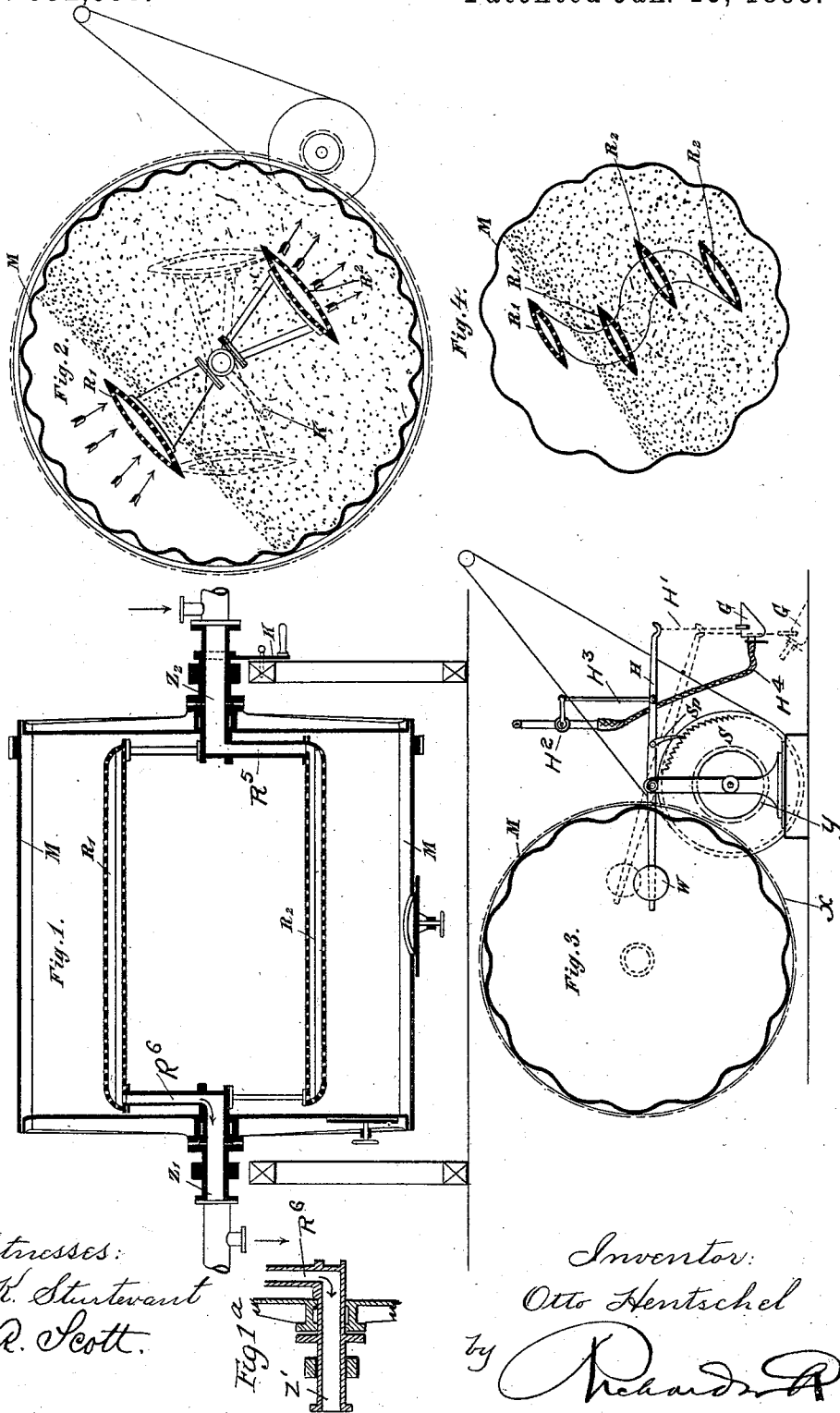


(No Model.)

O. HENTSCHEL.  
MALTING DRUM.

No. 532,553.

Patented Jan. 15, 1895.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

OTTO HENTSCHEL, OF GRIMMA, GERMANY.

## MALTING-DRUM.

SPECIFICATION forming part of Letters Patent No. 532,553, dated January 15, 1895.

Application filed May 16, 1894. Serial No. 511,459. (No model.)

*To all whom it may concern:*

Be it known that I, OTTO HENTSCHEL, manufacturing engineer, residing at Grimma, in the Kingdom of Saxony and German Empire, have invented a new and useful Improved Apparatus for Effecting the Washing, Swelling, and Germination of Grain, of which the following is a specification, reference being had therein to the accompanying drawings.

