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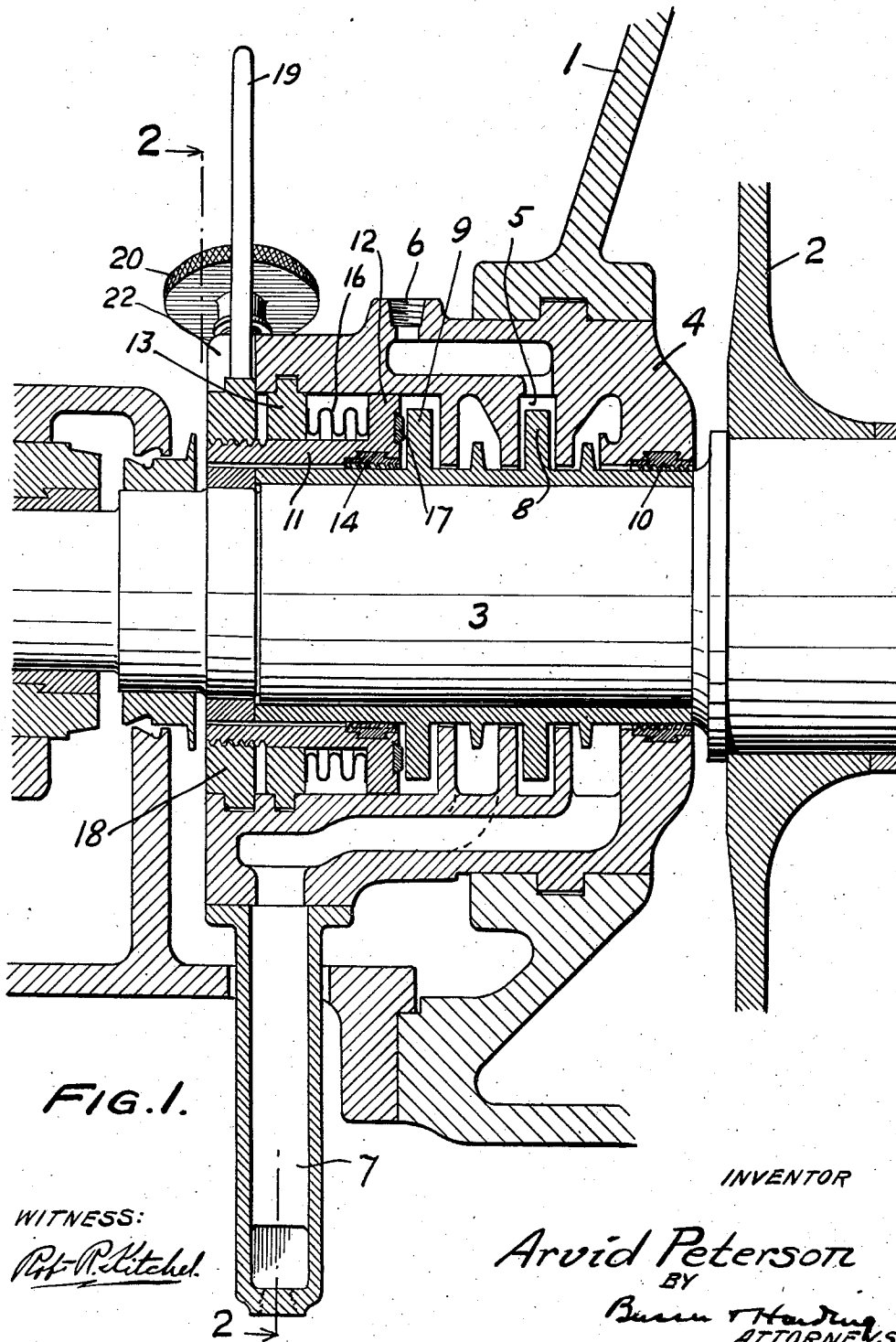
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2,163,153

