No. 757,452. PATENTED APR. 19, 1904.

L. GOOS, JR.

STEAM ENGINE.

APPLICATION FILED MAY 16, 1903.

NO MODEL.

Fig. 1.

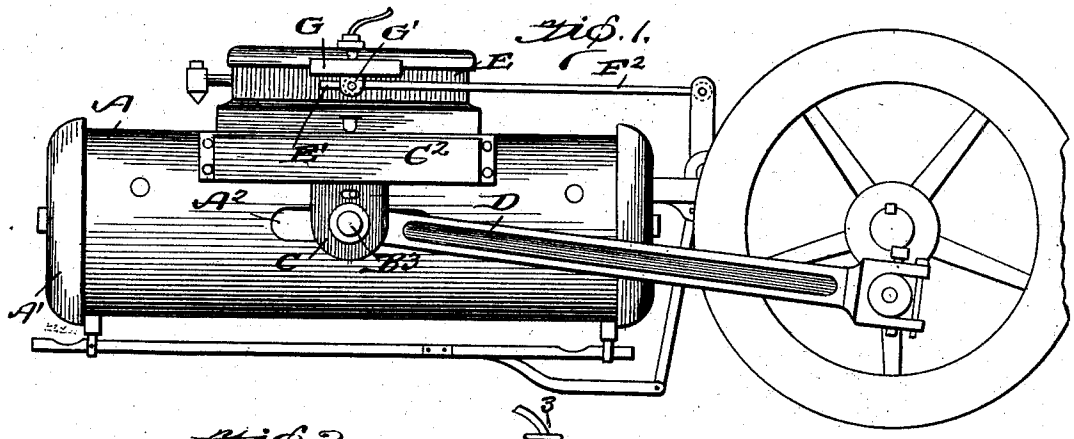


Fig. 2.

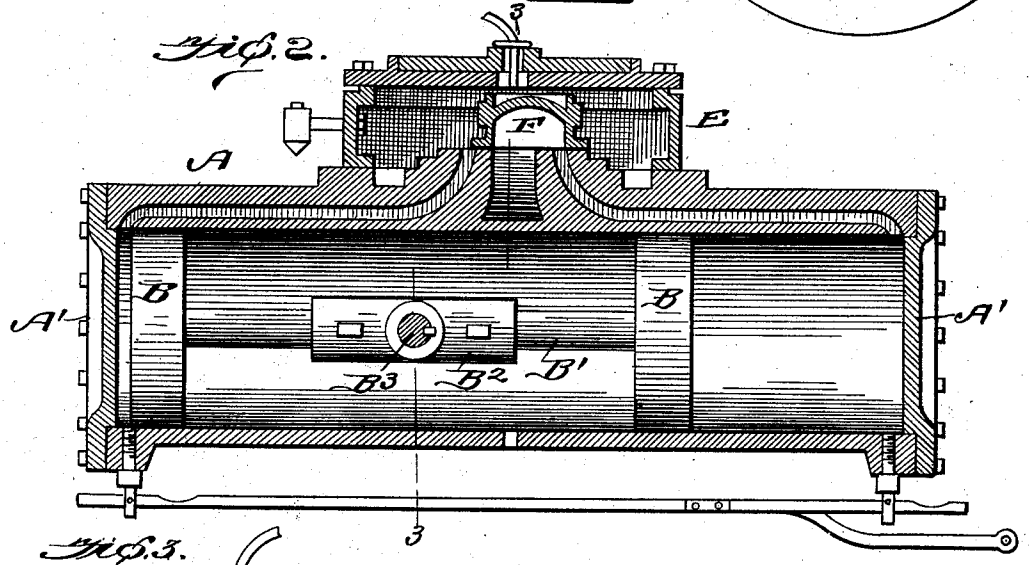


Fig. 3.

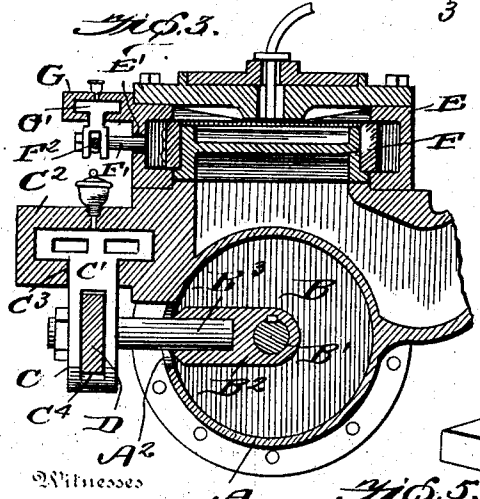


Fig. 4.

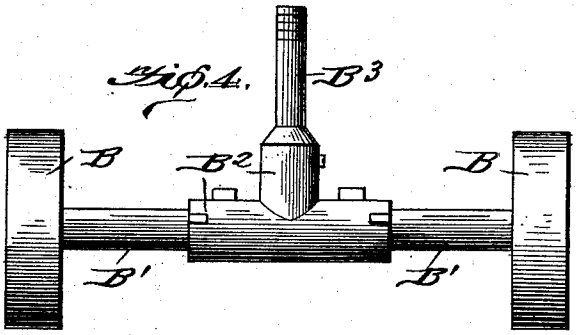
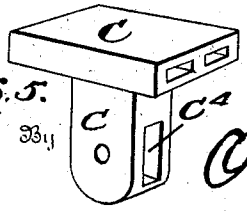


Fig. 5.



