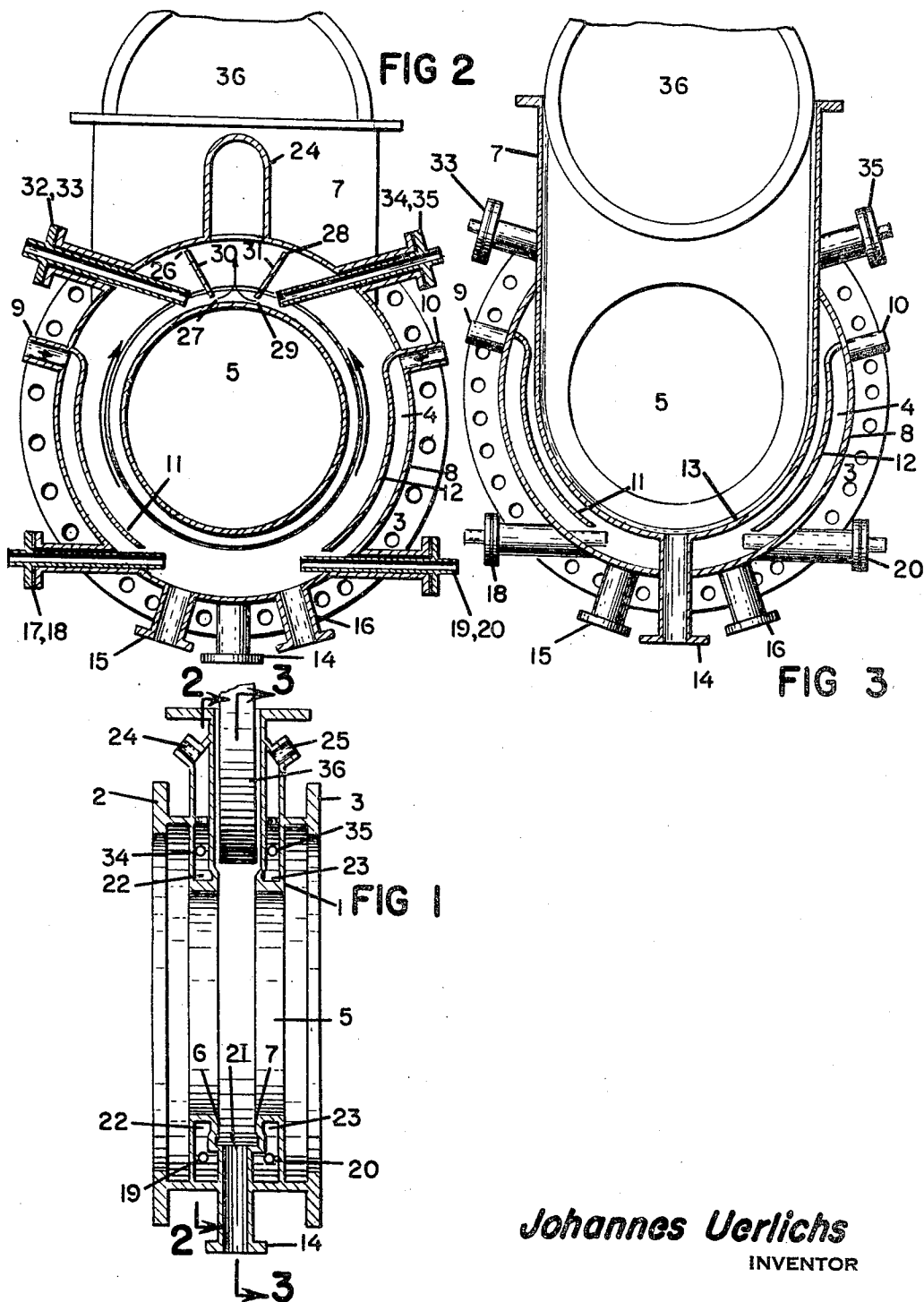


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SLIDE VALVE, PARTICULARLY A HOT-BLAST SLIDE
VALVE OR A HOT-GAS VALVE
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**SLIDE VALVE, PARTICULARLY A HOT-BLAST
SLIDE VALVE OR A HOT-GAS VALVE****Johannes Uerlichs, Duren-Birkedorf, Germany, assignor
to Hermann Rappold & Co., G.m.b.H., Duren-Birkedorf, Germany****Filed Mar. 16, 1964, Ser. No. 352,117****4 Claims. (Cl. 137—340)**

