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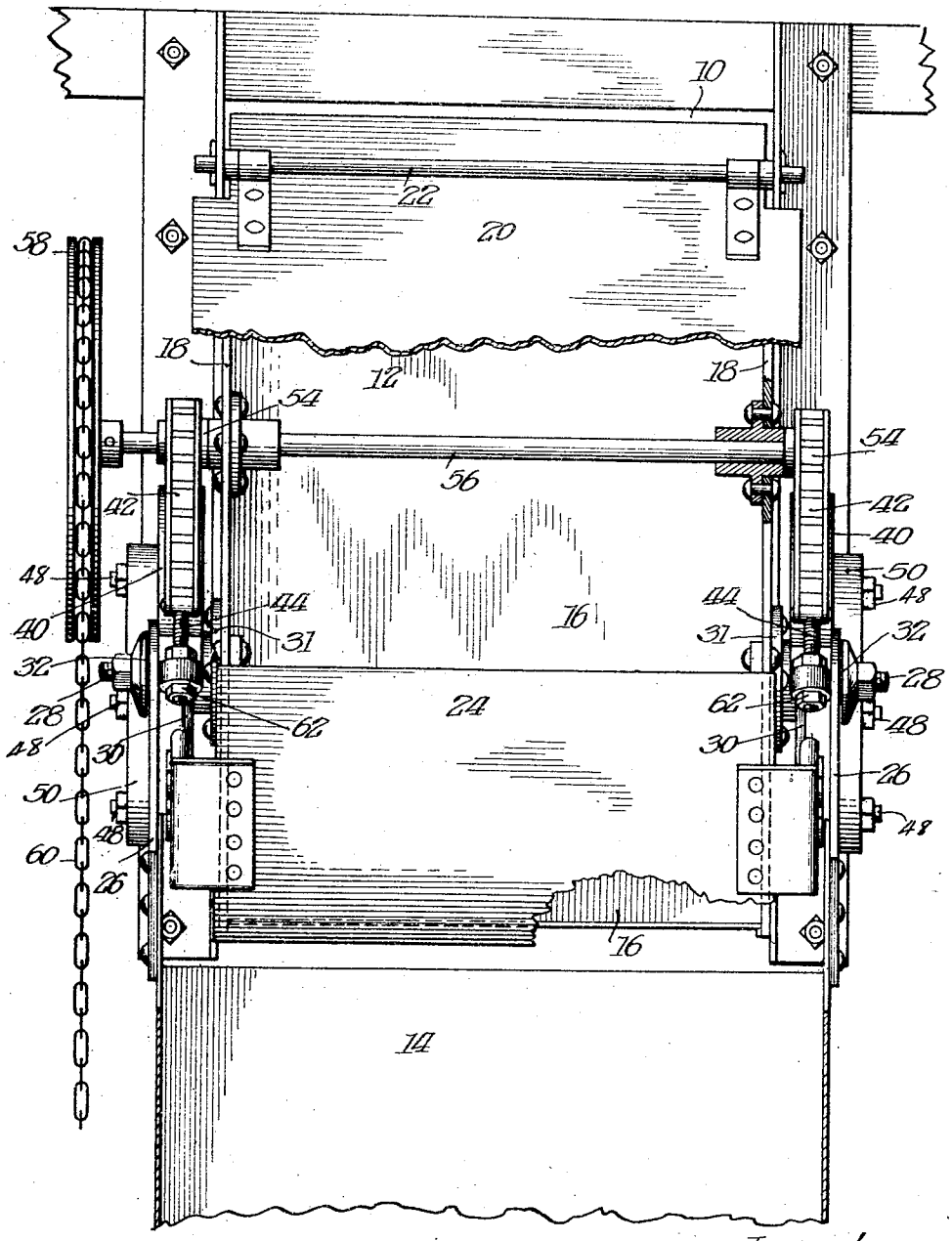
DISCHARGE GATE FOR STORAGE RECEPTACLES.

APPLICATION FILED JULY 12, 1919.

