(No Model.)

S. W. MARTIN.

STOP VALVE.

No. 271,491. Patented Jan. 30, 1883.

Fig. 3.

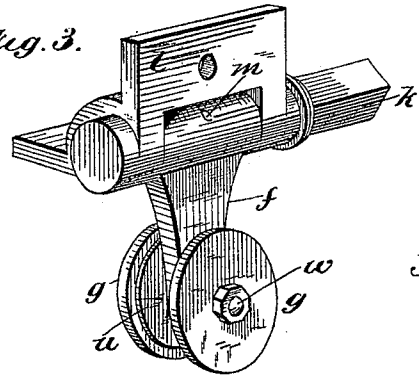


Fig. 4.

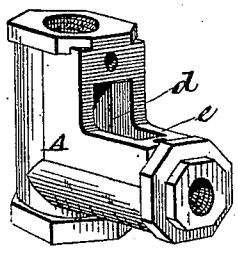


Fig. 2.

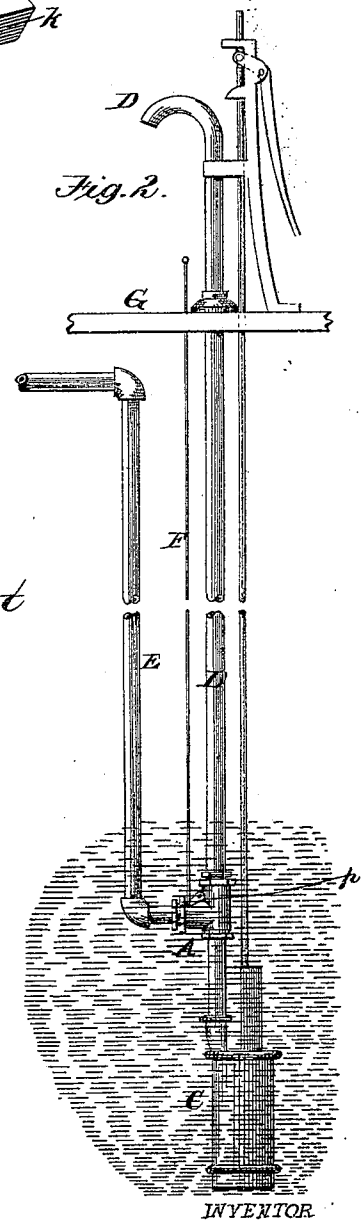
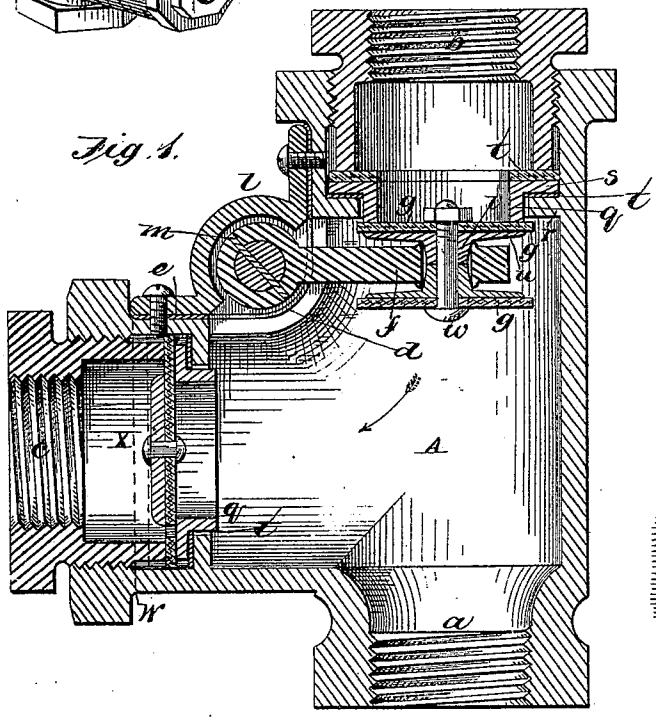


Fig. 1.



WITNESSES

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SAMUEL W. MARTIN, OF SPRINGFIELD, OHIO.

STOP-VALVE.

SPECIFICATION forming part of Letters Patent No. 271,491, dated January 30, 1883.

