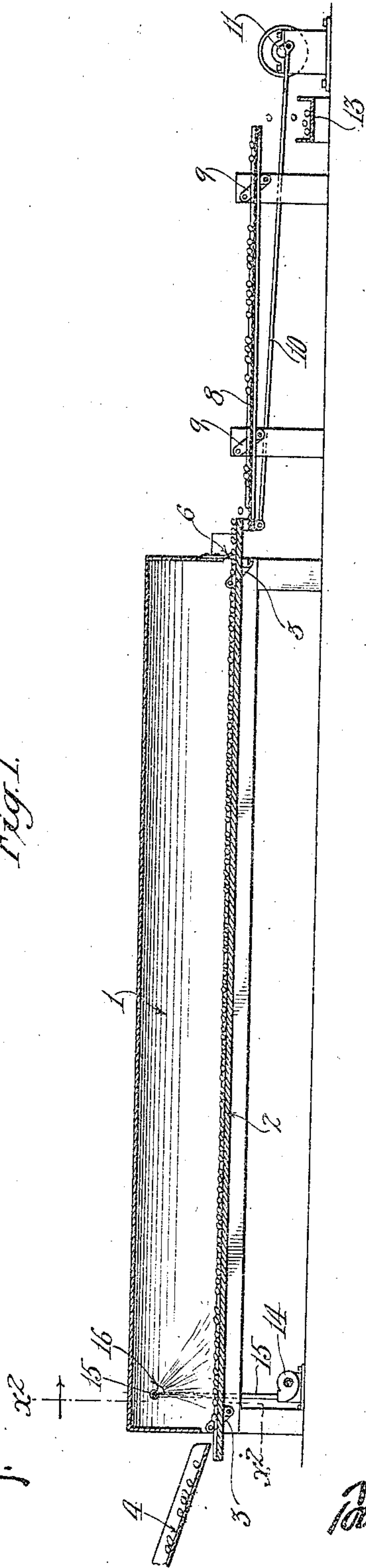


995,598.

