

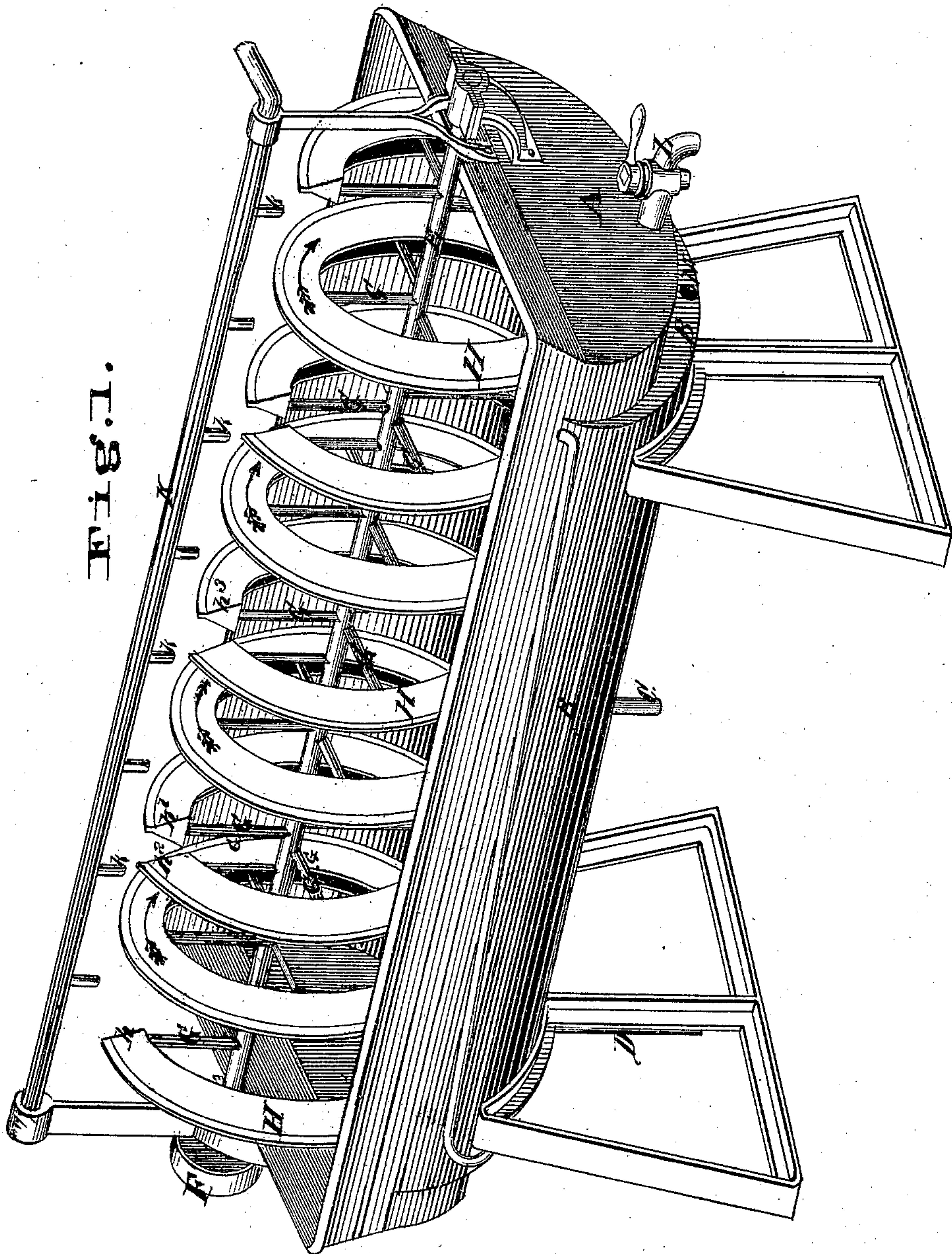
2 Sheets--Sheet 1.

J. RING.

Improvement in Apparatus for Cooling Lard.

No. 130,534.

Patented Aug. 13, 1872.



ATTEST.

