

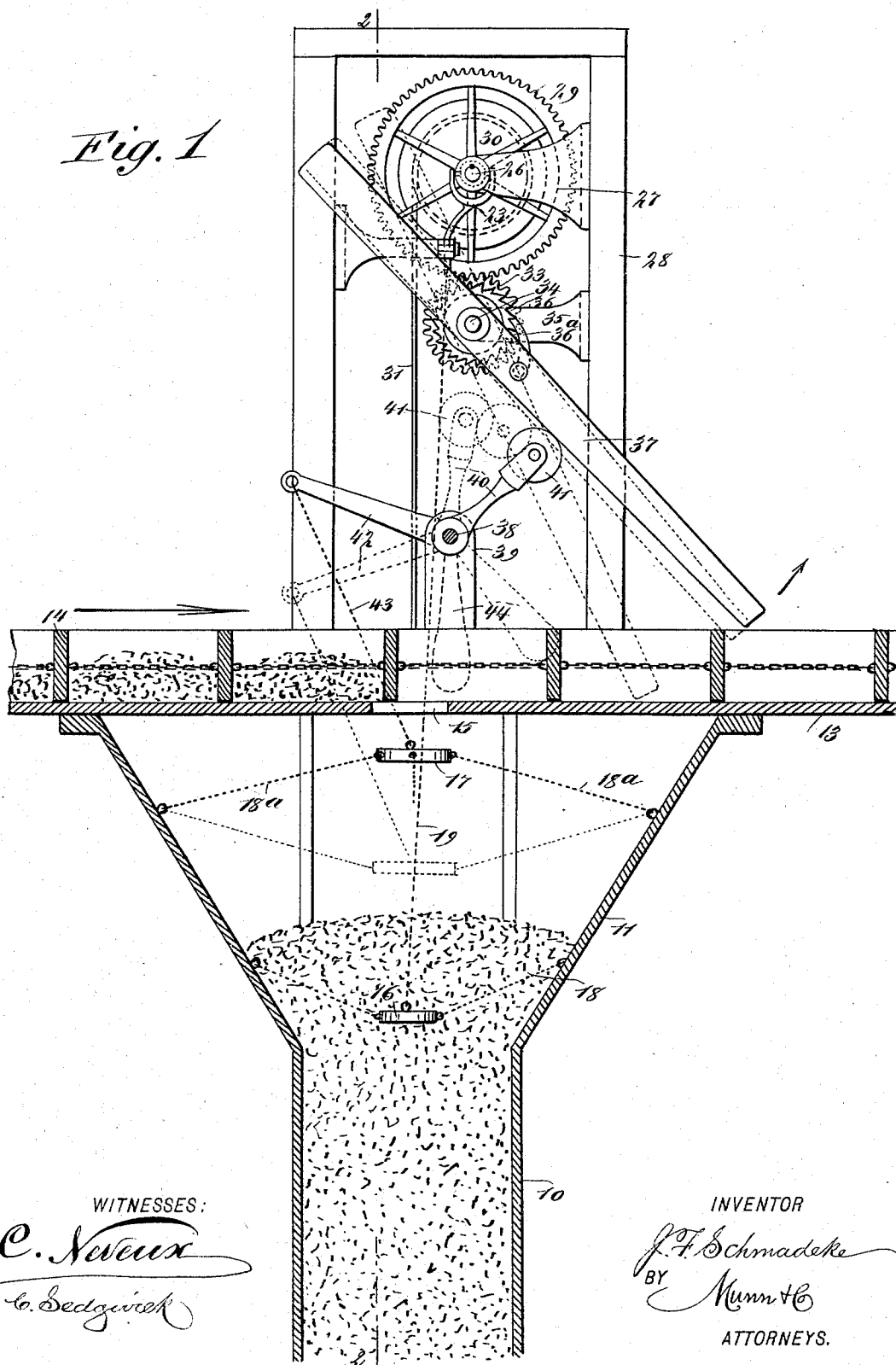
(No Model.)

3 Sheets—Sheet 1.

J. F. SCHMADEKE.
COAL CHUTE REGULATOR.

No. 518,653.

Patented Apr. 24, 1894.



THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.)