F. HAYES & T. H. LAMBERT.  
PROCESS OF BLEACHING NUTS.  
APPLICATION FILED DEC. 8, 1908.

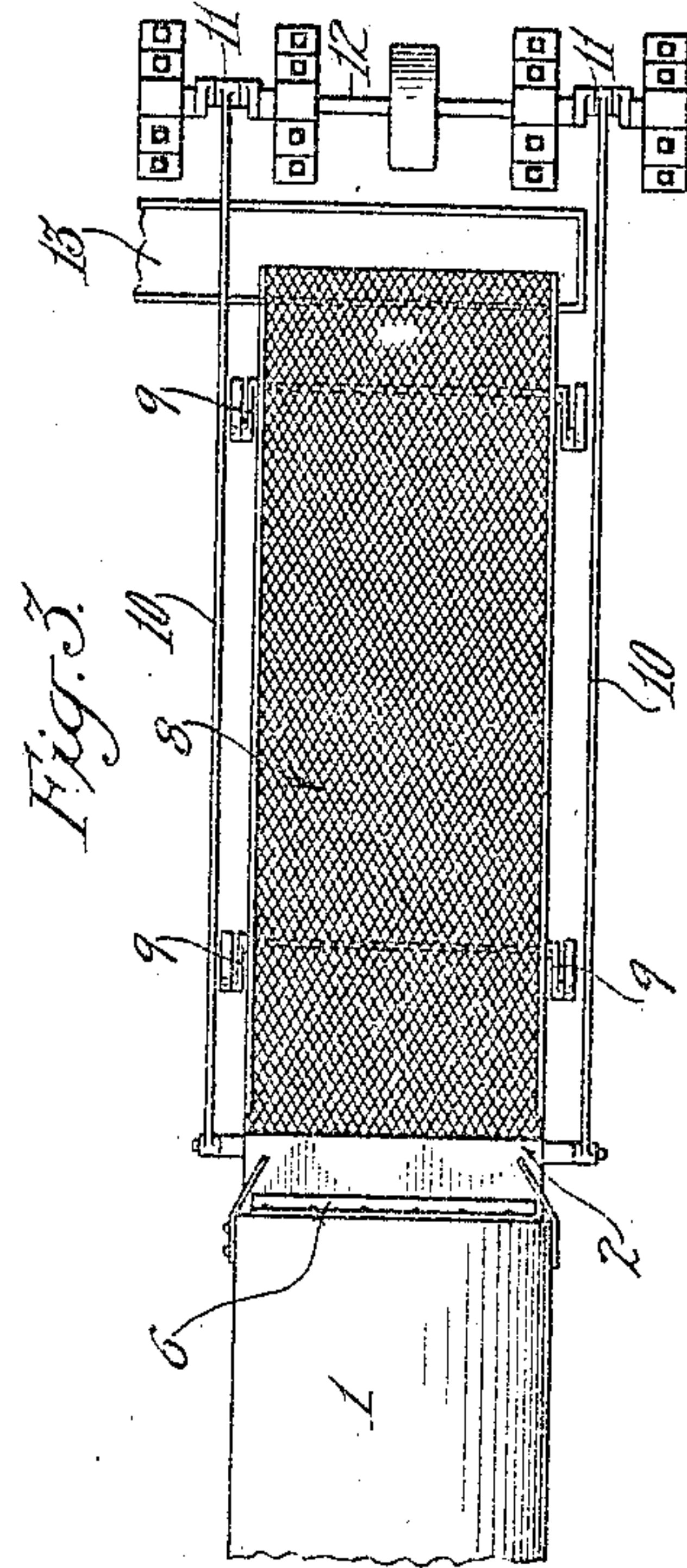
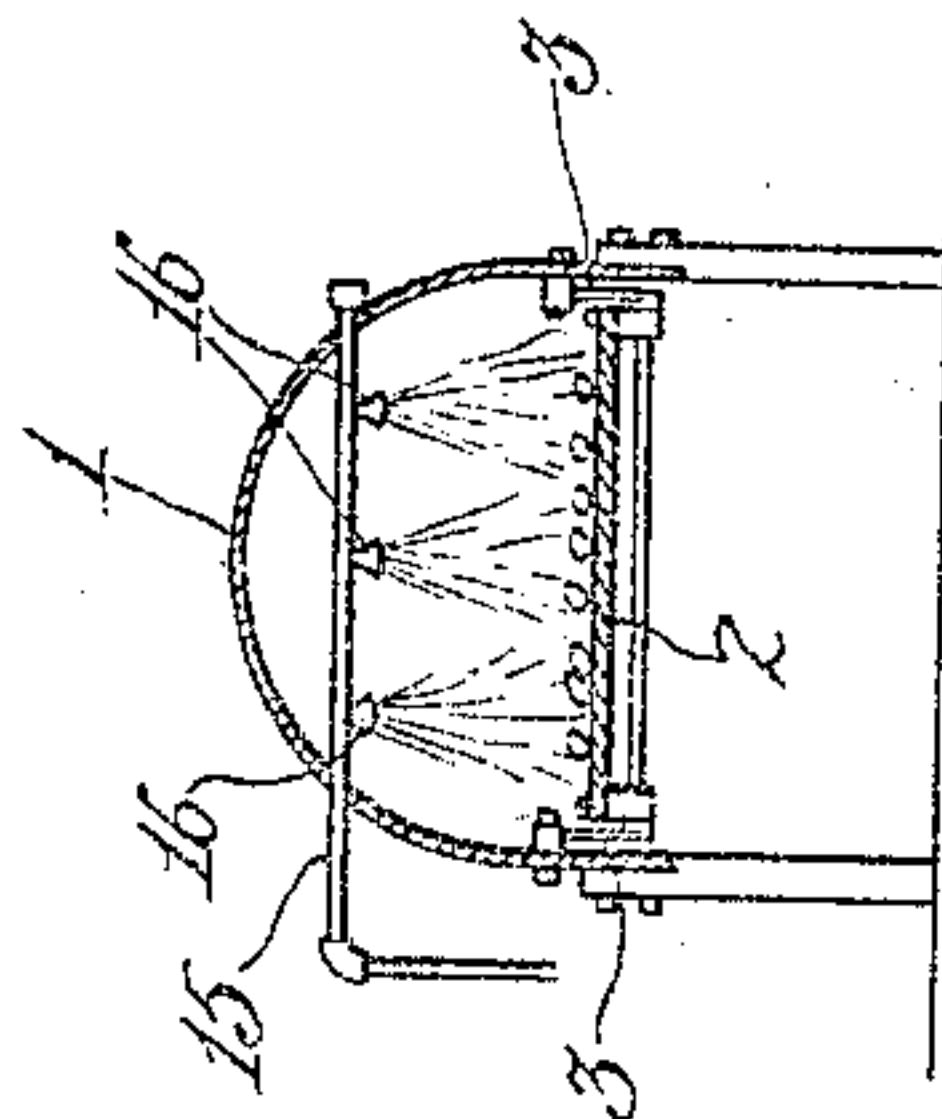
Patented June 20, 1911.

