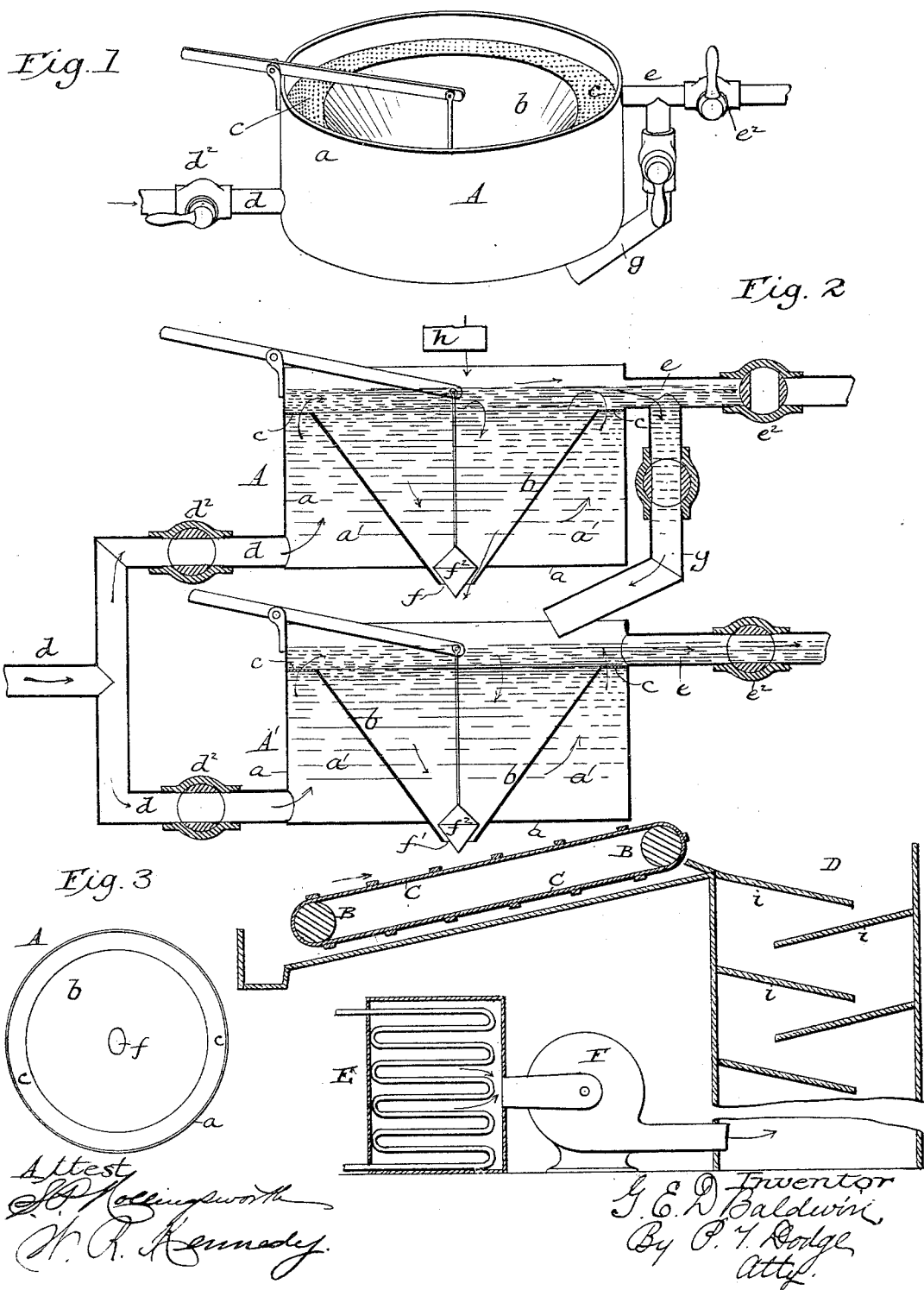


(No Model.)

G. E. D. BALDWIN.
WHEAT SEPARATOR.

No. 419,238.

Patented Jan. 14, 1890.



UNITED STATES PATENT OFFICE.

GEORGE E. D. BALDWIN, OF BALTIMORE, MARYLAND, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF TWO-THIRDS TO ARTHUR B. CROPLEY AND AUSTIN HERR, OF WASHINGTON, DISTRICT OF COLUMBIA, AND CHARLES W. BALDWIN, OF LAUREL, MARYLAND.