Witnesses

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No. 757,452. Patented April 19, 1904.

UNITED STATES PATENT OFFICE.

LOUIS GOOS, JR., OF ATLANTIC CITY, NEW JERSEY.

STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 757,452, dated April 19, 1904.

Application filed May 16, 1903. Serial No. 157,429. (No model.)

To all whom it may concern:

Be it known that I, LOUIS GOOS, Jr., a citizen of the United States, residing at Atlantic City, in the county of Atlantic and State of New Jersey, have invented a new and useful Steam-Engine, of which the following is a specification.

My invention is an improvement in steam-engines, and relates especially to the construction of the cylinders and means of transmitting power from the pistons therein to the driving wheels or shaft.

A further object of my invention is to construct a cylinder in which no stuffing-box will be required and to provide a valve mechanism in which the valve-stem will be connected to the valve substantially in the same manner as the crank-rod is to the piston, thereby dispensing with the necessity for a stuffing-box for the valve-stem.

My invention consists in the novel features of construction and in the combination of parts hereinafter fully described, and pointed out in the claims.

In the drawings forming a part of this specification, Figure 1 is a side elevation of that portion of an engine embodying my invention. Fig. 2 is a longitudinal section through a cylinder constructed in accordance with my invention and showing the piston and piston-rod in elevation. Fig. 3 is an irregular section about on the line 3 3 of Fig. 2. Fig. 4 is perspective view of the pistons, rod, and cross-head. Fig. 5 is a detached perspective view of a guide-block.

Referring to the drawings, A represents a cylinder carrying at each end solid end plates A′ and having a longitudinal slot A^2 formed in the side of the cylinder intermediate the ends, said slot being slightly greater in length than the length of the stroke. Working in each end of the cylinder is a piston B, the two pistons being connected by a piston-rod B′ and neither traveling as far as the slot A^2.

A T-shaped coupling B^2 is secured on the piston-rod midway the pistons, and in this is secured the inner end of a cross-head B^3. This cross-head projects through the slot A^2 and adjacent its outer end is supported in the depending leg C of the guide-block C′. This guide-block slides in a longitudinal casing C^2, secured on the exterior of the casing and above the slot A^2, the bottom of the casing being slotted, as at C^3, the depending leg working through said slot. The depending leg is also slotted, as at C^4. The cross-head extends transversely across this slot, and the driving-rod D extends into this slot and is pivotally connected to the cross-head.

The valve-casing E is preferably mounted on the cylinder and is slotted longitudinally on one side, as shown at E′. The other details of construction of this casing are immaterial and may be varied to adapt it to the particular style of engine with which it is to be used. The slide-valve F is of the usual construction, and the valve-stem F′ has at its inner end an integral plate reduced adjacent its end and bolted to the valve, the intermediate portion of the plate bearing against the inner side of the valve-casing and covering the slot. The stem F′ extends through the slot E′, and at its outer end it is pivotally connected to the valve-rod F^2. A guide-casing G is carried by the valve-casing, and a guide-block G′ slides in this casing and has a depending portion supporting the outer end of the valve-stem. The construction of the casing G is similar to that of the casing C^2, and the block G′ corresponds to that at C′. The remaining parts of the engine are constructed in the usual manner. The operation of the device will be obvious. Steam is admitted only into the space between the piston-heads and the ends of the cylinder, and the cross-head reciprocates in the slot A^2. As the travel of the pistons stops short of the slot A^2, no steam escapes therethrough. By this construction no stuffing-box is required for either the piston-rod or valve-stem. The device as above described may be used in connection with locomotives, marine or stationary engines.

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

1. A device of the kind described comprising a cylinder slotted longitudinally along one side midway its ends and closed at the ends,

a piston-rod in the cylinder, pistons at each end of the rod, a union-coupling on the piston-rod midway the pistons a cross-head secured at one end in said coupling and projecting through the slot, a casing having a slotted bottom, a guide-block sliding in the casing and having a depending leg secured at its lower end to the outer end of the cross-head, and a driving-rod connected to said cross-head.

2. The combination with a cylinder slotted longitudinally and closed at each end of pistons, therein, a rod connecting the pistons, a T-shaped coupling on the piston-rod, a cross-head connected to the coupling, a casing secured to the cylinder above the slot, the bottom of said casing being longitudinally slotted, a guide-block sliding in said casing, said block having a depending slotted leg extending through the slot of the casing and connected to the cross-head, and a driving-rod working in the slot of the leg and pivotally connected to the cross-head.

3. The combination with a cylinder longitudinally slotted on one side, of pistons therein, a piston-rod within the cylinder connecting the pistons, a cross-head secured to the piston-rod midway the pistons and projecting through the slot, a hollow, longitudinal casing integral with the cylinder and having its bottom longitudinally slotted, a guide-block sliding in the casing, a slotted depending leg secured at its upper end to the guide-block and extending downward, the said cross-head extending into the slot of the depending leg, and a drive-rod extending into said slot and pivotally connected to the cross-head.

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Witnesses:
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