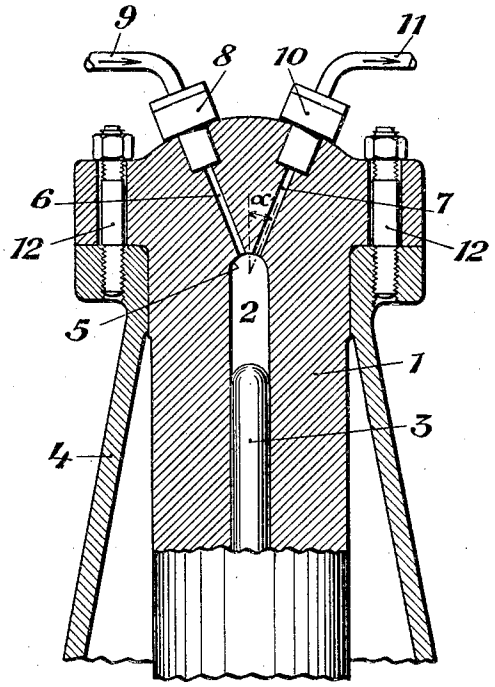
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HIGH PRESSURE RECIPROCATING COMPRESSOR

Filed April 27, 1928



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HIGH-PRESSURE RECIPROCATING COMPRESSOR

Application filed April 27, 1928, Serial No. 273,266, and in Switzerland May 2, 1927.

This invention relates to reciprocating compressors working at very high pressure and has for its object to provide an improved and simplified construction of such compressors in which the stresses in the material of the cylinder are considerably reduced.

According to the present invention the compressor cylinder is formed integral with its cover, and the cylinder bore terminates in a blind substantially hemispherical chamber in the cylinder head, the inlet and outlet passages leading to this chamber being also formed in the head so that the stresses in the material are reduced and the need for a gas-tight joint between the cylinder and its cover is eliminated.

One construction according to the invention is diagrammatically illustrated by way of example in the accompanying drawing in which the compressor cylinder is shown in cross-section.

In the construction illustrated in the drawing the cylinder 1 is formed integral with its cover and encloses a narrow duct-like bore within which reciprocates a piston 3 of the plunger type. The cylinder bore 2 terminates in a blind substantially hemispherical chamber 5 with which communicates an inlet passage 6 and an outlet passage 7, also formed in the cylinder head. These passages respectively lead to the inlet valve 8 and discharge valve 10 controlling the inlet and discharge pipes 9 and 11 as shown. The passages 6 and 7 are disposed symmetrically with respect to the axis of the cylinder bore 2 and make an angle α therewith, which may, for example, be one of 45°.

The complete cylinder together with its integral cover is secured by means of studs 12 to the compressor frame 4.

With the construction according to the invention the safety of operation of the compressor is increased owing to the reduction in the stresses in the material, since the very high stresses produced by the junction of two cylindrical hollow spaces, as is the case when a separate cylinder cover is employed, are avoided.

It will be appreciated that the results obtained by means of the invention are in no way altered when the cylinder is provided with a liner of appropriate form.

I claim:

1. In a high pressure reciprocating compressor, the combination of a cylinder block, a cylinder head formed integral with said block, said block having an axial bore terminating in a blind chamber of substantially hemispherical shape, and an inlet valve and a discharge valve in said cylinder head, said valves being connected to said chamber by means of relatively small passages extending radially from the hemispherical portion of the bore.

2. In a high pressure reciprocating compressor, the combination of a cylinder block, a cylinder head formed integral with said block, said block having an axial bore terminating in a blind chamber of substantially hemispherical shape, and an inlet valve and a discharge valve in said cylinder head, said valves communicating with said chamber by means of relatively small passages extending radially from the hemispherical portion of the bore, said passageways being of enlarged diameters adjacent the exterior of the cylinder block to provide seats for the valves.

3. In a high pressure reciprocating compressor, the combination of a cylinder block, a cylinder head formed integral with said block, said block having an axial bore terminating in a blind chamber of substantially hemispherical shape, and an inlet valve and a discharge valve in said cylinder head, said valves communicating with said chamber by means of relatively small passages extending radially from the hemispherical portion of the bore, the radius of said ports being less than the thickness of the surrounding wall portion.

4. In a high pressure reciprocating compressor, the combination of a cylinder block, a cylinder head formed integral with said block, said block having an axial bore terminating in a blind chamber of substantially hemispherical shape, and an inlet valve and a discharge valve in said cylinder head, said valves communicationg with said chamber by means of relatively small passages extend-

ing radially from the hemispherical portion of the bore, said ports being of enlarged radius adjacent the exterior of the cylinder block but no radius throughout their length exceeding the thickness of the surrounding wall portion.

In testimony whereof I have affixed my signature.

CHARLES SCHAER.