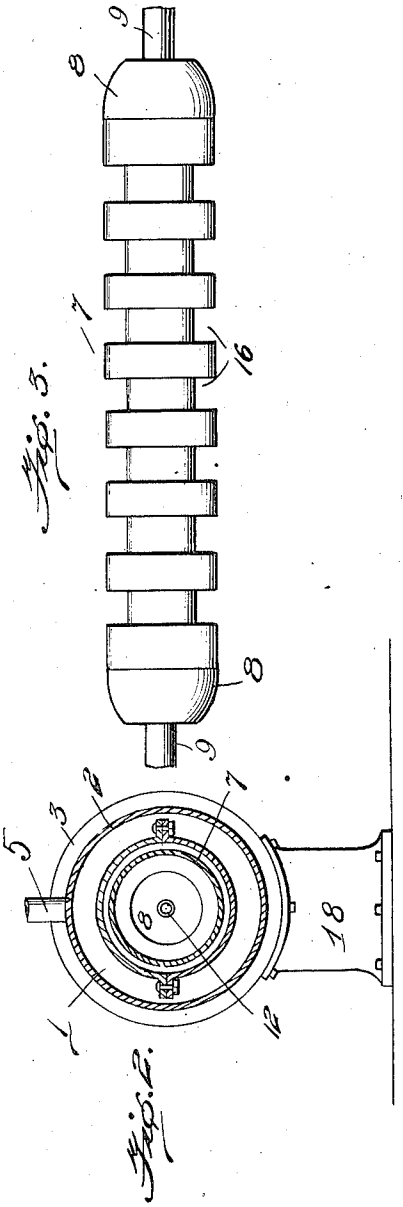

Fig. 3.

Fig. 2.

Witnesses

E. M. Offutt

C. F. Griesbauer.

Inventor

Jerome N. Humphreys,

by A. B. Wilkinson & Co.

Attorneys

UNITED STATES PATENT OFFICE.

JEROME N. HUMPHREYS, OF DALLAS, TEXAS, ASSIGNOR TO THE ALLBRIGHT-NELL CO., OF CHICAGO, ILLINOIS.

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1,036,628. Specification of Letters Patent. Patented Aug. 27, 1912.

Application filed June 28, 1909. Serial No. 504,806.

To all whom it may concern:

Be it known that I, JEROME N. HUMPHREYS, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Apparatus for Chilling and Whitening Lard Compounds; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in apparatus for chilling and whitening lard compounds.

The object of the invention is to provide a machine or apparatus of this character by means of which the operation of chilling and whitening lard compounds will be simplified and improved and the product hardened or stiffened to such a degree as to require the addition of a less quantity of high priced stiffening agents and thus reducing the cost of producing the compound.

A further object is to provide a machine of this character having an improved means by which the cooling agent is applied to the compound and to provide for a maximum amount of cooling and rubbing surface.

With the foregoing and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a longitudinal vertical sectional view of a cooling and bleaching apparatus constructed in accordance with the invention; Fig. 2 is a cross sectional view on the line 2—2 of Fig. 1; Fig. 3 is a side view of the inner brine cylinder of the machine.

In the embodiment of the invention, I provide an outer cylinder 1 which is surrounded by a fluid tight jacket 2. The ends of the cylinder 1 and jacket 2 are secured to heads 3 in any suitable manner to form a fluid tight joint therewith. The space 4 between the cylinder 1 and the jacket 2 is adapted to receive a cooling agent which is preferably in the form of brine which is let into the space through an inlet port 5 and is discharged from the space through an outlet port 6. The ports 5 and 6 are arranged at opposite ends of the jacket or casing 2 thereby providing for a circulation of brine throughout the entire length of the space 4 between the cylinder 1 and the jacket 2.

