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F. K. HOOVER & A. J. MASON.

GATE FOR ORE POCKETS OR SIMILAR RECEPTACLES.

APPLICATION FILED MAY 1, 1903.

NO MODEL.

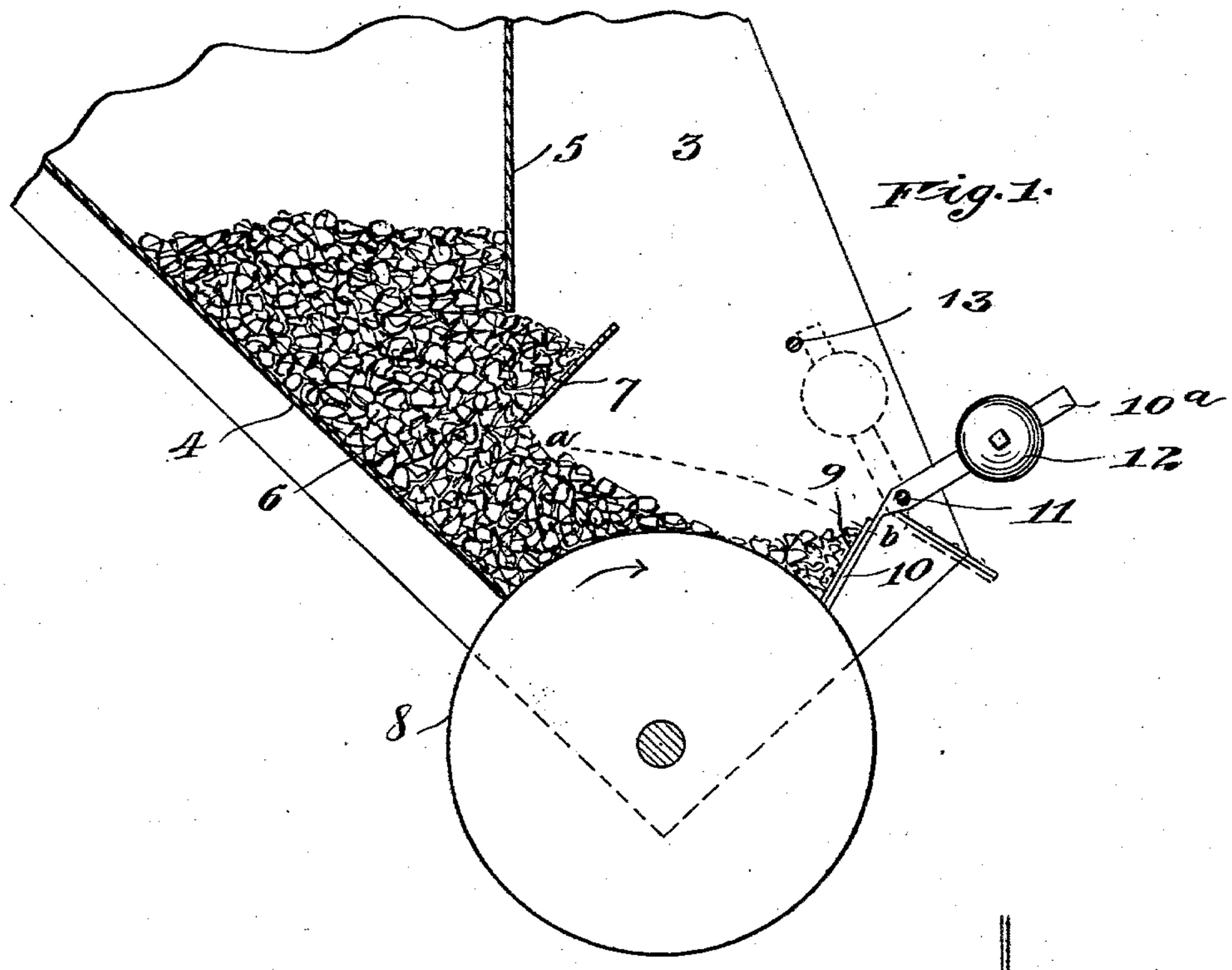
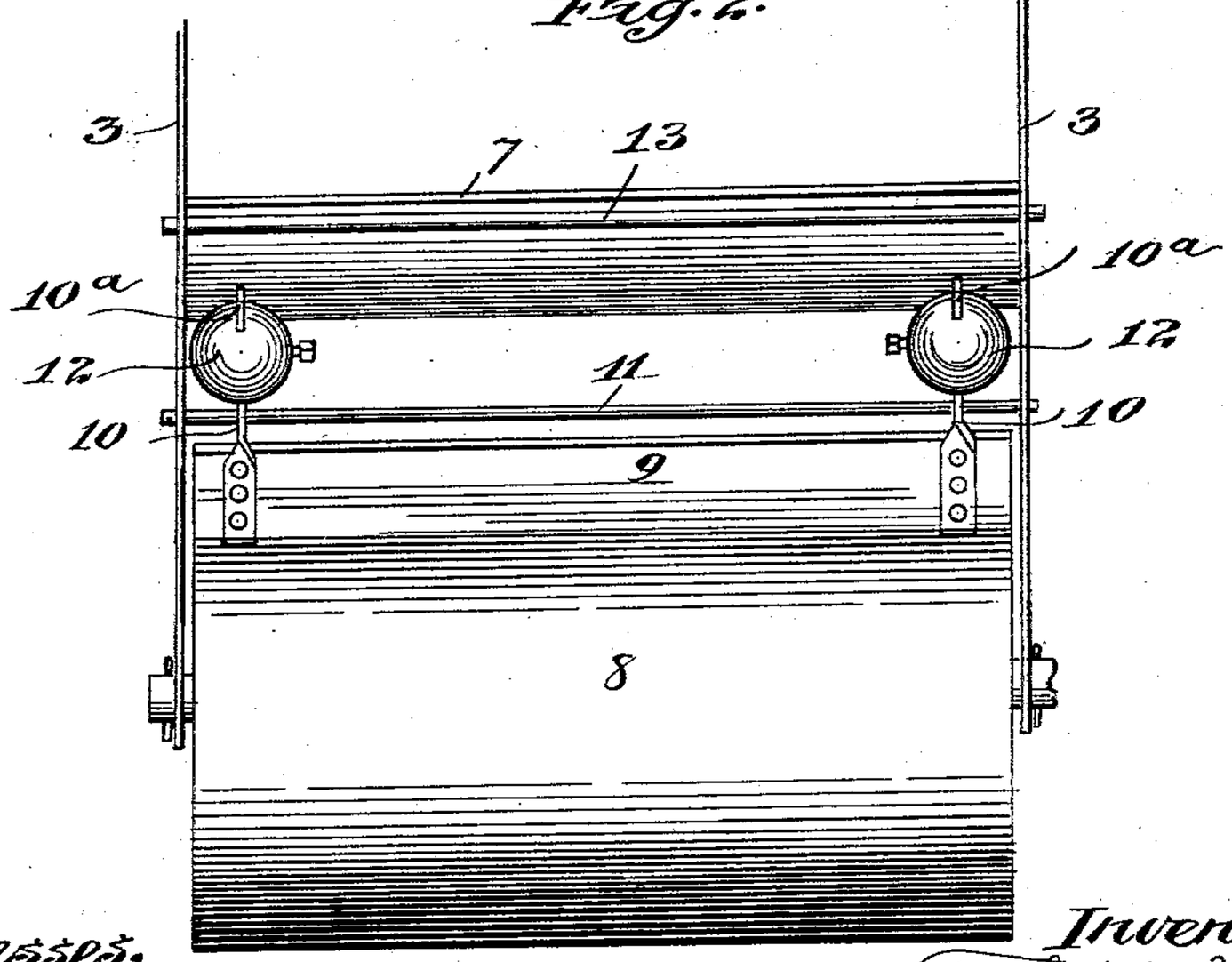


