H. GARBE.

CUT-OFF SLIDE VALVE.

APPLICATION FILED JAN. 27, 1915.

1,185,789. Patented June 6, 1916.

Fig. 1.

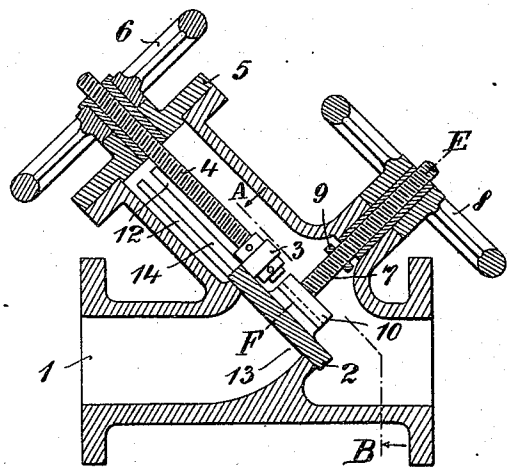


Fig. 2.

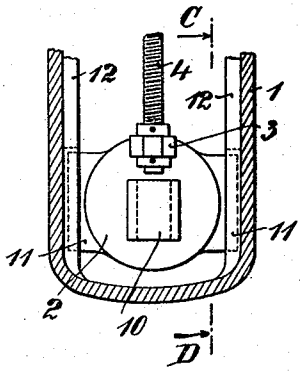


Fig. 3.

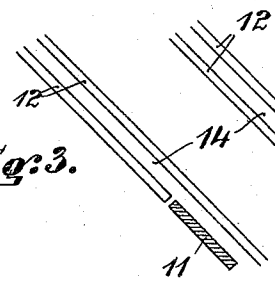


Fig. 4.

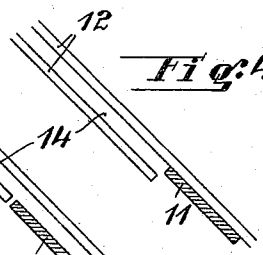
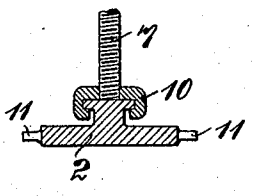


Fig. 5.



Witnesses:

J. K. Langner

V. Belletti.

Herman Garbe,

Inventor:

by Lawrence Langner

Attorney.

UNITED STATES PATENT OFFICE.

HERMAN GARBE, OF CHARLOTTENBURG-BERLIN, GERMANY.

CUT-OFF SLIDE-VALVE.

1,185,789. Specification of Letters Patent. Patented June 6, 1916.

Application filed January 27, 1915. Serial No. 4,770.

To all whom it may concern:

Be it known that I, HERMAN GARBE, engineer, a subject of the German Emperor, residing at Sybelstrasse 17, Charlottenburg-Berlin, Germany, have invented certain new and useful Improvements in Cut-Off Slide-Valves, of which the following is a specification.

The present invention relates to improvements in cut-off slide-valves for pipes, and has for its object to provide devices of this character which are extremely simple in construction and are therefore especially suitable for use in plants using superheated steam.

Further features of the invention will appear from the following description in conjunction with the drawing showing a preferred form thereof. In this drawing, similar letters of reference designate the same parts throughout the figures.

Figure 1 is a vertical longitudinal section, Fig. 2 a section on the line A—B of Fig. 1 looking in the direction of the arrow. In this figure the lifting-spindle is omitted. Fig. 3 is a diagrammatic section taken on the line C—D of Fig. 2, the valve being in its closed position. Fig. 4 is a corresponding view of the cut-off plate after it has been lifted but before displacing it. Fig. 5 is a section on the line E—F of Fig. 1.

The casing 1 contains the cut-off valve member or plate 2 which rests on its seat and forms a good fit. An apertured projection 3 on this plate is engaged by the spindle 4 in such manner that the plate 2 is permitted a small lateral play perpendicularly to the axis of the spindle. The screw-spindle 4 is supported in known manner in a threaded sleeve in the cover 5 of the casing so that by rotating the hand-wheel 6 this spindle may be screwed inwardly and outwardly and as a result of the movement thereby imparted to the plate 2, the passage 13 in the casing 1 may be opened or closed. However, the movement of the cut-off plate 2 for opening the passage 13 can only take place after the plate 2 has been lifted from the seat. Moreover, before closing the valve, the plate 2 must be brought to overlie the seat, after which it must be pressed tightly against the seat. Both the lifting and pressure movements of the obturating plate 2 are effected by the lifting spindle 7, and hand-wheel 8. Both movements are relatively slight and are limited in one direction by the stop 9 on the spindle 7 meeting the wall of the casing, and in the other direction by the plate meeting its seat. The spindle 7 is connected with the valve plate 2 by means of a trough-shaped guiding member 10 (see Fig. 5) so that the plate 2 can be shifted laterally out of engagement with the spindle 7 by means of the spindle 4 and can be subsequently re-engaged with this spindle.

