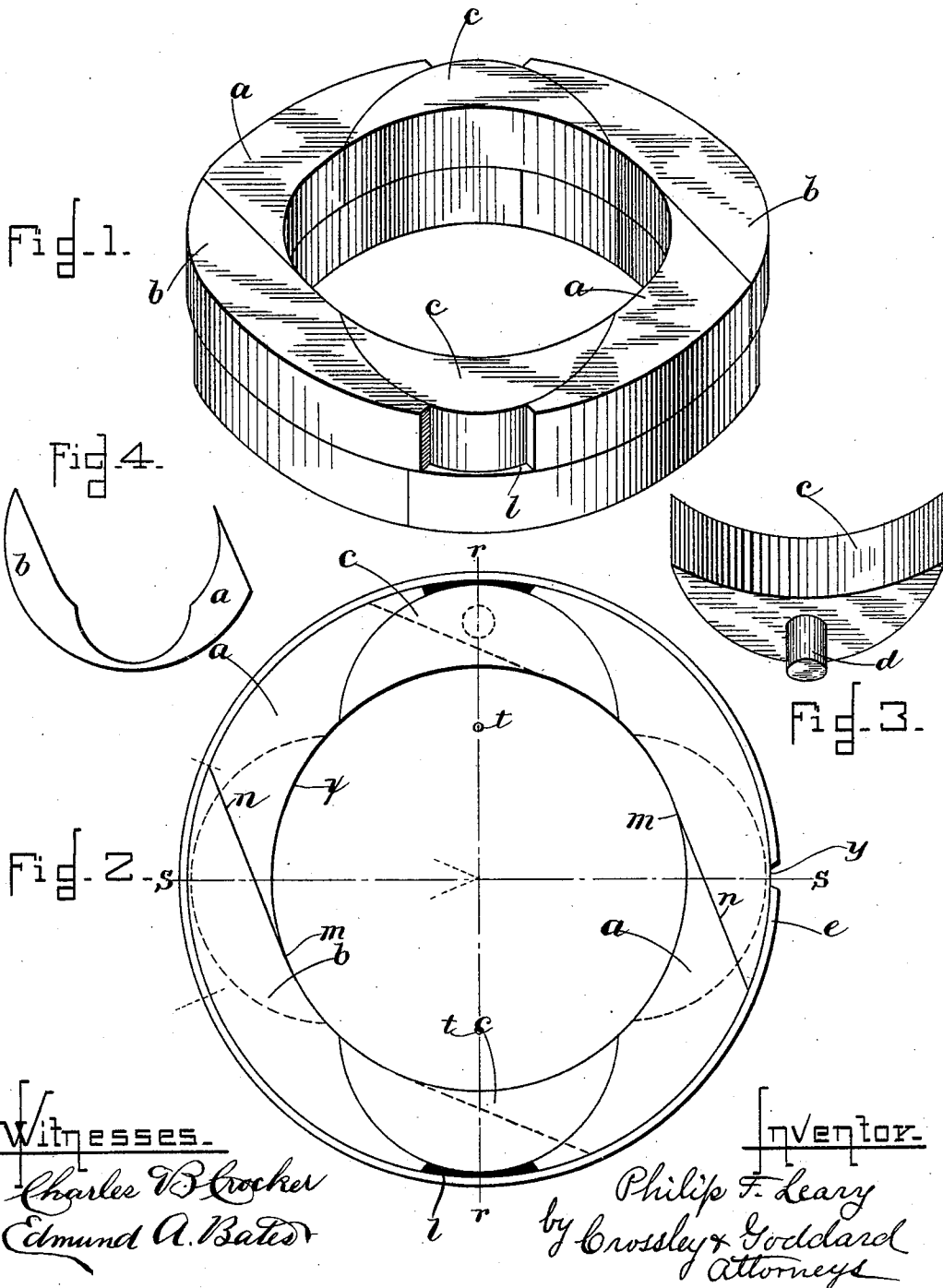


(No Model.)

P. F. LEARY.
STEAM PACKING.

No. 588,681.

Patented Aug. 24, 1897.



UNITED STATES PATENT OFFICE.

PHILIP F. LEARY, OF FALL RIVER, MASSACHUSETTS.

STEAM-PACKING.

SPECIFICATION forming part of Letters Patent No. 588,681, dated August 24, 1897:

Application filed May 4, 1897. Serial No. 634,987. (No model.)

To all whom it may concern:

Be it known that I, PHILIP F. LEARY, of Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Steam-Packings, of which the following is a description sufficiently full, clear, and exact to enable those skilled in the art to which it appertains or with which it is most nearly connected to make and use the same.

My invention consists in new and useful improvements in metallic packings, and has for its object to produce a durable and efficient packing which shall be perfectly adapted to take up wear and to automatically adjust itself to unevenness in the wear of the piston-rod or of the packing itself.

