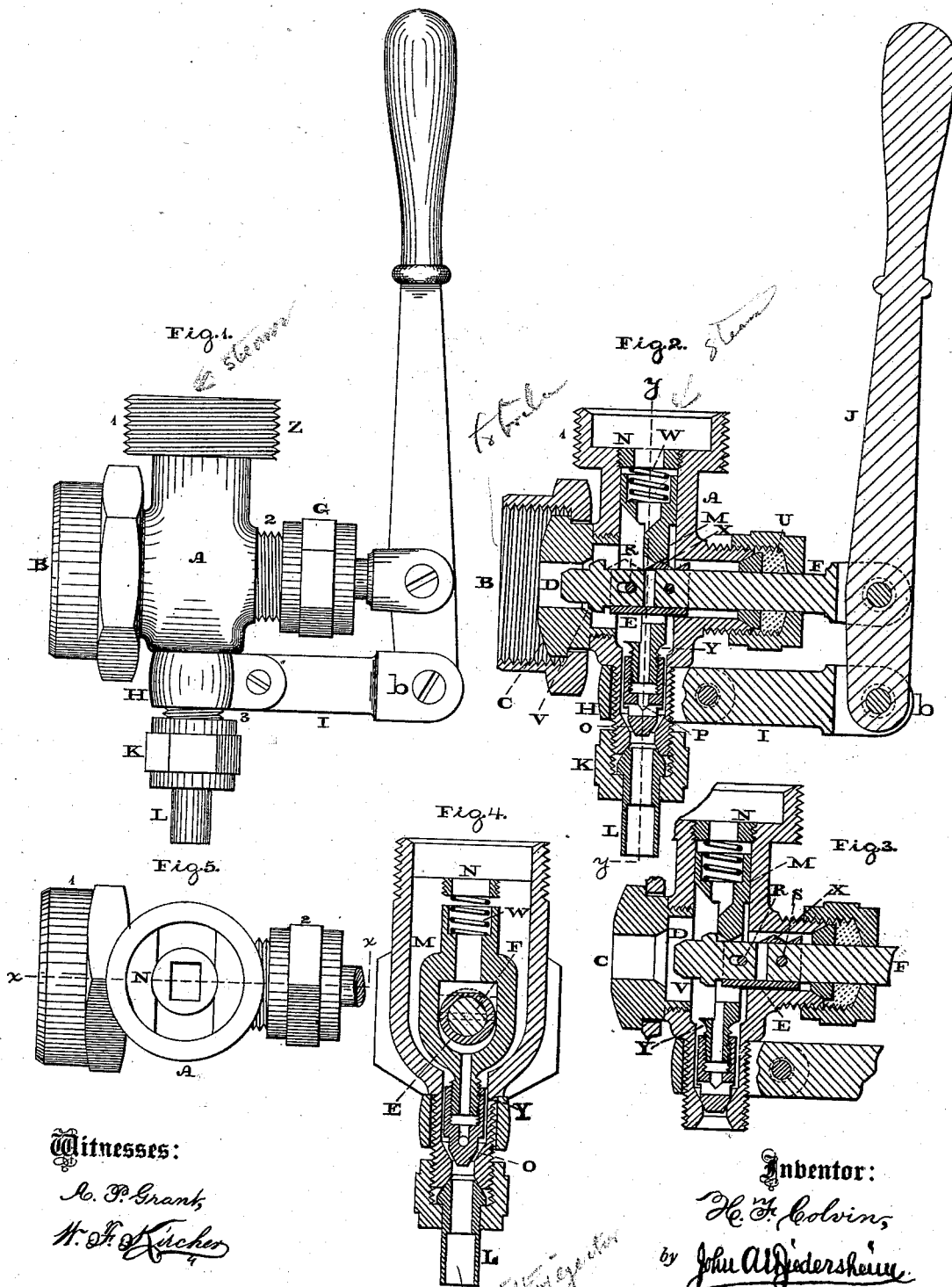


H. F. COLVIN.
Steam-Valve.

No. 215,323.

Patented May 13, 1879.



