

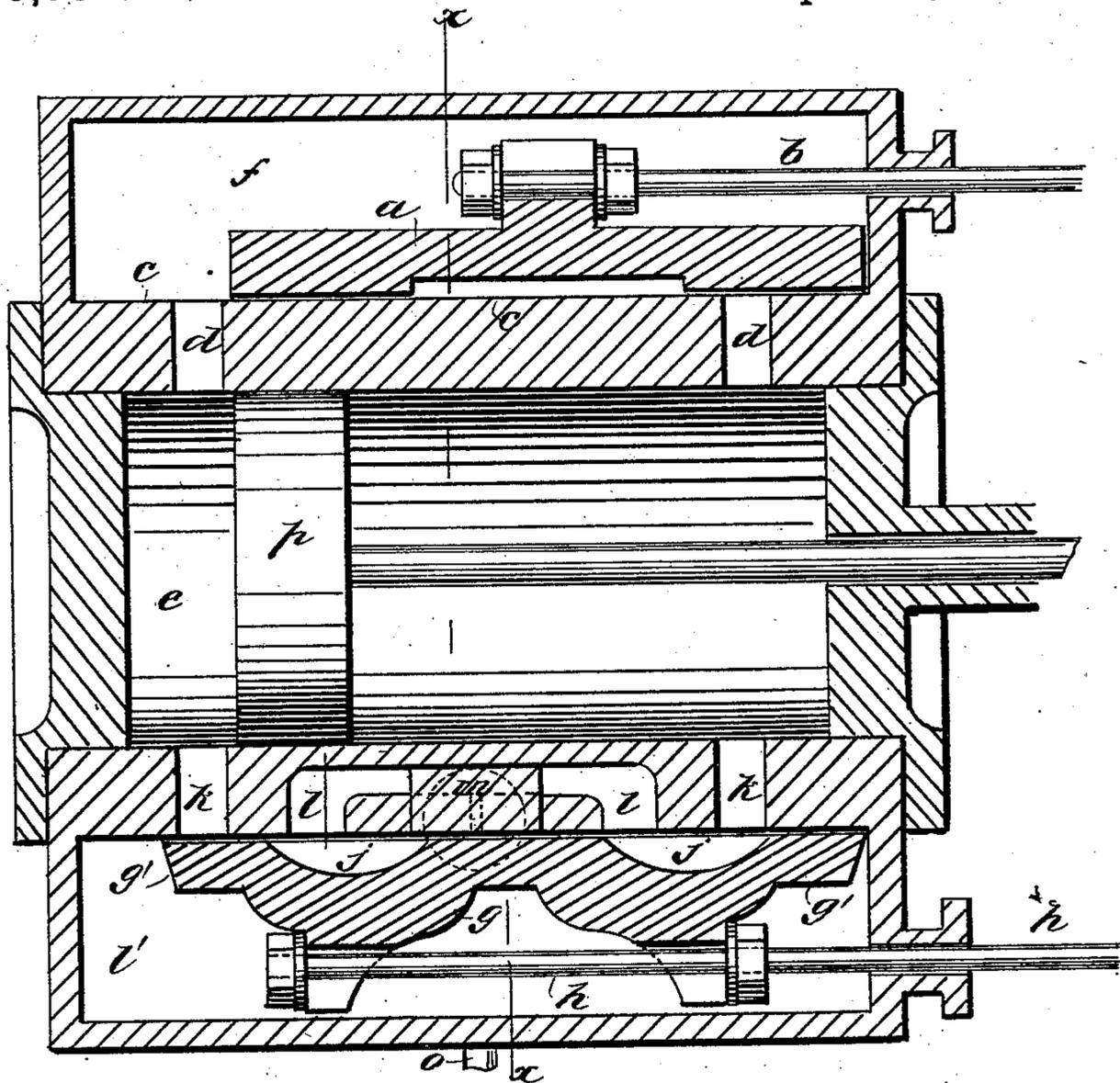
(Model.)

R. DOTY.  
SLIDE VALVE.

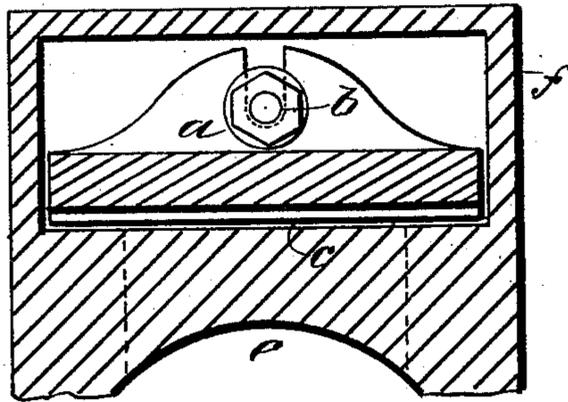
No. 285,737.

Patented Sept. 25, 1883.

