

H. ADAMS.

METHOD OF AND APPARATUS FOR STORING AND DISCHARGING COAL, &c.

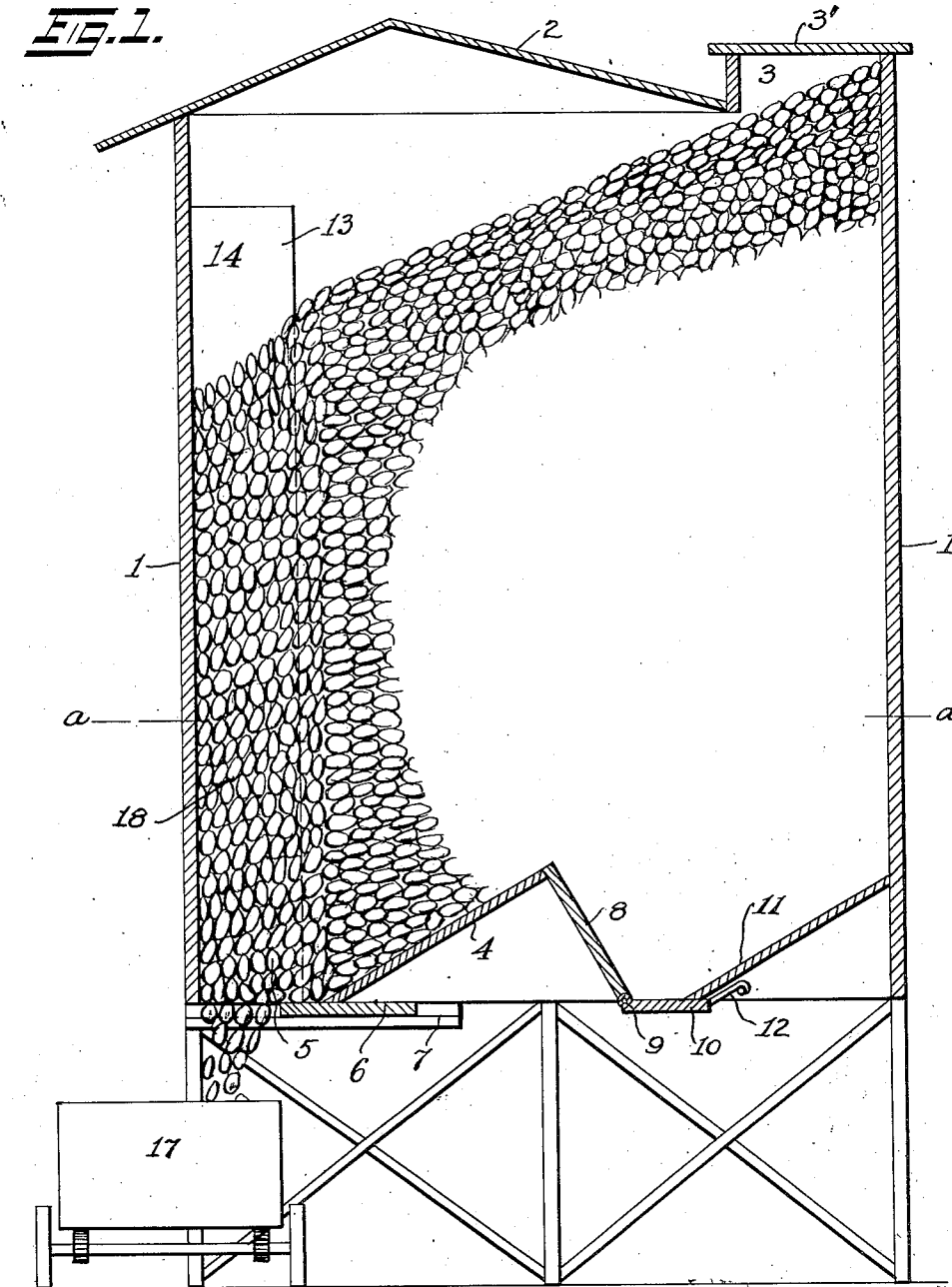
APPLICATION FILED DEC. 28, 1916.

1,234,709.

