(No Model.)

L. D. HOOPER.

ROTARY STEAM ENGINE.

No. 287,379. Patented Oct. 23, 1883.

Fig. 1.

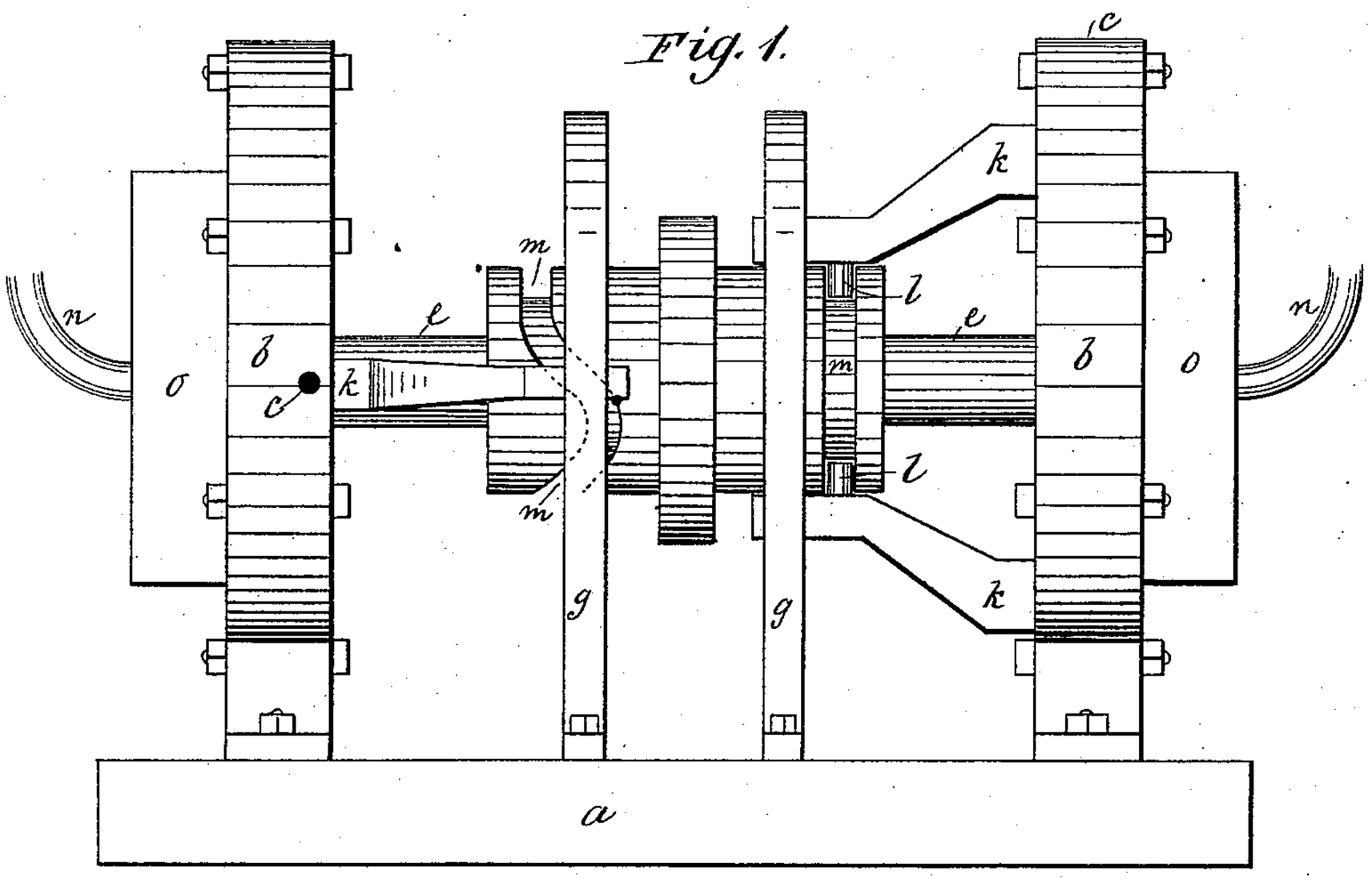


Fig. 2.

