

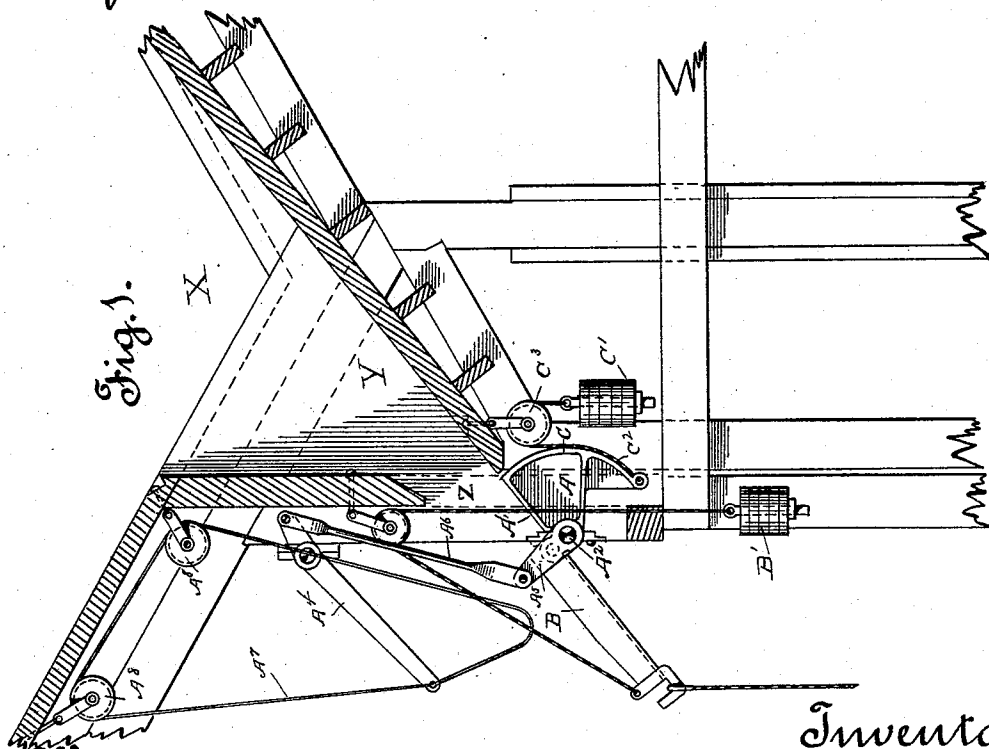
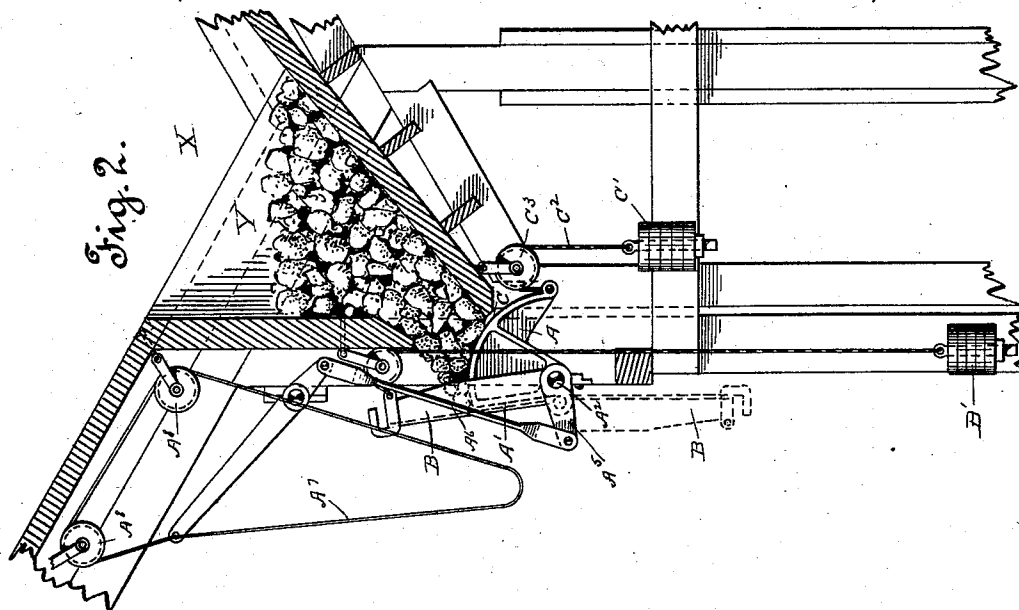
(No Model.)

2 Sheets—Sheet 1.

W. G. CURTIS & J. D. ISAACS.
COAL BUNKER.

No. 536,186.

Patented Mar. 26, 1895.



Witnesses.

H. Korteweg
F. C. Priestly

Inventors.

