

J. T. WRIGHT & M. SCHNEBLE.

Piston-Packings.

No. 157,666.

Patented Dec. 8, 1874.

Fig. 2.

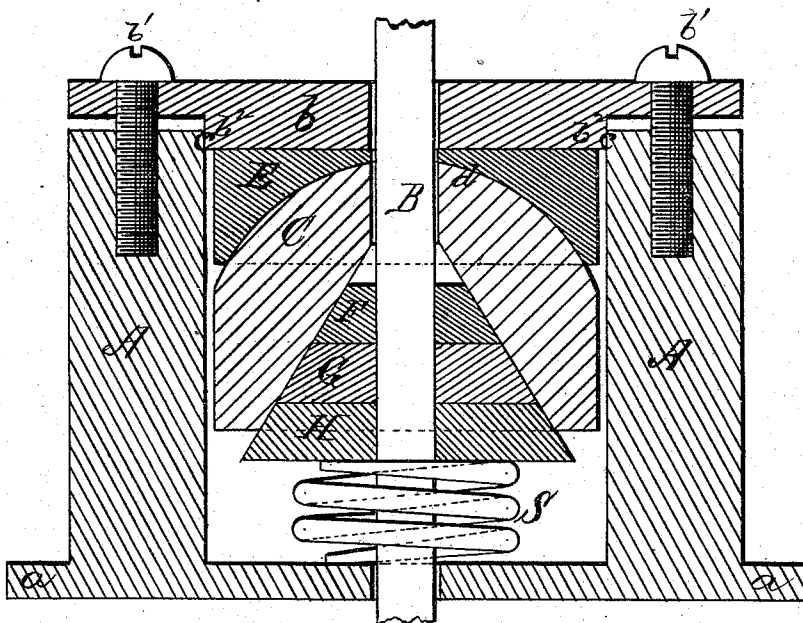
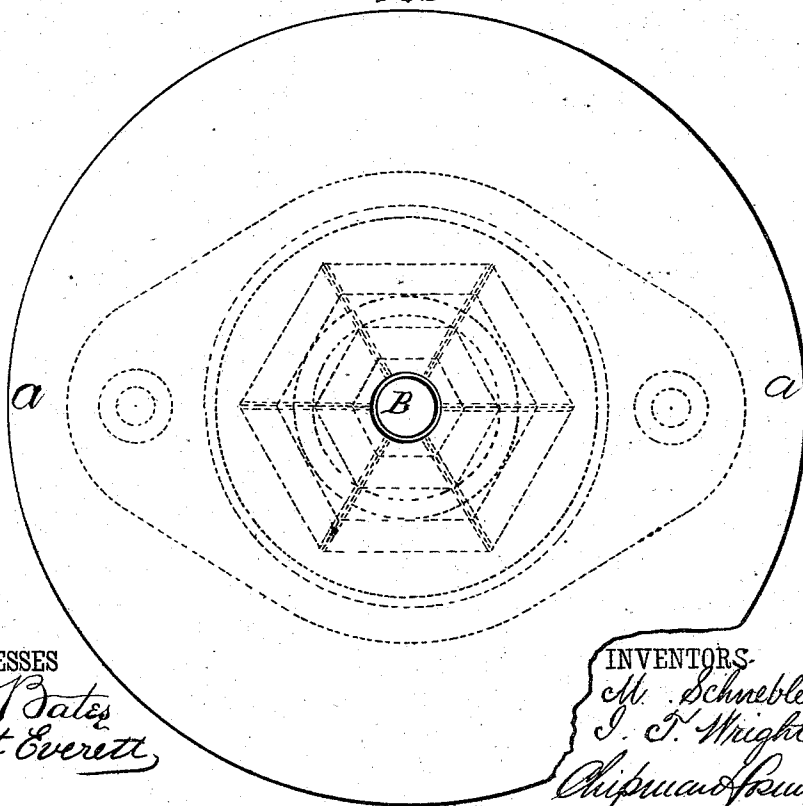


Fig. 1.



