

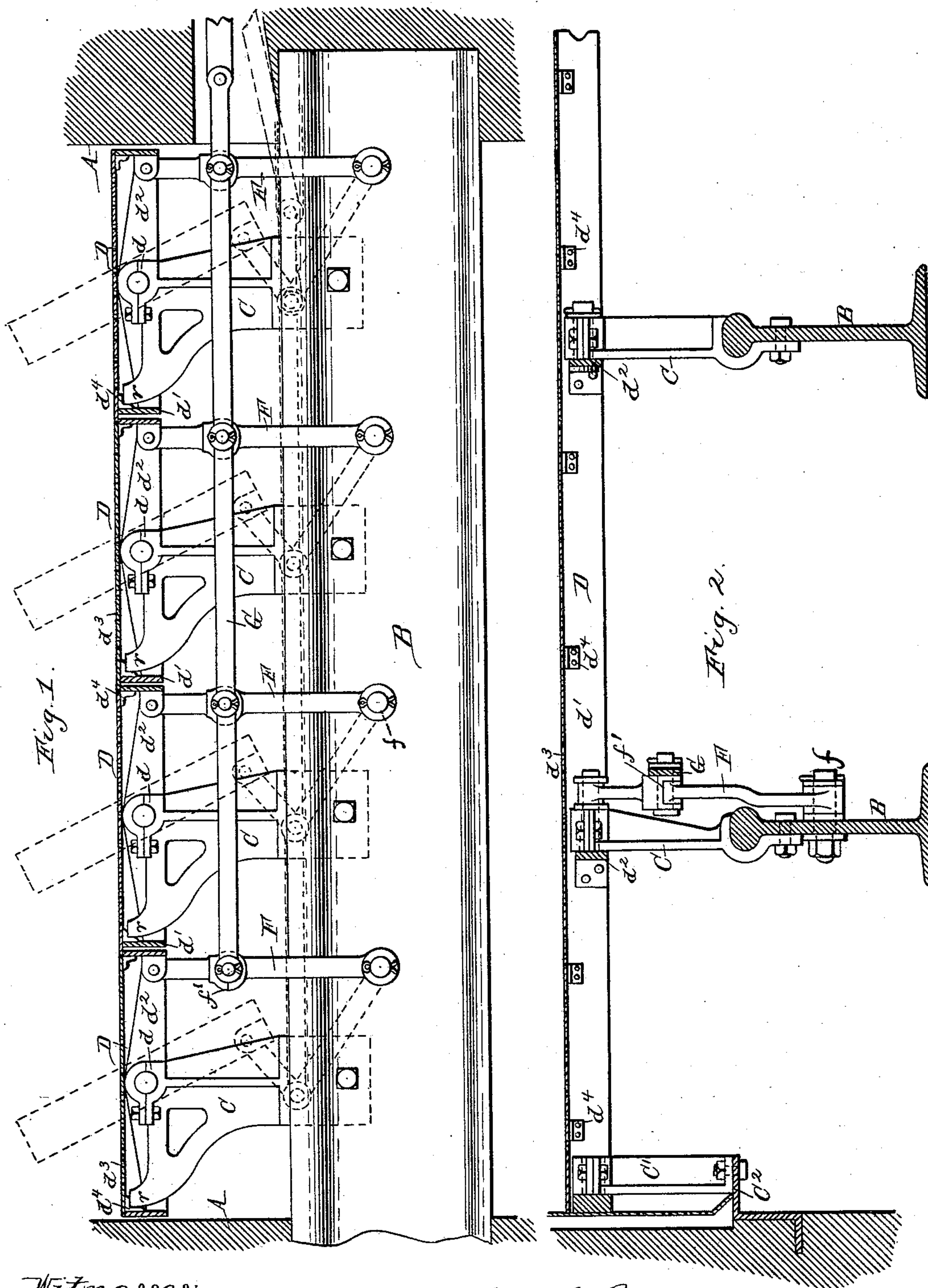
(No Model.)

2 Sheets—Sheet 1.

J. H. E. RATHMANN.
GRAIN DRIER FLOOR.

No. 465,203.

Patented Dec. 15, 1891.



Witnesses:
Emil Neubart.
F. C. Geyer.

