No. 711,492.

Patented Oct. 21, 1902.

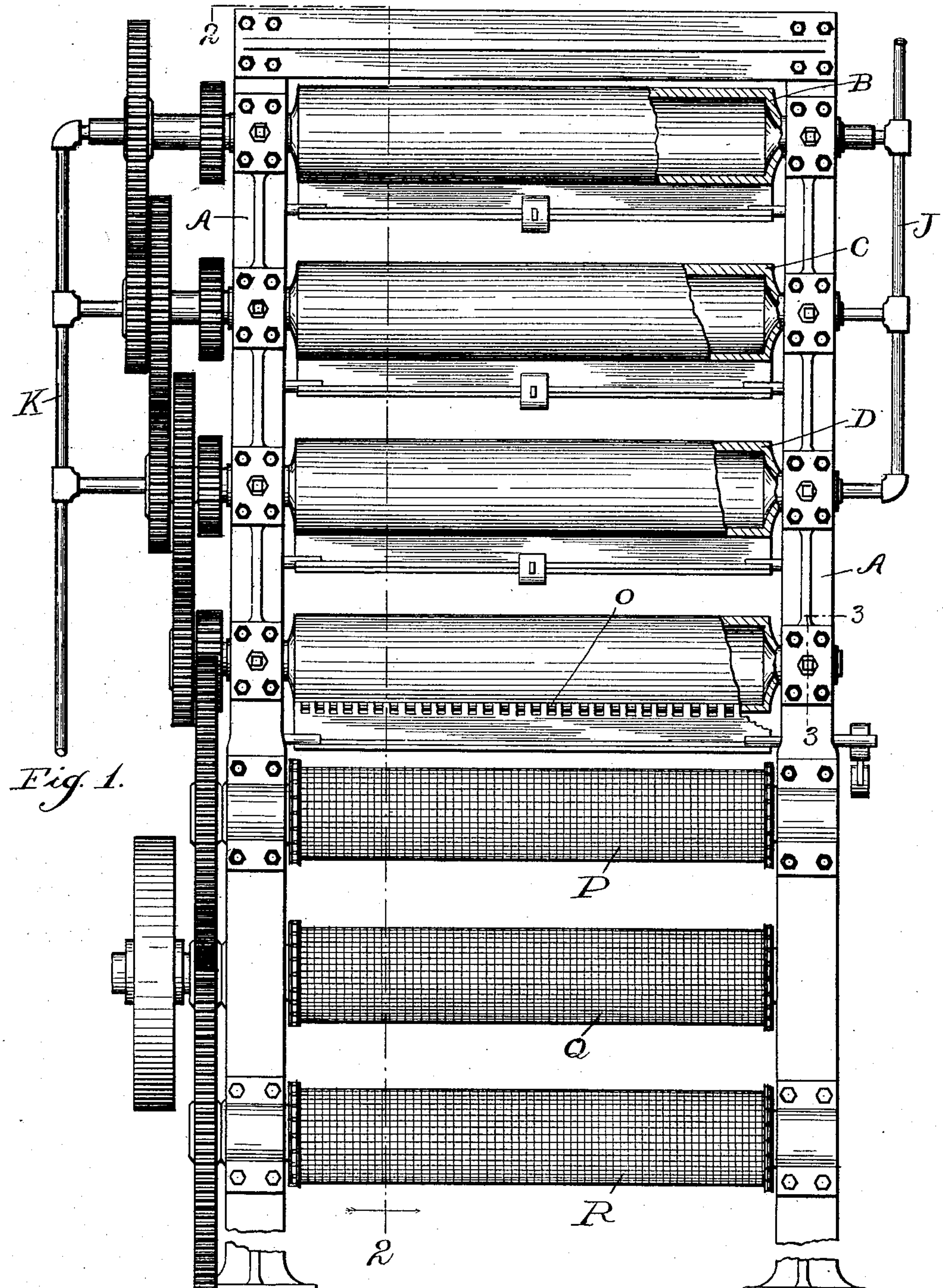
L. GOTTSCHALK.

SOAP BOILING AND FINISHING MACHINE.

(Application filed Feb. 1, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

Fig. 2.