William G. Curtis and
John D. Isaacs

per *E. F. Mindock*
att'y

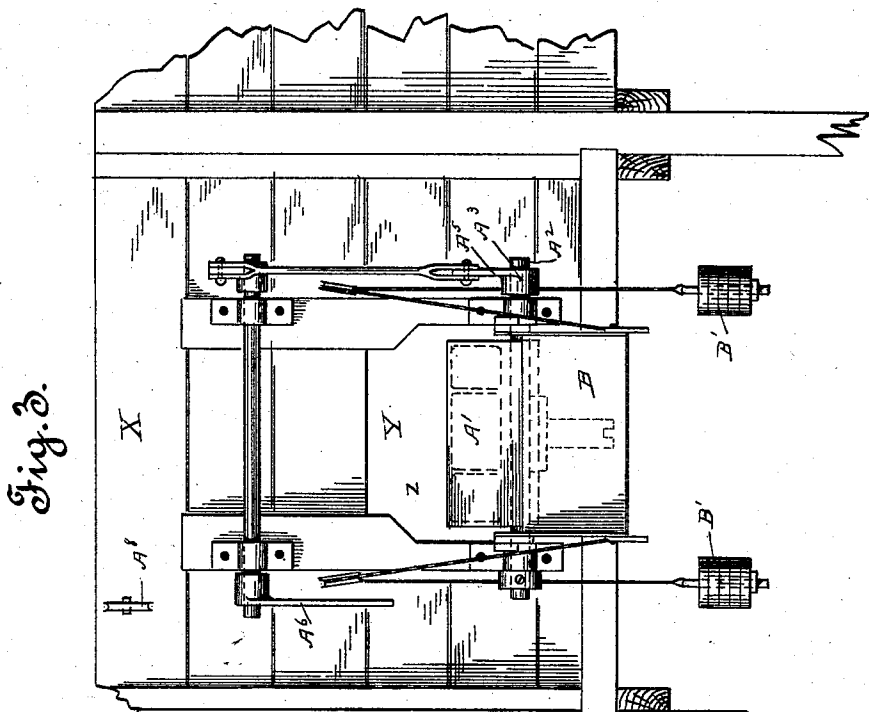
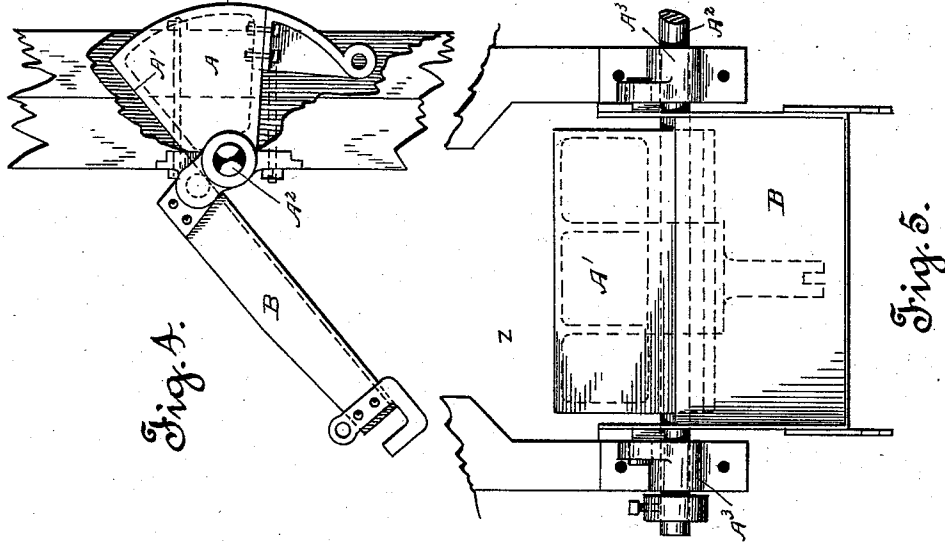
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2 Sheets—Sheet, 2.

W. G. CURTIS & J. D. ISAACS.
COAL BUNKER.

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Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM G. CURTIS AND JOHN D. ISAACS, OF SAN FRANCISCO, CALIFORNIA.

COAL-BUNKER.

SPECIFICATION forming part of Letters Patent No. 536,186, dated March 26, 1895.

Application filed April 27, 1894. Serial No. 509,251. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM G. CURTIS and JOHN D. ISAACS, citizens of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Coal-Bunkers; and we do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to improvements in coal bunkers and more particularly to the valve or gateway therefor, and it consists in the novel arrangements and construction of the parts as hereinafter described.

In the drawings: Figure 1 is a cross-section of a bunker showing the valve open and the apron in position for use. Fig. 2 is a similar view showing the valve closed and the apron raised, and in dotted lines the apron lowered. Fig. 3 is a front elevation of the chute showing the valve and apron in position to allow the coal to flow. Fig. 4 is a side elevation in detail of the valve and apron. Fig. 5 is a front elevation of the same.