COMPRESSOR SEAL

Filed Sept. 28, 1936

2 Sheets-Sheet 1



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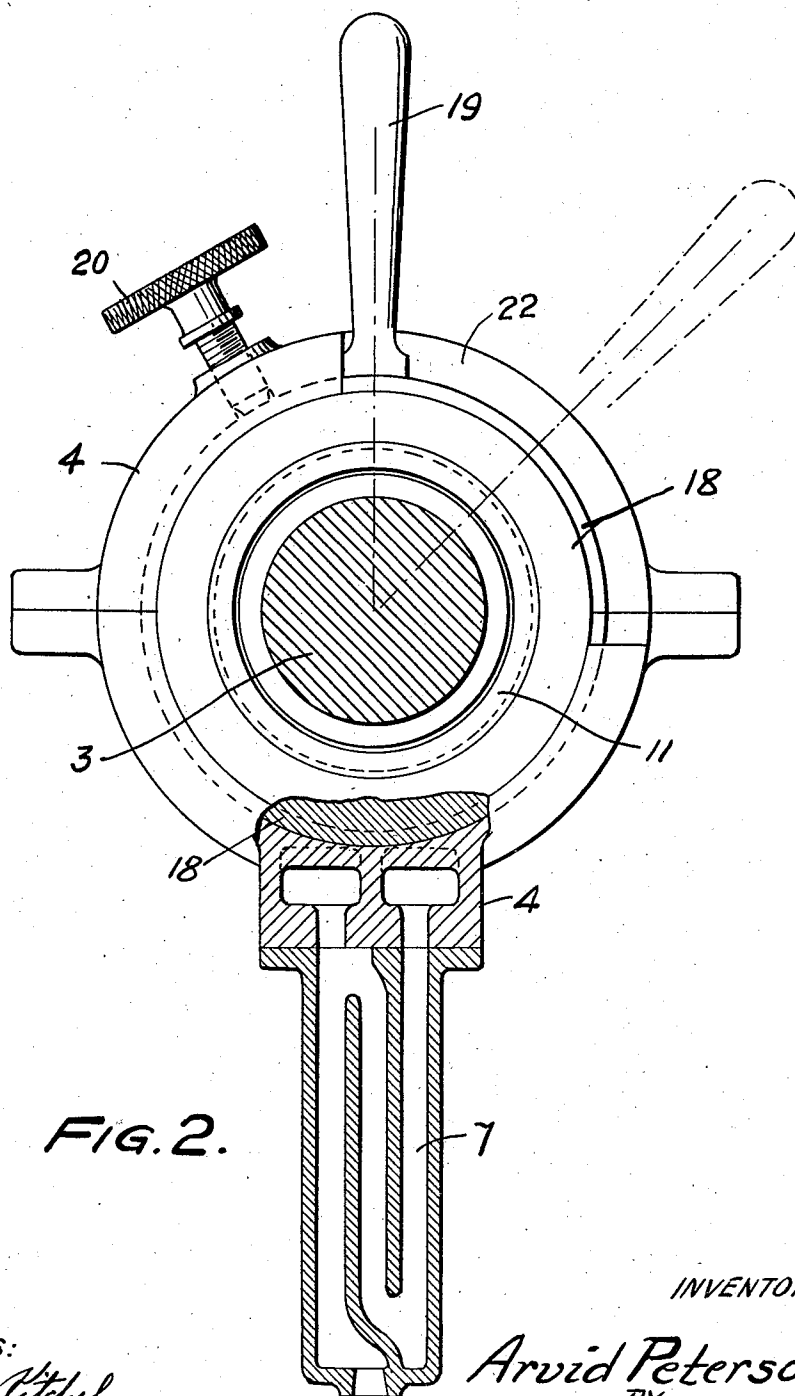


FIG. 2.

WITNESS:

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2,163,153

COMPRESSOR SEAL

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Application September 28, 1936, Serial No. 102,901

1 Claim. (Cl. 286—11)

This invention relates to an improvement in compressors, pumps and the like, and more particularly relates to a compressor provided with a packing box so constructed as to prevent the leakage of gas when the compressor is shut down.

Heretofore the leakage of gas from compressors, and particularly from such adapted for handling, for example, illuminating gas, coke oven gas and the like, has been prevented during the operation of the compressor by the admission of water into a sealing chamber in which a revolving collar on the shaft generates sufficient pressure to prevent leakage.

However, when the compressor is out of operation, the sealing medium, as water, is shut off and if the valves used in the piping system are not absolutely tight leakage occurs as a result of gas pressure building up in the compressor casing.

Various efforts have been made to avoid leakage of gas from compressors when out of operation, but none has proved entirely efficient and satisfactory. Thus it has been proposed to introduce a heavy grease or soap into the sealing chamber when the compressor is shut down, but such has proved objectionable. Again it has been proposed to displace the entire packing housing axially against the revolving collar on the shaft, but such presents the possibility of the escape of gas through the sliding fit which must be provided between the packing housing and the compressor casing.

