(No Model.)

J. P. McCALLISTER.

GRAIN HEATER OR STEAMER.

No. 527,442. Patented Oct. 16, 1894.

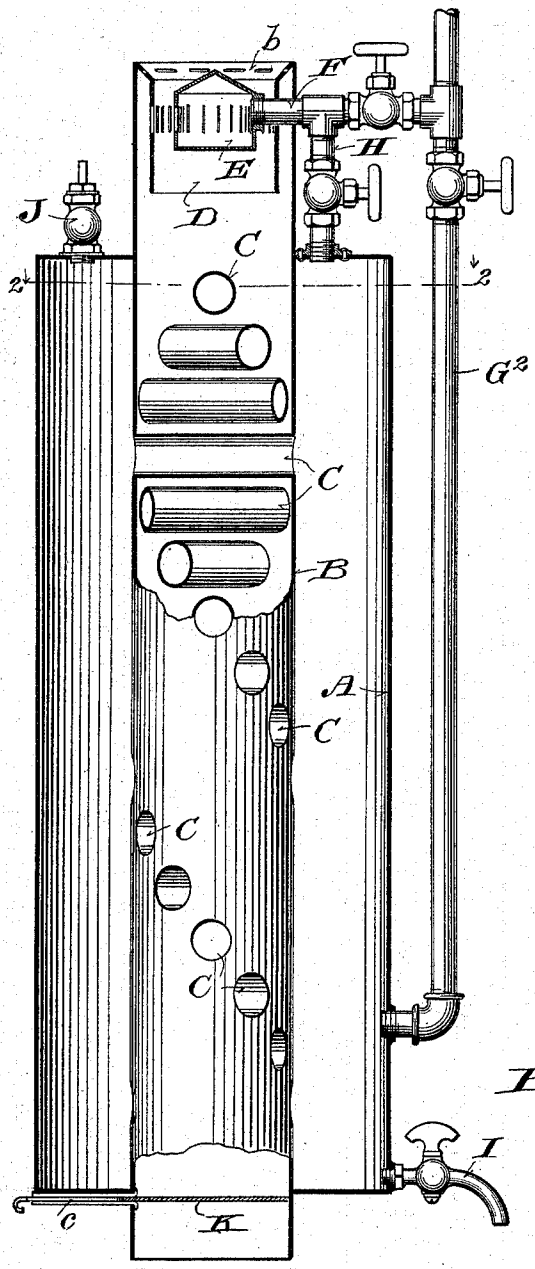

Fig. 1.

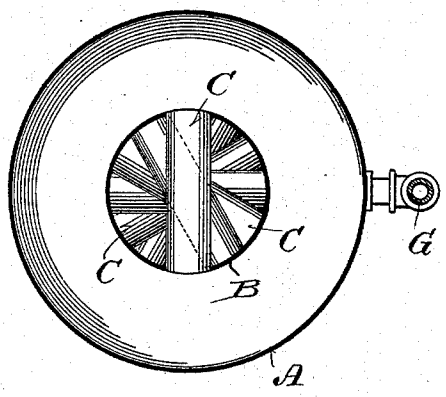

Fig. 2.

Witnesses:
Geo W Young.
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UNITED STATES PATENT OFFICE.

JOHN P. McCALLISTER, OF AVOCA, WISCONSIN.

GRAIN HEATER OR STEAMER.

SPECIFICATION forming part of Letters Patent No. 527,442, dated October 16, 1894.

Application filed March 26, 1894. Serial No. 505,085. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. MCCALLISTER, a citizen of the United States, and a resident of Avoca, in the county of Iowa, and in the State of Wisconsin, have invented certain new and useful Improvements in Grain Heaters or Steamers; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide a simple, economical apparatus for thoroughly heating and steaming grain, either operation or both being performed at the will of the operator; and it consists in certain peculiarities of construction and combination of parts hereinafter specified with reference to the accompanying drawings and subsequently claimed.

In the drawings: Figure 1 represents a sectional elevation of a grain-steamer and heater constructed according to my invention, and Fig. 2, a horizontal section of the same taken on line 2—2 of the preceding figure.

Referring by letter to the drawings A represents a preferably cylindrical casing made from any suitable material and closed at both ends.

Extending through both ends of the casing central of the same is a grain-chute B that is also preferably of cylindrical form, and that portion of the chute within the casing is provided with a series of open end transverse tubes C arranged in successive order at suitable intervals in such a manner that each one thereof is out of line with its predecessor and consequently exposed below the same.

A shell D of less diameter than the chute depends into the upper end of the same and has a flaring upper extremity *b* joined to said chute.

By the difference in diameter of the chute and shell, a space is formed between the two and said shell has its body and flared extremity provided with a series of apertures for the distribution of steam.

A hollow deflector E, in the form of a box having a conical top, is arranged centrally of the shell D and has its body portion provided with a series of suitable apertures.

A valve-controlled branch F of a main steam-pipe G extends through the chute B and shell D into the box E, and depending from said branch into the casing A is another valve-controlled branch H of the steam system.

The main steam-pipe is provided with a cut-off valve below its union with the branch F and the lower end of said pipe discharges into the lower portion of the casing, the latter being provided with a drain cock I for water of condensation and an exhaust opening preferably controlled by an automatic relief valve J of any suitable construction, this valve being herein shown as connected to the top of said casing. A cut-off plate K arranged in guides *c* on the bottom of the casing A is employed to control the mouth of the grain-chute. In practice grain is run through the chute, and to simply heat said grain, the branches of the main pipe G are cut-off and steam admitted to the casing to find its way through the tubes C and escape through the exhaust opening above specified.

Owing to the peculiar disposition of the tubes C in the chute, the kernels of the grain are constantly changed as to position in their descent, whereby an even distribution thereof is effected in order to obtain a corresponding heating of the same by contact with said tubes.

When it is only desirable to steam the grain, the main steam pipe is cut-off below its union with the branch F, and the latter being opened the other branch H is also cut-off. Consequently all of the steam finds its way into the hollow deflector E and is distributed through the same and the apertured shell D in various directions in the path of said grain, the latter being deflected in a thin sheet, and prevented from clogging by the peculiarly disposed transverse devices in the chute.

To heat and steam the grain at the same time, the branch F of the main steam-pipe is cut-off and this main-pipe, as well as the branch H opened. Consequently the steam entering the casing heats the tubes C and escaping through the latter branch into the hollow deflector is distributed through this deflector and the apertured shell D to mingle with said grain, it being understood that the valve controlling the former branch is intermediate of the other branch and said main-pipe.

The apparatus herein set forth is especially

designed for use in mills, as a means for heating, steaming or both of wheat or other grain from which flour is to be made, the heating insuring a fine reduction of said grain and the steaming serving to toughen the kernel-hulls or bran so that the latter may be readily separated from the flour.

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

A grain-heater and steamer comprising a steamtight undivided casing having an exhaust opening, a chute extending through the casing, a series of open end transverse tubes successively arranged in the chute to have each one thereof out of line with its predecessor, an apertured shell of less diameter than said chute depending therein and having a flared and apertured upper extremity joined thereto, a hollow apertured deflector within the shell, a valve-controlled steam-pipe leading into the casing, a valve-controlled branch leading from said pipe into the deflector, and another valve-controlled branch connecting the one aforesaid with said casing, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Avoca, in the county of Iowa and State of Wisconsin, in the presence of two witnesses.

JOHN P. McCALLISTER.

Witnesses:

G. H. McCALLISTER,

S. W. SWINEHART.