

No. 606,920.

Patented July 5, 1898.

E. L. FORD.

STOP GATE.

(Application filed June 5, 1897.)

(No Model.)

Fig. 1.

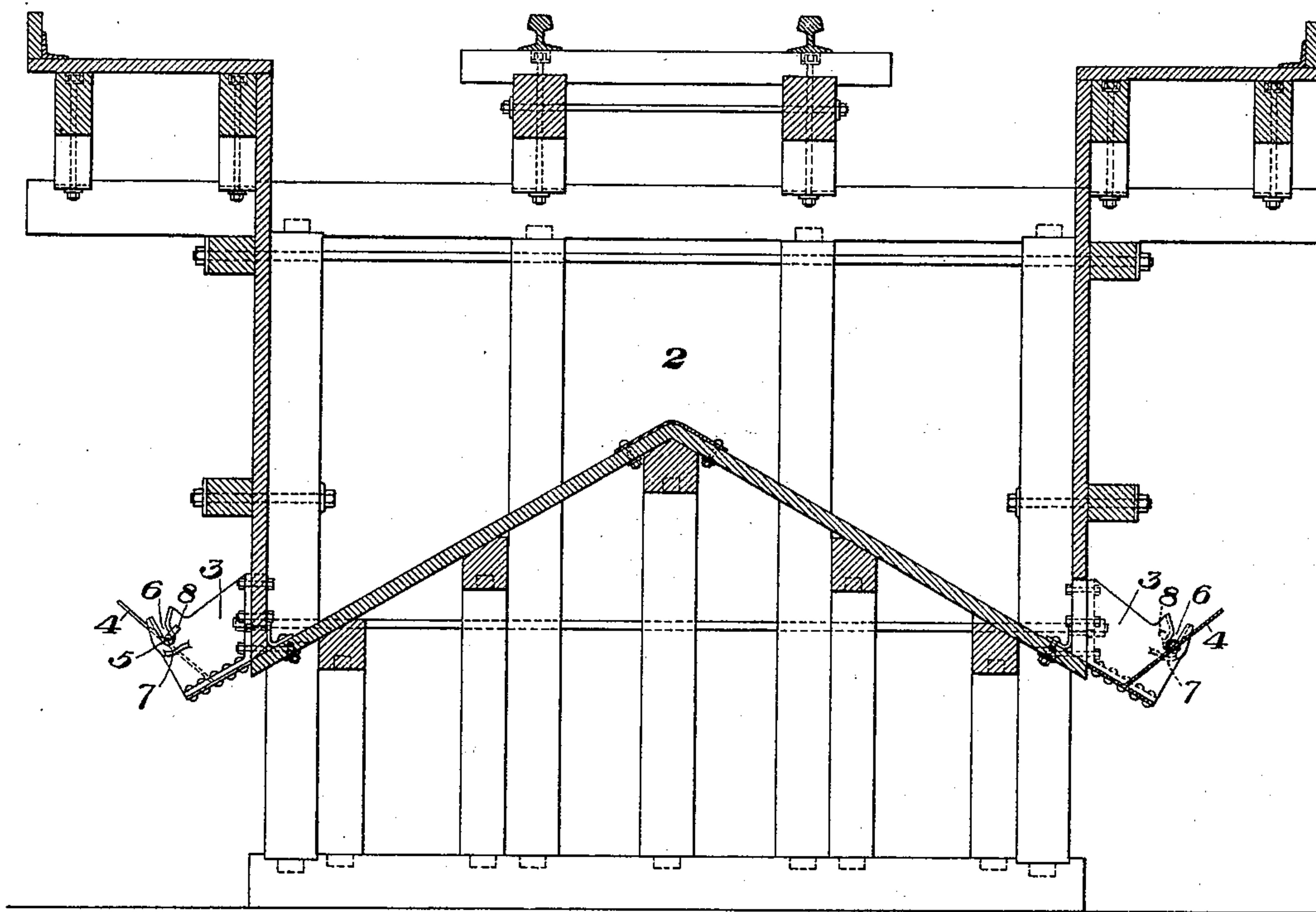


Fig. 2.

