No. 682,200. Patented Sept. 10, 1901.

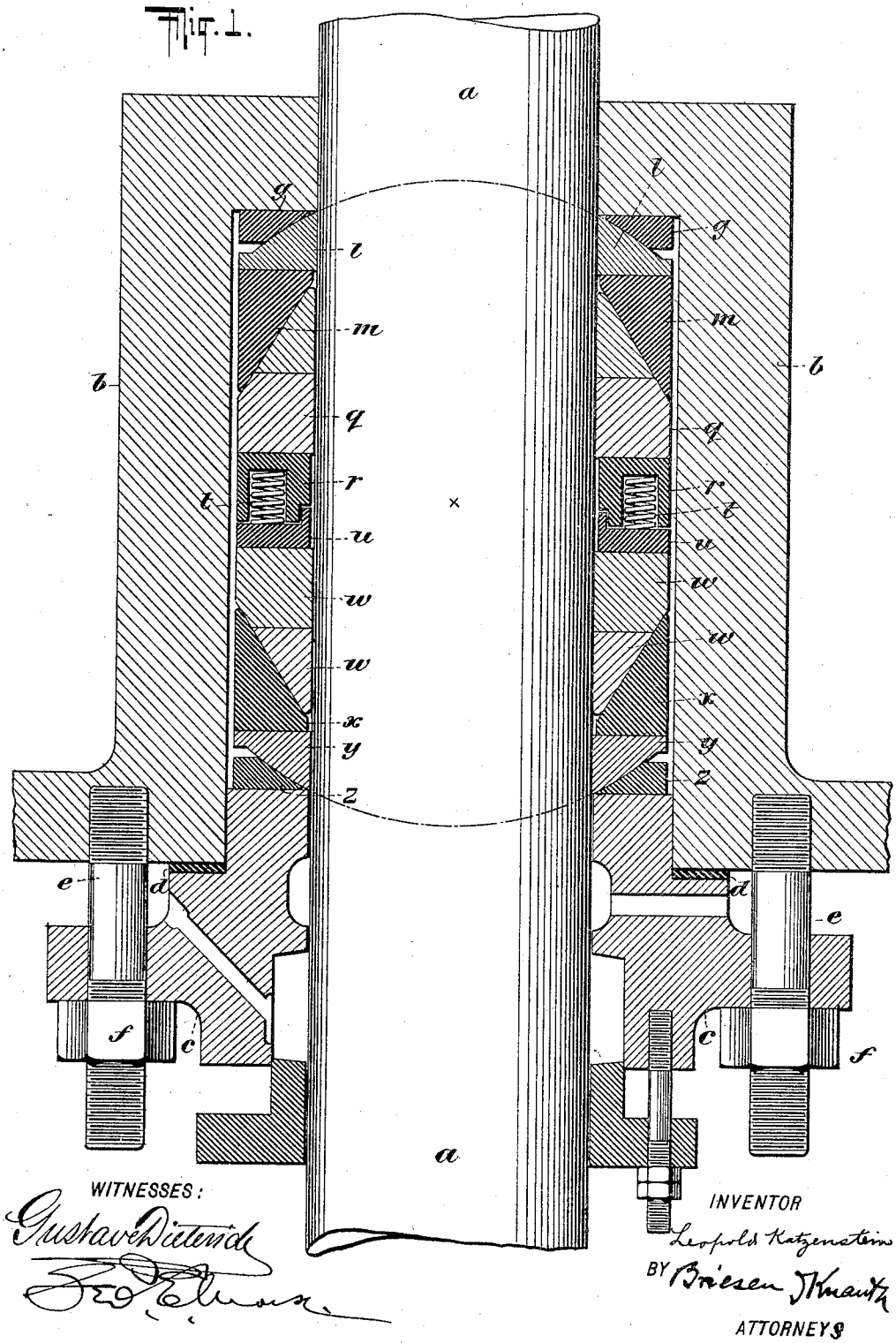
L. KATZENSTEIN.

METALLIC PACKING.

(Application filed Nov. 24, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



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L. KATZENSTEIN.

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Fig. 2.

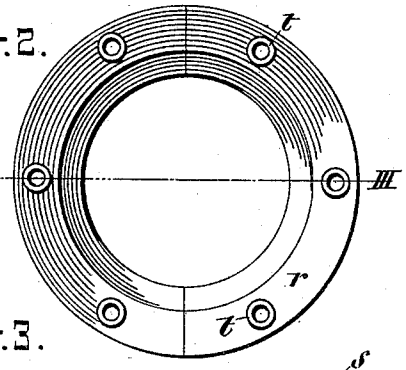


Fig. 4.

