E. SCHMIDT.

Stirrers for Malt-Kilns.

No. 138,288. Patented April 29, 1873.

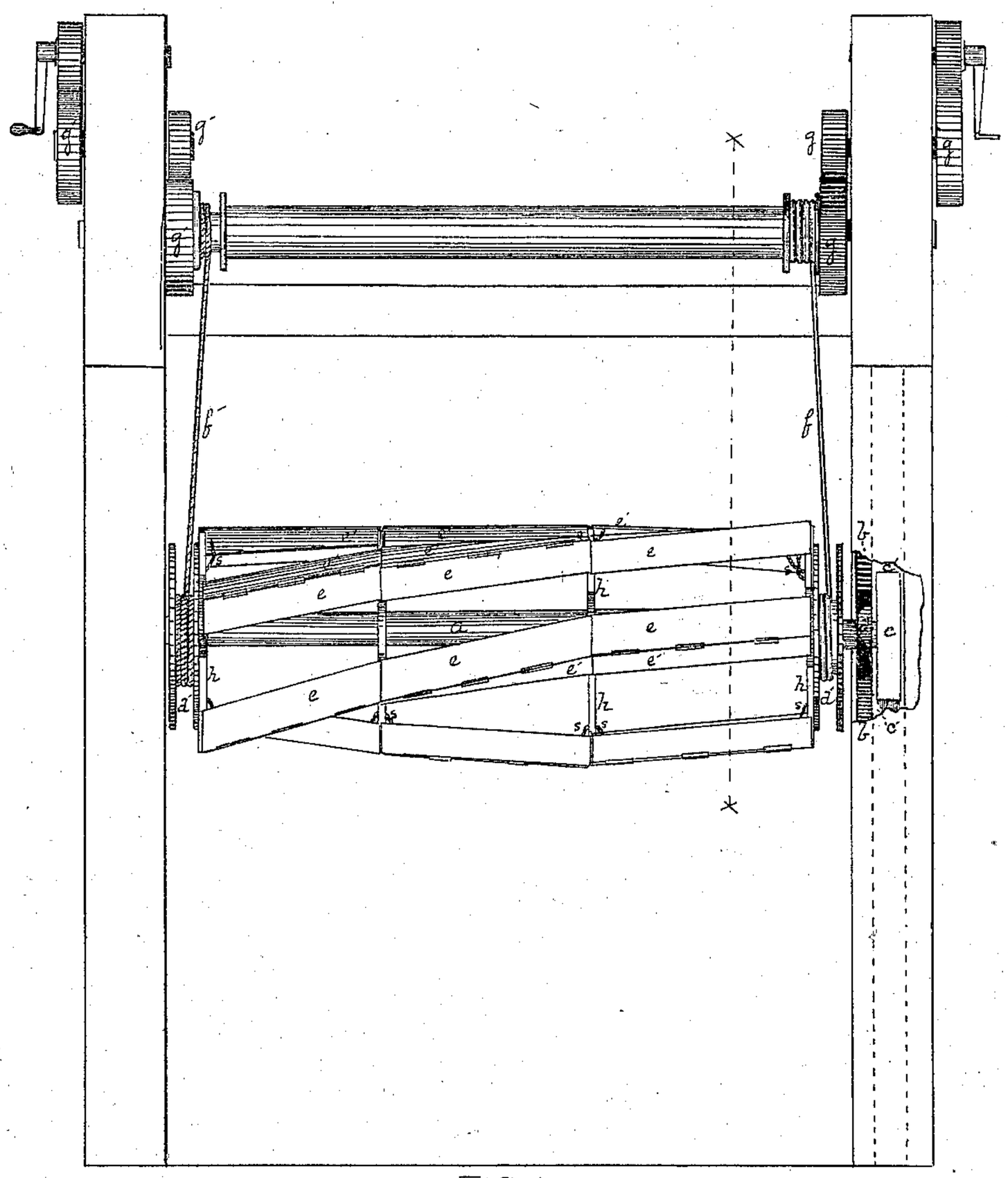

FIG. 1.

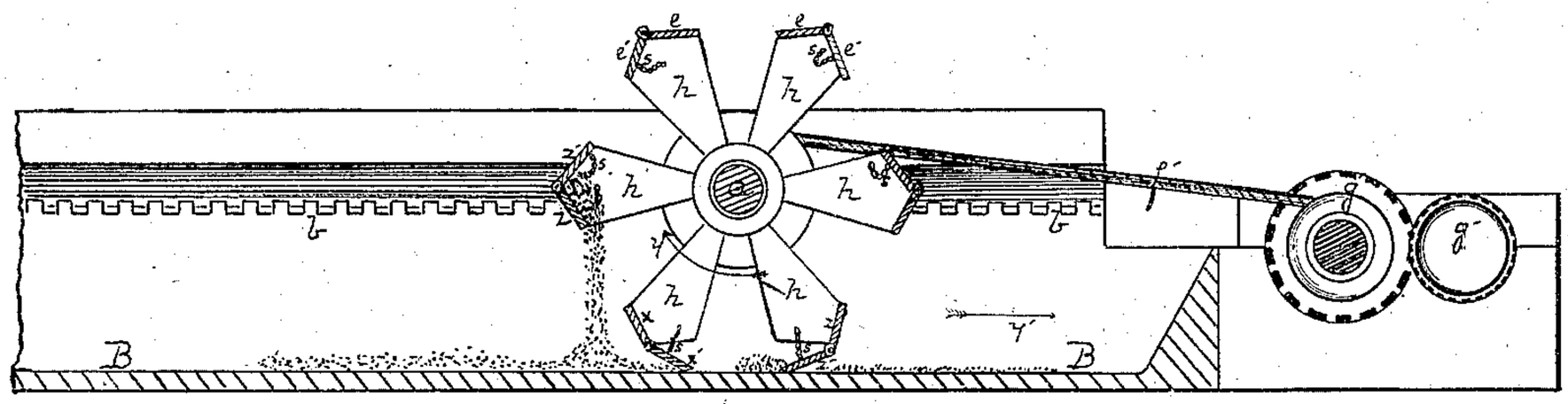

FIG. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

EDWARD SCHMIDT, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN STIRRERS FOR MALT-KILNS.