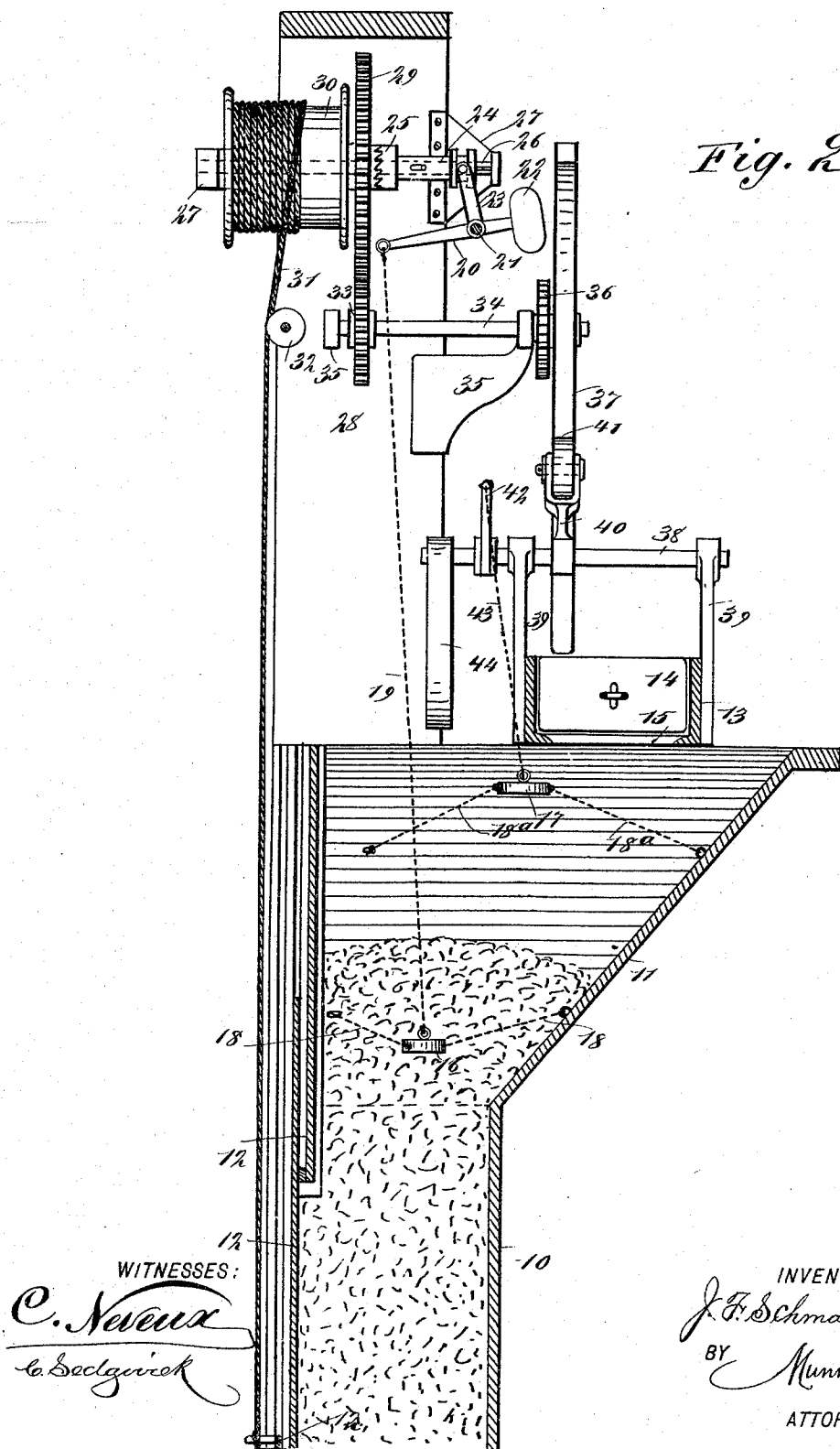
3 Sheets—Sheet 2.

J. F. SCHMADEKE.
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Fig. 2



(No Model.)

