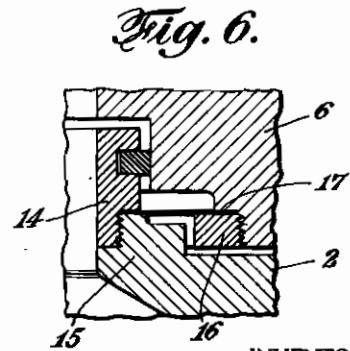
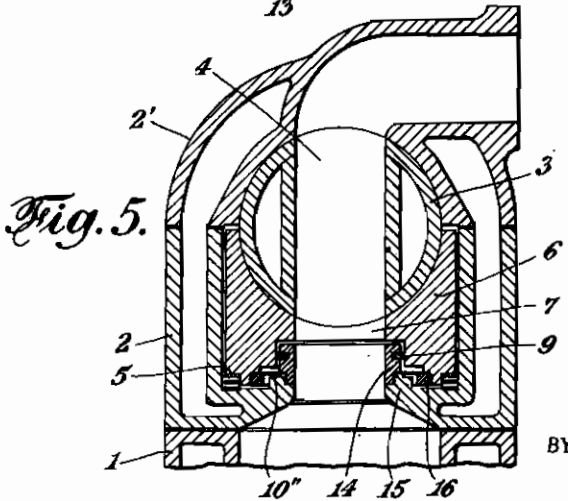
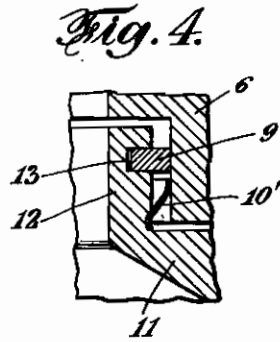
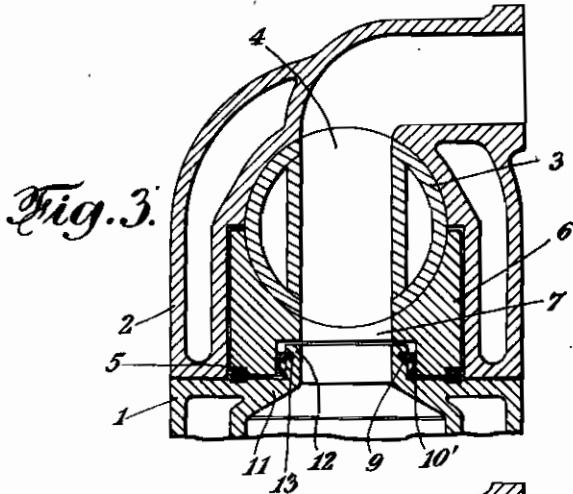
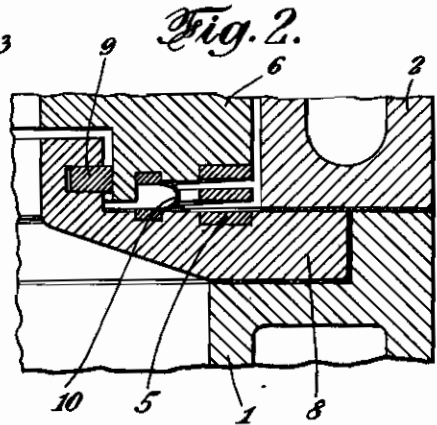
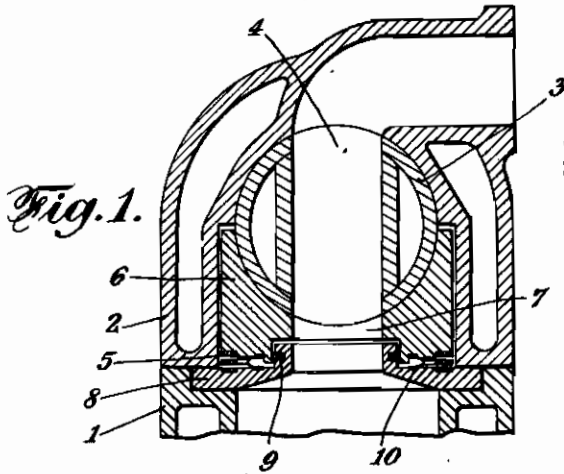


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CYLINDRICAL ROTARY SLIDE VALVE
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CYLINDRICAL ROTARY SLIDE VALVE

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The present invention relates to a cylindrical rotary slide valve for the valve gear of steam engines, compressors, expansion engines, and internal combustion engines.