This invention relates to a slide-valve, particularly to a hot-blast slide-valve or hot-gas valve comprising a cooling chamber which is provided in the valve casing and through which the cooling medium, preferably cooling water flows. The problem to be solved with the object of this invention is seen in the improvement of the cooling system of the slide-valve in order to warrant its safety in operation, also at relatively high temperatures.

As is well known in the field and utilization of hot-blast slide-valves with water-cooled casings, the cooling water enters the cooling chamber at its lowest point and flows out at its highest point. This system of conducting of the cooling water is insufficient, especially for slide valves which are subject to high temperatures, because of the relatively low velocity of the cooling water current causing extremely high depositing of impurities contained in the cooling water. Thus, after a short time of operation, sediment is formed which influences the cooling effect and ultimately results in rendering the casing useless.

The problem is principally solved by the instant invention in that the cooling water, as is well known in previous valve-tongue systems, is diverted by guiding members located in the cooling chamber of the slide-valve, thus lengthening the path of the cooling medium and increasing the velocity of the current. It is further solved by providing in the area of the deviation zones in the valve casing connections for compressed air or water under pressure. In this way, it is avoided primarily that impurities settle in the path of the cooling water, due to the relatively high velocity of the current in the cooling chamber. Secondly, the deviation zones of the cooling water, which are particularly subject to sediment accumulation, may be cleaned faster and more thoroughly by means of the cleansing connections so that the accumulation of impurities in the cooling chamber is eliminated. It, therefore, follows that the durability of the slide-valve will be increased and a ready cooling effect with low consumption of the cooling medium will be constantly maintained.

The procedure under this invention with respect to the movement of the cooling water is that the cooling water is directed in two currents to connections located at the outer wall of the casing and approximately level with the middle axis of the gas or air inlet aperture on both sides of the same and is vertically directed by guiding members along the outer wall where it reverses in the area of the lowest zone of the cooling chamber between the guiding members which terminate at a distance from each other. The cooling water then flows out of the casing and flows between the guiding members and the inner wall of the casing upwards to the outlet apertures which are located at the highest point of the cooling chamber. Additional guiding members are advantageously provided in front of the outlet apertures for the cooling water, said guiding members leaving narrowed passage cross sections for the cooling water immediately between the inner and outer wall of the valve casing. These cross sections are chosen so that the principal cooling water currents conform closely to the inner wall of the valve casing.

Concerning the location of the cleansing connections, they are usefully provided in the area of the lowest part

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of the cooling chamber at the deviation zone and at the narrowed cross sections of the outlet of the cooling medium. Thus, impurities which accumulate especially in these areas can be agitated so that they will be carried out by the cooling water. In some cases, sealable outlet apertures for the impurities may be provided in the area of the lower part of the cooling chamber through which, with the aid of the scavenging process, accumulated sediment is eliminated.

With the above and other objects in view which will become apparent from the detailed description below which illustrates a preferred modification of the invention and the drawing in which:

FIGURE 1 is a longitudinal sectional view of the valve and cooling system.

FIGURE 2 is a cross-sectional view taken along section line 2—2 of FIGURE 1 and

FIGURE 3 is a cross-sectional view taken along section line 3—3 of FIGURE 1.

In the drawing, the valve casing 1 is provided with connection flanges 2 and 3, a tongue 36 and having a cooling chamber 4 extending chiefly around the passage aperture 5 of the valve and along the sealing surfaces 6 and 7 which coincide accurately with the valve tongue when the valve is closed. Approximately above the middle axis of the passage aperture 5 inlet connections 9 and 10 for the cooling water are provided at the outer wall 8 of the casing 1, namely one connection each on both sides of the passage aperture 5.

