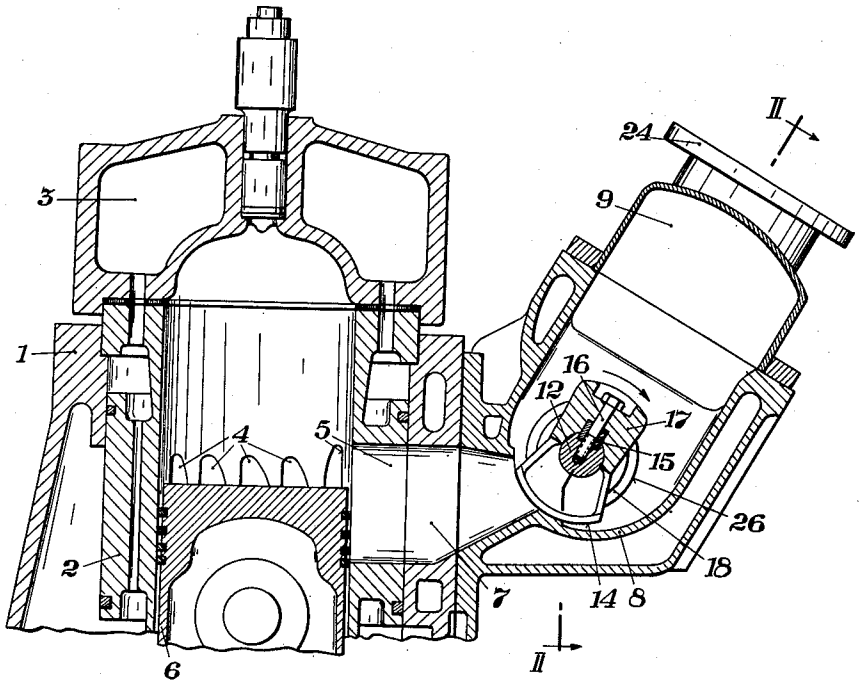
Aug. 21, 1956 F. LEHNER 2,759,464

ARRANGEMENT WITH A ROTARY SLIDE

Filed May 19, 1953 2 Sheets-Sheet 1

Fig. 1

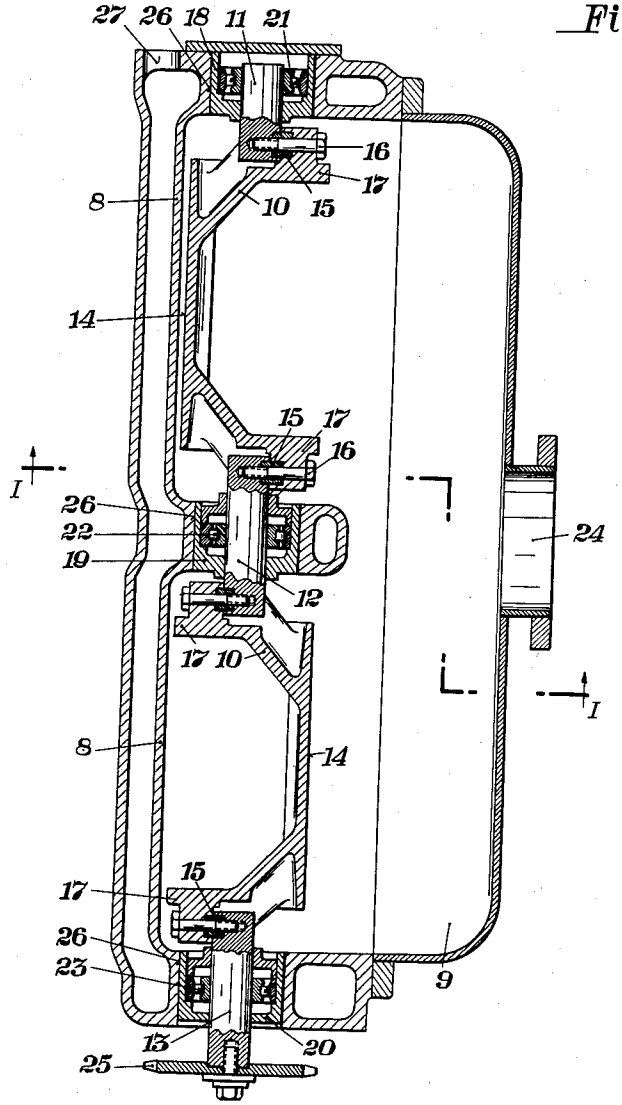


Aug. 21, 1956 F. LEHNER 2,759,464

ARRANGEMENT WITH A ROTARY SLIDE

Filed May 19, 1953 2 Sheets-Sheet 2

Fig. 2



United States Patent Office 2,759,464 Patented Aug. 21, 1956

2,759,464

ARRANGEMENT WITH A ROTARY SLIDE

Felix Lehner, Hallein, Austria, assignor to Hans List, Graz, Austria

Application May 19, 1953, Serial No. 355,907

Claims priority, application Austria May 19, 1952

1 Claim. (Cl. 123—59)

The invention relates to a rotary slide, particularly for controlling the exhaust in two-stroke internal-combustion engines.