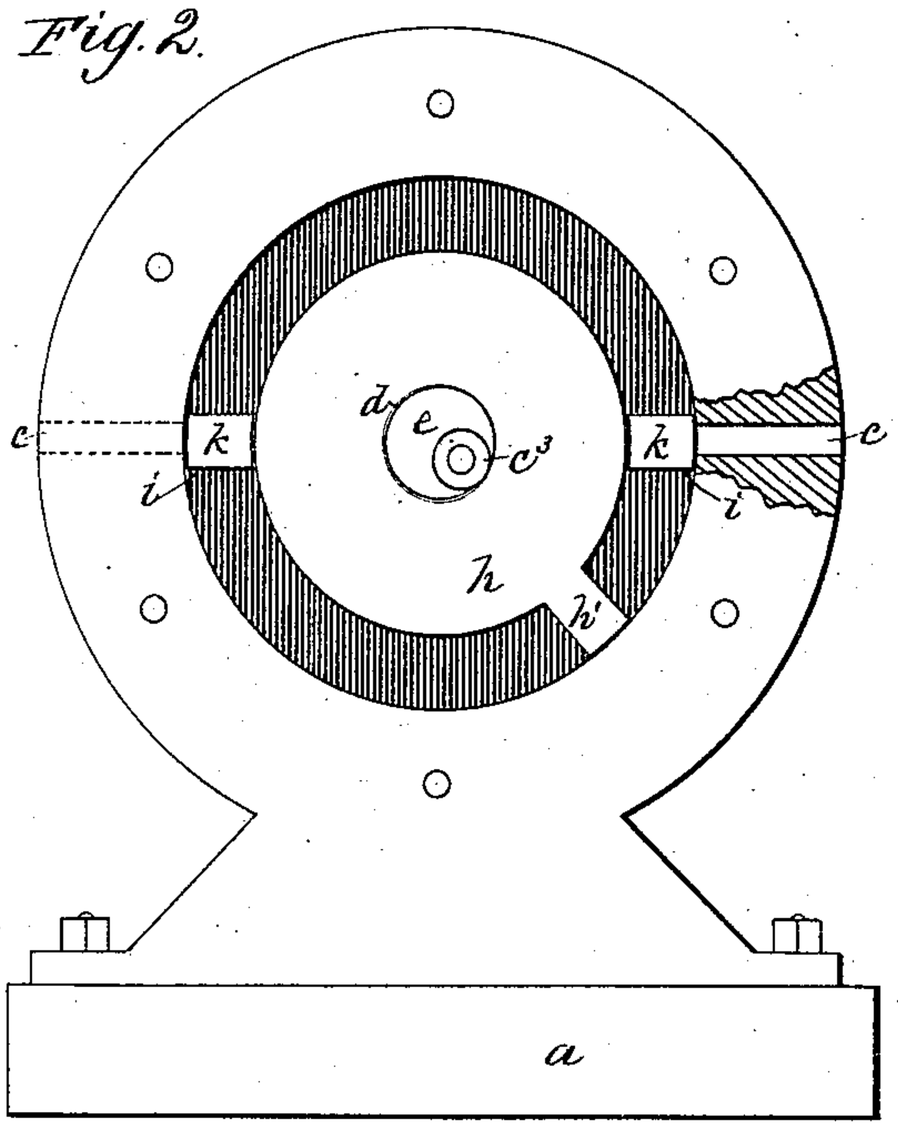


Fig. 3.

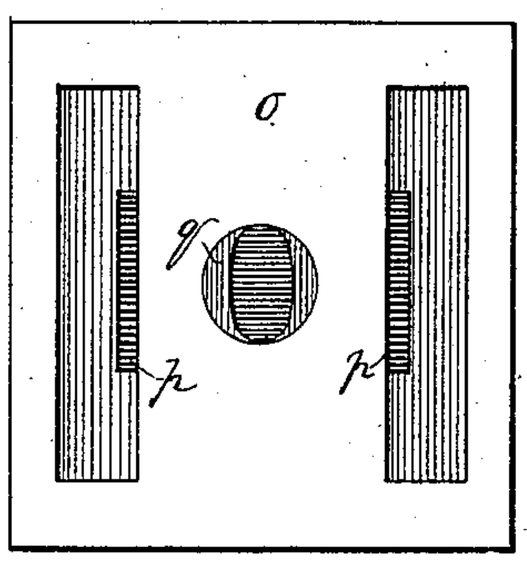
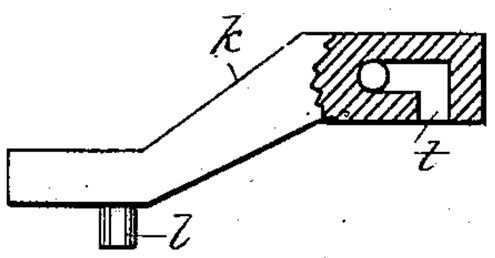


Fig. 4.



WITNESSES:

W. W. Hollingsworth

T. T. Read

INVENTOR:

Lorenzo D. Hooper

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

LORENZO D. HOOPER, OF COFFEYVILLE, KANSAS.