Patented July 31, 1917.

2 SHEETS—SHEET 1.

FIG. 1.



Witnesses:

Lehas & Whitman

H. D. Perry

Inventor:

Henry Adams.

By his Atty, W. H. Richards

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2 SHEETS—SHEET 2.

FIG. 3.

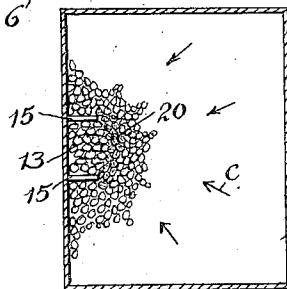
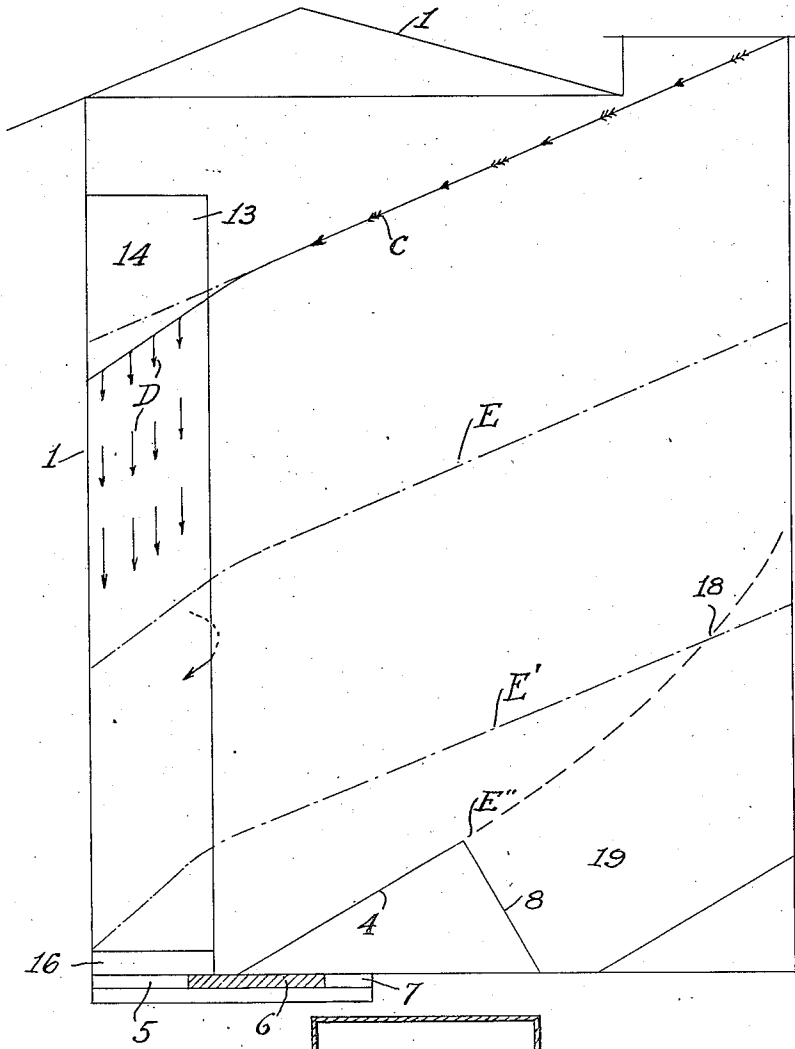


Fig. 2.

Witnesses:

Chas. Whitman
H. D. Penney

Inventor:

Henry Adams.
By his Atty, *V. H. Richard*

UNITED STATES PATENT OFFICE.

HENRY ADAMS, OF NEW LONDON, CONNECTICUT, ASSIGNOR TO THE ADAMS COAL MACHINERY COMPANY, OF NEW LONDON, CONNECTICUT, A CORPORATION OF CONNECTICUT.

METHOD OF AND APPARATUS FOR STORING AND DISCHARGING COAL, &c.

1,234,709.

Specification of Letters Patent.

Patented July 31, 1917.

Application filed December 28, 1916. Serial No. 139,293.

