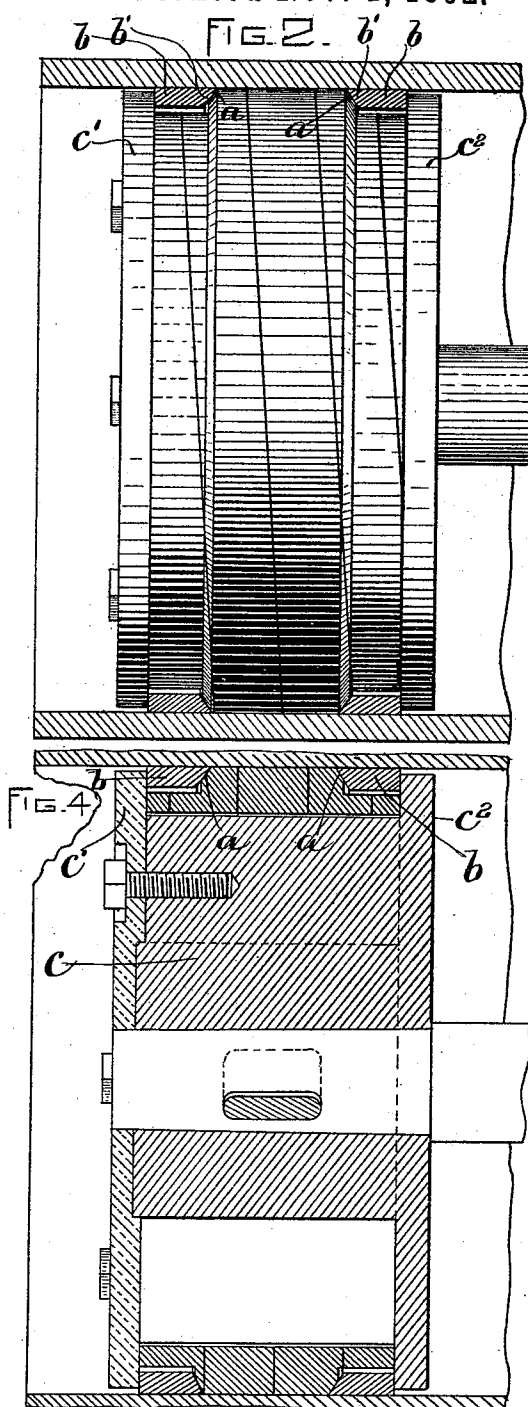
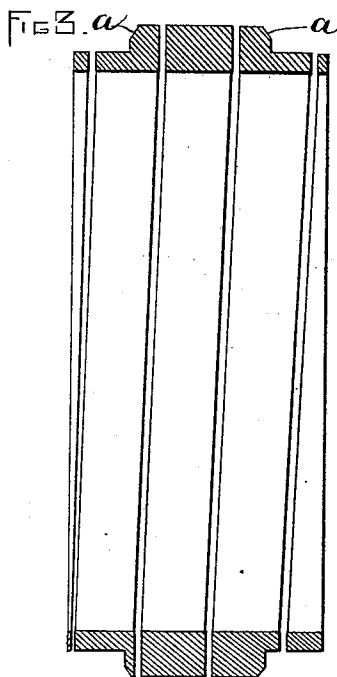
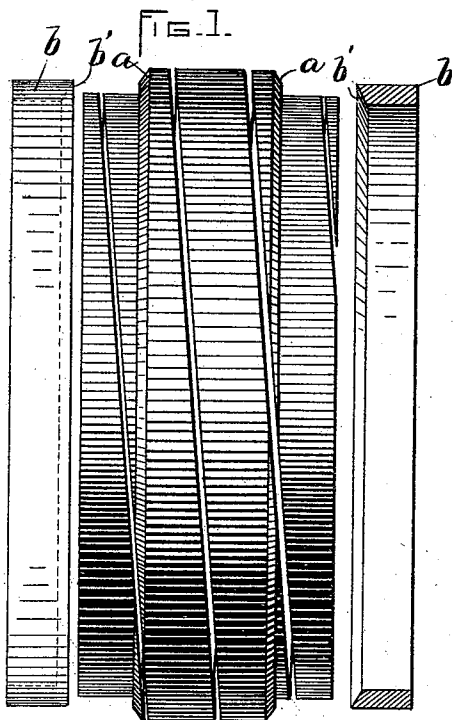


(No Model.)

F. N. ETHRIDGE.
PISTON PACKING.

No. 485,407.

Patented Nov. 1, 1892.