1,366,334. **Patented Jan. 18, 1921.**

3 SHEETS—SHEET 1.

Fig. 1



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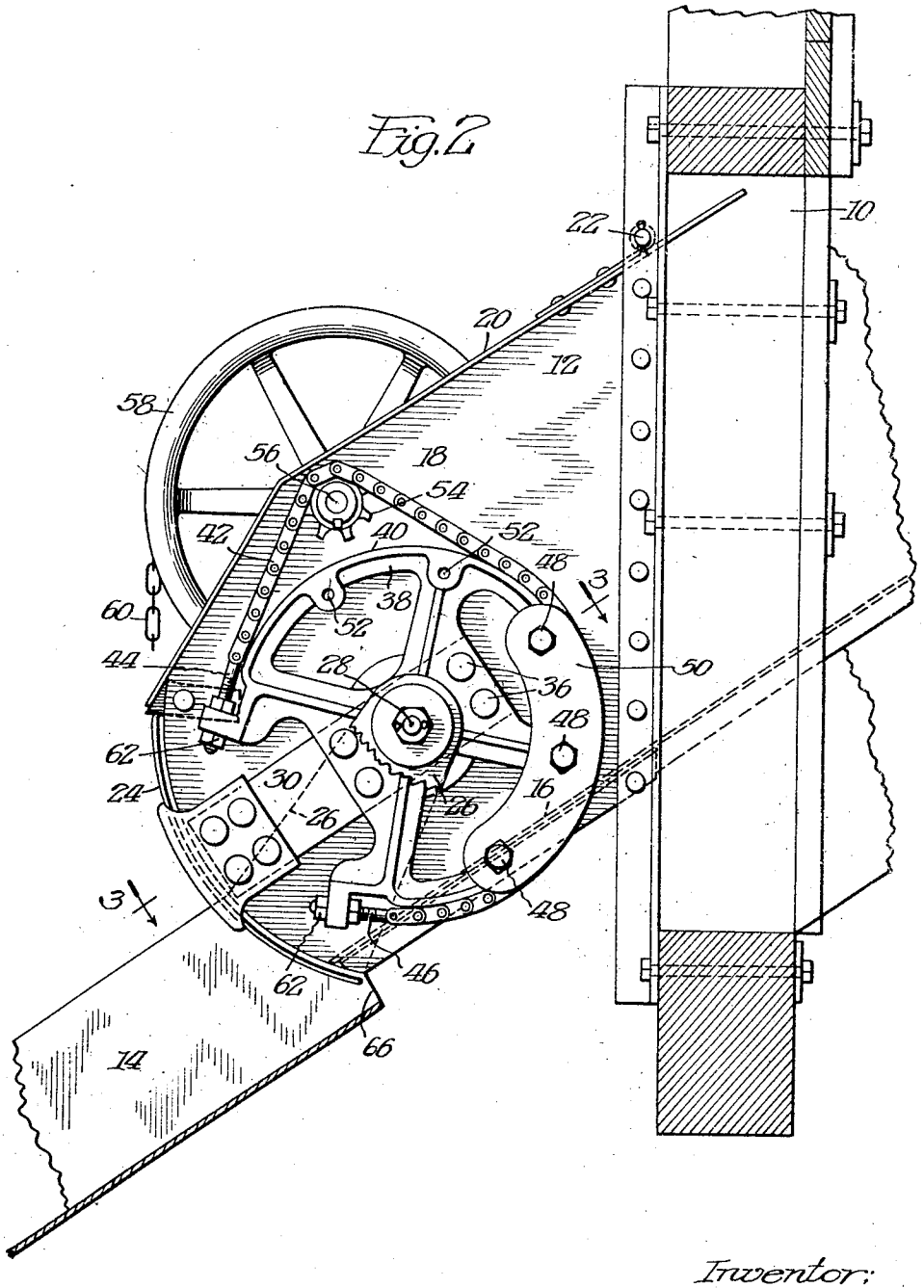
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3 SHEETS—SHEET 2.

Fig. 2



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DISCHARGE GATE FOR STORAGE RECEPTACLES.

