No. 854,523. PATENTED MAY 21, 1907.

L. NOEL.

GATE VALVE.

APPLICATION FILED OCT. 13, 1906.

Fig. 1.

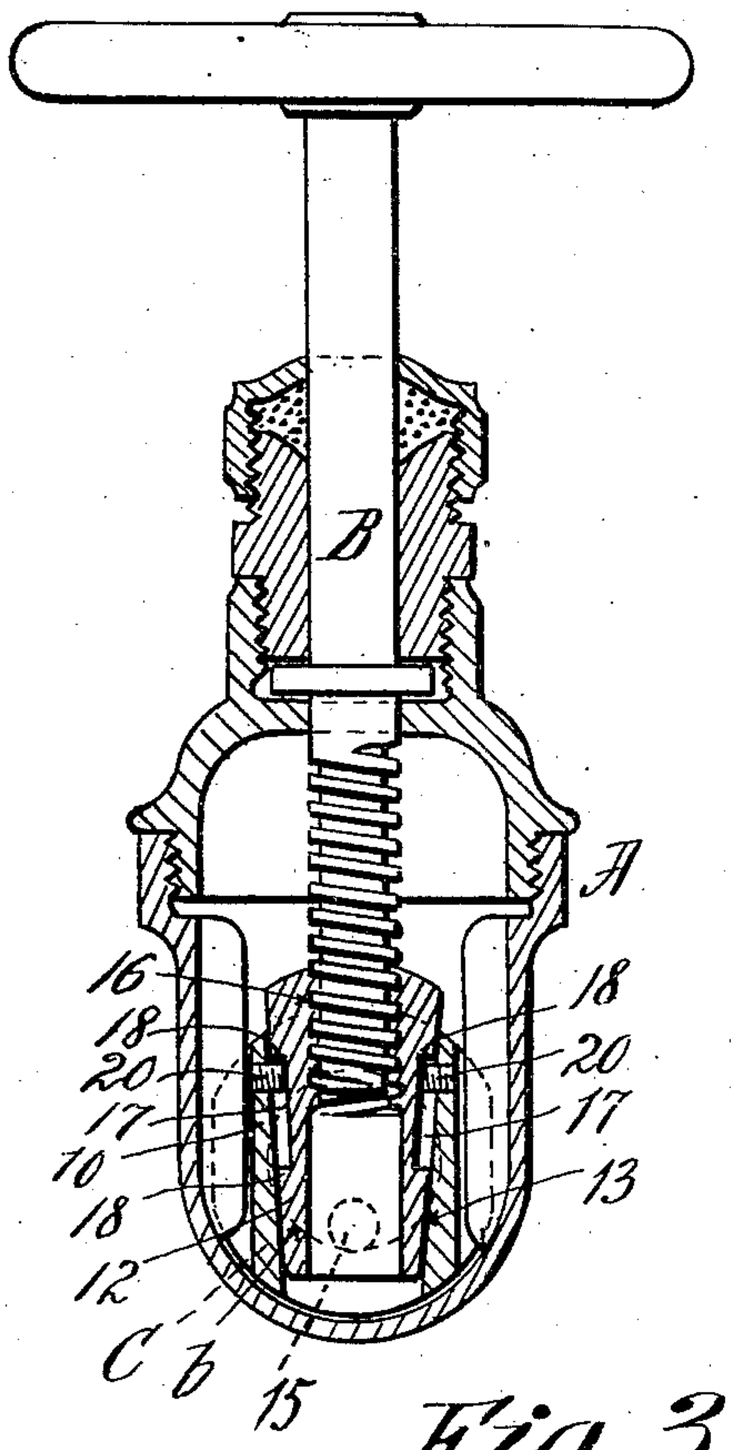


Fig. 3.

Fig. 2.

