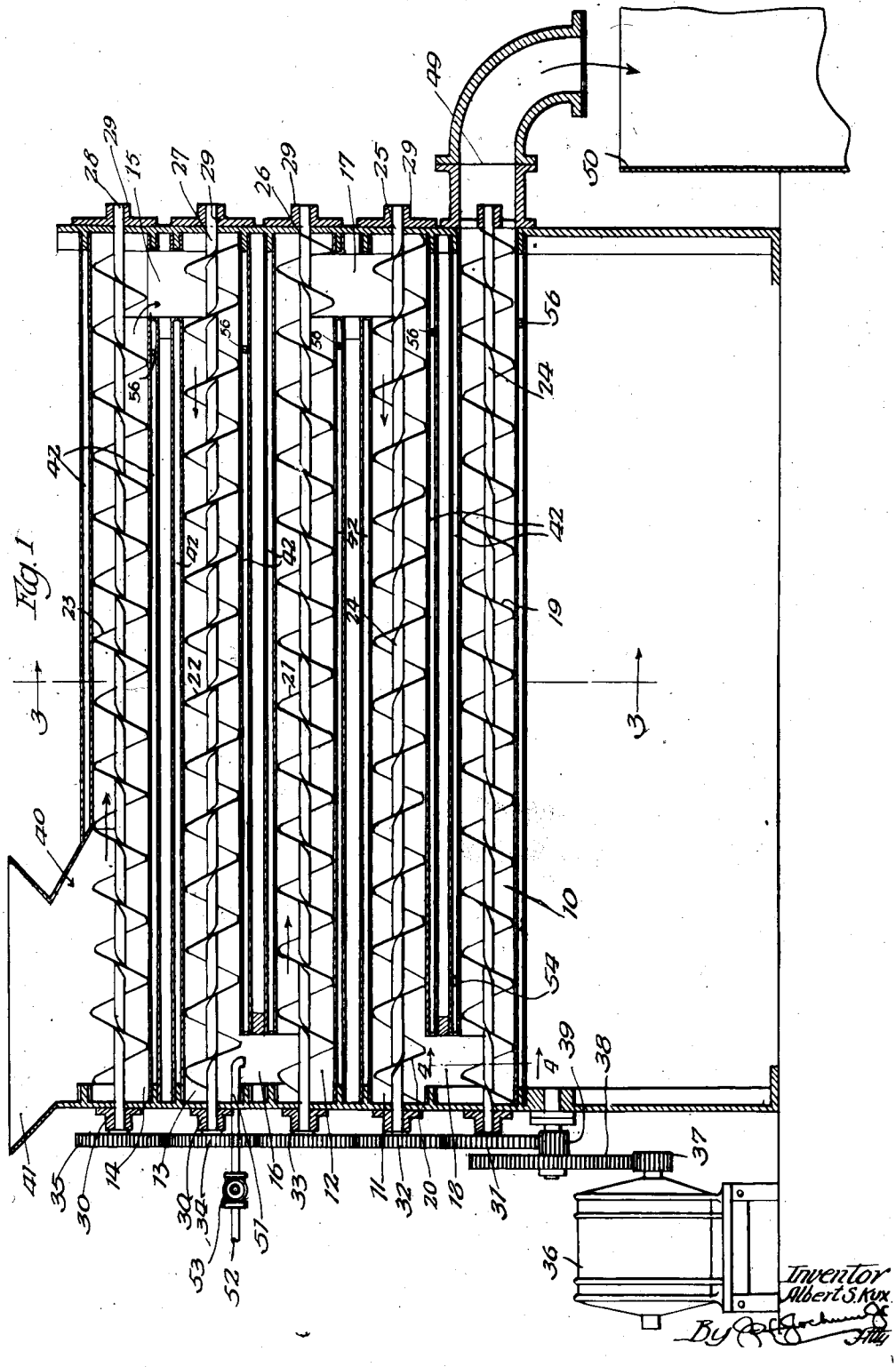
May 21, 1929. A. S. KUX 1,713,537

MACHINE FOR MANUFACTURING CHEESE

Filed Aug. 14, 1926 2 Sheets-Sheet 1



May 21, 1929. A. S. KUX 1,713,537

MACHINE FOR MANUFACTURING CHEESE

Filed Aug. 14, 1926 2 Sheets-Sheet 2

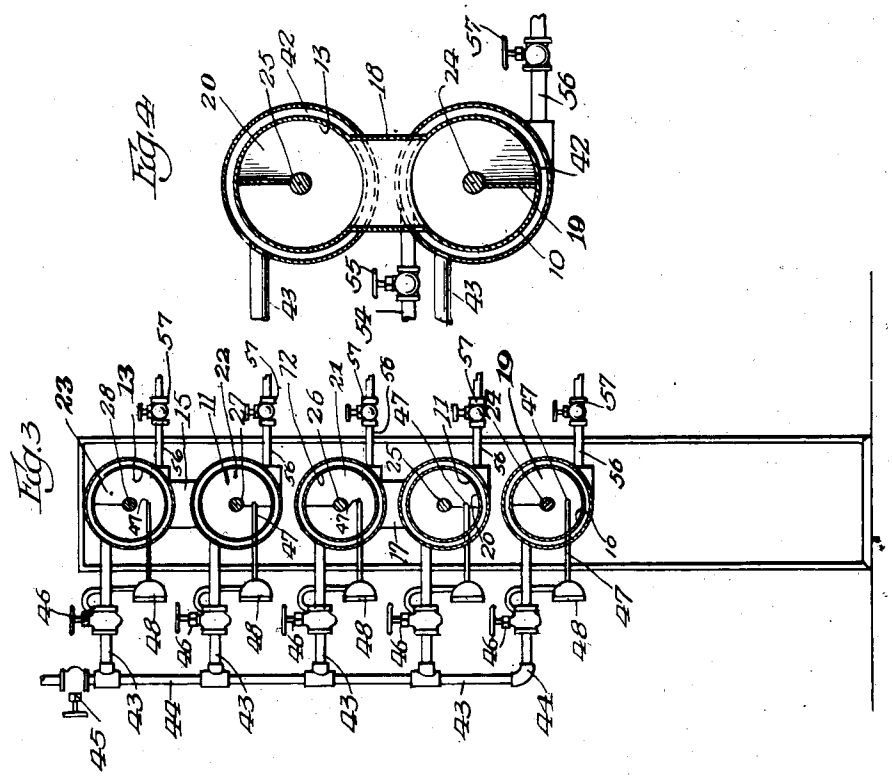


Fig. 3

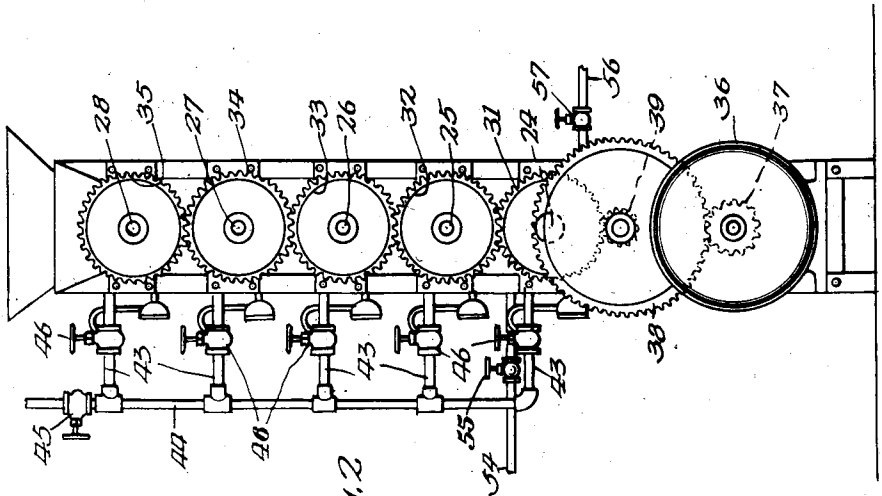


Fig. 2

Fig. 4

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Patented May 21, 1929. 1,713,537

UNITED STATES PATENT OFFICE.

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MACHINE FOR MANUFACTURING CHEESE.

Application filed August 14, 1926. Serial No. 129,156.

Heretofore in the manufacture of cheese it has been customary to supply the mixed material to the cooking apparatus in separate batches, which is not only laborious, but necessitates a constant watching of the machine.

It is one of the objects of the present invention to provide an improved machine for producing a continuous operation of cooking and sterilizing the material, and which material is continuously fed into the machine.

A further object is to provide in an improved machine of this character means for automatically and thermostatically controlling the temperature of the cooking chamber.

A further object is to provide improved means whereby the temperature of a portion of the cooking chamber may be reduced to a predetermined degree.

A further object is to provide improved means for supplying liquid to the material at a predetermined point in the passage of the material through the machine, for controlling the moisture content of the material being cooked or treated.

A further object is to provide an improved machine of this character which will be of a simple, durable and compact construction and effective and efficient in operation.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawings illustrating this invention, and in which—

Figure 1 is a vertical, longitudinal sectional view of a machine of this character constructed in accordance with the principles of this invention.

Figure 2 is a left hand end elevation of Figure 1.

Figure 3 is a detail sectional view taken on line 3—3, Figure 1.

Figure 4 is a detail sectional view taken on line 4—4, Figure 1.

Referring more particularly to the drawings the numerals, 10, 11, 12, 13 and 14 designate cooking chambers, which may be of any desired length and diameter and are superposed, each of the chambers having communication with the next adjacent chamber at one end of the chamber respectively as at 15, 16, 17 and 18, whereby, after the material has been fed through one of the chambers in one direction it will pass into the the next adjacent or lowermost chamber to be fed through the latter in a direction opposite to the direction in which it was passed through the next preceding chamber.

