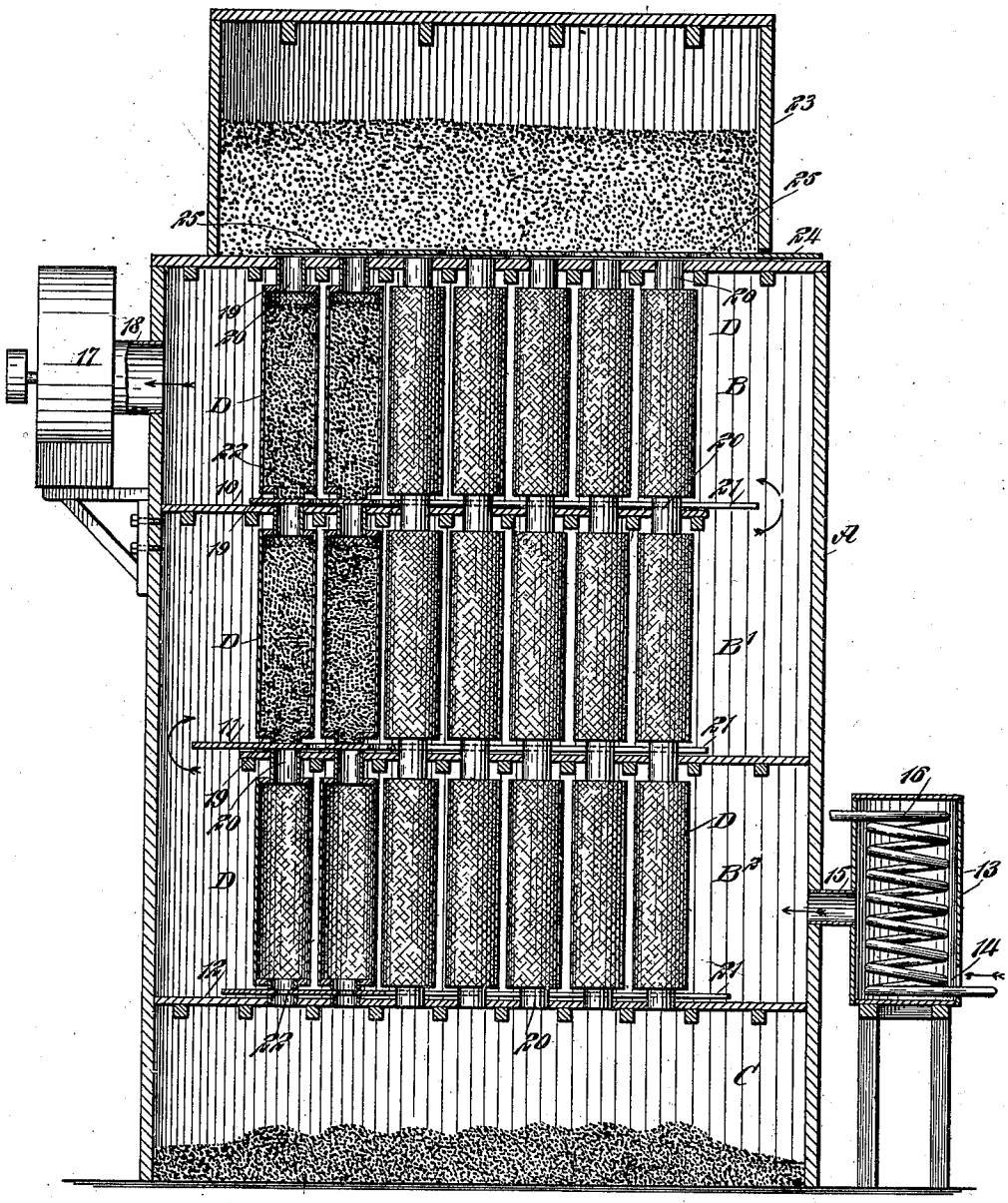
No. 660,900. Patented Oct. 30, 1900.

L. W. HASKELL.

RICE DRIER.

(Application filed June 7, 1900.)

(No Model.)



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LOUIS W. HASKELL, OF SAVANNAH, GEORGIA.

RICE-DRIER.

SPECIFICATION forming part of Letters Patent No. 660,900, dated October 30, 1900.

Application filed June 7, 1900. Serial No. 19,410. (No model.)

To all whom it may concern:

Be it known that I, LOUIS W. HASKELL, a citizen of the United States, and a resident of Savannah, in the county of Chatham and State of Georgia, have invented a new and Improved Means for Hardening and Drying Rice and other Grain, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a simple and effective means for drying grain artificially immediately after the harvest and while it is still green or to dry grain which has been wet or harden soft grain. These means usually consist of a suitable chamber or chambers, in which bags or equivalent vessels for grain are supported in such manner that air may circulate between and around them, devices being provided for connecting corresponding bags in the chambers or for retaining the grain in the bags within the chamber for a certain length of time. Devices are also included for circulating dry heated air within the chambers, directly-applied heat being avoided. Experience demonstrates that drying grain in this manner especially hardens rice, to which these means are particularly applicable, and renders it especially fit for the peculiar milling operations to which it is subjected.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawing, forming a part of this specification, in which is represented a vertical section through the improved device, sundry of the bags employed to hold the grain being in side elevation.