Fig. 1.



Witnesses:  
Frank L. Mahan  
Louis W. Gratz.

Fig. 2.



Inventors,  
Frank Hayes,  
Thomas H. Lambert.  
By  
Russell L. Hatchley  
attys.



# UNITED STATES PATENT OFFICE.

FRANK HAYES AND THOMAS H. LAMBERT, OF EL MONTE, CALIFORNIA.

## PROCESS OF BLEACHING NUTS.

995,598.

Specification of Letters Patent. Patented June 20, 1911.

Application filed December 3, 1908. Serial No. 466,567.

*To all whom it may concern:*

Be it known that we, FRANK HAYES and THOMAS H. LAMBERT, both citizens of the United States, residing at El Monte, in the county of Los Angeles and State of California, have invented a new and useful Process of Bleaching Nuts, of which the following is a specification.

This invention relates to a process which is particularly adapted for bleaching English walnuts, although it may be used in other connections.

In the usual process of bleaching walnuts the walnuts are immersed in a bleaching liquid, consisting for example of water containing free chlorin, and are then removed from the liquid and allowed to stand, or are shipped. Such a process is liable to cause the walnuts to be soaked or filled with water to such an extent that they are difficult to dry and in many cases will spoil in storage or shipping.

English walnuts have an opening or crack at the stem end, and when the nuts are placed in a bleaching solution, more or less of the solution permeates through this opening into the inside of the shell, and in bleaching by immersion in a liquid a large percentage of the nuts are spoiled by becoming soaked with the bleaching liquid.

The main object of the present invention is to provide for bleaching the walnuts in such manner that there is no possibility of the walnuts becoming water soaked or filled with water.

Another object of the invention is to expedite the bleaching process by eliminating the long process of drying.

Other objects of the invention will appear hereinafter.

The accompanying drawings illustrate an apparatus suitable for carrying out the process.

Figure 1 is a longitudinal view of the apparatus. Fig. 2 is a transverse sectional view of the apparatus on the line  $x^2-x^2$  in Fig. 1. Fig. 3 is a plan of an end of the apparatus.

The apparatus comprises a bleaching chamber 1 which may be formed of wood in the shape of a tunnel, the floor 2 of said chamber being movable longitudinally on suitable supporting means, for example, link-hangers 3. Inlet and outlet openings are provided at the respective ends of the chamber 1 and a feed chute 4 extends into

the inlet openings to deliver walnuts onto the floor or table 2, the said table or floor extends beyond the outlet opening so that the walnuts may pass from the chamber to said outlet opening when still on said table. A flap 6 of fabric or other suitable material may be provided at the outlet opening to substantially close the same while permitting passage of the walnuts under said flap. A screen 8 is attached at one end to the table 2 and is supported on suitable means such as links 9 permitting longitudinal motion thereof. The table 2 and screen or sieve 8 are horizontal from the receiving to the delivery end of the machine. The motion on the hangers causes the walnuts to pass forwardly thereon and means are provided for imparting longitudinal reciprocation to these members to cause the walnuts to travel slowly therealong, and simultaneously agitate the walnuts causing them to rotate, thus bringing all portions of the walnut upward. Such means may consist of connecting rods 10 pivoted to said screen and operated by crank means 11 on a driving shaft 12 driven by suitable power connection. Any suitable means such as a delivery trough 13 may be provided under the delivery end of the screen or sieve 8 to receive the nuts therefrom.

Means are provided for forcing or injecting into the chamber 1 atomized or finely divided bleaching medium, said means consisting for example of a pump 14 connected to any suitable supply of bleaching liquor and having a delivery pipe 15 leading into the chamber 1 and provided therein with any desired number of nozzles 16 which spray the liquor in a finely divided condition into said chamber.