3 Sheets—Sheet 3.

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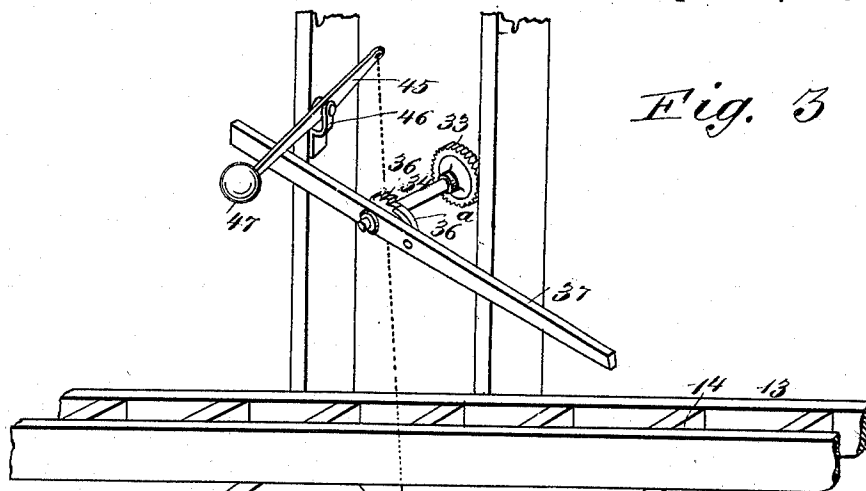


Fig. 3

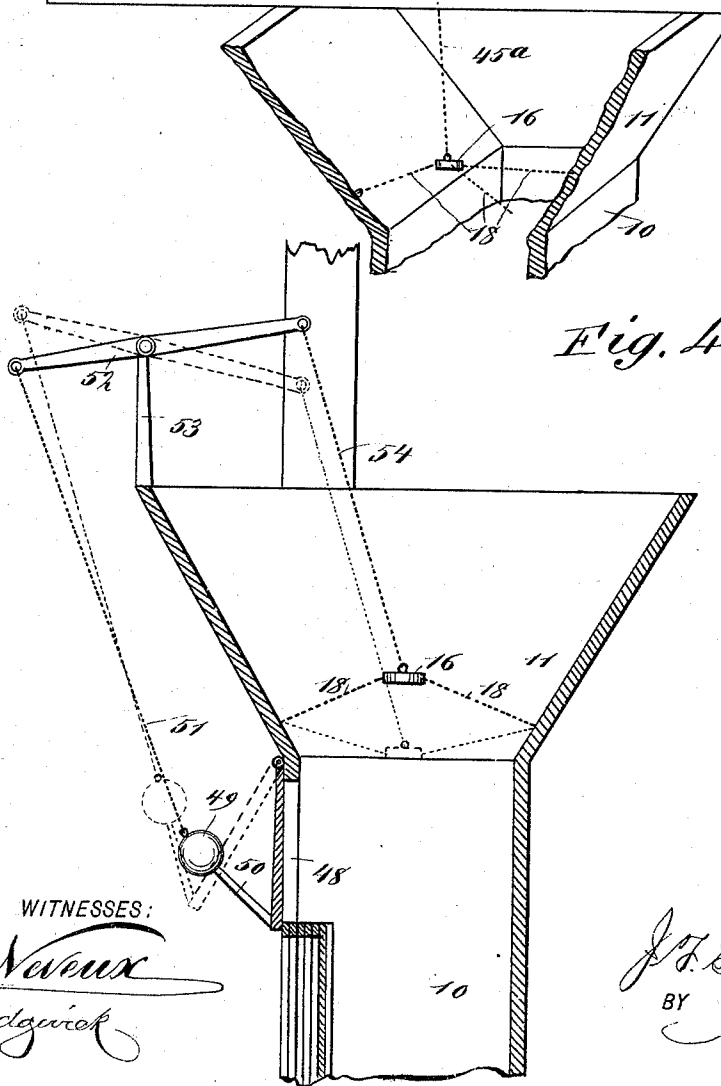


Fig. 4

WITNESSES:
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UNITED STATES PATENT OFFICE.

JOHN F. SCHMADEKE, OF BROOKLYN, NEW YORK.

COAL-CHUTE REGULATOR.

SPECIFICATION forming part of Letters Patent No. 518,653, dated April 24, 1894.

