(No Model.)

2 Sheets—Sheet 1.

# W. C. SALMON.

## STEAM ENGINE OR PUMP.

No. 347,644. Patented Aug. 17, 1886.

*Fig. 1.*

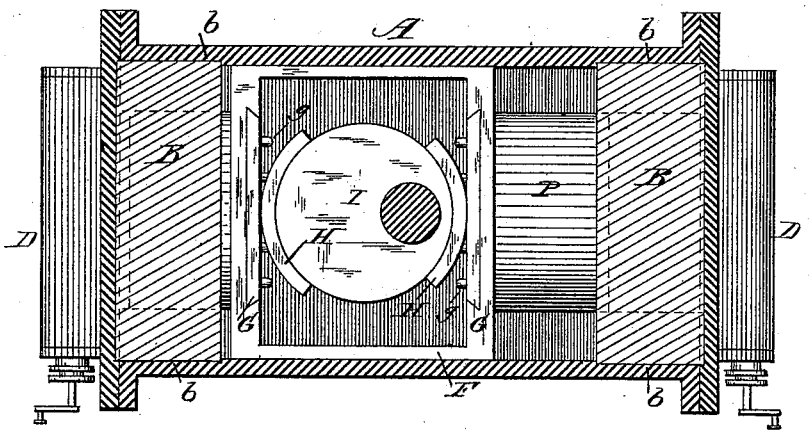
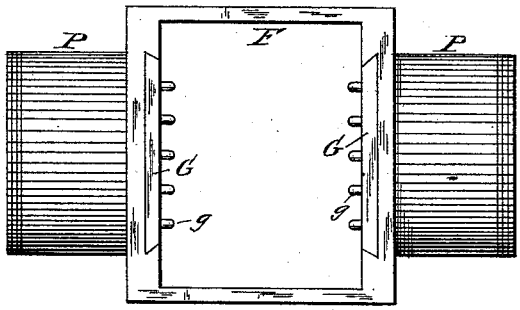



*Fig. 2.*

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(No Model.) 2 Sheets—Sheet 2.

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## STEAM ENGINE OR PUMP.

No. 347,644. Patented Aug. 17, 1886.

Fig. 3.

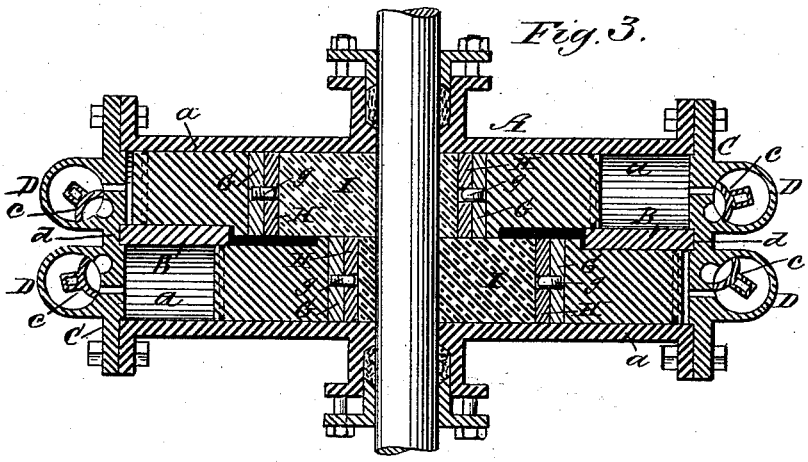


Fig. 4.

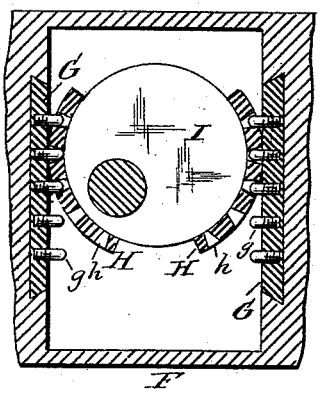


Fig. 5.

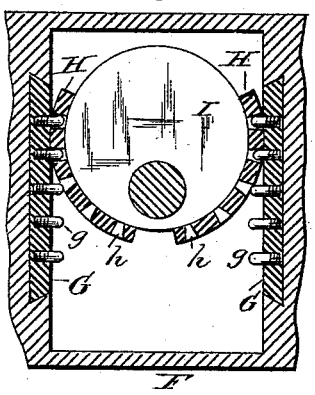


Fig. 6.