Application filed August 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL W. MARTIN, of Springfield, in the county of Clarke and State of Ohio, have invented certain Improvements in Stop-Valves, of which the following is a specification.

My invention relates to a stop-valve wherein the valve proper is mounted on a vibratory arm provided with a projecting journal, whereby it may be operated positively on the outside of the body.

My improvement is designed more particularly for use in connection with three-way valves designed to discharge through one or the other of two throats, as required; but the improvement may be applied with equal facility to what are commonly known as "straight-way valves," having a single inlet and a single outlet opening.

The invention consists in the improved manner of inserting and operating the vibratory valve and in minor details.

The drawings illustrate a three-way valve adapted for use in connection with lifting-pumps to direct the water to the surface or to a reservoir, as may be required.

Referring to the accompanying drawings, Figure 1 represents a vertical central section through my valve. Fig. 2 is a side elevation, illustrating the manner in which the valve is used in connection with a lift-pump. Fig. 3 is a perspective view of the valve proper detached from the case or body. Fig. 4 is a perspective view of the valve case or body with the valve removed.

In constructing my valve, I first provide a case or body, A, which may be of any suitable form and configuration, having an inlet-neck, *a*, at the bottom and an outlet-neck, *b*, at the top, and a second outlet-neck, *c*, on one side. The body is provided, to admit the insertion of the valve, with a large opening, *d*, in the corner or angle between the two outlet-necks, as plainly represented in Figs. 1 and 4, and has on the outside, around the edges of the opening, flat faces *e*.

The valve proper consists, as shown in Figs. 1 and 3, of a vibratory arm, *f*, provided at one end with two valve disks or faces, *g*, on opposite sides, and supported at its opposite end upon a rock-shaft or spindle, *k*, the latter sustaining at its two ends the angular recessed plate *l*, which latter is adapted to fit over and close tightly the opening *d* in the outside of the valve-body. The pivoted end of the arm *f* is seated in a recess formed on the inside of the angular plate *l*, and is secured and held in position by inserting the spindle *k* endwise through the plate and arm, as shown in Figs. 1 and 3, and passing a fastening-pin, *m*, through the arm and the spindle, as represented. The pin *m* serves both as a means by which the rotation of the spindle is caused to vibrate the arm and also as a means of holding the spindle against end motion.

In assembling the parts the vibratory arm is first applied to the plate *l*, as shown in Fig. 3, after which the valve is inserted through the opening *d* in the body, and the plate *l* secured or bolted firmly against the outside of the body in such manner as to close tightly the opening *d* and prevent the escape of water through the same. When the parts are thus assembled the angular end of the spindle or rock-shaft *k* is exposed on the outside of the valve, so that it may be operated by an arm, lever, or other device applied thereto, the preferred device being an arm, *p*, applied as represented in Fig. 2. By means of the outside lever the spindle may be caused to vibrate the valve-arm in such manner as to throw the valve-plates opposite the outlet-throat *b* or the outlet-throat *c*, and close one or the other, as may be required.

The outlet-throats *b* and *c* may be cast in one piece with the body A, and may have at their inner ends suitable seats or throats for the valve-plates *g* to close upon; but in order to facilitate the accurate fitting of the parts, and to admit of the wearing-surfaces being rounded, it is preferred to provide the valve with removable seats *q*, of any approved construction, for the valves *g* to rest against.

In the drawings, Fig. 1 illustrates the preferred method of applying these removable throats, each throat consisting of an outwardly-flanged ring inserted through the end of the body on the outside, and supported upon a flange or ledge, *r*, being secured in place by means of a threaded outlet-neck screwed into the body from the outer side, as shown.

In order to prevent the leakage of water past the outer edges of the valve-seats *q*, rubber or other packing-sheets, *s* and *t*, may be placed on opposite sides of the same, as shown in the drawings. When the packing-sheets are thus applied and the tubular neck screwed in-

ward, the packing will be compressed, and the edges of the valve-seat held tightly between them.

