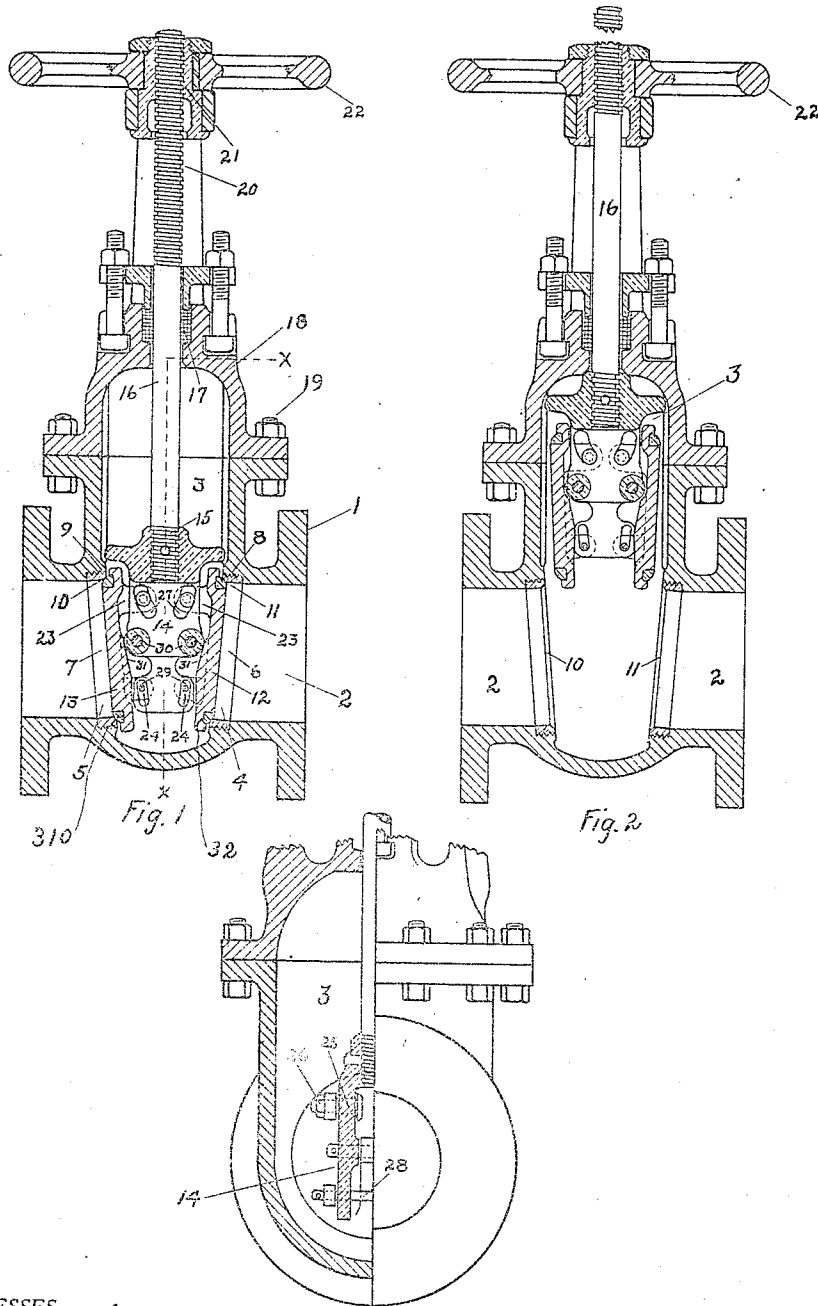


F. K. NORTH.
VALVE.

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1,023,955.

Patented Apr. 23, 1912.



WITNESSES:
Charles H. Fitts
Miss R. M. Mendenhall

Fig. 3

INVENTOR.
F. K. North
BY
Attorney.

UNITED STATES PATENT OFFICE.

FRED K. NORTH, OF BOSTON, MASSACHUSETTS.

VALVE.

1,023,955.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRED K. NORTH, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to valves for conducting liquids or fluids under pressure and has for its object to produce a gate valve so constructed that the contacting faces of the gate or disk and the seat may be readily reground when worn.

In the so-called globe valve, which is well known to those skilled in this art, the contacting faces of the disk and valve seat can be reground by the application of a little emery and oil to the gate and its subsequent turning while frictionally held in contact with the valve seat, but in the so-called gate valve, where the gate comprises a wedge-shaped block fitting in a wedge-shaped recess between the ports or seats, it has been found impossible to regrind the contact surfaces. The gate valve is much preferred because it has many advantages over the globe valve and it is with the object of combining the regrinding features of the globe valve with a gate valve that I have produced the present invention, which may be designated as a regrinding double disk gate valve.