To all whom it may concern:

Be it known that I, HENRY ADAMS, a citizen of the United States, residing in New London, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Methods of and Apparatus for Storing and Discharging Coal, &c., of which the following is a specification.

10 This invention relates to coal, etc., bins or pockets, and especially to a method of, and apparatus for carrying the same into effect, and for so storing and delivering coal, etc., that the loading and unloading of the same will be of the least possible injury thereto, and degradation of the same by excessive production of fines, be reduced to a minimum.

15 In the storage of coal it has become quite a problem to so store the coal that the same can be handled with the least breakage to the coal. It has been found that while it is cheaper and more convenient to store the same in piles of great altitude, the weight of the coal, coupled with its impact and movement upon entrance and exit is sufficient to considerably fracture the pieces near the bottom; and it has further been found that when in the removal of coal the same is drawn from the bottom, the rubbing and scraping of the pieces upon one another is accompanied with very detrimental-like results; and it has also been found that when the coal is drawn from the top, the resulting avalanching of the coal-pile will cause such scraping and rubbing of the pieces against one another, that the undesirable fine coal is thereby produced in great quantity, with the consequent destruction and degradation of the better grades of larger coal.

20 To obviate such difficulties and consequent damage and loss is the object of my improved method set forth described and claimed herein, for the carrying out of which I have shown herein one form of apparatus, or structure, also of my invention, which I have in practice found to be highly efficient. My said improved method of storing coal, etc., consists in substance in so storing the coal, that the same in delivery will be directed downward, at an exceedingly slight angle of inclination from the top layers of the main body and retained

in a comparatively small vertical descending column, until nearly all the coal has been removed by way of such descending column, when the small remaining balance is removed through a second chute. My said method of storing and loading coal, together with one form of apparatus of my invention for carrying such method into effect, is fully shown and described in the following specification of which the accompanying drawings form a part, wherein similar letters or numerals of reference designate like or equivalent parts wherever found throughout the several views, and in which:—

Figure 1, is a side view in central vertical section of my improved form of storage-bin, with the coal in process of being removed therefrom;

Fig. 2, is a top plan view of such bin, taken in horizontal section on the line *a—*a** of Fig. 1; and

Fig. 3, is a diagrammatic view of the bin shown in Figs. 1 and 2, showing by arrows the path taken by the coal during the removal thereof.

Referring to the drawing;—

The reference numeral 1, designates the exterior walls of the bin, which are made of any suitable material, such as wood or concrete, usually having the covering roof 2, to protect the coal from the elements, and having at the rear upper top portion an entrance orifice or chute 3, having the cover 3', through which the coal is introduced to such bin. The bottom of such bin consists of the forward bottom-slide base-piece 4, inclined toward the front so as to direct the coal into the forward delivery chute 5, closed at the bottom by the door or gate 6, sliding in slotted side-pieces 7, as clearly indicated in Fig. 1; which bottom plate 4, is supported in the inclined position at the rear end by the slightly rearwardly inclined back bottom-piece 8, to which is hinged by a suitable hinge-joint 9, the rear delivery bottom-gate 10, abutting, when in the closed position, at its rear end, against the forwardly inclined rear slide-faced bottom-piece 11, inclined at substantially the same angle as is the front slide bottom-piece 4; which gate is locked in the closed position by any suitable locking-device, such as that indicated at 12. Secured in position to the front wall 1, in any desired manner, usually and prefer-

ably at the front central portion of the bin, and extending nearly to the top of the bin is the vertical delivery-chute 13, formed by two upright-plates or partitions 15, of wood or other suitable material; thus forming a delivery-chute open along its entire length toward the rear of the bin. Usually and preferably a short space 16 is left between the bottom of the chute side pieces 15, and the floor of the bin through which will flow out the small remnant of coal at the front side-portions of the bin which would otherwise be left, and the flow of the same under the side-walls of the chute may be facilitated by having the floor slope inward toward the same, but I have not deemed it essential to show such sloping floor portion in the drawing.