Fig. 3.

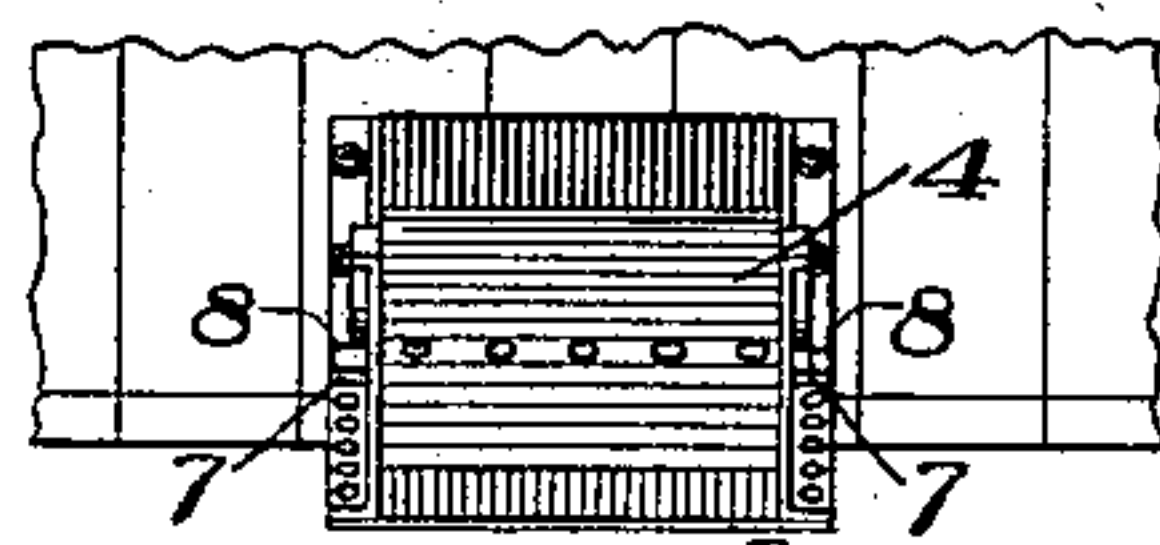