ROTARY STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 287,379, dated October 23, 1883.

Application filed March 10, 1881. (No model.)

To all whom it may concern:

Be it known that I, LORENZO D. HOOPER, of Coffeyville, in the county of Montgomery and State of Kansas, have invented certain new and useful Improvements in Duplex Rotary Steam-Engines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings and letters of reference marked thereon, in which—

Figure 1 is a side elevation of my improved duplex rotary steam-engine. Fig. 2 is an end elevation of the same with one of the cylinder-heads removed. Fig. 3 is a bottom view of one of the steam-chests, showing the steam space and ports; and Fig. 4 is a detail view of one of the sliding abutments, showing at its upper end an opening for the escape of exhaust-steam.

Similar letters indicate like parts in all the figures.

My invention relates to improvements in duplex rotary steam-engines; and it consists in the peculiar construction and arrangement of the parts, as hereinafter more fully set forth, and pointed out in the claims.

In the accompanying drawings, *a* represents the bed-plate of the engine, to which are secured near its ends the cylinders *b*, provided with exhaust-ports *c c* and central orifices, *d d*, for the passage of a horizontal driving-shaft, *e*, provided near its ends with pistons *h*, each provided with a projection, *h'*, adapted to revolve steam-tight in its cylinder.

The cylinders, steam-chests, and pistons, with their operative mechanism arranged at opposite ends of the driving-shaft *e*, are precisely similar in construction. So a description of those parts at one end of the shaft will answer for both.

Each cylinder-head is provided near the circumference of its recesses with two slots, *i i*, lying diametrically opposite each other, and each slot lying opposite an exhaust-port *c*, through which slots pass steam-tight the outer ends of the abutments *k k*, the inner ends of the abutments being provided with pins *l l*, engaging in the cam-grooves *m*, fast on the driving-shaft, whereby in the revolution of the shaft *e* the abutments are caused to slide back and forth in the slots *i i*, to allow the passage of the projection *h'* of the piston. As soon as the projection *h'* has passed one of the abutments *k*, drawn back by the cam-groove *m*, the abutment is projected immediately into the cylinder by said cam-groove, and the exhaust-steam passes through an opening, *t*, in the outer end of the abutment, and thence into the exhaust-port *c* of the cylinder.

g g are vertical guides secured to the bed-plate, and provided with slots to receive and guide the inner ends of the abutments in their sliding movements.

The front face of each cylinder-head is provided with ports lying diametrically opposite each other, for the passage of live steam into the cylinder *b* from the steam-chest *o*, secured to the front face of the cylinder, and provided with a central orifice, to which a steam-pipe is secured, connected with a boiler.

As previously stated, there is a similar steam-chest secured to the cylinder at the opposite end of the shaft *e*. The steam-chest *o* is provided with induction-ports *p p*, over which reciprocates the slide-valve *q*, operated by an eccentric, c^3, on the end of the shaft *e*, designed to connect the power with the machinery it is to operate.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the driving-shaft *e*, provided with the cam-grooves *m m*, of the cylinders *b b*, arranged at opposite ends of the driving-shaft, and provided with the exhaust-ports *c c* and slots *i i*, and the abutments *k k*, provided with the pins *l l* and the openings *t t*, substantially as herein shown and described.

2. The combination, with the driving-shaft *e*, provided with the pistons *h h*, having projections *h' h'*, and cam-grooves *m m*, of the cylinders *b b*, arranged at opposite ends of the said shaft, and provided with the exhaust-ports *c c* and slots *i i*, and the abutments *k k*, provided with pins *l l* and openings *t t*, substantially as herein shown and described.

3. The combination, with the driving-shaft *e*, provided with the eccentrics c^3 c^3, and the cylinders *b b*, arranged at opposite ends of the said shaft, of the steam-chests *o o*, secured to

the cylinder-heads, and provided with the induction-ports *p p* and the slide-valves *q q*, substantially as herein shown and described.

4. The combination, with the driving-shaft *e*, provided with the pistons *h h*, having projections *h' h'*, the eccentrics c^3 c^3, and the cam-grooves *m m*, of the cylinders *b b*, arranged at opposite ends of the said shaft, and provided with the exhaust-ports *c c* and slots *i i*, the abutments *k k*, provided with the pins *l l* and openings *t t*, and the steam-chests *o o*, secured to the cylinder-heads, and provided with the induction-ports *p p* and slide-valves *q q*, substantially as herein shown and described.

LORENZO D. HOOPER.

Witnesses:
O. P. ERGENBRIGHT,
J. S. HARVEY.