

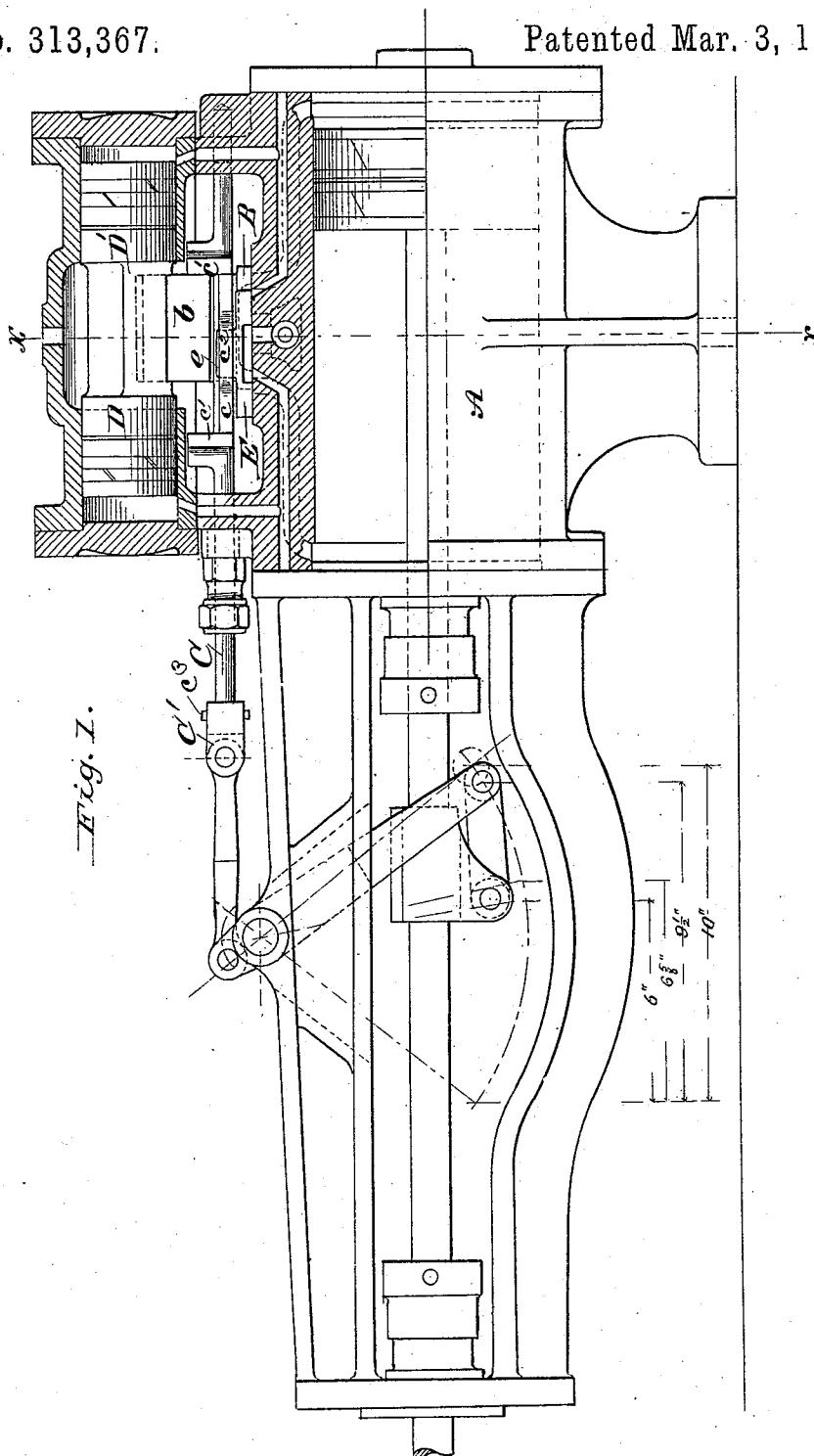
(No Model.)

2 Sheets—Sheet 1.

H. L. PERRINE.
STEAM ACTUATED VALVE.

No. 313,367.

Patented Mar. 3, 1885.



