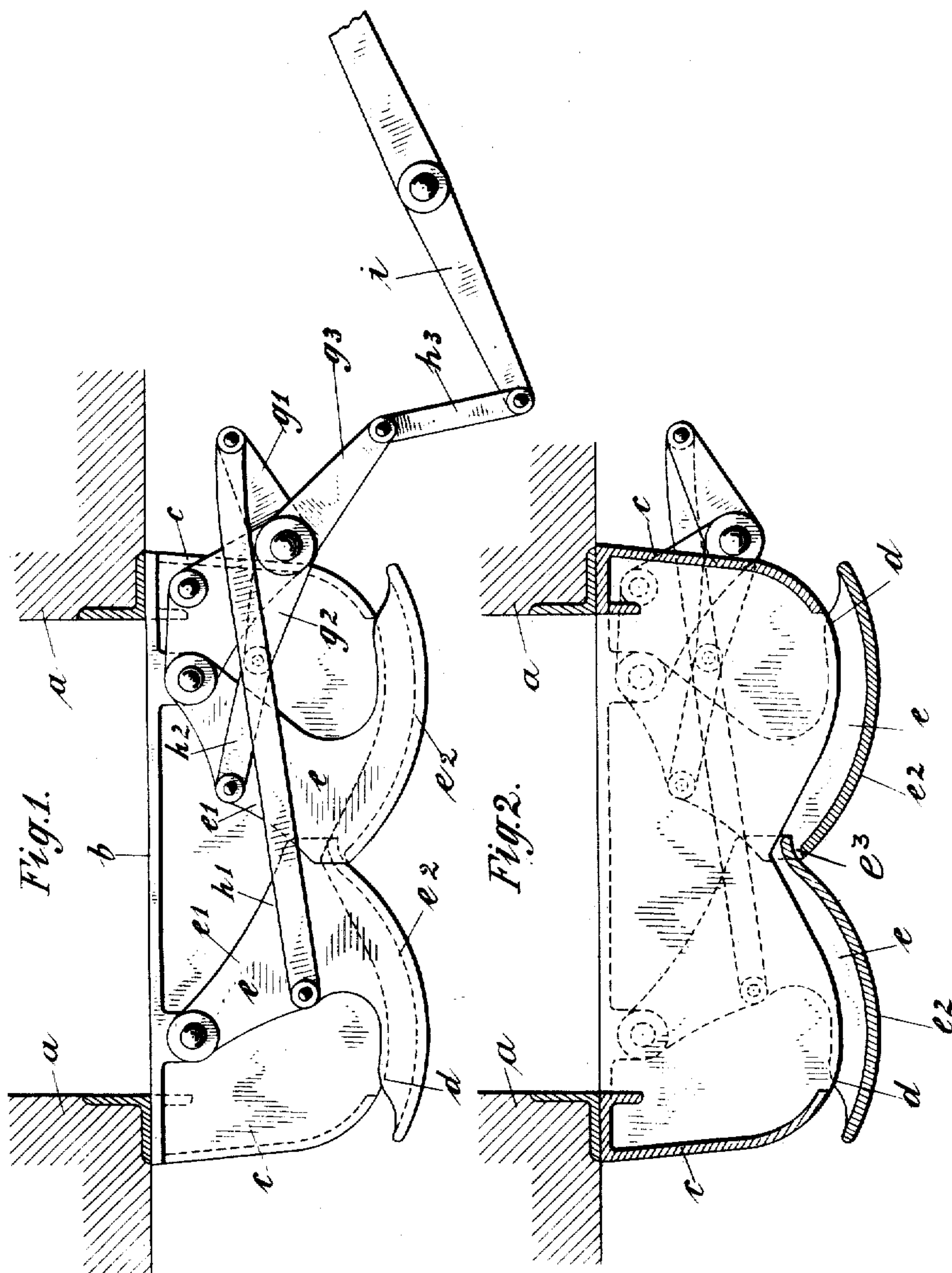


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HOPPER VALVE, &c.
APPLICATION FILED MAR. 17, 1908.

954,294.

Patented Apr. 5, 1910.



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HOPPER-VALVE, &c.

954,294.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed March 17, 1908. Serial No. 421,656.

To all whom it may concern:

Be it known that I, CHARLES W. HUNT, a citizen of the United States, residing at West New Brighton, in the borough of Richmond of the city of New York, in the State of New York, have invented certain new and useful Improvements in Hopper-Valves, &c., of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

This invention relates to devices for controlling the flow of coal, ore, grain, etc., from bins or other containers, to cars, trucks, etc., in which the flow of the material through the opening in the bottom of the valve body is controlled by swinging jaws which move from opposite sides toward a median line to close the opening; and the object thereof is to overcome difficulties previously existing in valves of the type specified by so constructing and arranging the jaws that their inner meeting edges shall be offset vertically when the jaws are closed and, preferably, so that when the jaws are in their closed position the edge of one shall pass or overrun the edge of the other beyond the angle of repose of the material to be controlled, thereby preventing catching of a hard piece of the material between the edges of the jaws and also practically preventing the escape of material between the edges of the jaws even if they are not completely closed, the combined length of the valve members when closed being greater than the length of the discharge opening, and the jaws being located below and spaced apart from such discharge opening.