It consists in its essential features of sectional rings made up of parts that are adapted to be moved toward the center to take up wear and at the same time are adapted to turn or rock with reference to each other to compensate for uneven wear at different portions of the same part.

Referring now to the drawings, Figure 1 is a perspective view of my packing composed of two sectional rings, one superimposed upon the other in such a manner as to break joints. Fig. 2 is a plan view of the same. Fig. 3 is a detail view showing one of the sectional parts. Fig. 4 is a detail view of the casting out of which the parts *a* and *b* are made.

I will first describe the manner of laying off the lines of the pattern for my packing.

I first describe the inner circle *x* of the proper size to fit the piston-rod. I then describe the outer circle *y*, so as to secure the width desired for the packing. I next lay off the diameters *r r* and *s s* perpendicular to each other. On one of these diameters at distances equal to about one-half the radius of the outer circle I take the points *t*, and from those points as centers I lay off the arcs *o*. At diametrically opposite points *m*, which are distant from the axis *s s* approximately about one-sixteenth of a circumference, I lay off the tangent lines *n*. It will be understood, however, that the exact location of the points *t* and of the tangent points is not essential, the object being to have the arcs *o* somewhat less than a semicircumference, care

being taken also that the arcs *o* shall not be in contact with the circumference of the outer circle for reasons to be hereinafter explained.

The important thing to be observed in laying off the tangent lines is that they shall be parallel, and I prefer that the two parts *a* and *b* should be of approximately equal size. I prefer to make the part *c* so that its outer face will be a little less than a semicircumference, so that as it wears down the length of its inner face will be decreased to correspond with the diminished size of the piston-rod as it becomes worn.

In making my castings I must of course make them of sufficient size to allow for waste in dressing down and finishing. I prefer to make the casting for parts *a* and *b* of one piece, as shown in Fig. 4. I then grind out the recess to receive the lune-shaped part *c* to a true circle and cut out entirely a short piece at the thinnest part, so that when the packing is put together the thin ends of the parts *a* and *b* do not come in contact with each other, but leave a space, as shown at *l*.

I prefer to provide one of the parts of the upper ring with a dowel *d*, which fits into the part of the other ring lying beneath it to prevent one of the sectional rings from slipping upon the other in a rotary direction. This serves to maintain broken joints. I have shown in the drawings but two sectional packing-rings placed together. It is obvious that any number may be used.

I grind both the outer and inner faces of the parts *c* on the arcs of circles, as above stated. By grinding on the arcs of circles it is possible to grind these opposing surfaces with such accuracy that they will adhere so closely together as to support each other against the force of gravity.

When the parts are all fitted together, I employ any suitable form of spanner-spring to press them toward the center, so as to form a close joint with the piston-rod. I have shown in Fig. 2 a spanner-spring *e*, embracing one of the packing-rings, but may use other forms as well.

It will be observed that the parts *c* form a contact with the parts *a* and *b* upon the true arc of a circle, so that it is possible for these

parts to rock or play with reference to the parts *a* and *b* in order to conform to any unevenness or inequality of the piston-rod without in the slightest degree disturbing the closeness of the joint formed between the several parts, which would not be the case were these surfaces of contact flat instead of circular. The spaces *l* afford room for the parts *a a* to move toward each other to take up wear, so that as the piston-rod grows smaller as it is worn down there is nothing to prevent the sections from coming more closely together.

It is a well-known fact that white-metal, Babbitt metal, and other metals commonly used for packings become rapidly deteriorated by the action of the commingled oil and steam, which seems to render them brittle and to affect their molecular structure. I have discovered that phosphor-bronze is almost entirely, if not absolutely, free from this deteriorating action. While its hardness renders it more refractory to work up, yet owing to its peculiar immunity from deterioration it is especially adapted to be used for steam-packings in lieu of the comparatively soft metals which have been selected for this purpose heretofore.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it

may be made or all of the modes of its use, it is declared that what is claimed is—

1. A metallic packing comprising sectional rings, each ring having lune-shaped sections and adjacent sections each having an end recessed to fit the lune-shaped sections and an end cut tangent to the inner circle of the packing-ring.

2. A sectional packing-ring comprising lune-shaped sections and adjacent sections having their faces that abut against the lune-shaped sections concaved to closely fit the outer surface of the lune-shaped sections, all the sections being of equal thickness.

3. A sectional packing-ring having lune-shaped sections and adjacent sections, each adjacent section being concaved on the arc of a circle to fit the outer face of a lune-shaped section, said lune-shaped section being made of sufficient size to keep the sections adjacent to itself out of contact with each other, whereby a movement of the sections upon each other is permitted without impairing the joints between them.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 1st day of May, A. D. 1897.

PHILIP F. LEARY.

Witnesses:

GEO. N. GODDARD,
ARTHUR W. CROSSLEY.