

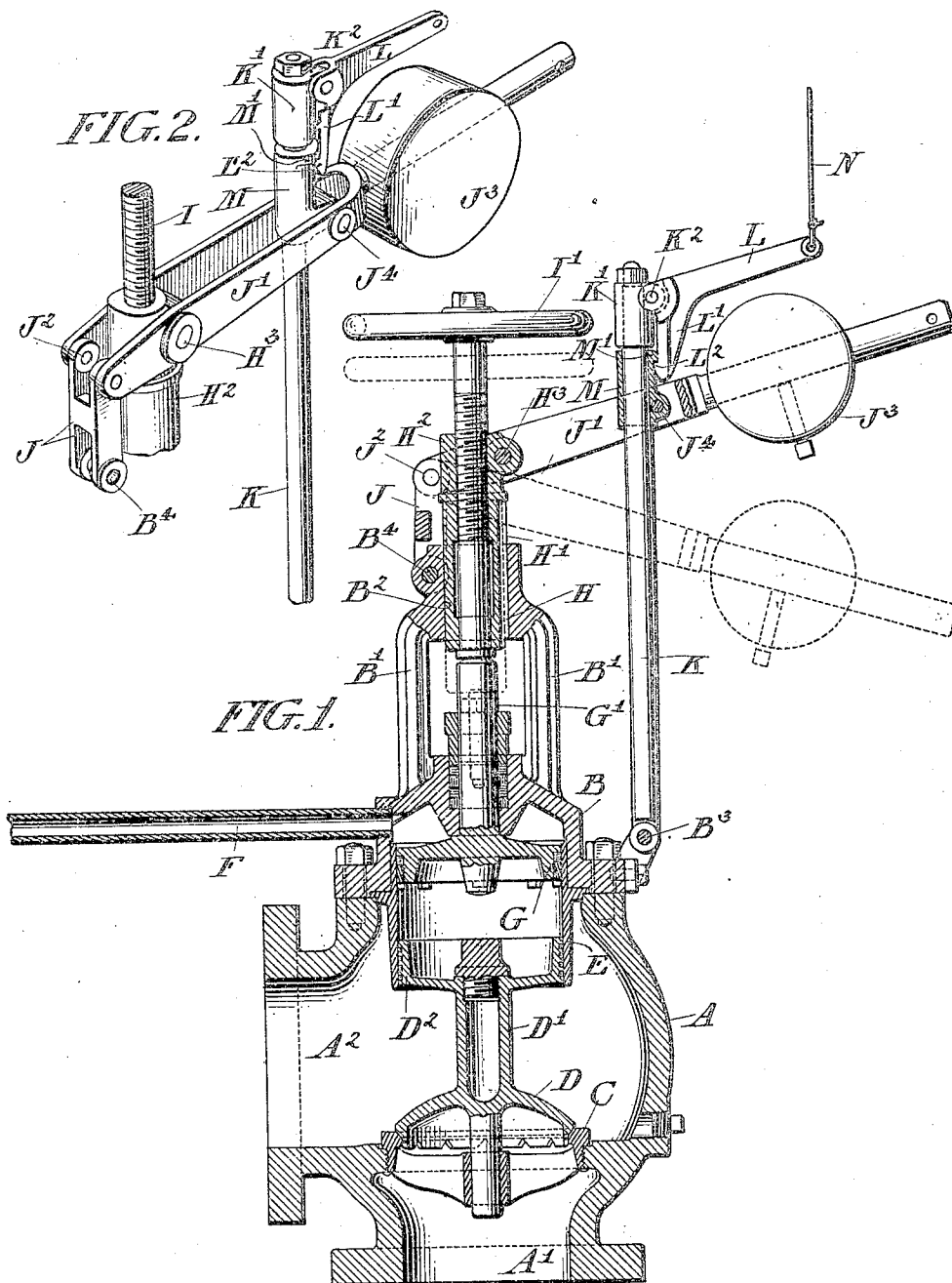
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PATENTED MAY 7, 1907.

A. W. FISCHER & P. W. KNAUF.

STOP VALVE CONSTRUCTION.

APPLICATION FILED AUG. 4, 1905.



WITNESSES:

Norman Elliott

INVENTORS:

Adalbert W. Fischer
Paul W. Knauf
by Francis D. Chambers
 Their ATTORNEY.

UNITED STATES PATENT OFFICE.

ADALBERT W. FISCHER AND PAUL W. KNAUF, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO SCHUTTE AND KOERTING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

STOP-VALVE CONSTRUCTION.

No. 852,709.

Specification of Letters Patent.

Patented May 7, 1907.

Application filed August 4, 1905. Serial No. 272,646.

To all whom it may concern:

Be it known that we, ADALBERT W. FISCHER, a subject of the Emperor of Germany, and PAUL W. KNAUF, a citizen of the United States of America, both residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Stop-Valve Construction, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

Our invention relates to stop valves such as are used in the conduits leading from steam boilers to engines where the steam is utilized, said valves being adapted to open freely under the normal flow of steam and to close automatically in case for any reason the pressure on the boiler side of the valve falls below that on the engine side.