*Geo. L. Ewin*  
*Walter Allen*

INVENTOR,

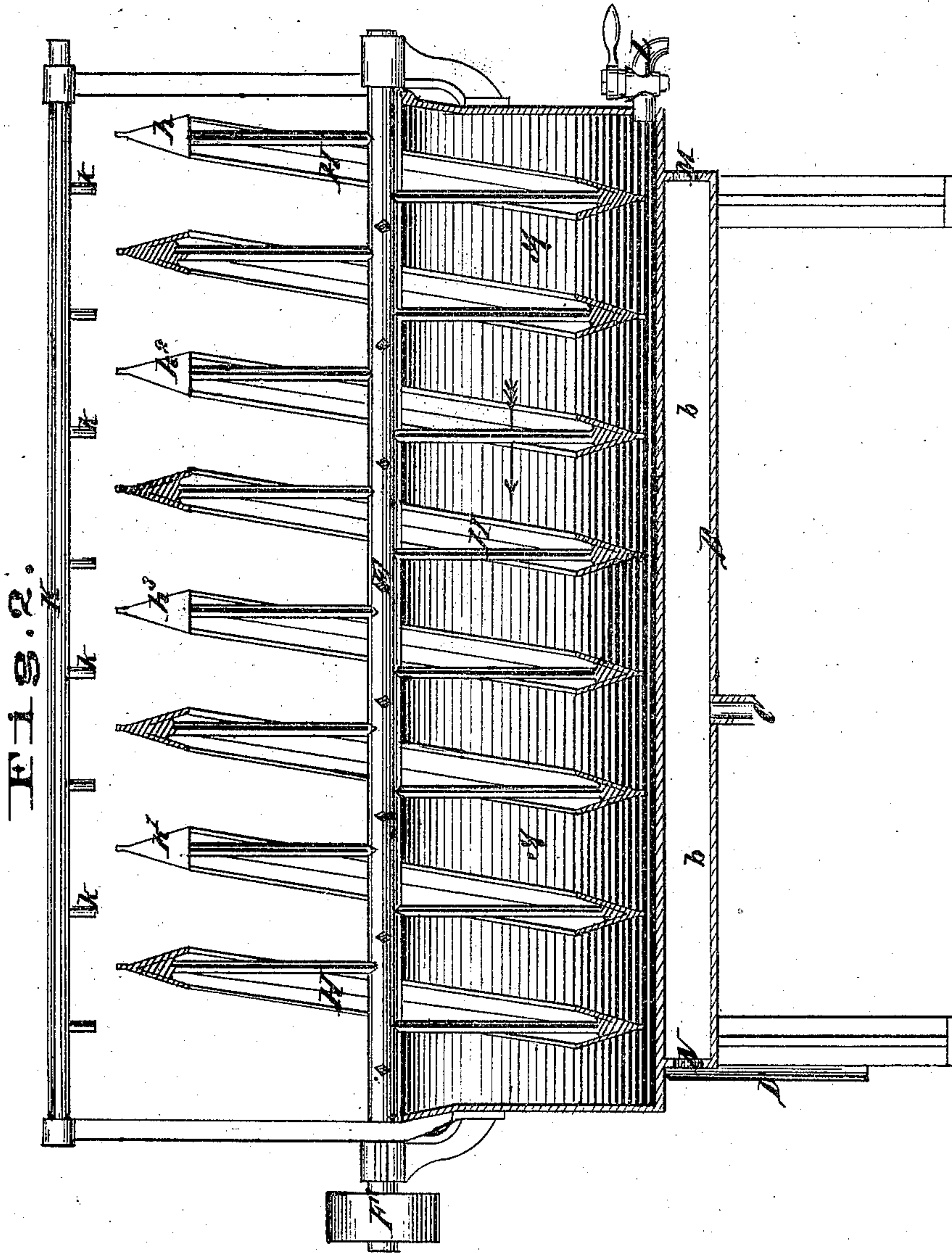
*John Ring*  
*By Knight Bros Atty.*

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# UNITED STATES PATENT OFFICE.

JOHN RING, OF ST. LOUIS, MISSOURI.

