

W.A. & T.F. Powers,

Piston Packing.

No 58,176.

Patented Sep. 18, 1866.

Fig: 1.

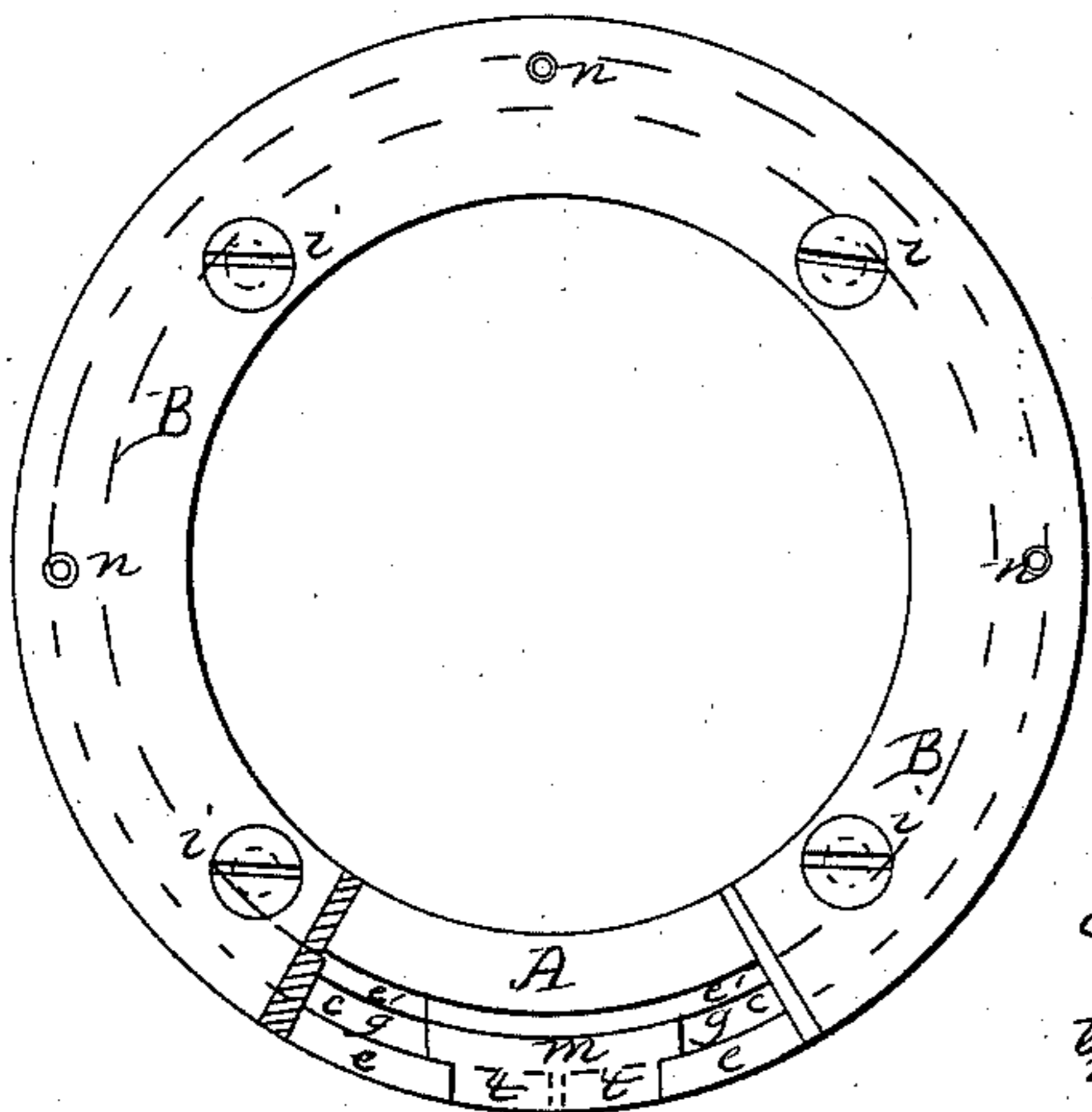


Fig: 2.

