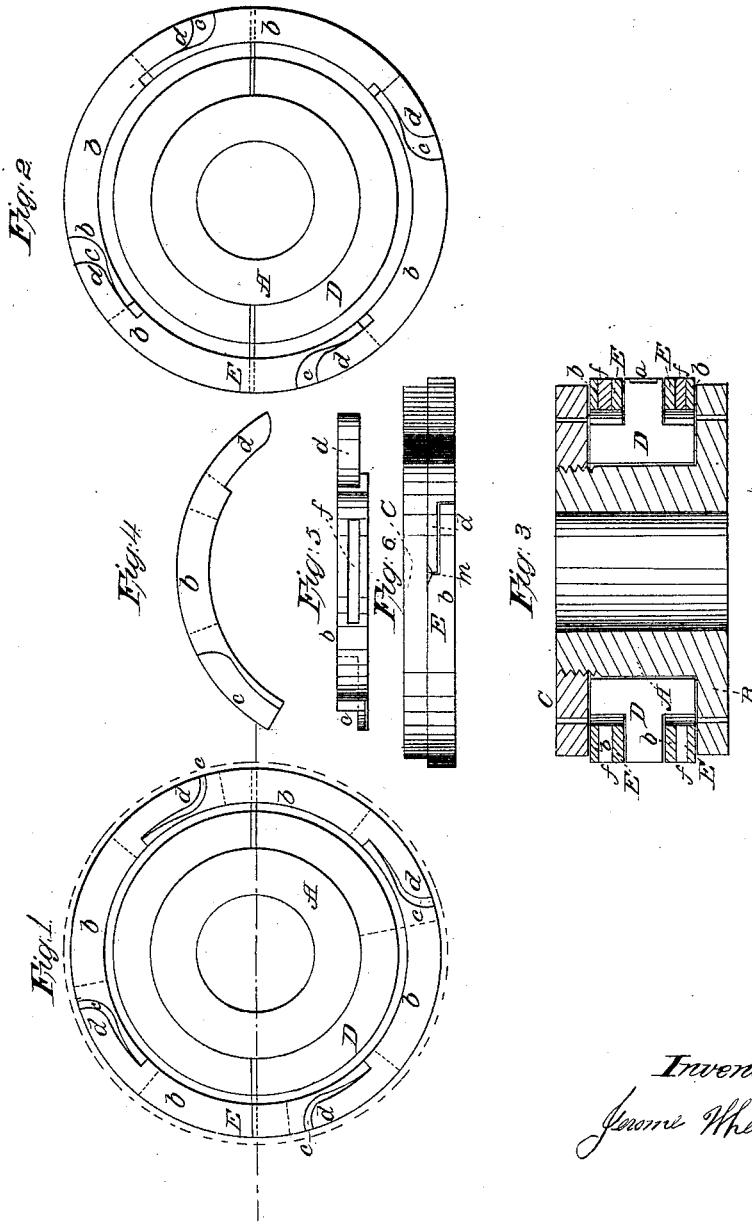


Piston Packing.

N^o 51,250.

Patented Nov. 28, 1865.



Witnesses.
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UNITED STATES PATENT OFFICE.

JEROME WHELOCK, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN PISTON-PACKINGS.

Specification forming part of Letters Patent No. 51,250, dated November 28, 1865.

To all whom it may concern:

Be it known that I, JEROME WHELOCK, of Worcester, in the county of Worcester and State of Massachusetts, 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 drawing, forming part of this specification, in which—

Figure 1 represents a plan or face view of this invention, the follower having been removed, showing the piston as the same will appear when newly fitted into a cylinder. Fig. 2 is a similar view, showing the piston as it will appear after the rings have worn. Fig. 3 is a central section of the same. Fig. 4 is a plan of one of the sectional rings detached. Fig. 5 is an end view of the same. Fig. 6 is a partial side elevation of the piston.

Similar letters of reference indicate like parts.

This invention relates to certain improvements in that class of pistons in which sectional rings are used in combination with a T-shaped or grooved ring placed between the piston-head and the follower.