From the inlet connections 9 and 10 are the baffles 11 and 12 in the interior of the cooling chamber 4, which baffles extend parallel to the outer wall 8 and the inner wall 13 of the casing 1 to the lowest part of the cooling chamber 4 and terminate there at a distance from each other.

A closable dust blast duct 14 is directed from below between the ends of the baffles 11 and 12 through the cooling chamber 4, said duct being flanked by cleansing connections 15 and 16 which open out in the cooling chamber 4. In addition, two connecting pipes each 17, 18, 19 and 20, project into the lowest part of the cooling chamber 4 at the ends of the baffles 11 and 12, and extend through the outer wall 8 in oblique direction to the axis of the passage aperture 5 in such manner that their nozzle ends, which are arranged at a distance opposite each other, are in the area of the cooling chamber passages 22 and 23, the latter being separated by the valve tongue area 21.

These cooling chamber passages comprise at their highest point outlet connections 24 and 25 for the cooling water in front of which on both sides, baffles 30 and 31 are located reducing the cooling chamber passages 22 and 23 to narrow slits 26, 27 and 28, 29. Further provided are upper connecting pipes 32, 33, 34 and 35 arranged analogous to the lower connecting pipes 17 to 20, said upper pipes being located with their nozzle apertures in front of the passage cross sections 26 to 29.

For the cooling of casing 1, the cooling water is guided by the connections 9 and 10 into the cooling chamber 4, then in two currents of relatively high velocity between the baffles 11 and 12 and the outer wall 8 of the casing 1 downwards to the lowest part of the cooling chamber 4 where the two currents of the cooling medium meet, reverse and then travel along the inner wall 13 of the casing 1 upwardly to the apex area of the cooling chamber 4, in which area these cooling water currents are diverted before the obliquely arranged baffles 30 and 31 and are then conducted through the passage cross sections 26 to 29 towards the outer and inner walls of the casing so that the cooling water currents maintain close contact principally with the inner wall 13 and therefore

in the cooling water passages 22 and 23. Subsequent to passing the narrowed cross sections 26 to 29, the cooling water flows out of the casing 1 through the outlet connections 24 and 25.

The cooling chamber 4 may be cleansed of impurities occasionally by forcing air or water through the pipes 17 to 20 and 32 to 35 so that the sediment accumulating chiefly at the reversing or deviation areas may be agitated and taken along by the cooling water. If occasion arises, the cleansing connections 15 and 16 may be opened at the same time when starting the cleansing pipes 17 to 20 so that the agitated impurities flow downwards.

It is thought that the invention and its advantages will be understood from the foregoing description and it is apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing its material advantages, the form hereinbefore described and illustrated in the drawings being merely a preferred embodiment thereof.

I claim:

1. A slide-valve, particularly a hot-blast slide-valve or a hot-gas valve comprising a casing having an inner and an outer wall and a gas passage aperture therethrough, a valve tongue slidable in said casing to open or close said aperture, a cooling chamber having an inlet and an outlet through which a cooling medium may flow located in said casing at each side of said tongue, said inlets being located at the outer wall of said casing approximately level with the middle axis of said passage aperture on both sides of said aperture, guiding members for conducting the cooling medium in the cooling chamber from said inlets away in vertical direction along the outer wall of said casing and reversing the cooling medium in the area of the lowest point of said cooling chamber between the ends of said guiding members, said ends being spaced at a distance from each other so that said medium is sub-

sequently conducted between said guiding members and the inner wall of said casing and flows upwardly to and out of said outlets located at the highest point of said cooling chambers, and connections located in the area of reversing said cooling medium for compressed air or water under pressure for momentary scavenging of said cooling chambers.

2. A slide-valve according to claim 1 wherein dust outlet apertures are provided in the area of the reversing zones of said cooling medium.

3. A slide-valve according to claim 1 wherein additional guiding members are located in front of said outlets for the cooling medium, said additional guiding members leaving narrowed passage cross sections for the cooling medium between said inner and outer walls of said casing.

4. A slide-valve according to claim 3 wherein scavenging connections are provided near said narrowed cross sections at said outlets.

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