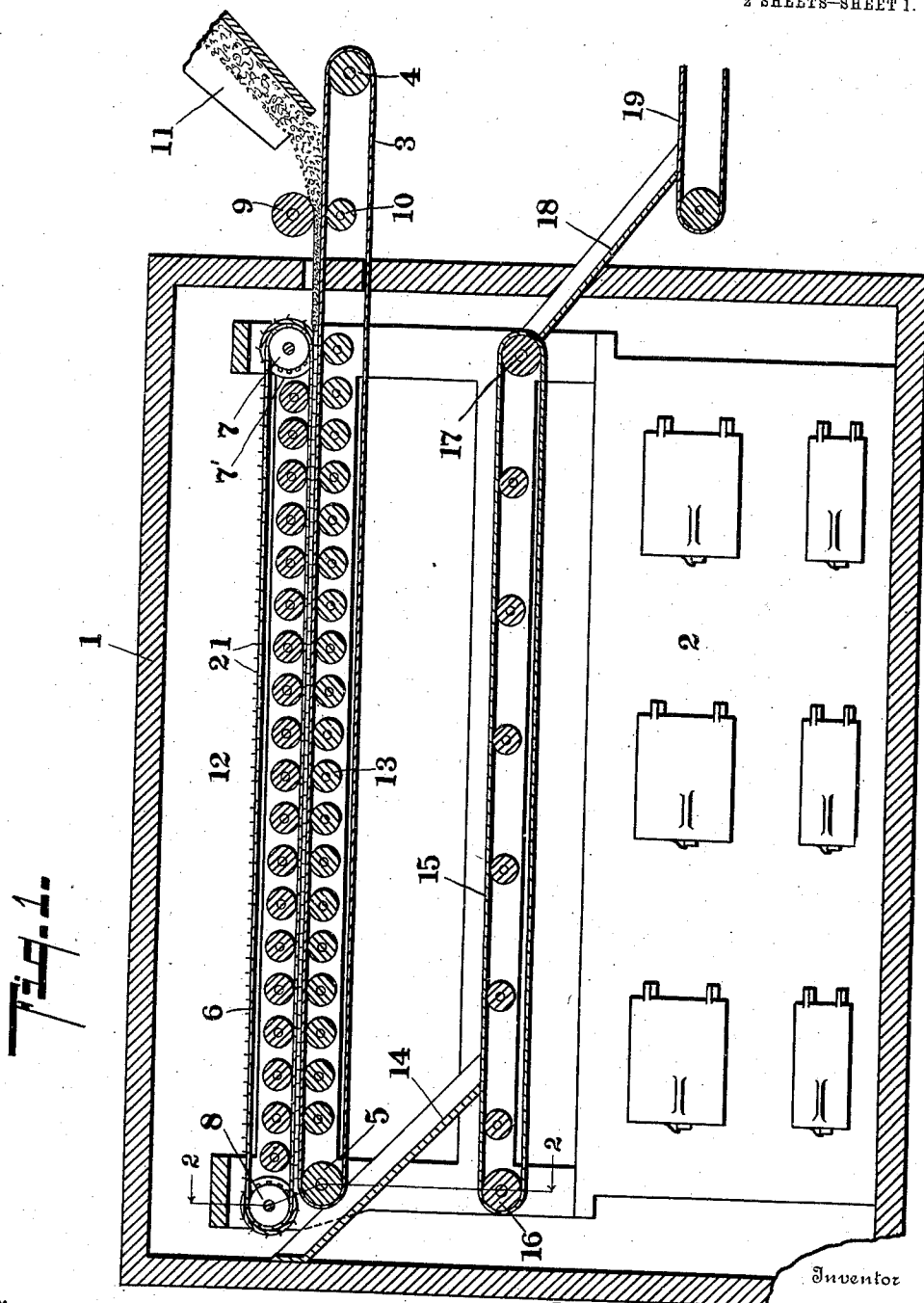


J. L. KELLOGG.
MACHINE FOR MANUFACTURING BISCUIT FROM CEREAL FLAKES.
APPLICATION FILED MAR. 4, 1908.

985,178.

Patented Feb. 28, 1911.

