No. 827,170. PATENTED JULY 31, 1906.

P. H. MURPHY.

VALVE BLOCK.

APPLICATION FILED JUNE 17, 1905.

Fig. 2.

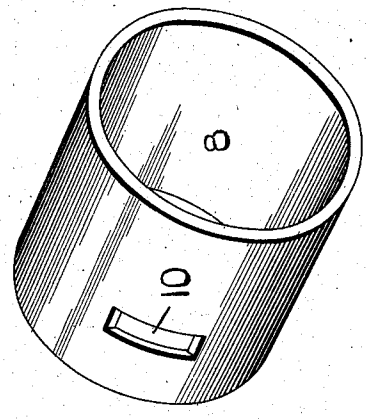


Fig. 1.

Fig. 3.

Witnesses

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VALVE-BLOCK.

No. 827,170. Specification of Letters Patent. Patented July 31, 1906.

Application filed June 17, 1905. Serial No. 265,723.

To all whom it may concern:

Be it known that I, PETER H. MURPHY, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented a new and useful Improvement in Valve-Blocks and Similar Articles, of which the following is a specification.

Valve-blocks for pneumatic tools have a bore or valve-chamber for the valve into the sides of which open passage-ways which are drilled transversely and longitudinally through the block. In order to secure a uniform pressure on all sides of the valve, it is desirable to have the inner ports of the transverse passage-ways enlarged into annular grooves formed in the wall of the valve-chamber. Such valve-blocks are usually made of a single block or piece of metal. In practice the manufacture of valve-blocks by the present method requires great skill and care on the part of the workman and is subject to considerable loss from defective material, inaccuracy in the finished product, and the delicacy of the tools necessarily used in such manufacture. Besides, the operations are slow and expensive, and the difficulty of inspection of the interior grooves is liable to leave rough and ragged surfaces from which small chips are liable to break off in the ordinary operation of the tool and cause clogging of the valve or effect injury thereto.

It is the object of the present invention to avoid the difficulties and disadvantages above specified in the manufacture of valve-blocks and similar articles.

My invention consists principally in making a valve-block in sections adapted for convenient and economical manufacture and assemblage. It also consists in the construction hereinafter more fully described and claimed.

In the accompanying drawings, which form part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a perspective view of the several transverse sections of the valve-block which are spaced apart to expose the entire faces thereof. Fig. 2 is a perspective view of the shell which incases the transverse sections, and Fig. 3 is a longitudinal section through the finished valve-block.

As shown in the accompanying drawings, the valve-block is a construction having a cylindrical bore or valve-chamber extending therethrough and adapted to permit the reciprocation of a valve fitting therein. The bore or valve-chamber in the particular valve-block shown in the drawings has five circumferential enlargements formed by grooves in the inner face of the valve-block. Into each of these five grooves opens a passage-way which extends radially outward. All of these radial passage-ways (with the single exception of the exhaust passage-way hereinafter mentioned) communicate with a passage-way extending longitudinally of the valve-block. For present purposes it is unnecessary to describe the connections of the several passage-ways in detail. It is considered sufficient to state that such passage-ways are controlled by a valve in the valve-chamber and are arranged to communicate with a source of pressure-supply with the cylinder or piston-chamber and with the atmosphere in accordance with established practice.

According to the practice that now prevails the valve-block above described would be made of a single block or piece of metal. According to my invention this valve-block is made of as many transverse sections 1 2 3 4 5 as it has internal ribs or bearing-surfaces 6 in contact with the valve, together with an end cap 7 at one or both ends and a sleeve or shell 8 incasing said sections. All of said sections are flat on one side and all (except usually one of the endmost sections) are counterbored on the other side. The normal bore of the several sections constitutes ribs or bearing-surfaces 6 for the valve, and the counterbores constitute the grooves, (when the sections are laid together flatwise.)

The counterbored face of each section has a slot or slots 9 extending radially outward. As these slots are intended to be cut with an ordinary planing-tool, they preferably extend to the periphery of their respective sections; but with the exception of the slot constituting the exhaust passage-way all such slots are closed by the incasing shell. As the exhaust-port should open into the atmosphere, the slot constituting the exhaust passage-way registers with a hole 10, provided therefor in the incasing shell.

Extending longitudinally through each disk are passage-ways 11 so arranged that the several passage-ways of one disk will aline with those of the disk next adjacent thereto. Most of these passage-ways are duplicated and terminate in the radial slots above mentioned, whereby the several passage-ways communicate, through their re-

spective slots, with the grooves in the wall of the valve-chambers. The several sections are thus simple forms which may be made under the most favorable and economical conditions. In practice the boring, the counterboring, and the drilling of the holes of each section are completed before the section is severed from the rod of which it is formed, and the operation of the cutting-tool in severing the section forms the flat face thereof. The sections are assembled by first clamping them firmly together and centering them upon an arbor and then turning their surfaces off true. Then the shell, which is of slightly less internal diameter than the diameter of the finished disks, is heated to expand it and then slipped over the disks and allowed to cool. The shell may also be set in place by hydraulic pressure. When the sections are thus assembled, suitable end caps are fitted thereto, (if required,) and the assembled parts constitute a valve-block similar in all respects to an integral valve-block.

Obviously my invention is applicable to all forms of valve-blocks and to other hollow articles having internal grooves, and I do not wish to be restricted to the particular form of valve-block shown in the accompanying drawings.

What I claim is—

1. A valve-block or similar article comprising axially-bored sections fitting together flatwise, said sections having radial slots in their faces arranged to constitute passage-ways opening into the hollow interior of the assembled section.

2. A valve-block or similar article comprising axially-bored sections fitting together flatwise, said sections having radial slots in their faces arranged to constitute passage-ways opening into the hollow interior of the assembled sections, and said sections being counterbored in alinement with said slots to constitute grooves in the wall of such hollow interior.

3. A valve-block comprising a plurality of sections fitting together flatwise, all of said sections having an axial bore, and all but one of said sections having a counterbore, said sections having passage-ways therethrough, and a shell or casing for said sections.

4. A valve-block having transverse and longitudinal passage-ways, said valve-block comprising a plurality of sections fitting together flatwise, and a casing for said sections, each section having an axial bore constituting part of the valve-chamber and some of said sections being counterbored, the counterbored sections having radial slots extending from the counterbore to the periphery of said sections to constitute portions of said passage-ways.

St. Louis, Missouri, June 10, 1905.

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