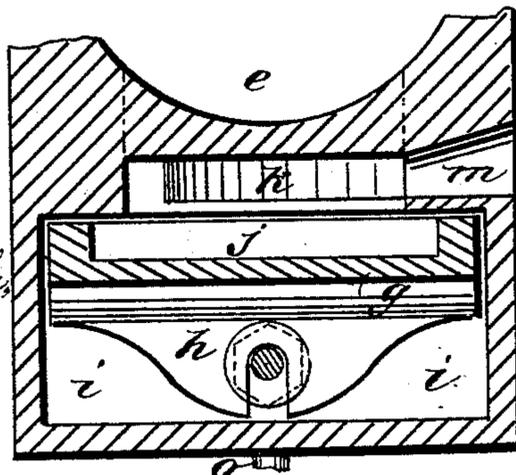
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

RILEY DOTY, OF LEONARDSBURG, OHIO.

## SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 285,737, dated September 25, 1883.

Application filed July 6, 1883. (Model.)

To all whom it may concern:

Be it known that I, RILEY DOTY, of Leonardsburg, in the county of Delaware and State of Ohio, have invented certain new and useful Improvements in Slide-Valves for Steam-Engines, of which the following is a full, clear, and exact description.

My improvements have reference to that class of engines employing separate slide-valves for admission and exhaust of steam, whereby a better control of the steam, and consequent closer regulation, is secured than can be obtained by the use of a single slide-valve.

The invention consists in a particular arrangement of the admission slide-valve in its chest on a double-ported seat, in combination with an exhaust slide-valve arranged over a three or four ported seat in a separate chest, and having live steam admitted to balance the exhaust-valve against the steam-pressure in the cylinder, the whole making an arrangement at once simple, practical, and effective, all as hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal sectional elevation of a steam-cylinder with my improvements applied. Figs. 2 and 3 are cross-sections, respectively, on the broken line *xx* of Fig. 1, of the steam and exhaust chests and their valves.

The letter *a* represents the steam or admission valve, which has a stem, *b*, to be connected to an eccentric, for moving the valve over its seat *c* for inlet of steam through ports *d*, alternately at either end of the cylinder *e*, said valve *a* being inclosed in any approved steam-tight chest *f*.

The letter *g* represents the exhaust-valve, which works, by the reciprocation of its stem *h*, within a separate chest, *i*, here placed diametrically opposite the steam-valve *a* and its chest; but valve *g* may be placed in a chest on the side of the cylinder, at right angles to valve *a*, if desired, the exhaust-passages being arranged correspondingly. The exhaust-valve *g* has recesses *j j*, which alternately connect the steam-exhaust ports *k* from the cylinder *e* with the adjacent exhaust-passages *l*, which communicate with the common outlet,

*m*, (dotted in Fig. 1,) to which the exhaust-pipe of the engine has any suitable connection.

The letter *o* represents a small pipe, leading, preferably, from the steam-supply pipe below the governor-valve, for supply of live steam to the chest *i*, to hold the valve *g* closely to its seat against the outward pressure of the steam from the cylinder through the ports *k* and from passages *l m*. The ends *g'* of valve *g* overlap or cover the exhaust-ports *k* at all points when the valve is closing said ports, so that no waste of steam from pipe *o* takes place through the exhaust-passages, and provision may be made, by any suitable drip-cock or pipe-connection, to withdraw the water of condensation from chest *i*, as required.

In the operation of my improvements, and with the valves positioned as in Fig. 1, steam is being admitted through the left-hand port *d* to drive piston *p* to the right, the cylinder *e* being meanwhile exhausted through the right-hand passages *k j l m*, and the valves act in like manner at the opposite end of the cylinder on the return-stroke, as will readily be understood, the movements of the steam and exhaust valves *a g* being relatively timed with each other to relieve the piston *p* of all back-pressure, or as much of it as desired, for regulating the freedom of the exhaust from the cylinder, or the amount of "cushion" for the piston for insuring the best economy in practice.

My improvements may be applied to cylinders having the steam and exhaust ports arranged in the center, if desired.

It will be noted that the arrangement of valves *a g* in separate steam and exhaust chambers or chests permits the use of inlet *o* for seating the exhaust-valve *g* without waste of steam, and also adapts the valves to be set as desired, and with the greatest precision, and also to be driven by separate connections for maintaining any constant relative adjustment of the valves *a g* with each other which shall give the best results.

I do not abandon or dedicate to the public any patentable features set forth herein and not hereinafter claimed, but reserve the right to claim the same either in a reissue of any patent that may be granted upon this application or in other applications for Letters Patent that I may make.

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

1. The combination of the steam-cylinder *e*, piston *p*, admission-valve *a*, working in a steam-chest, *f*, the exhaust-valve *g*, working in a separate chest, *i*, and having extensions *g'* of the ends, and the live-steam inlet *o*, substantially as shown and described.

2. The combination, with the steam-cylinder and its piston, of the inlet-valve *a*, controlling ports *d* to both ends of the cylinder, the ex-

haust-valve *g*, having end extensions, *g'*, and passages *j*, controlling exhaust-passages *k l m*, and the live-steam inlet *o*, substantially as specified, said valves *a g* being arranged in separate chests *f i*, and for operation by independent connections, substantially as shown and described.

RILEY DOTY.

Witnesses:

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