2 SHEETS-SHEET 1.



Witnesses

Lulu Greenfield
Phina Woodruff.

By

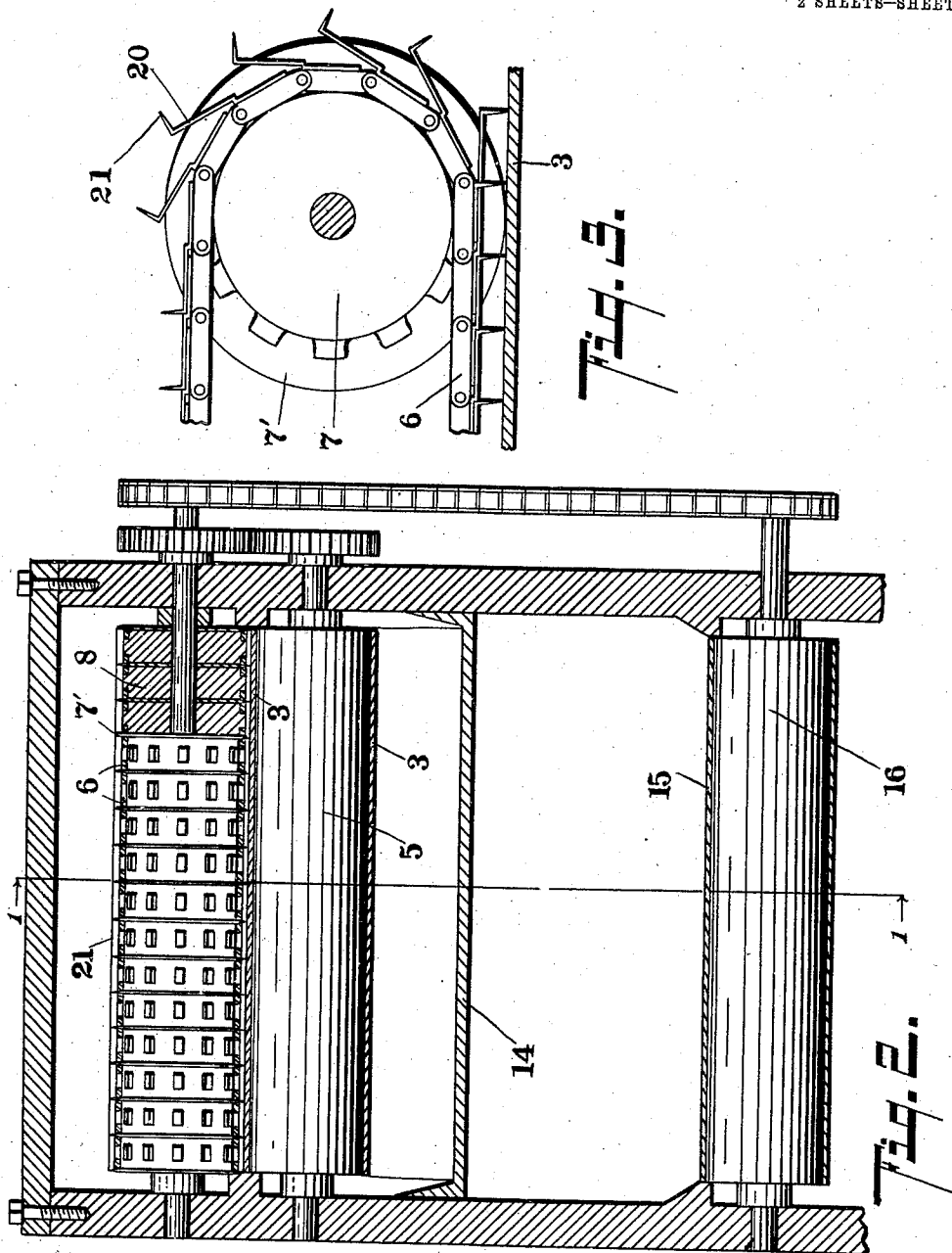
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Inventor

Witnesses

Lulu Greenfield
Phin Woodruff.

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UNITED STATES PATENT OFFICE.

JOHN L. KELLOGG, OF BATTLE CREEK, MICHIGAN.