Witnesses:

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HENRY F. COLVIN, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO RUE MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN STEAM-VALVES.

Specification forming part of Letters Patent No. **215,323**, dated May 13, 1879; application filed November 6, 1878.

To all whom it may concern:

Be it known that I, HENRY F. COLVIN, of the city and county of Providence, and State of Rhode Island, have invented a new and useful Improvement in a Steam-Valve for Two Steam-Jets, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side elevation of the valve embodying my invention. Fig. 2 is a central longitudinal section thereof in line *xx*, Fig. 5, and showing both valves partly open. Fig. 3 is a similar view of a portion thereof, one valve being shut and the other valve open. Fig. 4 is a transverse section in line *yy*, Fig. 2. Fig. 5 is a top or plan view thereof.

Similar letters of reference indicate corresponding parts in the several figures.

It is common to use two jets of steam—one for the lifting of the water to the injector, the jet being thrown into the overflow or into an attachment to the feed-pipe near the mouth of the feed-orifice, and the other jet from the main steam-valve to force the water into the boiler; but I am not aware that any apparatus has been made which, by a movement of the actuating device in one direction, starts a jet into the overflow or mouth of the feed-orifice, and when the water is raised shuts off the same and starts another jet to admit a small amount of steam into the body of the injector a little in advance of the shutting off of the first jet, whereby the water raised by the jet is held, and then increases the jet from the main valve in sufficient quantity to force the water into the boiler.

I have invented a valve that will accomplish this much-needed result in a simple and inexpensive manner, and also is applicable to other purposes.

My invention consists of a double steam-valve in one casing, the two valves being operated by a sliding rod, and having independent connections to be attached to injectors, ejectors, and other apparatus that may require the use of one or more jets of steam working together, consecutively, or partly together.

It also consists of mechanism whereby in one shell two or more openings are opened and closed by valves, which are operated by a rod and connected devices, so constructed that

either valve may be opened irrespective of the other or both may be opened together. Both valves may be of the same size, or one may be smaller than the other, as required. The advantage is that instead of having to change the hand from one valve to another, and so backward and forward from one to the other, the operator can do all with one valve that he could do with two special valves, changing from valve to valve. This advantage is of great importance, as making a quick change in steam-valve work, and the device can be applied to many things—that is, to a whistle, to a bell-ringer, to an oil-connection, and to a blower for a fire, pipe-connections taking the steam from this valve, thus dispensing with separate openings in the boiler.

Referring to the drawings, A represents the body or shell of the valve, with branches 1 2 3; B, the nut for coupling purposes; C, the swivel, screwed into the body of the valve, on which the nut B is held, and in which is the seat V of valve D.

D is a valve, controlling the steam from the boiler to the place of service. The stem of this valve is held in the sleeve E, and slides a short distance in it, having in the stem a slot, through which is passed a pin, R, which moves it when the sleeve E is pulled.

The sleeve E, extending across the body of the valve, is joined to the rod F by a pin, S, and passes through the yoke M of the valve-rod Y. On the end of this sleeve is held the valve D, which is opened by the motion of the sleeve. On the upper side of the sleeve E, at the yoke M, is a cam or double incline, X, which, in passing through the yoke M, raises and lets fall the rod Y.

The rod F is jointed to the lever J, and extends through the packing U and branch 2, and to this the sleeve E is fastened by the pin at S. It is the operating-rod of the instrument.

G is the stuffing-box nut, screwed on branch 2, holding the packing U of rod F. H is the clamp for holding the connecting-link. I is the connecting-link, to which the lever J is jointed at *b*. K is the nut holding the swivel-pipe L. L is the swivel-pipe connection. N is the screw-nut holding the spring W in the rod Y. O is the valve at the end of rod Y, ad-

mitting steam to the pipe attached to swivel L. P is the hole through the lower part of rod Y, through which steam passes to the valve O.