WITNESSES

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Fig. 3.

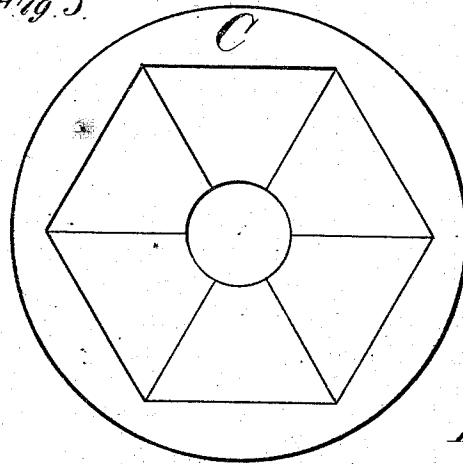


Fig. 6.

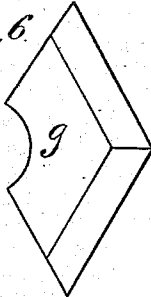


Fig. 7.

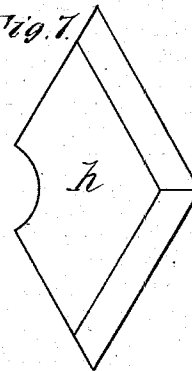


Fig. 4.

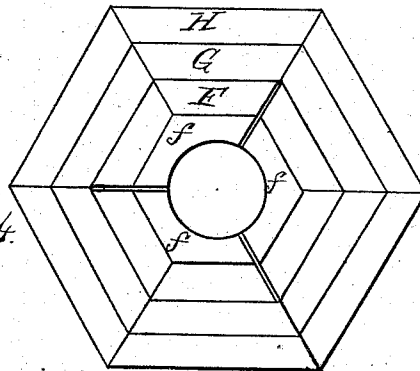


Fig. 8.

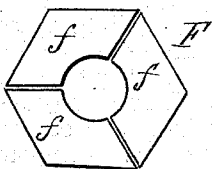


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN T. WRIGHT AND MARTIN SCHNEBLE, OF DAYTON, OHIO.

IMPROVEMENT IN PISTON-PACKINGS.

Specification forming part of Letters Patent No. **157,666**, dated December 8, 1874; application filed September 19, 1874.

To all whom it may concern:

Be it known that we, JOHN T. WRIGHT and MARTIN SCHNEBLE, of Dayton, in the county of Montgomery and State of Ohio, have invented a new and valuable Improvement in Piston-Packing; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a rear view of our piston-packing. Fig. 2 is a rear view, and Figs. 3, 4, 5, 6, 7, and 8 are detail views, of the same.

This invention has relation to self-adjusting packing devices for the valve and piston-rods of steam-engines, wherein a number of segmental rings of metal, decreasing in size from bottom to top, and in shape a conical frustum, are fitted around a piston passing through the packing-box for the said rings, each segment breaking joints with the smaller one above; and the nature of the invention consists in segmental packing-rings of pyramidal form, whereby, when applied around the piston-rod in a hollow packing-box, the interior of which is of the form of a pyramidal frustum corresponding with the shape of the segmental rings, each segment will be held to break joints with those above and below, thus obtaining an invariably steam-tight joint. It also consists in a packing-box having a convex spherical end fitting accurately into a concavo-spherical socket-plate, whereby the universal motion of a ball-and-socket joint is allowed to the said packing-box for the purpose of compensating for lost motion of the piston-rod or its connections, or for the wear of the former, without detriment to the steam-tight qualities of the packing, as will be hereinafter more fully explained.

