

P. WAGNER.
DIVIDED PACKING RING FOR ROTATING SHAFTS.
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1,041,534.

Patented Oct. 15, 1912.

Fig. 1.

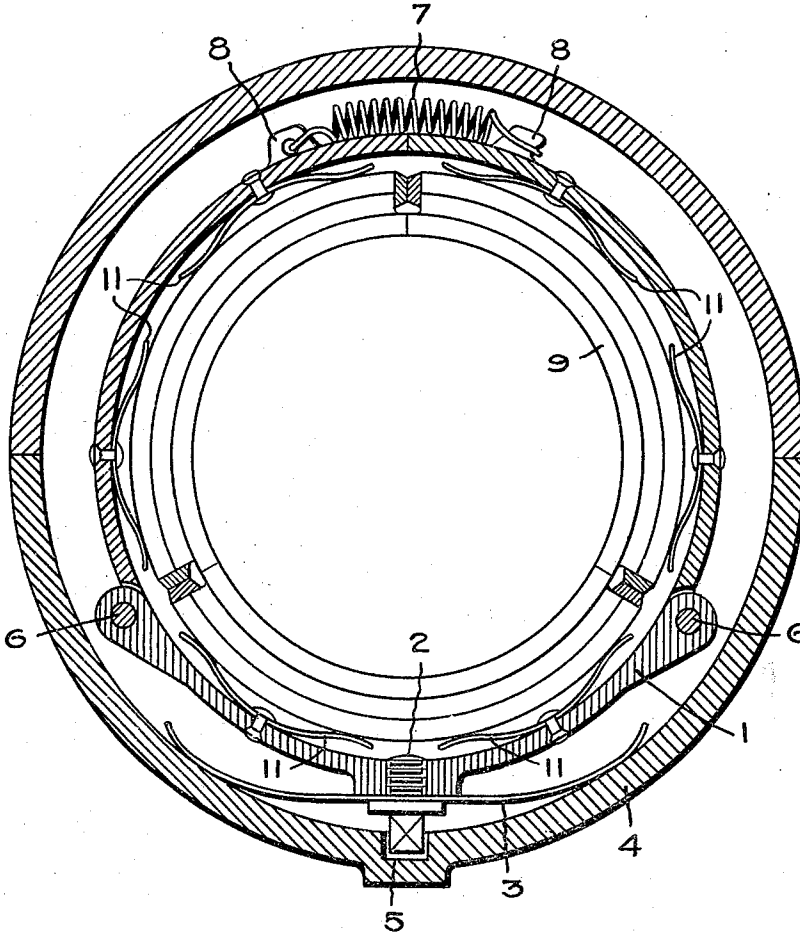
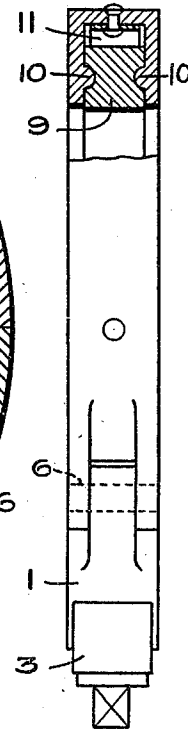


Fig. 2.



Witnesses:

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Att'y.

UNITED STATES PATENT OFFICE.

PAUL WAGNER, OF CHARLOTTENBURG, GERMANY, ASSIGNOR TO GENERAL ELECTRIC COMPANY A CORPORATION OF NEW YORK.

DIVIDED PACKING-RING FOR ROTATING SHAFTS.

1,041,534.

Specification of Letters Patent.

Patented Oct. 15, 1912.

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To all whom it may concern:

Be it known that I, PAUL WAGNER, a subject of the King of Prussia, residing at Charlottenburg, Germany, have invented certain new and useful Improvements in Divided Packing-Rings for Rotating Shafts, of which the following is a specification.

The present invention relates to packing rings for turbine shafts or rotors, and has for its object to improve their construction whereby they are more easily mounted on and dismounted and are rendered more efficient in operation.

For a consideration of what I believe to be novel and my invention, attention is directed to the accompanying description and claims appended thereto.

In the accompanying drawing, Figure 1 is a view in elevation with certain of the parts in section; and Fig. 2 is a partial axial section of the ring.