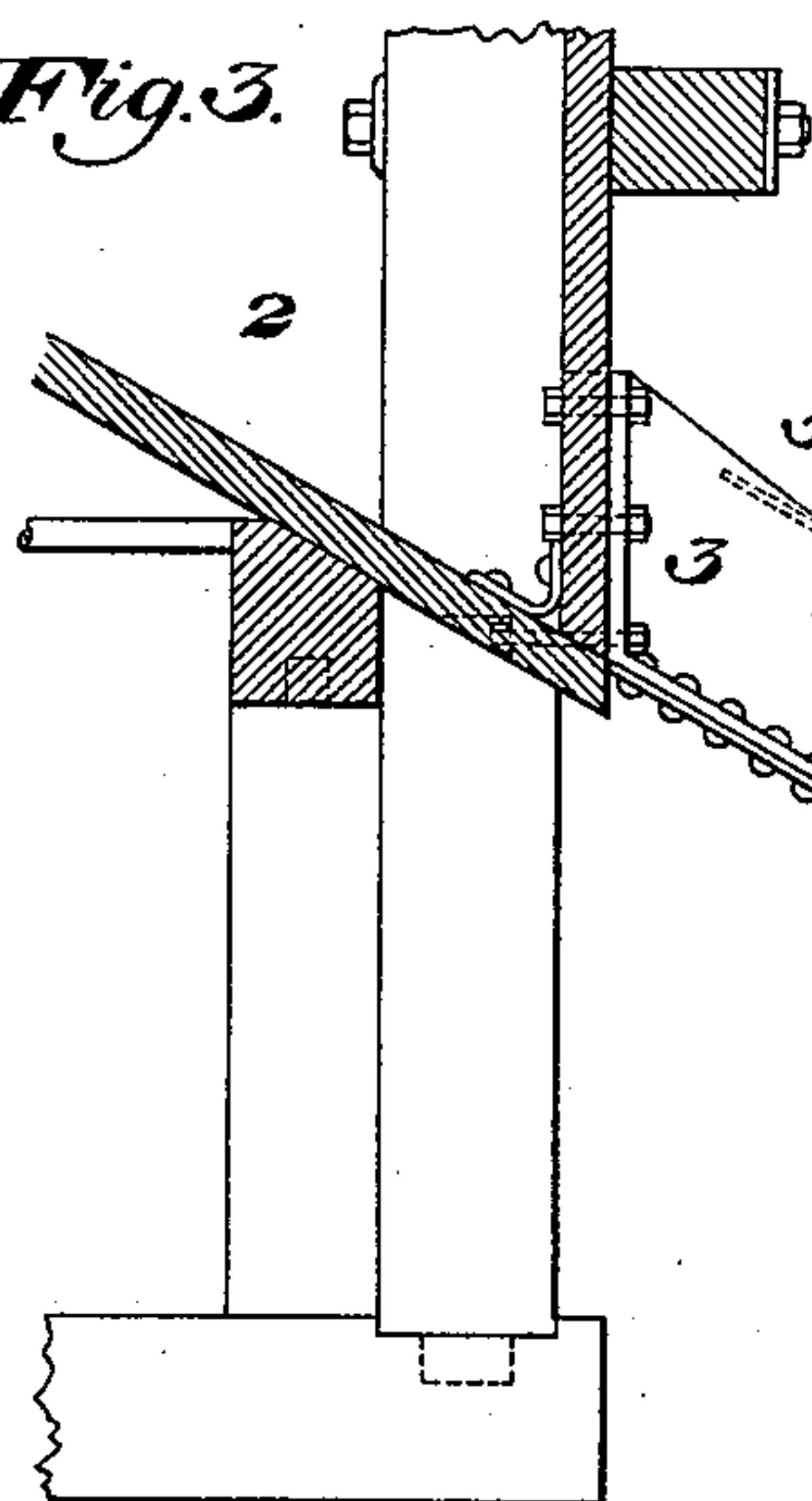


