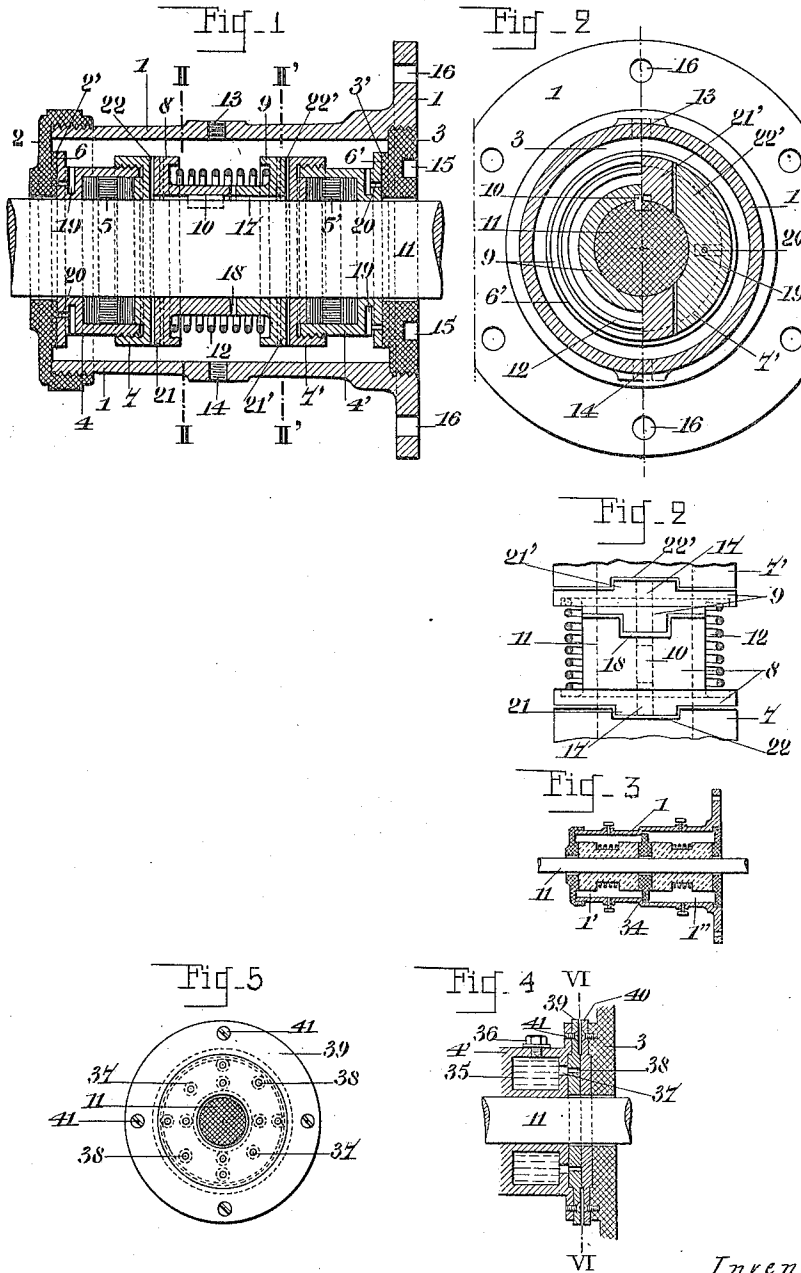


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J. LEROY
CONSTRUCTION OF STUFFING BOXES FOR REVOLVING SHAFTS OF ALL
KINDS AND ESPECIALLY OF TURBINE SHAFTS AND THE LIKE
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CONSTRUCTION OF STUFFING BOXES FOR REVOLVING SHAFTS OF ALL KINDS AND
ESPECIALLY OF TURBINE SHAFTS AND THE LIKE.

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To all whom it may concern:

Be it known that I, JULES LEROY, engineer, citizen of the Republic of France, residing at 48 Rue de Plaisance, La Garenne Colombes, Seine, have invented an Improved Construction of Stuffing Boxes for Revolving Shafts of all Kinds and Especially of Turbine Shafts and the like, of which the following is a specification.

10 This invention relates to an improved construction of stuffing boxes for revolving shafts of all kinds, and especially for turbine shafts and the like. The stuffing box comprises means which secures steam-tight-
15 ness without wearing the shaft which passes through it, by reason of arranging the entire apparatus which secures this steam-tightness, for turning with the revolving shaft, as hereinafter set forth.

20 Referring to the accompanying drawings, Figure 1 shows a longitudinal section of the device on the central axis of the box.

Figure 2 shows two half sections on the lines II—II and II'—II' respectively, of
25 Figure 1.

Figure 2' shows a plan view from above of one of the elements of the box, having the spring, to which reference will be made hereinafter, shown as cut.

30 Figure 3 shows a diagrammatic section of a stuffing box having two elements.

Figure 4 shows a longitudinal section of a lubricating device.

Figure 5 shows a front view on line V—V
35 of the device illustrated in Figure 4.