The invention will be more fully explained hereinafter with reference to the accompanying drawing in which it is illustrated, and in which—

Figure 1 is a view in side elevation of a valve which embodies in its construction the present improvement, the side walls of the container being shown in section, and Fig. 2 is a view thereof in vertical section.

In the drawing the container for the material, or so much of such container as is necessary to enable the application of the present invention to be understood, is represented by the walls *a, a*, between which is the opening *b* for the discharge of the material. Below the mouth or outlet *b* is secured the valve body *c* which has in its bottom an opening *d* controlled by jaws *e* which swing each about an axis at one side

of the plane of the jaw and preferably coinciding substantially with the axis of curvature of the jaw so that its edge may be forced through the coal or other material. The latter are of usual construction, except as hereinafter indicated and are arranged to move from opposite sides toward a median line to close the opening *d*. The jaws may be operated by any suitable means and are represented in the drawing as connected respectively, by links *h'* and *h''*, to arms *g'* and *g''*, of a three-armed lever, the third arm *g'''* of which is connected by a link *h'''* with the hand operated lever *i*.

The jaws *e* comprise, as usual, side walls or members *e'* and a bottom *e''*. The adjacent edges of the two jaws are offset vertically and preferably one of the jaws, as the left hand jaw in the drawing, is made slightly narrower than the other jaw, so that its forward portion may enter between the side walls of the other jaw, and its bottom *e''* is curved upwardly somewhat or the bottom of the other jaw is cut away somewhat, as the case may be, so that the forward edge of one of the jaws shall underrun the forward edge of the other jaw, as clearly shown at *e'''* in Fig. 2. It is well understood that coal and other dry materials have each its characteristic angle of repose and that any dry material will cease to flow, when undisturbed, as soon as the surface of the mass attains the characteristic angle. The underrunning of the edge of one jaw beyond the other, in the described construction, is therefore carried to such an extent that the angle included between a line drawn through the extreme edges of the two jaws and a vertical line is greater than the angle included between a vertical line and the surface of the material when in a state of repose. (As the angle of repose of different materials differs somewhat but is known for each material, the proper angle of the edges of the two jaws for any particular material is readily determined.) Consequently, the material being handled will not have a tendency to escape between the lips of the jaws, even if they are not brought closely together and, moreover, should a lump or piece of material lodge upon the lip of one jaw it will be pushed back by the lip of the other jaw as the two jaws approach the closed position, even if the adjacent edges of the two jaws are offset vertically without underrunning, the one under the other.

The extension of the body of the shell beyond the margin of the mouth to afford space into which the material may be crowded and the means for operating the jaws are not claimed herein, having been made the subject of separate applications.

I claim as my invention:

1. In a device of the class described, a valve body having an inlet at its upper end and a discharge opening at its lower end and through which material may flow; two valve members located at the lower end of said valve body and pivoted so as to swing about parallel axes separated from one another in a horizontal direction and located above the lower end of said valve body, said valve members being adapted to move across the outlet opening transverse to the direction of flow of material through said valve body and to meet at the middle portion of said discharge opening, and the extremity of one of said valve members being enlarged with reference to the extremity of the other, so that the meeting edges of said valve members may overlap one another when the valve members are in position to close the discharge opening aforesaid; and means for swinging said valve members in unison about their axes to cause them to simultaneously approach and recede from one another, the combined length of said valve members when closed being greater than the length of said discharge opening and said valve members being spaced apart from said discharge opening, so that the stoppage of the flow of material therethrough is not dependent upon a close fit between the said valve members and said discharge opening.

2. In a device of the class described, a valve body having an inlet at its upper end

and a discharge opening at its lower end and through which material may flow; two valve members located at the lower end of said valve body and pivoted thereto at points adjacent the upper end of the valve body and separated from one another in a horizontal direction, so that said valve members may swing about separate parallel axes passing through the upper portion of said valve body, said valve members being adapted to move across the outlet opening transverse to the direction of flow of material through said valve body and to meet at the middle portion of said discharge opening, and the extremity of one of said valve members being enlarged with reference to the extremity of the other, so that the meeting edges of said valve members may overlap one another when the valve members are in position to close the discharge opening aforesaid; and means for swinging said valve members in unison about their axes to cause them to simultaneously approach and recede from one another, the combined length of said valve members when closed being greater than the length of said discharge opening and the outer or non-meeting edges of said valve members being spaced apart from the adjacent wall of said discharge opening, so that the stoppage of the flow of material therethrough is not dependent upon a close fit between the outer edges of said valve members and the adjacent wall of said discharge opening.

This specification signed and witnessed this 10th day of March A. D., 1908.

CHARLES W. HUNT.

Signed in the presence of—

CHAS. E. SIMONSON,

B. KELLY.