The object of our invention is to provide such valves with improved mechanism for promptly closing against the pressure of the steam or other pressure fluid passing through them even when the flow is normal or excessive, and our invention consists in providing a cylinder and piston, the cylinder being connected with a boiler or other source of pressure and the piston arranged when moved under the pressure fluid to act on the valve in the direction of closing and in addition to this piston we provide supplemental means for acting upon the piston and through it upon the valve to close it, said means being normally held out of operation by a releasable latch.

By preference we use in addition to the piston, whose function it is to close the valve, another piston directly connected with the valve and moving in the lower end of the cylinder and having the usual function of preventing abrupt movements of the valve under normal operative conditions.

Our invention will be best understood as described in connection with the drawings in which it is illustrated and in which

Figure 1, is a vertical sectional elevation of a stop valve provided with our improvements and Fig. 2, a perspective view of the counterweight, latch, and movable head by which the final pressure to close the valve is applied.

A, indicates the valve chamber having inlet chamber A', and outlet chamber A².

B, is a cap or head for the casing formed as shown with upright arms B', B', which support a guideway B².

B³, is a pivot attached to the lower end of the head, B⁴, a pivot attached to the upper end of the guideway.

C, is the valve seat, D, the stop valve, having, as shown, a stem connecting it with the piston D², moving in the lower end of a cylinder E, the head of which is formed by the cap B.

F, is a conduit for fluid under pressure leading to the upper end of the cylinder E from the same source of pressure as that which supplies the chamber A'.

G, is a piston working in the upper end of the cylinder E, and having a stem G', extending through a stuffing box in the cap B.

As shown, H, is a sliding head moving in the guide way B², and kept from rotating as shown by a feather H'.

I, is a screw spindle working on an internally threaded part H², of the head H, the lower end of the spindle resting normally in contact with the spindle G', and the upper end having attached to it a handwheel I'.

J, J, are links secured to the pivot B⁴, and to the pivots J², in the ends of the double armed levers J', which levers are pivoted to the head H; by a pivot pin H², and has secured upon their outer end a counterweight J³. The lever J', is pivotally connected to a pin J⁴, extending out from a sliding head M, moving on a rod K, secured to the pivot pin B³, and formed with a latch M'. A head K', firmly secured to the upper end of the rod K, supports a pivot pin K², on which is pivoted the bent lever L, L', having a latch jaw L², adapted to engage with the latch jaw M'; as shown:

N, is a cord attached to the arm L, of the latch lever, and by which it can be moved to release the head M. This cord can be actuated by any convenient mechanical connection, either automatic or otherwise.

Under normal conditions, and when the valve D, is open, the pressure in the chamber A', differs but little from the boiler pressure, and finding its way between the piston D², and the wall of the cylinder E, maintains a

substantially equal pressure in the lower part of the said cylinder and on the lower side of the piston G, which, therefore, by reason of the difference in area of its two faces normally occupies its uppermost position as shown in Fig. 1. The boiler pressure on its upper face not being sufficient to counteract the slightly less than boiler pressure on its lower and larger face the function of the lower piston D², directly attached to the valve is the familiar function of such pistons, namely, that of preventing sudden movements of the valve due to fluctuations of pressure in the conduit of a disregarable nature. The head H, H², together with the screw spindle I, are normally held in their uppermost position, as shown in Fig. 1, by the engagement of the head M, supporting the counter weight lever with the latch lever L, L', but immediately on the release of the latch the counterweight forces down the head H, H², and the screw spindle which presses on the end of the piston spindle G', supplements the boiler pressure on the top of the piston forcing it down into contact with the piston D², and forcing said piston and the valve attached thereto to its seat where it will be held until the counterweight lever is again raised.

The screw spindle I, is of course adjustable in the head by means of the hand wheel V, and can be used to lock the valve closed in the usual way, and can also be used to raise the sliding head and counterweight lever to normal position after the release of said lever from the latch.

Having now described our invention, what we claim as new and desire to secure by Letters Patent is

1. A stop valve for controlling the flow of fluid under pressure through a conduit, in combination with a cylinder connected to the same source of fluid pressure as that supplying the conduit, a piston in said cylinder ar-

45 ranged when moved under the influence of the pressure fluid to act on the stop valve in a direction to close it, means for applying additional pressure to the piston, and through it, to the valve, and a releasable latch normally holding said means out of operation.

2. A stop valve for controlling the flow of fluid under pressure through a conduit, in combination with a cylinder connected to the same source of fluid pressure as that supplying the conduit, arranged in line with the valve, a piston directly connected to the valve and working in the cylinder, a second piston working in the cylinder above the first and directly exposed to the action of the pressure fluid means for applying additional pressure to the upper piston and through it to the valve, and a releasable latch normally holding said means out of operation.

3. A stop valve for controlling the flow of fluid under pressure through a conduit, in combination with a cylinder connected to the same source of fluid pressure as that supplying the conduit, arranged in line with the valve, a piston directly connected to the valve and working in the cylinder, a second piston working in the cylinder above the first and directly exposed to the action of the pressure fluid, a stem connected to said second piston and extending through the head of the cylinder, a threaded head slidably supported in line with the piston stem, a rod screwing in said head and normally resting on the end of the piston stem, means tending to depress the head and screw rod and a releasable latch normally holding the head in elevated position.

ADALBERT W. FISCHER.
PAUL W. KNAUF.

Witnesses:

ARNOLD KATZ,
D. STEWART.