Fig. 1.

Fig. 2.



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UNITED STATES PATENT OFFICE.

FRANK K. HOOVER AND ARTHUR J. MASON, OF CHICAGO, ILLINOIS.

GATE FOR ORE-POCKETS OR SIMILAR RECEPTACLES.

SPECIFICATION forming part of Letters Patent No. 753,076, dated February 23, 1904.

Application filed May 1, 1903. Serial No. 155,189. (No model.)

To all whom it may concern:

Be it known that we, FRANK K. HOOVER and ARTHUR J. MASON, both citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gates for Ore-Pockets or Similar Receptacles, of which the following is a specification.

Our invention relates to an improvement in that class of hoppers or receptacles designed to carry ore, coal, and like material, which are provided at their lower ends with a discharge-roller for effecting the discharge in regulable quantities of the material stored in the pocket or hopper; and our invention has been devised more particularly as an improvement upon the ore-pocket forming the subject-matter of Letters Patent No. 702,731, granted to us June 17, 1902. We have found in the practical operation of the aforesaid patented ore-pocket that when the pocket has been completely emptied and fresh ore is introduced the first few lumps of ore will at times acquire velocity sufficient to pass over the roller and out of the pocket.

With a view to eliminating the objection above referred to we have devised the present improvement which relates to a gate for the purpose of arresting these lumps and preventing them from falling. This gate in its preferred form is hinged across and above the discharging-surface of the roller and is counterweighted, so as to remain under the action of its counterweights in either the open or closed position to which it may be manually adjusted.

Our invention in its preferred form is illustrated in the accompanying drawings, wherein—

Figure 1 shows a side elevation, broken away at the top, of the lower portion of an ore-pocket, the side of the pocket nearest the observer being removed, having our improvement applied thereto; and Fig. 2 is a front elevational view of the same.

Referring to the drawings, 3 designates the side wall, 4 the rear wall, 5 the front wall, 6 the contracted discharge-throat, 7 a louver-bar, and 8 the discharge-roller, of the pocket or hopper, which parts are preferably constructed as fully described in our Letters Patent hereinabove referred to.

Referring now more particularly to the improvement constituting the subject-matter of our present invention, 9 designates a gate extending transversely across the path of the discharging material substantially above that point on the periphery of the roller at which the material tends to drop by gravity therefrom when the roller is turned. The gate 9, which is preferably a plain rectangular metal strip or plate, is secured at or near its opposite ends to arms 10, mounted on a spindle 11, itself mounted in and between the side walls 3 of the hopper. The arms 10 are preferably formed with integral forward extensions 10^a, preferably set at such an angle to the plane of the gate as that when the gate is opened to its fullest extent the arms 10^a will swing across and behind the vertical plane passing through the pivot rod or spindle 11. Adjustably and slidably mounted on the arms 10^a are a pair of counterweights 12.

13 designates a stop-rod set in and extending across between the inner faces of the side walls 3 in the path of the outer ends of the arms 10^a when the latter are rocked inwardly.

When the gate 9 is closed, as indicated by full lines in Fig. 1, the counterweights 12 are sufficiently heavy to hold the gate closed with sufficient energy to prevent the exit of a small amount of ore, such as might fall thereagainst when an empty pocket is receiving its initial refilling load, or such as might fall thereagainst after the discharging operation of the roller has been stopped, due to the presence of a certain quantity of ore resting on the upper surface of the roller near the point or line where the forces of cohesion and gravity about counterbalance each other. In such position it obviously prevents the unintended discharge of lumps or particles of material when the roller is not in operation. When the ore is to be withdrawn, the roller being revolved as the arrow shows, the flow-line of the ore is about as shown by the dotted line *a b*, and the ore overcomes the weight of the counterweights and in thrusting open the gate 9 carries the counterweights across and back of the vertical plane passing through the pivotal

axis 11 of the gate, after which the gate obviously remains open under the effect of the counterweights. The stop-rod 13 receives and supports the ends of the weight-carrying arms 10^a after the latter have passed sufficiently beyond the pivot to insure the open position of the gate. After the discharging operation has been completed or the operation of the pocket is shut down for any considerable period of time the gate is closed manually, the comparative weights of the gate and the counterweights being such that when the gate is open, as shown in dotted lines, it requires but little effort on the part of the operator to restore it to the original closed position.

We claim—

1. The combination with a pocket or hopper having a discharge-roller mounted across its discharging end, of a pivoted gate in the nature of a guard mounted above and parallel with the discharging-surface of said roller, and controlling means connected with the pivot of said gate serving to hold the latter stationary in both its fully open and closed positions, but permitting the gate to pass from closed to open position under the impact of the material thereagainst when the roller is operated, substantially as described.

2. The combination with a pocket or hopper having a discharge-roller mounted across its discharging end, of a pivoted gate in the nature of a guard mounted above and parallel with the discharging-surface of said roller, and a counterweight mounted on the pivot of said gate in such a relation thereto as to hold the gate stationary in both its fully open and closed positions, but permitting the gate to pass from closed to open position under the impact of the material thereagainst when the roller is operated, substantially as described.

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