J. H. E. Rathmann Inventor.
By Wilhelm Hornum Attorneys.

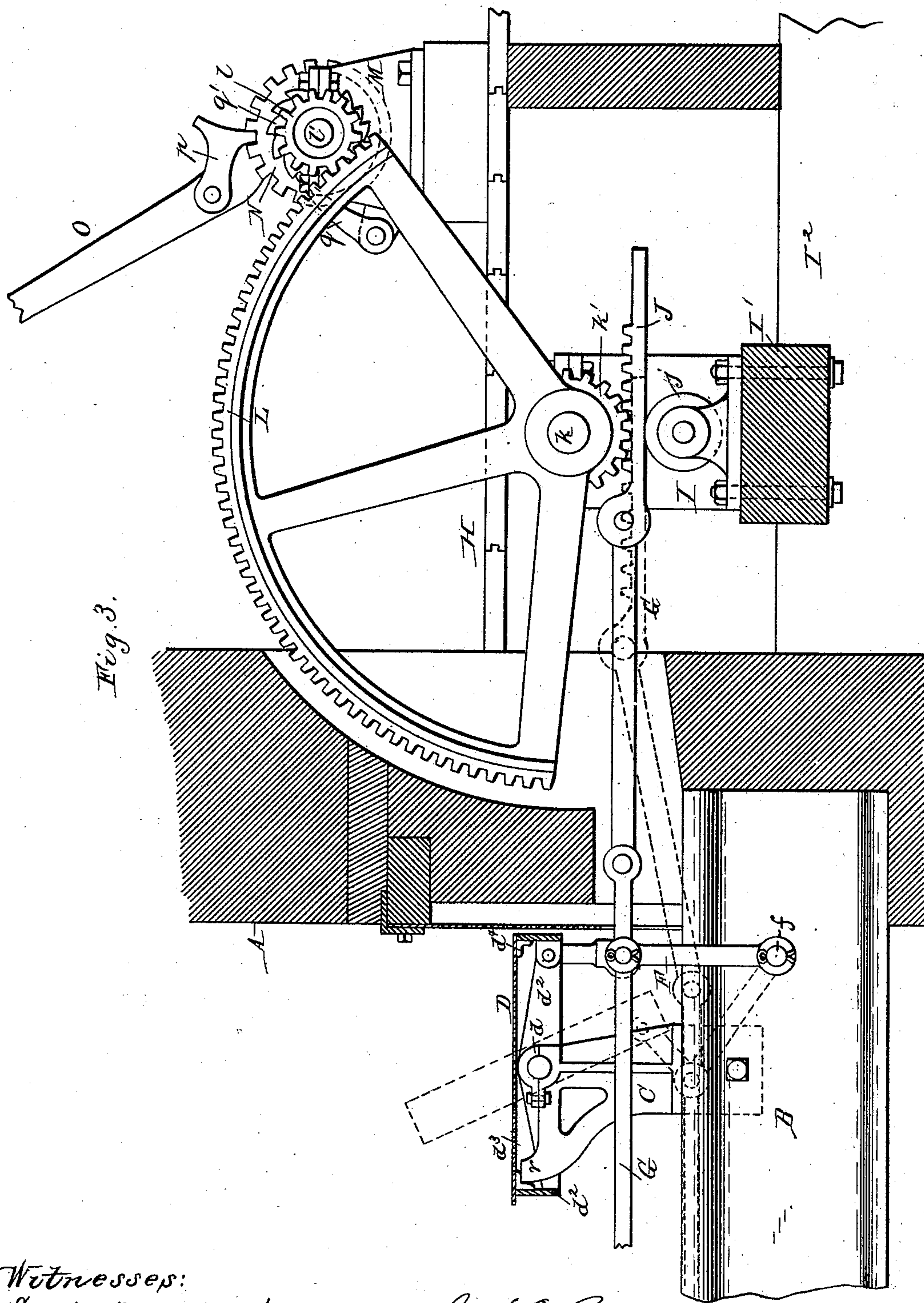
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J. H. E. Rathmann Inventor.
By William W. Bennett Attorneys

UNITED STATES PATENT OFFICE.

JOHANN H. E. RATHMANN, OF BUFFALO, NEW YORK.

GRAIN-DRIER FLOOR.

SPECIFICATION forming part of Letters Patent No. 465,203, dated December 15, 1891.

Application filed May 28, 1891. Serial No. 394,385: (No model.)

To all whom it may concern:

Be it known that I, JOHANN H. E. RATHMANN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Grain-Driers, of which the following is a specification.

This invention relates to the class of malt-kilns or grain-driers in which the floor or floors upon which the malt or grain is spread are composed of perforated dumping-sections and which are provided with means whereby a number of sections are simultaneously tilted to discharge the malt into a hopper or upon a dumping-floor below.

The object of my invention is to provide the pivoted floor-sections with a light and powerful tilting mechanism whereby the sections are easily dumped and which shall firmly hold the sections in their normal position in such manner as to relieve the parts of the tilting mechanism from undue strains.

In the accompanying drawings, consisting of two sheets, Figure 1 is a fragmentary transverse section of a malt-kiln containing my improvement. Fig. 2 is a vertical longitudinal section thereof at right angles to Fig. 1. Fig. 3 is a sectional side elevation of the mechanism whereby the tilting devices of the dumping-sections are operated.

Like letters of reference refer to like parts in the several figures.

A A represent the side walls of the kiln, and B are transverse beams or girders supported at their ends in the side walls.

C are standards secured to the girders B, and D are the perforated dumping-sections, which are journaled centrally in bearings d , arranged at the upper ends of the standards C so as to be capable of tilting, as indicated by dotted lines in Fig. 1. The end portions of the sections are journaled in standards C' , supported upon brackets C^2 , secured to the side walls.