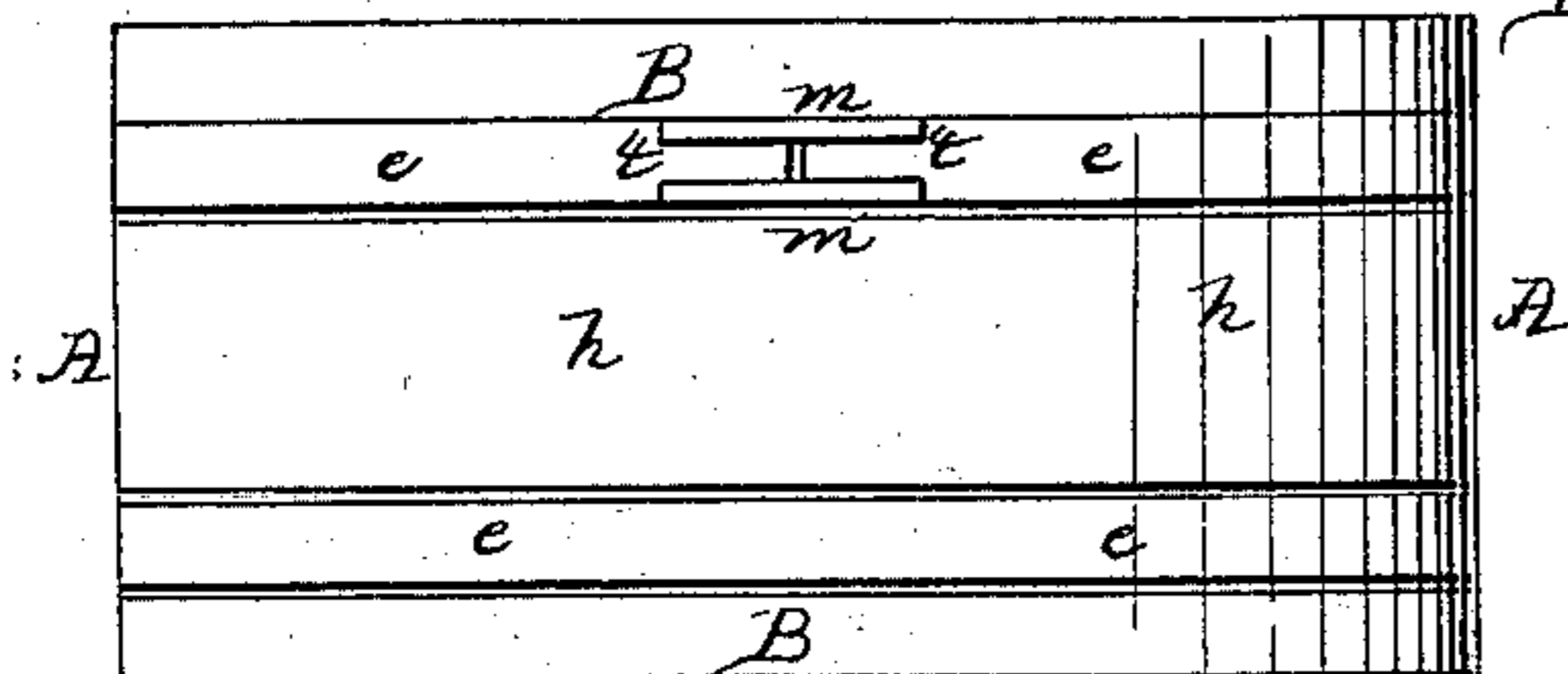
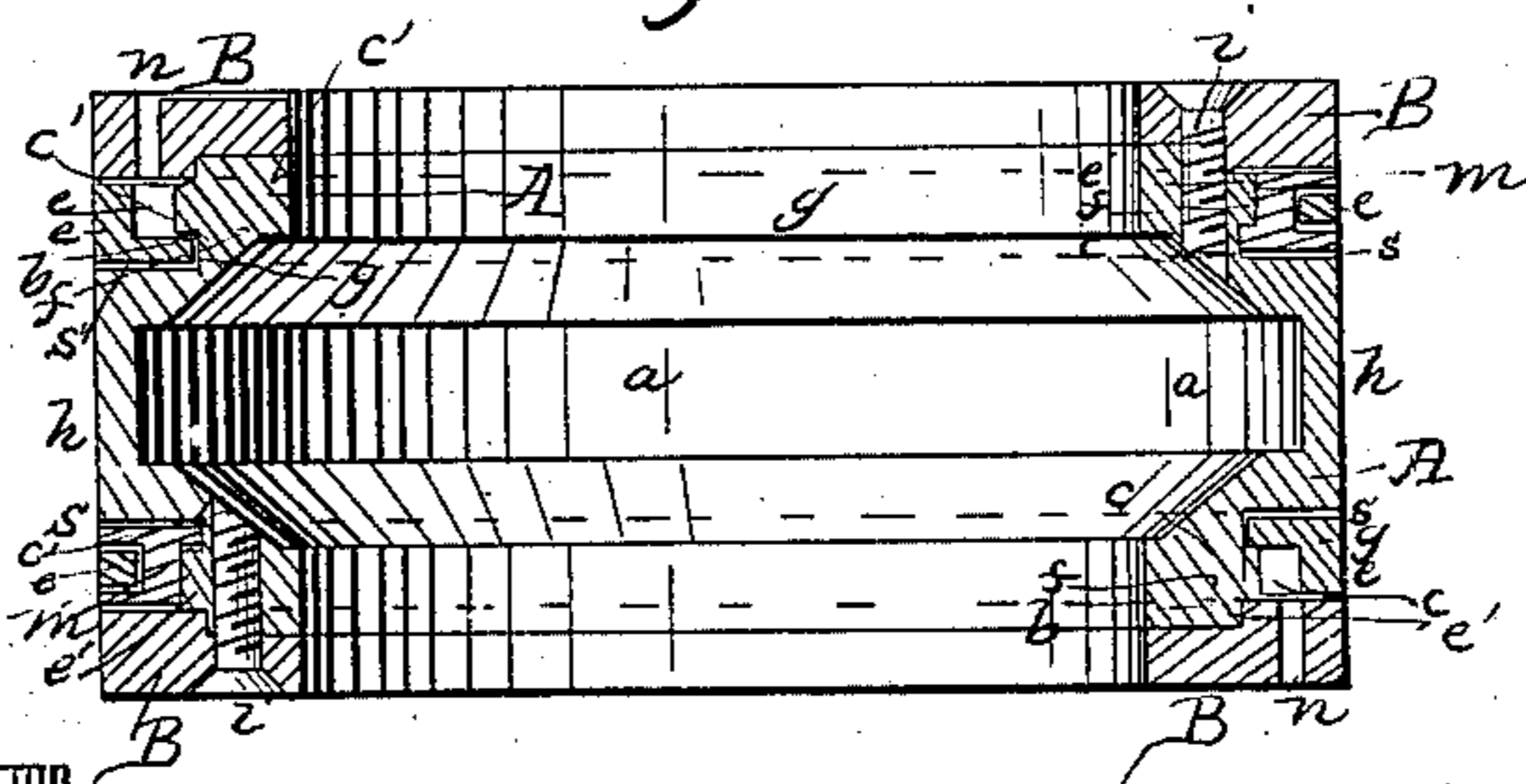