Application filed July 7, 1893. Serial No. 479,803. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. SCHMADEKE, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Coal-Chute Regulator, of which the following is a full, clear, and exact description.

My invention relates to improvements in coal chutes such as are filled by elevators or similar devices and from which coal is withdrawn and used. It is desirable that coal chutes of this class be kept full, or substantially so, to prevent coal from breaking badly as it drops to the chute bottom; and the object of my invention is to provide an apparatus which is adapted to operate automatically in connection with the usual elevator, to throw mechanism into gear by the filling of the chute, which shall wind up a cable on a drum and open the chute doors, and also to arrange the mechanism so that it shall work in a converse way to close the doors as the chute becomes empty.

To these ends my invention consists in certain features of construction and combinations of parts, as will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a sectional elevation of the complete apparatus. Fig. 2 is a vertical section on the line 2—2 in Fig. 1, at right angles to the view illustrated in Fig. 1. Fig. 3 is a broken perspective view of a slightly modified form of the apparatus; and Fig. 4 is a sectional elevation of another modification of the apparatus, in which there is no superstructure above the chute and in which it is necessary to attach the apparatus to a swinging door.

The chute 10 is of the usual vertical kind, having a hopper-like top 11 and a plurality of sliding doors 12 in one side, these doors being arranged so that by the lifting of the lower and outer one the others are successively raised. Above the chute is the usual conveyer or carrier 13, traveling horizontally

or paddles 14 and a hole 15 in the bottom through which the coal passes into the top of the chute. In the upper portion of the chute and hopper-like top 11 thereof are floats 16 and 17, placed one beneath the other and suspended loosely by chains 18 and 18^a so as to permit them to rise and fall, as hereinafter described.

The lower float 16 connects by a chain 19 with one end of a lever 20 which is fulcrumed on the shaft 21 above the conveyer and chute, and which has at its opposite end a weight 22, heavy enough to raise the chain 19 and float 16 when the latter is not weighted down by coal above it. The lever 20 carries an upwardly-extending arm 23 which engages, in the usual way, a sleeve 24 of a clutch 25, which is of common construction, and is mounted on a shaft 26 which turns in suitable bearings 27 on the framework 28 above the chute, and the clutch is adapted to connect or disconnect the gear wheel 29 and drum 30 with or from the shaft 26. The drum 30 carries a cable 31 which extends downward over a suitable guide pulley 32 and is secured to the outer of the doors 12.

It will be seen that when the float 16 is depressed by a quantity of coal above it, the chain 19 will be pulled down, the lever 20 tilted, and the clutch 25 thrown into engagement with the gear wheel 29 and shaft 26, so that when the shaft is turned, the cable 31 is wound upon the drum and the doors raised. The gear wheel 29 meshes with a pinion 33 on a shaft 34 below it, which shaft is journaled in suitable supports 35 and has near one end a ratchet wheel 36 which is engaged and turned by a pawl 36^a on a long tilting lever 37, which is also fulcrumed on the shaft 34 and the lower end of which drops, when unopposed, into the path of the buckets of the conveyer or carrier.

Beneath the lever 37 is a shaft 38 which extends transversely above the conveyer and is supported in suitable hangers or bearings 39, and on the shaft 38 is an upwardly-extending arm 40 which is directly beneath the lever 37 and in the free end of which is journaled a roller 41 on which the lever rides. The shaft has also a crank arm 42 extending

from the side opposite the arm 40, and to the outer end of this arm 42 is secured a chain 43 which extends downward and is fastened at its lower end to the upper float 17.

5 The shaft 38 carries a weight 44 which normally hangs in a vertical position, as shown by dotted lines in Fig. 1, and this is sufficiently heavy to swing the arms 40 and 42 into the position shown in Fig. 1, so as to hold
10 the lower end of the lever 37 almost out of the path of the conveyer buckets and they will thus touch it but lightly as they travel, and so as to hold the float 17 in a raised position.