## IMPROVEMENT IN APPARATUS FOR COOLING LARD.

Specification forming part of Letters Patent No. 130,534, dated August 13, 1872.

Specification describing a certain Improved Lard-Cooler, invented by JOHN RING, of the city and county of St. Louis and State of Missouri.

My invention relates to improvements on that class of lard-coolers in which a rotary spiral or helix causes the circulation of the lard and raises a portion of the same, which drips from the helix and is cooled passing through the air. The first part of my improvement consists in making the helix V-formed in transverse section, so as to form, with the spokes, a number of cups or troughs, in which the lard is raised, and as the cups or troughs emerge from the body of the lard the lard contained in them runs out on the surfaces of the helix, and then as that part of the helix is raised to its upper position the lard runs from the inner edges in two thin sheets. The second part of my invention consists in dividing the spiral stirrer or helix into a number of sections or helices, and breaking the uniformity of the spiral by placing the helices nearer together (or more distant) upon the shaft, so that the currents of the lard from end to end of the containing-trough are broken and eddies or counter-currents formed, by which the lard is more thoroughly mixed and the cooling capacity of the apparatus increased, as is daily demonstrated by two machines running side by side, and of similar dimensions, but one having the continuous and the other the sectional helix. The third part of my invention consists in placing above the apparatus a row of air-jets, by which streams of cold air are ejected on the dripping lard.

In the drawing, Figure 1 is a perspective view of my cooler. Fig. 2 is a longitudinal section of the same.

A is a semi-cylindrical trough, which may be twelve feet long, more or less. B is the outer case or jacket of the water casing or chamber *b*, through which cold water is passed to cool the bottom of the trough A. C is the water-supply pipe, and D the water-discharge pipe. The pipe C enters at the bottom of the chamber *b*, and the pipe D communicates with the said chamber at two or all four of the upper corners. E is the shaft of the helices, and is turned by a belt on pulley F, or by other means. The helices H are attached to their shaft by spokes G, and are V-formed in transverse section, as shown most clearly in Fig. 2.

In the cooler patented to E. M. Allen, (assignee of G. B. Williams,) reissue No. 3,183,

the helix consists of a simple metallic ribbon, and this causes very little drip because it carries up but little more lard than will adhere to it at the top of the stroke. In my helix the cups or troughs in the rim between the spokes carry up a considerable quantity of lard, which, as the trough is turned up, runs over the inner edges and down the faces of the rim, and by the time that part is coming into its upper position the lard runs down the flanges and drips or runs off their edges in two thin sheets, presenting broad surfaces to the cooling air.

The shaft E rotates in the direction shown by the arrow, causing the lard to pass along the bottom of the trough A and return over the helices, (between the spokes,) the courses of the currents being shown by arrows. The uniformity of the currents from end to end is broken by forming the helix in sections. *h*<sup>1</sup> *h*<sup>2</sup> are the two ends of the first helix, and *h*<sup>3</sup> the ends of the second helix, the end *h*<sup>2</sup> of the second helix being to the rear of that *h*<sup>1</sup> of the first, so that as the shaft rotates and the lard is carried forward as it escapes from the point *h*<sup>1</sup> it flows somewhat backward toward the end *h*<sup>2</sup>, thereby destroying the uniformity of the currents from end to end and causing local eddies or counter-currents, and mingling the warmer and cooler portions thoroughly. K is a blast-pipe, having a number of air-jets, *k*, through which air is forced down into the trough to cool the lard. In the application of the air-blast to my cooler I have used air cooled by passing it through an ice-box, and the water resulting from the melting of the ice I have passed through the water-chamber *b*. M and N are hand-holes for removal of sediment from the water-chamber *b*. L is a faucet for drawing off the lard.

I claim herein as of my invention—

1. The helix H having a V-formed cross-section, substantially as and for the purpose set forth.
2. The sectional helix or helices arranged so as to form counter-currents, substantially as and for the purpose set forth.
3. In combination with the cooling apparatus A H, the cooling air-jets K *k*, substantially as and for the purpose set forth.

JOHN RING.

Witnesses:

SAML. KNIGHT,  
HENRY G. ISAACS.