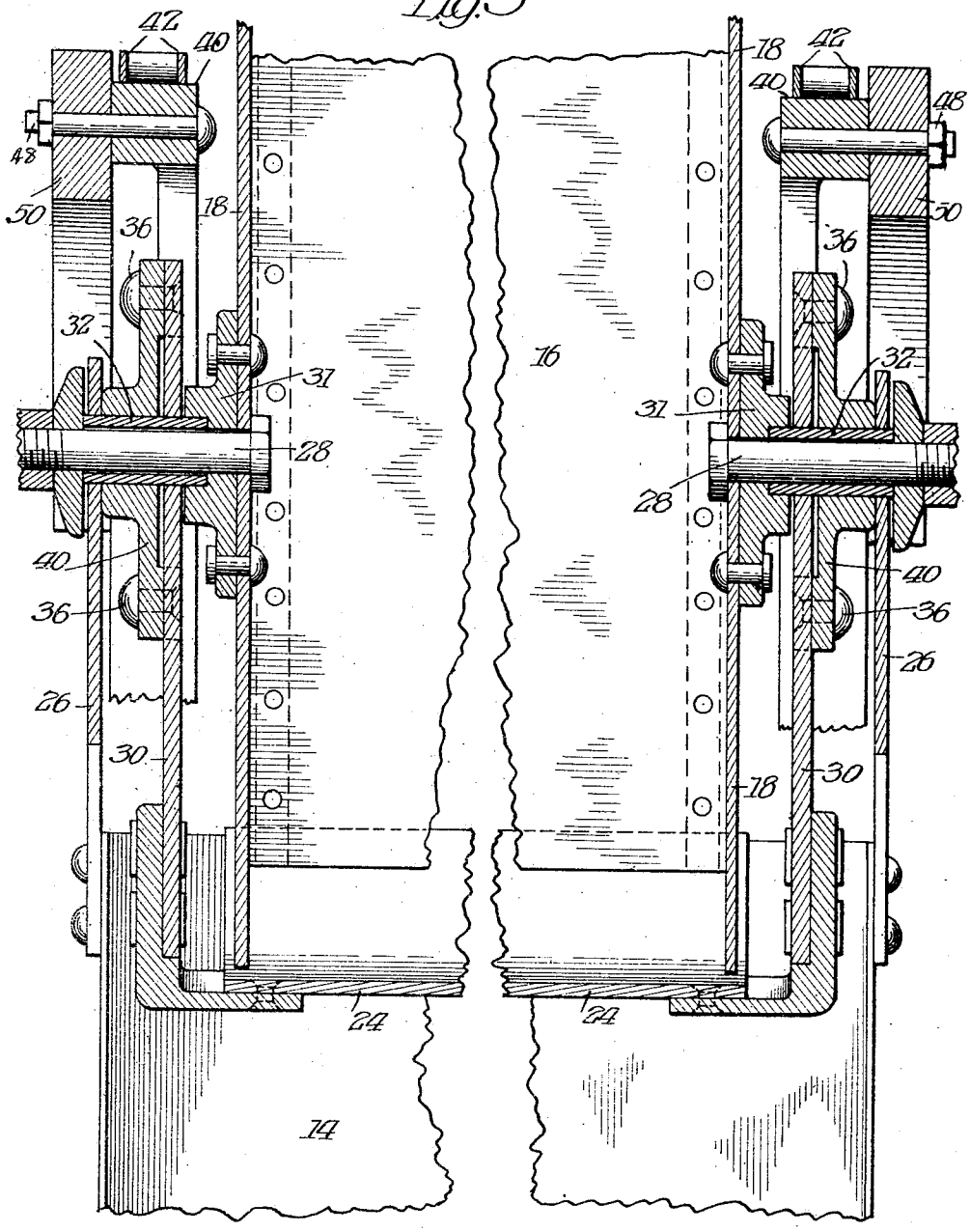
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3 SHEETS—SHEET 3.

Fig. 3



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UNITED STATES PATENT OFFICE.

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DISCHARGE-GATE FOR STORAGE-RECEPTACLES.

1,366,334. Specification of Letters Patent. Patented Jan. 18, 1921.

Application filed July 12, 1919. Serial No. 310,413.

To all whom it may concern:

Be it known that I, FREDERICK N. WHITESELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Discharge-Gates for Storage-Receptacles, of which the following is a specification.