In the outer cylinder 1 is revolubly mounted an inner brine containing cylinder 7, said cylinder being provided at its opposite ends with heads 8 on which are formed tubular bearing extensions or trunnions 9 which are revolubly mounted in bearings 10 formed in the heads 3 of the outer cylinder and jacket. The heads 3 are also provided with stuffing boxes 11 through which the tubular trunnions pass thereby forming a fluid tight joint between the trunnions 9 and the bearings in the heads 3. In the outer ends of the tubular trunnions 9 are arranged stuffing boxes 11′ which form fluid tight connections for the brine inlet and discharge pipes 12 and 12′ which are connected with the trunnions to supply the cylinder 7 with brine or other form of cooling agent. The cylinder 7 is of somewhat less diameter than the cylinder 1, thus providing between said cylinders a thin annular space 13 through which the lard compound is forced in the operation of cooling and whitening the same. The lard compound is let into the space 13, at one end of the apparatus, through an inlet port 14 formed in one of the heads 3 and is discharged from said space through a discharge port 15 formed in the opposite head 3. The cylinders 1 and 7 are preferably provided with irregular cooperating surfaces to provide for an increased cooling area and also to provide increased rubbing surface whereby the compound, when being forced through the passage 13, will be thoroughly rubbed, intermixed and aerated by the rapid rotation of the inner cylinder 7, which action will whiten the compound to a higher degree and impart to the same a whiter color than is obtainable by any other method. This rubbing between the irregular surfaces forming the walls of the space or passage through which the compound passes will also impart to the compound a flaky quality and will also harden or stiffen the same so that it is necessary to use a much smaller quantity of high priced stiffening agents, such as oleo-stearin or other beef fats, thereby greatly reducing the cost of manufacturing or producing the compound.

The irregular surface of the inner cylinder 7 and outer cylinder 1 may be formed in

any desired manner, but is here shown and is preferably formed by constructing the cylinders with a series of annular grooves or channels 16 and 17, the grooves or channels 17 of the outer cylinder fitting into the grooves or channels 16 of the inner cylinder, thus providing an irregular or tortuous passage between the cylinders through which the lard compound is forced and thoroughly rubbed and cooled in the manner hereinbefore described.

The outer cylinder 1 and its jacket 2 are supported on pedestals or other suitable supports 18 arranged below the heads 3. The inner cylinder 7 has mounted on one of its trunnions 9, tight and loose pulleys 19 by means of which suitable power is applied to the cylinder to rapidly revolve the same.

In Fig. 2, the outer casing 1 is shown as being constructed of two halves and each provided with clamping flanges. This illustration, of course, is a conventional one and is made only for the purpose of showing the obvious means of connecting the parts together.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention, as defined in the appended claims.

Having thus described my invention, what I claim is:

1. In an apparatus for chilling and whitening lard, in combination: inner and outer cylinders rotatable with respect to each other and having their opposed surfaces closely approximated to provide between them a thin free annular space through which the material being chilled and whitened is adapted to be rapidly forced; means for bringing a chilling agent into contact with the chilling wall of one of said cylinders; and mechanism for continuously rotating one of said cylinders: substantially as specified.

2. In an apparatus for chilling and whitening lard, in combination: inner and outer cylinders rotatable with respect to each other and having their opposed surfaces closely approximated to provide between them a thin free annular space through which the material being chilled and whitened is adapted to be rapidly forced; means for bringing a chilling agent into contact with the chilling wall of each of said cylinders; and mechanism for continuously rotating one of said cylinders; substantially as specified.

3. In an apparatus for chilling and whitening lard, in combination: inner and outer cylinders rotatable with respect to each other and having their opposed surfaces closely approximated to provide between them a thin free annular space through which the material being chilled and whitened is adapted to be rapidly forced; means for bringing a chilling agent into contact with the chilling wall of one of said cylinders; and mechanism for continuously rotating the inner one of said cylinders; substantially as specified.