Attest:
E. J. Walker
WM. Hammay

Inventor:
H. Loring Perrine
by his attorney
P. G. Ciba

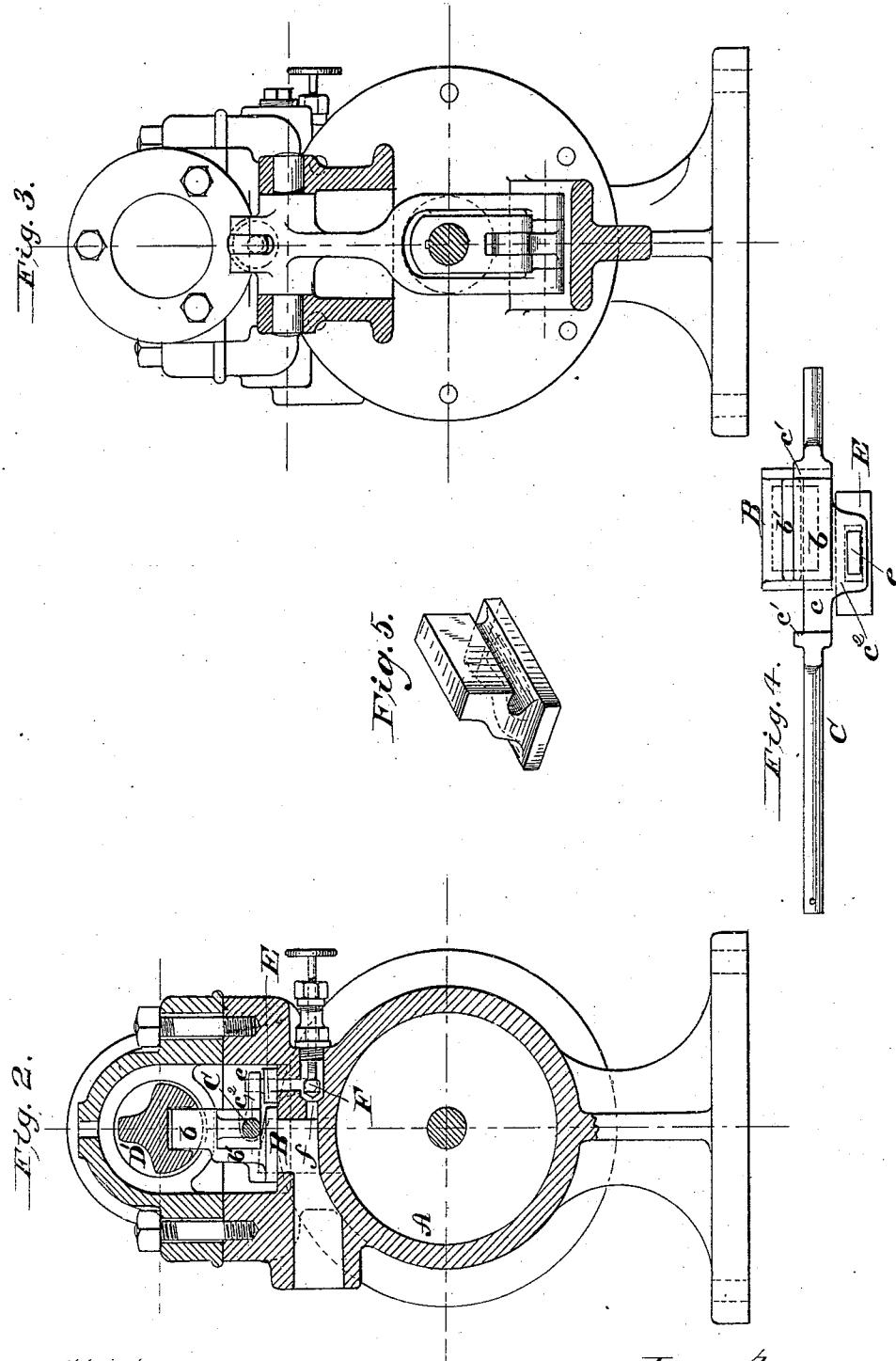
(No Model.)

2 Sheets—Sheet 2.

H. L. PERRINE.
STEAM ACTUATED VALVE.

No. 313,367.

Patented Mar. 3, 1885.