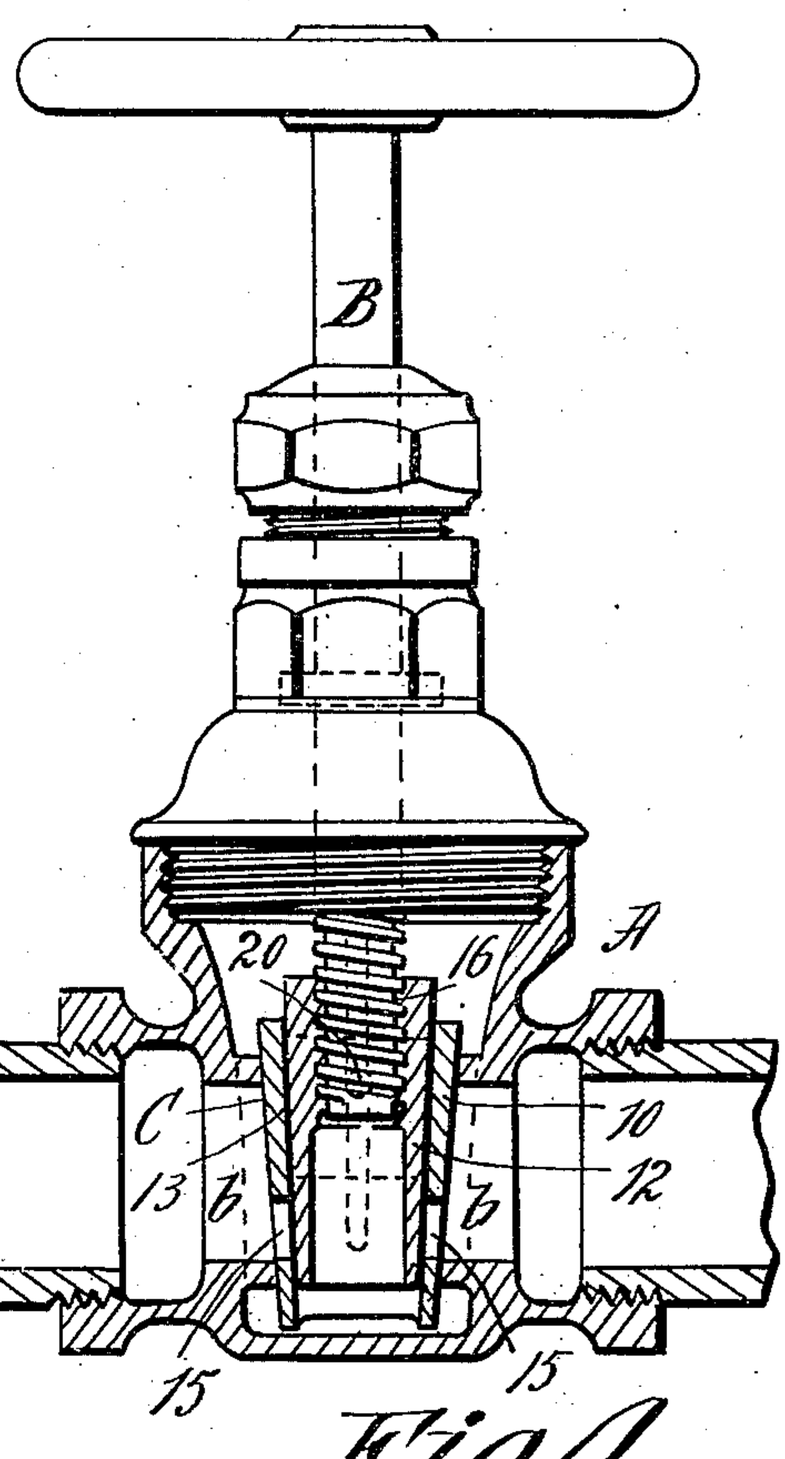
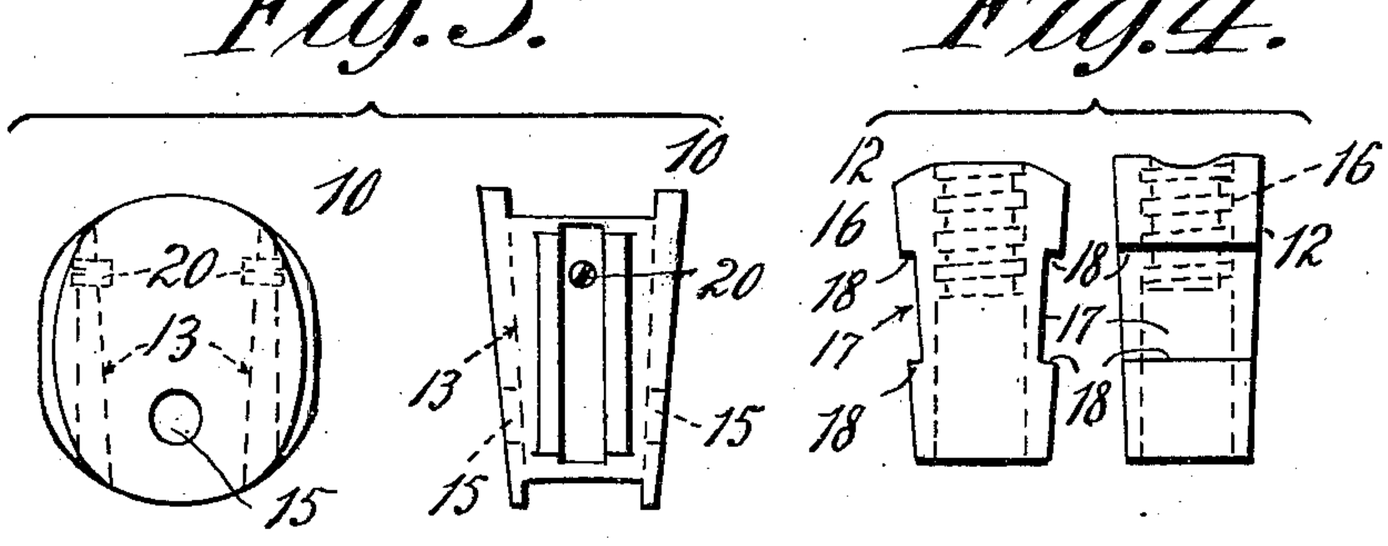