The subject of this invention is an improved apparatus for effecting the washing, swelling and germination of grain and consists essentially of a drum of corrugated sheet metal and an adjustable agitating apparatus, through which circulates water, steam or air according to the object to be attained.

In order that my invention may be the better understood I now proceed to describe the same, reference being had to the accompanying drawings and to the letters marked thereon.

Figure 1 is a vertical section through the axis of the apparatus. Fig. 1<sup>a</sup> is a detail view of the outlet tube and a part of the drum. Fig. 2, is a transverse section of the drum, and the hollow tubes, the latter being shown in full lines in one position and in dotted lines in another position. Fig. 3, is a transverse section of the drum showing means for driving the same, the dotted lines representing the driving means in another position. Fig. 4, is a view similar to Fig. 2, showing a modified arrangement of hollow tubes.

The essential part of this invention consists in a drum M of corrugated sheet metal, carried in a hollow axle and adapted to be slowly rotated by suitable gearing. This drum M is designed for the reception of the material to be washed and is provided with suitable devices for discharging.

An agitating apparatus R' R<sup>2</sup> is provided within this drum, consisting of two tubes perforated like sieves and which are of fish belled shape. These tubes are placed parallel to the axis of the apparatus and are disposed diametrically, in such a manner that one tube is nearly at the lowest part of the grain in the drum while the other is above the surface of the grain and nearly parallel with it. Each of these hollow tubes R' R<sup>2</sup> is connected to hol-

low bearing pins Z' Z<sup>2</sup> respectively, situated free to rotate in the ends of the drum, so that water may be forced through the lower agitating tube R<sup>2</sup>, by way of the inlet pipe R<sup>5</sup> between the hollow bearing Z<sup>2</sup> and the tube R<sup>2</sup> as required and discharged by suction through the upper tube or vice versa by way of the outlet pipe R<sup>6</sup> between the tube R' and the hollow bearing Z'. During the process of malting or germination, air is introduced and exhausted in a similar manner. The drum M is usually rotated by suitable means while the agitating tubes remain at rest, so that a relative motion is produced, but the agitating tubes may receive a jiggling or rotary motion by suitable means.

If the agitating tubes are to remain at rest during the operation, they may be fixed in position by means of the crank K. Shown in Figs. 1 and 2. This position is of particular importance while the drum is filled or emptied.

The advantage of the corrugated shell of the drum is that the grain cannot slide along the inner walls of the drum. This effect is further assisted by the agitating tubes R' and R<sup>2</sup>.

Motion is as a rule communicated by ordinary transmitting devices, but it may conveniently be obtained by the apparatus shown in Fig. 3, which is automatic.

A double rocking lever H carries at one end a shovel like vessel or pan G by means of the chain H', while the other end carries a counterweight W. If the vessel G is filled with water, the lever H will be lowered toward this side, that is to say so far until the vessel strikes the ground and the water is allowed to run out. Then the counterweight W predominates again and raises the empty vessel. During this movement a tap or valve H<sup>2</sup> connected with the lever by a rod H<sup>3</sup> is opened which allows water to run into the vessel through a flexible connection H<sup>4</sup> extending from the tap or valve to the vessel G and the same operation is repeated. To that part of the lever H which carries the vessel G is attached a ratchet pawl S p acting on a ratchet wheel S. The rotation of the ratchet wheel by the pawl is transmitted to the drum by a suitable cog-wheel or frictional gearing X,—Y.

The waste water discharged from the drum may be used for filling the vessel G.

It will thus be noticed that the two tubes R' and R<sup>2</sup> are both provided with sharp cutting  
5 edges to pass through the mass of grain.

What I claim, and desire to secure by Letters Patent of the United States, is—

In combination with the malting drum, the two tubes R', R<sup>2</sup> extending longitudinally  
10 thereof, the hollow bearing tubes Z' Z<sup>2</sup> for said tubes R' R<sup>2</sup> extending through the bearings of the drum, the inlet pipe R<sup>5</sup> between the tube R<sup>2</sup> and the hollow bearing tube Z<sup>2</sup>

and the outlet pipe R<sup>6</sup> between the other tube R' and the other bearing tube Z', said drum  
15 being capable of movement independent of the tubes, and said tubes having no communication with each other except through the interior of the drum, substantially as described.  
20

In witness whereof I have hereunto set my hand in presence of two witnesses.

OTTO HENTSCHEL.

Witnesses:

RUDOLPH FRICKE,  
LEE BUNDICK.