4. In an apparatus for chilling and whitening lard, in combination: inner and outer cylinders rotatable with respect to each other and having their opposed surfaces irregular and closely approximated to provide between them a thin irregular annular space through which the material being chilled and whitened is adapted to be forced; means for bringing a chilling agent into contact with the chilling wall of one of said cylinders; and mechanism for continuously rotating one of said cylinders; substantially as specified.

5. In an apparatus for chilling and whitening lard, in combination: inner and outer cylinders rotatable with respect to each other and having their opposed surfaces interruptedly restricted and closely approximated to provide between them a thin and irregularly sized annular space through which the material being chilled and whitened is adapted to be forced; means for bringing a chilling agent into contact with the chilling wall of one of said cylinders; and mechanism for continuously rotating one of said cylinders; substantially as specified.

6. In an apparatus for chilling and whitening lard, in combination: inner and outer horizontally arranged cylinders rotatable with respect to each other and having their opposed surfaces closely approximated to provide between them a thin free annular space through which the material being chilled and whitened is adapted to be rapidly forced; means for bringing a chilling agent into contact with the chilling wall of one of said cylinders; and mechanism for continuously rotating one of said cylinders; substantially as specified.

7. In an apparatus for chilling and whitening lard, in combination: inner and outer cylinders movable with respect to each other and having their opposed surfaces closely approximated to each other and arranged to provide between them a thin and continuous free annular space through which the material being chilled and whitened is adapted to be rapidly forced longitudinally; an inlet through which the material so forced under pressure is adapted to be introduced into said chilling space; means for bringing a chilling agent into contact with the chilling wall of one of said cylinders;

and mechanism for actuating one of said cylinders; substantially as specified.

8. In an apparatus for chilling and whitening lard, in combination: inner and outer cylinders movable with respect to each other and having their opposed surfaces irregular and closely approximated and arranged to provide between them a thin and tortuous annular space through which the material being chilled and whitened is adapted to be forced; means for bringing a chilling agent into contact with the chilling wall of one of said cylinders; and mechanism for actuating one of said cylinders; substantially as specified.

9. In an apparatus for chilling and whitening lard, in combination: inner and outer cylinders movable with respect to each other and having their opposed surfaces interruptedly restricted and closely approximated to provide between them a thin, tortuous and irregularly sized annular space through which the material being chilled and whitened is adapted to be forced; means for bringing a chilling agent into contact with the chilling wall of one of said cylinders; and mechanism for actuating one of said cylinders; substantially as specified.

10. In an apparatus for chilling and whitening lard, in combination: an outer cylinder having an irregular surface, an inner cylinder revolubly mounted in said outer cylinder and having a correspondingly irregular surface which is spaced from the surface of the outer cylinder to provide an irregular passage between the cylinders, means whereby a cooling agent is introduced to said inner hollow cylinder, and a jacket arranged around said outer cylinder and spaced therefrom to form a passage for the cooling agent.

11. In an apparatus for chilling and whitening lard, in combination: an outer cylinder having an irregular surface, a jacket arranged around said outer cylinder to form a space to receive a cooling agent, means whereby a cooling agent is passed through said space, heads arranged on the opposite ends of said cylinder and jacket, said heads having formed therein inlet and discharge passages, an inner cylinder having an irregular surface corresponding to the irregular surface of the outer cylinder and arranged to form between the cylinders a cooling and whitening space through which the compound is passed, and means whereby said inner cylinder is revolved within the outer cylinder thereby rubbing the compound passing between said cylinders.

12. In an apparatus for chilling and whitening lard, in combination: an outer cylinder, a hollow inner cylinder revolubly mounted in said outer cylinder, said cylinders having formed therein a series of corresponding annular grooves or channels whereby an irregular passage is formed between the cylinders, a jacket arranged around said outer cylinder to provide a space to receive a cooling agent, and means whereby a cooling agent is introduced to said inner hollow cylinder.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JEROME N. HUMPHREYS.

Witnesses:
L. S. WEBB,
E. T. WHEELER.