

(No Model.)

W. G. SHEPHERD.
STEAM ENGINE VALVE.

No. 526,847.

Patented Oct. 2, 1894.

Fig. 1.

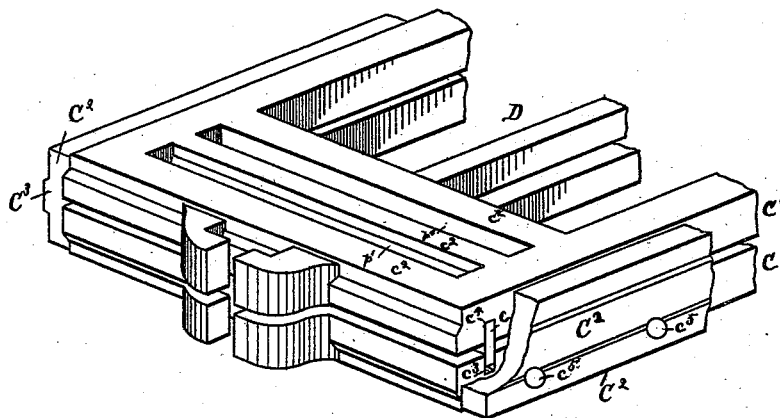
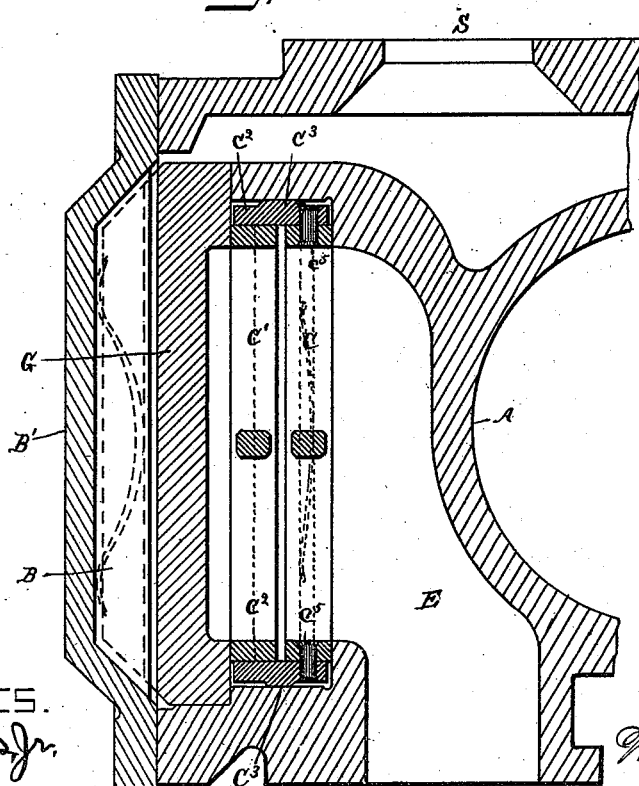


Fig. 2.



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WILLIAM G. SHEPHERD, OF ERIE, PENNSYLVANIA.

STEAM-ENGINE VALVE.

SPECIFICATION forming part of Letters Patent No. 526,847, dated October 2, 1894.

Application filed December 11, 1893. Serial No. 493,399. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. SHEPHERD, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Steam-Engine Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to steam engine valves, and consists in certain improvements in the construction thereof, as will be hereinafter fully described and pointed out in the claims.

More particularly my invention is in the nature of an improvement of an invention for which I have made an application for a patent, and which is now in the United States Patent Office, Serial No. 466,927.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 is a perspective view of a valve embodying my invention. Fig. 2 is a section of a cylinder and steam chest on a line at the longitudinal center of the cylinder, and showing a valve of my construction in the said steam chest.

A marks the cylinder; B, the steam chest; C, the valve proper; C', the relief plate on the valve; D, the usual "D" at the center; G, the presser plate on which the relief plate is seated; S, the passage for the admission of steam, and E, the exhaust passage.

The valve to which I have adapted my invention and which forms the subject matter of my before mentioned application, is of the double ported variety, the relief plate being of substantially the same shape as the valve, and acting upon its seat as an auxiliary valve by means of passages in the presser plate and valve ports p and p' in the relief plate and valve. The steam passages of the valve are separated by the bridges, c^2 , into which on the adjacent surfaces of the valve and relief plate are oppositely cut the grooves, c^3 and c^4 , respectively, as shown in Fig. 1. These grooves run from side to side of the valve, and the packing strips, c , are fitted into them so as to move readily therein, but still be steam tight, and are of such length as to come flush with the sides of the valve and relief

plate. The valve and relief plate are held to their seats by springs, shown in dotted lines in Fig. 2, placed in the grooves under the packing strips.

In ordinary valves of this class, the valve and its relief plate are put together telescopically, the relief plate entirely encircling the valve; but with a double ported valve this construction is impractical, as it is necessary to provide means for separating the steam and exhaust ports of the valve and still leave the valve and relief plate capable of separating, and following the wear on their respective seats. This I accomplish by means of the packing strips, c , heretofore mentioned.

After the grooves, c^3 , are cut in the valve, I attach to its sides side plates, C^2 , preferably by means of rivets, c^5 . This strip fits closely against the relief plates and prevents the steam from passing around the ends of the packing strips. These plates are not so thick but that, when steam is admitted, its pressure exerted against them clamps them securely against the relief plate, so that whatever unbalancing tendency there may be as a result of the steam entering between the valve and relief plate at the sides of the packing strips, is obviated as the clamping action catches the relief plate at a proper initial pressure against its seat and holds it securely in that position. This makes a perfectly balanced valve with the exception of the weight of the valve itself. In order that this may be obviated, I make the plate, C^2 , sufficiently thick to contact the top and bottom of the steam chest, by means of contact surfaces, C^3 . These contact surfaces, of course, relieve the valve of the steam pressure in proportion to their areas. The lower contact surface is made of less area than that of the top so that there is a greater surface at the bottom than the top of the valve that is exposed to steam pressure, and this difference is made just sufficient to sustain the weight of the valve at the steam pressure at which it is desired the engine shall run.

By the construction shown, that is by riveting the plates, C^2 , to the valve instead of making them solid with it, the grooves for the packing strips can be more readily cut in the valve surface. This of course is more advantageous with the double ported valve, as there

are more grooves to cut, and the telescopic construction heretofore mentioned cannot be so readily adapted to this variety of valve, and the riveted plate more readily clamps the relief plate than it would if made solid with the valve. Of course the side plate may be riveted to the relief plate and pinch the valve, but this is so obvious an equivalent of my construction that I have not shown it as an alternative construction.

What I claim as new is—

1. In a steam engine valve, the combination of the valve having grooves in the bridges between its steam passages, and side plates on the sides of said valve; a relief plate between said side plates on said valve and having oppositely placed grooves therein; and packing strips in said grooves.

2. In a steam engine valve, the combination of the valve, having grooves in the bridges between its steam passages, and side plates on the sides of said valve; a relief plate between said side plates which is pinched by

said side plates when under pressure, and having grooves therein oppositely placed to those in the valve; and spring actuated packing strips in said grooves.

3. In a steam engine valve, the combination of the valve having grooves in the bridges between its steam passages; a relief plate thereon having oppositely placed grooves therein; packing strips in said grooves; and side plates riveted to the valve.

4. In a steam engine valve, the combination of the valve having side plates thereon that contact the top and bottom of the steam chest, the steam exposed surface of the lower plate being greater than that of the top plate; and a relief plate for said valve between said plates.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM G. SHEPHERD.

Witnesses:

J. P. SLOCUM,

H. C. LORD.