Fig: 3.



Inventors.

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Witnesses.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN PISTON-PACKINGS.

Specification forming part of Letters Patent No. 58,176, dated September 18, 1866.

*To all whom it may concern:*

Be it known that we, WILLIAM A. POWERS and THOMAS F. POWERS, both of Brooklyn, in the county of Kings, and State of New York, have invented certain new and useful Improvements in Piston-Packings; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a plan or top view of our invention, a portion being represented as broken away to show the construction of the internal parts. Fig. 2 is an edge or side view of the same. Fig. 3 is a vertical transverse section of the same.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to that class of piston-packings in which the packing-rings are kept in close contact with the interior of the cylinder by the outward pressure of the steam upon them; and it consists in a novel construction of a packing whereby the friction of the rings upon the cylinder and the loss of power resulting therefrom, and also the excessive wearing of the said parts is very materially reduced, at the same time that the escape of steam between the piston and the cylinder is effectually prevented.

To enable others to understand the nature and construction of our invention, we will proceed to describe it with reference to the drawings.

A represents the bull-ring, which is attached to the body of the piston in any ordinary or suitable manner, and the interior of which is recessed or hollowed out, as shown at *a*, in order to lighten or decrease the weight thereof. Formed in the circumference of the bull-ring at each side thereof, is a deep and broad rabbet, *b*, and formed at the inner edge of the bottom of each of these rabbets is a narrow annular groove, *c'*, and at the outer edge thereof is a smaller or supplemental rabbet, *c'*.