Fig. 4.

Fig. 5.

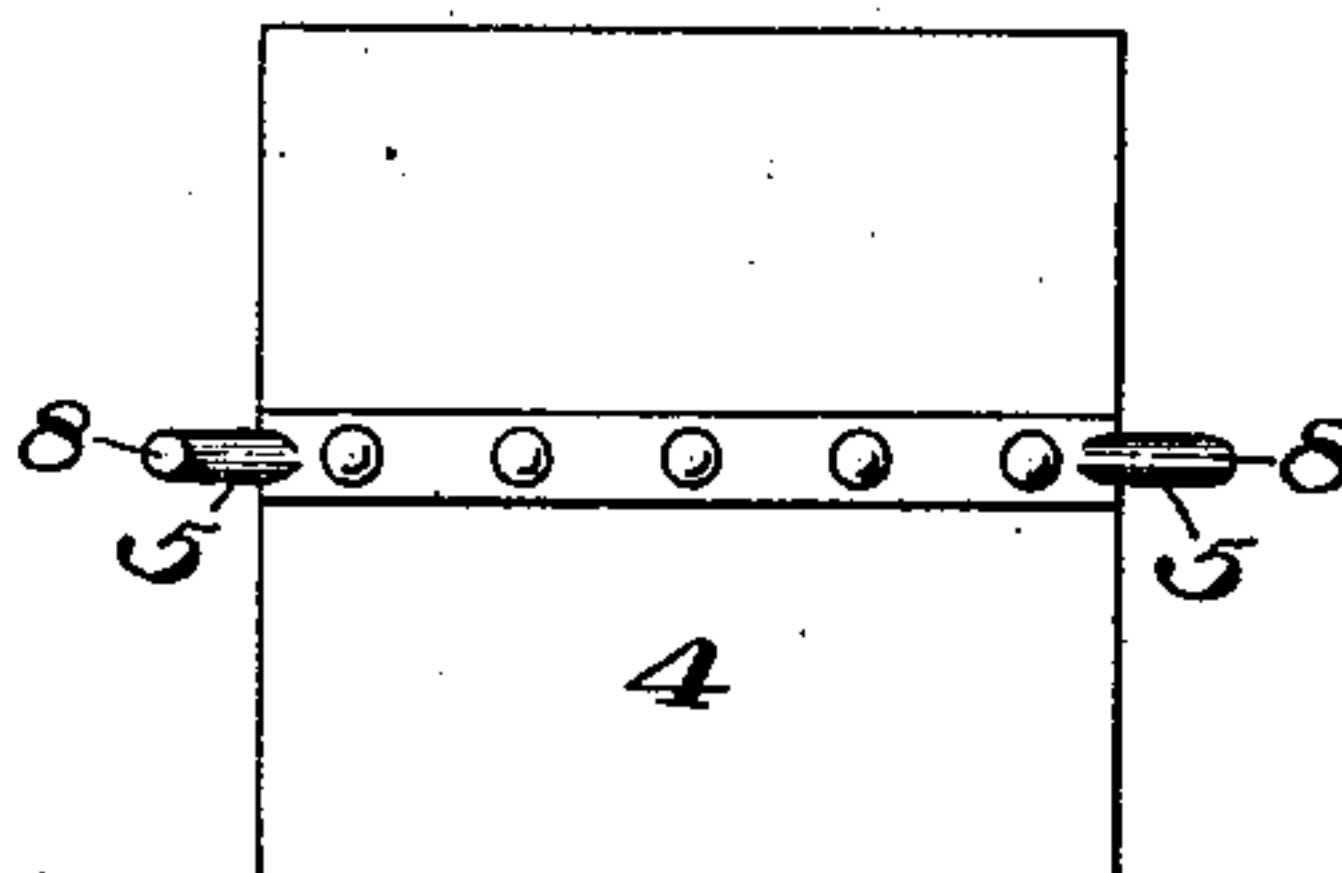
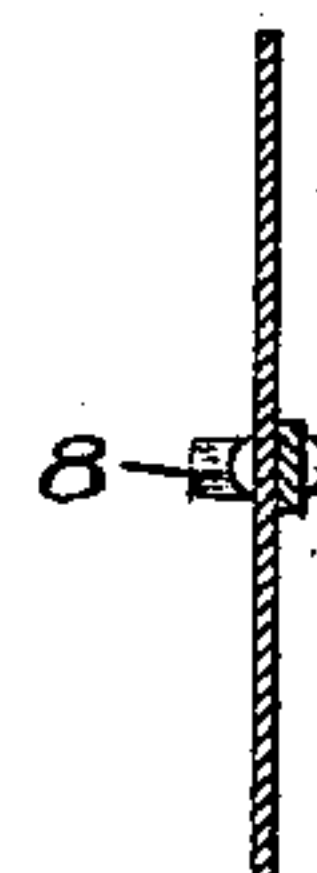


Fig. 6.



WITNESSES.

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EDWARD L. FORD, OF YOUNGSTOWN, OHIO.

STOP-GATE.

SPECIFICATION forming part of Letters Patent No. 606,920, dated July 5, 1898.

Application filed June 5, 1897. Serial No. 639,552. (No model.)

To all whom it may concern:

Be it known that I, EDWARD L. FORD, of Youngstown, in the county of Mahoning and State of Ohio, have invented a new and useful Improvement in Stop-Gates, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a cross-section of the bin, showing the spout embodying my invention. Fig. 2 is an end view of the spout. Fig. 3 is a side elevation of the spout, showing the stop-gate open. Figs. 4, 5, and 6 are detail views of the stop-gate.

In the drawings, 2 represents a bin for holding ore, limestone, &c., and 3 3 are the spouts.