WITNESSES:
H. Brown
A. S. Harrison.

INVENTOR:
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UNITED STATES PATENT OFFICE.

FRANK N. ETHRIDGE, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-THIRD
TO GEORGE A. PETERSON, OF SAME PLACE.

PISTON-PACKING.

SPECIFICATION forming part of Letters Patent No. 485,407, dated November 1, 1892.

Application filed August 19, 1892. Serial No. 443,478. (No model.)

To all whom it may concern:

Be it known that I, FRANK N. ETHRIDGE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Piston-Packing, of which the following is a specification.

This invention has for its object to provide a serviceable and durable metallic packing for pistons; and it consists in the improvements which I will now proceed to describe and claim.

In the accompanying drawings, forming part of this specification, Figure 1 represents a side view of the parts of my improved packing disconnected. Fig. 2 represents a side view of a piston having my improved packing, the binding-rings of the packing being shown in section. Fig. 3 represents a sectional view of the packing without the binding-rings. Fig. 4 represents a sectional view of the piston and packing.

The same letters of reference indicate the same parts in all the figures.

In carrying out my invention I take a hollow metal cylinder or ring, which is reduced in thickness at its ends by cutting away portions of the periphery of the cylinder in such manner as to form shoulders *a a*, which are beveled, as shown, the thicker part of the cylinder between said shoulders being of uniform thickness. This cylinder I convert into a helical strip by cutting a helical slot through it from end to end, as shown in Fig. 1. I then compress or wind down the coils of the strip until the sides of the helical slot come together, the diameter being thus reduced. While the strip is held in a compressed condition, I turn off its exterior between the shoulders *a a* to exactly the inside diameter of the cylinder in which the packing is to be placed. The previous compression of the strip or coil causes it to make a constant effort to expand, so that when the packing is placed in a cylinder the outer surface of the thicker part will constantly press outwardly against the interior of the cylinder, and thus compensate for wear until the expansive force due to the original compression of the strip has been expended.

b b represent two continuous metal rings, each having its inner edge beveled, as at *b'*.

The external diameter of said rings is such that their outer surfaces will be about flush with the outer surfaces of the convolutions of the strip between the shoulders *a a*, their inner surfaces being of larger diameter than the reduced end portions of the strip, so that spaces exist between said end portions and the inner surfaces of the rings, as shown in Figs. 2 and 4. When the packing is placed on the piston *c*, the rings *b b* are interposed between the beveled shoulders *a a* and the flanges or heads *c' c'* of the piston, the beveled edges of the rings bearing against the beveled shoulders, as shown in Figs. 2 and 4. It will be seen that the rings prevent the lateral separation of the coils of the packing between the shoulders *a a*, and at the same time the beveled form of said shoulders and of the inner edges of the rings causes a continual outward or endwise pressure of the rings against the flanges or heads *c' c'*. Hence the packing is kept steam-tight at all essential points.

It is possible to make an operative packing without using the reduced end portions of the helical strip; but I prefer to use said end portions, because they materially assist in assembling the parts of the packing, it being usual in assembling said parts to first place one ring against the head *c'*, then apply the helical strip by inserting one of its reduced ends into said ring, then put the other ring over the other reduced end of the strip, and then apply the removable head *c'*.

An important advantage resulting from the construction of my improved packing is that it wears the cylinder uniformly and does not wear grooves therein, this being due to the helical form of the strip and the absence of any free ends which are capable of springing out from the circle of the packing.

I claim—

1. A packing composed of a normally-compressed helical strip having a cylindrical portion provided with beveled shoulders and continuous rings having beveled inner edges bearing against said shoulders and adapted to prevent lateral separation of the coils of the strips between said shoulders, as set forth.

2. A packing composed of a normally-compressed helical strip having a cylindrical portion provided with beveled shoulders and re-

duced end portions outside of said shoulders and the continuous rings inclosing said reduced end portions and having beveled inner edges bearing on the beveled shoulders, as
5 set forth.

3. The combination, with a piston having heads or flanges, of a packing composed of a normally-compressed helical strip surrounding the piston between said flanges and pro-
10 vided with a cylindrical portion having beveled shoulders and the continuous rings inter-

posed between the said shoulders and heads and provided with beveled inner edges bearing against the shoulders, as set forth.

In testimony whereof I have signed my 15 name to this specification, in the presence of two subscribing witnesses, this 30th day of July, A. D. 1892.

FRANK N. ETHRIDGE.

Witnesses:

C. F. BROWN,

A. D. HARRISON.