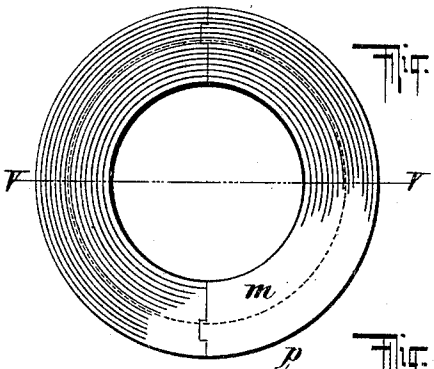


Fig. 3.

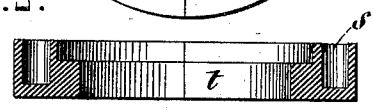


Fig. 5.

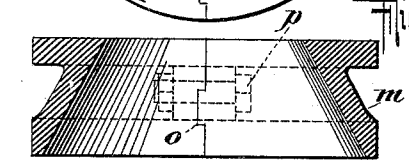


Fig. 6.

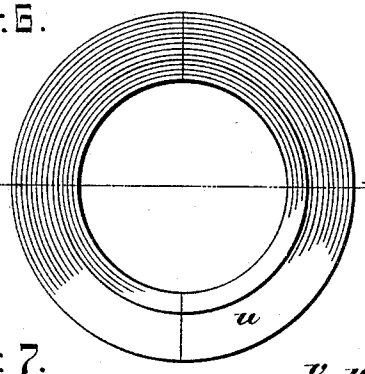


Fig. 8.

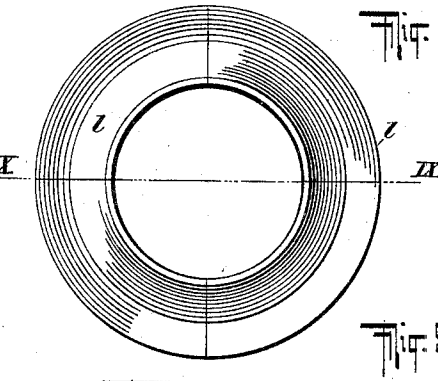


Fig. 7.

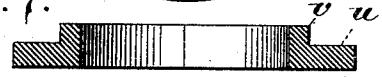


Fig. 9.

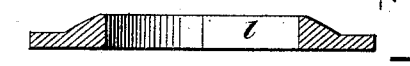


Fig. 10.

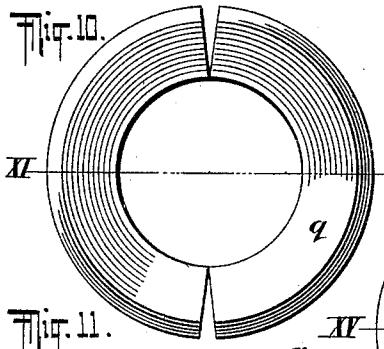


Fig. 14.

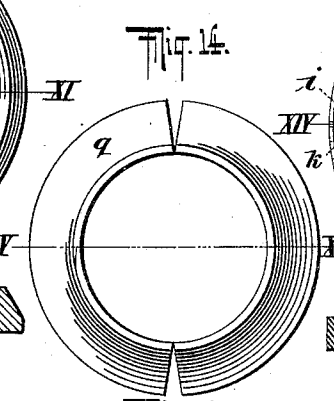


Fig. 12.

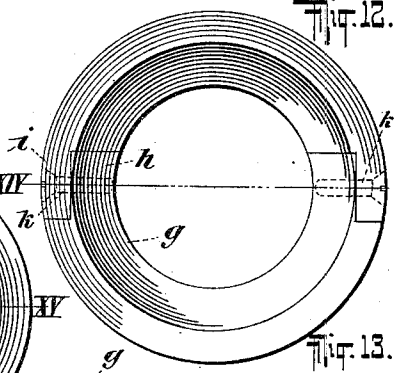


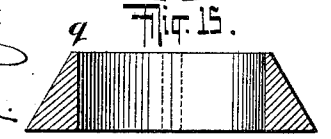
Fig. 11.



Fig. 13.



Fig. 15.



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UNITED STATES PATENT OFFICE.

LEOPOLD KATZENSTEIN, OF NEW YORK, N. Y.

METALLIC PACKING.

SPECIFICATION forming part of Letters Patent No. 682,200, dated September 10, 1901.

Application filed November 24, 1900. Serial No. 37,561. (No model.)

To all whom it may concern:

Be it known that I, LEOPOLD KATZENSTEIN, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Metallic Packings, of which the following is a specification.

My invention relates to metallic packings for piston or other rods of steam, water, and other machinery. The metallic packing is especially designed to allow for the slight vibration or lateral oscillation which piston-rods generally have.

In the accompanying drawings I have shown in detail a metallic packing in which one form of my invention is embodied.