A represents a receptacle of any desired character and of any suitable size. This receptacle is shown divided into four chambers—three drying-chambers B, B′, and B^2 and a lower chamber C, adapted to receive the dried grain. This division of the receptacle is effected through the medium of horizontal partitions or floors 10, 11, and 12. These partitions or floors may extend from side to side of the receptacle; but usually the bottom partition 12 only is of such size and the upper partition 10 is made to engage with the left-hand side of the receptacle, stopping short of the right-hand side, while the intermediate partition or floor 14 stops short of the left-hand side of the receptacle and extends to the right-hand side of the same. A heater is located at the exterior lower portion of the receptacle. This heater usually consists of a cylinder or a tank 13, to which air is admitted at its bottom portion through an opening 14, and this tank is also usually connected about centrally between its ends with the interior of the lower drying-chamber B^2, the connection being effected through the medium of a suitable tube 15.

At the upper portion of the opposite side of the receptacle a Sturtevant fan or other form of suction-fan 17 is located. This fan is suitably driven, and its casing has a tubular connection 18 with the interior of the upper drying-chamber B. When this fan is in operation, air is drawn from the tank 13 and is made to circulate through the chambers B, B′, and B^2, finding an exit at the fan, and the air which passes through the tank 13 is heated by means of a coil 16, located in the said tank and connected with any source of heat supply and discharge.

Series of bags D or other receptacles are located in the chambers B, B′, and B^2. These bags are shown circular in cross-section, although they may be of any desired shape, and they consist of a body made of reticulated or perforated material, each body having a rigid head 19 at each end, and each head is provided with a tube 20, one of the tubes being an inlet and the other an outlet tube. Usually the corresponding bags in all of the drying-chambers are connected, so that when a series of chambers is used the bags are arranged in transverse and vertical series. The inlet-tubes 20 for the bags in the upper chamber B extend through the top of the receptacle A, and the outlet-pipes at the lower ends of these bags in the upper chamber connect with the inlet-tubes of corresponding bags in the next lower drying-chamber, the connected tubes passing through the floor or partition 10, and the lower tubes belonging to the bags D in the drying-chamber B′ extend through the floor or partition 11 and connect with the upper tubes of the bags

located in the lowest drying-chamber B^2, while the lower or outlet tubes of these series of bags extend through the lower partition or floor 12.

Cut-offs 21 are used in connection with each transverse series of bags in each drying-chamber, the said cut-offs being located above the floors or partitions 10, 11, and 12, and these cut-offs may be in the nature of slides, as illustrated, each slide having openings therein, designated as 22, adapted to register with the space in an outlet-tube 20 of the bags D. Thus it will be observed that material may be retained in any one or more series of bags in any one or more drying-chambers, or the material may be delivered from the bags in one drying-chamber to the bags in the next chamber, or the material in the bags of all of the chambers may be simultaneously discharged therefrom into the receiving-chamber C when the grain treated has been properly dried. A hopper or other receptacle 23 for the green or wet grain is placed on top of the main receptacle A, and a slide 24 is located in the bottom of this auxiliary receptacle or hopper having openings 25, adapted to register with the inlet-tubes 20 of the upper series of bags D. This slide is operated from the exterior of the device, and through its means the supply of green material to the bags may be cut off or turned on at any time.

I desire it to be understood that the current of air may be made to move horizontally in a chamber which is low and long or can be made to move vertically in a chamber which is high in proportion to its other dimensions and that a single drying-chamber may be used or a number of connected drying-chambers may be employed, placed one above the other, and the draft may be made to return several times, if necessary, so as to take longer to pass through the grain and to serve the purposes of uniform drying. The temperature of the air must be maintained at such a degree that it will not impair the delicate starchy structure of the rice or tend to partially cook it. It will be observed that through the means I employ for drying and hardening grain a great volume of air can be used at a comparatively low temperature.

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

1. The improved grain drying and hardening apparatus, consisting of a chamber having an air-inlet at one side and an air-outlet on the other side, at diagonally-opposite points, a series of transverse apertured partitions, the intermediate ones having an air-passage at their alternate ends, apertured slides arranged on all the partitions, several series of independent reticulated grain-receptacles having rigid tubular heads that suspend them from all the partitions save the lowest, and rigid tubular discharge ends adjacent to the slides, said receptacles being separated to allow free circulation of heated air around them on all sides, as shown and described.

2. In a machine for hardening or drying rice and other grain, a receptacle divided into chambers, the various chambers having outlets and inlets, a hopper for the supply of material and located at the inlets in the upper portion of the machine, bags having inlets and outlets suspended between the inlets and outlets of the various chambers, in connection with the inlets and outlets of said chambers, corresponding bags in the several chambers being thus connected and the divisions of the chambers being so formed that air may circulate through all of the chambers from the bottom chamber to the upper chamber, cut-offs for the inlets and outlets of the bags, an air-heater located outside of the receptacle and connected with the lowermost chamber thereof, and an exhaust-fan located at the upper chamber of the receptacle at an opposite side to that at which the air-heater is placed, as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS W. HASKELL.

Witnesses:
L. C. WILKINS,
J. W. B. COHENSTEIN.