My invention relates to the valve or stop-gate 4, which is used for closing the spout and which consists of a butterfly plate having at the middle opposite trunnions or pins 5, projecting from the edge and adapted to fit within slots 6, which allow to the trunnions not only a rotary motion, but, when desired, a sliding motion. The perpendicular distance from the trunnions to the bottom of the spout against which the end of the valve bears is, when the trunnions are at their lowest position, less than the distance between the trunnions and the lower edge of the valve. The angle at which the valve when closed lies relatively to the bottom of the spout is so related to the weight, height, and physical condition of the contents of the bin and to the angle of the spout that the material may not of itself be able to unseat the valve. On the outer sides of the spout are shelves 7, and at the ends of the trunnions 5 are angled extensions or arms 8, one of which will engage the shelves 7 when the stop-gate is in the position shown in Fig. 3.

The operation of the device is as follows: When the stop-gate is in the position shown at the right of Fig. 1, inclining inwardly, with its bottom edge bearing upon the bottom plate of the spout, the pressure of the material in the bin acting against the stop-gate keeps the same closed. If it is desired to open the spout and to permit of the discharge of material from the bin, the operator pushes upwardly on the top of the stop-gate, thereby raising its trunnions in the slots, so as to free the lower

edge of the gate from the bottom of the spout, whereupon the material in the bin forces the stop-gate open into a position parallel with the bottom of the spout, allowing the material to run freely under it. It is not necessary for the operator to hold the stop-gate in this position, for the arms 8 being slightly longer than the distance between the shelf 7 and the normal position of the trunnion when the stop-gate is closed one of said arms will engage the shelf when the stop-gate is in the parallel position above mentioned and by acting frictionally will so hold the same. This position of the parts is shown in Fig. 3.

When it is desired to close the stop-gate, the operator moves the same in the direction of the arrow A until its inner end comes into contact with the moving material, which immediately forces it into the closed position shown at the right of Fig. 1.

The device has proved to be very satisfactory in practice. It is especially desirable when applied to the stopping of the spouts of bins for coke, ore, and limestone, though it is of general application for like purposes.

Within the scope of my invention, as defined in the claims of this specification, many changes in the construction and form of the parts may be made by the skilled mechanic, since

I claim—

1. A rotary stop-gate or valve for spouts, in combination with a bottom or rest upon which it is adapted when closed to bear, said gate or valve having an axis movable away from the bottom or rest, to permit it to be swung open; substantially as described.

2. A rotary stop-gate or valve for spouts, in combination with a bottom or rest upon which it is adapted when closed to bear in an inclined position, said gate or valve having an axis at a middle point movable away from the bottom or rest, to permit it to be swung open; substantially as described.

3. A rotary stop-gate or valve having at a middle point journals mounted in slots, a shelf or surface, and an arm adapted to bear frictionally upon the shelf and to hold the gate in open position, substantially as described.

4. The combination with a spout, of a rotary stop-gate or valve pivoted in bearings

permitting a vertical movement, the distance from the pivot to end of the valve being greater than the distance from the trunnion-bearings to the bottom of the spout, whereby
5 the valve in making a revolution must rise in the bearings, substantially as set forth.

5. A rotary stop-gate or valve with pivots mounted in slots, a shelf, and an arm arranged to bear frictionally upon the shelf,
10 the arm being longer than the normal distance of the axis of the valve to the shelf, so that the valve in revolving must be raised when the arm engages the shelf, substantially as set forth.

15 6. The combination with a spout, of a ro-

tary stop-gate or valve, the distance from whose pivots to the end of valve is greater than the normal distance of the pivots to the bottom of the spout, so that the angle the valve makes with the bottom of spout, when
20 first in contact, will be enough greater to prevent the material from raising the valve on its axis and opening the valve, substantially as set forth.

In testimony whereof I have hereunto set
my hand. 25

EDWARD L. FORD.

Witnesses:

F. D. JONES,

W. R. MERRICK.