The spindles 4 and 7 are preferably both arranged obliquely to the direction of the passage of the steam in such a way that these spindles and their hand-wheels 6 and 8 project only slightly laterally beyond the casing 1. From this there results advantages in that the construction is compact without impeding the passage of the steam. Naturally however both spindles can be shifted through an angle of 45° to the right of their shown position, which would bring the plate 2 in a plane perpendicular to the main direction of the steam-pipe.

The valve plate 2 is provided with lateral guiding projections 11 (Figs. 2 and 5). These projections are guided between guide-ribs 12 which are preferably cast in one piece with the casing. The movement of the plate 2 along the ribs 12 is only possible after the valve plate has been lifted from the seat by means of the spindle 7. As may be seen from Figs. 3 and 4, the guide-ribs 12 are of different length, the upper ribs being longer than the lower. If the plate 2 is pressed down on the seat (Fig. 3) the projections 11 lie in the plane of the shorter ribs 12, the front edges of said ribs acting as stops to prevent movement of the valve plate 2 until this plate has been lifted from its seat by means of spindle 7 to such an extent that the projections 11 lie in line with the guide-groove 14 between the ribs 12, after which the plate 2 can be displaced laterally by the spindle 4 and the passage 13 opened thereby.

The plate 2 is guided by the guide member 10 on the end of the spindle 7 until the end of the projection 11 has entered between the ribs 12. If, however, the plate is displaced further by the spindle 4 the projections 11 are guided by the ribs 12 and the plate 2 is disengaged from the guide-member 10. In closing the valve this operation is repeated in reverse sequence.

By arranging the guiding means for the obturating plate so that one portion is supported by the casing, while another is treated

on the valve plate, there is the advantage that after opening the valve, only the lower part of the lifting spindle with its short guide member 10 lies in the passage of the steam, so that the steam encounters only a small resistance. However, even this small resistance can be avoided by suitably proportioning the parts and their movements.

While only one embodiment of the invention has been shown and described by way of example herein, it is obvious that the same results can be secured by other constructional means within the ambit of my invention, and therefore it is apparent that various alterations can be made without departing from the spirit of my invention. For instance, instead of using a lifting spindle as herein-described, a cam or eccentric disk or the like may be used. Again, the inner end of the spindle 7 may be made to form a valve for equalizing the pressure on both sides of the obturating plate before lifting such plate etc.

What I claim is:—

1. A device of the kind described, comprising in combination a valve member, a seat therefor, a spindle for shifting the valve member relative to said seat, and a second spindle inclined to the first spindle for pressing the valve against said seat and for lifting it therefrom.

2. A device of the kind described comprising in combination a casing having an inlet-branch and an outlet-branch in alinement with said inlet branch, a valve member, a seat therefor, a spindle for shifting the valve member relative to said seat and a second spindle inclined to the first spindle for pressing the valve against said seat and for lifting it therefrom.

3. A device of the kind described comprising in combination a casing having an inlet-branch and an outlet-branch in alinement therewith, a valve member, a seat therefor, a spindle for displacing the valve member relative to said seat, a second spindle for pressing the valve against said seat and for lifting it therefrom, said spindles being inclined to each other and to the common axis of the inlet and outlet branches.

4. A device of the kind described, comprising in combination a casing having an inlet branch and an outlet branch in alinement therewith, a valve member, a seat therefor, having its plane obliquely inclined to the common axis of said inlet and outlet branches, a spindle for shifting the valve member relative to said seat, and a second spindle inclined to the other spindle which is adapted to press the valve against its seat and lift it therefrom.

5. A device of the kind described comprising in combination, a valve member, a seat therefor, means for lifting the valve member from said seat, means for shifting the valve member relative to the face of said seat, and means whereby the valve member may be engaged and disengaged from said valve lifting means during the movement of said member relative to the face of the valve seat.

6. A slide valve comprising a valve member, a seat therefor, a guide-way, means for lifting the valve member from its seat to bring it into engaging relation with said guide-way, means for shifting said valve member substantially transversely to said lifting direction with the member in engagement with said guide-way and means for positively preventing the shifting of the valve member in said transverse direction until it is engaged in said guide-way.

7. A slide valve comprising a valve member, a seat therefor, means for lifting and lowering said valve with respect to its seat, means for displacing the said valve in a direction substantially parallel to the plane of the said seat and means for preventing such displacement until the valve has been raised from its seat.

8. A slide valve comprising a valve member, a seat therefor, means for moving said valve in two directions respectively normal to and parallel to the plane of the seat and coacting guides and projections for preventing the second movement to be imparted to the valve until the first movement has been effected.

9. A slide valve comprising a valve member, a seat therefor, means for raising and lowering said valve with respect to its seat, means governed by the aforesaid raising and lowering means for displacing said valve in a direction substantially parallel to the plane of the seat and a connection between the said raising and lowering means and the valve to permit of the engagement or disengagement of these parts when the valve is displaced in a direction parallel to the plane of its seat.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

HERMAN GARBE.

Witnesses:

HENRY HASPER,

WOLDEMAR HAUPT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."