The packing-rings are each marked *e g* in the drawings, and may be made of cast-iron, and are situated one in each of the annular rabbets *b*. The outer portion of the inner edge of each of these rings *e g* is cut away in such

manner as to form an angular rabbet or groove therein, as shown at *c*, the innermost side of each ring constituting an inwardly-projecting annular flange, *g*, the inner circular edge of which is fitted into the groove *c'*, while the inner flat surface thereof rests upon the shoulder *s*, formed by the side of the central portion *h* of the bull-ring A, the angular rabbet *c* formed in each of the packing-rings, as just described, forming an annular chamber between the outer annular portion *e* of the packing-ring and the part *f* of the bull-ring, as shown in Fig. 3.

The packing-rings *e g* are kept in their places by annular flanges B, which are secured upon the upper and lower sides, respectively, of the bull-ring, by means of suitable screws *e'*, each of the said flanges B being made to project near its circumference, so as to fit into the small or outer rabbet, *e'*, and to bring its inner surface in contact with the outer side or edge of the part *e* of the packing-ring and to cover the rabbet or chamber *c* of the said packing-ring.

Formed transversely in each flange B, at a suitable distance from the circumference thereof, is a series of holes or perforations, *n*, which communicate with the aforesaid annular rabbet or chamber *c* of the adjacent packing-ring.

In order that the packing-rings may be allowed to expand as required in the operation of the invention, they are divided transversely at one side in the usual or any suitable way, the escape of steam between the ends thus formed being prevented by a packing-piece, *m*, the ends formed by dividing the packing-ring being reduced in thickness to form tongues *t t*, and fitted into grooves or slots in the ends of the packing-piece *m* in such manner that they may approach and recede from each other at the same time that the joint between them is broken by the aforesaid packing-piece, and consequently the escape of steam prevented.

The bull-ring with the packing attached thereto being secured to the piston as hereinbefore set forth, and the piston being placed in the cylinder in the usual manner, the steam passes through the openings *n* into the annular chamber formed by the rabbet *c*, and pressing outward upon the circular or outward portion

*e* of the packing-ring, forces the said ring into close and immediate contact with the cylinder, thus properly packing the piston therein, and at the same time presses against the inwardly-projecting flange *g* of the said ring, and forces the said ring inward against the shoulder formed by the outer side or edge of the central part, *h*, of the bull-ring with sufficient closeness to prevent the escape of steam between the said shoulder and the packing-ring, and with such force that the friction of the ring upon the aforesaid shoulder counteracts in a measure the outward action of the steam upon the part *e* of the packing-ring, so that while the outward pressure on the said part *e* is sufficient to keep the ring in close contact with the cylinder and thus form a tight packing between the cylinder and the piston, such outward pressure is rendered sufficiently moderate to prevent excessive friction of the packing-rings upon the cylinder, and the consequent loss of power and injurious wearing or abrasion of the packing-rings and cylinder. Furthermore, by placing the innermost edge of the flange *g* of the packing-ring in the groove *c'*, as hereinbefore explained, the steam is prevented from passing between the packing-ring and the central part, *h*, of the bull-ring with more absolute certainty than if such groove were dispensed with, while by the employment of the removable flanges B the packing-rings may be adjusted in their places before

attaching the said flanges B to the bull-ring by springing them only to a slight extent, in order to place their inner edges in the groove *c'*, whereby much less danger of breaking the ring is experienced than if the flanges B were formed in one with the bull-ring, which would necessitate the springing of the said packing-rings into the grooves or annular recesses formed behind the said flanges for their reception.

What we claim as new, and desire to secure by Letters Patent, is—

1. The packing-rings *e g* constructed with annular angular grooves or rabbets *c* in their outer sides, and combined with the bull-ring A, and perforated flanges B, substantially as herein set forth, for the purpose specified.

2. The annular groove *c'* formed at the innermost edge of the rabbet *c*, and arranged in combination with the rabbeted packing-ring *e g*, and the perforated flange B, substantially as herein set forth, for the purpose specified.

3. The packing-pieces *m*, constructed as described, in combination with the tongues *t* on the rings *e*, substantially as and for the purpose herein specified.

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Witnesses:

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