MACHINE FOR MANUFACTURING BISCUIT FROM CEREAL FLAKES.

985,178.

Specification of Letters Patent.

Patented Feb. 28, 1911.

Application filed March 4, 1908. Serial No. 419,178.

To all whom it may concern:

Be it known that I, JOHN L. KELLOGG, a citizen of the United States, residing at Battle Creek, Michigan, have invented certain new and useful Improvements in Machines for Manufacturing Biscuit from Cereal Flakes, of which the following is a specification.

This invention relates to improvements in apparatus and process for manufacturing and baking biscuits from flaked cereals or similar material.

The objects of this invention are to provide an apparatus which will compress a mass of flakes that are delivered to the same into an even layer, cut the same into proper form for biscuits, heat and partially bake the same while they are in the compressed form in the cutters, which insures the integrity of the biscuits, and the moisture being evaporated from the material within the cutters, insures a contraction of the mass and a consequent proper discharge of the biscuit from the cutter, so that the same can then be passed on and completely cooked without danger of mutilation.

Objects pertaining to details of construction will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

An apparatus embodying my invention and for carrying out my improved process is clearly illustrated in the accompanying drawings, forming a part of this specification, in which:

Figure 1 is a longitudinal sectional view through an oven with my improved apparatus installed, portions being indicated diagrammatically, taken on a line corresponding to line 1—1 of Fig. 2, the furnace not being in section; Fig. 2 is a detail sectional view of the cutting, compressing and delivering apparatus, taken on a line corresponding to the irregular line 2—2 of Fig. 1; and Fig. 3 is an enlarged transverse sectional view of the roller and carrier taken on a line corresponding to line 1—1 of Fig. 2.

In the drawing, the sectional views are taken looking in the direction of the little

arrows at the ends of the section lines, and similar numerals refer to similar parts throughout the several views.

Considering the numbered parts of the drawing, the outer walls 1 of the oven are indicated diagrammatically, the furnace 2 being within the same. In the upper part of the furnace is supported an endless apron 3, which is carried on rollers 4 and 5 at each end thereof, the said apron being of flexible sheet metal or of any suitable material that will answer the purpose and withstand the temperature of the oven. Above this apron 3 is supported a series of aprons 6 parallel to each other on opposite rollers, 7 and 8, which aprons are of flexible sprocket chain construction or any suitable material that will serve the purpose. To these are secured a series of cutters 20, hereafter to be more thoroughly described. Within these aprons are series of compression rollers 12—13 for holding the proximate portions of such aprons toward each other, to compress any volume of flakes that may be delivered between the same.

The roller 7 is separated into sections by disk knives 7' which divide the flakes delivered thereto into longitudinal strips as wide as the biscuits are long, in the construction illustrated, but they could, of course, be divided into strips the same width as the biscuits to be manufactured.

Flaked corn or wheat, or any other cereal, is delivered from the flaking machines through a suitable spout or hopper 11 onto the apron 3, where it is compressed and distributed by rollers 9 and 10 just outside of the oven and delivered inwardly between the lower apron 3 and the upper cutter belts or aprons 6, so that as the apparatus is actuated a thin layer of damp flakes as they come from the rollers is spread out on the apron 3 by the rollers 9 and 10, and carried along and delivered between the aprons 3 and 6 under compression, and will be divided longitudinally by the disks 7', and the cutters of the belts will divide the same into biscuits. As the biscuits are advanced into the oven, the heat of the oven drives the moisture out and causes a contraction of the biscuits, so that when the same reach the opposite end of the oven they are readily discharged from between these compression aprons and slide

down an inclined chute 14, which is arranged at the inner end of these aprons, and are deposited on the endless apron 15 in the lower part of the oven. This endless apron 15 is carried on opposite rollers 16—17. The biscuits by the time they are carried back to the outlet of the oven on the apron 15 are thoroughly baked, the temperature of the oven and the speed of the aprons being regulated to that end, when they slide down the inclined plate 18 onto a carrier 19 or to a suitable receptacle for packing.

