C. H. Clark,

Piston Packing.

No. 53,949. Patented Apr. 17, 1866

Fig. 1.

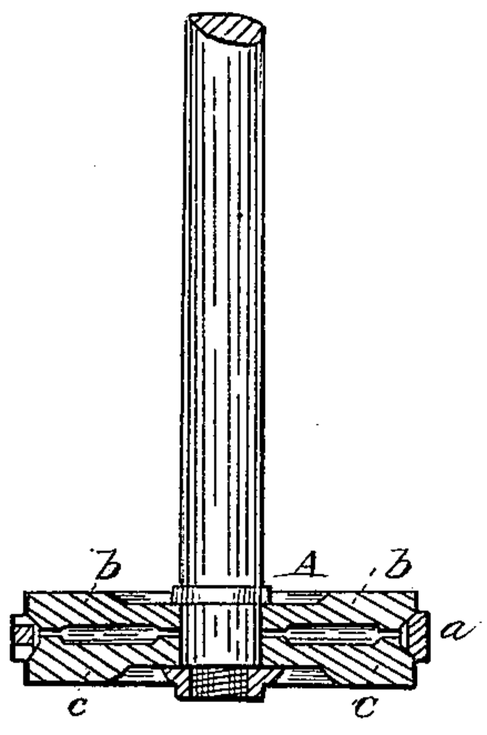
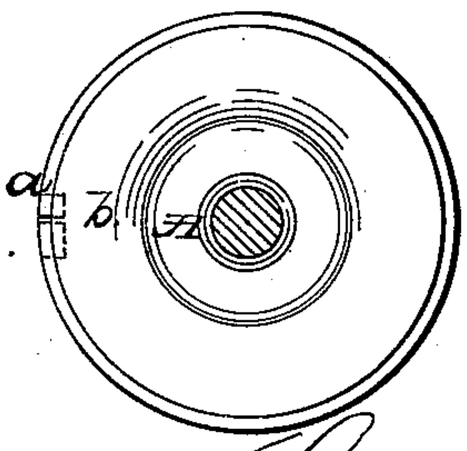


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES H. CLARK, OF WILMINGTON, DELAWARE.

IMPROVEMENT IN PISTON-PACKINGS.

Specification forming part of Letters Patent No. **53,949**, dated April 17, 1866.

To all whom it may concern:

Be it known that I, CHARLES H. CLARK, of Wilmington, in the county of New Castle and State of Delaware, have invented a new and Improved Piston-Packing; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a central section of a piston with a single ring packed according to my invention. Fig. 2 is an end view of the same.

Similar letters of reference indicate like parts.

This invention relates to a piston-packing in which the pressure of the steam on the head or follower causes the packing-ring to spread and to bear steam-tight against the inner surface of the cylinder. The piston is packed with a single ring, and the object is effected by chamfering off its inner edges, and also the inner edges of the piston-head and follower, in such a manner that any pressure bearing on said head or follower causes the ring to spread.

A represents a piston the packing of which is composed of a single ring, *a*. This ring is chamfered off at its inner edges, giving it the form of a wedge, as shown in Fig. 1 of the drawings, and it is interposed between the head *b* and the follower *c*, the inner edges of which are also chamfered off, as shown. The follower *c* is so arranged in combination with the head *b* that the two are allowed to move toward and from each other, and if the piston is introduced in its cylinder and the follower is pressed up against the head the inclined edges of the head and follower acting against those of the ring *a* cause the latter to expand and to bear steam-tight against the inner circumference of the cylinder.

By this arrangement a perfect central setting of the piston is effected by the action of the steam itself at all times during the motion of the engine, and by making the inclined edges acute, a gentle pressure only is exerted on the rubbing edges. When the steam is shut off and the engine is in motion, as in a locomotive running down grade, the atmospheric pressure takes the place of the steam and sets the ring sufficient to carry the piston-head in a central position.

In small cylinders up to about seventeen-inch follower the bolts may be dispensed with and the spider and follower made to part through their middle, and be retained on the rod by means of a nut on the end of the same.

I am enabled to cast the ring entirely of Babbitt metal in the groove which it is intended to fill by using a copper band of suitable shape, which is secured round the head and follower. A piece of clay inserted into this band produces a square slot intended to receive the joint-block, which, when the ring has set, is produced by running in an additional quantity of metal. The ring thus obtained is turned in the lathe about one-thirty-second of an inch smaller than the cylinder, the joint-block is slipped out, the ring sawed across the middle of the slot, and the packing is complete.

It must be remarked that the inclined bearing-surfaces of the ring and of the head and follower may be made concave or convex, or in any other desirable form or shape which will produce the desired result.

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

The inclined bearing-surfaces of the ring *a*, in combination with corresponding inclined surfaces of the head *b* and follower *c*, substantially as and for the purpose described.

CHAS. H. CLARK.

Witnesses:

HENRY A. SAUNDERS,

MICHAEL MCCARTNEY.