Attest:
E. F. Haeran
W. W. Hanney

Inventor.
H. Lanning Perrine
by his attorney
C. C. C. C.

UNITED STATES PATENT OFFICE.

H. LANSING PERRINE, OF NEW YORK, N. Y.

STEAM-ACTUATED VALVE.

SPECIFICATION forming part of Letters Patent No. 313,367, dated March 3, 1885.

Application filed June 7, 1884. (No model.)

To all whom it may concern:

Be it known that I, H. LANSING PERRINE, a citizen of the United States, residing at New York, in the county of New York and State 5 of New York, have invented certain new and useful Improvements in Steam - Actuated Valves for Direct-Acting Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, 10 such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to steam - actuated valves of direct - acting engines such as described in United States Letters Patent No. 15 269,319, granted to me December 19, 1882.

My improvement consists of such a construction and combination of the parts that the main slide-valve and the controlling-valve 20 may be taken out of the steam-chest for inspection or repair without requiring the removal of the valve-rod and without sliding the valves either longitudinally or transversely.

25 In order that my invention may be clearly understood, I have illustrated in the annexed drawings and will proceed to describe a practical form thereof.

Figure 1 illustrates a side elevation of a direct-acting steam-engine, the upper half of the main cylinder, the valve-chest, and superimposed valve-piston cylinder being shown in section. Fig. 2 is a transverse section in the plane indicated by the broken line XX 35 of Fig. 1. Fig. 3 is an end elevation, the frame being shown in section. Fig. 4 is a plan of the main slide-valve, controlling-valve, and the rod for operating them. Fig. 5 is a perspective view of the main slide-valve.

40 The same letters of reference indicate identical parts in all the figures.

The ports of the main cylinder A are governed by the main slide-valve B, connected to move in unison with the valve-pistons D 45 D', and operated in part mechanically by the valve-rod C and in part by steam acting on the said valve-pistons, the admission of steam behind the said pistons and its exhaust being governed by the controlling-valve E, which is 50 operated entirely by the valve-rod C.

The general construction and mode of op-

eration of these parts and the gear for connecting the valve-rod C with the main piston-rod are substantially the same as in the steam-engine illustrated in my before - mentioned 55 patent, and require, therefore, no detailed description.

Between the back of the slide-valve B and its lug b, which is engaged by the valve-pistons, a space is left for admitting the portion 60 c of the valve-rod, which is provided with a tappet-shoulder, c', at each end of portion c, to operate on the slide-valve and move it and the valve - pistons mechanically as the main piston approaches the end of the stroke 65 in either direction. The portion c of the valve-rod has a lateral projection, c'', suitably perforated to engage a lug, e, on the back of the controlling-valve E. Suitable provision is to be made to permit the turning of the 70 valve-rod in its bearings when it becomes necessary to remove the controlling - valve. For this purpose the valve-rod is, in this instance, detachable from its knuckle C', to which it is ordinarily connected by a pin, c''. 75 The lug b is connected to the slide-valve B by a web, b', which, when the valve is in position, is on the plain side of the portion c of the valve-rod.

To remove the valve, the cylinder of the 80 valve-pistons must be lifted off the valve-chest. The main slide-valve may then be removed by lifting it at the same time that it is turned sufficiently to pass from under the valve-rod, and the controlling-valve can also 85 be removed by first turning the valve-rod, whereby the valve will either be released or turned upside down, and then lifting the valve.

The exhaust f from the controlling-valve 90 contains a valve, F, by which it may be throttled more or less to retard the motion of the valve-pistons.

It will be observed that the valves are removed without retracting the valve-rod and 95 without sliding them either longitudinally or transversely. Thus, while the construction and connection of the parts provide for the convenient removal of the valves, no undue enlargement of the steam-chest is required, 100 and the valve-rod may be constructed with permanent means for engaging the valves, al-

though detachable means may be used, if preferred.

I claim as my invention—

The combination, substantially as before set forth, of the main slide-valve, the controlling-valve, and a single valve-rod engaging both valves, the parts being constructed and connected, substantially as described, so that both valves may be removed from under the rod

without sliding them either longitudinally or transversely.

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

H. LANSING PERRINE.

Witnesses:

B. M. ESPY,
ROGER McGARRY.