WHEAT-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 419,238, dated January 14, 1890.

Application filed February 4, 1888. Serial No. 263,022. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. D. BALDWIN, of Baltimore, in the State of Maryland, have invented certain Improvements in Wheat-Separators, of which the following is a specification.

The aim of my invention is to speedily and wholly separate the sound and heavy wheat from garlic, light wheat, and other like impurities, and this by a uniform and continuous operation, without the employment of moving or power-driven devices, and without subjecting the wheat to a prolonged soaking or scouring action.

To this end my apparatus embraces as its essential elements a hopper having an overflow-opening near the top and a constantly-open discharge-throat at the bottom, combined with means for delivering into the hopper a constant stream of water sufficient to maintain an overflow at the top in addition to the constant discharge at the bottom and a conductor by which the grain is delivered constantly into the hopper from above, so that the heavy grain will pass down rapidly through the water and escape therewith in a continuous stream at the bottom, where it is mechanically separated from the water, while the garlic and light impurities escape with the overflow at the top of the hopper.

I am aware that grain has been delivered into vessels containing water, the light materials escaping through an overflow, while the heavy grain precipitated to the bottom of the vessel was mechanically removed therefrom. To such constructions I lay no claim.

Figure 1 is a perspective view of the separator proper. Fig. 2 is a vertical central section through the complete apparatus, including two of the separators, a conveyor, and a drying mechanism. Fig. 3 is a plan view illustrating the form of the wheat-discharge opening.

Referring to the drawings, A and A' represent the separator, which consists of a cylindrical water-tight vessel *a*, containing a central conical hopper *b*. At its lower end the hopper is joined closely to and opens

through the bottom of the vessel *a* for the purpose of discharging the water and wheat. The bottom opening of the hopper remains constantly open during the operation of the apparatus. At its upper end the hopper is of a diameter somewhat less than that of the vessel *a* and is joined to the latter by an annular perforated plate or screen *c*. A supply-pipe *d* delivers water into the annular space *a'* surrounding the hopper. From this space the water flows upward through the perforated screen around the outside of the hopper, which is constantly filled therewith. An overflow-pipe *e* is connected with one side of the vessel *a* above the hopper, and serves for the discharge of a portion of the water bearing the garlic and other light impurities on its surface, the remaining portion of the water escaping with the wheat through the central orifice at the bottom of the hopper. The second separator *a'* is arranged immediately below the first and in position to receive the wheat from its outlet *f*. It is, like the upper separator, provided with a water-inlet pipe *d'* and with the water-overflow pipe *e'*. A returning-pipe *g* is connected to the under side of the overflow-pipe of the upper separator and leads thence downward to the hopper of the lower separator for the purpose of delivering to the latter the wheat which may chance to be carried over by the water-current in which the pipe ends.

A feed-spout *h* is arranged in any suitable position above the upper separator to deliver the wheat into its hopper. This spout should be so arranged and the grain should descend from such height that it will enter the separator with considerable velocity and thus be certain to sink beneath the surface of the water.

The water-supply pipes are each provided with a regulating-valve *d*², the overflow-pipes provided with regulating-valves *e*², and the discharge openings or throats of the hoppers provided with regulating-valves *f*². It is to be understood that these valves are to be used during the operation of the apparatus solely as a means of regulating the size of the

outlet openings or throats, and not as a means of closing said openings.

Below the outlet f' of the lower separator I arrange on suitable supporting-rolls B, or otherwise, an endless traveling apron C, driven from any suitable motor. This apron, which may be arranged in an inclined or a horizontal position, as preferred, serves to convey the grain to the upper end of a vertical drying trunk or chamber D, containing a series of reversely-inclined shelves i , over which the grain descends in a zigzag course.

A steam-coil E or other equivalent apparatus serves to heat the air and insure the rapid drying of the grain as it descends. If desired, a blower F of any suitable form may be arranged to maintain a blast of air in an upward direction through the trunk. In place of this drying apparatus, which is not separately claimed, a drying apparatus of any ordinary or approved form may be employed.

I prefer to construct the conveyer-apron C of wire-gauze or other pervious material, that the water may the more readily escape from the grain; but if placed in an inclined position, so that the water will fall from its lower end or edge, it may be made of impervious material.