Fig. 4.



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UNITED STATES PATENT OFFICE.

LOUIS NOEL, OF INDIAN ORCHARD, MASSACHUSETTS.

GATE-VALVE.

No. 854,523. Specification of Letters Patent. Patented May 21, 1907.

Application filed October 13, 1906. Serial No. 338,872.

To all whom it may concern:

Be it known that I, LOUIS NOEL, a citizen of the United States of America, and a resident of Indian Orchard, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Gate-Valves, of which the following is a full, clear, and exact description.

This invention relates to improvements in gate valves and particularly to means therein comprised for acquiring an improved "loose neck" valve construction and for relieving the bind to which the valve-gate is subjected, when closed or seated, by the water pressure, whereby lessened power is required to bodily raise and open the gate.

The improved valve constructed in a manner to carry out both of the objects of the invention as above indicated consists in the combination with a valve-body having a screw-threaded valve-stem, of the valve-gate constructed in two sections, the main section thereof having an upwardly opening chamber therein and having a hole from side to side therethrough, intersecting said chamber, and the secondary section fitting and being vertically movable within and relatively to said chamber, and engaged and to be vertically moved by the valve stem, one of said sections having vertical ways in opposite portions thereof, and the other of said sections having members adapted for a limited extent of relative play in said ways, and for engagements with the end boundaries thereof.

The improved gate valve is illustrated in the accompanying drawings, in which,—

Figures 1 and 2 are substantially vertical sectional views taken on the plane of the axis of the valve and its stem, and respectively transversely and longitudinally relatively to the water way through the valve. Fig. 3 is a side view, and edge-view-projection, of the main section or portion of the gate valve; and Fig. 4 is a side view, and edge-view-projection, of the secondary section comprised in the valve.

Similar characters of reference indicate corresponding parts in all of the views.

The body A, stem B and gate C of the valve are, except in respect of the constructions, features and arrangements herein particularly pointed out and described, substantially the same as common and well known in gate valves extensively used.