The cutters 20 are secured by suitable means to winged links of the sprockets constituting the said belt 6, and they have upturned ends 21, transverse thereto, so that in passing around the roller 7 they will take a tangential position, and the cutting ends 21 will strike down upon the mass of flakes on the apron 3 beneath, dividing the same into lengths as the layer is advanced between the rollers. As these cutters 20 overlap each other and the two aprons are held together by compression rollers, clamping pressure is applied to the biscuits as they are advanced through the oven. The heat drives the moisture from them, causing them to shrink so that when they reach the opposite end of the apron they drop readily from the cutter and pass readily on their course through the apparatus as indicated.

The cutters I have shown are in the form preferred by me, but the mass of flakes might be cut and put under pressure in the manner I have indicated either in molds when it is cut or not in molds, and the same be baked under clamping pressure as I have indicated, when the same will be found to be thoroughly formed and the integrity of the biscuits insured, so that they will not break up into a mass of flakes as soon as they are handled or packed, or transported.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is,—

1. In an apparatus for manufacturing biscuit, the combination of a suitable oven; a cutting and molding apparatus consisting of an endless apron 3 supported on suitable rollers with compression rollers within the loop thereof; a series of endless aprons 6 above the same and arranged to cooperate therewith; cutters 20 thereon having transverse cutting portions 21 secured by suitable means to the upper apron; cutter disks to divide the mass of flakes longitudinally between said aprons; an inclined delivery slide to receive biscuit from the inner end of said cutting and molding apparatus; suitable means for delivering flaked material to the outer end of said cutting and molding apparatus; compression rollers 9 and 10 for compacting and spreading the said flakes on the

said lower apron; an endless apron 15 supported on suitable rollers for carrying the biscuit from the cutter portion to the outlet of the said oven, whereby the said biscuit will be completely baked after their discharge from the cutting and molding apparatus; and a suitable slide at the delivery end of the said apron 15 for discharging said biscuit from the said oven, coating substantially as described and for the purpose specified.

2. In an apparatus for manufacturing biscuit, the combination of a suitable oven; a cutting and molding apparatus consisting of an endless apron 3 supported on suitable rollers with compression rollers within the loop thereof; a series of endless aprons 6 above the same and arranged to cooperate therewith; cutters 20 thereon having transverse cutting portions 21 secured by suitable means to the upper apron; cutter disks to divide the mass of flakes longitudinally between said aprons; suitable means for delivering flaked material to the outer end of said cutting and molding apparatus; compression rollers 9 and 10 for compacting and spreading the said flakes on the said lower apron; an endless apron 15 supported on suitable rollers for carrying the biscuit from the cutter portion to the outlet of the said oven, whereby the said biscuit will be completely baked after their discharge from the cutting and molding apparatus, coating substantially as described and for the purpose specified.

3. In an apparatus for manufacturing biscuit, the combination of a suitable oven; a cutting and molding apparatus consisting of an endless apron 3 supported on suitable rollers with compression rollers within the loop thereof; an endless apron 6 above the same and arranged to cooperate therewith; cutters 20 thereon having transverse cutting portions 21 secured by suitable means to the upper apron; an inclined delivery slide to receive biscuit from the inner end of said cutting and molding apparatus; suitable means for delivering flaked material to the outer end of said cutting and molding apparatus; compression rollers 9 and 10 for compacting and spreading the said flakes on the said lower apron; an endless apron 15 supported on suitable rollers for carrying the biscuit from the cutter portion to the outlet of the said oven, whereby the said biscuit will be completely baked after their discharge from the cutting and molding apparatus; and a suitable slide at the delivery end of the said apron 15 for discharging said biscuit from the said oven, coating substantially as described and for the purpose specified.

4. In an apparatus for manufacturing

biscuit, the combination of a suitable oven; a cutting and molding apparatus consisting of an endless apron 3 supported on suitable rollers with compression rollers within the loop thereof; an endless apron 6 above the same and arranged to coöperate therewith; cutters 20 thereon having transverse portions 21 secured by suitable means to the upper apron; suitable means for delivering flaked material to the outer end of said cutting and molding apparatus; compression rollers 9 and 10 for compacting and spreading the said flakes on the said lower apron; an endless apron 15 supported on suitable rollers for carrying the biscuit from the cutter portion to the outlet of the said oven, whereby the said biscuit will be completely baked after their discharge from the cutting and molding apparatus, all arranged within said oven whereby the baking of the biscuit is well advanced while the biscuit is under pressure, co-acting substantially as described and for the purpose specified.