These drawings show the apparatus as composed of a metal casing I, closed at each end by screw cap 2 and plug 3, through which freely passes the shaft 11 which may
40 be for instance, a turbine shaft, and around which is supported in any convenient manner, the casing I replacing a stuffing box of the ordinary kind.

In the interior of the casing I are placed
45 two complete stuffing boxes 4, 4', which are slidable on shaft II and which serve to hold the packing washers 5, 5', clamped by the caps 7, 7', forming together a stuffing box and devised to ensure steam-tightness
50 around the shaft passing through the apparatus.

The caps 7, 7' are preferably screw-threaded, the one with a right-handed thread the other with a left-handed thread, so as to
55 tend to grip one another, under the strain of

the turn communicated to them by the rotation of shaft 11. The outer faces 6, 6', of these boxes, and the inner faces 2', 3', of the cap 2 and plug 3 which are, respectively, in contact, are suitably adjusted to ensure perfect contact therebetween. Lubricating apertures 19 and 20 serve to lubricate these parts.

Between the two boxes 4 and 4' provided with their closures and constituting stuffing
65 boxes, is placed a cylindrical piece formed in two parts 8, 9, which parts are fastened firmly together by a rib such as 18 (Fig. 2'), and fastened to the shaft 11 by means of a groove 17, into which is inserted a key 10
70 also fitting into a groove in the shaft.

Further, these pieces 8 and 9, are connected to the boxes 4, 4', by means of mortices and tenons 21, 21', and 22, 22' (Fig. 2'). Under the influence of a helical spring 12
75 the two pieces are separated without losing connection, and thus ensure close contact of the boxes 4, 4', with the screw cap 2, and plug 3.

The shaft 11, in its rotation thus causes
80 rotation of the entire construction, except the casing I and the screw cap 2, and plug 3, which remain stationary.

The casing I can be filled with oil through an aperture 13 and can be drained through
85 aperture 14. A drop lubricator or other suitable means can be provided at 13, or a constant circulation of oil can be maintained within the casing.

Apertures 16, in the vertical wall of casing I serve for attaching the casing by means
90 of screws or rivets, to a turbine or other apparatus having a rotating shaft, and recesses 15 formed in the screw plug 3, permit readily securing the plug in place.

In the principal form of invention above described, and shown in Figs. 1, 2 and 2', there is but a single compartment. Evidently, however, the invention is adapted
100 to cover that form of device, wherein several complete units are placed adjacent each other, and separated merely by a partition. This form has been represented schematically, in Fig. 3, wherein, a packing box has two identical elements, 1' and 1'' separated
105 by a loose partition 34.

One stuffing box may thus be composed of one or more elements up to any desired number.

Figures 4 and 5 show a lubricating device 110

for preventing, any leakage occurring through the lubricating orifices 19 and 20 (Figs. 1 and 2). For this purpose, there is arranged in the boxes 4, 4' a tight oil chamber 35, which chamber is filled through a tube provided with a plug 36 and has apertures 37 for lubricating the discs 39 and 40 on which the friction of the entire moving system takes place as indicated at 2' and 3' (Fig. 1). The lubrication takes place through the apertures 38 coinciding with the apertures 37.

In Figure 5, the discs 39 and 40 are shown close together and fixed by means of screws, one of them to the box 4', and the other to the screw plug 3. This arrangement can, however, be made in any other convenient manner for the purpose of enabling the easy replacement of these parts. The discs may be formed of various materials according to the use to which the stuffing box is to be applied.

The apparatus constructed as above described operates in the following manner:

When the turbine or other apparatus of like kind, on which the stuffing box above described, is mounted, is in motion, the shaft 11 revolves, and by reason of the key 10, the parts 8 and 9, and the projections and recesses 21, 21', 22, 22', it carries with it the stuffing boxes 4, and 4' firmly pressed against the screw cap 2, and plug 3, by the action of the spring 12. By this means, steam-tightness is realized, first, between the shaft 11 and the boxes 4, 4', by means of washers 5, 5', which permit of a longitudinal motion of the shaft, and second, between the movable surfaces 6, 6' and the fixed parts, 2', 3' by reason of the close contact

therebetween, while permitting the shaft 11 to move to some extent both laterally and vertically.

In Fig. 1, the contact surfaces 2' and 3', between the boxes 4 and 4' and the ends of the casing, have been represented wholly schematically. In certain cases, and particularly where pressures are very high, it is advantageous to form surfaces having more perfect lubrication.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

A stuffing means for rotatable shafts, comprising, in combination, a casing, bearing surfaces on the casing, two complete stuffing boxes in the casing, the stuffing boxes ends having a bearing surface on one side cooperating with the casing bearing surfaces, and each having a recess on the opposite side, an annular member having two parts, a coil spring separating the two parts, the two parts being interposed between the stuffing boxes, said two parts having interengaging portions to restrain the parts to rotate together, one of said two parts being keyed to the rotatable shaft with which used, and a projection on each of the two parts, fitting into a recess in each of the stuffing boxes.

In testimony whereof, I have signed my name to this specification in presence of two witnesses.

JULES LEROY.

Witnesses:

PIERRE LOYST,
JULES FAYOLLET.