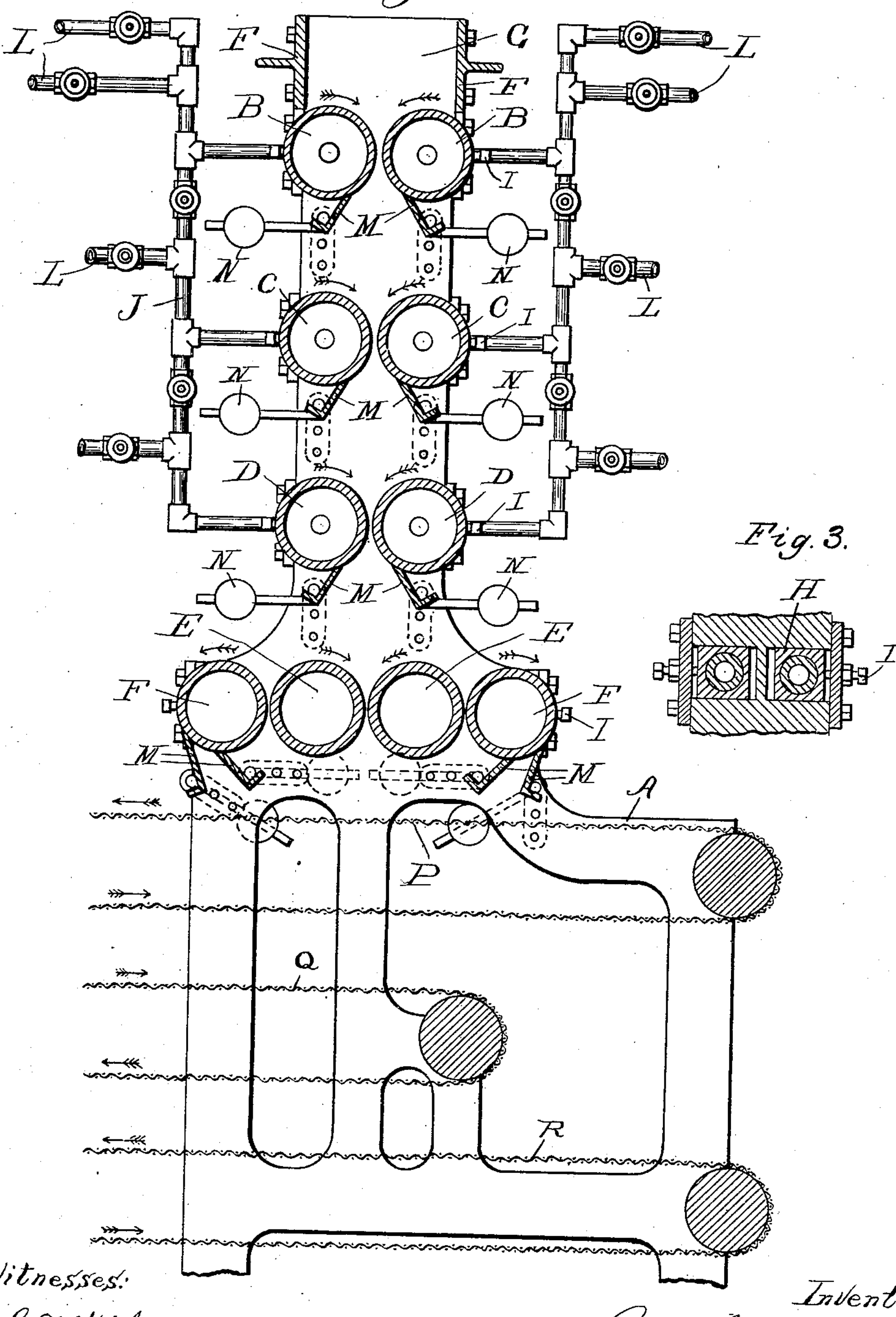

Fig. 3.

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UNITED STATES PATENT OFFICE.

LOUIS GOTTSCHALK, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE BROWNIE SOAP COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SOAP BOILING AND FINISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 711,492, dated October 21, 1902.

Application filed February 1, 1900. Serial No. 3,601. (No model.)