The valve plates or faces *g* may be of any suitable construction. It is preferred, however, to make them in the manner represented in Fig. 1, by mounting disks of vulcanized rubber or equivalent elastic material *t* on the outer faces of metallic supporting-plates *u*, which latter are provided with central necks, *v*, fitting loosely into an opening in the end of the vibratory supporting-arm *f*, the parts being held together by means of a central bolt, *w*, passing through both plates and their elastic faces. This construction permits the valve-plates to rotate independently of each other, and to move independently of the arm to a limited extent, in order that they may adapt themselves to the position of the seats or throats.

When the device is used in connection with a pump delivering through an elevated pipe, it is desirable to provide means of preventing the water from flowing backward through the valve, and for this purpose I provide the device in its side with a check-valve, *x*. The valve represented in the drawings consists of a flexible sheet of leather or rubber, having its central portion cut loose from the remainder, and provided with a metallic plate or weight, which serves the double purpose of a weight to close the valve and of a support to prevent the flexible material from giving way under the pressure to which it is subjected. The outer edges of this valve-sheet are inserted between the outer neck and the valve-seat *q*, and serve as a packing between said parts.

It will be seen that when the main valve is in the position represented in Fig. 1, the water ascending through the neck *a* will be compelled to pass through the side delivery, *c*, the valve at such time closing the outlet *b*. When, however, the spindle is turned and the main valve thrown downward in the direction indicated by the arrow in Fig. 1, the neck *c* will be closed and the water compelled to escape through the outlet *b*. It will be observed that the valve is forced firmly to its seat under either of its two adjustments by the pressure of the water within the body.

In making use of my valve in connection with a pump it is ordinarily employed as represented in Fig. 2, in which C represents the pump-cylinder; D, the pipe leading directly to the surface, and E the lateral pipe extending to a reservoir or elsewhere.

The valve A is applied at the junction of the pipes C and D and E, and an operating-rod, F, extending from the valve through the platform G at the top of the well, so that it may be operated by the attendant standing thereon. By simply moving the rod the attendant is enabled to adjust the pump for the delivery of the water at the surface or elsewhere, as may be required. I prefer to locate the valve, as represented in the drawings, beneath the surface of the water within the well, whereby it is prevented from being frozen up or disabled during the winter.

It is manifest that the valve-operating spindle may be set in ears formed upon the body at the sides of the opening *d*, in which case the external plate would serve only as a means of covering and closing the opening; but the construction represented in the drawings is, for various reasons, preferred.

When applying my improvement to a straight-way valve it is only necessary to omit one of the delivery-necks and construct the body of the valve with a closed side as indicated by the dotted line W in the drawings.

Having thus described my invention, what I claim is—

1. In combination with the body A, having the inlet and the two outlet openings, the internal vibratory arm provided with two valves, substantially as described and shown.

2. The combination of the body provided with inlet and outlet openings, the seats or throats at the inner ends of the outlet-openings, and the vibratory arm provided with the two valve-surfaces capable of a limited motion independent of the arm.

3. The valve-body provided with the inlet and the two outlet openings, the vibratory arm and its valves, and the supporting-plate for said arm applied externally to the body, substantially as described and shown.

4. In the stop-valve, the vibratory valve and the supporting-arm attached and sustained by a plate applied externally to the valve-body, as described and shown.

5. The improved body for a stop-valve, provided with a side opening, *d*, substantially as described and shown, for the admission of the valve proper and its supporting-arm.

6. The valve-body provided with the necks *a b c* and with the opening *d*, located in the angle and adapted to admit the valve, as shown.

7. The combination of the valve-body having the three throats, the vibratory arm, its valves, the arm-supporting plate, and the operating-spindle *k*, having the exposed end.

8. In a three-way valve, the combination of a check-valve, the main valve, and the valve-seat *q*, located, as described, between the two valves, and arranged to co-operate with both.

9. In combination with the valve-body, the internal vibratory valve, the externally-applied valve-seat *q*, and the externally-applied neck *b*, serving to hold the seat in position.

10. The combination of the body A, having the internal flange, *r*, the valve-seat *q*, packing *s* and *t*, and neck *b*.

11. In a stop-valve, the combination, with a vibratory valve-supporting arm, of a valve body or casing provided with a side opening to permit the introduction of said arm, and with a plate adapted and arranged to cover said opening, as described and shown.

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