Each dumping-section preferably consists of a rectangular frame composed of longitudinal bars d^1 and transverse connecting-bars d^2 , arranged at suitable intervals, and a top plate d^3 , of perforated sheet metal, secured to the upper side of the longitudinal frame-bars by angle irons or lugs d^4 , arranged on the in-

ner sides of the longitudinal bars. The perforated top plate of each section extends rearwardly beyond the supporting-frame and overlaps the front portion of the frame of the adjacent section, so as to form a closed lap-joint between the sections. The front portion of the perforated plate of each section terminates at a short distance inwardly from the edge of the section, and the projecting rear portion of the top plate of the adjacent section abuts against this retracted edge, thus forming flush joints between the top plates of the sections. The latter are arranged side by side in the usual manner and may extend from end to end of the kiln; but if the kiln is of considerable length the sections are divided into several transverse series.

F represents toggle-joints, having their lower bars or members pivoted to one of the beams or girders B and their upper bars to the front or descending portions of the tilting sections, so that when the toggle-bars are straightened, as shown in full lines in Fig. 1, they support the pivoted sections in their normal horizontal position, while upon deflecting the toggle-bars or moving the same at an angle to each other, as shown by dotted lines in the same figure, the sections are tilted. The pivots f , which connect the lower bars of the toggle-joints to the girder B, are preferably arranged directly below the pivots connecting the upper bars of the toggle-joints to the tilting sections, so that the toggle-bars stand vertically in line with each other when the sections are in their normal position. The bars of each toggle-joint are provided at their adjacent inner ends on their rear sides with stops or shoulders f' , which abut against each other when the toggle-bars are straightened and prevent the bars from moving forwardly beyond this position.

G represents a horizontal shifting bar or rod connecting the toggle-joints of the several sections of a series, and whereby the connected sections are tilted simultaneously to dump the malt or grain resting thereon.

The shifting-bar G may be operated in any convenient manner; but the mechanism shown in Fig. 3 of the drawings is preferably employed for this purpose. Referring to this figure, H is a floor arranged outside of the

kiln, and I is a standard supported upon a cross-piece I', secured to the joists I². J is a horizontally-movable rack-bar guided upon a roller j, journaled in the lower portion of the standard I and connected with the shifting-bar G, which latter passes through an opening in the adjacent wall of the kiln. k is a horizontal rock-shaft mounted in bearings at the upper end of the standard I, and k' is a pinion secured to said shaft and meshing with the rack-bar J, so that upon turning the shaft in one or the other direction the rack-bar is caused to shift the bar G inwardly or outwardly, and thereby tilt or close the dumping-sections. L is a gear-segment secured to the rock-shaft k and meshing with a pinion l. The latter is mounted on a shaft l', which turns in bearings arranged in a standard M, secured to the floor H. The gear-segment L passes upwardly through a slot in the floor. N is a toothed wheel secured to the shaft l', and O is a hand-lever swinging upon the shaft l' and having a reversible actuating-pawl p, either tooth of which may be engaged with the toothed wheel N for turning the shaft l' in one or the other direction. Upon engaging the proper tooth of the reversible pawl with the toothed wheel and oscillating the hand-lever the bar G is shifted inwardly and caused to tilt the dumping-sections, while upon engaging the other tooth of the reversible pawl with the toothed wheel the bar G is shifted outwardly and caused to return the sections to their normal position.

35 The shaft l' is held against retrograde movement in closing the sections by a detent q, pivoted to the standard M and engaging with a ratchet-wheel q', secured to said shaft.

40 As the bars of the toggle-joints stand vertically in line with each other when the dumping-sections are in their normal horizontal position, the toggle-bars act as rigid struts or braces which firmly support the descending portions of the sections and prevent the same from tilting under the weight of the malt or of attendants walking upon the same. The toggle-bars thus receive the greater part of

the pressure to which the sections are subjected, thereby largely relieving the shifting-bar G and its actuating mechanism from strains and rendering the parts more durable and less liable to break.

The rear or ascending portions of the dumping-sections preferably rest upon rearwardly-projecting brackets r, formed on the standards C C'.

I claim as my invention—

1. The combination, with the pivoted floor-section and a stationary support, of a toggle-joint connecting the support with the section on one side of its pivot and arranged to be perpendicular when the section is in its horizontal or normal position, thereby forming a rigid support for one side of the section, substantially as set forth.

2. The combination, with a number of pivoted floor-sections and a beam or stationary support arranged underneath the sections, of toggle-joints connecting the pivoted sections with said support and a shifting-bar connecting the toggle-joint on the several sections, substantially as set forth.

3. The combination, with a pivoted floor-section and a beam or support arranged underneath said section, of a bracket or standard supporting the section on one side of its pivot and a toggle-joint supporting the section on the opposite side of its pivot, substantially as set forth.

4. The combination, with the pivoted floor-sections and their stationary support, of toggle-joints connecting the pivoted sections with said support, a shifting-bar connected with said toggle-joints and provided with a rack-bar, a segment provided with a pinion meshing with said rack-bar, and mechanism whereby the segment can be turned in either direction, substantially as set forth.

Witness my hand this 23d day of May, 1891.

JOHANN H. E. RATHMANN.

Witnesses:

C. F. GEYER,
FRED. C. GEYER.