R is a pin on the sleeve E, on which the stem of the valve D slides by means of a slot, which allows a short motion of sleeve E independently of valve D, whereby the double incline X raises the yoke M and rod Y, and a jet of steam issues from O without moving valve D. On the further motion of the sleeve, as the yoke M passes down the incline X, and rod Y is lowered, it closes the valve O, and the pin R will catch the end of the slot and pull valve D slightly open to admit steam to the body of the injector or other apparatus before the valve O is entirely closed, and when the lever J is pulled fully out the valve D is fully open. The pin R may be omitted and sleeve E fastened to valve-stem D, and the incline X so arranged that both valves may be opened at the same time.

The upper part of the rod Y is hollow, and through it the steam from the boiler passes to the body of the valve. It is constructed with a yoke, M, adapted to pass around the sleeve E and over a double incline, X, to lift the valve O, seated in the lower part of branch 3 of casing A. The rod Y is also hollow at its lower end, to allow steam to pass through the hole P to the swivel-pipe L. The rod Y has also a cup-like hollow in the upper part, in which is placed a spring, W, which is held by nut N, and returns the rod Y to place.

Z is the part for making connection with the boiler. No. 1 is the branch of valve for steam. No. 2 is the branch of valve through which the rod from lever works. No. 3 is the branch to which the coupling for second valve is attached.

The method of working this valve is as follows: The steam-pipe is attached to the connection at Z, and the steam, passing down to the valve O by the hole P in the rod Y, presses the valve D upon its seat. The valve is attached to the injector or ejector or other apparatus by the nut B.

When the lever is pushed, in the valves D and O are closed. When the lever is pulled slightly out, the sleeve E is moved by the rod F. The yoke M of the valve-rod Y rides up on one side of the incline X and lifts the valve O, admitting steam to the pipe connected with the swivel-pipe L leading to the apparatus for suction forcing or lifting.

On the first outward movement of the rod F the valve D, held by the steam, remains on its seat, as the sleeve E, by means of its pin R and the slot in the stem of D, is adapted to move a short distance without moving valve D.

When the first valve that is opened has done its suction work the lever is pulled farther out, and the yoke M descends the double incline or cam X, closing the valve O, and at the same time the pin R draws out valve D a short distance, admitting a small amount of steam to the injector or ejector or other appa-

ratus. This steam being admitted while the jet-valve is being closed catches and holds the water raised by suction, and then the lever being pulled fully out the sleeve E draws the valve D as far open as is desired, admitting the full or required amount of steam into the injector or other instrument.

When the pin R is omitted and the sleeve fastened to valve-stem D, then both valves are used at the same time; or when pin R is operated by sleeve E before the part X comes under yoke Y, then valve D is opened before valve O. The pushing in of the lever closes both valves.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A double steam-valve consisting of two steam-valves, each having an independent connection, combined with an actuating sliding rod and intermediate devices, constructed substantially as shown, so that the movement of the rod in one direction first opens one valve, then partly opens the other valve while it is closing the one first opened, and lastly fully opens the second valve.

2. A double steam-valve having the two valves arranged at right angles to each other, in combination with a sliding rod and cam-sleeve, by means of which both valves are operated substantially as shown by moving the rod in one direction.

3. A double steam-valve, in combination with a sliding rod and cam-faced sleeve, said rod being provided with a slot adapted to receive a pin on the sleeve, the parts so arranged that one valve can be opened in advance of the other, and either at separate times or both at the same time, substantially as and for the purpose set forth.

4. The shell A, with branch 3, the valve O, swivel C, valve D, the rods F and Y, the sleeve E, fastened to the rod F, and provided with a double incline, X, and a pin working in a slot in stem of valve D, the yoke M on valve-rod Y working over the part X, the rod Y, having a perforation, P, leading to the valve O, carried by the rod Y, all combined, for the purpose herein set forth.

5. The combination of the rod F with sleeve E, double incline X, rod Y, provided with yoke M and valve O, pin R, and valve D, all arranged as and for the purpose described.

6. The combination, with the shell A, provided with suitable valve-seats, the valve D, rods F and Y, the spring W, nut N, yoke M, provided with openings for steam at top and bottom, valve O, fastened to rod Y, and sleeve E, passing through the yoke and having double incline X, the whole forming a small and compact double valve, in which the two valves are operated by one rod and at right angles.

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