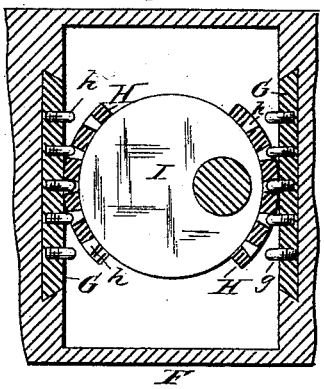
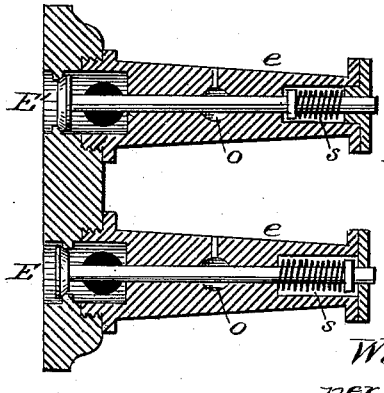


Fig. 7.



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# UNITED STATES PATENT OFFICE.

WILLIAM CUTTER SALMON, OF PORTLAND, OREGON.

## STEAM ENGINE OR PUMP.

SPECIFICATION forming part of Letters Patent No. 347,644, dated August 17, 1886.

Application filed March 17, 1886. Serial No. 195,518. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM CUTTER SALMON, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Steam Engines or Pumps; and I do hereby declare that the following is a full, clear, and exact description 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 vertical horizontal section. Fig. 2 is a side elevation of a pair of the pistons. Fig. 3 is a longitudinal horizontal section showing four cylinders reduced in diameter to permit the eccentrics to be placed together upon the shaft. Figs. 4, 5, and 6 are views of the eccentric in different positions with relation to the piston; and Fig. 7, a view of a set of puppet-valves that may be used as steam-valves, or when the engine is converted into a pump.

The present invention is an improvement upon that shown in my Patent No. 333,675, granted January 5, 1886, and has for its object to provide better means for the bearing-surface between the eccentrics and the pistons, whereby the eccentrics are caused to wear true and with less friction.

In the accompanying drawings, A represents the casing, in which the outer portions, *a*, in which the pistons work, are made round. This I accomplish by placing a division-piece, B, between the two pistons, in grooves *b* in the upper and lower and at the end of the casing. This division-piece is concave on each side, conforming to the shape of the pistons. In other words, it is put in place and bored out the same as any cylinder, it forming one side of the cylinder and the casing the other. The side of the casing is removable, as shown in my former patent, for assembling the parts. This is not important, as I do not claim it here. The heads C of the cylinders are provided each with a groove or recess, *d*, to still further secure the division-piece.

Upon the outside of the cylinder-heads are steam-chests D, each containing an oscillating valve, *c*, for admitting and exhausting steam from the cylinders. These valves could be operated by a valve-gear when the engine is converted into a pump, which is done by applying power to the shaft to operate the pistons; but I have shown a set of puppet-valves for the pump that would operate by the action of the water. These valves are shown in Fig. 7, E being the inlet-valve, and E′ the outlet, the stems of which pass through the standard *e* and are provided with springs *s*, which prevent them from remaining open if they should move too far.

About midway of the standard and around the stem is an oil-chamber, *o*, for lubricating the valve-stem.

The pistons P are connected together by the yoke F, which has a bearing upon the top and bottom of the casing, and also upon one side. There being two sets of pistons, the inside of the yokes bear against one another, all moving freely, but kept in position without any undue friction. Within the yokes, back of the pistons, are dovetailed plates G, of suitable material, each provided with pins *g*, projecting therefrom. The plates are made removable, as it is necessary that it should be constructed of some hard metal, to guard against wear, and also to prevent the pins from working loose. Supported upon these pins are shoes H, that conform to the contour of the eccentrics I, the shoes being provided with holes *h*, for the reception of the pins.

In operation, as the eccentrics revolve, the shoes are rocked upon the plates G, and are supported alternately upon two or more of the pins.

When the shoes or eccentrics are worn, new shoes can be readily put in their place, and the eccentric can wear considerably before being replaced.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a steam-engine, the combination of the four pistons, rigidly connected in pairs, the casing, and the removable division-piece forming the partition between the two cylinders, substantially as shown and described.

2. The combination of the yoke with the eccentric, the curved shoes in contact with the

eccentric, and provided with recesses, and the plate provided with pins, substantially as shown and described.

3. The combination of the eccentric with the yoke, the shoes, and the plate provided with the pins, all substantially as shown and described.

4. The combination of the eccentric with the yoke, the pistons, the shoes, and the plate provided with the pins, all substantially as shown and described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM CUTTER SALMON.

Witnesses:

WILLIAM J. BECANNEN,

CHARLES G. SCHRAMM.