Specification forming part of Letters Patent No. **138,288**, dated April 29, 1873; application filed September 28, 1872.

To all whom it may concern:

Be it known that I, EDWARD SCHMIDT, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Stirrer for Malt-Kilns; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a plan view, partly in section, of my improvement; and Fig. 2 is a vertical longitudinal section through the same in the line *x x* of Fig. 1.

Like letters of reference, except as noted, indicate like parts in each.

To enable others skilled in the art to make and use my improvement, I will proceed to describe its construction and mode of operation.

The floor of the kiln or drying-room is represented at B. On each side of the kiln, at a suitable distance above the floor, is a toothed rack, *b*. The stirring-wheel is built on a shaft, *a*. The outer ends of this shaft have their bearings each in a slide, *c*, which slides as the wheel moves back and forward, guide it, and hold it with its axial line at right angles to its course. These slides play each in a groove *c'*. On each end of the shaft *a*, just inside the slides *c*, is a pinion, *d*, which meshes into the toothed rack *b* on that side. Inside each pinion is a pulley or band-wheel, *d'*, by means of which and a band or chain, *f f'*, with suitable gear *g g'*, power is applied to cause the rotation of the wheel, and also impart to it a forward and backward motion from one end of the kiln or drying-room to the other and return, and so on continuously. As shown in the drawing, one pulley-band and set of gearing are designed to rotate the wheel and cause it to move forward, and the other to rotate it in the opposite direction and cause it to move back; and for this purpose they must of course operate alternately, one unwinding as the other winds up. But, in connection with this wheel, I do not limit myself to these devices for imparting to it a rotary and reciprocating motion, since various devices well known in the mechanic arts may be substituted therefor. At suitable intervals on the shaft *a* I extend outwardly therefrom a series of arms, *h*. These arms are arranged spirally—that is, each arm of one series is set a little forward or back of the corresponding arm of the next series, but all in the same order. The outer ends of these arms are of suitable form for carrying V-shaped troughs or boxes *e e'*. One half, *e*, of each box is fixed to its arm, and the other half, *e'*, is hinged thereto or to the arms, and its outer or swinging edge is secured by a cord or chain, *s*, of sufficient slack to co-operate in securing the operations to be described. These troughs extend spirally along the wheel, as shown in Fig. 1. The fixed halves *e* of each two contiguous troughs are either adjacent to each other or opposite to each other, as also are the swinging or hinged halves *e'*. This arrangement is illustrated in Fig. 2. In this figure I have marked the troughs of the two lower and left-hand horizontal arm with different letters from those above indicated, the better to explain the operation involved. The wheel is supposed to be rotating in the direction of the curved arrow *y* and advancing in the direction of the straight arrow *y'*. Thus moving, the swinging sides *z'* of the troughs will, as they come down, drop far enough to enter the bed of grain or malt, scoop the same clear of the floor, carry it up and discharge over the back or outer edges of the fixed sides *z* of the troughs. By this operation the body or bed of grain or malt will be completely inverted, and be distributed evenly and loosely over the floor. At the same time the intermediate loose half *x'* will slide over the bed of grain or malt so as not to scrape it out of the way of the loose half *z'*, which comes next into action. With the return and reverse motion of the wheel, the loose half *x'* and the corresponding loose halves of the alternate troughs will scoop up and distribute the grain, as already described, the remaining swinging parts *z'*, &c., sliding over, as above set forth. Instead of the chains *s* weak springs or other suitable device may be employed therefor.

The troughs *e e'*, instead of being spiral, may extend along straight and parallel with the axis, or with any desired curve other than a spiral; or they may be zigzag in the direction of their length; or one part may make any desired angle with the next part; or they may be made in disconnected sections. In this way the entire body of grain or malt is stirred,

scooped up, inverted, and distributed evenly and loosely over the floor each time the wheel traverses the floor from end to end.

The apparatus described is suitable for use in malt-kilns, drying rooms or ovens, and on "growing-floors," and I claim it in all such and similar applications; and in so far as relates to the rotating traversing-wheel, I claim it without regard to the form or construction of stirrers employed on its periphery.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The shaft *a* as a carrier for a stirring-wheel, in combination with rack-pinion and sliding guide at each end, substantially as set forth.

2. A V-shaped stirring-trough, consisting of one fixed side, *e*, and a swinging side, *e'*, the latter having a limited swinging motion, substantially as set forth.

3. The relative arrangements of troughs *e e'*, with the fixed sides of each two contiguous troughs adjacent or opposite, whereby each alternate swinging half will act as a scoop as the wheel goes one way, and the remaining swinging halves will have a like action with the reverse motion of the wheel, substantially as described.

4. A stirring-wheel having a forward-and-back traversing motion along the floor of the kiln or drying-oven, and also a simultaneous rotary motion, and operative in stirring the grain or malt whichever way it moves, substantially as described, without reference to the form of stirrers employed thereon.

In testimony whereof I, the said EDWARD SCHMIDT, have hereunto set my hand.

EDWARD SCHMIDT.

Witnesses:

A. S. NICHOLSON,

G. H. CHRISTY.