

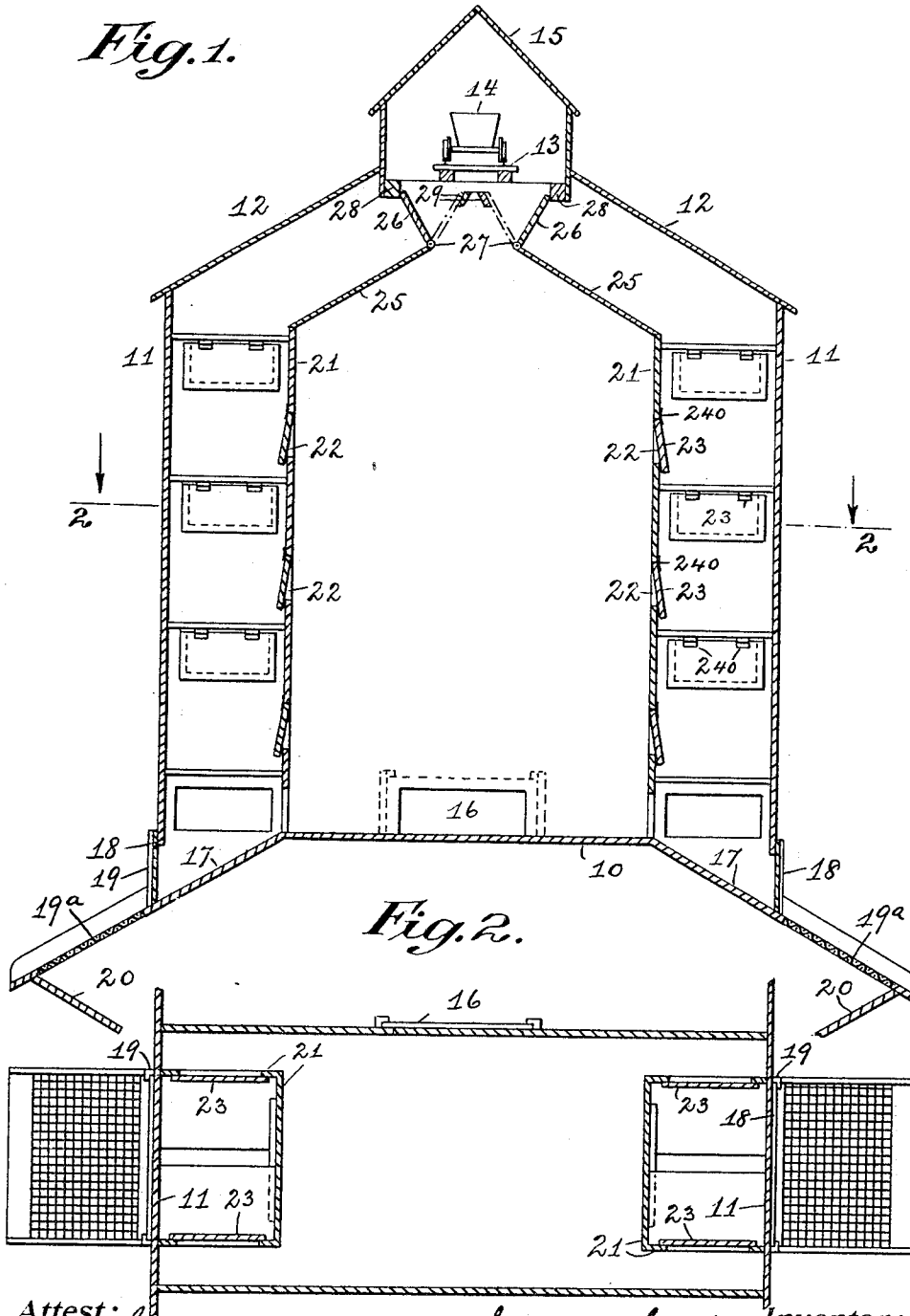
G. D. CURTIS.
COAL POCKET.

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1,121,328.

Patented Dec. 15, 1914.

Fig. 1.



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UNITED STATES PATENT OFFICE.

GROVE D. CURTIS, OF NEW YORK, N. Y.

COAL-POCKET.

1,121,328.