In the annexed drawings, A designates a stuffing-box of a cylinder of a steam-engine having a flange, *a*, by means of which it is secured to the cylinder-head, and a plate, *b*, by means of which the packing is confined within the stuffing-box around the piston-rod B. The plate *b* is secured to the stuffing-box by means of the screws *b'* and suitable screw-threaded perforations in the plate and box, and it is pro-

vided with an inner annular portion, *b*², forming a shoulder, *c*, for the purpose of relieving the screws of lateral strain. C designates a packing-box, having an upper rounded head, *d*, which is ground to fit accurately into a concavo-spherical depression, *e*, of a socket-plate, E, through both of which the piston-rod B centrally passes, the perforations therein being slightly greater in diameter than the said piston-rod, for the purpose of allowing it a degree of lateral play. The interior of the packing-box C is in the form of a pyramidal frustum, the base of which may be a hexagon, as shown in the drawings, Fig. 3, or of any other polygonal shape which I may elect. Within this chamber a number of packing-layers, F G H, are applied, the upper and lower plane surfaces of which are ground true to fit accurately the one upon the other, and which closely conform to the shape of the interior of the packing-box—that is to say, the interior thereof being in the form of a pyramidal frustum with a hexagonal base, the various layers of metal packing will be exactly of the form of a transverse section thereof, increasing in size from top to bottom. The layers F G H are respectively composed of segments *f g h*, which, when applied around the piston-rod B, will leave a slight space between the various segments, as shown for the segments for layer F in Figs. 4 and 8, by means of which, as the surfaces thereof, subjected to the action of the piston-rod, are worn away, the various segments will approach nearer to each other, thereby enabling them to penetrate farther up into the interior of the chamber and take up the waste, preserving and maintaining a steam-tight joint. The layers F G H are held in place by means of the reactive force of a helical spring, S, which is caused to contract by the downward pressure of the plate *b* upon the socket-plate and the packing-box, occasioned when the said plate *b* is forcibly brought in contact with the stuffing-box by the screws *b'* being driven home.

While the spring S is not of absolute necessity when the engine is going ahead, its functions being in a measure served by steam escaping from the cylinder into the hollow of the stuffing-box, it is indispensable when the engine is at rest and the cylinder empty of steam, or when the cylinder is in an upright position,

as in walking-beam marine engines. The piston-rod having, for the reasons above described, a slight lateral play, the stuffing-box, owing to the rounding of its upper end and the corresponding concavity of the depression in the socket-plate, will have a slight universal ball-and-socket motion, thus allowing the packing-rings to move in any direction that the piston or valve rods, through wear in the cross-heads or lost motion in any part of the machinery connected therewith, may cause it to take out of a true line, at the same time remaining steam-tight.

The segments *f g h* of the layers F G H are placed within the chamber of the packing-box C in the following order and in the following manner, viz: The smallest segments *f* are first placed in the chamber around the piston-rod B. Then the segments *g* are arranged in like manner, breaking joints with the former, and then the segments *h* are similarly applied, breaking joints with those of layer G. The angles of the segments being received within the angles of the chamber, the various layers are held against relative displacement, and the spaces between the contiguous edges of the various segments of each layer of packing are thereby prevented from revolving about the piston-rod, to assume a position which would place them in the same line, thus allowing the escape of steam and rendering the packing ineffective.

Where packing is used consisting of circular

segments, this event is of no infrequent occurrence, since, owing to the conical form of the packing-box, no resistance is offered to such a revolution, and it may occur at any time and under any circumstances.

The segments of angular form may be of babbitt-metal, iron, composition steel, or of any other metal or composition thereof.

We are well aware that conical segmental metallic packing layers are not new; hence we do not make a broad claim to these devices.

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

1. The packing F G H of the form of a pyramidal frustum, composed of segments *f g h*, applied around the piston-rod, breaking joints with each other and leaving a slight space between the segments, substantially as described, and for the purpose set forth.

2. The packing F G H, constructed as described, in combination with a packing-box, C, having a concave pyramidal chamber and an upper rounded end, *d*, and the socket-plate E, substantially as and for the purpose set forth.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

JOHN T. WRIGHT.
MARTIN SCHNEBLE.

Witnesses:

O. M. GOTTSCHALL,
GEO. M. YOUNG.