The familiar types of cylindrical rotary slide valves are either fitted into a borehole in the cylinder cover or the cylinder block, or are pressed yieldingly on the cylinder head by means of a movable cylinder cover. The former method is the cause of a great deal of trouble in operation, because it is impossible to secure a fit that will be equally tight whether the cylinder is hot or cold. By the latter method the cylinder cover is subjected to a pressure approximately equal to that exerted on the piston, so that a considerable surface load is exerted on a rotary slide valve designed as a plain friction bearing.

The aim of the present invention is to avoid the drawbacks inherent in these two designs, while retaining the merits of each.

For that purpose a fixed cylinder cover with a port opening of approximately the same size as that of the valve gear section absorbs about 60 to 80 per cent of the gas pressure, while a slipper is pressed on the rotary roller by means of a spring with a sealing pressure of about 2 to 5 kg/cm² and determines the timing of the valve gear by means of the slot therein. The fixed cylinder cover and the movable slipper are protected against passage of the medium working in the cylinder, which may be steam, or compressed air, or combustion gases, by means of a pre-sealing device which consists of a piston ring or a packing, and a soft or elastic main sealing device, for example, a material which should be soft or as tough as possible, such as deep drawing sheet steel, special deep-drawing sheet steel, soft brass, soft bronze, aluminum, asbestos-metal fabric, or the like. The result is twofold: firstly, only a small fraction of the gas pressure is transmitted to the slide valve roller, just as is the case when the slide valve is fitted into a borehole, and secondly, sealing is effected both in the cold and in the hot state by means of the pressure exerted by the spring on the slipper, as occurs when a rotary slide valve is fitted with a movable cylinder cover. The following three examples are intended to

illustrate the nature of this invention and the way in which it may be carried into practical effect, but the invention is not confined to these examples.

5 Fig. 1 shows the cylinder head 2 on the cylinder block 1. The valve gear roller 3 rotates in the said cylinder head 2 and is provided with the necessary port openings, one of which, the passage 4, can be seen in the figure. The slipper 6, which has the valve gear section 7, is pressed by means of the spring 5 on the said roller 3, whereby it is constantly in touch both with the said slipper as well as with the cylinder head. The fixed cylinder cover 8 is pressed gas-tight by means of the head 15 on the cylinder block, for which purpose the familiar type of cylinder head packings may be used. A pre-sealing device 9, which consists of a packing or a ring of graphite, carbon, or metal, is fitted in the said fixed cylinder cover 8. Approximately 75 per cent of the pressure is absorbed by the said pre-sealing device, so that the change of pressure between the said pre-sealing device and the main sealing device amounts to less than 25 per cent of the change of pressure of the working cylinder. The main sealing device 10 is composed of a soft or elastic material and can yield to the corresponding extent when the valve gear roller increases in size as it heats up and the slipper moves towards the cylinder cover. The characteristic of the said spring 5 is of such a nature that the pressure exerted is barely measurable in view of the short distance traversed by the spring.

According to the design illustrated in Fig. 2, the fixed cylinder cover is united with the cylinder block. The various parts are numbered in the same way as in Fig. 1.

According to the design shown in Fig. 3, the fixed cylinder cover is united with the cylinder head which consists of the two parts 2 and 2' for convenience of assembly. The main sealing device 10 of this design is pressed by means of a nut 8' on the part of the cylinder head that forms the fixed cylinder cover and by means of the nut 6' on the movable slipper. The other parts are numbered to correspond with Fig. 1.

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