The valve gate C made with slightly tapered flat opposite sides is adapted, as usual, to fit and entirely close the water way *b* through the valve. The gate is constructed in two sections, 10 and 12, the one 10 being herein termed the main section, and the one 12 the secondary section. The main section has an upwardly opening chamber 13 therein, formed with downwardly convergent walls and having a horizontal hole 15 from side to side therethrough intersecting said chamber. Thc secondary section 12 is formed downwardly tapered whereby it may closely fit the downwardly convergent walls of the chamber 13 in the main section; and it has an upwardly opening threaded socket 16 in which the lower extremity of the valve stem B (which stem while freely rotatable in the valve body is constrained against any axial movement as apparent from Fig. 1), has an actuating screw engagement. The said secondary section has opposite edge recesses 17, 17 with shoulders 18, 18, at top and bottom thereof.

The threaded plugs 20, 20, screw engaged horizontally through opposite edge walls of the main section, protrude, by their inner end portions, within the aforesaid recesses 17, 17, and constitute abutments to be engaged by the aforesaid shoulders 18 of the secondary section at suitable times in the movements both upwardly, for opening, and downwardly, for closing, the two part valve. For practicability and operativeness of the device the socket 20 vertically in the secondary section 12 is continued through to the lower end of such part,—the same being preferably non-threaded at the lower portion thereof.

By turning the screw shaft or valve stem B when the valve is closed, as shown in the drawings, the section 12 will be initially raised, without moving the valve gate section 10 until the lower edge of the secondary section is above,—or in a relation to open,—the hole 15 through section 10, establishing a restricted water way through the valve, relieving the water pressure, or establishing an equilibrium thereof at opposite sides of the gate; and then the further continued rotation of the valve stem will cause a lifting of the main valve section to partially or fully open the water way *b b* by reason of the engagement by the lower shoulders 18 of the upwardly moving secondary section, with the abutment members 20, 20 of the main valve section. And in the closing operation of the valve the secondary section will have a descent, with lost motion, in a degree before

the upper shoulders 18 will engage the abutment members 20 to positively downwardly force toward, or fully to, its seating, main valve section.

The constructions herein described provide a very simple and satisfactory loose neck valve, with all the advantages inuring thereto, irrespective of the also important pressure relief capability acquired by the provision of the horizontal hole 15 through the main valve section which the secondary section alternately opens and closes.

I claim:—

1. In a gate valve, the combination with a valve-body having a water way therethrough, and a valve-stem having a screw threaded lower end portion of the valve-gate constructed in two sections, the main section thereof having an upwardly open chamber therein, and having a hole from side to side therethrough intersecting said chamber, and the secondary section fitting and being vertically movable within and relatively to said chamber, and having an upwardly open screw threaded socket within which the threaded lower end of the valve stem engages, the secondary section having vertical ways in their opposite edge portions, with shoulders at the upper and lower ends thereof, and the main section having inwardly projecting members adapted for a limiting extent in the said ways of the secondary section and for engagements with the upper and lower end shoulders thereof.

2. In a gate valve, the combination with a valve-body having a screw threaded valve stem, of the valve gate constructed in two sections, the main section thereof having an upwardly opening chamber therein, and having a horizontal hole therethrough intersecting said chamber, and the secondary section fitting and being vertically movable within and relatively to said chamber, and engaged, and to be vertically moved by, the valve stem, said secondary section having opposite edge recesses, with shoulders at the upper and lower ends thereof, and the opposite portions of the main section having plugs screw threading therethrough and protruding into the said recesses.

3. In a gate valve, the combination with a valve body having a screw threaded valve stem rotatable therein, and constrained against axial movement, of the valve gate constructed in two sections, the main section thereof having an upwardly opening chamber therein, formed with downwardly convergent walls, and having a hole horizontally therethrough, and the secondary section formed downwardly tapered, and having an upwardly opening threaded socket in which said valve stem has an actuated screw engagement, and fitting, and being vertically movable within and relatively to said chamber, and said secondary section having opposite edge recesses with shoulders at the tops and bottoms thereof, and threaded plugs, screw engaged horizontally through opposite edge walls of the main section and inwardly protruding within the said recesses, for the purposes set forth.

Signed by me at Springfield, Mass., in presence of two subscribing witnesses.

LOUIS NOEL.

Witnesses:
WM. S. BELLOWS,
G. R. DRISCOLL.