This invention relates to means for closing the discharge chute from a storage receptacle during the time that material, contained in said receptacle, is flowing therefrom.

The object of the invention is to provide positive, powerful mechanism of this class which is especially adapted for stopping the flow of material contained in such receptacle, particularly where the material is composed of a great volume of large, heavy objects of irregular shape, such for instance as chunks of coal flowing from a storage bin to a railroad car or locomotive or the like.

The invention consists in mechanism in carrying out the foregoing objects which can be easily and economically made, which is satisfactory and positive in operation and is not readily liable to get out of order, and more particularly in a gate mechanism adapted to cut through or across a chute which is so positively and accurately controlled that it can be easily held in any given position or moved at the will of the operator in either direction.

More particularly, the invention consists in features and details of construction which will be hereafter more fully set forth in the specification and claims.

Referring to the drawings in which similar numerals indicate the same parts throughout the several views,

Figure 1 is a front view of a receptacle chute equipped with mechanism of this invention in its preferred form.

Fig. 2 is a side view of the device of Fig. 1, enough of the exterior parts of the chute being broken away so as to afford a clear view of the operating mechanism.

Fig. 3 is a detail sectional plan view taken on the line 3—3 of Fig. 1.

The device of this invention is shown applied to one side wall 10 of a coal or other material receptacle from which projects a main chute member 12 leading to supplemental chute member 14. Chute 12 comprises a bottom plate 16, two side walls 18, and a cover plate 20 hinged at 22, the whole so arranged so as to form at the lower extremity of the device a discharge port closed by the semi-circular gate 24 leading to the supplemental chute 14, suspended by arms 26, pivoted on trunnions 28, carried on sides 18 of the main chute by bracket members 31 (Fig. 3). Gate member 24 is rigidly secured at its opposite sides to arms 30 journaled about said trunnions 28; more specifically the arms take direct bearing upon the tubular members 32, fitted over the trunnion bolts 28. These members 32 are provided to afford rigidity of construction when in operation and easy dismounting of the gate when it is necessary to remove it. Each arm 30 is rigidly secured by any suitable means, as for instance, the rivets 36 to the web of an adjacent segmental wheel 38, whose circumference 40 is embraced by a sprocket chain 42 whose opposite ends are connected to the wheel at 44 and 46.

Attached to the circumference of each wheel 38 by any suitable means as bolts or rivets 48 is a segmental weight 50 adapted to counterbalance the arms 30 and the gate 24. Each counterweight is adjustable about the circumference of the wheel by attaching it in place by inserting its securing rivets 48 through different selected groups of holes 52 provided for the purpose.

Each chain 42 travels over and is driven by an independent wheel 54 on a shaft 56, driven by a wheel 58, operated by any suitable means as an ordinary pull chain 60.

There is one chain 42 on each side of the chute 12, each having its own sprocket wheel 54 on shaft 56 from which it will be seen that adjustments of these chain devices may be made independently at points 44 and 46, heretofore described, through the proper use of adjusting nuts 62 provided for the purpose. This has a distinct advantage over using direct intermeshing gearing at opposite sides of the chute.

Fig. 2 of the drawing shows the gate 24 in closed position. When it is open the mechanism described is operated to rotate it in a counter clockwise direction about trunnion 28 through an opening 66 provided for the purpose between main chute 12 and supplemental chute 14. When the door has been moved completely through this opening 66 coal or other material in the main recep-

tacle can pass down chute 12 into the supplemental chute 14. When it is desired to stop the flow of such material, the operator manipulates wheel 58 to rotate wheels 38 and consequently gate 24 in a clockwise direction. As the gate so moves its upper edge passes to the left through opening 66 and cuts into and through the flowing material in chute 12 until the entire gate reaches the position of Fig. 2 where the flow of material is entirely shut off.