Specification of Letters Patent.

Patented Dec. 15, 1914.

Application filed January 16, 1909. Serial No. 472,723.

To all whom it may concern:

Be it known that I, GROVE D. CURTIS, a citizen of the United States, and resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Coal-Pockets, of which the following is a specification.

This invention relates to coal pockets, and its novelty consists in the construction and adaptation of the parts, as will be more fully hereinafter pointed out.

In the ordinary coal pocket, the coal is brought to the top of the structure, either by a line of cars, a series of derricks, or other suitable carriers, and dumped into the interior from which it is withdrawn at the bottom, or the lower side edge, through appropriate gates, into the wagons by which it is delivered to the consumers.

The ordinary coal pocket as now constructed is in effect a prismatic box with outlet ports along its lower edges. When one of these ports is opened a flow of coal is induced toward it, and after it has continued for a short time it will be noticed that a channel has been formed directly through the mass of coal from its top toward the outlet. Furthermore it will be noticed that the coal does not flow steadily toward the outlet but practically falls inwardly into this channel first choking it up and then gradually clearing up as the coal is removed from beneath. This movement is accompanied by a sort of vortex or rotary movement resembling the similar movement which takes place in a mass of fluid discharged from a small bottom orifice. This vortex movement tends to grind the coal and in my opinion is largely responsible for the formation of dust therein. By dust I mean coal of such small size as to have substantially no commercial value and to be of a size below that of any of the marketable grades. When coal falls any distance and strikes a hard surface it is fractured and splinters and formed into smaller pieces but it is not ground to powder and does not form dust. This action is relatively unimportant because the smaller pieces are practically all marketable but dust is not and as the dust has been paid for in paying for the weight of coal purchased and as the owner of the pocket usually does not deliver such dust, he secures no reimbursement for such outlay and it is highly important that the formation of such dust

should be prevented or materially lessened and I believe this purpose is accomplished by means of the device hereinafter described.

In the drawing, Figure 1 is a vertical central section through a coal pocket embodying my invention and Fig. 2 is a horizontal section of the same on the plane of the line 2-2 in Fig. 1 and a top plan view of the parts beneath the section plane.

There is represented in the drawing a coal pocket comprising in effect a rectangular box made of any suitable size and material and which has a bottom 10, upright side walls 11 and a sloping roof or cover 12. Above the center of the pocket or elsewhere conveniently arranged is a railway indicated at 13 on which trucks 14, or other carriers are adapted to be moved to bring the coal to the pocket. This part of the device is usually protected by a supplemental shed or roof 15. A door 16 is placed at any convenient situation to afford access to the lower interior of the pocket. The bottom is usually made sloping in places as at 17 toward outlet apertures adapted to be closed by suitable gates or valves indicated at 18 and which may slide in a grooved frame indicated at 19, or be supported and guided in any suitable manner. Extending outwardly from the outlet apertures are screen chutes 19^a made of woven wire netting or similar foraminous material and provided at their lower edges with backwardly extending chutes 20 adapted to guide the discharge of the dust and screenings away from the end of the chute 19^a.

The parts above described form no part of my invention.

Arranged in a substantially vertical position within the pocket are vertical conduits having upright walls 21. For the sake of economy of construction, I prefer to make these conduits with four sides and use the side walls 11 of the pocket as one of the walls of the conduit, but it is obvious that these conduits may have any number of sides and placed anywhere within the pocket. Arranged at suitable intervals along the upright walls 21 are openings 22 adapted to be closed by valves or gates 23 opening inwardly. I prefer to use and I have shown in the drawing a simple form of valve consisting of a flat piece of suitable material, secured to the wall 21 above the corresponding opening 22 and fastened in place by a hinge 240, and which piece is

of a size sufficient to overlap the lower edge of the opening 23 and so close it. This form of valve normally closes its opening by gravity and is readily made and put in place. It will be noted that the openings along the walls are so arranged that those along one wall are staggered with respect to those along the adjacent wall. At the upper inner edge of such conduit there is arranged a shelf 25 sloping upwardly toward the track 13 and suitably supported by the framework of the pocket (not shown). This shelf terminates in a guide plate or deflector 26, secured thereto by a hinge 27 and so arranged that it can be swung to the position indicated in full line in Fig. 1 to rest against a portion of the framework 28 and thus prevent access to the shelf 25 and serve as a guide toward the interior of the pocket or it can be swung to the position indicated in dotted outline in Fig. 1 to rest against another portion of the framework 29, to permit access to the interior. In the construction shown there are two of these deflectors and when in one position they guide the coal into the conduits and when in the other position they guide the coal into the interior of the pocket.