To all whom it may concern:

Be it known that I, LOUIS GOTTSCHALK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Soap Boiling and Finishing Machines; and I do hereby 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.

My invention relates to a novel construction in a soap boiling and finishing machine, the object being to provide a device of this character in which a continuous process of boiling, congealing, finishing, and cutting into chips is performed without intermittence between the various steps; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a side elevation of a machine constructed in accordance with my invention. Fig. 2 is a vertical section of same on the line 2 2 of Fig. 1. Fig. 3 is a detail sectional view on the line 3 3 of Fig. 1.

My invention is based primarily on the fact that a material can be thoroughly boiled in very small quantity in a very short time, whereas in bulk it requires a very long time. To this end I have constructed a machine comprising two parallel standards A, in the upper portions of which are journaled a plurality of pairs of rollers B, C, D, E, and F, said pairs B, C, D, and E being located one below the other, so that material passing between the rollers B will drop by gravity upon the rollers C, pass between the latter, and drop upon the rollers D, and so on. Cross-pieces F, secured at their ends to the side edges of the standards A above the rollers B, form a receiving receptacle or hopper G, of which said rollers B form the bottom. Said rollers are driven at varying speeds by means of gearing, special description of which is deemed unnecessary, but which is so arranged that the rollers B are driven at a given speed, the rollers C at, for example, twice the speed of the rollers B, the rollers D at twice the speed of the rollers C, and so on, the rollers E and F running at the same relative speed, but at greater speed than the rollers D. The relative speeds may of course be changed and varied as may be deemed advisable. Said rollers B B, C C, &c., are geared to each other by means of intermeshing gear-pinions, and at least one roller of each of said pairs is journaled in a sliding box H, so that it may be adjusted toward or away from the other, as desired, said sliding box H being moved inwardly by means of a set-screw I and adapted to be held the desired distance from the other roller by means of the pressure of the material passing between said rollers. The distance between the rollers of each pair is successively smaller from the rollers B down, so that the material is gradually rolled into a very thin film. Said rollers are hollow and are suitably connected with a source of supply of a heating or cooling fluid, as desired. Said rollers B, C, and D are connected with stand-pipes J J and K K, the former being connected with a source of supply of a heating fluid by means of the pipes L, while said pipes K K form the exhaust or drain. The ingredients passing between said rollers will obviously be heated, and thus form soap, being at the same time kneaded to a certain extent. To prevent the material from adhering to said rollers, a scraper M is provided for each of same, said scrapers each consisting of an angle-iron having a sharp edge bearing against the roller at a point adjacent the point of exit of the material passing between each pair. Each of said angle-irons is pivotally mounted in said standards A and held normally in position to scrape the roller by means of a weight N, mounted upon the free end of an outwardly-extending arm carried by said angle-iron. Said rollers E E are not provided with scrapers, but the soap as it passes between the same adheres thereto and divides itself over same and is carried around and into contact with the rollers F F, the surfaces of which are slightly roughened to cause the soap to adhere thereto, so that said rollers take said soap from the rollers E E. Two scrapers M are provided for each of said rollers F, the outermost one of which is serrated at its edge, as at O, so as to remove one-half the soap ad-

hering to said rollers, while the inner scraper has an unbroken edge and removes the soap not removed by the outer scraper, the soap being thus removed in ribbons or chips of equal width.

The connections between the rollers B B, C C, and D D and the source of supply of heating fluid are such that I am enabled to heat each pair to any desired temperature relative to the others, and I so manipulate these connections that said pair of rollers B B are heated to the required temperature for boiling the soap, said pair C C to a slightly lower temperature, so as to partially congeal the soap, while at the same time said rollers serve to knead the soap and press out any air-bubbles that may have formed therein in mixing the ingredients and in boiling, thus insuring homogenity to the mass. Said rollers D D are, again, less hot than the rollers C C, so as to still further congeal the soap, while at the same time they further knead it and press it into a still finer film, which then passes down to the rollers E E, which are not heated, and hence serve to finally congeal the soap and at the same time to finish it by imparting to it a glazed surface. The chips leaving the rollers F F fall upon an endless open-work belt P, thence upon a second belt Q, and thence upon a third belt R, said belts carrying said soap back and forth through a drying-room to dry said chips, the same being carried thence to other apparatus for further treatment.

