

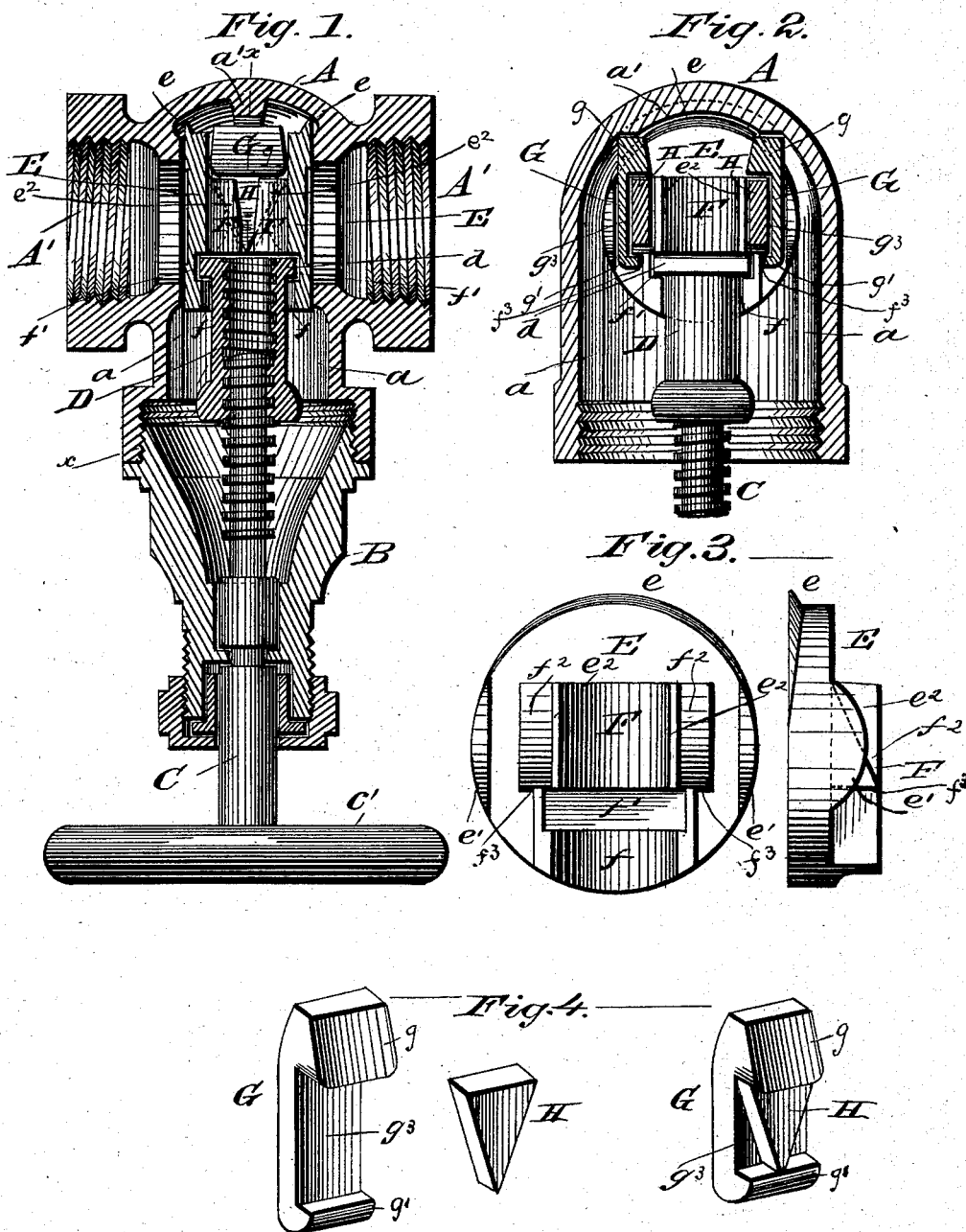
(No Model.)

H. HALL.

STRAIGHT WAY STOP VALVE.

No. 384,906.

Patented June 19, 1888.



WITNESSES.
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UNITED STATES PATENT OFFICE.

HENRY HALL, OF LANSINGBURG, NEW YORK, ASSIGNOR TO THE RENSSELAER MANUFACTURING COMPANY, OF SAME PLACE.

STRAIGHT-WAY STOP-VALVE.

SPECIFICATION forming part of Letters Patent No. 384,906, dated June 19, 1888.

Application filed July 7, 1887. Serial No. 243,683. (No model)

To all whom it may concern:

Be it known that I, HENRY HALL, of Lansingburg, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Straight-Way Stop-Valves; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 represents a central vertical section through my improved valve. Fig. 2 is a transverse vertical section of the same on line *x x*, Fig. 1. Fig. 3 is a view of one of the gates. Fig. 4 is a perspective view of one of the wedge-arms.

This invention relates to improvements in valves provided with sliding gates; and it has for its objects to improve the valve shown and described in my Letters Patent numbered 330,322, dated November 10, 1885, and its objects are to strengthen the actuating parts of the valve, and also to cheapen its construction and better insure the closing of both gates. To these ends the invention consists in the improved construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly specified in the appended claims.

I will first briefly describe the general features of the valve, which are the same as those shown in my aforementioned patent, and therefore do not require a detailed description.

Referring to the drawings by letter, A designates the casing of the valve, T-shaped and provided with ports A' A', and the guideways *a*, which stand at right angles to said ports and extend through the stem of the valve-casing.

B designates the valve-stem casing, fitted onto the stem of the valve proper, and in which is secured the valve-stem C in the usual manner, so that it can rotate freely, but not move in other direction therein. This stem C is provided outside its casing with the usual hand-wheel, *c'*, as shown.