15 When the coal rises in the chute so as to depress the lower float 16, the winding mechanism will be thrown in gear, as already described, and as soon as the coal rises a little higher, the float 17 is depressed, which move-
20 ment of the upper float 17 depresses the arm 42 and raises the arm 40 into the position shown by dotted lines in Fig. 1, thus permitting the lower end of the lever 37 to fall into engagement with the buckets 14 of the ele-
25 vator, and as these travel along they successively strike the lower end of the lever 37 so that the said lower end is alternately swung upward and downward and the action of the pawl 36^a on the lever, in connection with the
30 ratchet wheel 36, causes the shaft 34 to be turned and the movement is imparted to the pinion 33 and gear wheel 29 to the drum 30, and the cable 31 is wound thereon, and the doors opened.

35 In Fig. 3 I have shown a slightly modified form of the apparatus, in which the clutch mechanism is dispensed with and a single float used. Here a tilting lever 45 is fulcrumed in a suitable support 46 above the chute
40 and conveyer, and one end of the lever 45 extends across the upper end of the lever 37 and is provided with a weight 47 which is of sufficient heft to normally depress the upper end of the lever 37 and raise the lower end,
45 and it also raises the single float 16 in the chute with which the lever 45 connects by a chain 45^a.

Fig. 4 illustrates the use of the apparatus without the gears, and where it is necessary
50 to have a swinging gate, as here shown, the chute 10 is provided with a swinging gate 48 near the top, which is closed by a weight 49 carried by an arm 50 projecting upward and outward from the free edge of the gate 48.
55 The weight 49 has secured to it an upwardly-extending chain 51 which is secured to the outer end of a lever 52, which is fulcrumed near its center in a support 53 projecting upward from the hopper-like top 11 of the chute.
60 The inner end of the lever 52 connects by a chain 54 with the single float 16 in the top of the chute.

It will be seen that when the chute is not quite full, the weight 49 closes the gate 48
65 and lifts the float 16, but when the chute is

full the coal therein depresses the float 16 and the latter pulls downward on the chain 54, tilts the lever 52, and lifts the chain 51 so as to swing the arm 50 and gate 48 outward, thus permitting the surplus coal to pass out
70 through the gate 48.

I have shown and described floats 16 and 17 for operating the door controlling mechanism, and it will be understood that anything movable by the pressure of coal, such as
75 trap doors, may be substituted for the floats without affecting the principle of my invention.

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

1. The combination, with a coal chute having suitable doors, of a float suspended in the chute, means for thus suspending it and means for opening the doors set in operation
85 by the depression of the float, substantially as described.

2. The combination, with a coal chute having suitable doors, and a conveyer or carrier arranged to deliver coal to the chute, of floats
90 suspended in the chute, a gear mechanism actuated by the conveyer or carrier to operate the doors, and means for throwing the gear mechanism out of and into gear by the rise and fall of the floats, substantially as de-
95 scribed.

3. The combination, with a coal chute having suitable doors, and a conveyer or carrier arranged to deliver into the chute, of floats
100 mounted in the chute, a winding drum operatively connected by a cable with the doors, means for throwing the drum out of and into gear by the rise and fall of one float, a tilting lever adapted to drop into the path of the
105 conveyer, a gear and ratchet mechanism for turning the winding drum by the tilting of the lever, and mechanism actuated by the rise and fall of the second float for throwing the tilting lever into and out of engage-
110 ment with the conveyer, substantially as described.

4. The combination, with the chute having suitable doors, and the conveyer arranged to move above the chute, of the winding drum
115 operatively connected by a cable with the doors, a float arranged in the chute, a clutch operated by the rise and fall of the float to throw the drum into and out of gear, a tilting lever having one end extending into the path of the conveyer, a ratchet and gear con-
120 nection between the tilting lever and the drum, whereby the tilting of the lever will turn the drum, a second float in the chute, and means, actuated by the rise and fall of the second float, for throwing the lever into
125 and out of engagement with the conveyer or carrier, substantially as described.

5. The combination, of the chute, the float therein, the conveyer or carrier extending
130 across the top of the chute, the tilting lever

having one end adapted to extend into the path of the conveyer or carrier, the doors of the chute, the winding drum operatively connected with the doors, a gear and ratchet mechanism for operating the drum by the tilting lever, an arm on the shaft adapted to hold the lever out of contact with the con-

veyer, a second arm on the shaft, and a chain connecting the second arm with the float, substantially as described.

JOHN F. SCHMADEKE.

Witnesses:

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C. SEDGWICK.