Heretofore the flow of the coal has been controlled by means of a sliding gate mounted vertically in front of the opening through which the coal is delivered from the bunker. By the raising or lowering of this gate the contents of the bunker have been permitted to flow or have been stopped. The principal difficulty arising from this construction has been in the increased necessary force required to push the lower edge of the gate through the stream of coal in stopping it, and in the liability which exists of the edge settling down on a large lump of coal and becoming jammed, necessitating on the part of the operative to break away the obstruction or force the gate down until the lump is crushed. This necessity has given rise to the use of a pinch bar which is jammed into the wood work above the gate, to obtain sufficient leverage to crush the lump, and this in time destroys the wood work and necessitates repairs. Other devices have been employed operating in substantially the same way and under the same objections. It is the purpose of this present in-

vention to overcome these objections, which it accomplishes by the introduction beyond the gateway of the chute or pocket of an obstruction raised in the path of the coal and forming with the upper edge of the said gateway a line of natural inclination or line of flow of the coal, or other materials being thus handled.

In the drawings illustrating this invention the letter X designates a coal bunker of ordinary construction provided with a pocket —Y— and gateway —Z—. The floor of the pocket —Y— is cut away to insert the valve —A—, the upper side of which forms with the floor of the pocket, a chute leading to the apron B, by means of which the delivery of the coal is located. The said valve is provided with a shaft, A², and is pivotally mounted in bearings, A³, which are supported on the frame of the bunker and slightly advanced beyond the opening of the gateway to bring the highest point of the valve, in closing, outside the upper edge of the said gateway. The valve A is swung on the bearings A³, by means of the lever A⁴, which is connected to the crank, A⁵, on the shaft, A², by the rod, A⁶. To the outer end of the lever, A⁴, is attached the cord, A⁷, for convenience in manipulating the lever. This cord is carried on the pulleys, A⁸, A⁹. In its operation this valve does not close the gateway by raising against the upper edge thereof, but leaves between it and the valve a considerable opening which, when filled in by the contents of the pocket to the line of the natural inclination, stops the flow in the same manner as a retaining wall. It will be understood where the term "natural inclination" occurs in this specification that the inclination at which the material would cease to flow is meant. This it will be understood, varies in the different classes of material it is designed to handle by means of this invention. It is obvious that in the different grades of coal, from large to small this angle of natural inclination must necessarily alter. The form in which this valve is shown in the drawings is that of a segment of a cylinder, C, pivoted in the center, and having a flat platform, A', extending from the upper edge of the wall of the cylinder toward the center. By the use of the cylindrical wall, C, every

point on the surface of which is equally distant from the pivotal shaft, all danger of jamming between the edge of the pocket and the face of the valve is avoided, as in its movement about the shaft, A², every part of the surface travels in the same path. The distance from the shaft, A², to the curved wall is calculated so as to carry the edge of the curved wall above the line of inclination of the flow of the material after passing the upper edge of the gateway.

The valve, A, as herein shown, is counter-balanced by means of the weight, C', to which it is connected by the cord, C², after passing over the pulley, C³. By means of this weight the valve is maintained in any position to which it is brought.

Swung on the same frame which carries the valve is the apron, B, which is of ordinary construction. It is provided with the counter-balance weight, B'. This apron is so hinged as shown in Fig. 2 of drawings as to allow it to be raised or lowered. By means of this construction it is rendered possible to deliver under the roof of a box car and remove the apron to allow the same to pass.

Having thus described this invention, what we claim is—

1. A bunker or similar receptacle provided with an open gate-way having an upper edge and a pocket, in combination with a valve at the end of said pocket adapted to form a continuation of said pocket and to be raised to project its upper edge outside and away from the gate-way above the line of natural inclination or flow of the material being handled, substantially as described, whereby jamming

of the material between the said valve and gate-way is avoided.

2. In a bunker or similar receptacle such as described the combination of a gateway having an upper edge, the valve, A, pivotally mounted in the bearings, A³, and provided with the curved wall, C, the platform, A' forming a continuation of the floor of the pocket, the lever, A⁴, adapted to rotate the valve, A, upon the bearings, A³, to extend the said curved wall into the path of the material being handled to the line of inclination of the said material when drawn under the upper edge of the said gateway, and the upper edge of the valve away from the said gateway and suitable connections between the said lever and valve, substantially as described.

3. In a bunker or similar receptacle such as described the combination of a gateway having an upper edge, the valve, A, pivotally mounted in the bearings, A³, and provided with the curved wall, C, platform A', forming a continuation of the floor of the pocket, the apron, B, the lever, A⁴ adapted to rotate the valve, A, upon the bearings, A³, to extend the said curved wall into the path of the material being handled to the line of inclination of the said material when drawn under the upper edge of the said gateway.

In testimony whereof we have hereunto set our hands.

WILLIAM G. CURTIS.
JOHN D. ISAACS.

In presence of—

GEO. R. GAY,
FREDERICK M. WILLIS.