Now in accordance with this invention there is provided a packing box structure for compressors and the like comprising essentially a sylphon bellows and a stationary collar adapted to be slid against a collar on the shaft whereby a gas-tight joint, resistant to relatively high pressure in the compressor casing, is formed.

Having now indicated in a general way the nature and purpose of this invention, I will proceed to a detailed description thereof with reference to the accompanying drawings, in which there is illustrated a preferred embodiment thereof, and in which:

Figure 1 is a sectional view of a packing box embodying this invention.

Figure 2 is a sectional view on line 2—2 of Figure 1.

In the drawings, 1 indicates the casing of a compressor, housing an impeller 2 carried on a shaft 3, mounted in suitable bearings in the casing and adapted to be suitably driven.

Cooperating with the casing and adapted to pack the shaft 3 where it passes through the cas-

ing is a packing box comprising a casing 4 within which is formed a water sealing chamber 5, adapted to be connected with a supply of water through a tapped opening 6 and from which water will be discharged through a conduit 7. Leakage from the chamber 5 is prevented by means of suitable packings 10 and 14. Within the chamber 5 and carried by shaft 3 is a collar 9, which on operation of the compressor causes pressure to be built up in the water sealing chamber 5.

Slidably mounted around shaft 3 and packed with respect thereto is a sleeve 11 carrying a collar 12 at one end and a collar 13 intermediate its ends. The collar 12 is formed integral with sleeve 3 and has a sliding fit on the casing, while collar 13 engages the casing with a tight fit and has a sliding fit on the sleeve. A sylphon bellows 16 extends between and is welded to the collars 12 and 13 and the outer face of the collar 12 is provided with an annular facing 17 of relatively soft metal as, for example, Babbitt metal.

The outer end of sleeve 11 is threaded and carries a nut 18 bearing against the casing 4 and provided with a handle 19, which works in a cut-away portion 22 in the casing and by which the nut may be turned. A set screw 20 passing through the casing 4 is adapted for adjustment to secure the nut 18 in any given position.

As will now be appreciated, the sleeve 11 slidable on but not revoluble with shaft 3 will be slid inwardly or outwardly on turning of the nut 18 one way or the other and as a consequence the facing 17 may be brought in contact with or spaced from collar 9 on shaft 3 and the sylphon bellows expanded or contracted.

When the compressor, or the like, is in operation escape of gas will be prevented by the water seal, and the sleeve 11 will be in its outward position with the facing 17 spaced from the collar 9 as shown in Figure 1. Whenever the compressor, or the like, is stopped and the water seal may become ineffective, the sleeve 11 is moved inwardly, by turning nut 18, and the facing 17 brought into contact with the collar 9, as will be clear from Figure 1. The set screw 20 will be adjusted to hold the nut 18 and consequently the sleeve 11 in either of its positions indicated.

When the sleeve 11 is adjusted to bring the facing 17 in contact with the collar 9, the contact of the facing with the collar will positively prevent the leakage of gas from the compressor casing, it being noted that the passage of gas from the casing must be outside of the periphery of collar 9. The sylphon bellows, having gas-tight connection with the collars 12 and 13, and the 55

gas-tight fit between the periphery of collar 13 and the casing prevents the escape, through the sliding fit between collar 13 and the shaft, of any gas which may pass between the periphery of collar 12 and the casing.

5 As will be fully appreciated, the facing 17 on collar 12 may be omitted and the discharge of gas prevented by bringing the faces of collars 9 and 12 into contact. The facing 17 will have the
10 virtue of preventing scoring of the collars if the compressor be started up without disengaging the collars.

As will be obvious, the water seal arrangement described herein does not form any essential part
15 of this invention and such may be substituted for by a steam seal or the like, or omitted; it being appreciated that this invention operates when the compressor or the like, and consequently the water seal or the like, is out of operation.

20 What I claim and desire to protect by Letters Patent is:

In a compressor, or the like, including a casing and a shaft extending through the casing, packing means comprising a shoulder carried by the shaft, an axially adjustable sleeve supported by the casing, having a threaded outer end, surrounding the shaft, and arranged to provide an
5 annular fluid-tight seal with said shoulder, a collar surrounding the sleeve between its ends and forming a tight joint with the casing, a flexible annular element of substantial axial extent surrounding said sleeve and having fluid tight engagement at its one end with the inner end of
10 said sleeve and at its other end with the collar, and a nut on the threaded end of the sleeve, said nut being rotatably mounted on the casing and fixed against axial movement for adjustably fixing said sleeve either in contact with the shoulder
15 or spaced therefrom.

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