The operation of the apparatus is as follows:

The bin being filled through the top filling opening or chute 3, with a body of coal, as indicated in Fig. 2, the slope of the top of such body of coal will be at about the angle indicated; being approximately about 25° to 30° to the horizontal; whereupon the delivery cart 17, being placed in position underneath the bottom delivery-orifice 5, and the gate 6, opened, the column 18, of coal, contained within the chute 13, will immediately begin to descend absolutely vertically, and as such vertical body of chute contained coal 18, flows into the wagon, the upper top layers of the main body of coal in the bin will slowly flow downward, and into the open side of the chute to take the place of the coal removed by gravity, without any attritive and degrading disturbance of any of the coal underneath; and during this entire process, the main-body of the coal without, and to the rear of the delivery-chute, will maintain its top layers and surfaces, at practically the same relative angle, in the passage from top to bottom, namely at 25° or thereabout, whereby there will be no degrading disturbance, or attrition activity of the coal in any except the immediate two or three top layers; while the vertical movement of the coal in the chute will also tend to minimize the attrition and the consequent production of fines.

The path taken by the top layers of the coal composing the main body, is clearly indicated by the arrows C in Fig. 2, and in Fig. 3 the entire action clearly indicated by like arrows C showing the movement of the top layers of the main body, and the arrows D showing the absolutely vertical movement in the delivery chute; while the maintenance of the practically identical angle of the top surface of the main body is shown in such Fig. 3, by the dotted lines E, E' and E''.

When the top surface of the main body of coal assumes the form of the more or less curved dotted line 18, shown in Fig. 3, the

flow of the coal through the front delivery gate-orifice 5, will of course cease, the remaining coal being caught by the wall 8, and held in the rear-pocket 19, and the delivery wagon 17, is then shifted into position beneath the rear gate 10, and the same being opened, the remnant of the coal in the rear pocket 19, flows out therethrough.

I claim:—

1. The hereinbefore described method of removing coal from storage, comprising the limiting of that portion of the coal to be immediately delivered to a substantially upright, vertical, gravitationally moving body in free contact from top to bottom with the main-body of coal on one face, upon the top of which, as such vertical body descends, fresh coal is gravitationally directed and fed from the top surface layer or layers of the main body of the coal.

2. The hereinbefore described method of removing coal from storage, comprising the limiting of that portion of the coal to be immediately delivered to an upright, vertical gravitationally moving body, in free contact from top to bottom with the main-body of coal on one face, upon the top of which, as such vertical body descends, fresh coal is gravitationally fed from the top surface layer or layers of the main body of the coal.

3. The hereinbefore described method of removing coal from storage, comprising the limiting of that portion of the coal to be immediately delivered to an upright, vertical gravitationally moving body, in free contact from top to bottom with the central portion of the main body of coal, on one face, upon the top of which, as such vertical body descends, fresh coal is gravitationally fed at an angle to the vertical, from the top surface layer or layers of the main body of the coal.

4. The hereinbefore described method of removing coal from storage, comprising the limiting of that portion of the coal to be immediately delivered to an upright, vertical gravitationally moving body, in free contact from top to bottom with the central portion of the main body of coal, on one face, upon the top of which, as such vertical body descends, fresh coal is gravitationally fed at an angle to the vertical, from the top surface layer or layers of the main body of the coal, such vertical body of coal being in communication with the main body at the sides only immediately adjacent to the bottom and delivery orifice.

5. The hereinbefore described method of removing coal from storage, comprising the limiting of that portion of the coal to be immediately delivered to an upright, vertical gravitationally moving central body, in free central contact on one face with the main-body, upon the top of which central body as such vertical body descends, fresh

coal is gravitationally fed at an angle to the vertical maintained at a substantial constant until the main body of the coal has been discharged from the top surface layer
5 or layers of such main body.

6. The hereinbefore described method of removing coal from storage comprising the limiting of that portion of the coal to be immediately delivered, to an upright vertical
10 gravitationally moving body in free contact from top to bottom with the main body of coal on one face, by automatically form-

ing between the two bodies immediately below the top flowing body of the main body portion, an outwardly bowed vertical body, 15 automatically formed from the main body of coal, down by and along which the vertical gravitationally moving body flows without practical disturbance of such bowed main body portion.

HENRY ADAMS.

Witnesses:

JOHN E. CORCORAN,
NATHAN BELCHER.