Arranged within the respective chambers are conveyors 19, 20, 21, 22 and 23, preferably of the spiral type, embodying respectively shafts 24, 25, 26, 27 and 28.

These shafts extend through the respective chambers and are journaled in suitable bearings 29—30 at the opposite ends of the shafts.

Connected respectively with the shafts are intermeshing gears 31, 32, 33, 34 and 35, and the intermeshing gears are driven from a motor 36 having a gear 37 connected with the shaft thereof and which gear 37 meshes with a gear 38 that has connected with it a gear 39, the gear 39 in turn meshing with the gear 31.

With this construction it will be manifest that when the motor 36 operates the combined conveyors and mixers in the respective chambers will be rotated in opposite directions. The material is fed into the uppermost chamber 14 through an inlet opening 40, and a hopper 41 preferably surrounds the opening so as to direct the material thereinto.

Each of the chambers is provided with a steam space 42 which encompasses the chamber and steam or a heating medium is supplied into the spaces 42 by means of pipes 43, the latter in turn being connected with a supply pipe 44.

A valve 45 may be provided in the supply pipe 44 for controlling the passage of the fluid therethrough, and controlling valves 46 may also be provided in the pipes 43 so that the supply of steam may be cut off in one or more of the steam spaces 42.

Projecting into each of the chambers is an element 47 of a thermostatic control device 48, which latter may be of the ordinary and well known construction. The thermostats 48 are adapted to also control the valves 46 so that when the temperature in any one or more of the cooking chambers rises above a predetermined degree, the respective thermostats will control the supply of heating

fluid to the heating space 42 around the chamber. Likewise when the temperature in any one or more of the chambers fall below a predetermined degree the thermostats will operate to open the valve so that the heating medium may enter into the steam space.

The automatic control valve may be of any ordinary and well known construction suitable for the purpose.

Leading from the lowermost chamber 10 is a discharge outlet 49, through which the cooked and sterilized material will be discharged into a suitable receiving receptacle 50.

With this improved machine it will be manifest that the material may be continuously supplied thereto through the hopper 41 and that there is a continuous operation of the machine and upon the material as it passes through the respective chambers and from one chamber to the other.

A supply nozzle 51 may be provided at any suitable point or points along the line of passage of the material through the machine for supplying moisture to the material as it is being cooked and sterilized, by means of which nozzle 51 the moisture content of the material may be controlled.

The nozzle 51 receives its supply from a suitable source of supply (not shown) through a pipe 52, and a control valve 53 is provided in the pipe 52 for controlling the amount of liquid delivered through the nozzle 51.

It is sometimes desirable to reduce the temperature of the material before it is delivered through the delivery opening 49 and as it is passing through the lowermost chamber 10.

To that end there may be provided a supply pipe 54 having a valve 55 therein, and through which pipe a temperature reducing medium, such as water or the like, may be delivered into the steam chamber 42 surrounding the cooking chamber 10. A discharge pipe 56 having a valve 57 therein also leads from the space 42 around the chamber 10 so as to permit of the circulation of the temperature reducing medium around the chamber 10 and out of the pipe 56. Similar pipes 56 may be provided to lead from each of the steam jackets around the various conveyor chambers to convey away the condensates, and valves 57 may be provided in the pipes to control the discharge of condensates.

The temperature reducing medium may be supplied to the space 42 around the chamber 10 at the same time that the heating medium is supplied thereto, if desired, or the supply of heating medium may be cut off from this space when the cooling medium is supplied, according to the will of the operator.

With this improved apparatus it will be manifest that there is provided a means whereby there will be a continuous process of mixing, cooking and sterilizing the cheese material and in which apparatus the moisture content of the material may be readily controlled while it is passing through the machine.

This will obviate the necessity of intermittently supplying batches of the material to the machine and will insure a uniform mixing and cooking as well as sterilization of the material which passes through the machine.

While the preferred form of the invention has been herein shown and described, it is to be understood that various changes may be made in the details of construction and in the combination and arrangement of the several parts, within the scope of the claim, without departing from the spirit of this invention.

What is claimed as new is:—

A machine for mixing, cooking and compounding cheese embodying a plurality of superposed chambers, each of the chambers discharging into the next adjacent chamber whereby the material will have a tortuous passage through the machine, a combined mixing and conveying element in each of the chambers, means common to said elements for operating them, means for delivering the material into one of the chambers, means for delivering the material from one of the chambers and out of the machine, means for supplying a heating medium outside of and about each of the chambers, the last said means embodying a heating fluid space encompassing the respective chambers, and means for introducing at will, a cooling fluid into one of the said spaces.

In testimony whereof I have signed my name to this specification, on this 23rd day of July, A. D. 1926.

ALBERT S. KUX.