The known rotary slides for internal-combustion engines with several cylinders are constructed either undivided or divided with respect to the bearings and therefore the assembly and replacement is very difficult, because larger engine parts, such as the slide casing are to be removed. Or, a large free space is necessary in axial direction which space, however, is often not available on ships. In undivided constructions, it is, moreover, of disadvantage that the same cannot be standardized for motors with different numbers of cylinders. In the interest of an easy and simple production it is, however, desirable for factories which simultaneously produce motors with like cylinder elements and different numbers of cylinders to manufacture as many like parts as possible.

The rotary slides divided in the bearings are expensive and require a very high precision in the manufacture

According to the invention the above disadvantages are avoided by providing a rotary slide comprising a separate controlling or regulating part for each motor cylinder in a slide casing open on one side, the ends of which controlling part are fastened at the sides of two shaft stubs, the sides of which are remote from the sliding surface of the controlling part. In this arrangement the axial extent of the sliding surface of the controlling part is smaller than the distance between the stub shafts. It is thereby possible to mount or remove the rotary slide to and from the casing already after removing the exhaust head. Furthermore, the standardization of the relatively inexpensive and simple elements of the rotary slide for motor types with different numbers of cylinders will be possible.

In engines with cylinders arranged in line the individual controlling parts can also be arranged one behind the other by adjusting common shaft stubs for each two adjacent joints. The so formed unit of the rotary slide is driven by the crank shaft in usual manner with unchangeable ratio of revolutions.

According to a further feature of the invention it is advantageous to fasten the controlling parts by applying sleeves by means of radially arranged screws. Furthermore, the individual controlling parts are fitted with balancing masses at the sides opposite to their sliding surface for balancing the controlling slide or the engine. Each of the shaft stubs is advantageously supported in a pipe piece, for example in ball- or roller-bearings and the pipe pieces are axially adjusted in a common bore in an undivided rotary slide casing.

In the following the invention is illustrated by way of example.

Fig. 1 shows a part of a two-stroke internal-combustion engine, viz. a cylinder in middle-section and the rotary slide casing in section along the line I—I of Fig. 2.

Fig. 2 shows a section through the rotary slide casing along the line II—II of Fig. 1.

In the motor casing **1** a cylinder liner **2** is mounted which is fastened at the cylinder head **3** by means of screws not illustrated. The cylinder head **3** is fastened by means of screws on the motor casing **1**. The inlet slots **4** and outlet slots **5** are controlled by means of a piston **6**. The channel for the supply of air or the fuel-air-mixture to the inlet slots **4** are not illustrated in Fig. 1. A channel **7** leads from the outlet slots **5** over the open undivided casing of the exhaust rotary slide **8** to the exhaust head **9**. The exhaust pipe is connected to the pipe piece **24**. The exhaust head is cooled with water, the water inlet is designated by **27**, the water outlet is not illustrated. In the rotary slide casing **8** is arranged the rotary slide for rotation in the direction of the arrow, which slide consists of two controlling parts **10** and the shaft stubs **11**, **12** and **13**. The controlling parts **10** are secured against rotation by means of claws **17** at that side of the shaft stub which is remote from the sliding surface **14** of the controlling parts **10**. The fastening is carried out by using fitting sleeves **15** by means of radially arranged screws **16**. The claws **17** are formed reinforced for the sake of balancing masses.

The shaft stubs **11** to **13** are arranged in roller bearings **21** to **23** located in pipe pieces **18**, **19**, **20** which are axially introduced into the casing **8**. The pipe pieces **18**, **19**, **20** having the same outer diameter are inserted into a common bore **26** of the undivided casing **8**. The shaft stub **11** serves as a bearing support but both controlling parts **10** are also connected with one another by means of the shaft stub **12** secured against rotation. The shaft stub **13** is provided with a driving wheel **25** for the whole rotary slide.

In assembling the arrangement the pipe pieces **18**, **19** and **20** are axially located in the casing **8** together with shaft stubs **11**, **12**, **13** positioned in said pipe pieces, whereupon the controlling parts **10** are radially introduced individually from outside and there fastened. In order to enable such an assembly the axial extent of the sliding surface **14** is somewhat smaller than the distance of the shaft stubs. For mounting and removing the rotary slide only the exhaust head **9** is to be removed.

What I claim is:

In a two-stroke combustion engine the combination comprising a main motor casing, a plurality of cylinders in the main casing and arranged in a row and having air inlet ports and outlet ports, a piston in each cylinder and controlling the ports, a valve casing open at a side and thereat connected to the main casing and communicating with the outlet ports, rotary exhaust valve members for opening and closing the communication between the casing and the outlet ports and each including a control part carrying an arcuate closure element and also including stub shaft means each secured at its side remote from the closure element to one end of a control part, the axial length of each closure element being shorter than the distance between the ends of the stub shafts secured to the control part, the valve casing having an outer opening remote from the main casing and larger than the largest dimension of the control parts to permit the insertion thereof radially of the stub shafts.

References Cited in the file of this patent

UNITED STATES PATENTS

1,774,881	Fry	Sept. 2, 1930
1,776,665	Riehm	Sept. 23, 1930
1,887,661	Pielstick	Nov. 15, 1932
2,076,976	Burn	Apr. 13, 1937