5. In an apparatus for manufacturing biscuit from flakes, the combination of a suitable oven; a pair of endless aprons, one of which is of continuous sheet metal and the other of which is provided with cutter molds; means for delivering flakes to said aprons, means for compressing and molding a layer of flakes between the same and advancing the same within the oven, all arranged within said oven whereby the baking of the biscuit is well advanced while the biscuit is under pressure, coacting for the purpose specified.

6. In an apparatus of the class described, the combination with an oven of an endless apron; a series of parallel endless aprons above the same and coacting therewith, consisting of sprocket-chain construction; cutters having out-turned cutting ends secured to winged links of said sprockets; rollers for carrying said aprons; and cutter disks on the upper roller to divide the mass of flakes longitudinally, as described.

7. In an apparatus of the class described, the combination with an oven of an endless apron of continuous sheet metal; an endless apron above the same and coacting therewith, consisting of sprocket chain construction; cutters projecting longitudinally beyond the pivot connection of each link and having out-turned cutting ends secured to winged links of said sprockets; and rollers for carrying said aprons, as described.

8. In an apparatus for manufacturing biscuit; a cutting and molding apparatus consisting of an endless apron 3 supported on suitable rollers with compression rollers within the loop thereof; a series of endless aprons 6 above the same and arranged to coöperate therewith; cutters 20 thereon having

transverse cutting portions 21 secured by suitable means to the upper apron; cutter disks to divide the mass of flakes longitudinally between said aprons; an inclined delivery slide to receive biscuit from the inner end of said cutting and molding apparatus; suitable means for delivering flaked material to the outer end of said cutting and molding apparatus; compression rollers 9 and 10 for compacting and spreading the said flakes on the said lower apron; an endless apron 15 supported on suitable rollers for carrying the biscuit from the cutter portion to the outlet of the said oven, whereby the said biscuit will be completely baked after their discharge from the cutting and molding apparatus; and a suitable slide at the delivery end of the said apron 15 for discharging said biscuit from the said oven, coacting substantially as described and for the purpose specified.

9. In an apparatus for manufacturing biscuit; a cutting and molding apparatus consisting of an endless apron 3 supported on suitable rollers with compression rollers within the loop thereof; a series of endless aprons 6 above the same and arranged to coöperate therewith; cutters 20 thereon having transverse cutting portions 21 secured by suitable means to the upper apron; cutter disks to divide the mass of flakes longitudinally between said aprons; suitable means for delivering flaked material to the outer end of said cutting and molding apparatus; compression rollers 9 and 10 for compacting and spreading the said flakes on the said lower apron; an endless apron 15 supported on suitable rollers for carrying the biscuit from the cutter portion to the outlet of the said oven, whereby the said biscuit will be completely baked after their discharge from the cutting and molding apparatus, coacting substantially as described and for the purpose specified.

10. In an apparatus for manufacturing biscuit; a cutting and molding apparatus consisting of an endless apron 3 supported on suitable rollers with compression rollers within the loop thereof; an endless apron 6 above the same and arranged to coöperate therewith; cutters 20 thereon having transverse cutting portions 21 secured by suitable means to the upper apron; an inclined delivery slide to receive biscuit from the inner end of said cutting and molding apparatus; suitable means for delivering flaked material to the outer end of said cutting and molding apparatus; compression rollers 9 and 10 for compacting and spreading the said flakes on the said lower apron; an endless apron 15 supported on suitable rollers for carrying the biscuit from the cutter portion to the outlet of said oven, whereby the said bis-

cuit will be completely baked after their discharge from the cutting and molding apparatus; and a suitable slide at the delivery end of the said apron 15 for discharging
5 said biscuit from the said oven, coating substantially as described and for the purpose specified.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

JOHN L. KELLOGG. [L. s.]

Witnesses:

LUELLA G. GREENFIELD,
GERTRUDE TALLMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
