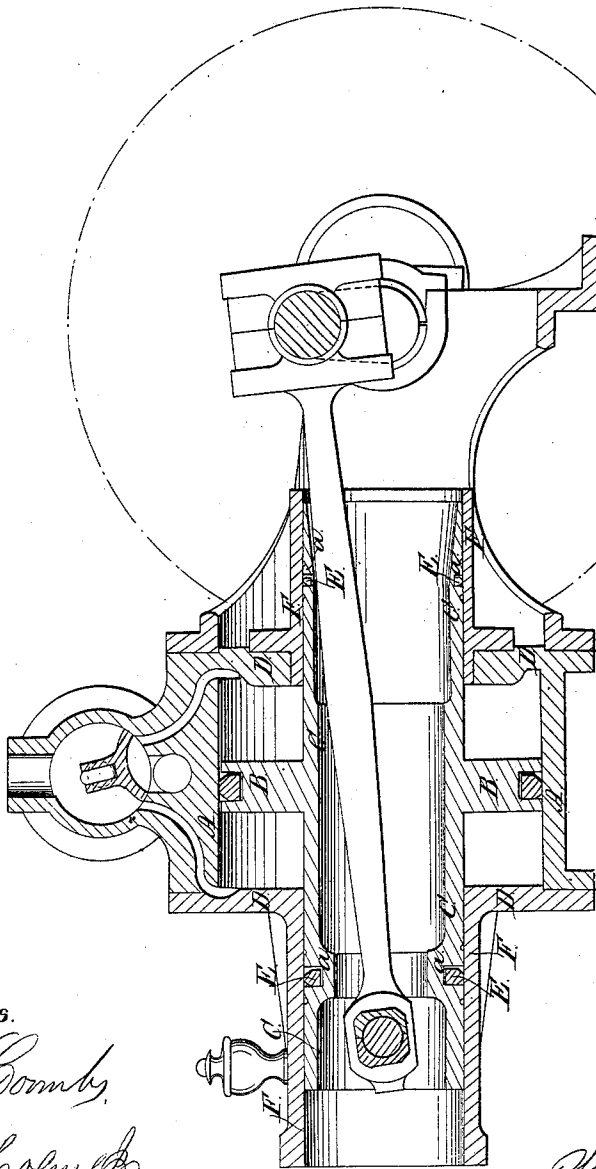


J. B. Root,

Reciprocating Steam Engine,

No 57,190,

Patented Aug. 14, 1866.



Witnesses.

J. M. Combs,
Law. & Holmstedt

Inventor.

John B. Root

UNITED STATES PATENT OFFICE.

JOHN B. ROOT, OF NEW YORK, N. Y.

IMPROVEMENT IN TRUNK-ENGINES.

Specification forming part of Letters Patent No. 57,190, dated August 14, 1866.

To all whom it may concern:

Be it known that I, JOHN B. ROOT, of the city, county, and State of New York, have invented a new and useful Improvement in Trunk-Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, said drawing representing a central longitudinal vertical section of a trunk-engine with the improvement applied.

One of the difficulties encountered in trunk-engines of large size has been that of preserving a tight packing in the very large stuffing-boxes employed around the trunk.

The object of this invention is to obviate this difficulty; and to this end the invention consists in dispensing with stuffing-boxes for the packing of the trunks by the use of expanding packing-rings substantially like those used for piston-packing inserted into grooves in the trunk and working in cylindrical guides attached to the cylinder-heads.

To enable others skilled in the art to apply my invention to use, I will proceed to describe it with reference to the drawing.

A is the cylinder of the engine. B is the piston surrounding and attached to the trunk C, which extends through both cylinder-heads and works in two cylindrical guides, F F, attached to the cylinder-heads D D. These guides are concentric with the cylinder, and each of a length somewhat greater than the stroke of the piston, and are bored out truly and smoothly.

E E are the expanding packing-rings, of metal, which constitute the principal feature of my invention, fitted into circumferential grooves *a a*, which are formed in the exterior of the trunk in such positions that during the stroke of the engine they will work within the guides F F, one within one and the other within the other of the said guides. These packing-rings may be of any known or suitable construction, and be pressed out to work steam-tight within the guides either by means of springs or by the pressure of the steam, which passes from the cylinder between the

trunk and guides and enters the grooves *a a*; but I prefer to use rings of the construction which is the subject-matter of my application for Letters Patent allowed February 8, 1866. These rings, fitting and working steam-tight within the cylindrical bores of the guides F F, effectually prevent any steam from escaping from the cylinder between the trunk and the guides beyond the said rings.

A similar packing-ring and cylindrical guide may be used in trunk-engines in which the trunk passes through one cylinder-head only.

One advantage of arranging the packing-rings in grooves around the exterior of the trunk over their arrangement in stuffing-boxes attached to the cylinders consists in their permitting the use of longer cylindrical guides F F with a given length of trunk, and thereby enabling the engine with a given length of stroke and guide to be made considerably shorter. In explanation of this, let it be supposed that the rings were arranged near the outer ends of the cylindrical guides. The trunk would then have to be long enough to remain within the rings when the piston was at the end of the stroke farthest from either ring.

Another advantage of this arrangement of metallic packing-rings consists in the simplicity of construction provided for compared with the insertion of such rings into guides of a similar character to stuffing-boxes, such rings in the latter case requiring glands and bolts in the ends of the guides.

I do not confine myself to the particular construction of the packing-rings herein specified; but

What I claim as my invention, and desire to secure by Letters Patent, is—

The arrangement of the packing-rings within the trunk, in combination with the cylindrical guides F F, attached to the cylinder, substantially as and for the purpose herein specified.

JOHN B. ROOT.

Witnesses:

J. W. COOMBS,
A. LE CLERC.