In place of the endless apron, a conveyer of any other ordinary type which will permit the escape of the water from the grain may be employed—such, for example, as the familiar conveyer-screw arranged in a trough.

In operating my apparatus water is constantly delivered through the conductor-pipes d' into the chambers a' of the separator in such quantity that its surface will at all times stand slightly above the upper ends of the hoppers b . The grain, being supplied in an uninterrupted stream through the spout h , descends forcibly into the water. The wheat-berries, by reason of their gravity, sink through the water and escape through the constantly-open throat f , together with a portion of the water, while the garlic floats upon the surface of and is carried with the overflowing water through the pipe E. The grain discharged from the upper separator falls into the second or lower separator, and, being treated as before, is finally delivered upon the conveyer-apron C, whence it is delivered into the drier, from which it emerges thoroughly dried and in proper condition to be immediately used or to be stored without danger of its heating. Those grains of wheat, if any, which may pass into the overflow-pipe e will enter the return-pipe g and be delivered thereby into the lower separator. It is to be understood that the lower separator may be omitted and the grain delivered directly from the first separator to the conveyer. The second separator is necessary only in the treatment of wheat in which light berries constitute a considerable proportion of the grain.

While my apparatus is intended primarily for the removal of garlic, it also serves inci-

dentally to remove much of the dirt adhering to the berries and also to carry off the chaff and other light impurities.

In practice I prefer to construct the orifice f of an elliptical form in its horizontal section, as shown in Fig. 3; but this is not a necessary feature of my construction.

It will be perceived that the essence of my invention resides in the combination of a receiving-vessel having top and bottom outlets for the delivery of the garlic and the wheat, respectively, with means for constantly supplying this vessel with water, and with means for constantly delivering the wheat into the water; and it will be manifest to the skilled mechanic that these elements may be variously modified as to the form and arrangement without departing from the limits of the invention.

It will be observed that in my apparatus the hopper has a permanently-open outlet at the bottom, that it receives a constant supply of water suitably graduated with reference to the supply of grain and the size of the discharge-openings, and that the heavy grain is constantly supplied and flows in an unceasing stream with the water through the bottom opening, after which it is arrested and the water permitted to escape. It will be perceived that in this manner I am enabled to carry on a continuous and uniform separation without the employment of elevators, agitators, or other moving parts to handle the grain and without subjecting the grain to either prolonged soaking or rubbing, both of which are very objectionable.

In my apparatus the escaping heavy grain assists in choking or obstructing the outlet, so as to retard the flow of water, and thus I am enabled to employ a large outlet and secure a free delivery of the grain without using an excessive quantity of water.

What I claim as my invention is—

1. In an apparatus for separating wheat from garlic, &c., a hopper having an overflow near the top and a constantly-open outlet of suitably-restricted size at the bottom, a pipe through which water is constantly delivered to the hopper to maintain an overflow, and a spout through which grain is constantly delivered to the hopper from above, whereby the heavy grain and water are caused to flow through the hopper in an unceasing stream and the light matters separated and floated away at the top.

2. In a wheat and garlic separator, an open hopper having an overflow near the top for the escape of garlic and water and a constantly-open bottom outlet for the heavy grain and water, a pipe through which water is constantly supplied to maintain the bottom discharge and the overflow, means for constantly delivering grain to the hopper, and a receiver beneath the bottom opening to retain the grain and allow the water to flow therefrom.

3. The vessel A, provided with a water-

supply pipe *d*, the hopper seated within the vessel and opening through its bottom, the perforated plate encircling the upper edge of the hopper that the water may flow through
5 the outer vessel into the top of the hopper, the overflow above said plate, and the grain-spout delivering into the hopper from above, said elements combined substantially as described and shown, whereby the heavy grain
10 and water may be delivered in a continuous stream downward through the hopper, while the garlic and other light impurities are floated away at the top through the overflow, subject to the retarding effect of the water
15 flowing inward over the top of the hopper.

4. The hopper having the bottom outlet and top overflow, in combination with the water-supply to the top of the hopper, the wheat-spout delivering to the top of the hopper, the conveyer arranged below the bottom outlet 20 to receive the water and wheat and effect their separation, and the drier to which the conveyer delivers.

In testimony whereof I hereunto set my hand, this 28th day of January, 1888, in the 25 presence of two attesting witnesses.

GEORGE E. D. BALDWIN.

Witnesses:

JNO. T. MADDOX,
ALEX. SLAYSMAN.