The conduits are preferably made of such size that the coal can surround them, except, of course, as to that side which is identical with a portion of the side wall of the pocket.

In use, the coal is first dumped into the pocket at the top center, the guide plates 26 being swung inwardly so as to constitute with the shelves 25 chutes to guide the coal into the conduits which are first filled in order that the coal within them may press against the valves 23 to keep them shut. When the conduits are filled the hinged guide plates 26 are disengaged and allowed to swing outwardly to form a hopper to guide the coal into the center of the pocket and this central portion of the pocket is then filled. The discharge gate 18 of one of the conduits is then opened. This allows the coal to be drawn off from that conduit but on account of its relatively small cross sectional area the burrowing or grinding action above referred to does not take place, and the coal falls gently and evenly substantially without any other than a vertical motion. So long as sufficient coal remains against the inside of one of the valves 23 to keep it shut, this valve prevents any movement of the coal within the pocket (outside of the conduits) resting against such valve, but just so soon as the coal falls below the level of the valve the latter is pushed open by the pressure of the coal in the pocket and a portion of such coal escapes through the valve and falls by gravity on top of the descending column of coal in the conduit, and this action continues until practically

all of the coal in the pocket above the level of the valve aperture has thus been discharged. As the coal continues to be drawn from the conduit the valve at the next lower level is opened and the coal at that level similarly is discharged until, as the operation is continued, the pocket practically becomes empty.

The operation it will be noted consists mainly in continually drawing the coal from the pocket from the top of the mass so that the moving coal is not subjected to the lateral pressure of the mass of coal below the top layer and the lateral pressure of the coal in a layer equivalent to the depth of one of the apertures 22 is negligible. Should it be found that dust was being formed the mischief can be remedied by decreasing the size of the apertures and increasing their number. The invention therefore results from and is due to the discovery that the dust is formed by the grinding action of the mass of coal surrounding and bearing against the column of moving coal ordinarily drawn from the pocket, which grinding action, it will be observed, will be prevented by segregating the moving column from contact with the mass, and always supplying said column from the top of the mass.

It is obvious that in designing an apparatus in accordance with my invention, the cross-sectional area of the vertical discharge conduits must be planned with due regard to the size of the coal which is to be used in the apparatus. For instance, with egg coal, the cross-sectional area would be larger than with pea-coal. The ideal construction, of course, would be to provide a conduit with a cross-sectional area just large enough to permit the particular size of coal to pass freely through it, one lump after another. But the discharge under these conditions would be too slow, and therefore the conduit will be made of such size as to rapidly discharge without permitting undue lateral displacement of the lumps in their passage.

What I claim as new is:—

1. A coal holding and delivering pocket having side walls provided with outlet openings, vertical conduits arranged within the pocket alongside the side walls and delivering to said outlet openings in the side walls, each of said conduits having openings arranged at different elevations and on different sides thereof, inwardly opening valves controlling said openings in the conduits, and means in the upper end of the pocket whereby either of the conduits or the pocket exterior of the conduits may be charged with coal, including means for delivering coal into the top of the pocket.

2. A coal holding and delivering pocket having side walls provided with outlet open-

ings, vertical conduits arranged within the pocket alongside the side walls and delivering to said outlet openings in the side walls, each of said conduits having openings arranged at different elevations and on different sides thereof, inwardly opening valves controlling said openings in the conduits, and means in the upper end of the pocket whereby either of the conduits or the pocket exterior of the conduits may be charged with coal, including a valve controlling the inlet of each conduit, both of said valves controlling the inlet of the upper end of the pocket exterior of the conduits, and means for delivering coal into the top of the pocket. 15

Witness my hand this 13th day of January, 1909, at New York, N. Y.

GROVE D. CURTIS.

Witnesses:

WILLIAM R. BAIRD,
HERMAN MEYER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."