D designates a threaded sleeve or nut placed on the correspondingly-threaded end of the stem C, within the stem of the valve-casing proper, so that it is reciprocated longitudi-

nally within said casing when the valve stem C is turned. This nut D is provided on its lower end with a rectangular flange, *d*.

E E designate the gates, preferably circular in form and having the cutting-edges *e e* on their edge farthest from valve-stem C. These gates are dressed on their outer faces to fit snugly against the inner dressed surface of the ports A' A', as shown and described in my aforementioned patent. These gates E E are provided on their inner surfaces with the projection F, having the longitudinal semicircular groove *f* and transverse recess *f'*, and the grooves *f f* of the oppositely-facing gates E E receive the lower end of nut D, and its annular flange *d* is seated in the recesses *f' f'* of the gates, so that when properly arranged the recesses *f' f'* of the gates prevent the rotation of nut D, and the gates are in turn caused to reciprocate with said nut in casing A. The projections F F of each gate are beveled on their inner ends, forming inclined faces *f²*, and on the other side of each of said projections, at the base of said inclines *f²*, are formed the shoulders *f³*, hereinafter referred to.

All of the foregoing parts are formed similar to and operate like the corresponding parts in my patent, numbered 330,322, referred to.

I will now proceed to describe my improvements.

a' designates a stop rib or lug formed in the bottom of casing A, opposite the stem-casing B, situated centrally between ports A' and extending about half-way around the inner circumference of the casing A, as shown.

G G designate short independent but similar arms, which are employed to separate the gates E E, so as to keep them in proper working position. Each of these arms G is recessed, as shown at *g³*, on its inner face, forming at their lower ends the shoulders or hooks *g' g'*, which are adapted to engage with the shoulders *f³* of the gates E, the recessed portions *g³* of the arms corresponding in length to the length of the sides of lugs F, below shoulders *f³*, as shown. The upper ends, *g*, of pieces G are thickened, as shown, to form secure seats for wedges H, hereinafter described.

In order to prevent the sidewise escape of arms G from between the gates when in use, I

form the narrow upstanding flanges e' on the inner faces of each gate to the outside of the inclined portions f^2 of projections F, which, when the parts are in position, embrace the outer edges of arms G G and keep said arms in position, as evident. I also employ narrow outstanding flanges e^2 , which are formed on the inner edges of inclines f^2 , as shown, the top edges of said flanges being on a line with the faces of projections F, as shown, and which are hereinafter referred to.

When the gates and arms G are in proper working position, the arms G G lie between and are embraced by the flanges e' and projections e^2 of opposite gates, and the lower portions of the arms G are adapted to engage against the stop a' when the gates are down or closed.

H H designate triangular wedges, which are placed between the inclines f^2 of opposite gates, and are held thereon by the flanges e^2 and by the arms G, as shown. The gates when reciprocated move in the ways a , and are thus held in sufficiently close relation with each other to prevent the escape of the arms G or wedges H H.

The operation of the device is as follows: The stem C being turned will cause the sleeve D, and through it gates E E and their attending parts, to reciprocate. When moving inward, the lower ends of arms G G will engage against the opposite end of lug a' and keep the arms stationary, while the gates can be moved still farther inward. This movement of the gates causes the wedges H H to come into play. Said wedges, being held by abutting against the parts g of arms G, ride upward on the opposite inclines f^2 of the opposite gates E E, and cause the forcible separation of the gates, causing the latter to seat themselves firmly and tightly against the inner faces of ports A', as is evident.

In practice I have found that it is very difficult to make the bar G of my patent sufficiently strong to be reliable in large valves, and it is also difficult and expensive to manufacture; but by employing the separate and independent arms G, as herein shown, and giving them both an independent bearing on a stop-lug in casing A, I not only cheapen the cost of the valve, but I insure its effective working and sufficient strength to stand the severest strains, and also lighten the valve, which is quite an advantage where very large valves are required, because this extra weight on the wedges causes the gates to abrade always against the ways a as well as the valve, which

abrasion will not be sufficient to hinder the quick movement of the parts, yet in time wears out the surface of the gates and causes the valve to leak, necessitating the re-dressing of their faces. Another advantage of the present valve is that the bearing-points of the arms G when the valve is closed are not upon the central part of the casing A, which is obviously its weakest portion, but are transferred to the opposite sides thereof when being closed. The arms G G being independent, should one side of the valve-ports be worn, so that the gates would bind on the opposite side first through one arm G, there will be sufficient play of the parts to allow the valve-stem to be turned until the opposite arm G is engaged, thus securely closing the valve-ports by reason of the independent action of the arms G and their wedges, which could not be done in my patent referred to, for the reason that the arms being rigidly connected in said patent, the binding of one would similarly stop the action of the other, as is obvious.

In some cases the wedges H H may be cast integral with the arms G, with which they cooperate, their action not being effected thereby; but I prefer forming them separate, as described, when the valve is to be employed in an inverted position, or with the stem lowermost.

Having described my invention, what I claim is—

In a straight-way stop-valve, the casing A, its opposite ports, and stop-lug a' between said ports, and the valve-stem casing B, valve-stem, and angularly-flanged nut playing on said stem, in combination with the oppositely-facing gates E, hung upon the angular flange of said nut, having pairs of oppositely-facing inclines f^2 on their inner faces, flanges e^2 to the inside of said inclines, flanges e' to the outside thereof, and shoulders f^3 , the independent recessed arms G G, hung between gates E E on the shoulders f^3 thereof, and lying between the flanges e' and inclines f^2 , and the wedges H H, placed in the recesses of said arms and engaging the inclines f^2 of the opposite gates, all substantially as and for the purpose described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

HENRY HALL.

Witnesses:

JAMES I. EDDY,
ELLIS L. ROWE.