As the counterweight 50 practically balances the gate very little power is required to move the gate itself and as the gate moves upward in closing, it is comparatively easy to move it through the flowing material in chute 12, particularly as the gate 24 is curved and moves in the arc of a circle about the centers of trunnions 28.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:—

1. In mechanism of the class described, an open ended chute, trunnions on opposite sides of the chute, a wheel member on each trunnion, a gate mechanism supported by and movable with said wheels, movable to open and close the chute, means for rotating the wheels to so move the gate and a counterweight mechanism attached to the wheel mechanism to substantially balance the gate mechanism.

2. In mechanism of the class described, an open ended chute, trunnions on opposite sides of the chute, a wheel member on each trunnion, a gate mechanism supported by and movable with said wheels, movable to open and close the chute, means for rotating the wheels to so move the gate, a counterweight mechanism attached to the wheel mechanism to substantially balance the gate mechanism, and means for adjusting the position of the counterweight mechanism with reference to the wheel mechanism.

3. In mechanism of the class described, an open ended chute, a gate mechanism for closing the open end of the chute, means pivoting the gate mechanism on the sides of the chute so arranged that the gate can be rotated between two positions to open and close the chute, a wheel segment mounted to move in unison with the gate mechanism, a flexible driving member on the wheel segment, and means for moving said flexible driving member in either direction, for the purposes set forth.

4. In mechanism of the class described, an open ended chute, a gate mechanism for closing the open end of the chute, means pivoting the gate mechanism on the sides of the chute so arranged that the gate can be rotated between two positions to open and close the chute, a wheel segment mounted to move in unison with the gate mechanism, a flexible driving member on the wheel segment, means for moving said flexible driving member in either direction, and means for selectively adjusting the flexible driving member along the circumference of said wheel segment, for the purposes set forth.

5. In mechanism of the class described, an open ended chute, trunnions on opposite sides thereof, a wheel member on each trunnion, a gate mechanism rigid with the wheels, movable by them between two different positions, one in which it closes the chute, and in the other of which it leaves it open, a flexible driving member about the circumference of each wheel, and operating means at a distance from the circumferences of the wheels engaging each of the said flexible driving members, adapted through them to rotate the wheels and attached parts in either direction to so move the gate.

6. In mechanism of the class described, a chute having an open end, a curved door rockable across the open end to close it, means pivoting the door on the side of the chute, to afford such movement of the door, a wheel segment on each side of the chute rigid with the door mechanism, a shaft at one side of said wheel mechanism, a flexible drive mechanism driven by said last mentioned shaft, located at each side of the chute, one for each wheel segment, means for driving said last mentioned shaft, and means connecting opposite ends of each flexible drive mechanism to its adjacent wheel segment, for the purposes set forth.

7. In mechanism of the class described, a chute having an open end, a curved door rockable across the open end to close it, means pivoting the door on the side of the chute, to afford such movement of the door, a wheel segment on each side of the chute rigid with the door mechanism, a shaft at one side of said wheel mechanism, a flexible drive mechanism driven by said last mentioned shaft, located at each side of the chute, one for each wheel segment, means for driving said last mentioned shaft, means connecting opposite ends of each flexible drive mechanism to its adjacent wheel segment, and means for adjusting each end of said flexible drive member along the circumference of its adjacent wheel, for the purposes set forth.

8. In mechanism of the class described, an open ended chute, trunnions on opposite sides of the chute, a wheel member on each trunnion, an arm carried by each wheel member, a gate carried by said arms and movable by them to open and close the chute, a counterweight to balance the gate carried by each wheel, a sprocket chain about the circumference of each wheel, means for adjusting the longitudinal position of each sprocket chain on its wheel, a shaft at a distance from the wheels, a sprocket pinion on the shaft one for each sprocket chain, and

means for rotating the shaft for the purposes set forth.

9. In mechanism of the class described, an open ended chute, a gate mechanism for closing the open end of the chute, means pivoting the gate mechanism on the sides of the chute so arranged that the gate can be swung between two positions to open and close the chute, a wheel segment mounted to move in unison with the gate mechanism, a sprocket chain on the wheel segment, means at a distance from the wheel for moving said flexible driving member in either direction and means for adjusting the chain lengthwise over the wheel, for the purposes set forth.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

FREDERICK N. WHITESELL.

Witnesses:

DWIGHT B. CHEEVER,

A. ROSENTHAL.