By means of this machine I am enabled to perform the processes of boiling, congealing, finishing, and cutting into chips in a remarkably short space of time, so that I can each day make just the quantity required to fill orders, and thus save storage and handling. Besides these advantages I save a great deal of labor in the manufacture of the soap.

I claim as my invention—

1. In a machine of the kind specified, the combination with a plurality of pairs of hollow rollers, and means for introducing a heating agent into same, of devices for adjusting the relative positions of said rollers, and pivoted scrapers bearing upon said rollers and adapted to remove material adhering thereto.

2. In a machine of the kind specified, the combination with a hopper adapted to receive material, of a plurality of pairs of rollers mounted below the delivery end of said hopper and adapted to receive said material consecutively between the same and finely divide it, means for adjusting the position of said rollers of each pair relatively to each other, pivoted scrapers held normally in engagement with the surface of each of said rollers and adapted to remove material adhering thereto, and means for introducing a heating agent into each of said rollers.

3. In a machine of the kind specified, the combination with a hopper, of parallel rollers interposed in the delivery end of same and adapted to withdraw the contents of the hopper and finely divide same, means for introducing a heating agent into said rollers, devices for removing the heated materials from said rollers, and devices adapted to receive said heated material and knead and cool the same, comprising parallel rollers between which said heated material is passed, said last-named rollers being heated to a less temperature than said first named.

4. In a machine of the kind specified, the combination with a plurality of pairs of rollers, and means for introducing a heating agent thereto, of a plurality of pairs of rollers interposed below said first-named rollers and adapted to receive and cool the material heated by the first rollers.

5. In a machine of the kind specified, the combination with a plurality of pairs of rollers, and means for introducing a heating agent thereto, of a plurality of pairs of rollers interposed below said first-named rollers and adapted to receive and cool the material heated by the first rollers, and scrapers bearing upon said rollers and adapted to remove material adhering thereto.

6. In a machine of the kind specified, the combination with devices for finely dividing and heating material, and devices for removing the heated material therefrom, of devices adapted to receive said heated material and further finely divide and cool the same, and devices for cutting said finely-divided material into chips and delivering same.

7. In a machine of the kind specified, the combination with a receptacle, devices for finely dividing and boiling the contents thereof, and devices for kneading, congealing and finishing the boiled material, of scrapers engaging said boiling and finishing devices for removing material adhering to said devices and delivering same to succeeding devices including finishing-rolls, and devices for finally cutting said material into chips and delivering same from said machine, comprising a serrated scraper and an unbroken scraper behind the same, both engaging the final finishing-rolls.

8. In a machine of the kind specified, the combination with parallel heated rolls adapted to receive, press into a film and boil soap, of a plurality of pairs of parallel heated rolls each adapted to have a successively lower temperature than said first pair, adapted to receive the boiled film, reduce the thickness thereof and partially congeal same, and a pair of rolls below said lowermost heated rolls for finally congealing said film.

9. In a machine of the kind specified, the combination with parallel heated rolls adapted to receive, press into a film and boil soap, of a plurality of pairs of parallel heated rolls each adapted to have a successively lower temperature than said first pair, adapted to receive the boiled film, reduce the thickness thereof and partially congeal same, a pair of rolls below said lowermost heated rolls for

finally congealing and finishing said film, and rolls parallel with said last-named rolls and provided with an adhesive surface for taking said film therefrom.

10. In a machine of the kind specified, the combination with parallel heated rolls adapted to receive, press into a film and boil soap, of a plurality of pairs of parallel heated rolls each adapted to have a successively lower temperature than said first pair, adapted to receive the boiled film, reduce the thickness thereof and partially congeal same, a pair of rolls below said lowermost heated rolls for finally congealing and finishing said film, rolls parallel with said last-named rolls and provided with an adhesive surface for taking said film therefrom, and scrapers engaging said adhesive rolls for removing said film and cutting same into chips.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS GOTTSCHALK.

Witnesses:
RUDOLPH WM. LOTZ,
JOHN CASSLEMAN.