The process is carried on as follows: The walnuts are placed on the feed chute 4 and passed therefrom into the chamber 1 and onto the table 2, the reciprocatory motion of the table in connection with the link support thereof causing the walnuts to pass slowly from the receiving to the delivery end of the chamber. At the same time the bleaching liquor supply means 14 is set in operation to cause the finely divided spray of bleaching liquid to be directed into the chamber 1 and onto nuts on the table 2. The liquid which it is preferred to use for this purpose is obtained by the electrolysis of sodium chlorid solution, such a solution being subjected to the action of electric cur-



rent to a sufficient extent to develop the proper proportion of free chlorine therein for bleaching the walnut and the solution is forced into the chamber 1, as stated, in such manner that it reaches the surface of the walnuts in a finely divided or atomized condition, coating all parts of the surface with a film or thin layer of bleaching liquid without any liability of penetrating or running into the interior of the walnuts. As the walnuts turn over and over in their passage along the table 2 every part of each walnut is exposed to the action of the gas in chamber 1 and the particles of liquid suspended in the air in said chamber are gradually deposited on said walnuts as they pass through the chamber. As there is no draft through the chamber 1 waste of gas from the liquid is reduced to a minimum. The nuts passing from the delivery end of the table 2 fall on the screen or sieve 8 and pass along the same. There is a tendency of a film or layer of water on the nuts to gravitate to and through the screen, and the shaking motion dislodges any drops of water which may be collected on the nuts, so that the nuts leave the screen with a surface but slightly dampened and without any actual accumulation of water on any portion thereof. As a consequence the nuts dry immediately or shortly after they are delivered from the screen and may be packed or shipped without any deterioration by absorbed moisture.

It is obvious that the agitation of the nuts may be accomplished by various means and we do not limit ourselves to the particular mechanical embodiment shown or described.

What we claim is:—

1. The process of bleaching nuts having shells which are permeable to liquid which consists in agitating the nuts and coating the nuts with a thin superficial film of bleaching liquid during the agitation and thereafter causing or allowing the film of liquid to dry off from the nuts whereby uniform superficial bleaching action is effected on the surface of the nuts without permeation of bleaching liquid into the interior of the shells of the nuts.

2. The process of bleaching nuts having shells which are permeable to liquid which consists in agitating the nuts and exposing the nuts to a finely divided spray of bleaching liquid during the agitation to form a thin superficial film of bleaching liquid

on the nuts and thereafter causing or allowing the film of liquid to dry off from the nuts whereby uniform superficial bleaching action is effected on the surface of the nuts without permeation of bleaching liquid into the interior of the shells of the nuts.

3. The process of bleaching nuts having shells which are permeable to liquid which consists in agitating the nuts and causing nuts to traverse a chamber and exposing the nuts while being agitated in said chamber to a finely divided spray of bleaching liquid to form a thin superficial film of bleaching liquid on the nuts and thereafter causing or allowing the film of liquid to dry off from the nuts whereby uniform superficial bleaching action is effected on the surface of the nuts without permeation of bleaching liquid into the interior of the shells of the nuts.

4. The process of bleaching nuts having shells which are permeable to liquid which consists in agitating the nuts and exposing them during the agitation to a finely divided spray of bleaching liquid to form a thin superficial film of bleaching liquid on the nuts and subsequently agitating the nuts over a surface capable of permitting a discharge of excess of liquid from the nuts, and thereafter causing or allowing the film of liquid to dry off from the nuts whereby uniform superficial bleaching action is effected on the surface of the nuts without permeation of bleaching liquid into the interior of the shells of the nuts.

5. The process of bleaching nuts having shells which are permeable to liquid which consists in providing a quantity of nuts within a substantially closed chamber, agitating the nuts and simultaneously spraying the nuts with a bleaching agent, and thereafter causing or allowing the film of liquid to dry off from the nuts whereby uniform superficial bleaching action is effected on the surface of the nuts without permeation of bleaching liquid into the interior of the shells of the nuts.

In testimony whereof we have hereunto set our hands at Los Angeles-California this 27th day of November 1908.

FRANK HAYES.

THOMAS H. LAMBERT.

In presence of—

ARTHUR P. KNIGHT,

FRANK L. A. GRAHAM.