In the drawings, Figure 1 is a transverse section of the metallic packing embodying my invention; and Figs. 2 to 15 are plan and sectional views of the various rings employed in the packing, a specific description of which will be given.

In the drawings, *a* represents a piston-rod, and *b* is the box containing the metallic packing, which is preferably closed by a suitable gland *c*, packed by a suitable metallic gasket *d*. Suitable bolts and nuts *e f* are provided in order to render the gland removable from the box, so that the rings may be removed and replaced in case of accident by ordinary packing. The group of metallic packing-rings are so constructed that they will have an oscillating movement in the box in order to allow for the lateral oscillation of the rod. A ring *g* is seated in the bottom of the box. This ring *g*, which is shown clearly in Figs. 12 and 13, is turned in circular form and acts as a seat for the group of packing-rings. There is one of these rings at each end of the box, and the concavities are circular, both struck from the same center in order to give the packing the character of a ball working in a spherical socket. The ring *g* is a metallic ring, preferably iron, and slides laterally in the box. The ring *g* is a two-part ring, its respective half-rings having their meeting or matching edges scarfed, as at *h i*, and held together by a suitable screw *k* or otherwise secured together. Seated upon the seat-ring *g* is a bearing-ring *l*. This bearing-ring is of metal, is made in two parts, and has one of its faces curved on the arc of a circle. The curved face of the ring *l* fits in the face of the seat-ring and is adapted to have an oscillating motion thereon.

In Figs. 8 and 9 I have shown in plan and section, respectively, views of the bearing-ring *l*. Adjacent to the bearing-ring *l* is a compression-ring *m*, preferably triangular in cross-section and made in two parts, which parts have their abutting meeting edges stepped, as at *o*, the two parts of the ring being held together by bolts *p* and nuts. The compression-ring *m* constitutes a seat for one or more metallic packing-rings *q*. In the present instance I have shown two of these packing-rings seated in the compression-ring, which packing-rings are shown in plan and in section in Figs. 10 and 11 and 14 and 15. The packing is provided with a tension member, shown in the present instance as a pair of rings pressed apart by springs. One of these rings *r*, which is shown in detail in Figs. 2 and 3, is provided with sockets *s*, which receive springs *t*. The ring *r* is a split ring. The other member of the tension-ring is constituted by a split metallic ring *u*, (best shown in Figs. 6 and 7,) which ring *u* is provided with an annular flange or collar *v*, which enters a recess in the ring *r* in order to prevent fragments of spring from coming against the rod in case of breakage of a spring or springs. The rings *g*, *l*, *m*, and *q* find their counterparts in the opposite side of the box, the rings *w* corresponding to the rings *q* and being held in a compression-ring *x*, in all respects similar to the compression-ring *m*, which ring *x* bears upon a bearing-ring *y*, which in turn rests upon a seat-ring *z*.

It will of course be understood that in order that the rings may be applied to a piston-rod without the necessity of disconnecting the piston-rod they are all made in two or more parts, as most clearly shown in Figs. 2 to 15, inclusive. Now it is obvious that the tension-ring serves to press the packing-rings *q w* laterally against the tapered faces of the compression-ring, whereby the packing-rings will firmly grasp the piston-rod and will also press the bearing-ring firmly against the seat-ring. It is of course to be understood that the box may be bored concavely, so as to dispense with the seat-ring *g*. With this idea in mind it will be clearly apparent that the

improved packing consists of two sets or groups of rings, with an intervening tension-ring, the outermost ring of each group having a circular face. It will of course be understood that any number of groups may be used so long as the idea of employing a circular-faced ring to afford a bearing for a lateral movement is preserved.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a metallic packing, the combination of an intermediate tension-ring and a plurality of oppositely-placed sets of rings *w q*, a pair of tapered rings *m x* surrounding said rings *q w* respectively and curved-faced bearing-rings, one at each side of the group of rings and a plurality of curved seat-rings freely movable with respect to the piston-rod substantially as described and for the purposes set forth.

2. In a metallic packing the combination of an intermediate tension-ring, a plurality of sets of packing-rings one on each side of the said tension-ring, each of said sets of packing-rings consisting of an internal tapering ring and an external tapered ring fitting within the same, curved-faced bearing-rings whose faces form part of the same circle, and freely-movable curved-faced seat-rings *g z* upon which the bearing-rings work.

3. In a metallic packing, the combination with suitable packing-rings adapted to be forced apart in opposite directions, of a tension-ring therefor, the said tension-ring consisting of two members, one of the said members having seats for springs, and the other of the said members having a depending flange *v* to prevent fragments of springs from coming in contact with the piston-rod should the breakage of any of the springs occur.

LEOPOLD KATZENSTEIN.

Witnesses:
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OTTO V. SCHRENK.