A further object of the invention is to produce a valve and gate which is movable to place it in and out of alinement with its seat or port and also so as to be moved toward the port after it shall have been brought into alinement therewith.

To the above ends the present invention consists of the improved regrinding double disk gate valve which will now be described and claimed.

The present invention is shown in the accompanying drawing, in which:—

Figure 1 shows a vertical sectional view through a valve embodying the invention and showing it in its closed position. Fig. 2 shows a similar view with the valve stem and gates raised and in an open position. Fig. 3 shows in partial end elevation and vertical sectional view the lower part of a

valve, the section being on the line $x-x$, in Fig. 1.

Similar reference characters will be employed throughout the specification and drawing to designate corresponding parts.

The valve comprises a casting 1 through which is formed a transverse passage 2, opening into a vertical chamber 3, through the ports 4 and 5. Surrounding the ports 4 and 5 are the inclined valve seats 6 and 7 made in the form of separate rings and secured in place by the mating screw threads 8 and 9. The outer edges of the rings 6 and 7 are beveled, as shown at 11 and 10, to cooperate with the closing gates 12 and 13. The gates 12 and 13 are mounted in a head 14 carried by the threaded end 15 of the valve stem 16 which passes up through a suitable packed bearing 17 in a cap 18 held by bolts 19 to the casting 1. The upper end of the rod or stem 16 is threaded, as shown at 20, and engages a threaded block 21 arranged to be turned by the wheel 22, whereby the stem 16 will be raised and lowered in a manner well known to those skilled in this art.

The gates 12 and 13 are arranged to have a movement up and down with the valve stem 16 and also for a purpose to be hereinafter described they are each arranged to permit a relative movement of the stem 16 and the head 14 with relation to the gates 12 and 13. To secure this result, the gates 12 and 13 upon their inner faces are provided with the inwardly projecting lugs 23 and 24, the upper lugs supporting removable bolts 25 carrying heads 26 (see Fig. 3 of the drawing), and engaging the inclined cam slots 27 in the head 14. The lower lugs 24 carry a removable bar 28 which passes through the inclined slots 29 at the lower end of the head 14. The above arrangement is such that as the valve stem 16 is raised the first movement of the head 14 causes the cam slots 27 and 29 to draw the valve gates 12 and 13 toward each other, thus causing them to assume the position shown in Fig. 2, whereby they can be raised into the chamber 3.

As the valve stem 16 is lowered, when the lower edges of the gates 12 and 13 engage the lower edges of the valve seats 6 and 7, their downward movement will be terminated and thereafter the downward movement of the valve stem 16 and the head 14

will, through the cam slots and the studs 25 and 28, cause the gates 12 and 13 to be moved outward to cause them to be firmly seated against the beveled edges 10 and 11 of the rings 6 and 7. To assist in the proper contact of the gates 12 and 13 with the valve seats, the head 14 will be provided with cam rolls 30 arranged to bear upon cam faces 31 on the inner surface of the gates 12 and 13, and thus the gates 12 and 13 will be forcibly thrown into contact with the beveled valve seats. The gates 12 and 13 will be provided with a rabbeted edge 310 in which will be seated a ring 32 of brass or other suitable metal arranged to contact with the rings 6 and 7 carrying the valve seats.

To effect the regrinding of the gates or disks in contact with the valve seats they will be disengaged from the head 14 by removing the bolts 25 and the bars 28, after which they may be coated with a little emery and oil and turned while held in contact with the valve seats, which causes a regrinding of the contacting surfaces in the same manner as such operation is performed in the so-called globe valve.

It will be noted that an upward movement of the valve stem acts first through the raising of the head 14 to withdraw in a substantially horizontal line the gates 12 and 13 from engagement with the valve seats and having thus been withdrawn and caused

to assume the position shown in Fig. 2, the valve stem may be elevated, as shown in said figure, and that a downward movement of the valve stem causes a forcible projection or outward thrust of the gates against the beveled seats 10 and 11.

Having described my invention I claim as new and desire to protect by Letters Patent of the United States:—

A gate valve comprising a vertically movable stem, a slotted head at the lower end thereof, valve gates at opposite sides of said head, bolts detachably connected to the backs of said gates respectively and passing through inclined slots in the head, said gates having a sliding movement on said head, inclined surfaces in the rear of said gates, rollers on said head engaging the inclined surfaces, valve seats having beveled faces arranged to coöperate with the beveled edges of the respective valve gates, said gates being adapted to be disconnected from the head and turned while in contact with the valve seats for regrinding, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses.

FRED K. NORTH.

Witnesses:

T. HART ANDERSON,
MARY A. KENNEY.