The shell or holder is composed of a number of parts, three being shown. The lower section 1 is made sufficiently robust to support the other sections. It is provided with a boss on the under side to receive the threaded pin 2. On the pin is a shoulder and between it and the boss is located a flat spring 3 having upturned ends that rest on the inner wall of the divided outer casing or inclosure 4 and support the weight of the shell and its associated parts so as to prevent the packing ring proper from resting on the shaft or its surrounding sleeve and being unduly worn. The head of the pin is squared and engages the walls of a slot 5 in the casing to prevent the ring from rotating with the shaft or rotor.

The ends of the lower sections of the shell are provided with enlargements made in the form of forks to receive the projecting ends of the upper ring sections. The upper sections are hinged to the lower and secured by pins 6. By means of this arrangement the parts of the shell can be swung back away from the shaft to facilitate mounting and dismounting the packing. The upper ends are held together by a coiled extension spring 7 one end of which is anchored to one of the lugs 8, the other end of the spring being detachably connected to the other lug 8 so that it can be disconnected when it is desired to remove the packing.

The parts of the shell or holder are made U-shaped in cross section to receive and hold

the sections of the packing ring 9 that is made of carbon or other good packing material. The sections of the packing ring 9 are grooved on the sides, as shown in Fig. 2, and fitting into the grooves are internal projections 10 formed on the outer shell. These parts are more or less loosely fitted to facilitate assembling in place and to afford some play. To press the sections of the ring 9 together flat springs 11 having curved ends are employed that are riveted to the sections of the outer shell. The sections of the packing ring 9 abut at their ends and the springs 11 insure of this relation being preserved at the same time allowing for a small amount of play when necessary.

It is preferable to make the sections of the ring 9 out of carbon and also to make them as large as possible, consistent with the nature of the packing, to prevent breakage.

I have omitted the shaft or rotor from the drawing in order to simplify the latter. It is to be understood, however, that the said shaft may be of any suitable construction. The carbon packing ring may be of the arch bound type (meaning thereby that the ends of the section are in contact with each other and that the bore of the ring is very slightly larger than said shaft), or it may be of the type wherein the sections of the ring actually engage the shaft. This arrangement has the advantage that whereas it is made up of a number of pieces it is never necessary in dismounting to loosen more than one connector. It also avoids the use of a special shell to hold the individual parts. It further has the advantage that the individual parts of the ring which belong together are constantly in connection with each other and therefore cannot be lost or separated when taken from the machine. It also insures of the individual sections being returned to exactly the same place they previously occupied so that the inner surface, or that presented to the rotor, will be smooth and unbroken, a condition which would not happen if one end of a ring section was worn more than another and was reversed in re-assembling.

By supporting the shell by means of a spring at the bottom and at one point only, it is free to properly adjust itself with respect to the rotor.

In accordance with the provisions of the patent statutes, I have described the prin-

ciple of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the
5 apparatus shown is only illustrative, and that the invention can be carried out by other means.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. In a packing, the combination of a ring-shaped holder made in sections, hinge connections between sections, a means for pressing two of the adjacent sections together; a segmental packing ring that surrounds the rotor, each of whose sections is carried by a section of the holder and is loosely mounted therein, and a means for sustaining the weight of the holder and the
20 packing ring to relieve the rotor of weight.

2. In a packing, the combination of a circular holder comprising segmental sections, each section being U-shaped in cross section, a segmental packing ring, each segment of which is loosely mounted in one of the holder sections, a spring in each holder section for pressing its packing segment inwardly, hinge connections between certain of the holder sections, an elastic
25 means for uniting the other holder sections, an inclosure for the packing, and a spring which rests on the inclosure and supports the holder and its associated parts.

3. In a packing, the combination of a
35 circular holder comprising segmental pieces,

one of said pieces being located under the rotor which is to be packed, hinges uniting the said under piece to the others, a spring connected to and uniting the pieces which form the remainder of the holder, an inclosure, a spring that rests on the inner wall of the inclosure and supports the holder and its parts, a stud that secures the spring and also engages the inclosure to prevent the packing from rotating, and a
40 segmental packing ring whose segments are mounted in the holder.

4. In a packing, the combination of a circular holder made in segments, all but one of the pairs of adjacent ends of which are hinged together, a spring arranged on the outside of the segments that secures the other pair of ends together, means securing the ends of the spring to said other pair of segments ends so that at least one end of the spring can be disconnected when desired, a segmental packing ring whose segments are mounted in the holder, springs for pressing the segments of the ring toward the axis of the packing, an inclosing casing for the packing, means for supporting the packing from the casing, and a device for preventing the holder from rotating.

In witness whereof, I have hereunto set my hand this 18th day of February, 1911.

PAUL WAGNER.

Witnesses:

GEO. NUBERLEE,
GUSTAV HULBROCK.