The invention consists in so arranging the T-shaped or grooved ring, which is cut in two or more sections, that the ring can be put into and removed from the cylinder without removing the piston or piston-rod, and when the piston is used in a horizontal cylinder, and said piston wears, by placing chips of iron or suitable wedges between the sections said ring can be made to fit the cylinder up and down without much trouble or loss of time.

It consists, further, in constructing the joints of the sectional packing-rings in the shape of evolvents or curves of such a nature that said rings will wear from a smaller to a larger surface, or, in other words, that the same will wear into instead of out of shape; and it consists, finally, in the arrangement of mortises or recesses in the sectional rings in such a manner that steam is admitted between the ring and the inner surface of the cylinder, and the pressure of the steam on the back of the rings is partially counteracted and the friction reduced.

A represents the body of my piston, which

is rigidly connected or cast solid with the head B, and to which the follower C is secured by a screw-thread or any other suitable means. The space between the head B and follower C is occupied by a T-shaped or grooved ring, D, the shape and position of which are best seen in Fig. 3 of the drawing. This ring is fitted loosely to the body A of the piston, and its ends are turned off flat and ground to fit steam-tight against the inner surface of the piston-head and the follower. The diameter of the radial portion of this T-shaped or grooved ring is equal to the inside diameter of the cylinder; and in order to be able to spread said ring if it should wear off, I make the same in two or more sections, so that by slipping chips of iron between the ends of said sections the ring can always be made to fit the cylinder up and down if the piston works in a horizontal cylinder.

When used in an upright cylinder which opens from the top, and which is often smaller at the end than in the part traversed by the piston, the sectional ring is easily taken out and put in, whereas if the ring is not cut the cross-head has to be removed before the ring can be taken out, which causes great loss of time.

The lower section of the T-shaped or grooved ring D is provided on its circumference with one or more recesses, *a*, which fill with steam, so that by the action of the steam itself the weight of the piston is partially or wholly balanced and the friction between the same and the cylinder reduced.

The spaces between the radial shank of the T-shaped or grooved ring D and the piston-head on one and the follower on the other side are occupied by the packing-rings E. Each of these rings is made in four (more or less) sections, *b*, detached views of which are shown in Figs. 4 and 5. These sections are cast of brass composition or any other suitable material, and they are fitted in loose between the ring D and the head or follower, said head and follower being turned smaller so that the steam will press the rings up against the sides of the radial portion of the T-shaped ring, and they are joined together by providing each section at one end with a recess, *c*, and at the opposite end with a tongue, *d*, and if the sections are put together the tongue at the end of one

section fits into the recess at the end of the adjoining section. Said recesses and tongues are produced by milling, and they are of such a form that the rings wear into shape—that is to say, they are formed so that when the sections are close together, as shown in Fig. 1, the inner ends of the tongues will be in contact with the outer ends of the recesses; but if the rings wear the tongues will gradually come in such a position that they fit the recesses, as shown in Fig. 2, and the ring will work steam-tight for a long time.

The rings are forced out against the inner surface of the cylinder by the action of steam let in behind them through suitable holes or apertures in the head and follower, or through grooves, *m*, in the edges of the rings; and in order to reduce the friction, particularly if the pressure of the steam is high, the sections of the rings are provided with mortises *f*, which pass clear through and reduce the effective bearing-surface of the steam; or, instead of mortises, simple recesses may be made in the faces of the sections which communicate with the inner or steam space of the piston, so that the pressure forcing the rings out is partially

counteracted by the pressure of the steam in said recesses, which has a tendency to force the same in. By this arrangement a piston is obtained which works with the least possible friction, and consequently with the least possible wear. It can be made at a small expense. It is very durable, and if one of its parts should wear out it can easily be replaced.

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

1. Arranging the T-shaped or grooved ring D in two or more sections, as and for the purpose described.

2. The curved recesses *c* and tongues *d* at the ends of the sections of the packing-rings, as and for the purpose shown and described.

3. The mortises or recesses *f*, in combination with the sectional packing-rings, constructed and operating substantially as and for the purpose set forth.

The above specification of my invention signed by me this 27th day of July, 1865.

JEROME WHEELOCK.

Witnesses:

M. M. LIVINGSTON,
C. L. TOPLIFF.